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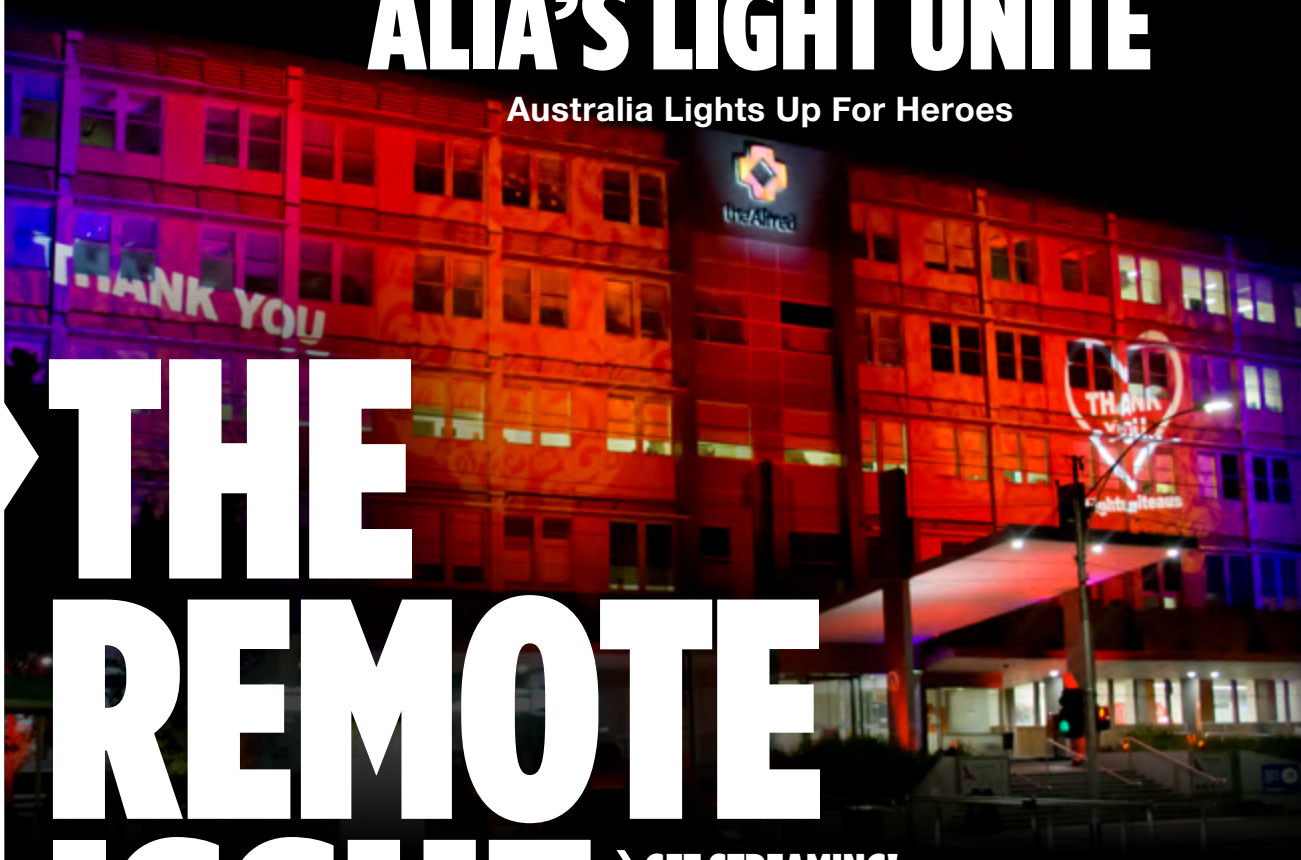
CX

LIGHTING | AUDIO | VIDEO | STAGING | INTEGRATION

ALIA'S LIGHT UNITE

Australia Lights Up For Heroes



THE REMOTE ISSUE

- GET STREAMING!
- GEAR FOR REMOTE
- MASSING ONLINE
- AV COMPANIES ARE MAKING IT WORK

NEWS

REGULARS

ROAD TEST

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Horizon 2020

Friday Night Party Rocked with Robe

Canberra-based technical production and event specialist and rental company Elite Event Technology ensured that February 21's 'Horizon 2020 – the Friday Night Party' event that was part of the Australian National University Students Association's (ANUSA) annual Orientation (freshers) Week activities – had spectacular lighting and sound for their main stage, including an all-Robe moving light rig.

Staged at the Fellows Oval sports ground on the University of Canberra campus in ACT, around 3,000 students enjoyed great weather and a superlative line-up of young emerging talent from some of Australia's best 'ones-to-watch' music stars including Club Sport, HOLY HOLY, Wafia, Graace, Remi, Adrian Eagle, and Hayley Mary.

Elite also provided a fabulous sounding d&b audiotechnik PA system for the event. The company supplies lighting, sound and AV production for numerous other functions at the University and were delighted to help ensure that this year's Friday Night Party rocked.

The lighting rig was based around a festival lighting spec created by headliner Club Sport's LD Jake Ploss.

Elite's owner and house FOH sound engineer for the night Darren Russell took this as a starting point and – in consultation with Jake – modified elements to make it practical for the event and to fit the 14-metre-wide truck stage.

The stage offered 6.5 metres of headroom to its structural gantry, below which Elite flew their four production trusses.

Elite's Blake Watkin operated lighting for all the other bands apart from Club Sport and the challenge was in lighting each artist differently to match their performance and musical style. With the Robes on the rig, there was plenty of versatility and dynamics.

Over 60 per cent played in daylight which was another consideration and a factor in the choice of BMFLs, for their intensity and multiple features. "They are the only light that can cut through and register in any colours during daylight," states Blake, "you simply can't beat BMFLs for this."

Blake has found that a combination of the demand for 'big' spot and wash looks plus the framing system and effects features make BMFL WashBeam ideal for virtually all their work – and the fixtures are out working constantly.

For the Friday Night Party, the six BMFL WashBeams were on the most downstage truss and used for some excellent subtle key lighting and specials. They worked perfectly; the framing allowing precise and neat highlighting with minimal spill.

Sixteen BMFL Spots were distributed around the other trusses together with 16 of the 24 Pointes, with the balance of Pointes on the floor. These other eight Pointes were part of Club Sport's floor package and were wheeled onto stage on mobile tank trap bases together with some strobes.

All the lights were controlled through the grandMA2 light house console.

The stage was positioned and set up the day before the event – on the tarmacked end of the playing fields – so there was enough time to rig lighting and sound and for Blake to do some pre-programming the night before, getting some basic building blocks into the desk.

He was not familiar with most of the bands and artists so a certain amount of improvisation was needed, a goal he achieved with the art of nimble and impressive 'busking', and you would never know that he didn't work regularly with all of them!

With no video elements, all the visuality of the performances was down to the lighting.

The biggest challenge for Friday Night Party's lighting was keeping enough smoke and haze in the stage area (which was open on both sides) to enhance beams and effects. Even with multiple hazers, smazers and fans deployed, and a little help from the wind, this mission still had its erratic moments!

Elite Event Technology also provided all the stage risers and backline for the concert, plus crowd barriers. Darren and the team commissioned and ordered the generators, and designed and supplied site-wide power distro infrastructure which covered the stage and production, plus the entire Fellows Oval field for the concessions.

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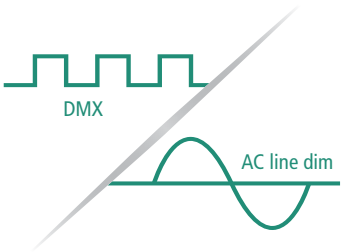

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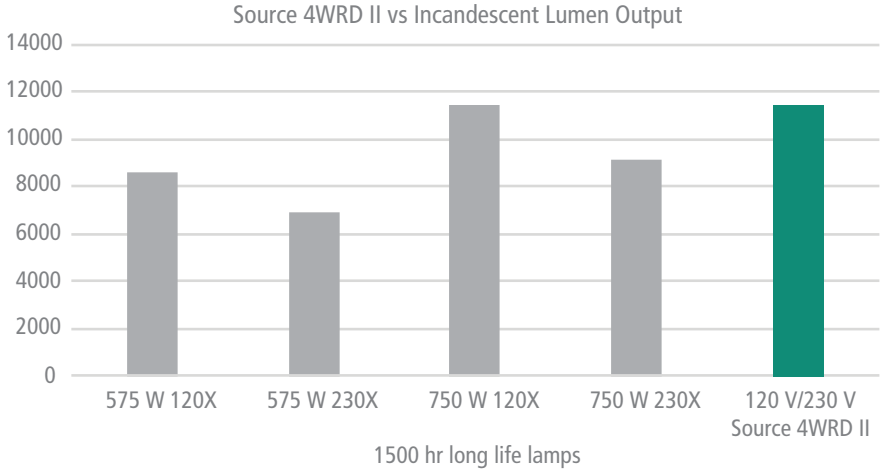

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Jands Appointed as Australian Distributor of Blustream

Jands is excited to announce a distribution partnership with Blustream. Blustream is an Australian owned, award-winning solution for advanced HDMI distribution in the residential and commercial markets.

Jands will distribute Blustream's complete portfolio of HDBaseT and HDMI technology through their well-established Australian dealer network that spans commercial markets such as integrated systems, performance spaces, education and hospitality.

"Blustream will play an integral part in growing our commercial systems business. We're excited to have this exceptional brand on board, one that is similarly passionate about their products and services as we are at Jands." says Geoff Smith, General Manager of Distribution at Jands.

Martyn Shirley, General Manager of Blustream, commented, "We are excited by the opportunity to build a long-term partnership with the AV team at Jands. Their plans for the commercial AV channel in 2020 and beyond are both ambitious and achievable. The company structure, available resources and most importantly the quality of the people at Jands make them the ideal partner for Blustream in the rapidly growing commercial channel".

Blustream will join Jands' international portfolio of brands that includes Ampetronic, Anolis, Aveo, Biamp, Bosch, Clear-Com, ETC, Furman, L-Acoustics, RF Venue, Robe and Shure.

About Blustream

Founded in Melbourne in 2014, Blustream is the audio-visual industry's award-winning option for advanced HDMI distribution. Their products have been designed and engineered by a global team of AV specialists with over 40 years' experience. Research highlighted the market need for an AV distribution brand that could deliver both industry-leading performance and most importantly reliability. This has resulted in developing a range of HDBaseT, Video over IP, and HDMI solutions that deliver seamless AV integration within any installation environment.

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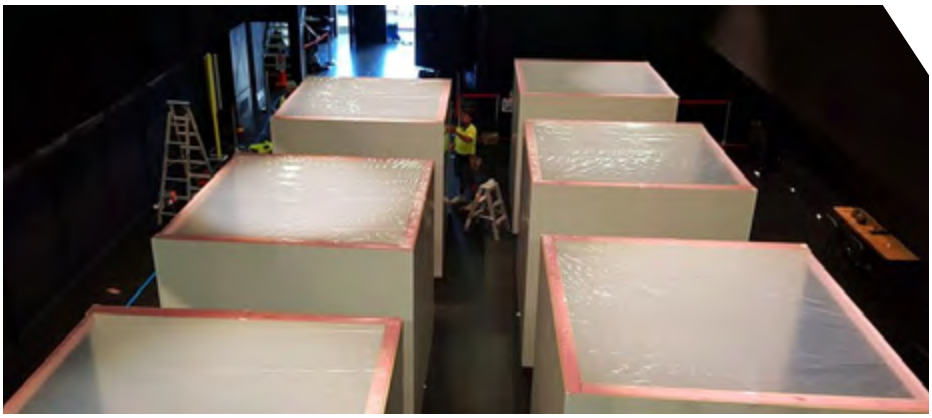

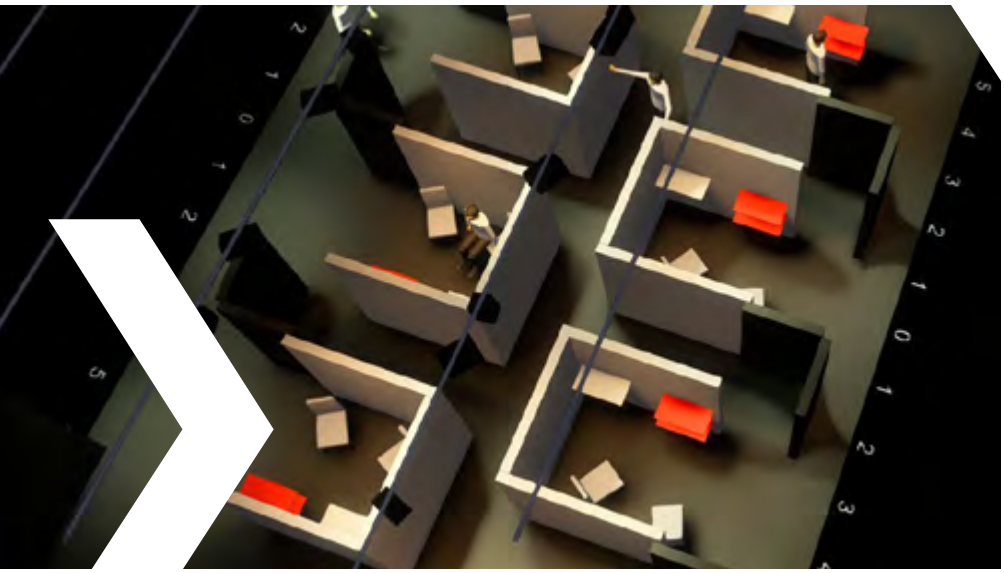

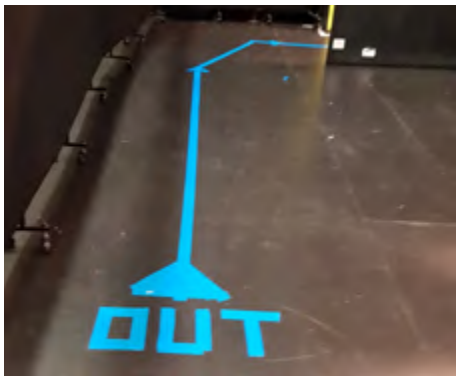

Gisborne, NZ's War Memorial Theatre Becomes Medical Facility

As New Zealand went into COVID-19 induced stage four lockdown, all entertainment venues were shuttered. At the same time, front-line medical professionals prepared staff and facilities to treat any suspected respiratory illness as the novel virus, and keep suspected patients away from the already sick and vulnerable. The local hospital contacted council looking for suitable spaces to build new testing and treatment facilities, and The War Memorial Theatre was the top of the list.

Tim McAneney of Creative Lighting Design Ltd contracts his company's services to the theatre, looking after the tech of every show that comes through. "We had the *Menopause The Musical* touring show scheduled to come in on Wednesday 18 March," relates Tim.

"That was just before the gathering ban was announced, and they were still on the road. We did the pre-rig for them on the Tuesday. They turned up, the show was cancelled, and they turned around and went home."

Now faced with a turnaround of a different kind, Tim found himself dealing with a local construction company who built the stand-alone kiosk modules for the testing centre, then helped assembled them on-stage. "One of our techs works for them, too," elaborates Tim. "It was good to get our crew onto doing this kind of building work."

The next step for Tim was designing one of the most unconventional lighting specs for a theatre install. "The criteria was they didn't want too much heat, partially because of running costs, but most importantly because air conditioning would move airborne virus particles around."

So how do you design a lighting rig for a medical testing facility in a theatre? Tim used an all LED rig comprising 15 Strand PLCYC1 MKII cyc fixtures in a warm white, and eight Theatrelight TL-F1000 LED Fresnels, and even pre-visualised it in Capture! "I had to eliminate the lighting desk or anything complicated from the system, so I set everything to stand-alone mode and ran it off hot power," states Tim. "Any staff member can just flick two switches to turn it all on."

Capture

Free Visualising Software

Capture Visualisation, out of Sweden, has a free version of their lighting visualisation software called Capture Student Edition, which is perfect for anyone interested in learning visualisation. It's available at: capture.se/Downloads/Download-Capture

It has a limited number of fixtures and trusses, but there is enough there to fill a single universe of DMX and learn some skills that you might normally not have time for. It's best to learn in combination with Capture's reference manual and video tutorials found at: capture.se/Support/Documentation

You can use Student Edition for conceptual design and can save your projects. The only thing missing is the full-blown library, which is sadly also currently missing from reality too, until events come back to life around the globe. Hopefully soon.

Capture have also opened up their School licence to allow students from a school with a Capture licence to have their personal computer unlocked. Educational licences of any Capture Edition had always been available to institutions according to their licensing policies, but until recently, the computers unlocked could only be owned by the institution. Therefore, they were usually found in their laboratories, while students at home would use the free Capture Student Edition.

What has changed now is that the institutions can extend the use of their licence to students at home until 1 September 2020 by requesting an unlock for the student's computer. Only the registered owner of the key file will be able to request manual unlocks and therefore students should not email Capture directly for unlocking their installations. Detailed instructions have already been emailed to the registered owners of educational licences, so if you are a student, Capture advises you to ask your institution for further instructions on how to obtain it. It goes without saying that the new policies are also available for new educational licence purchases.

Installations on student computers will have by default an expiration date of 1 September 2020, by when of course it is Capture's sincere hope that the world will be back to normal!

Sennheiser MobileConnect

The new generation of Sennheiser's MobileConnect streaming solution offers students an individual assistive listening capability through the convenience of their own smartphone. The system offers operators implementation of complex architectures easily, along with management from a central location. The Wi-Fi-based MobileConnect system delivers high audio quality with low latency. MobileConnect consists of three components: the MobileConnect Station converts audio signals into network-compatible digital packets, the MobileConnect Manager software enables the system to be centrally controlled, and the MobileConnect App ensures that the audio stream can be optimally personalised and played on the student's smartphone.

Sennheiser SpeechLine Multi-Channel Receiver

Offering the same uncompromising RF performance as all SpeechLine Digital Wireless devices, the new multi-channel receiver accommodates up to four receiving channels and an auto-mixer – no additional antenna is needed, and only one cable is required for PoE, control data and the Dante stream for which redundant sockets are provided. A 3-pin terminal connector is available for infrastructures that need an analog output. The multi-channel receiver complies with common network security standards.

Australia: Sennheiser
en-au.sennheiser.com or 1800 648 628
New Zealand: en-nz.sennheiser.com or (09) 580 0489

NEW GEAR

Epson EB-1485Fi

The EB-1485Fi is a 3-chip interactive laser source projector designed to be easy to use. It can convert any wall or existing dry-erase board into a 100" interactive display. The laser source provides up to 20,000 hours of virtually maintenance free operation, with the added benefits of higher image contrast and instant ON/OFF. Capture, save and share - no need to transcribe meeting notes or snap a photo; easily save, print or email directly from the projector. The EB-1485Fi provides wireless compatibility to display documents, files and photos from iOS, Android, and mobile devices with the Epson iProjection App installed. A HDMI out enables connection to a larger display, videoconferencing system, or recording device.

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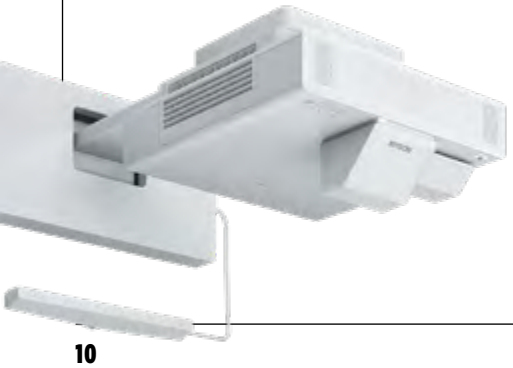

Chauvet Professional Maverick Silens 2 Profile

The Maverick Silens 2 Profile from Chauvet Professional is the quietest LED moving head ever released for theatre and studio applications. This 500 W moving head is completely fanless, and designed to operate in total silence without compromises in colour consistency or output. The unit features a 10,000+ lumen output, customised optics with variable CMY + CTO colour mixing, and a +/- green adjustment to ensure perfectly rendered skin tones. Maverick Silens is also capable of superb animation effects via one rotating and one static gobo wheel, a prism, fully variable frost, and an emulated red shift for a tungsten punch. Control your way with DMX, sACN, Art-Net, or CRMX.

Australia: Showtools
www.showtools.com.au or (02) 9824 2382
New Zealand: M.D.R Sound & Lighting
www.mdrlighting.co.nz or (06) 355 5073

Kiloview E1 and E2 Video Encoders

Kiloview offer a range of video encode, decode and signal converters, including the E1 and E2 series of SDI and HDMI encoders. The E1 comes in two SDI formats, one catering for all of your typical IP encoding formats (RTP, RTSP, RTMP, TS, HLS) and the other with all of the IP set plus NDI with optional HX and SRT as standard. Ingest resolutions of up to 1080p60 are supported. The E2 is the HDMI version offered in two options as IP and NDI enabled encoding with up to 1080p60 supported as well. Kiloview also have a range of 4K encode and decode devices, wireless and wired, rackmount and standalone.

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LIGHT UNITE


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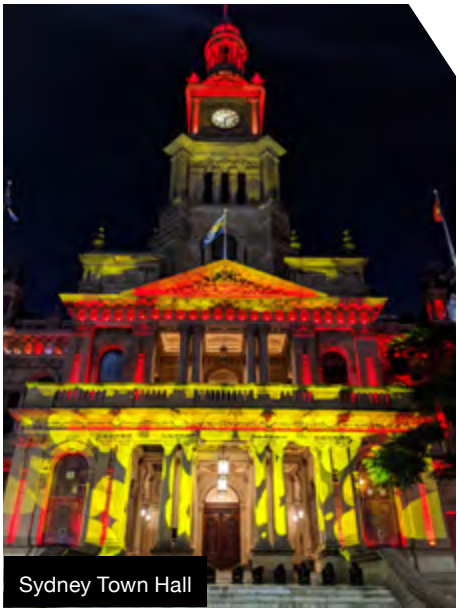
Event Sound Sydney

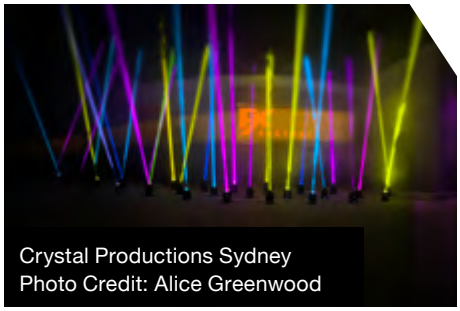
On Wednesday 15 April, 80 Australian production companies, venues, lighting suppliers, distributors and designers lit up buildings, landmarks, hospitals, and the sky across Australia in the ALIA-coordinated campaign 'Light Unite'.

Inspired by similar events in Europe, the aim was to thank all essential workers at the front-line of the pandemic, while drawing attention to the plight of our own industry. It was a huge media success, covered by major networks including an interview with organiser Cat Strom, and flooding social media with images and videos. It also provided a much-needed morale boost to techs, getting them back on the tools.

ULA Group Brisbane

Phaseshift, Melbourne

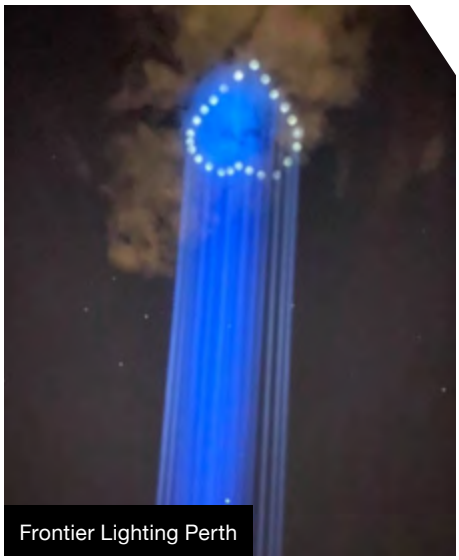

Sydney Town Hall


Crystal Productions Sydney
Photo Credit: Alice Greenwood

"It was a huge media success, covered by major networks."


Cleveland Point Lighthouse by Show Hire Australia

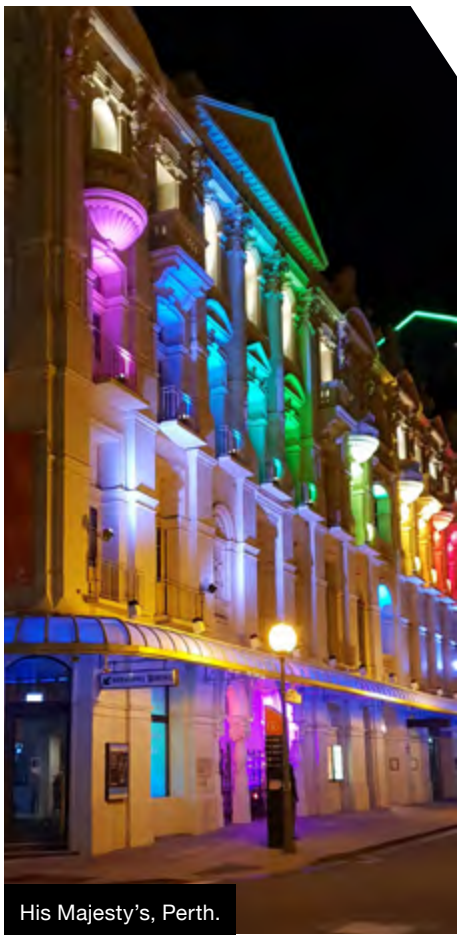
R and R Productions - Old Council Chambers Kiama


Frontier Lighting Perth

"The aim was to thank all essential workers at the front-line of the pandemic


Show Technology, Sydney


Melbourne Town Hall


His Majesty's, Perth.


HOTA, Gold Coast


Metropolis Perth by Granston Productions

"It also provided a much-needed morale boost to techs, getting them back on the tools.


Perth Concert Hall, GSD Productions

YABARRA
DREAMING IN LIGHT

by Jason Allen

The signature installation of 2020 Adelaide Fringe Festival, Yabarra – Dreaming in Light, ran at Tandanya National Aboriginal Cultural Institute from 12 Feb to 15 March. Created in partnership with Aboriginal arts collective Yellaka and digital content creators Monkeystack, it told the creation story of Tjilbruke, interpreted by Karl Winda Telfer and the Williams clan of the Kaurna people. Novatech Creative Event Technology provided the tech know-how and equipment to bring the story to life.

Taking advantage of the ENTECH Roadshow being in town, Novatech organised a special 'tech tour' of the exhibition for attendees. Hosted by managing director Leko Novakovic, we got to experience the exhibition as a private party, with Leko and the crew explaining how they achieved the amazing results, letting us peek backstage to see the gear running the show.

The Journey

The exhibition guides the viewer from place to place, mapping the path of Tjilbruke through the geographically significant places of the Kaurna, including the springs along the coast created by his tears as he wept for the death of his nephew. The exhibition flows naturally as pieces of projected and recorded content invite the viewer to stay, look, and listen at significant places. Overhead, a 30 metre continuous projection of The Milky Way runs the length of the gallery, and the constellations known to the Kaurna as emu, lizard and more come to life to guide you to the next part of the story.

It's a physically impressive feat. The main gallery of Tandanya, some three stories tall and 15 metres wide, was enclosed by Novatech's drape lines, hung from the gallery's existing truss. In the space, Novatech carved out projection surfaces and screens, built fake campfires, created textured bush and trees by using layers of hung gauze and projections, and even created a tornado, the finale of the exhibition, known as the 'Spirit Wind'.

Projecting Around Corners

It's a masterclass in projection, with 30 projectors from brands including Hitachi, Panasonic, Epson and Fujifilm rigged in every conceivable angle, orientation, and throw. Short-throw lenses, laser sources, and perfectly aligned blending all work together to make the images seamless. Notable is the use of eight Hitachi CPWU600w projectors with short-throw lenses that covered the entire 30 metres of the Milky Way, and the new Fujifilm FP-Z5000 ultra-short throw projector, equipped with the world's first folded two-axial rotatable lens, which can direct the lens up, down, front, rear, left and right without having to move the main unit.

"Novatech's co-owner, Milenko Novakovic, came across the FP-Z5000 just prior to its release and was so impressed he immediately requested that we have the first demo unit in Australia for testing and evaluation," explained Leko. "We hadn't invested in smaller projectors for a while and we were just in the planning phase for Yabarra – Dreaming in Light. With that installation using more than 30 projectors we knew that the Z5000s would now be a key part in the design. We had some sections that we simply did not have the projection distance to cope with, even with short throw fixed lens options, and the Z5000s became the saviours."

Total Control

The beating heart of the system is two disguise d3 4x4 Pro media servers and a grandMA3 fullsize lighting console, handling all content, control, and distribution to the main gallery, with a stand-alone QLab system handling the separate 'Waking Room'. Everything is automated on a daily schedule, with gallery staff totally hands-off. It's testament to the thoroughness of Novatech's programming and attention to detail that they didn't need a tech onsite at any time during the run, except to refill the fog machine. "Milenko even figured out a way that we could rig that up to refill automatically," related Leko, "But it was a bit risky if it went wrong, and it wasn't a bad idea to have a tech come in every few days and cast an eye over the place."

The stunning finale of the exhibition, the 'Spirit Wind' is a two-storey tall fog tornado that miraculously forms in the middle of the gallery.

The Spirit Wind – How To Build an Indoor Tornado

The stunning finale of the exhibition, the 'Spirit Wind' is a two-storey tall fog tornado that miraculously forms in the middle of the gallery. How did Novatech create it? Well, it helps to have a staff member that used to build artificial tornados for Canberra's Questacon National Science and Technology Centre. Daniel Sisson, an electronic service and repair technician at Novatech, helped them develop six hidden tubes that run floor to ceiling around the room, perforated, and fed by high powered fans. "The secret is that the vortex is already there when you walk in," hinted Leko.

After you've entered the room and the wrap-around projections tell their story, Tjilbruke summons the Spirit Wind. Through vents in the floor, the fog rises and forms a perfect tornado, accompanied by earth-rattling sound FX, courtesy of four L-Acoustics SYVA. Creating the haze from backstage is a Topcat H-SW3000 Low Water Fog Machine, which uses ultrasonics to break water molecules into haze. Mounted above the tornado, a GLP Force 120 x 120 fan sucks the haze up into the ceiling. Lit by GLP Impression X4s and SGM XC-5 Colour strobes, it's a breathtaking end to the exhibition.

Hearing and Seeing the Story

There's audio throughout each station of the exhibition, as the story is told by different members of the Williams clan, across generations. If you've ever wondered what those Sonance RK63 loudspeakers that look like rocks are for, it's this – there's four in campfires and other bush tableaux around the exhibition. 24 Yamaha VXS5 surface mount two-ways are rigged and hidden in every conceivable place, powered by Yamaha XMV8140 and XMV4140 multi-channel amps.

Lighting complements the projection throughout, without fighting against it. Notable fixtures distributed around the space included GLP X4 Atoms, GLP Impression X4 moving wash lights, Prolights LED CRYSTALBK moving spots fitted with custom gobos, and UV COB ULTRA PARs.

Continuing the Journey

It's hoped that Yabarra – Dreaming in Light will find a new life after the Festival, touring to take the Dreaming story to other cities and countries as a cultural exchange. While the global landscape has completely altered since it's opening run, at the time of our visit, the SA government was already seeking new avenues to share Yabarra with the world.

A TIME TO SAY THANKS.

This one goes out to our crew 'family' far and wide.
Under one name yet made up of many.

Thanks for the experience you bring to our family business in making memories for audiences everywhere we go. In challenging times like these, we are thankful in reflection, we have you to be grateful for.

To our clients for the gigs, suppliers for the rigs, the venues we fill and artists that thrill, for fans that roar so events can soar. Thank you.

Thank you CX magazine. You support the industry that supports us.

Experience is everything.

novatech

ncet.co

HOME ALONE TOO

by Andy Stewart

Given the crazy situation we're all in, more of us than ever have suddenly found ourselves recording at home. Some of us have decided to track that Opus we always promised ourselves we'd produce (which is awesome); others are participating in large (remote) group tracking sessions, contributing parts in isolation. If you're in one of these camps, and you want your recordings to sound professional, here are some basic do-s and don'ts about recording in a space that's far from ideal.

Monumentally weird times call for inventive, sometimes unorthodox (and visually displeasing) solutions to unforeseen audio problems…

For some of us at least, this nationwide lockdown has prompted us – either out of a fundamental need to preserve our sanity, or sheer boredom – to start recording at home. Many of us already do this anyway of course, and I know from letters I receive that lots of CX readers have been tracking, mixing (and even mastering) at home for decades – including yours truly.

So while we're all locked down, here are a couple of tips for recording at home, assuming three things: that you've had no time to prepare for the change of venue, there's no money to invest in fancy room treatments or new gear, and you have plenty of time on your hands to experiment with techniques you've never bothered to try.

Before we dive in here, I should just say that part of this article has been prompted by my own participation in a huge group tracking session that came my way a few days ago. I've volunteered to edit, mix and master it for a YouTube release later in the week. As well as recording parts for it myself here at The Mill (in isolation of course), I've been sent audio files by literally hundreds of people, each of whom has recorded his or her own part at home, while also filming their participation for the associated video (I talk about this in greater depth on page 34).

The sonic quality of these performances, needless to say, has varied greatly! So much so that on several occasions I've been sitting at the console shaking my head in astonishment, at the sheer randomness of the audio signal coming through my Genelecs. Some of it has been so beyond the pale as to be unusable, thanks mostly to extreme room resonances and background noise caused by people naively setting themselves up in acoustically 'hard' rooms, several metres away from a mic. Others have had the original click track file mixed back into their audio bounce – what they were thinking there I'm really not sure!

Anyway, there are many things you can do to avoid falling into the amateur recorder's trashcan, even if the amount of equipment at your disposal right now is almost nil.

Back To The Drawing Board

Getting right back to basics here is probably the best place to start.

Let's say, for instance, we want to record a vocal at home… that's a pretty common occurrence at the moment, and more often than not this is where people get into trouble right out of the gate.

There are several things to consider if you're serious about recording a vocal at home if you want it to meet some kind of standard befitting a future release (or for that matter, your next contribution to a mass online band).

Assuming you have a microphone at your disposal, and preferably a stand too (you could even Gaff a mic to a broom handle if you're desperate), there's every possibility, given what I've been seeing over the last week, that without the professional surroundings of a studio or an engineer in the room guiding your setup, you'll simply plug in and start recording.

Hold everything right there!

There are several things we've got to consider about our setup before we're ready to start tracking! If we overlook any of these our recording is likely to sound average at best – awful in some cases.

Let's start by assuming we only have a Shure SM58 or Sennheiser e935 (two very common cardioid dynamic mics), or maybe you have a more desirable condenser mic… at this point it doesn't really matter. You could have your phone gaffed to a tree branch for the purposes of this exercise.

For starters, choose a mic that's directional… cardioid-patterned preferably. A ribbon mic will be less useful in this instance because its figure-8 pattern will record everything behind the mic as well as in front of it. If your room sounds ordinary (which it often does) or is noisy for some reason, you'll potentially strike trouble using this mic. The same logic applies to a condenser if it's in figure-8 or omni.

Now at this point you might be set up in a room you've recorded in a thousand times before. Regardless, now is the time to remember two important things: that you need to track in a quiet space, not in the front room 10 feet from a busy street (not that there are many of those at the moment!) and not without a pop shield. I don't care what mic you've set up; you can't record vocals without a pop shield.

If it's a 58, a pop shield is still mandatory. The same goes for any other mic you care to name (unless it already has a decent foam shield incorporated into its design, like an SM7 etc). If you don't have one, make one out of a coat hanger and a pair of stockings. Failing that, tape a pencil to the centre of the mic's outer grille – crude but effective. Both these options might look ugly, but we only care what our setup sounds like, don't we… not what it looks like. If you're concerned about looks, consider a job in the film industry.

Now… two more things to consider, and these are crucial too. Where you point your dynamic cardioid microphone is vital to the quality of the recording, because if it's aimed at something noisy, or hard, you're in trouble.

The third mic stand supports the weight of the other two

My fancy Dead V with a roof setup in a big studio

Why? Because a mic picks up everything behind you, the singer – not behind itself! For some reason, everyone seems concerned with stopping unwanted ambience getting into the back of their microphone, never the front of it. But that's a misnomer if the mic is cardioid-patterned. What matters then is what the mic is facing towards. If that's a hard surface, all the room ambience bouncing off the wall behind you gets picked up by the mic as it simultaneously records your vocal! Conversely, if the rear wall is quite absorbent (dead), we're on track for the vocal to sound half decent.

The next thing to remember is that your lead vocal track is likely to be louder, and possibly more compressed, than anything else in your new production. So even if you don't compress while you're tracking, chances are the vocal will have some (or possibly lashings) of this process applied later on. Bearing this in mind, any room resonances, flutter echoes or ambience in your space that's left untreated, or seems inconsequential at the time, is going to be MAGNIFIED by the various mixing and mastering processes that will occur down the track.

What does this mean? Well, put it this way: if your recording sounds a bit 'roomy' now, it's going to be a hell of a lot worse when a bunch of compression is added to it later. This is the key problem of most home recordings: ambience, whether ugly or sweet, gets greatly amplified by compression, and that is rarely a good thing for a main vocal. This is why singers often record in a 'dead' vocal booth – so that when the vocal gets compressed at 4:1 during tracking, then again during mixing, and yet again during mastering, it remains detailed and dry, not a washed out, resonant mess.

Impromptu Vocal Booth

Almost no-one I know has a vocal booth at home (a pity), although walk-in wardrobes can sound pretty cool. What you need to do now is build a dedicated isolation booth inside the one you're currently isolated in! Not like the ones you see in glossy mags, but rather, one you can construct in 10 minutes out of found objects around the house. This can be as simple as a queen size mattress tipped on its side against a wall – although this is not recommended, as it's never very popular with your other half!

By far the best (butt ugly) design option is a Dead 'V'. This is something I talked about way back in Issue 110 of CX. It's a setup used by countless engineers the world over, whether they're in Abbey Road Studios or their flat in Abbotsford. It's one of the most crucial bits of hardware in any home recording setup, and it's free.

A 'Dead V' is great for recording almost any instrument that requires a more isolated, deader sound than any untreated room could ever provide. Given our current circumstances where we're all trapped in our acoustically compromised houses, this setup basically applies to nearly everything we'll be recording for the next few months, so get building.

By placing two soft walls in an open 'V' configuration, so that a directional mic points straight at its centre, you not only deaden the room overall, you also provide a far less reflective rear wall for the tracking of your vocals, guitars or pots and pans etc. The subsequent audio recording will contain far less embedded room ambience, making for a far tighter, more versatile sound later on in the production.

You can build a Dead V with either a few mic stands or lengths of fairly strong dowel.

To build the mic stand option, fully extend two boom stands up and at 90-degrees (parallel to the floor). In this state they're impossibly weak on their own, but when a third upright stand is placed at the centre of the V to carry the two extended arms, the structure becomes quite sturdy (see pic).

Gaffa tape them all together or use the mic clip of the middle stand to hold the others up. Carefully throw a couple of doonas or heavy canvases over this frame arrangement, and viola! A Dead V. If it's strong enough and high enough you might also consider throwing something soft over the top to create a roof (although this often puts more stress on the structure than it can handle).

Audio Aneurysm

The other thing to watch out for when you're recording at home is headphone bleed. Far too often I receive home recordings that have clearly been tracked with open-backed headphones (ones that don't have a solid outer shell). These can render audio recordings unusable for several reasons.

Firstly, given that there will nearly always be compression added to an instrument later on – whether that's by you or someone else – this will tend to exacerbate the level of bleed (do I detect a recurring theme here?). If this consists primarily of things like click tracks, guides and other superfluous ingredients, you've potentially got a serious problem on your hands that's difficult to solve… except by you, right now.

If you only have open-backed headphones, try putting a couple of layers of Gaffa tape over the areas that leak sound, to at least dull the spill. Every bit helps! Failing that, there's another, slightly more complicated trick involving a second channel and a polarity flip.

After you've recorded your vocal performance, let's say, and now you've discovered that the guide guitar and click track have spilled into the signal, all is not lost. Here's what you must do: open a second recording channel immediately, stand (or sit) exactly where you recorded your successful take, and using the exact same headphone cue, track the performance again, this time without making a sound. What you're doing here is recording the headphone bleed again, only this time on its own. Now add the two signals together, with the polarity (phase) of the second channel flipped. This should all but kill the spill stone dead, or at the very least, reduce it.

If you're recording at home and don't do something to 'shut down' the main resonances of your tracking space, you'll lose the battle against corrupting ambience. Don't let your general ignorance of complex acoustic theory paralyse you. More often than not there's an easy fix to improve the situation. Just don't use your eyes!

Stay safe everybody.

Andy Stewart owns and operates The Mill on Victoria's Bass Coast. He's a highly credentialed producer/engineer who's seen it all in studios for the last three decades. He's happy to respond to any pleas for recording or mixing help... contact him at: andy@themill.net.au

A CHORUS LINE

by Cat Strom. Photo Credits: Robert Catto

When *A Chorus Line* opened on Broadway in 1975, it created a storm and revolutionised everyone's notion of what a musical could be. The original Broadway production ran for 15 years but unfortunately, Darlinghurst Theatre Company's recent staging of this classic never had its Opening Night.

The show was one of the last to hang in there during the COVID-19 shutdowns in Sydney. The theatre seats 200 exactly and they were still powering ahead when the restrictions closed many other shows over 200 pax. Regrettably, on the day of Opening Night, the restrictions were limited further down to 100 pax and the company made the heart-wrenching decision to suspend their 2020 season until further notice.

From the start, this new production of *A Chorus Line* set out to be different. Whilst still set in the 1970s on a theatre stage, it has fresh choreography from the director and choreographer Amy Campbell, who was keen to give it a modern flair.

The show was lighting designer Peter Rubie's second mainstage show with Darlinghurst Theatre Company, a company he states are a dream team to work with. Amy's approach to the staging gave him creative license to be a bit more dynamic with the lighting. The traditional audition scenes are lit as standard with mostly generic lights, including a simple 1k Fresnel tungsten top wash, but there are plenty of moments that call for accents, colour and movement which often occurs once the storyline breaks away from the theatre world and into people's thoughts.

Simon Greer designed a great set comprised of truss arches and scaffold pipes which make much of the back wall of the set and, thanks to a generous donation from NIDA, Peter was able to add a collection of Strand Patt lights that cover the racks and help bring that 1970s backstage theatre feel. Bit by bit at select moments in the show, they come to life, giving a stark contrast between the warmth (literal as well as colour temperature!) against the cooler and more saturated colours the movers and LEDs produce.

The workhorses of the lighting rig were 17 Chauvet Rogue R1 Washes that acted as a backlight/spotlight for each of the 17 dancers on the line, just like the line of lights in every other production of *A Chorus Line*, but it was an ambitious dream of Peter's for them to all be moving lights to enable colour changing and add other strengths and dynamics to that line.

"The Rogue R1 Wash was a perfect choice," commented Peter. "I needed something that had good colour rendering enabling me to achieve static looks, like a row of tungsten par cans, yet also more dynamic moments of colour. Zoom was a welcome benefit to flood out at times and give an even full stage backlight. The R1 Wash perfectly fitted in the gap between the theatre back wall and the rear arch, which was only 500mm."

The Rogue R1 Washes worked more than any other light in the rig as there are often key moments where focus shifts in and out of characters on the line. Being able to pick out solo moments from the rest on the line with a quick colour contrast was invaluable for Peter, as was jumping quickly from general states to tightly focused beams of lights on the dancers.

Peter added five Claypaky Axcor Profile 400s to his rig, saying that they are a great framing unit if you're on a tighter budget in a small to mid-sized theatre.

"They have the same reliability and features as the more expensive units," he added. "If I had to be picky, I would say the colours take a tiny bit longer to calibrate between units for precise skin tones but I otherwise can't fault them. I had three of these units out FOH for picking out people in tight specials, instead of any follow-spots. Another two were perch shots to do more area focuses / high sides and tighter shuttered areas, and this helped split the stage up into different zones/play areas. There were even some live shutter moves in the show, including the three FOH units, covering the full width of 17 dancers on the line and wiping the shutter blades from their faces to feet, in an instant snap. The full curtain ability of the shutters in these units made that possible, which is something you only usually find in the higher end units."

Six Martin MAC Quantum Profiles provided extra dynamic moments of texture/backlight spots and feature area washes in conjunction with the R1 washes. They may seem an odd choice for theatre, but on a smaller budget, Peter likes them for their very flat field and near-silent operation.

Added to that were four Mac Aura XB that according to Peter are hard to beat for an LED wash light on skin tones. It's extremely hard to get sidelight/shin buster light downstage in this theatre as the front row is on a curve that wraps the downstage two meters or so

and there is little to no place on the floor for sidelights. A single unit onstage, either side of the stage, did low angle shots, sometimes just one or two people and at other times flooded out to get the whole downstage area whilst still holding its own.

A total of 39 ShowPRO DreamPix Strips delivered a modern touch to the production. The venue offers a huge width to play with and so Peter decided to highlight the set truss arches with the DreamPix Strips.

"They turned out great and look really dynamic with the custom effects run through them in the more fun and flashback montage moments, as well as bringing the extra level of sparkle needed to the finale," he said. "We don't light the arches up till the very end of the first half of the show and thanks to their smoked black diffuser and strategic placement alongside the edge of the truss, you don't notice them until they come to life. It's a well-designed product, they have really thought about the mounting mechanism, making rigging easy and flexible with sliding clamps and slide locks to align a run of them."

Sidelight is important for any dance lighting, and so Peter used every ETC Source 4 Lustr the venue had plus an additional two on hire (making a total of 20) to allow for a full stage high-side wash. The stage was often going to be full with all 19 dancers and so, that coupled with no actual wings, meant a traditional ballet boom sidelight was out of the question.

"I was a little nervous that not being able to shoot directly from the side wouldn't give me the sculpting I needed but I landed on an angle which is not quite a high side and not quite a sidelight, and it worked out well," elaborated Peter. "A lot of the bodies and faces were lit predominantly with this low high side wash and so it was worth its weight in gold to have the beautiful full spectrum of colour in it that the Lustr offers to fully colour tone the scenes to suit the mood."

Control was the venue's ETC Classic ION that was pushed to its limit. In fact Peter believes they were three parameters over the console capacity, so he had to pair up a few things! Peter uses a variety of consoles depending on the show but states that he still prefers to use the ETC family for anything theatrical.

"Its ability to drill down into timings and details that you need in a theatre piece or musical is still much faster and more precise than any other console I've come across," he remarked. "Its handling of information shown on screen, which you can custom build into a single screen magic sheet, is also extremely good. Often I program my own shows and in those cases, I'm happy to get lost in many screens of sheets and tables of data but when I take my programmer gloves off I just need a clear and summarised information overview of what is happening in the current cue, which I find ETC does very well. Programming for me on this show was Blake Garner, whose speed and precision meant we managed to get through the whole show in the plot time which left some important time to go back and detail afterwards. Part of that was a fair amount of timecoding which always adds an extra layer of time required but it's always so satisfying to watch playback once recorded and tight."

Peter used his own MADRIX 5 professional to run the DreamPix Strips rather than chew up console channels which he had run out of anyway. MADRIX acted as a media server for the DreamPix, driving the seven universes of pixels and the ETC had a simple MADRIX fixture patched which triggered cue sequences and had basic control of the overall colour and intensity.

The show had 512 lighting cues, an ironic number to land on, with another 130 point cues. Fortunately, there was no live band in this production, with the only source of live music coming from a piano on stage, which meant that most of the songs that have other instrumentation other than just the piano have a base track running alongside them in QLAB. Peter took advantage of this and timecoded about 80% of the show via MIDI coming out of QLAB and into the ION which also sends a handful of MSC messages to trigger certain cues here and there. The other 20% of the cues were run by the stage manager, Ryan Tate.

Lighting was supplied by both Audio Visual Events and Intense Lighting Hire who, according to Peter, were both very generous in hire costs to make this rig possible.

For audio, the show used Darlinghurst Theatre Company's new inhouse system designed by Emily Adams. Courtney Weaver designed and operated the audio for this production.

"I was lucky enough to be working with voices that blew me away every night and gave me the chance to creatively express the emotion portrayed in each scene," said Courtney. "Not only is the speaker position important but a super important part of our storytelling is also the volume of every sound, mix between vocals and track/piano and the SFX used. Every one of these aspects of sound design effect the emotion portrayed by the actors and received by the audience."

Courtney had the freedom of using different SFX to create different moods for the audience. For example, making the ensemble of the scene sound distant and dreamlike while the principals are harsh and forward creating an uncomfortable feeling for the audience, therefore, making the scene have more impact.

FOH there were two Meyer Sound UPJ 1P left, centre and right all stacked in a horizontal position and flown to deliver the main fill for

"My job is closely linked to all the beautiful, talented actors on stage."

the room, angled to hit the first row up to the middle of the back. Three UPM 1P cabinets were flown delays angled to hit the back few rows. Foldback was one JBL VP7212 per side and sub was one USW 1P per side at the back of the stage wall.

For band imaging, there was one UPJ 1P per side at the back of the stage wall that was used for only tracks and piano to make a realistic fade as well as bringing underscore back from the PA to make it more realistic and give Courtney dynamic control.

At the rear were two JBL VP7210 speakers used mainly for Zach's voice when he is at the back of the auditorium, createing a booming overpowering effect. These are also used for SFX throughout the show in certain moments and scenes.

The piano had a UPJ 1P hidden behind the façade to keep some specific piano moments super realistic and the piano also had speakers in it to reinforce this notion.

Microphones were 20 DPA 6061 hairline mics which were used for a full and realistic sound from the actors. Another benefit of the DPA 6061 is that it is super small and waterproof so in this small space the mic is less distracting in the middle of their forehead and there is no need for blotting sweat out of the mic until the interval.

"The most rewarding moment for me as a sound designer and operator is that every moment is something new for me to build on, working with the cast to make something truly special that the audience get to enjoy," commented Courtney. "My job is closely linked to all the beautiful, talented actors on stage, and I get the chance to work with every voice to convey a message and make something special for the audience to enjoy. Theatre is an incredible world and every story is different, the special nature of *A Chorus Line* is one I'm glad I didn't miss and I hope everyone gets to enjoy eventually."

Audio Visual Events supplied all of the audio apart from the inhouse JBL speakers.

The whole company really put their blood, sweat and tears into this show (which ironically is what the show is about) so it was such a shame they never got an Opening Night. However, they are confident that the company can pull through this difficult period. So much so, the show is still set up in the theatre, left exactly as it was thanks to their generous equipment suppliers, waiting to open as soon as they're able.

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Stay Strong

DELEGATE SOLUTION

Mandurah City Council Chambers, WA

by Jason Allen

WA's Pro AV Solutions recently completed a council chamber install designed around Televic's Plixus family of conferencing solutions, which includes twenty of the first automatically managed Televic Plixus E-Ink Nameplates in Australia.

"We specialise in and have been integrating AV solutions in council chambers around the country for some time now" explains Steve Travia, Managing Director of Pro AV Solutions WA. "We've completed projects for well over 20 councils, and have been refining our design and our process, making it easier and easier for both ourselves and the end-users. The Mandurah City Council job has been in two parts; the initial upgrade of the council chamber was based on a tender to supply an easy-to-use delegate solution. We installed a wireless Televic Plixus system, new audio and control. Two years on, the council has decided to move to a new chamber with a new fit-out. We've moved the Televic system, added the E-Ink Nameplates, and made some upgrades and improvements."

The Mandurah City Council Chambers system now features a Televic Plixus system with E-Ink Nameplates at each seated position. The Plixus CoCon Software is integrated with the AMX room control system which is operated from a 10" touch panel located at the moderator's seated position. From the touch panel interface, the moderator selects from a list of preconfigured meeting profiles, such as Executive Committee, Annual Finance Meeting, or Council Meeting. Each meeting profile is customised with seating arrangements, names and titles of attendees, and mic activation limits.

As the meeting starts, the electronic nameplates update automatically with the names and details of each attendee and illuminate as the meeting progresses to indicate which microphones are activated. The AMX control system integrates directly with the Televic Plixus engine, which allows control and feedback to a GUI on the touch panel. The custom designed user interface enables users to start or pause the meeting, view or update seating arrangements, start a vote count, and control other functions such as presentation sources and audio levels.

It's all been a Pro AV Solutions in-house design and construct. The final fit-out uses one Televik Confidea CV G3 Wireless Chairman unit, twelve Confidea DV G3 Wireless Delegate Units, and fourteen Confidea DD G3 Wireless Delegate Units. 27 Televik Confidea D-MIC 50 SL GSM gooseneck microphones capture audio, processed through a Q-SYS QA CORE 110f and amplified via a Crestron amp into Crestron ceiling speakers. An AMX NetLinx controller interfaces with the AMX 10.1" Modero S Series Touch Panel, and a Kramer VS-84UT all-in-one presentation system handles video switching.

"Usually it's the minute-taker or the governance officer that operate the meetings," explains Steve. "They've got a lot to do during the meetings, so the less they have to touch the system, the better. 'Start' and 'Stop' voting is a single button press on the touch screen, and it's all automatic. Once they stop the vote, they click an add-in in a Word document, it pulls the voting results in, and projects the results onto their screen."

The council also wanted to be able to move councillors seating positions on-the-fly, so the system has been set-up so the E-Ink Nameplates can be re-named from the AMX touch screen. "It's just really simple and user friendly for them," reports Steve. "They don't have to use back-end software at all, and have had no problems at all with anyone understanding or operating the system."

Networked Lighting Control and Management at the MCG

by Jason Allen

While the recent $25 million PA upgrade as part of the ongoing $50 million of capital improvement works at the 'G got a lot of attention, Lightmoves quietly implemented a brilliant networked solution controlling, managing, and monitoring 953 luminaires over IP using 18 Luminex DInMX4 DMX512 gateways…

The luminaries in question are Philips ArenaVision LED gen3 sports lights, installed by electrical contractor Nilsen Electrical. They are all identical except for some varying optics, depending whether they are installed on the lighting towers, as infill, or around the stands. They support RDM, and can log power cycles, power application to the unit, LED hours, LED array temperature, driver temperature, driver output voltage, output current, mains voltage, and mains frequency. They will also report their set DMX address, and luminaire naming convention.

Mains switching is handled by Philips Dynalite System Manager sitting on an IT server, and DMX512 control is via dual redundant Pharos controllers. Bringing it all together, and enabling the full potential of the fixtures' RDM compatibility and reporting, are the Luminex DInMX4 DMX512 gateways. "Luminex are one of the few companies that treat DMX RDM properly," says Andrew Sherar, Technical Director at Lightmoves. "They've got some clever algorithms that look at the incoming Art-Net or sACN streams and make decisions on when to interrogate fixtures between control packets without impacting the output. One of the primary things in the specification for the MCG was that they wanted fixture health monitoring done properly. Very few products can monitor and deal with a system like this correctly. The LumiNet monitoring software from Luminex gives us this exact functionality."

At 18 locations (six in the southern stand, six in the northern stand, and the six lighting towers), an Envision IP to Dynet/RS485 device enables communication from Philips Dynalite System Manager to the local relay controllers. Each fixture has its own relay channel using pulse on/pulse off contactors within the Philips Dynalite controllers. Each location also hosts a Luminex DInMX4 decoder that takes Art-Net from the Pharos controllers and distributes DMX512 from four separate output drives to the luminaires.

With the Philips Dynalite System Manager hosted on a virtual server, authorised users on the MCG's main network can access the client software, and with the proper user permissions, can control power to all 953 luminaires either individually, or by running macros. The Pharos controllers allow for the simple selection of sports modes, dimming levels, or special effects. Whilst the core network works with the MCG's networked workstations, a secondary port on the virtual server allows for communication with the Sports Lighting VLAN for communicating with all the required field devices distributed around the ground.

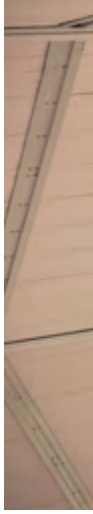
Nilsen Electrical staff can login for checks and maintenance. Facilities management and MCG operations technicians can allow for a lighting console to be patched in and control the system via Art-Net. "One suggestion I'm working on with LD Hugh Taranto, who lights a lot of major events, is to put MA3onPC into the installation," elaborates Andrew. "I've already coded some of that functionality into Pharos, but driving a live event from a computer isn't ideal. If any touring act want to plug in their own DMX control, it's preferable, as any Art-Net addressing they already have will likely conflict with the house, even though I've set it all quite high. I've got the two Pharos controllers spitting out two different ranges of Art-Net addresses, and we're doing a domain IP merge inside of Luminex, so if one Pharos goes down the other still gets data and takes control, which is how we've approached redundancy."

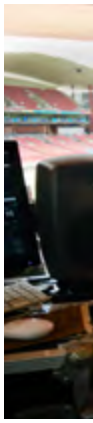
With the switch to LED, the MCG's power usage has gone down dramatically. "The Cricket Mode we've set runs the LEDs at about 70%; 100% is far too glary," says Andrew. "The infills have three bays turned off at either end as standard. AFL Mode has the goal squares turned off at either end so they don't glare in the player's eyes as they're kicking for goal."

"With the switch to LED, the MCG's power usage has gone down dramatically."

While the stadium now sadly sits empty and unused until restrictions are lifted, the visual results of the upgrade were evident in the events run just before the shut-down. "The T20 Womens' final and the only AFL game we had both looked great, and we were all pretty happy with the result," observes Andrew. "The HD broadcast has great depth of field, and with the new audio and lighting, the 'G feels fresh. I think the MCG got more than it expected!"

Sydney Showground Stadium upgrade & T20 Women's World Cup Celebration





Friday 21st February 2020 saw the Opening Celebration of the 7th T20 Women's World Cup at Sydney Showground Stadium. On the day, the title holders Australia opened the tournament against India, one of the up and coming sides in the competition. The Celebration on the opening day was the culmination of an almost two-year process to upgrade the aging sound system in the venue. Sydney's The P.A. People were involved from start to finish in the project, being not only the successful contractor engaged to design and install the new system, but also delivering a performance audio and communications package for the Celebration itself.

The Install

In May 2018, in response to their selection as a major venue for the forthcoming T20 Women's World Cup, the Royal Agricultural Society of NSW (RAS) embarked on a process to upgrade the sound system at Sydney Showground Stadium.

The Stadium had undergone a major refurbishment some five years earlier which included the construction of two new grandstands, and whilst the existing buildings were refurbished internally at that time, replacement of the existing original grandstand sound system was outside the approved scope of works. Given the profile of the World Cup, and that fact that the venue was now host to both the GWS Giants AFL team and the Sydney Thunder BBL team, the RAS Capital Works and Assets teams went to market to seek ideas and options for the upgrade.

The P.A. People responded with a comprehensive options paper outlining a scope of works, appropriate performance criteria, design constraints, and differing types of solutions that could be deployed and their associated budgets. Some nine months later The P.A. People were engaged to deliver a new system for the venue.

The initial task involved developing an acoustic model of the venue and the preliminary design of an appropriate sound system that not only would meet the performance criteria previously agreed but would also meet the structural loading requirements of the existing grandstand roof. The P.A. People engaged the RAS' nominated consulting engineers to provide certification that the proposed design was suitable from a loading perspective.

The P.A. People's design was based on the latest generation of constant curvature line array from Bose. The new ArenaMatch product fitted the bill perfectly. Released in February 2019, it is high performance, IP rated for outdoor use, and relatively lightweight. It can be powered in low impedance or 100v line mode with an option for bi-amped configuration. Each cabinet houses a custom 14" woofer and six mid high devices giving the system significant mid-range punch and penetration. At Sydney Showground Stadium, each cabinet was powered individually in order to maintain maximum flexibility through the commissioning process. The system comprised some eleven clusters, each comprised three 100 degree x 40 degree cabinets, plus an additional two fill cabinets to cover the area between the new and the old grandstands. The system is powered using Bose PM8500N 8 channel amplifiers connected to an existing Biamp Vocia DSP system.

Each cluster is suspended from a custom

fabricated bracket, designed so the system can be lowered for maintenance without a requirement for a boom lift or other access equipment. The bracket design and fabrication was carried out inhouse at The P.A. People. "Design of systems with a view to their ongoing maintenance is a feature of our large venue projects," commented Ross Ford, Project Manager for the RAS upgrade. "Each cluster hangs vertically from a beam which is inclined in two directions; every mounting bracket for the clusters is unique. The bracket design and fabrication is quite a detailed engineering project in itself," said Ross.

The new system is rounded out with a new Yamaha QL5 console and two RIO1608 Dante I/O boxes and was first trialed during the Sydney Thunder BBL games in January. System operator Trevor Beck was suitably impressed; "the system has far better clarity and coverage than the old rig. It makes operating gigs like the Big Bash quite pleasant!"

The Celebration

Whilst the installation was in its later stages, Event Producer Michael Cassel Group was appointed to produce the Opening Celebration for the T20 Women's World Cup. Veteran Technical Director Nick Newey was assigned the task of putting together the team of suppliers. He quickly learned that The P.A. People, whom he had worked with on many successful events previously, was installing the upgraded system in the venue. A meeting ensued, ideas were tossed around and subsequently The P.A. People were appointed as audio and communications supplier for the event.

The opening celebration encouraged the audience to get into the spirit of the

show and celebrate the T20's theme song *Get up and Dance*. With this in mind, the Michael Cassel Group were looking for an audio system that would provide solid low frequency performance as well as effective and even coverage to the stands. The P.A. People proposed a system that combined the low frequency performance and sense of direction of an on-field system based on their Bose Carts, with the elevated clusters in the new installed system. Each of the ten carts distributed in front of the grandstands feature a three element Bose ShowMatch array with two 18" subwoofers, all powered from an onboard Linea Research 44M20 amplifier. Infill between the carts was provided by Bose LT9702 cabinets in layback frames. The entire system was time aligned with the two upper cabinets in the installed arrays to provide even coverage and a focus on the field of play.

The FOH system was controlled on a Yamaha PM10 and Genelec monitors, with a pair of Mac Mini based QLAB machines for playback. Each Mac Mini is mounted in a Sonnet chassis fitted with a 128 channel Dante interface. Sam Dodds, Systems Engineer for the job commented "We use Dante as our primary mode of audio transport in all our larger system designs. The Linea Research amps and the Yamaha consoles all feature native Dante connectivity. Apart from the use of Yamaha's RPIO stage boxes and its TwinLAN protocol, pretty much all of the system uses Dante. We really like the feature set of the Yamaha consoles, and have been asked to provide them on a number of recent projects." Monitor land, located behind the stage, featured a Yamaha PM7 console, the main Yamaha RPIO I/O frame, and a substantial RF complement for both inputs and outputs along with conventional monitors. The console took eight Shure UHF-R Beta 58 radio mics as well as the tracks from Front of House, and then generated mixes for two channels of Shure PSM1000, six channels of PAP Level 2 IEM systems and a feed for the mass cast dancers who used proprietary FM packs operating just outside the commercial FM band. The stage area was also covered with eight recently refurbished Creative Audio CA3831 foldback wedges. "These wedges are well older than me, but the guys love the sound, so they have been brought back into service – they just sound great," mused Hamish Langdon, Monitor Engineer.

The contract for the celebration also included a substantial Comms system covering all areas of the arena and the rehearsal space. Technical Operators for the production were located on one side of the arena whilst the Show Caller and other staff were located almost 300m away in another set of control rooms, which was again some 400m from Monitor land. The Comms system comprised a Clear-Com HX Matrix intercom system with twelve key stations spread across all three locations, ten Clear-Com HelixNet partyline belt packs, some twenty FreeSpeak II full duplex packs in use across the arena itself, 8ch of interfaced two way radios with 50 handsets, and a time code display system. The HX Matrix was fitted with a Dante network audio card, which facilitated a simple sharing of sources between the FOH audio system, monitors and the Comms system, while the entire audio and Comms infrastructure was built on a common 10GB Ethernet backbone, which also provided a connection point for the FreeSpeak II IP Transceivers at any network switch. "The Comms system was big enough to be non-trivial, but small enough to be handled by two people. Effective Comms are the key to these types of events - they are fluid and it is essential that the Comms system allows the creative to develop over what is usually a very short rehearsal period." commented Andy Carson, head Comms technician on this task for The P.A. People.

The Cricket

On the way through the process of the install and celebration delivery, The P.A. People also worked with the sports presentation producers on other aspects of the T20 event. In order to comply with requirements for a T20 World Cup, they needed to provide a secondary LED scoreboard for the venue. The P.A. People worked with specialist supplier TDC to install a temporary 7m x 4m screen on the concourse to support the three match days at the venue. "We were also asked to supply a system with another 300 FM mass cast receivers for the final at the MCG. We were happy to oblige," notes Sam Dodds.

The Wrap

This project has drawn together a unique group of stakeholders – The RAS Capital Works team, the RAS Assets and Maintenance folks, the RAS Events team and Michael Cassel Group. Each has their unique requirements for the project, and in the words of RAS Head of Project Development, Jonathan Seward; "The P.A. People listened to our requirements and have come up with a solution that has already - and we trust will continue - to meet our needs for the next fifteen years. Overall, we are very happy with the outcome."

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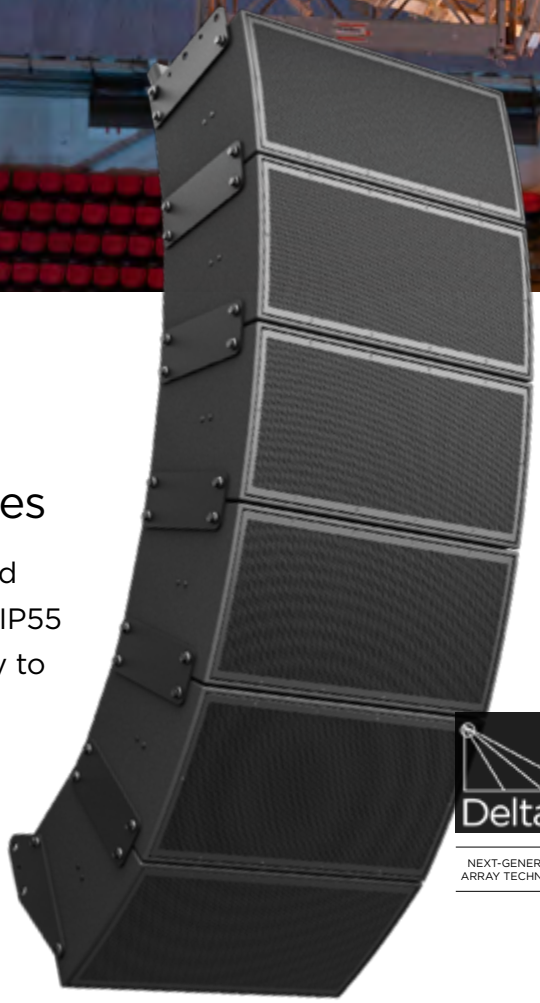

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Introducing:

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Videobar VB1

The Bose Videobar VB1 is an all-in-one USB conferencing device that brings premium audio and video to small meeting areas — from huddle spaces to medium-sized rooms. Six beam-steering microphones automatically focus on voices in the room and reject noise. A 4K ultra-HD camera with autoframing delivers crystal-clear video, helping remote participants feel like they're in the room. Proprietary Bose technology supports multimedia presentations, plays Bluetooth audio, and ensures voices on the call sound natural. Single-cable connectivity means there's no need for separate audio and video cables at the table, reducing clutter. Whether it's a quick morning check-in or a full-afternoon workshop, the Bose Videobar VB1 helps you huddle up, see more, hear more, and work better. *Shipping from September 2020, contact Bose for updates.*

FEATURES

- Six beam-steering microphones actively focus on voices and reject noise. Auto EQ delivers optimised audio to all participants
- 4K ultra-HD camera with autoframing
- Compatible with Microsoft Teams, Google Meet, Zoom, and more
- Premium Bose-proprietary transducers deliver room-filling sound from a USB-connected laptop or wireless Bluetooth device
- Low-profile design that complements the room, improves aesthetics, and connects via a single USB cable
- VMount easily in multiple ways with included table stand and wall-mount kit
- Connect to existing network infrastructure, making installation and troubleshooting faster and allowing for remote updates, management, and monitoring
- Configure easily with Bose Work Configuration Utility, available as an app or via web browser; and manage remotely with the Bose Work Management app which displays real-time status and allows for easy single-unit or system-wide changes
- Control settings in real time from a smartphone using the Bose Work mobile app to easily adjust volume, mute, pan, tilt, zoom, zoom presets, and Bluetooth pairing

Noise Cancelling Headphones 700 UC

Bose Noise Cancelling Headphones 700 UC equip you for better collaboration in the workplace and beyond: cubicle, open office, home office, and everywhere in between. An adaptive microphone system helps you turn any space into a meeting place, isolating your voice so you sound like yourself. Say goodbye to the mute/unmute shuffle and co-workers constantly asking "… are you there?" Eleven levels of noise cancellation let you personalize what you hear from your surrounding environment — from virtual silence to open and ambient. And the included Bose USB Link Bluetooth module provides a reliable wireless connection, so you can quickly jump on calls and easily switch between audio sources.

FEATURES

- Adaptive four-microphone system
- 11 levels of noise cancellation
- Pre-paired Bose USB Link Bluetooth module provides a dedicated wireless connection to your computer
- Compatible with third-party cloud services such as Microsoft Teams, Google Meet, Zoom, and more
- 20 hours of wireless battery life and time-based power information
- Comfortable, lightweight design, stainless-steel headband, and angled earcups
- Conversation Mode allows you to hear people and your surroundings clearly without removing your headphones
- Active equalisation technology
- Access Amazon Alexa and Google Assistant with the push of a button and easily manage volume, calls, and music using intuitive touch-sensitive controls

ES1 Ceiling Audio System

The Bose ES1 Ceiling Audio System is a complete conferencing system for fully integrated meeting rooms. It combines the premium performance of the Bose EdgeMax in-ceiling loudspeaker and Sennheiser TeamConnect Ceiling 2 microphone, along with a Bose amplifier and DSP, to deliver a seamless meeting experience that empowers productivity. It's a complete room audio solution, ready for quick deployment and configuration of the electronics, reducing installation time. The ES1 system is more than fully integrated — it's truly integrated. Completely out of the way. With fewer devices on walls and tabletops, meeting participants can stand, sit, or move around the room freely with the confidence that they'll hear and be heard.

COMPONENTS

Sennheiser TeamConnect Ceiling 2 microphone

Quick and easy to install, the TeamConnect Ceiling 2 microphone features patented automatic beamforming technology with a single beam. This allows the microphone to adapt to room conditions without reconfiguration. No matter how the room is set up or how the participants in the room want to hold the meeting, they'll gain more flexibility and complete "freedom of speech" as the TeamConnect Ceiling 2 microphone adapts to their needs.

Bose EdgeMax EM180 loudspeaker

The EdgeMax EM180 in-ceiling loudspeaker features proprietary Bose PhaseGuide technology. This unique loudspeaker design combines the room-filling coverage patterns typical of larger surface-mount speakers with the architect-preferred aesthetics of in-ceiling models. Designed to mount at the front of the meeting room above the room's display screen, EdgeMax loudspeakers draw attention toward the screen for a more natural and less fatiguing conferencing experience.

ControlSpace EX-440C processor

With an open-architecture, all-in-one design, the ControlSpace EX-440C conferencing processor facilitates high-quality microphone integration and audio processing for small- to medium-size conference rooms. Various inputs and outputs allow for flexible configuration: four mic/line analog inputs, four analog outputs, onboard VoIP, PSTN, USB, Bose AmpLink output, eight-channel acoustic echo cancelling (AEC), and 16 x 16 Dante connectivity. ControlSpace Designer software simplifies the setup process with drag-and-drop programming, making configuration quick and easy.

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Introducing Impulse, AVPro Edge's easy-to-use solution for streaming live to the internet via YouTube, Facebook and more.

Streaming with the Impulse is simple, even for the most novice user: you set it, then you forget it is even running. With Impulse, there is no need to have a dedicated computer do the streaming, and with front panel controls, you are able to access the menu features easily. All this, topped with the ability to record simultaneously, makes Impulse the best solution on the market for live streaming devices.

Simply connect the Impulse through its LAN port to the internet, connect a camera via HDMI or SDI, then configure your settings via any browser (on your phone, tablet, or laptop) and you are streaming to Facebook Live, Twitch, or YouTube. Streaming live content has never been easier.

The Impulse is compact, easy to use, and was built for one purpose; to stream/record the connected source.

The possibilities are endless. What will you stream with Impulse?

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MASSING ONLINE

by Andy Stewart

What I wouldn't give now to have enjoyed the power of 2020 hindsight back in 2019! All those things we took so utterly for granted only a few months ago – live gigs, kids at school, hand sanitiser (not that we cared about it then), crowded spaces – all now replaced in the blink of an eye with isolation, boredom, unemployment and uncertainty. But these unexpected changes have included something else… a massive shift in the way we participate in music. Everyone, it seems, has become a performer!

Even from inside my studio I can hear the groans of the 4G Network bending under the weight of all that Internet traffic, as everyone takes to their new online lifestyle.

It's a brave new world, that's for damn sure, but I'm not going to dwell on that here.

Suffice to say, while some of my work has dried up like a worm in the hot sun (as it has for most of us reading this magazine), paradoxically my phone has been ringing day and night. Friends, non-musicians and the wider community have suddenly taken to participating in random online recording sessions, and some of them have been requesting my involvement or advice.

There's a veritable tidal wave of new audio material out there, surging onto the Internet: via phone apps, over Facebook and Skype et al, some of it at least has slightly loftier expectations of its audio quality. As a result, guys like me have suddenly received calls from people who, three months ago, didn't know a mic from their elbow.

For now, I'm going with the flow of this seismic shift, not quite knowing where it might lead. Although I have several albums in production at the moment to keep me busy, at least one of these has stalled – in the short term at least – until we can find a satisfactory online recording method that's not too tedious and unwieldy. In the meantime, I'm half expecting that my participation in at least one of these 'Community Projects' (not wanting to patronise it with a label) will inform me of the best way forward for my paid gigs.

The Bedroom Hit Factory

I predict that this year, the biggest hit will come via someone recording in their bedroom – and who knows, it might have been tracked already – and if that occurs, this homemade production (including the video) might just transform the way we view pop stardom. It might finally force the world to divest itself of the persistent notion that big hits must always be recorded (and filmed) inside shiny studio facilities, by people wearing fifty thousand dollars worth of clothes and makeup. Shabby and unshaven might become the new look for videos – and the crappier the backdrop the better!

Coming Together, Tearing Us Apart

The project I've volunteered to participate in this week has, however, no such expectations of itself other than to distract and entertain those involved for the sheer hell of it. Organised by a musician I know in Gippsland, Brett Glover, who's perhaps more widely known for his role in getting the Bundy Hall (near Bundalaguah, VIC – yep, I'd never heard of that town either) cranking with live music in recent years, the project is called Mass Online Band, and the song we've recorded is a cover of INXS's hit, Never Tear Us Apart.

Perhaps not surprisingly, it's been quite fascinating to both witness and participate in.

It has swept up kids, grandparents and every age group in between, glued them all together with a sense of community they so desperately crave, and added a healthy dose of humility to the expectations and purpose of musical performance.

It's participation in the raw (almost literally), featuring a grab-bag of musical skill levels, and an even wider array of audio engineering techniques (if some could be called that). But what's fascinating is that there are literally thousands of similar projects happening the world over right now, which should be of particular interest to those of us who derive an income from the audio industry.

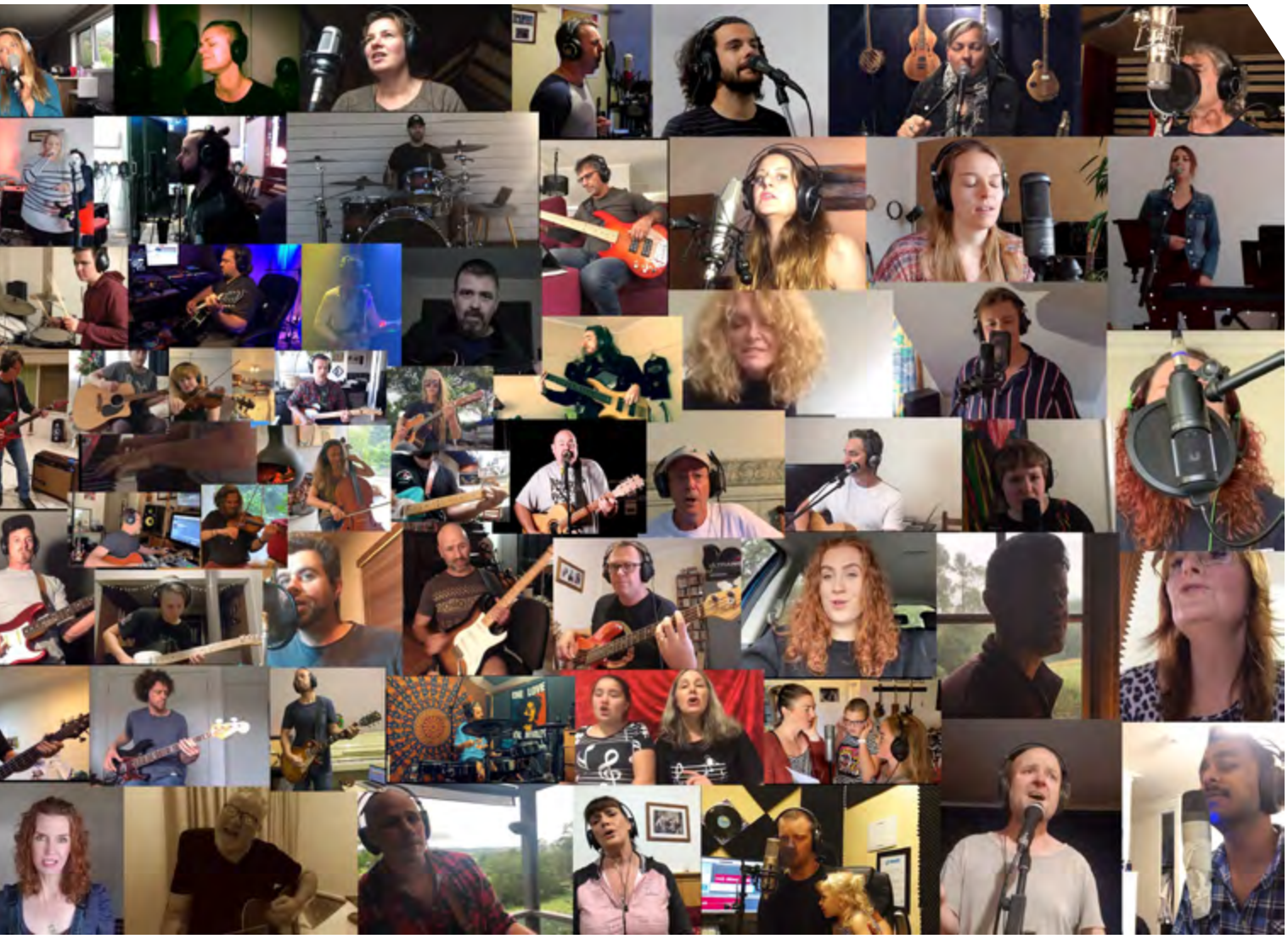
These spontaneous projects are ushering in the further democratisation of music recording – a heavy sounding notion to read perhaps, but not really.

Digital recording equipment ushered in a revolution years ago now, transforming our industry by giving more people a chance to show off their musical skills. This worldwide shutdown is taking that digital revolution and running with it… down the street and around the block! And for those of us in the audio industry with something to sell – mics, converters, speakers, PAs, our skills as engineers – this might just mean that, though times are painful right now, on the other side of this mess the market for audio equipment might be four times bigger than it was going in. I guess only time will tell.

Music In Isolation

The Mass Online Band project is just one example of the way in which people gravitate to music when they're pushed into a corner. As people have found themselves locked down, music has emerged as a common auditory link, via live performance on people's balconies – like we all saw in Italy – and online the world over amongst amateurs and professionals alike.

What's also been fascinating to see has



been the relatively humble, sometimes unremarkable, online musical performances by famous musicians in their own homes, stripped of their giant PAs and lighting rigs, stage sets, and roadies. While it's no consolation to the thousands of CX readers who derive their livelihood from working with musicians and actors on stage, it won't go unnoticed by the latest batch of amateur performers that often their musical heroes, when stripped of all the associated trappings, look just like they do! I dare say this will push more people than ever to say "bugger it, I'm gonna have a crack at this!"

The Mass Online Band project probably has a few such participants, though I can't be sure; I've not spoken to any of them!

Actually, related to that concept, this musical online collaboration is unique in my experience for one specific reason: there has been no collaboration.

Most online recordings involve some sort of back and forth interaction – sometimes endlessly – between musicians as they bounce off one another's performances, and the word 'collaboration' is nearly always central to describing that process. The Never Tear Us Apart cover, meanwhile, was achieved with nothing more than a Facebook page and a demo guide track that anyone could download. No-one collaborated in any musical sense; each individual played in isolation to nothing but the guide track, knowing nothing about what anyone else might be adding to the project, nor where the music style was even headed. And from a technical standpoint… well, frankly, there was no technical standpoint! No-one paid any attention to where their audio file started or ended, and nothing was recorded at a common digital resolution. It has been as close to technical anarchy as a project gets!

But it's worked.

Admittedly, I had to convert and time align every single audio file as it came in, but that was a relatively simple process, albeit slow. The time alignment was basically done by me, by ear – there was no common 'blip' or clapper board noise at the start of each file, with which to align them. Admittedly, I knew the tempo of the guide track, so it was easy enough to set up a simple tempo map inside Pro Tools, which I used to get things close.

The rest was simply an evolutionary process of getting to know what each performance sounded like as it came in. A few were completely unusable, but mostly everything's in there… a few missed the cut – well, I mean, you can't really have six people playing the same bass line. I had to pick one of those in the end. There are two drummers: myself and a guy called James.

I've mixed the song's final pass tonight, without knowing who most of the performers even are, whether they're eight or 80, or what they look like… I guess I'll find out when the video uploads to YouTube later in the week. It's been hilarious to hear people in their homes having a crack at a Michael Hutchence lead vocal, getting it horribly wrong, and sending off the video and audio files anyway! I'm sure Michael would be touched to know that so many people took refuge in his words during this crisis, for some brief amount of time.

I dedicate this article to him, and to the many other great musicians – including my hero John Prine – who have been taken from us recently by this horrible virus.

EDITOR'S UPDATE: As we went to press, the video had more than 100K views and 1,200 shares, and Andy was being interviewed on ABC Radio, and Channel 10s 'The Project. To check out the great results of the Mass Online Band project for yourself, go here: www.youtube.com/watch?v=VCDclazXGk8

ATEN Introduces Remote Working Solutions for Businesses and Schools

ATEN ANZ has introduced a series of remote working solutions to facilitate communication during the COVID-19 pandemic. The need for remote communication, work-from-home, and remote teaching has grown rapidly as businesses and schools, as well as government sectors take precautions to lower the risk of infection.

Empowering Efficient On-Demand BYOD Collaboration

During natural disasters or hazardous situations, working with groups of people in confined spaces should be avoided as much as possible; however, communication among colleagues is still essential. The ATEN VP2120 Seamless Presentation Switch integrates a video matrix switch, AV streaming, audio mixing, and collaborative functions into one compact device, and through the ATEN Video Presentation Control App, it allows four participants in the same network to join in a meeting and share their content simultaneously using their own devices with secure connections. Key features include:

- Stream from any BYOD device
- Simultaneous bi-directional multistreaming: stream-in presentation content from your laptop or mobile device, or stream-out presentation content in real-time to participants
- Real-time whiteboard annotation, instant-chat and file sharing
- Quad view flexibility with auto layout: allows up to four streamed-in sources to be displayed in quad view on a single screen

Ensuring Safe Work From Anywhere

ATEN's CN9600 / CN8000A / CN8600 KVM over IP switches allow remote access of digital video, audio, and virtual media via remote control of a PC or workstation to provide an affordable and durable IP server management solution while assuring users with operational dependability and efficiency. Telecommuting and remote working have become increasingly popular in today's workforce, especially in the fields of IT, finance, and production lines. According to a survey by the office-service provider International Workplace Group, 50% of employees globally are working outside of their main office headquarters for at least 2.5 days a week, and 85% confirm that productivity has increased in their business as a result of greater work flexibility. With the integration of ATEN's KVM over IP Switches, users can safely work from anywhere without having to install additional software. Features of CN9600 / CN8000A / CN8600 include:

- Secured remote data access with data encryption
- Dual LAN and Dual Power for redundancy
- Bios-level access with no software installation required and no computer virus concerns
- Authorised virtual media function supports file applications and software installation
- Supports PC video resolution up to 1920 x 1200

To increase production efficiency while working from home, the ATEN US3342 2-Port USB-C Gen 2 Sharing Switch with Power Pass-through allows users to share data between four USB devices in two different USB-C enabled laptops. Its key features are:

- Share Devices with two Computers: US3342 only needs one set of keyboard, monitor, and mouse to seamlessly control two systems and share data without complicated network-based setups
- Share without boundaries: supports cross-system data transfer, including Windows to Mac, Mac to Mac, and Windows (newer version) to Windows (older version) or vice versa
- Mouse Switching allows users to effortlessly move the mouse cursor across the screen border and onto the target computer to switch control without clicking a button
- Builds a direct link between two computers with up to 10Gbps transfer speed

Furthermore, ATEN also possesses a series of USB docking stations that can help to expand connectivity and create simplified, productive workspaces for any desktop environment.

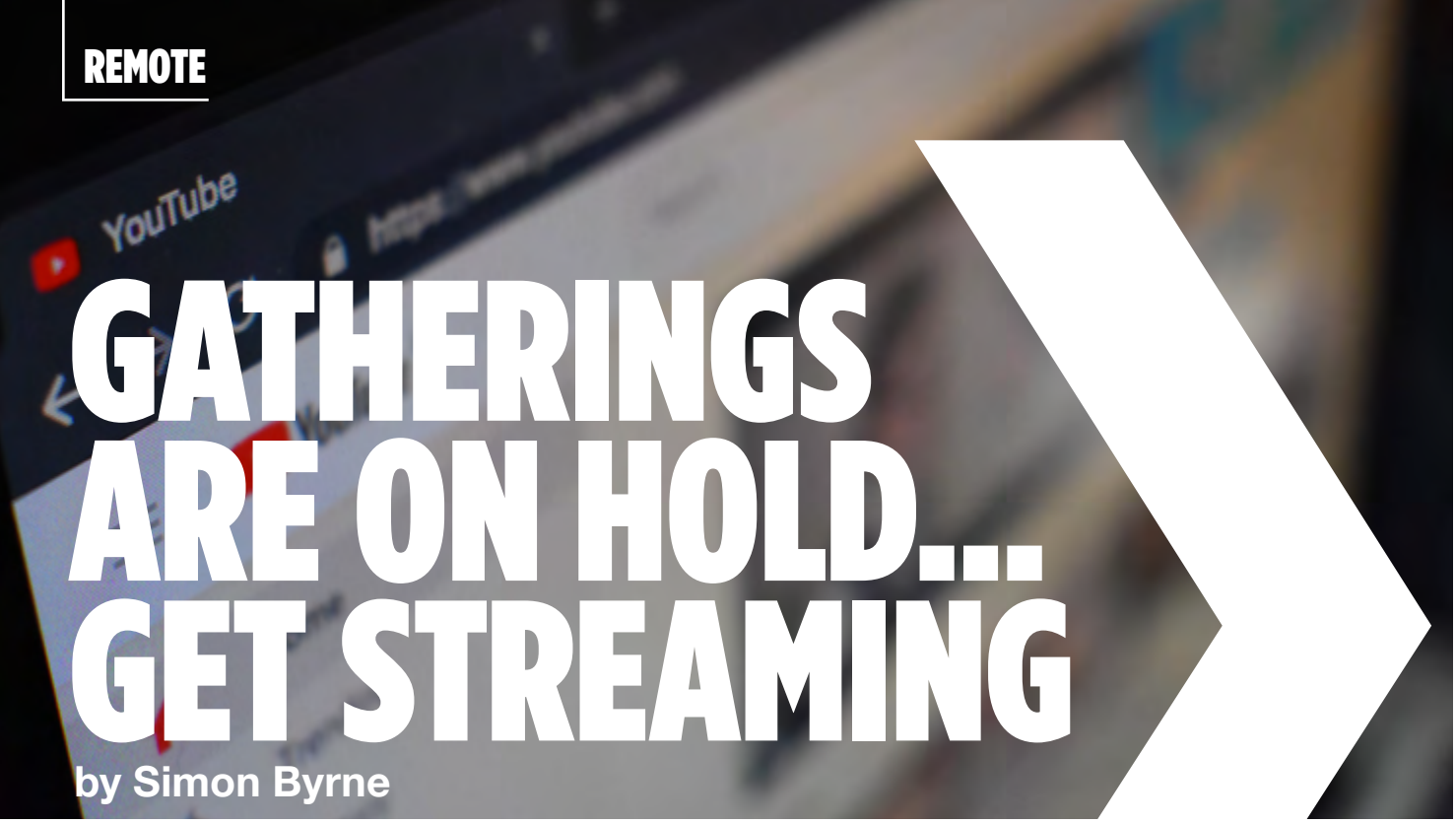
Remote Teaching
– Learn Without Being At School

Unlike traditional teaching scenarios, in which teachers and students have to be physically present in school, remote teaching is another way of acquiring knowledge without the limitations of distance. In situations of school suspension or quarantine, ATEN's UC3020 could be helpful to teachers as it is able to convert an existing camera instantly into a webcam, allowing users to easily adopt a camera for any application and platform. Key features include:

- Captures unencrypted HDMI video signal from a camcorder or DSLR up to 1080P@60, better than any 1080P webcam
- Supports live video streaming, webcasting, and video conferencing via platforms such as video editing software, Open Broadcaster Software (OBS), Xsplit, Twitch, YouTube, Facebook, and Skype
- Plug & Play: Supports UVC/UAC v1.1

If more advanced functions are required, the UC9020 StreamLive HD All-in-One Multi-Channel AV Mixer offers:

- All-in-one design to simplify streaming workflow; teachers can use an iPad to download the intuitive OnAir app for preview and program monitoring, changing video layout in Full Screen/PBP/PIP settings, adding image and subtitle overlays, and using smooth scene transitions for a professional finish without the need for additional video editing software
- Storyboard-like management: preset up to eight scenes for use while streaming and during performances to reduce the need to interact with hardware
- Switching between presentations and cameras to enhance interaction
- PC-free and software-free with plug-n-roll capability



GATHERINGS ARE ON HOLD... GET STREAMING

by Simon Byrne

As I write this, it is apparent that things are not going to get back to normal in the events industry any time soon.

The NSW Premier has stated that social distancing will be the "new normal" until a vaccine is out, and the Chief Medical Officer has stated that social distancing will be in place for at least six months, plus epidemiologists are openly stating that they cannot see a way for our international borders to be opened back up for at least twelve or more months. This is because we might get the COVID-19 problem under control in Australia, but the rest of the world will take much longer, and at varying rates, so the risk is too high to allow foreigners into the country.

I really hope that I am wrong, but the event industries will remain dark for a very long time.

This means that streaming and virtual meeting technologies have suddenly become widely used. For those in the AV industry, it presents an opportunity in an otherwise terrible market.

There are lots of way to do streaming, as well as lots of different destinations. I'm going to delve into some of the issues.

I won't get into the video and sound acquisition…you know how to do that.

The first step in the chain is encoding of the content. This can be done in software on a computer using external interfaces, made by companies such as Blackmagic Design, Aja, or Magewell.

Most modern computers are capable of streaming, but processor speed, threads, memory, and importantly, graphics processor memory and speed, will dictate how well they perform.

In terms of software, there are three well known options.

The first is OBS Studio which is Open Broadcaster Software. It works on all platforms (Windows, MacOs and Linux), it is very functional, open source, and it is genuinely free!

It is relatively light on features, but OBS will comfortably handle any entry level streaming job. It does real-time source and device capture, basic scene composition, encoding, local recording, and of course, streaming.

For commercial products with more features, the main players are vMix and Wirecast.

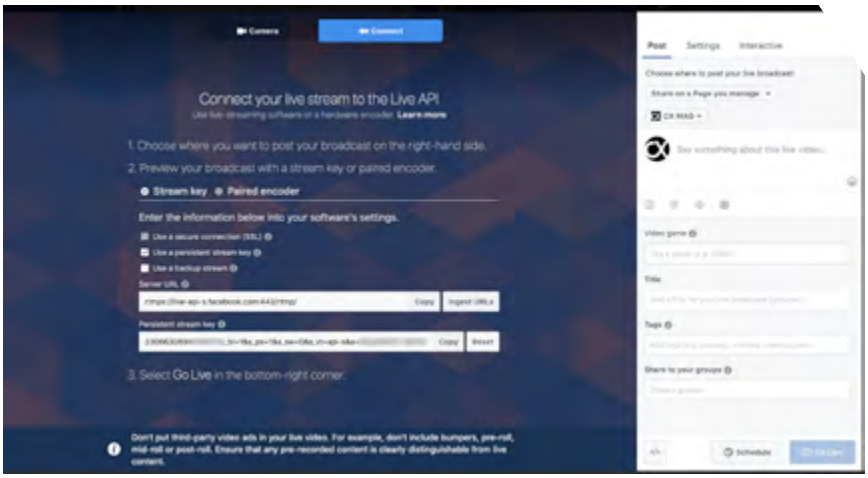
vMix is a powerful application available for Windows only. It is a comprehensive software video mixer with a live streaming platform. It does have a learning curve, but in my view, vMix has emerged as the standard in streaming software and it is made by Australians! We love that.

Currently up to version twenty-three, it is sophisticated and actively maintained; there isn't much you cannot do on vMix. Complex multi input productions can be put together, with picture in picture, titling, social media feeds, and integrated vMix Call that allows you to add remote guests to your production with high quality audio and up to HD video. The guests need nothing more than a laptop with Chrome installed.

vMix have more than two hundred tutorials on their Youtube channel and have a generous ninety day, full functioning trial at the moment whilst we are in isolation (normally sixty days… still very generous). vMix have an entry level version, right through to a sophisticated 4K version with numerous add-ons.

Wirecast is a Windows/Mac live video production program that can input and mix multiple audio and video inputs, add transitions, layers, titles, and other elements. Currently on version thirteen, it can encode and output the streams to different services as well as record to disk. They too have a remote caller system, which they call Rendezvous, and social media feeds. If you are on Mac, it is your only option other than OBS. The Wirecast trial is fully functional and not time limited. However, your broadcasts will contain both video and audio watermarks.

If you do your switching in a hardware external switcher, you might be better off with a dedicated hardware encoder. Hardware encoders are built specifically for that purpose so they are likely to be more reliable than computers that rely on hardware, operating systems and software by others, and the bloat that brings.



For example, Aja, Magewell and Kiloview make hardware encoders with SDI or HDMI inputs that are well priced and worth checking out.

A hybrid of these two approaches is a video mixer with a stream output. Just last month Blackmagic Design released the Atem Mini Pro which is a new simple switcher complete with mutliview that has its own encoder and Ethernet port. That means you can stream out of the switcher itself.

The gold standard for dedicated hardware combined with software for streaming is Newtek's Tricaster range. These are products that merge live video switching, broadcast graphics, virtual sets, special effects, audio mixing, recording, social media publishing and web streaming into an integrated appliance.

But what does an encoder do? It takes the video stream and converts that into a RTMP stream of usually H.264 video. RTMP stands for Real Time Message Protocol, which was developed by Macromedia (now part of Adobe). It is quite an old TCP based technology that used to be the main method for streaming when combined with Flash. It is old and outdated but despite this, RTMP remains the industry standard protocol for transport of a stream to a Content Delivery Network (or CDN). Every encoder can stream RTMP.

A RTMP address is formatted like any other address but starts with rtmp:// instead of http://. For example, Facebook's RTMP URL is rtmps://live-api-s.facebook.com:443/rtmp/. The extra "s" on the rtmp is simply for a secure connection. As well as the address, you have a key as well, which is just like a password.

You can stream to free public CDNs like YouTube, Facebook, Instagram, Linkedin and Twitch, or paid services such as Vimeo Live, Wowza, or Dacast where you have many more user features, more control, and greater reliability.

All the CDNs have their benefits and disadvantages. For example, Facebook is fantastic for reaching new audiences, however you cannot let copyrighted music be on your stream because their bots will mute it and in some cases shut your stream down. YouTube will do the same, quite often even if you have paid for the rights to use the music. Therefore you might be better off using a paid CDN provider like Wowza as their service comes with support as well as some other bells and whistles.

The CDN takes the RTMP feed and transcodes it normally into HTTP Live Streaming, known as HLS. HLS is an adaptive bitrate streaming communications protocol developed by Apple.

It is the most popular streaming format to end users because it is encoded at different bit rates, segmented into chunks, and sent to the client using an extended M3U playlist.

The adaptive playlist is actually a choice of resolutions and bitrates divided up into chunks. The viewer's player chooses the resolution depending on the user's internet bandwidth. If they have a great internet connection, they'll get the highest resolution chunks delivered and have a high quality image. However, if they have a poor internet connection, only low resolution, low bitrate chunks are delivered. It doesn't look as good, but at least it is there without stuttering. Also, HLS can traverse any firewall or proxy server that lets through standard HTTP traffic so it can be delivered reliably.

A CDN has another very important function. Each stream uses bandwidth to deliver. Say the stream from the encoder is 5 Mbps and you have 20 Mbps upload capacity. That means at best, you can deliver just four simultaneous outputs (if you are lucky!). But what if you have a thousand viewers? You'd need a 5 gigabit upload internet connection.

A CDN gets around this bottleneck by transcoding the stream into small HLS chunks, making copies of the HLS stream, transferring them to delivery servers all over the world, and serving up the stream of HLS chunks to every single user watching the stream. The viewer's player plays these chunks out sequentially and for whatever reason, if a viewer's internet connection gets worse, the CDN will simply start sending lower resolution chunks, thereby reducing the amount of data sent. Equally, if the viewer's bandwidth gets better, higher resolution HLS chunks are then sent.

CDNs do a lot of heavy lifting and are capable of massive scale. They do this through sheer scale and computing power. They take the incoming stream, transcode it, then they cache it on literally thousands of computers around the world. The reason they are all around the world is so that they are geographically close to the end users thereby ensuring a good experience for users worldwide. By the way, Netflix, Prime Video, Stan etc all use outsourced CDNs to deliver their content. Not to transcode, but to get the massive amounts of video data streams out to all their viewers.

I have built my own CDN using Amazon's Web Services platform. I did this because I wanted a CDN that was focussed on the Australian region, plus I need a whole heap of features for my premium clients that I could not get cost effectively. To start with, it has a primary and backup upload link so if one were to fail, it simply defaults to the backup. My connections are to the AWS edge server in Sydney, ensuring that the connection is quick. The transcoding is done in the same room and farmed out to their other edge Cloudfront delivery servers around Australia and the world. By building my own, I have ensured a good experience for my Australian users, which is my most important market, by making the round-trip path and delivery time as short as possible. A lot of the other CDNs are focussed on the US markets; you cannot choose your upload edge location, and the rest of the world including Australia comes second.

The weakest link for streaming an event is nearly always the internet connection between your encoder and the CDN.

Most internet connections are designed for big download, not big upload. Most users consume content rather than deliver it, so it makes sense to design the networks to accommodate big downloads, rather than uploads.

A typical 1080 25p RTMP stream uses between 5 Mbps to 10 Mbps of upload bandwidth. The widely accepted rule is that you want 100% headroom for uploading a stream so that means you want a minimum of 10 Mbps upload bandwidth available just for your 5 Mbps stream.

You absolutely want to test the upload speed of your venue's internet connection.

We all know that the quality of internet connections can be affected by lots of things out of our control, and ISPs often engineer better access to speedtest.net to display better results than reality. I suggest you want even more headroom, especially in the peak times of the evening. (Check out my article on the NBN - link at the end of this article.)

A lot of people use speedtest.net, but I prefer speedof.me. As mentioned previously, ISPs tune their networks so as to deliver better results to speedtest.net than the real world, indeed speedtest.net servers are often hosted by the ISPs themselves. That aside, I like speedof.me because it gives a better visual indication of your internet connection over time and you can clearly see the dips in speed, which is the speed you can rely upon.

Venue internet connections are sometimes great. But often they are terrible for lots of reasons. Firstly, they tend to be locked down for legitimate security reasons. Secondly, they'll often have lots of users on a single internet connection which means the available bandwidth to you is variable. And lastly, venues simply won't permit outsiders onto their LANs, especially if they are doing strange streaming things that they don't understand. It is easier for them to say no.

In those cases, you go with 4G mobile broadband connections, the most unreliable connection of them all. The phone companies use a mix of technologies and frequencies in their networks and the results are not always as you expect. What I am saying is that 4G is only a marketing term and there are different forms of it that perform differently.

To get around the variability of 4G connections, you can go with a bonded solution that redundantly shares the traffic across multiple internet connections. The LiveU Solo and Teradek VidiU Go are examples of these. These devices have multiple connections by way of USB modems, Ethernet, and even Wi-Fi which take a video feed, encode the feed using their proprietary technologies, send it across the multiple connections to their own servers, which then re-assemble the feed and send it out as a RTMP feed to the CDN.

I have a LiveU Solo and it works great, but it is expensive to keep running because I maintain three 4G services, plus I pay an annual fee for access to LiveU's bonding server. However, nothing comes close to its reliability and it is refreshing not having to rely on others for a reliable connection. In my case, LiveU's bonding server is in the same room as my CDN's edge server in Sydney so once again, I have reduced the trip time as much as I possibly can.

You should never rely on Wi-Fi as your primary upload link. There are way too many variables that can impact the safe delivery of your real time stream. You need hardwired Ethernet.

The upload bandwidth required is a function of frame rate and resolution. That is, if you run with lower resolution and standard frame rates, you have a more reliable upload link because of less traffic. I see a lot of people doing streams in 1080p at 60 frames per second. Why? Standard high definition television is often 720p at 25 frames per second so unless you are doing really high action sports, you definitely don't need the high frame rates, and you probably need no more than 720p. At the time of writing, Facebook doesn't deliver more than 720p anyway.

Lastly, there are three rules for successful streaming. Rule number one - Test. Rule number two - Test. And rule number three - Test. Leave yourself plenty of time to set up and test. There are lots of gotchas with streaming that only become apparent from testing, so you need time to solve these. All CDNs have methods for you to test your stream thoroughly before going live to the public.

If you need technical support, there are quite a few user groups on Facebook. OBS, Wirecast and Vmix all have user groups, and there are people on there who have already had the problems you are working through.

Useful links:

OBS Studio. Free streaming software
www.obsproject.com

Wirecast. Streaming software
www.telestream.net/wirecast

vMix. Windows streaming software
www.vmix.com

URL for connection encoders
www.facebook.com/live/create

Youtube's URL for connecting encoders
www.youtube.com/live_dashboard

Good speed testing site
speedof.me

CX articles I've written about streaming
www.cxnetwork.com.au/mission-critical-show-networking

www.cxnetwork.com.au/networking-the-cables

www.cxnetwork.com.au/network-lan-scanning-see-whats-going-on/

www.cxnetwork.com.au/the-nbn-not-to-blame-necessarily/

www.cxnetwork.com.au/wi-fi-and-data-security-on-events/

A STREAM FROM TWO CITIES

Managing The Move Online

by Jason Allen

Pivot, pirouette, hustle; whatever you call it, it's what everyone is doing out of need. Any production and rental company with the capability has built some variation of a 'studio' for streaming. We look at two companies that are approaching the move online in different ways; the Melbourne office of Harry the hirer, and Sydney's AVE…

"In this unprece.." nah, just kidding. No-one needs to see that phrase or THAT word ever again. One of the surprising things about the pandemic crisis is how quickly all the emails, webinars, and video conferences got boring, repetitive, and annoying. As everyone moved online, there was an almost immediate 'sameness' to everything, a product of the limitations of the medium itself. It is very easy to disengage from content created for streaming unless it's done very well. I talked to two companies with two different approaches, catering to different audiences.

Melbourne and Sydney - Harry the hirer Productions – The Studio

The Studio at Harry's Richmond office already existed before the crisis and was designed to be a pre-visualisation suite and rehearsal space for clients to come in and try out graphics and looks before events. Live streaming their events was all in a day's work for Harry's crew, so all the gear and expertise was already in-house. The concept has worked so well that Harry's has set up an almost identical Studio in their Sydney facility. Add to this an already expansive internet connection in Richmond and Parramatta with two Gigabit pipes each, and the stage was set.

"For us, it was about pivoting gear and people," said Simon Finlayson, general manager at Harry the hirer Melbourne. "Some have been saying there's a big learning curve when you get into streaming, and there is, but for us it's not in the tech or the equipment, it's in how to interact with the market and engage it."

One of the big early successes for the Studio has been 'Delivered Live', a regular Saturday night live streamed gig featuring music and comedy, hosted by the inimitable Henry Wagons. Developed as a partnership between The Handshake Agency and Harry the hirer Productions, with the Victorian and NSW State Government backing the project, it can be watched free, but viewers are encouraged to donate the price of a regular gig ticket to support the artists and technicians. Each artist also nominates their favourite venue and a member of their road crew who receive a percentage of the ticket sales.

The Studio is kitted out with six HD cameras, Roland or Analog Way vision switching (depending on capacity), DiGiCo audio consoles, a grandMA light for the big gigs or a dot2 for corporate, and fixtures to suit the production, with Robe ESPRITES and MegaPointes, Astera AX1 Pixel Tubes, and Prolights Air5Fans all making appearances recently. Apple Macs are loaded with multiple streaming platforms dictated by customer preference to handle the feed out to the web.

"Zoom is popular with the corporates

because of the Q&A capabilities and analytics available after the stream," observed Simon. "Corporate AGMs and the like, which would typically run in a hotel ballroom, still need to go on as it's a legal requirement for the company. We have platforms that can handle up to 10,000 delegates, censor the Q&A before it goes live, and provide engagement analytics. Vimeo and YouTube tend to be the preference for more mainstream applications – 'Delivered Live' runs on a YouTube backbone, for instance - and we've used similar services for simpler applications like cosmetic companies training their staff, running regular streams to keep up their skills, which they normally do face-to-face."

Of course, all social distancing rules are adhered to, with the giant facilities having more than enough space for separate entrance and exit routes, and the techs to work more than 1.5 metres apart, wearing PPE.

"We're doing what we have to do," concluded Simon. "We're a rental business, and this is a different model. It's not going to be our core business, but it's a great add-on. I think what will happen when we come out of this crisis, instead of using The Studio exclusively for technical blocking, we'll develop and pre-package content ahead of the gig, which isn't a service we've provided before."

www.harrythehirer.com.au/digital-services

Sydney – AVE, Create Engage, and The SMC Conference & Function Centre – ON AIR

When hire and production company Audio Visual Events saw their calendar turn into a wasteland overnight, general manager Paul Keating got on the phone with their longstanding online event production colleagues Create Engage, who were about to have the opposite problem. Meanwhile, The SMC Conference & Function Centre, a venue both companies regularly work in, was about to make the decision to close its doors, despite recently completing a $4m refurbishment. Then the Eureka moment came, and ON AIR was born.

"The idea came to all of us to build a studio smack bang in the middle of Sydney, creating an affordable solution for companies to communicate with their teams," related Paul Keating.

"We all got together and it became clear what we could achieve collaboratively," added Luke Hammonds, Director at Create Engage. "We could offer something totally unique that was also a lot of bang-for-buck. It was just what we needed to go back to our clients and

convert their cancelled jobs into online events. The SMC Conference & Function Centre agreed to stay open for a one-month trial, but after seeing the results and the bookings coming in, they've given us the green light to proceed as long as we have to."

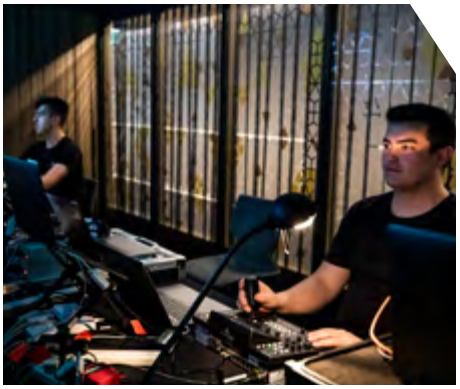
After a site visit with all parties, and extensive venue consultation on how to deliver the package safely, ON AIR went into development. Working to the brief of 'A Pandora's Box of high-end audio visual and virtual event capabilities', AVE put together the tech.

ON AIR features a 7 by 2.5 metre LED wall at 2mm pixel pitch, with ROE LED Strips for eye candy, run off Brompton SX40 LED controllers. With the LED wall creating a virtual canvas, digital sets can change the look and feel at the push of a button. Stage lighting is all moving head fixtures, capable of simple stage washes and a multitude of looks, controlled via grandMA onPC. Remote controlled 4K PTZ cameras reduce the need for operators in the room. A Barco E2 and MADRIX vision software handle the vision, with presenter visual foldback provided by two 55" monitors. Shure wireless microphones feed into Biamp Tesira DSP, handling processing and mixing. There's even a fibre connection to the Green Room for monitoring or for use as a breakout room. The operators are technically in the same room as the talent, but they're 15 metres away behind drape lines!

"I've been involved in streaming events since 2008," continues Luke Hammonds. "I was streaming when video was difficult, nothing was off-the-shelf, and the image was postage stamp size. We didn't even have ADSL2! Audience expectations and their levels of engagement have obviously changed over time!"

So what are Luke's technical tips for streaming? "Technically speaking, audio is the most important thing to get right," he related. "Audiences are more likely to put up with bad vision than bad audio; there's no coming back from bad audio, they just switch off. After that it's composition – online viewers can't look around, or tilt their head left or right. It's basic showcraft; you need to tailor the event for online by doing things like having the MC look down the camera and welcome the online audience to bring them into the fold. You can make a remote audience feel like they're a part of the event by doing something for you; submit a question and put their hand up online."

www.onairstudio.com.au



D2N #REMOTE SOLUTIONS

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#remoteBROADCAST

We can connect remote talent, editing, production and content teams all in remote locations, giving them open access to content acquisition and distribution. We can facilitate off-tube commentary, remote MCR and Press operations, and much more.

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Schools, Universities, Colleges. We can build a solution to keep both your student cohort and executive team connected via video and audio conferencing. Reliability and quality is what we deliver.

#remoteCONSTRUCTION

Need to keep your senior management team off-site for extended periods of time? We can bring in multiple remote controlled PTZ cameras, distributed around the site, with team meetings under a secure communications, audio, and video service.

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Living and working remotely

by John O'Brien

A few years ago, my partner and I made the decision to forgo the big-city conveniences and live in the bush. Not back-of-Bourke 2 days drive from the nearest store type of remote, but far enough away from the nearest mega centre to feel like we were isolated from the hordes.

Well, that myth busted recently as our local stores were cleaned out in seconds by carloads of panic shoppers arriving from the big smoke. Our "easy 2-hour window" back to town was just as easy for those getting out of town. Prepper logic fail 101 ...

Technical connectivity

When we first splurged on our 50 acres of dirt and trees, mobile telephony onsite was abysmal. This was great as we were "getting away from it all" and knew that we would get signal on the way back to town and catch up on any messages. While we were weekenders this worked OK. As we started building a house there, my paid work changed to part time (Mon-Wed in the city) and left 3-4 days per week free for work on our abode among the trees.

This meant physical and telephonic disconnection for days at a time - great for avoiding the boss but bad for prolonging a relationship. During this period, Telstra performed an upgrade to the nearby tower, finally giving us usable signal. I neglected to tell the boss but nightly domestic calls improved the separation blues. It was even just fast enough to allow daytime audio streaming - begin Spotify subscription to belt out tunes while I belted timber and rocks and stuff.

Eventually, my part time job went bad, so I ended up onsite 5-6 days a week while my other half soldiered on in her city job. As you could imagine, this was not great for our kinship but I solved that by crushing a disc in my back and being relegated to the city couch for 9 months. When I could walk again, we doubled down and together moved into a shed on our property. Building became my therapy and local jobs for my cohort ensured that we could live together, albeit with reduced amenity.

Eventually, we finished the house and moved in whence I promptly re-injured the same disc. Bugger. At least Telstra were upgrading again, so I simultaneously moved to a business account (faster and cheaper - go figure) and started spamming the internet with more words. Might have even watched a few hours of YouTube while I recovered.

Beyond technical

These trials made it all too apparent to me just how reliant our household is on the technologies that keep us connected to the rest of humanity. Just as reliant as everyone that we left behind in the metropolises of the world.

Connections are important for business but more so for survival and sanity when you "live in the bush". For us, if the car breaks down, it's a 25 minute walk just to get to the letter box. The nearest store is 10 minutes' drive and it's a glorified Post Office with a cranky proprietor. The nearest decent store is 25 minutes away by car (I haven't tried walking this one yet)! That's assuming that you don't have to slow or stop for trees down, stock wandering outside the fence, old matey hobbling his even more ancient tractor down the middle of the road or best of all, two or more utes lined up window to window and everyone having a good old yack (one of my favourite ways of connecting now).

I've written plenty before about community inclusion and its benefits but these are becoming even more apparent in the current crisis. We are all scared for our lives and livelihoods, yet many locals are still putting their hands up to take on personal risk and serve others.

Pros & Cons of being remote

Yesterday was my dearest's birthday. I was on a doctor and essential supplies run when our CFA pager went off and she responded to a fire. As did a whole group of committed and caring volunteers. They mostly went in their own cars (distancing and all that) and stayed at appropriate separation on scene but they all got some face time and social bonding while cleaning up someone else's mistake. Best of all, she was like a Cheshire Cat when we both got home - "I had the bestest birthday present. Got to use a fire hose to put out massive candles!"

Today was my turn - another burnoff got away and we had a forest of candles to douse. That was the easy bit. The more difficult aspect was overriding decades (centuries) of social conventions and conditioning to keep our distances. I might have sprayed one with the hose a little bit ... but they didn't come any nearer!

Along with a unique social bonding, life out of the city comes with fires, floods and snakes (danger noodles). It also comes with significant physical separation from the shows, events and all the wonderful people that make up our industry. I've had to devise strategies to remain in the loop.

Tips on #WFH

Working from home has its upsides but there are many traps to avoid. I have found a few ways to cope with the physical dislocation.

Number one rule for me is to stay in contact with everyone. I regularly scroll through the phone book and find someone that I haven't spoken to in a while, then give them a call. Pick a topic and stick to it, so that the time is productive for you both. It can be short and sweet but you don't have to be face to face to maintain an affiliation. If you don't regularly keep in contact with people, they can forget that you exist. I factor in half an hour or so of this most days.

The next essential is a dedicated workspace. We designed our house with his-n-her studies, so have an advantage on those with a laptop on the ironing board. Mine's even acoustically insulated! I also use my study for leisure but try and stay disciplined enough to switch between profit and pleasure modes. I will admit that this took a couple of years to get well established and is still a work in progress. I have to be clear with my spouse when I intend to be working and when I am not. Headphones are another boon - bung on some tunes that you can work by and shut out the audible domestic world.

I set boundaries for work time and home time. Typically, 'work' hours are 9-5 Tuesday to Thursday. Until shutdown, Monday and Friday mornings were allocated for fitness sessions but I get back on the clock to get an afternoon's worth done afterwards. I allow exceptions (and don't go too hard on myself for occasional distractions) but try and achieve something concrete by the end of every day. At 5-ish, I can let my hair down and do lifestyle things.

Try to block out your time. Allocate a period to each task and do nothing else until the next break. If your computer is fast enough, run multiple browser instances. I keep one open for general and emergency news (with several pinned tabs) and a separate one for each job. When the job is finished, I close that instance and start new ones for the next job (if required). Turn off or mute your socials and email client. Apportion time for these during the day and then shut them down again.

I'll admit - it does take considerable self-discipline at times but temperance is an evolutionary work in progress and not an end goal in itself. Even for one as practiced at WFH as me, the lockdown has presented challenges. Not the least being sharing with a partner who is also confined to barracks 24-7. Communication, patience and empathy are key. As is taking time to your own self when needed. And this is from someone without children to supervise, amuse or keep entertained. Good luck to all you parents.

A critical trick for me is keeping moving. Sitting for long periods is not good for anyone's body, but I find it is just as important for the mind to have regular breaks. My recent routine has been to get up from the desk at least once per hour and walk around the outside of the house two or three times. Walk back inside and get on with it. The body gets a break while the mind has time to reset or clarify. It's also a good thing to do when you get stuck on a problem - the fresh air does wonders for the headspace. If you are in a tight apartment or dungeon, you may need to be inventive to find ways to keep moving.

Not by your own choice, many of you will now be faced with this segregation from colleagues. Many will also be separated from their incomes - I know that mine has taken a big hit. Holes in the calendar are opening up and I am trying to fill these with professional development - research, upskilling and networking. It's fulfilling and more rewarding than watching depressing graphs on the news.

I'm sure that the more gregarious amongst you may find this separation difficult. It will take the utmost patience but, if the medical experts are right, it's the only real option. For now, you have phone and video chats. Do some projects around the house, read a book, conquer a video game, do whatever - but hang in there. This won't last forever.

In time, maybe we'll see more co-working spaces. They were recently bridging the divide between office and home-based work. Perhaps these will evolve into local hubs providing small numbers of the human contact that we need while connected by technology to broader networks of people and businesses. Each hub physically isolated but virtually connected.

Together we stand apart

For a long time, I have stayed in our industry from a distance. This remoteness has been both my lifestyle choice and a tough ask professionally. Right now, though, I feel truly privileged to have the physical isolation that we do. It's taken hard work to achieve but we are also very lucky in so many respects and ever grateful for that.

I don't envy those in big cities at the moment but I want and need to stay connected to you, the reader and the industry. I get great pleasure from giving back to an enterprise that has given so much to me and won't let a nasty bug stop that. We'll catch up for a beer soon enough.

A POTTED HISTORY OF REMOTE CONTROL

by John O'Brien

Our device is over there. But we are over here. We could walk over and activate it. Or we could wave a magic wand and, hey presto, control it from a distance.

Evolution of the remote control

Teleoperation as a general concept has been around since the late 19th century. In 1898, Nikola Tesla debuted the Teleautomaton, a radio wave controlled miniature boat. Onboard antennae and a receiver allowed unconnected control of speed, direction and some lights. Given that few were even aware that radio waves existed at the time, it must have created quite a stir. Of course, that came off the back of Guglielmo Marconi's pioneering work in radiotelegraphy a few years earlier in 1894-5.

In 1903, Leonardo Torres Quevedo used the quaintly titled Hertzian (radio) waves to demonstrate control of an electric tricycle and boat using his Telekine system. The patent describes it thus: "It consists of a telegraph system, without wires, whose receiver sets the position of a switch that switches on a servomotor, operating any mechanism." This was a big leap at the time. Even more importantly, he devised a pulse system of codewords that overcame the binary limitations of contemporary telegraphy.

Over the next half century or so, most effort in this field was directed to controlling military vehicles and weapons remotely. Although there had been many DIY control experiments, none were common. In 1939, Philco released their 'Mystery Control' wireless handset, allowing remote wireless control of radio and radio-phono sets. It's a weird looking unit but gave a hint of the future.

It was really in the 1950s that these technologies hit the consumer market and became more ubiquitous. The booms in post WW2 television and leisure time were major drivers in kicking this off.

The first TV remote control to hit the mainstream was the Zenith Radio Corporation's 'Lazy Bone' in 1950. Tethered by a cable to the TV, the Lazy Bone controller allowed viewers to remain seated while changing channels and volume.

Tired of complaints about people tripping over the cord, Zenith came up with the 'Flash-matic' remote in 1955. It shone light from a cool looking 'gun' towards photocell receptors in each corner of the screen but had serious crosstalk problems on sunny days, so 1956 saw the release of the 'Zenith Space Command'. These conveyed instructions to the receiver using ultrasonic sounds generated by the internal striking of aluminium rods. The buttons clicked which explains the 'Clicker' terminology used by folks older than me. This ultrasonic technology type was dominant with appliance manufacturers until the early 1980s, when infrared controllers came to the fore.

IR is cheap and functional but it has serious limitations being mono-directional and requiring line-of-sight. 2-way communication methods such as RF, more ultrasonic (voice, movement), Bluetooth, and now WiFi have also been used to control our shiny toys and essentials.

Beyond TV

Since the 80s, the humble control wands have multiplied like the generations of gadgets they come with and infiltrated our domestic existence. Starting with a garage door opener, moving on to a wand for your HVAC control, then the myriad appliances in the home entertainment stack of doom, each with its own plastic clicker, it's hard to get away without a pile of button drenched batons supposedly dedicated to making our life easier.

Instead, we end up with far too many choices to contend with and far less control. Consider the simple act of watching a show on the TV: use the grey remote to fire up the AV receiver, the white one to turn on the display, the small black one for the set-top box, back to the grey one for volume, and then surf with the black one. And please don't do any of that in the wrong sequence, lest the precarious balance of non-interactive devices be upset and the whole mess needs resetting.

Over time, and with the promise of a Jetsons existence, more solutions have evolved to try and curb the confusion. AV control systems started commercially but soon found their way into high end homes, replacing the jumble of handsets with a singular interface. At the lower end of the technical food chain, the universal remote came into existence. A cheaper way to consolidate control of multiple devices into one terminal, many still required a PhD to setup.

I dearly remember my Dad (then in his late 60s) configuring one for his 90-year-old mum: three remotes combined to one but still way too many choices for my otherwise cognitively sharp grandmother. This was solved with a stiff cardboard cover that only exposed the necessary three buttons. Even career engineers can do hacks!

Why are they so ugly and confusing?

Unfortunately, I also hold engineers responsible for the button jumble that we have inherited. Just because a device can perform 374 functions doesn't mean it should have that many options on the control interface.

Have you ever used all the buttons on all your remotes? Unless you've sat there with an IR learner capturing codes for higher level control, probably not. And you probably never will. Conversely, industrial design-led control products (such as the 'fruit' company) can be a bit too minimalist and may not allow the user the depth of control they require.

There is an artform to devising easy but powerful man-machine interfaces, enhancing the user experience rather than detracting from it. It is partly technical, partly emotional, partly psychological, and wholly arcane. Further, there is no perfect solution as all devices and system configurations are as different as their users.

The rise of personal home assistants has ushered in a new method of interface but they are not for everyone, particularly heavily accented people. Phones and tablets are also fast becoming the control link to your electronica. It's easy to download and configure an app and, bingo, control in your palm. It is much harder though to find and keep track of all the apps - somewhat like a digital version of the lounge room table clutter of yore.

Commerce and combat

Before the age of mass consumption exploded, most research on remote interfacing was conducted in the military and space spheres. From Torres Quevedo's early torpedo control to all manner of Unmanned Undersea Vehicles (UUV) and Unmanned Aerial Vehicles (UAV) that we see today, vast sums of capital and ingenuity have been invested by states and corporations worldwide into machines without humans onboard.

UAVs have come a long way and we are now seeing them used for all sort of purposes. Once only the domain of secret military function, drones are now widely used across the civil spectrum. Each one with a person operating them from afar.

Commercially, remote control technologies have particularly assisted mining operations, from remote plotting and surveying to faraway controlled trucks and trains.

Agriculturally, many large stations now monitor distant water sources, fencing and sensors from afar, saving untold hours in the field. Big cropping concerns are getting into GPS controlled farm implements, maximising the efficiency of each pass. Elevation mapping, asset inspections and funky stuff like vegetation measurement (NVDI & EVI) are becoming very useful to the switched-on farmer.

Back home again

GPS is another remotely achieved technology that now pervades our lives. It's great for on the fly navigation but equally great for deep state intrusion. Leave it switched on and the internet knows where you are 24-7. Plenty of countries are pandemic tracking people right now.

There are other examples of remote control in our daily lives. PCs and other computerised apparatus can be accessed at some distance. Many cameras now forgo a tethered shutter release cable and can be triggered by your phone app. A fun one that I've omitted until now is Remotely Operated Vehicles (ROV). How many readers grew up with RC cars, boats and planes? How many still enjoy using them?

Less fun but more essential is remote surgery. This is especially prescient given our current distancing measures. Telehealth has been scoffed at by the bean counters for a considerable time but it is surging to the fore while we are forced into isolating in our bunkers.

Some context

OK, I'll admit it - I was once an avowed Luddite. I've always used the minimum technology available and like to keep things simple.

Working with electronic devices for decades and directly employed in AV automation for nearly eight years, I was proud to NOT have any remote controls in my own home. After all, that was what I spent all day at work doing and I was more than happy to get off my nethers to change a channel on the TV.

I've since relented on that one, but (computers aside), a WiFi remote to the Raspberry Pi media server is as high-tech as it gets in our mud and straw house. Most devices here still require manual interaction!

What's next?

With the ability to bring up the status of our install and touring rigs on our phones and control them from the other side of the world, who's to say where remote control goes next. My crystal ball is too cloudy to tell for sure but it will undoubtedly blow minds when it first launches - perhaps combining the tactile response of a hard button with the real-time feedback of bi-directional comms.

Let's hope it has a good battery life...

Sending an email in 1984:
www.youtube.com/watch?v=szdbKz5CyhA

Personal assistants and the Scottish accent:
www.youtube.com/watch?v=XQCHoKAq9xA

How does a tech work remotely?

by Richie Mickan

As COVID-19 makes us all rethink how and where we work, there are some jobs that absolutely must be done 'onsite' or 'in-person'. Or do they?

There are lots of clever hardware tools and software programmes to allow remote control of your AV rig or installation, but conventional thinking is that you still need to be at the gig to operate, or go onsite to an installation to fix things that go wrong. Maybe now is the time to forget conventional thinking and follow Edward De Bono's ideas on Lateral Thinking.

The problem with this is that it is very hard to think differently. Once you know how something works, or are taught how to do a task, it's rather tricky for the human brain to find a different way of doing it. It is not something that comes naturally to most of us; we must be taught how to do it. One of the big problems is overcoming our preconceptions.

In 2009 I did an ALIA backstage tour of the Pussycat Dolls (don't judge me, we had a work experience student and wanted to show them backstage of a gig). The audio and lighting techs were from a small outfit out of the USA and were doing something completely radical. There was no Front of House riser! Instead there was a B&K stereo microphone 'head' (https://www.bksv.com/en/products/transducers/ear-simulators/head-and-torso/hats-type-4100) and a video camera located in the audience - supervised by a single security guard.

The audio and lighting operators ran the show from the side of stage, watching the show on large LCD screens. The lighting op had their console in front of one screen and had a perfectly adequate view of the stage from the FOH camera. The audio op sat with their console in front of the second screen, fed from the same camera and used in-ears to do the FOH mix, with the 'live' sound coming from the B&K head out in the audience. The audio bod also ran monitors, saving a third touring crew member, as the band's requirements were easily met with a single operator.

I was gobsmacked. It turned the tables on everything I knew. Lights, video and sound are always 'out the front' and for good reason. I spent many of my early years working for a sound company and on the rare occasions we were forced to mix side of stage in a small pub, it was horrid. You spent the whole night pushing you way out into the crowd to see how it sounded, then fought your way back again to tweak the EQ and levels.

I was also a bit horrified at the thought of this becoming the norm. We all love being out front at a gig. It is just what our egos need. Sitting on the front of house riser is the best place to see the show, it's why the VIP seats are often put there. It's the great view, it's the atmosphere, it's the bit of space, it's the vibe (to quote *The Castle*). We feel important up there and being relegated to somewhere 'out the back' would not be the same.

However, this team were winning LOTS of work due to their disruptive technology approach. The promoters loved what they did, as they could sell an additional 20+ tickets in the prime centre front location, and no seats were blocked by the mixing riser. There was also less cost in staging, and less OH&S issues of dealing with a FOH cable run. This company charged MORE than the opposition for their services, but it cost the promoter less – that is what we call a win-win situation.

On larger gigs they would add a few more listening positions around the venue, each using just two seats (one for the dummy and camera, the other for the security guard). This ensured a better sound to the audience by allowing the mix engineer to instantly 'move' around the arena and adjust the mix accordingly. They joked that one day they would not even need to be at the side of stage. Maybe they could be set up in the Green Room, or even back in their motel rooms, or in their garage at home. Ten years ago this was just a pipe dream. With today's high-speed internet it is now feasible. We have all seen the images of the row of follow-spot ops located in a back hall or other part of the concert venue operating the remote spots. What is stopping them being offsite? Nothing except our preconceived ideas.

Most jobs can be done remotely, we just need to change our thinking.

Many years ago, I was offered a job as the IT person for a medium sized clothing retailer. At the time I was travelling about 4-5 months per year and was looking at changing my lifestyle to something more attune to finding a girlfriend and maybe even a wife. The company who made the offer had over 150 stores in shopping centres all over Australia and so I presumed that there would be regular travel involved to fix problems in stores, or to install new system upgrades.

I was wrong. The current IT person had never visited a store and they could see no reason for that to change. Their solution was simple. They had two complete backup computer systems packed in cases, ready to ship out the door to any store that had a hardware fault. The computers were all preconfigured and had a two-page laminated instruction sheet on how to do the changeover. Anyone who could plug in a telephone could do the job, as the previous IT tech had spent considerable time making the entire system as simple as possible. This included every store being issued with a special floppy disc (it was a long time ago) that the store manager would insert into the replacement computer when prompted, that changed the config data to suit that store.

Apparently, the entire process took less than five minutes, and usually did not even require a phone call. Even if the IT person was on holidays, the system could be changed over without any need to call the tech. Once again, I was amazed. At the time I was supporting a major lighting console brand in the TV market, and I was on call 24/7 for when things went wrong and simply could not comprehend a solution that did not need me to carry a mobile phone at all times.

What can we do differently now for COVID-19, and in the future to reduce our carbon footprint and maybe even get a better work/home life balance?

When LSC released the LX consoles over 10 years ago, we included a TeamViewer license in each console. This allowed our engineers to remotely connect to a console anywhere in the world and tinker under the

Richie Mickan has worked for the last 35 in the entertainment industry. He started for a small rental/installation audio company in Adelaide in 1984, moved into import/wholesale in the 90s, then joined LSC in 2003 where he is now the Product Manager.

hood. This allowed us to fix bugs quickly and easily that otherwise would have required a lengthy plane flight, late nights in a venue, and grumpy clients. Our clients were amazed that they could click a button to give us access permission and then keep operating whilst we watched quietly in the background to see the problems occur in real time.

It wasn't any new or revolutionary technology, we just used something from the IT industry and transplanted it into a lighting console. Many modern AV products are just software running on a proprietary computer, giving the potential to do the same thing. If you can gain access rights, it would be quite simple to install some form of remote access software (TeamViewer, TightVNC, SSH) giving you access to remotely program, fault find and maintain a client's system. If this is not possible then maybe a third-party product that integrates with the AV system could give an alternative method to monitor or configure a system remotely.

Even the humble Arduino could be of use to solve some problems. We have an issue at the office with the air-con in the computer server room - it stops working if there is a power brown-out, and needs to be power cycled before it will work again. This used to mean someone driving to the office if it happened after hours. The R and D team came up with a plan to build a custom PCB and write custom software to allow the A/C to be automatically power cycled if the problem arose. This solution would have been costly and time consuming. Instead, one of the sales team bought an Arduino and a couple of plug-in 'shields'. Using the open-source libraries that exist they put together a working solution in less than three hours. A temperature sensor is used to trigger an alert if the room gets too hot. This in turn controls a relay which drives a contactor to power cycle the A/C. Once the power has been cycled, an IR LED sends a command to turn the A/C on again. It has been in place for three years and works perfectly.

Social distancing might be the reason to start implementing the ability to work remotely, but this ability is also a great boost to your business's bottom line. Being able to remotely login and programme/fault find a client's system will save you hours of frustration sitting in traffic as well as giving you more hours to do other work. It will take a bit of time to set-up and get right, but now might be the perfect time, as most of us have less work than we did just a few weeks ago.

How to get a wireless RJ45 connection to your temporary home office

by Richie Mickan

I spent one evening last week setting up my new home office, against one wall of the formal lounge room (no other use for it over the next few months). The phone system at work is an internet based online PABX. I can unplug the phone at work, bring it home and plug it into an RJ45 connector on my router and it works exactly the same as if I was in the office – marvellous technology that.

However, nothing is ever that easy. My router is hidden in a cupboard in the kitchen, nicely out of sight to keep the wife happy. It has Wi-Fi which all the computers, tablets, TV, phones, and numerous other devices use to connect to the web. There is not a physical Cat5 cable anywhere. The phone does not have Wi-Fi, so I ran a long piece of 'blue string' from the kitchen cupboard across the wall, over a door, then through a window, along another wall – well you get the idea. Not only is there an ugly cable all through the house, but the kitchen cupboard door no longer closes due to the cable getting jammed and the window is slightly ajar, letting in numerous flies, mozzies and other creatures. Not acceptable, I was told!

A quick look online solved my problem. The TP-Link TL-WA850RE is a Wi-Fi range extender which also has an inbuilt RJ45 ethernet port. This port was designed to provide a high speed wired back-link for extending your Wi-Fi, but it can be used in reverse – providing a physical Ethernet port when connected via Wi-Fi to your home router. It is the perfect solution.

It is a small all-in-one device, and has a 240v mains plug built in, so no annoying plug-pack PSU and DC plug/cables to mess about with. Just plug it in, wait 30 seconds for it to boot up and then connect to it via Wi-Fi to configure. All up it took less than five minutes to get it up and running, including plugging in my IP phone and calling the office to test the connection quality.

It costs under $50, and I found a twin pack at Officeworks for $88, so I bought four units so that others at work could use the same trick.

When we all go back to normal (sometime in the future) I can reuse it as a normal Wi-Fi extender, which will be great as currently the garage has crap Wi-Fi.

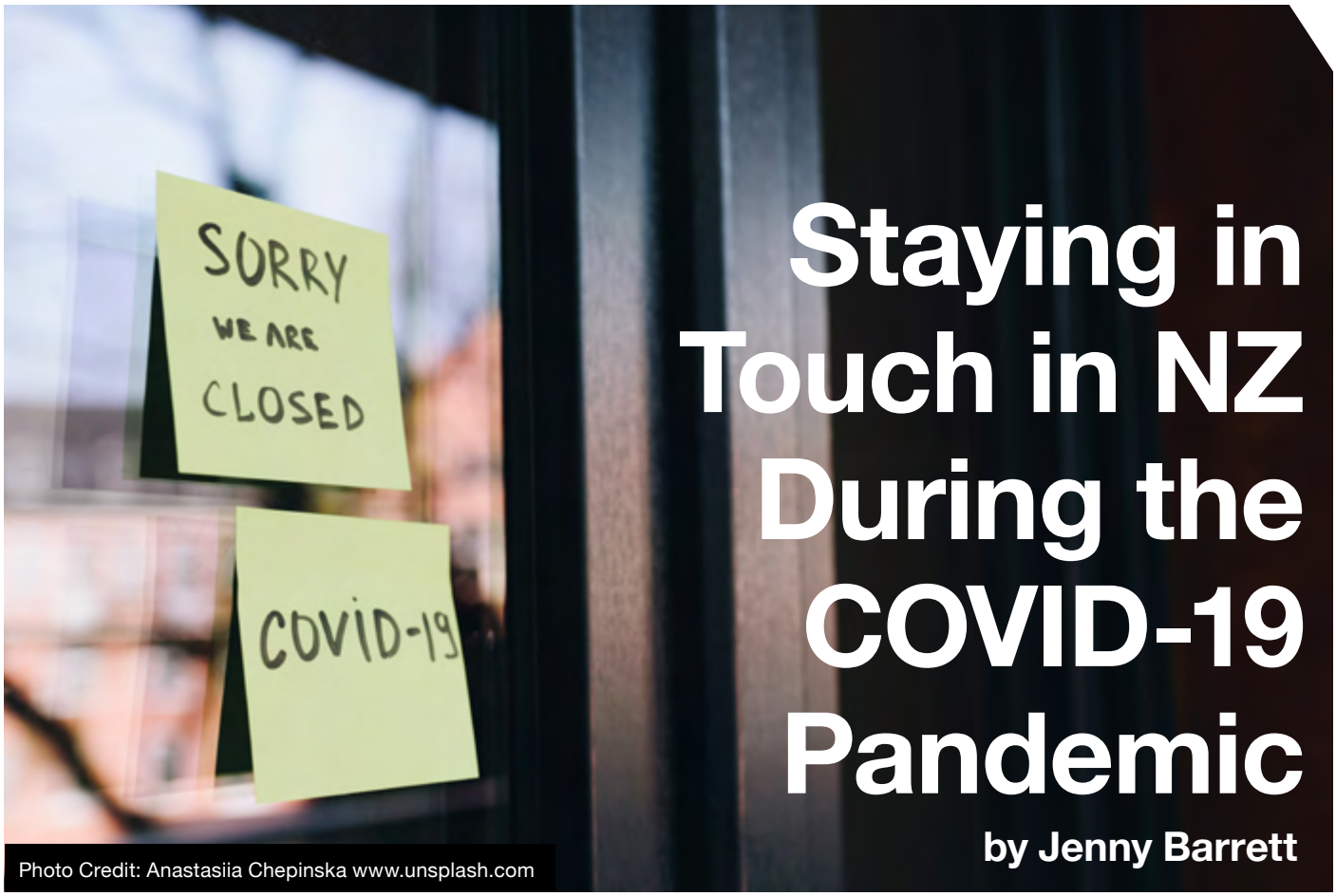

Photo Credit: Anastasiia Chepinska www.unsplash.com

Staying in Touch in NZ During the COVID-19 Pandemic

by Jenny Barrett

The New Zealand Prime Minister first announced the four-level COVID-19 alert system in a direct address televised to the nation on Saturday, March 21. After that things moved fast and two days later on Monday, March 23, the Prime Minister moved to Alert Level 3 restricting any unnecessary movements as a final preparation to enter into the complete lockdown phase. On Wednesday, March 25, at 11:59 pm New Zealand entered into complete lockdown, culminating the four-day preparatory process.

The Event Industry

The majority of events had been cancelled in the weeks and days prior. Mass gatherings over 500 were banned on March 16, and non-essential events over 100 on March 19. Prior to that a number of shows were impacted by the measures that came into force at midnight on Sunday March 15 requiring people who arrived in the country, including returning Kiwis, to self-isolate for 14 days, including cast and crew. Others had been cancelled even earlier, impacted by prohibitive freight costs.

Effectively since late February, the live entertainment sector has been in crisis. Whilst streaming technology has the potential to keep musicians and performers engaged, the roadies, technical teams, tour managers and riggers have nothing in their diaries for the rest of the year.

The Audio-Visual Industry

Similarly, many audio-visual manufacturers, distributors, resellers and hire companies are seeing both supply and demand impacted. Manufacturers who are partnered with Chinese factories have seen major delays, if they have not been shut down completely. Even if brands are not manufactured in China, a preponderance of their components are. While many Chinese factories are re-opening, bottlenecks exist elsewhere. After six weeks of total shutdown, factories are scrambling to fast-track their goods, opting to use much faster air cargo, rather than the typical ocean freight. The problem is that air cargo space is increasingly limited. The same is now affecting products manufactured elsewhere around the globe. This will simultaneously decrease supply and increase the price of goods. The consequence of this is that the market will likely see shortages and price hikes for the foreseeable future.

Inevitably demand is impacted too as economies have closed with the exception of essential services. Planned installations are on hold or are no longer going ahead and sales have shrunk. Inevitably the hire market is decimated, apparently apart from loud hailers for essential services.

The New Normal

As we go to press there is much uncertainty surrounding the new normal. The focus for today and for the next few months is to survive. There will be a future for both sectors and everybody needs to do their bit to make sure that we all get there.

We should focus on our own health, on our financial security, and stay in regular contact with others in the industry to check that they are doing the same.

Photo Credit: Logan Weaver www.unsplash.com

Photo Credit: Sharon McCutcheon www.unsplash.com

The New Zealand Government's COVID-19 website offers information for employers and employees on accessing financial support, as well as support for mental wellbeing. A range of other resources are being developed specifically for the sector.

Resources

Financial Support & Professional Counselling

MusicHelps has been the music industry's charity for eight years and among its core activities has been the provision of emergency financial support and professional counselling to Kiwi music people when crisis strikes through 'Backline'. It has now started MusicHelpsLive to specifically support people and organisations facing hardship due to COVID-19. Many in the industry have donated and the total currently stands at almost $300,000. To contact the organisation for help and support call 0508 MUSICHELPS or through an online form on the Backline webpage. Applications for grants opened on 20th April.

Creative New Zealand's Emergency Response Package, a $16 million investment, opened for applications from 14 April and these will be distributed to the sector through to 30 June 2020. A second phase will provide support beyond June 2020. The package features resilience grants to top up the government's COVID19 wage subsidy and is eligible to people involved in organising arts projects including producers, stage managers and technicians.

Live Nation, the world's largest live-entertainment company, has established Crew Nation, a charitable fund to which it is contributing an initial $5 million donation, to help support concert crews around the world. It will then match the next $5 million given by artists, fans and employees dollar for dollar. USD$1000 grants are available via an online form for international applicants to complete. Donations can also be made via PayPal.

Data Collection

Getting accurate figures is vital to get a greater understanding of the shape and scope of the impact, and for organisations to lobby government and for publicity. There are a number of organisations currently collating information:

- For the music industry: APRA AMCOS NZ, NZ Music Commission, IMNZ, MMF NZ, MusicHelps NZ, NZ On Air, Recorded Music NZ, and Te Mangai Paho have an online form 'I Lost My Gig'. One form covers Australia and New Zealand, and one just New Zealand.
- For the entertainment technology sector: ETNZ have put out two surveys to date to capture the situation. Join the organisation for free to receive monthly newsletters with updates on the survey findings.

Virtual / Social Networks

Entertainment Technology NZ (ETNZ) has a page on their website dedicated to COVID-19 resources and a Facebook page with regular updates. Sign up to their newsletter to receive regular emails.

Performing Arts Network of NZ (PANNZ) is holding a weekly online hui to hear from arts leaders such as David Inns, Chief Executive of Auckland Arts Festival, Tama Waipara, Executive and Artistic Director of Te Tairāwhiti Arts Festival and Executive Director of NZ Festival of the Arts, Meg Williams. These regular hui offer an opportunity for people to gather remotely, connect, ask questions and get up to date as a community. They are facilitated by Barbarian Productions' artistic director, Jo Randerson. Find out more information on their Facebook Page.

Aotearoa Arts & Events During the COVID-19 Crisis have a webpage and very active Facebook Group. They are organising Learning Lunches that are live and archived on YouTube and have included a session on financial stability and on well-being. Posts are sorted into units for ease of access and include Getting Financially Stable, Maori/ Oceania/First Nations, Getting By & Survival, Engaging with Audiences and Planning For the Future.

Professional Development

If your head is in the right place, now is the right time to look into professional development and see if you can access it for free or subsidised - and invite a friend to do it with you.

Entertainment Technology NZ (ETNZ)

- 100 Scholarships are available for the NZ Certificate in Entertainment and Event Operations, Level 3. This Scholarship will cover the cost of the qualification and the assessment. ETNZ will also offer a series of regional workshops delivered through venues to provide training for the Level 3 Qualification. These optional workshops are designed to work through all the material required to attain Level 3.
- The ETNZ website also hosts a webpage with a regularly updated list of professional development opportunities.

ETC are offering an array of courses, webinars and YouTube videos. Follow their Facebook page for more information and visit their Learning Stage page on their website for free online programmes.

Vectorworks are offering free online seminars for a time. Visit their website.

Strand Lighting have waived costs for Neo console. See their website for more information.

NSL Group are offering free webinars across a host of subjects.

VIRTUAL EVENTS REIMAGINED

Women in AV share their thoughts during the Covid-19 pandemic

by Toni McAllister

Just 3 weeks after the government ban on all mass gatherings, I sat down with Libbie Ray, Co-Owner and General Manager of AV 24/7 and Tanya Brown, Director of Create Engage to check in on how they were coping in this unprecedented time. These inspiring business leaders were generous and authentic in sharing their experiences and had poignant take-aways to share.

Libbie Ray, AV 24/7

Are you finding clients are cancelling their events rather than turning them into virtual events? Or are they waiting to see when the ban is lifted?

I think people still haven't made that decision, they're still deciding if their business can run through this time, what is going to happen to them personally and trying to see how other people engage virtually. Initially I think they're just trying to resettle after the storm.

It's hard to get your head around not having any live events and imagine how as an industry we can survive that.

Absolutely. That was a defining moment for me. First it was how are we going to get through the next six months and stay strong so we can reopen the doors. But now we're looking at this situation and thinking how long will this go on? The events industry was the first to go down, it'll be the last to come back. When that hits you, there's an element of fear but then it kind of turns into this question of what is going to be our new situation, our new norm if the worst-case scenario is 18 months before we can do an event. Once I started to accept that as a potential reality, I thought; OK, how can we use our skills, our passion, our drive, for something else? How can we help to alleviate the stresses and pains of loneliness and being disconnected and bring that into the virtual event space?

How do you think virtual events will change in this period?

Virtual events are not new. But previously all we've done is streamed a live event for the people that can't be there. That's not the case anymore. We can't just pick up a live event, put it in front of a camera and expect people to feel a connection. We need to completely reinvent what that looks like. How do you recreate the feeling that people have in a live event and give it to them from across the world through their screens?

Pivoting is a word we hear quite often, which is what you have needed to do with virtual events. But in reality, you still have shelves and shelves of gear just sitting there.

That's right. We lost 100% of our revenue in one day. And now we have a 1500 square metre warehouse in Sydney and another 500 square metres in Melbourne and they are full of equipment, not doing anything.

Is there anything you could put that equipment to use doing?

There are a few things that we are working on at the moment like supporting streaming services where they need a larger screen. Anything to get our equipment out there

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working. Now getting into the virtual space we're investing in slightly different equipment. In a time when we've lost all our revenue we're investing to make sure we're giving people the best outcomes and solutions.

This has had an overwhelming effect on people and their livelihoods. How are your staff coping?

Like most companies in our industry, we've had to stand down a lot of our staff which is devastating. With the JobKeeper initiative we are in a position to re-engage our team members. We hope to use this time and opportunity to stay connected to each other and give our teams purpose. Through this stage we will be managing upskilling programs, product development and making sure we stay connected through online networking and team meetings, even Friday afternoon drinks.

There are countless AV techs out there with little to no work right now.

Absolutely, it's terrifying and obviously any help the government gives is fantastic. One of the hard things with the event industry is that all of the revenue has been wiped out but we're being treated the same as a company that's only lost 30% of their revenue. And for businesses like ours that have lost all their revenue, we have to bankroll the $750 payments for a month before we see a cent from the government. So, we have to pay out that allowance to all of our employees, which we want to do for as many as we can, but we have to find that money four or five weeks ahead whilst trying to manage all the other payments with nothing or very little coming in.

How do you think things might look on the other side of this?

I honestly believe that some of the things that the industry is going to learn over the next year are going to be really valuable for our live events going forward. Having that conference for 600 people that you've got ready to go, get those 600 people there because they want that interaction but then how do you engage another 15,000 people from all over the world and make that experience really good for them, not just watching a live stream? How do you blend that virtual and live space together? I think that's where we're really going to see a big change.

As a business owner how are you feeling through all this?

Tired, really tired. I think when you are using your imagination and problem-solving skills constantly all day every day it's really exhausting. From mid-February, I started scenario planning for what might happen with this situation. By the end of February, I started to see what those effects might look like and we brought our entire team together. I've been really honest with people, really open. And that's draining as well. In a situation that is so unknown, honesty has been the most important thing and trying to keep staff updated. You don't have control. You need to let go, knowing you can't control it but that you can make the best of a situation. Which is what I'm trying to do.

Do you have any coping mechanisms that are helping you?

For me, mindset is everything. Checking yourself when you start to go down the wrong road. You need to bring it back to what you feel you are the best at and what is the biggest gift you can give to other people. I like to bring people up, I love to connect people. I thought to myself, if I'm not physically with people and if I'm feeling down, how can I bring people up? It's about reconnecting with what you know makes you happy. Really focusing in on that. What I can control is that I can call people and see how they're going and make sure my friends and my industry colleagues and other business owners I know are OK and stop wallowing in my own problems.

One of the things I keep saying to make me feel empowered is that in a business owner's life, there will never be another opportunity like this to see what you are made of. There is probably never going to be another time where in a day you lose 100% of your business and you then have the opportunity to see physically, emotionally and innovatively what you are capable of. I think of this as the ultimate challenge. I keep reminding myself of that and it makes me feel better.

What's the alternative? We need to try to be happy through this really terrible time, support one another and try to put on really great events. Great events that just happen to have a different experience now.

Photo Credit: Glenn Carstens Peters www.unsplash.com

Tanya Brown, Create Engage

How has business changed for you since the ban on mass gatherings?

February is usually quiet for us. But it was the busiest we've ever had. Some of our larger clients had already made the decision to change their events to 100% online even before the restrictions in Australia. We also had an increase of clients needing to stream in speakers from other countries that weren't allowed to travel.

It became very busy really quickly, but then the day the restrictions on gatherings over 500 people were announced, like everybody, we lost everything. Because most people didn't just cancel the larger events, they cancelled all events large and small.

We were still digesting that, when on the Monday immediately after the restrictions were announced, the phones rang off the hook. Our clients were looking at ways to live stream large groups of people together from around the country. We worked around the clock to put these proposals together. Shortly after gatherings over 100 people were also restricted and that work cancelled too.

After that came the "new normal"- no in-room audience, no breakout rooms, no team building, no face-to-face networking - just 100% online live streamed events. Collectively, the Create Engage team have been live streaming for over 12 years. This is what we do every day. We are now helping clients do this in a re-imagined way.

How will you manage this demand going forward?

Things are more under control now. The parameters have been set and the government has more or less said this is what it will look like for the next 90 days at least. So, everyone has a bit more clarity, clients understand what they can and can't do. That has helped. Plus, we've had time to go out with communications to our clients. We were able to let them know what to do before they call us. For them to think about what is the purpose of your communication? What is the message? Is it as urgent to communicate as you think? We're really honest with people. We're a communication tool and if they don't need to do a structured virtual event solution, they don't necessarily need us. They can use Zoom or one of the other many self-service platforms available.

Have you done anything differently as a result of this situation?

We were really adamant about helping other people in our industry. We have a good relationship with SMC Conference and Function Centre (SMC) and Audio Visual Events (AVE). Both of those companies were letting go of their staff and close to closing their doors. We got together with them and looked at what was happening. Our clients needed a place to go where they can communicate their message and feel safe. SMC are a unique newly refurbed venue, AVE are an industry leading AV specialist, and livestreaming, virtual events and video production are our core services. Together, we conceptualised the semi-permanent studio solution – ON AIR.

There are so many studios popping up now – is it too much or is it in line with demand?

I think there is plenty of work for everyone. There is definitely demand for it. It's just important that it is in their skill set. If your clients have never done this before it can be a bit scary. So a streaming supplier, especially in this current time, must exceed client's expectations and this is where experience in digital event services is paramount. If you're not an expert in streaming you might not have enough backups and contingencies. Once you go live, there is no going back.

So, for you it was less about pivoting and more about collaboration?

We've had to change more in the way we do our day-to-day tasks. Phone calls have escalated, proposals have escalated, web enquiries have tripled – that's a big influx for a business.

The ON AIR collaboration for us is a reaction to service the needs of our clients own need to pivot their events. Live streaming and digital events are what we do every day. Our clients are used to delivering their events with a majority in-room audience, with an online component. The pivot for these clients now comes in the fact that we're now doing a live stream that is bringing 100% of their audience online.

Are you doing anything to enhance the online experience? For the audience to feel more connected?

We're trying to help our clients understand that you still need to treat this like an event. You still need to have an MC. If you had one before, you have one now. The difference is, where before you could have just watched from home as the majority of the audience participation was still in-room, interactivity of some level has to be offered at a minimum as all audience participation and feedback will be coming from online. Interaction tools such as Q+A, polling, or audience sentiment need to be considered for increased connection. More than ever before you need to appropriately welcome and address the online audience and encourage online participation to enhance their experience.

How do you think things might look on the other side of all of this?

Live streaming was something a lot of people used to think was a nice add-on. I believe when this is over, most corporations will have an integrated digital plan to their events moving forward. So, if anything like this happens again, they've got a fall back strategy.

Do you think that this collaboration will continue on the other side?

Our events community are so close but right now people need to be willing to collaborate and work together regardless of whether you were a competitor before. Personally, for us, this relationship with SMC and AVE was already strong, but we're bonded for life now, through ON AIR. It's not a time to be competitive. It comes down to supporting people in the industry. Having that collaborative mentality would be great to see on the other side.

THE PIXIES

by Cat Strom. Photo credits: Jose Sanchez / Kim Strong

In March The Pixies embarked on their *Come On Pilgrim... It's Surfer Rosa* tour of Australia and New Zealand, a tour they took to the UK and North America in 2018 playing six nights at London's Round House, three nights in Mexico City and three nights in New York's Brooklyn Steel. In 2019 they toured the summer circuit with a completely different show before reviving the *Come on Pilgrim... It's Surfer Rosa* tour for 2020.

The show commemorated the 30th anniversary of the Pixies debut album *Surfer Rosa* as well as their 1987 mini-album debut, *Come On Pilgrim*. The band play the *Come On Pilgrim* album in full followed by the *Surfer Rosa* album, also in full, and finally a 30-minute encore of songs from other albums.

With the New Zealand tour successfully under their belt, the band put in an appearance at Victoria's Golden Plains Festival before heading to Melbourne's Palais Theatre for two nights. After that, they flew to Brisbane where the entire entourage was abruptly woken at 3 a.m. in their hotel beds and told to pack immediately as they were returning to the US amid COVID-19 concerns.

As they sat in the almost deserted departure lounge, they watched as flights began to get cancelled and their relief was palpable when they finally set off for home.

CX was due to cover one of the two Sydney shows planned for the Sydney Opera House forecourt but had to settle for phone interviews with Myles and Miles. Lighting designer Myles Mangino was in heavy lockdown in New York City with his young daughter, whilst FOH engineer Miles Wilson was ensconced at his home in Los Angeles. With his wife still actively employed, Miles is busy doing all of the homeschooling, cooking and housework saying that he is "f^%&**g exhausted!"

Myles Mangino has been with The Pixies since they first started 35 years ago, and a usual Pixies show for him involves a wall of smoke, lights, strobes and silhouettes with backlighting. This time he wanted to do something completely different.

Myles decided to make the production primarily about video content with the lighting as simple as possible. Eight Martin MAC Viper Profiles were located at the back of the stage with eight more at the front focused on the four band positions so each band member had two spots from behind and two from the front. Myles opted for the MAC Viper as he believes it has one of the best natural CTO to make it look like a tungsten fixture. Added to that were four MAC Viper Washes that lit each of the band member's backline. None of the lights ever moved and remained in CTO for the whole show.

"I decided to have six projection screens and one big video wall behind the band that would wrap around the audience," explained Myles. "Originally this show was designed for London's Roundhouse, a large round domed venue, where the audience could feel that they were engulfed in the imagery. Once we got into the usual rectangular shaped venues it wasn't quite the same, but it still worked well."

Before the band took to the stage there was a 24-minute avant-garde film based on the artwork of Vaughan Oliver who created all of the artwork for the Pixies albums and many of the other artists on the 4AD label. The film was accompanied by a narration by Vaughan describing his work process. The Australian shows were the first time this was shown since Vaughan passed away at the end of 2019. The film was created by Myles, with Joey Santiago, Pixies guitarist, scoring an original soundtrack.

"About a third of the visuals were Vaughan's artwork, a third were created by his students at the university he taught at, and the rest was content that I created myself," explained Myles. "I ended up with 780 video clips ranging from two seconds to four minutes in length – all of which I played back live across

Sometimes it all gets too much...

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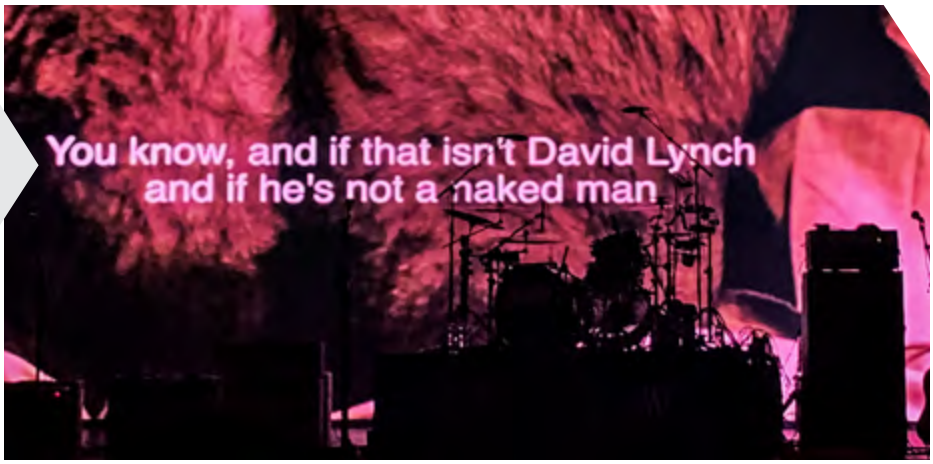


the seven screens from a grandMA2 console."

For content playback, Myles used Resolume which he says is ideal compared to the bigger media servers as he needed to prepare everything himself and to be able to fly with just a laptop. He ran seven outputs on a 16" MacBook Pro out of the USB-C output and never once had to use the backup.

"It ran solid even with me chasing content from the console so Resolume was being worked like crazy," added Myles. "I used it a little bit differently. When you use a media server at a festival where there may be 24 screens across the stage the entire image is usually mapped across the entire 24 screens but in this case, I treat each layer of Resolume and each output as a separate moving head fixture. From the console, I can use that LED projector or that LED wall like it's just another lighting fixture. I could chase the colours on it, zoom it in and out and even strobe it."

All of the content creation, video editing and previz was done at Myles' previz studio Highlt Previz & Production Design Studio in New York City.

Big Picture supplied the video in NZ, Woohah in Melbourne, and the lighting was supplied by Spot-lite in NZ and Phaseshift in Melbourne.

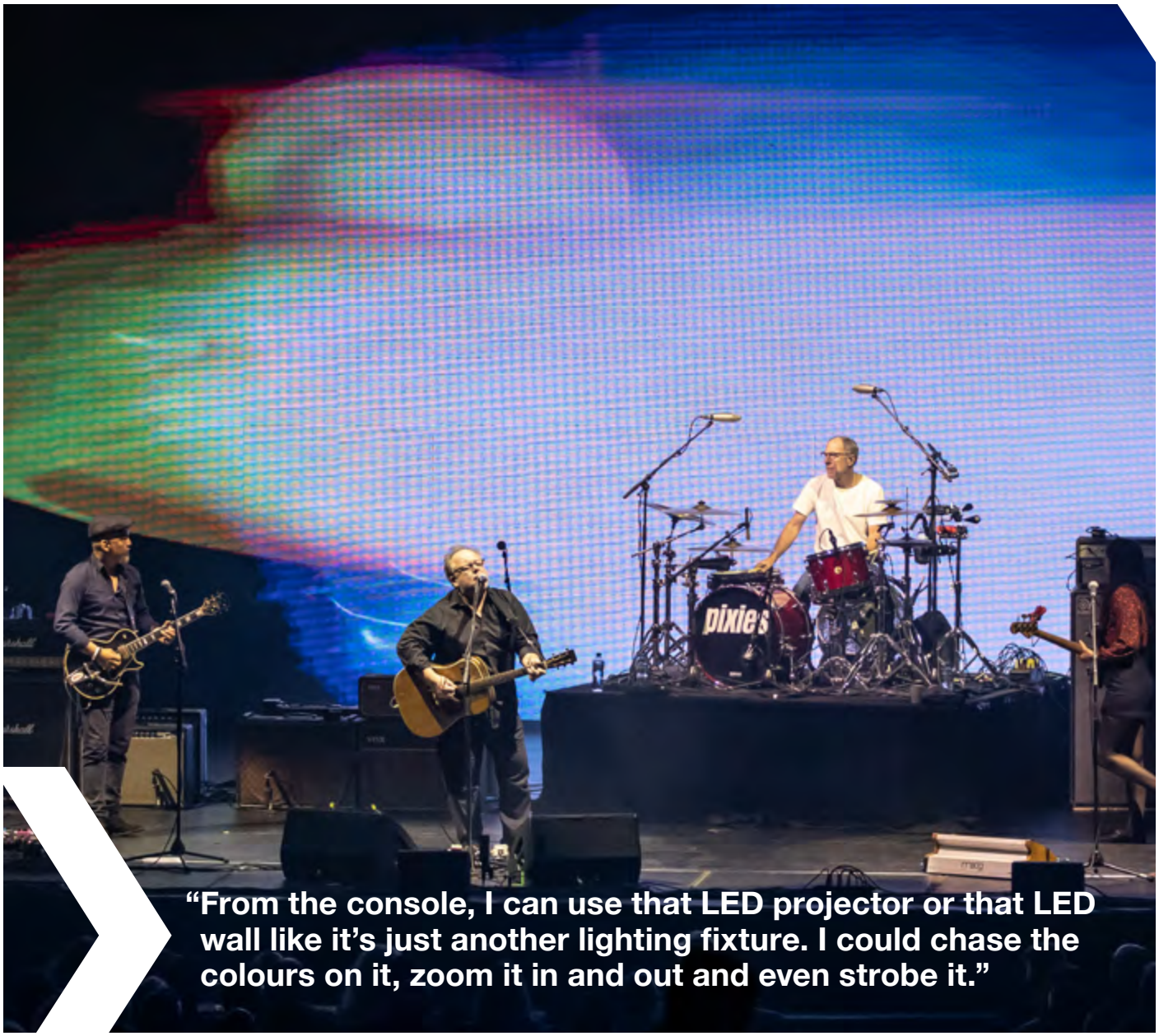
Miles Wilson is the new kid on the block having only been with The Pixies since 2004, taking over FOH duties in 2009. The Australian tour utilised in-house PA systems with JPJ Audio providing a control package. Whilst Miles may favour a d&b audiotechnik PA for The Pixies, he is not precious saying that as long as the PA is set up correctly, all of the top companies (L-Acoustics, Meyer Sound, Adamson, JBL, etc) make a great product.

For control Miles used an Avid S6L saying he was an early adopter of the model as he has been around Avid products for many years.

"I'm very happy with the Avid S6L especially the virtual soundcheck and being able to record everything is so easy. And it sounds great!" he said. "It's a very transparent console, both the high and low end is considerably more defined than it was with the Profile. The overall sound of the mic pres is much better, more depth and more detail. Of course, you are also running at 96K rather than 48K."

Over the years with The Pixies, Miles has chiselled away at his effects rack aiming to be self-contained within the console. He now uses Sony Oxford plugins and not much else.

"It's not a very effects-heavy mix for me," he remarked. "I'm much more concerned with the punch of the drums and the clarity of the vocals. If that's rocking and locked in, then I'll start to throw a little more reverb or slap delay on the vocals. The density of The Pixies sound sometimes makes it difficult to push the effects and the last thing I want to do is wash it out. That said, when we're doing an outdoor festival and it's nice and dry, I'll start pushing that stuff a bit more. I concentrate on getting it as loud, punchy and as clear as I can. You can get away with it being loud if



"From the console, I can use that LED projector or that LED wall like it's just another lighting fixture. I could chase the colours on it, zoom it in and out and even strobe it."

everything is working and it sounds nice and smooth. If you're having a tough night, the best thing you can do is bring it down a bit."

Microphones were fairly standard with Shure Beta 91 and 52 for the kick drum, Shure 57 and KSM 137 for the snare, AKG 414s for the overheads and Sennheiser 904s for the toms. For guitars, there were mainly Shure 57s although Miles experiments with bringing in an SM7 on amps now and then.

"I've used 421s and Royers at times, but I nearly always go back to using the Shure 57 for the most part. We do also use a small diaphragm condenser by Milab, the DC-96 which sounds awesome," commented Miles. "For Joey's Marshall, I use a blend of the 57 and Milab and the same for frontman Charles' two Vox AC30 amplifiers. A Beyer M88 is used for the bass cabinet. Shure Beta 57 vocal mics are used by everybody except Dave the drummer who gets a Beta 56. It's 24 inputs total and it can be dialed in quickly on a foreign console in very short order if needed."

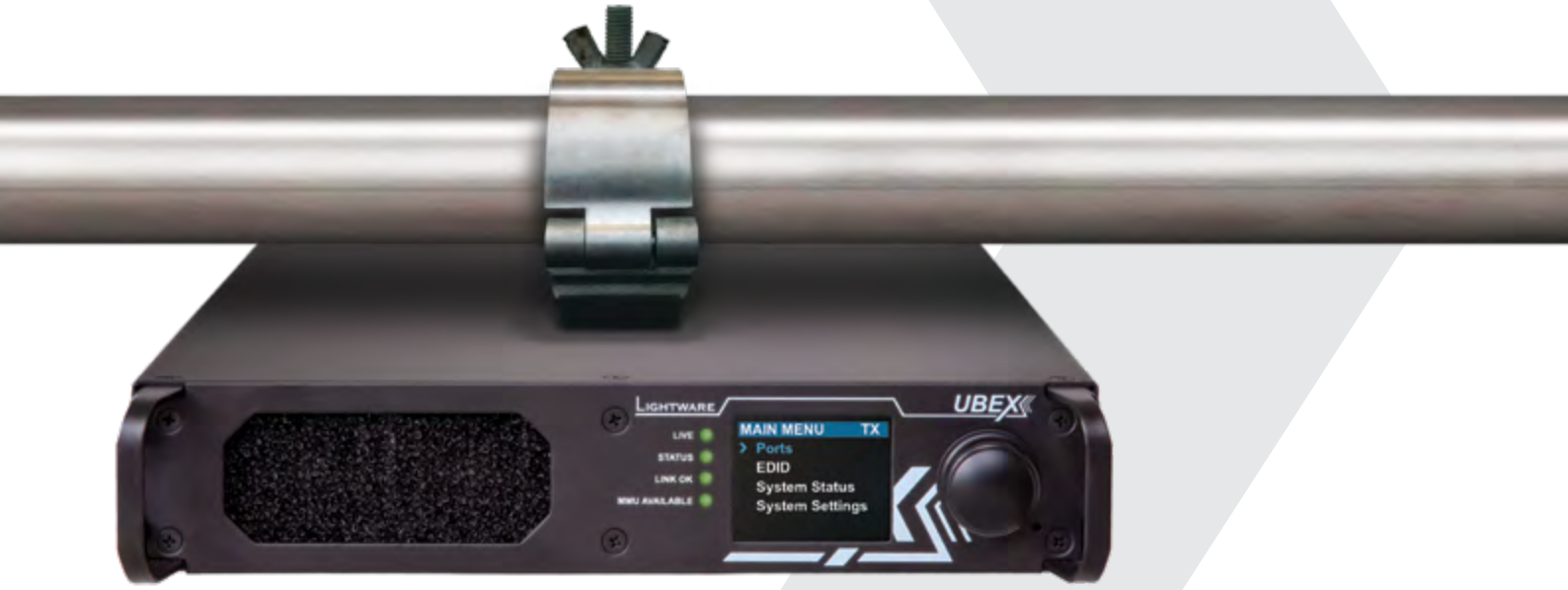
Monitors were looked after by Matt Jones on a Yamaha PM7 with Miles describing him as an awesome and technically savvy engineer who spots everything well before he notices any issues or potential pitfalls!

"Matt allows me to not worry too much about technical components and stage sound and just focus on the creative aspect of the mix," said Miles. "I don't have to sweat whether we have enough vocal headroom before PA feedback or whatever. The band are all using IEMs and Charles has a pair of wedges for himself plus there are a pair of side fills. It's nice because Charle's likes it loud, the guitar amps are loud, and when everyone used to be on wedges it got very loud on stage. Now it's a lot more controllable from front of house. They're definitely a loud band especially Charles who has a pair of Vox AC30s turned all the way up! When we're in a small or lively sounding room it can be a struggle to get his vocal nice and clean on top of that without tearing people's heads off!"

Miles revealed that The Pixies never use a setlist preferring to make shows up as they go, reading the audience from night to night and just riding with it. The result for him is a very fly-by-the-seat-of-your-pants gig!

"Some bands have everything scripted, and that can be fun too making for a really precise show, but this is just very different," added Miles. "Every night has it's own personality and more often than not, it's awesome. Some nights it goes off the rails a bit and it's all you can do to hold it together. That's usually to do with the sound of the room. It's a challenge mixing The Pixies but it is also very, very rewarding especially on the nights where you're in a great venue, the crowd is on fire and the band feels it. There's a reason why most of their crew has stuck with them for so long – plus the band are awesome as people which makes it all that much better."

The Pixies plan to complete their Australian tour as soon as they can.



LIGHTWARE UBEX-PRO20-HDMI-R100

by Rowan Lee

Rowan Lee holds the position of Technical Support & Research at Adelaide's Novatech Creative Event Technology. Starting out as a theatre tech student, he soon found work in live events. With a background in electronics and product engineering, and specialities in lighting, video, and comms, Rowan is involved in Novatech's technical decisions and operations, and provides research, education, and ongoing support across all disciplines.

Review

At Novatech, we've been researching and demoing solutions for 4K video signal transport over the last couple of years, as we saw it as a developing need for our clients. There are dozens of available options, but most are targeted at installation. There is a small subset that are rental-friendly, and a smaller subset of that which are no-compromise solutions. When we compared the options with those criteria, there was nothing else but UBEX that had the feature set along with the robustness. UBEX checks all the boxes.

The journey to 4K has been interesting. We've seen a progression from most gigs being in HD or SD, then to screens at HD or greater. Over the past six years, 4K has become the norm and clients now expect it. As such, we're using our UBEX with big lumen, big pixel projectors, mainly from Barco. It's often large blended walls but, at other times, individual screens, where more pixels are better!

The main UBEX range has install-oriented construction, like IEC power connections. The UBEX-Pro20-HDMI-R100 and other units made for the rental market come gig-ready, with extra corners on the metal case for protection, PowerCON True1 power connection, and rigging points for mounting on truss. The model that stood out as most versatile to us has a single opticalCON DUO connection making space for an extra gigabit Ethernet.

Deployment and Operation

While the UBEX can be deployed on a network in conjunction with a Lightware Matrix Management unit, we're usually using them in point-to-point applications. We have a large stock of single mode fibre, with Neutrik opticalCON connections, so crew with no knowledge of how to handle fibre correctly can still plug and unplug without scratching it up.

There are three modes of operation for each unit in point-to-point mode – transmitter, receiver, or transceiver. There are two completely independent video pipelines you can use on each unit, and both can run in either direction. If the unit is a transmitter, you can tell it which input is active, and set its local output to reproduce that signal. In transceiver mode, you can scale on the receive end, so for example if you have a 4K source and have to swap out to a non-4K projector, you can scale easily without having to change your signal path.

In terms of set-up interface, both the front panel and the control software (Lightware Device Controller) are both usable. It is very easy to use only the front panel, which means you can just grab a pair of UBEX and go. A really nice feature in point-to-point mode is that you can configure the unit on the other end from the one you're on, so you don't have to climb up a truss or pull out a computer.

The Specs

- Scaling of video signals to match the properties of the target display/sink
- Metal enclosure
- Ethernet extension (100 Mbps)
- Command injection on RS-232 and IR ports
- Supports all VESA and HDTV resolutions
- Advanced EDID Management
- Supports HDMI 4K signal formats (4K UHD @60Hz RGB 4:4:4, up to 18 Gbps)
- Breakaway audio and video switching (audio and video signals can be routed separately)
- HDR and Dolby Vision support
- HDCP 2.2 and HDCP 1.4 compliant with cross conversion capabilities
- 4096x2160@60Hz/4:4:4 maximum resolution (600MHz)
- Uncompressed video up to 18 Gbps datarate (600 MHz pixel clock)
- Mounting options for rack, furniture or truss

There's lots of nice features like EDID management, which is very important when dealing with dry hire events where we provide projection and someone else plugs in a source. It guarantees that everything operates in the right colour space, resolution and bit depth.

Redundancy

The design of the unit means the two signal paths are redundant by default. There are two physical HDMI input ports, and software-defined processing that changes that into data to travel over Ethernet. Two 10Gb Ethernet links travel over fibre, so if you're transmitting a single signal that is under 50% capacity, it's automatically redundant - if one of your fibre links dies it will continue operating. You can set the UBEX to output the same signal on both output ports, too. In terms of source redundancy, you can send two different sources into two different inputs and choose which it listens to.

Power is not redundant, but Lightware have chosen a high spec power supply. We pull apart any new gear to check that the quality of manufacturing is up to scratch, and UBEX certainly are, to the extent that all of the HDMI ports are on separate daughter boards, so if you trash a port you can replace it quite cheaply.

Learning Curve

The only teething issues we've had with UBEX has been our own 'video learning curve'; one thing that's newer to us is managing colour space. When you deal with the high data volume of 4K it's a relevant detail. For example, you can't quite fit two full 4K 4:4:4 signals down the 20Gb of link capacity, but if you drop them both back to 4:2:2, which is just a bit of chroma subsampling which is industry-standard and used in SDI, then you can fit two full 4K 60Hz independent signals through one box.

Improvements and Suggestions

We've been in touch with the Lightware design team and they're interested in the feature suggestions we've put in. They're really committed to developing UBEX as a platform and expanding it based on customer feedback, which we appreciate. When we're sending 4K, we'd like to have the local output on the transmitter output a downscaled version so we can monitor it on a 1080 screen, so we don't have to have 4K monitors for confidence checks. We'd also like a genlock input, which would require new hardware. We often use 4K projectors with a 4Kx1K output canvas to create super wide screens, so we're asking for more flexible signal routing – like the ability to route a single 4K input to left/right or top/bottom splits across two separate half outputs, or the reverse, combining two 1080 inputs into one double-wide canvas output.

Conclusion

Our UBEX-Pro20-HDMI-R100s have performed flawlessly. They're very well-thought-out products. It's clear they're built by people with experience in the production industry who have tested them on gigs, and the support from Lightware has been genuine and proactive.

Product info: https://lightware.com/ubex-pro20-hdmi-r100

Distributor: Lightware Visual Engineering Australia https://lightware.com/

LSC LIGHTING SYSTEMS APS

by Greg Ginger

Greg Ginger is the managing director of Outlook Communications, a Melbourne-based company providing technical services to theatre, events, and venues since 1987. Originally founded to provide superior audio systems for theatre productions, Outlook has grown to include communications and CCTV. Other services on offer include full production and technical management, and cabling infrastructure.

Review

I came to use the APS because both our install clients and our own production stock needed extra power protection. In particular, The Drum Theatre in Dandenong, Victoria, had many appliances including power amps and power supplies for mixing consoles blowing up over a period of months due to mains power fluctuations. I put an APS into The Drum and not a single thing in the audio system has blown since, while other areas of the theatre not protected continue to have failures. I've since installed APS into Her Majesty's Theatre in Ballarat, Reservoir High School's Theatre, and Trinity Grammar's Lecture Theatre.

Power Issues

A number of things can cause power fluctuations. For example, at Her Majesty's Theatre, the street mains voltage is always higher than 240V and has been for as long as I've known. Everything made in the USA is notoriously powered by 110/220V options, and even UK manufactured goods designed to run at 240V weren't coping with the mains at 255 to 260 on occasion. When dealing with the venue back in 2002, many amps and their mixing console blew up. We put in new English-made amps, and when we came back for the first maintenance check, all of their power supply capacitors had swollen.

When running on generators, over voltage is a common problem. I've had situations where phases have gotten out of balance on generators and caused differences in voltage. Loose neutrals in systems have caused uneven distribution of three-phase. I've often been called upon to fix these faults because of my electrical background. So, when we're running off generators at outdoor events, we're incorporating more APS units on our outdoor sports and PA rigs. The biggest risk with generators is unbalanced loads, and voltage ramping if they're capacity isn't big enough. When they fail, going from full load to nothing you can get a voltage surge, and extra protection is worth every cent.

Set Up and Operation

Setting up an APS using the front panel interface is incredibly easy; they're totally intuitive, and the touch screen is great. The APS can also be remotely configured by any RDM controller, and is compatible with LSC's new HOUSTON X software, which does remote configuration and monitoring.

In schools, we set up our APS with a relay closure connected via the front panel GPI input. We put a switch on the wall, and set the APS to turn on one circuit at a time on power up. When you switch it off, we set it to shut down after a time delay.

We set the delay based on a few things – in Reservoir High, the sound power switch is side of stage on the wall, and we created a delay in case of the switch accidentally being pressed during a show. The APS is physically located in the bio box, and when switched off, it triggers an audible alarm warning you it's going to shut down. The operator in the bio box can abort shut down via the screen on the front panel. You can set power down times from instant to an hour, in one minute increments.

As our nominal voltage is 240V, I set each circuit on the APS to turn off when it hits 5% above or below voltage. We have not had an issue where that's stopped a show.

Improvements

About the only improvement I could suggest for the APS would be the ability to set each circuit to power down in sequence; the opposite of its power up sequence, for example. That could be an advantage, though power-down sequence is not as critical for audio systems as it used to be, as most modern gear is designed with proper non-collapsing power supplies.

Support

Service and support from LSC Lighting Systems is fabulous. We've only ever had one issue with an APS, and LSC techs were out to fix it that afternoon. They also do great tech support over the phone. Located in Melbourne, being able to walk into their service department is great.

Product Info: http://www.lsclighting.com/products/power-distribution/aps

Distributor Australia and New Zealand: LSC Lighting Systems http://www.lsclighting.com/

The Specs

- RCBO – circuit breaker with earth leakage protection (RCD/GFI) for each circuit
- RCBO breaker also provides Neutral Disconnect function
- Staggered power-up of outputs to prevent overloading of supply feed breakers (cascading of multiple units is also possible)
- Control via DMX512 – presence detected turns outputs on and loss of DMX turns outputs off after a preset time delay
- Control via GPI contact closure
- Control via RDM
- Cascading start-up for individual units via XLR5 cabling and/or based on unit number
- Manual override via front panel
- 10A, 16A and 25A variants
- Operation on any mains voltage in the range of 100-240V per phase
- Monitoring of input voltages (3-phase), frequency and currents
- Programmable over-voltage and under-voltage trips to protect loads
- Voltage and current reporting via RDM
- 3-phase operation
- Single-phase operation possible but input current must be limited to 63A in total

SPLENDID ISOLATION

by Duncan Fry

So here we all are in government-imposed isolation at home.

Whether voluntary or thrust upon you, we've never had so much time at home and so little to do with it. Can't go out except in strictly controlled circumstances, can't catch up with friends. What can a poor boy (or girl) do? There are only so many TV series that you can stream before you get the screaming ab-dabs, as my nana used to say (MAFS viewers, I'm looking at you) and run around the house waving an axe.

So what should we do with this enforced spare time? Well, even though we're self-isolating, we can always turn the computer on and learn a new skill of some kind, thanks to the largest ever repository of knowledge at our fingertips - the Internet.

Maybe learn a language perhaps? Hmm; (drifts off, staring at the ceiling ...).

When I was a very young Pom my parents sent me off to boarding school, while they wandered around Europe on the hippie/artist trail, ending up on the island of Ibiza. The boarding school was a small, windswept penal colony on the north coast of Wales, where I promptly came down with a nasty bout of pneumonia, ending up in hospital wheezing my lungs out in an oxygen tent.

My mother screamed blue murder when she heard of this, and promptly yanked me out of the school and made sure I was on the next plane to Spain, to recuperate in the warm weather. At the time Ibiza wasn't the party island for the disco dregs of Europe, as it is now, but a sleepy little island. It had no airport, so my plane had to land in Mallorca, and I hopped on a fishing boat to get me from there to Ibiza.

Once there, my mother enrolled me in the local school and after a few weeks I learnt enough Spanish to communicate with the local kids quite well. My QI book of 1227 pieces of Quite Interesting information tells me that in 1958 there were only 12 cars on Ibiza. I'm sure I was there around that time, and I don't recall seeing any of them!

I rapidly recovered from the pneumonia in the warm Spanish summer, and after about 12 months went back to the UK, where I promptly forgot all the Spanish I'd learnt, because that's the thing with languages - you either use it or lose it. Adios Espana.

What about a different language? Probably not French for me – I already have Parisian taxi drivers beg me to speak English when I attempt to engage them in conversation, and not torture their language beyond all recognition.

But what else could we learn while we're in this splendid isolation? Another instrument? Or perhaps learn to play the ones we already have a bit better?

I've always wanted to know how to play keyboards, but I suspect that it's a bit late now. I wish my parents had forced me to learn the piano when I was ten or twelve, but of course they were too busy with their hedonistic lifestyle, wandering round the Mediterranean islands with the beautiful people. And now the appropriate nerve pathways from my brain to my fingers just aren't there. I can channel Chuck Berry but not Johnny Johnson (his piano player as 'any fule kno').

But if you want to learn something, then it's a given that someone, somewhere, will have a video on YouTube showing you how to do it. Or more correctly, how they do it, which is not quite the same thing! From stuffing a Turducken to rebuilding a Jaguar engine to making a croquembouche, there's someone who wants to tell you how to do it.

Still, that's the wonderful world of YouTube. Click your mouse in there and you'll be sliding down the rabbit hole of video lessons, and you might not come back for several hours. There are just so many good, bad, indifferent or just plain terrible people putting how-to-do-it videos up there that I have forced myself to make some rules for them to follow if they want me to watch them.

First - and this is the big one - get to the point within 10 seconds of starting. Any longer, and I'll just click on to the next one. And there's always a next one! Next - know what you're going to say before you say it. Don't ramble on repeating yourself ad nauseam without actually saying anything worth listening to. Don't intro the video with a fret melting shred guitar solo for a minute or so while I'm waiting for you to start. I don't want to see what a great player you think you are, unless that is the subject of the video. Explain the level of viewer you're aiming it at - I already know the string names, how to tune the guitar, and which fret is which. Lastly - use a bloody tripod. They're not expensive, and will go some way towards stopping me bringing up the day's takings while I try to watch the jerky video. Leave the hand-held 'WobbliCam' for arthouse movies. Please.

Seriously though, something like YouTube is a goldmine of information just waiting there for you. Unfortunately, like a real goldmine there can be an awful lot of crap to dig through before you strike it lucky!

When I first started to learn guitar there was no Internet, no YouTube, no computers even! I sat down for a week during the Year 10 school holidays with my Canora semi acoustic (m-m-m-my Canora) and little Jansen amp, a basic chord chart, and listened to the Rolling Stones' first album until I could play along with it all the way through. The key that each song was in is still scribbled on the back cover to remind me. By the time the holidays had finished, I had found some like-minded school chums and put together a band to play at all the school parties.

These days I like to watch video reviews of guitars, amplifiers, effects pedals and similar, just to keep updated on what's new, as well as lessons on how to play a particular riff. At the moment I'm watching several people's ideas on how to play the opening riff of Creedence's 'Fortunate Son' in various keys. It's a popular riff in many songs, from ZZ Top's Sharp Dressed Man to Patti Loveless' Blame It on Your Lyin' Cheatin' Mean Mistreatin' Cold Dead Beatin' Two-Timin' Double Dealin' Lovin' Heart. And all points in between.

As well as keyboards, I always wanted to learn to play the saxophone, but once again that ship has sailed! However, there are lots of songs that just need a little blast of sax now and then, and I thought that there must be a way I could get that effect without having to go through the time-consuming effort of actually learning to play the sax.

A damaged alto sax at a rock bottom price was the answer to my quest. It had no mouthpiece, but it didn't matter since I bought a 'professional' stainless steel kazoo and gaffer taped it into the hole where the mouthpiece should go. It worked like a charm and plays in any key I want, without having to learn any of that messy fingering. No need for any YouTube lessons either!

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