



MONTHLY TECH NEWS

CX135 APRIL 2018
\$7.50 AU

▶ **Handa Opera on Sydney Harbour** Tracking the Light Fantastic

▶ **Mamma Mia**
The ultimate feel-good musical

▶ **A Blanck Canvas**
White Night and Beyond

▶ **Meyer Sound's**
Australian Charm Offensive

NEWS:

- The Basement To Close
- Good News for Hills
- Positive Change – Listen Lists and Women in AV
- New Gear

REGULARS:

- Andy Stewart
- Simon Byrne
- ACETA
- Duncan Fry

GEARBOX:

- High End Systems
- Sola Frame Theatre
- Roland V-60HD

ROADSKILLS:

- Ed Sheeran
- Eskimo Joe and the SS0
- Hot Dub Wine Machine

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LISTEN
TECHNOLOGIES

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The Robe R&D team worked with Osram to provide a 470W lamp that aligns perfectly with the cutting edge optical system. This design provides a brilliant, crystal clear, razor-edged beam, adjustable from a punchy 1.8 out to a wide 42 degree zoom.

Both static and rotating (glass) gobos produce precision in-air effects or projected images with a sharp, high-contrast, flat field.

The newly designed effects engine can produce 12 varying beam and 'flower' effects. The beam can also be shaped using innovative shutter emulation, further creating a whole new blend of content & creativity.

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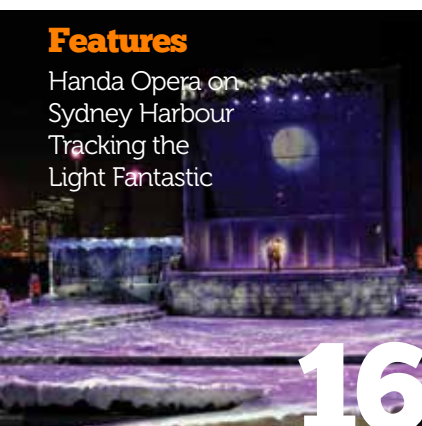
CX ⁺ 135 2018 contents.



42

Features

Mamma Mia
The ultimate feel-good Musical



Features

Handa Opera on
Sydney Harbour
Tracking the
Light Fantastic

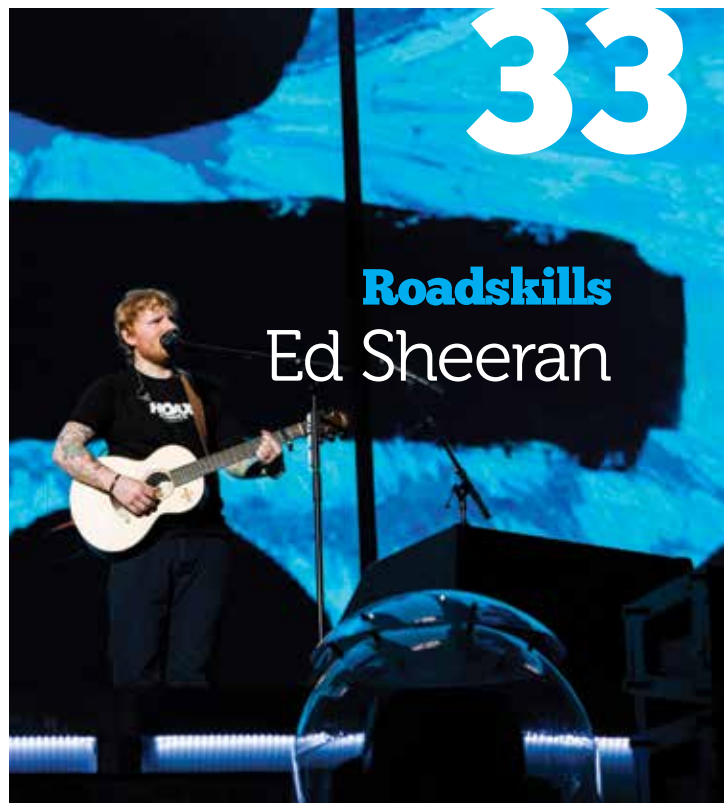
16



Features

A Blanck Canvas
White Night
and Beyond

26



33

Roadskills

Ed Sheeran

NEWS

- 06 Adamson Training
- 06 Cat Strom appointed
Associate Editor
- 07 Good News at Hills
- 07 ICC AV issues
- 08 Listen Lists
- 09 Women in AV Australia
- 10 The Basement to close

NEW GEAR 11

FEATURES

- 16 Handa Opera on Sydney Harbour
Tracking the Light Fantastic

- 20 How It Works - Zactrack's radio
tracking system
- 26 A Blanck Canvas
White Night and Beyond
- 30 Meyer Sound's
Australian Charm Offensive
- 42 Mamma Mia
The ultimate feel-good Musical

REGULARS

- 22 Andy Stewart
Reverb: The Cure and The Curse
- 24 History
5, 15 and 25 years ago in our pages
- 59 Simon Byrne
Batteries - Get Intelligent!

- 56 ACETA - ACETA Inaugural
Convention
- 62 Tech Tips
- 65 Duncan Fry - Throw that
stuff away??

GEARBOX

- 46 Roland V-60HD
Video Switcher
- 52 High End Systems
SolaFrame Theatre

ROADSKILLS

- 33 Ed Sheeran
- 38 Eskimo Joe
- 40 Hot Dub Wine Machine

• Cover photo: Prudence Upton

Published by Juliusmedia Group Pty Ltd ACN
134170460 under licence from CX Network
Pty Ltd ACN 153165167.
Locked Bag 30, Epping NSW 1710 Australia
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Email mail@juliusmedia.com

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Layout: TIZAdigital by Karla Espinosa, Yelina Pino

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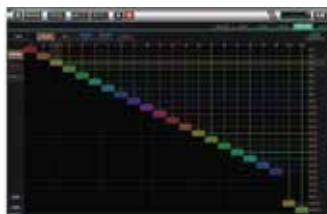
Big D - The new GUI for larger 1080p screens. With this new display you have a choice of running Gain inputs, EQ and dynamics or sends along with the usual faders and meter display.



4 Extra DSP Channels - The new channels can be patched as returns from USB DAW or LOCAL inputs (to double up on inputs for example).



Automix - The Ui24's Automix function increases gain for 'talking' mics and reduces gain for others on the fly, keeping the amount of total gain constant & creating a clean mix.



New Matrix Patch Window - You are now able to touch the matrix point you want joined or press and hold the point to remove the patch allowing for a faster patching experience.



Subgroup Ducker/Side Chain - The trigger for the compressor/limiter in the Subgroup section of a Ui24R can be assigned to any other subgroup that's before the one being used.

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Adamson

to deliver **Applied Certification Training** in Melbourne

Following the November 2017 sell-out of the Sydney Adamson System Engineering Applied Certification course, CMI Audio is pleased to announce that places are open for the Melbourne course to be held at CMI on the 2 and 3 May 2018.

The Adamson System Engineering Applied Certification course is designed to instil the foundations required to properly design, deploy and control an Adamson loudspeaker system with a focus on the Adamson Blueprint AV software, S-Series and E-Series speaker enclosures.

Over the two days, attendees will have the opportunity to learn fundamental skills, as well as tips and tricks to deploy an Adamson System and gain an understanding on the technology that provides the backbone for these systems. Book early as places are limited.

To be held on 2 and 3 May 2018 at CMI Music & Audio, 30-38 Export Dr, Brooklyn, VIC, 3012. To book please email adamson@cmi.com.au or contact Garry Farmer on 0413 055 549 or Lee Stevens on 0413 0555 39. Cost per person \$180.00 - includes daily lunch.



CAT STROM

appointed Associate Editor of

CX MAGAZINE



Having just taken the reigns of CX Magazine as Editor-in-Chief, Jason Allen is pleased to announce that he has appointed Cat Strom as Associate Editor. Cat's long experience in entertainment technology and deep connection to the lighting industry as a co-founder of ALIA means she brings an invaluable perspective to the editorial team. Cat will help shape the direction of the magazine as both a contributor and sub-editor, helping CX create content relevant to everyone in the industry.

Known for her regular 'Roadskills' stories in CX, Cat has run her own entertainment technology PR company since before LED in entertainment

lighting. A regular fixture at concerts, Cat can often be found sneaking in some tour catering before a show.

In a previous life she toured Europe with a few big name acts, worked for Celco (who remembers them?) and thought PARs and coloured gel were the height of technology.

Having written for all the major entertainment technology publications in the world, Cat has contacts second to none and enjoys bugging every single one of them. Lurking at many overseas tradeshow has reinforced many of these connections as many industry professionals are quite frankly scared of her.



Williams Sound International Business Consultant Doreen Ingebrigtsen (right) presents Hills Brand Manager Michael Carman (left) and Hills CEO David Lenz with the 2017 Outstanding Sales Growth Award.

SOME GOOD NEWS AT HILLS!

Williams Sound, global designer and manufacturer of wireless communication technology, celebrated its 2017 international sales award winners at ISE 2018 in Amsterdam. Winner of the 2017 Outstanding Sales Growth Award was Hills Limited, exclusive distribution partner for Williams Sound in Australia.

"Last year was pivotal for Williams Sound and Hills," noted Doreen

Ingebrigtsen, international business consultant for Williams Sound. "New product was launched, multiple training events hosted and continual sales growth experienced. We are proud to recognize the new Williams Sound Brand Manager Michael Carman, and we also thank CEO David Lenz and the entire Hills team for their support and exceptional sales efforts. We look forward to continued success in

growing the Williams Sound brand, and furthering our collaboration with Hills in 2018."

Added Ingebrigtsen, "A hearty congratulations to Hills on their achievement. We at Williams Sound are very fortunate to have such talented people to work with in the territory."

ICC Sydney gets \$1m AV top-up after design falls short



ICC ballroom

Sydney's International Convention Centre (ICC) has just spent over \$1 million on additional AV equipment, barely 18 months after opening as a fully equipped venue. The centre comprises trade show halls, a convention centre, and a theatre venue to replace the Sydney Entertainment Centre.

The NSW Government shocked the events industry in 2012 by announcing the closure for three

years and replacement of the Darling Harbour Convention Centre and the 12,000 seat Sydney Entertainment Centre. Touted as a major step towards competing against regional centres like Singapore, a 'Public Private Partnership' (PPP) financial model was created by Capella Group where a developer would design, construct and manage the new facility – in exchange for any excess land.





Lend Lease won the contract, with a design that shoehorned the new ICC and the ICC Sydney Theatre onto the previous footprint of the Darling Harbour Convention Centre – leaving the entire Sydney Entertainment Centre and its carpark open for apartment development. That development, known as Darling Square has enjoyed buoyant sales.

The State Government in exchange obtained the new ICC as a turnkey facility, at no theoretical cost to the tax payer. It gave over critical design and construct details to Lend Lease, who had a responsibility to their shareholders to spend as little as possible on the build.

Somehow the State Government neglected to mandate Lend Lease spend their money

on Australian steel, and the subsequent deal to buy Korean (Hyundai) pissed off the local steel industry, which needed all the help it could get.

With the apparently cut price ICC now built and open, deficiencies are plain to see. The ICC Theatre has attracted widespread audience and audio engineer derision, with poor acoustic finishes and sight-lines. The Convention Centre has a large 2,000 square metre exhibition space known as 'The Gallery' where inadequate floor loading prevents access by fork lifts. Other shortcomings relate to cabling, fit-out, and overall design.

For evidence of design failure, look no further than the long outdoor ramp on the facade of the facility. It features a short

step every 30 metres – making it impossible for wheelchairs.

While Lend Lease are enjoying mission creep over at the old Sydney Entertainment Centre site, selling everything they are building, (see the coloured buildings on the diagram) the city has gained little. There are more ballroom and meeting room spaces, and around 25% more trade show hall – albeit split into two levels, one with unpopular columns. The ICC Theatre is much smaller than what it replaced, and now needing expensive acoustic treatment and proper IMAG projector placement.

The PPP was skewed in favour of the developer.



LISTEN LISTS

— SUPPORTING CHANGE

LISTEN is a Melbourne-based feminist organisation dedicated to initiating and fostering change in the music industry, promoting the visibility and experiences of women, gender non-conforming and LGBTQIA+ people, people of colour, Aboriginal and Torres Strait Islander people, people with disabilities, and other marginalised folk in Australian music.

'LISTEN Lists' is their new project to build and distribute a database of women and gender non-conforming people in

the music industry, and confront the 'we couldn't find a woman' excuse head-on. LISTEN Lists aims to subvert the 'go-to' culture that continues to allow men to dominate key areas of the music industry. Through creating a series of live databases with women and gender non-conforming people's work and contact details, LISTEN Lists will create opportunities for more paid work, gaining experience, and accessing mentorship. Their first port of call in the series is audio production and sound engineering.



If you are a woman or gender non-conforming professional working in any area of sound, including live mixing, mastering, studio recording, studio mixing and more, go to <https://www.listenlistenlisten.org/introducing-listen-lists/> to learn more and add yourself to the list.



Women in AV Australia



Coinciding with International Women's Day on 8 March was the launch of Women in AV Australia - a group that unites and supports women working in the audio visual industry. Women in AV Australia has been established with a mission to empower and unite female audio visual professionals. Through positive and powerful messaging, it aims to increase the number of women working in the industry, reduce the gender gap and address the skills shortage in AV.

The group has launched its community Facebook Page - Women in AV Australia (www.facebook.com/womeninav.australia) - as a forum to provide communication, education and networking. Its goal is to connect and support women currently working in the industry, and ultimately encourage and inspire more girls and women to develop a career in AV.

Driving the group is Toni McAllister from AV1 who says; "I hold firm to the notion that 'you can't be what you can't see' and currently due to the under representation of women in the industry, young girls are not encouraged or inspired to work in AV. We need to create a platform where women in the industry can unite and connect with one another. And we need the support of both genders to see change happen."

Mathew Haynes, Technical Manager at International Convention Centre Sydney says "Being part of a driving change to create more gender diversity within the industry is an exciting opportunity. We need to change the mindset around how we as an industry appeal to the younger demographic, especially females, in order to drive this great industry forward."

Fundamental to the success of the group will be pairing the Facebook Page with face-to-face events.

"Connecting with one another in person will be imperative to creating a truly supportive and connected community", says Toni. A launch event will be announced shortly.

The group has the support of a number of companies across the industry all working together including AV1, Scene Change Australia, AV 24/7, International Convention Centre Sydney and AVPartners.

To be a part of Women in AV Australia, follow the group on Facebook or contact Toni to get involved on (02) 8310 0309 or at toni@av1.com.au



THE BASEMENT TO CLOSE. AMP AGREE TO END LEASE

Basement co-owners David Wallace and Dom Robinson (Photo: MiSociety)

Sydney music club The Basement is set to close in late March, after negotiations to sell the venue failed. Landlord AMP Capital said they had agreed to end the lease early. The Basement faced trading difficulties. Saddled with an astronomic rent north of ten grand a week, the venue needed a lot of sales to turn a profit.

Its closure was announced by a musician on Facebook, potentially killing any last-minute reprieve. A day of rumour and uncertainty followed until AMP confirmed the closure later on Monday 26 March.

Beyond trading difficulties CX understand there was friction between the partners who bought the venue in 2015 – restaurateur Dave Wallace and lawyer Andrew Robinson. Wallace runs the successful Opera Kitchen at Sydney Opera House. Under his guidance the food and beverage offerings were improved, much of the Basement turnover came from dinner and show packages seating 200 patrons, and the venue then did well from the bar for a further 200.

Originally established 45 years ago, the venue has operated most nights and was booked by Nathan Farrell. It has a program booked well into the year, all of which will need to be cancelled. The current location near Circular Quay is the second location for the venue.

Hosting many of the major names in music, The Basement is beyond iconic. It has traded well when the program is right, but in recent years struggled to find enough success. It boasts a custom designed PA system that was acclaimed by most users and which delivered a full band mix – and more than enough onstage fold back.

Ironically, the day the closure leaked was the same day reports emerged of the scope of a NSW State Parliament inquiry into the state of the music and arts economy.

Committee member John Graham, Upper House MLC, told Fairfax: “In the city of Sydney area we have lost 61 per cent of venues over 10 years”.

“It’s our oldest licensed music venue,” Mr Graham said of The Basement. “It’s a fantastic venue. My question, though, if this was London and they have had these sorts of problems with venue closures, this would be declared an asset of community value and protected.”

“Is this the sort of approach which has been considered in NSW? Have we looked at London and the approach they have taken?”

Music NSW made a submission where they described as the “alarming” state of live music attendance.

“What used to be considered a thriving industry in NSW is now often derided — not just by local industry and audiences in NSW, but across Australia and internationally,” managing director Emily Collins told Fairfax.

“The overarching perception is that we’ve killed off our industry, there’s no thriving scene here, and you’re better off moving somewhere else that actually supports and appreciates music.”

In other ominous news, Playbill Venues are anxiously awaiting the results of a tender to renew the lease over the Hordern Pavilion, Sydney’s only 5,000 seat live venue. The historic building is slated for a fresh lease from August 2019, and Sydney Swans Football club are believed to want the building as their HQ.

Which would further decimate live music in Sydney.

01

APART AUDIO KUBO

Apart Audio's KUBO is the result of the increasing market demand for stylish and more subtle design audio products. The KUBO Series comes with a 3" full-range driver unit or 5.25" two-way loudspeaker system and bass reflex port providing a dynamic bass response. Both sizes are available in an 8 ohm version or a T-version with a rotatable 70/100 volt power tapping selector, with 16 ohm connection. The KUBO cabinet will blend audio in with any kind of interior, adding elegance to each and every architect designed environment.

Australian Distributor: Amber Technology
www.ambertech.com.au or (02) 9998 7600



LISTEN TECHNOLOGIES AUDIO EVERYWHERE 02

An affordable and reliable way to meet ADA assistive listening requirements, the Audio Everywhere system from Listen Technologies connects to your existing internet service and streams audio directly to users through the mobile app. The MX3-4, MX3-8, MX3-12, and MX3-16 server models have four, eight, twelve and sixteen inputs respectively, while the MX5-1 server has one stereo analogue and one stereo digital audio input. The system can connect up to 150 client phones and tablets, with a "plus" version available that can handle up to 500 clients.

The Server takes inline level inputs, converts them from analogue to digital, compresses and packetises them and streams them out over Ethernet to the enterprise's Wi-Fi access points and from there to iOS and Android phones provisioned with the free



Audio Everywhere from Listen Technologies App. Each client phone or tablet uses less than about 175 kbps of local bandwidth and this number can be reduced with more compression if required. Typical latencies are a fraction of a syllable, depending on the access points and phone model. When connected to the Internet, the system is managed from the Audio Everywhere from Listen Technologies Cloud Server via a browser interface.

Australian Distributor: National Audio Systems
www.nationalaudio.com.au or 1800 441 440

03 CHAUVET DJ



EVE P-150 UV

EVE P-150 UV is a blacklight cannon fitted with 40 UV LEDs emitting 150 watts of blacklight power. The unit is designed without a fan and its silent operation combined with its flicker-free output make it ideal for video use. Its included interchangeable magnetic lenses alter the beam to desired angles and it comes with a built-in gel frame holder and 6 3/4-inch accessory slot to hold barn doors.



EVE P-140 VW

The EVE P-140 VW is a variable white wash light featuring cool white, warm white and amber LEDs. EVE P-140 VW is a D-Fi USB compatible fixture providing the option to control the fixture wirelessly in master/slave mode or with DMX control.

Australian Distributor: Audio Visual Engineering
avcorp.com.au or (03) 9706 5325



EVE P-130 RGB

The EVE P-130 RGB is a robust RGB wash light designed for mobile lighting entertainers. Interchangeable magnetic lenses are included to alter the beam to desired angles. It is D-Fi USB compatible for wireless master/slave or DMX control.

04 DIGITAL PROJECTION E-VISION LASER 5000 WUXGA

The E-Vision LASER 5000 is a compact single-chip DLP projector offering 20,000-hours of stable and near maintenance-free imaging performance. The E-Vision LASER 5000 is suited for applications requiring a bright and dependable solution while meeting prudent budgetary requirements. Being laser illuminated, there are never any lamps to replace, so long-term cost of ownership is near zero. Digital Projection's MultiAxis capability allows the E-Vision LASER 5000 to be oriented in nearly any position for installation flexibility and application creativity. To assure simplicity, the E-Vision LASER 5000 includes a standard zoom lens and a multitude of connectivity options.



Australian Distributor: Amber Technology
www.ambertech.com.au or (02) 9998 7600

05 ELATION ARTISTE DAVINCI

The Artiste DaVinci features a new 270W LED Cool White LED engine with advanced optics delivering over 12,000 total lumens, ultra wide 6° to 48° zoom, full CMY colour mixing and linear CTO colour correction, 7 dichroic colours including CTB and Violet, 6 rotating glass and 9 static-stamped metal interchangeable gobos, 3-facet and linear rotating prisms, frost filter, full 360° bi-directional animation wheel, motorized iris, focus, and auto-focus, variable dimming curve modes, high speed electronic shutter and strobe, hibernation mode, DMX, RDM (Remote Device Management), Art-NET, and sACN protocol support, Elation's E-FLY™ internal wireless DMX transceiver, 5pin XLR, RJ45 etherCON, powerCON TRUE1 in/out connections, full color 180° reversible menu display with 6 button touch control panel, battery backup for display power, adjustable LED refresh rate and gamma brightness for flicker free operation for TV and FILM, and a multi-voltage universal auto switching power supply (100-240v).



Australian Distributor: Lexair Entertainment
www.lexair.com.au or 0477 539 222

06 EVENTEC WDMXXLRRXA

Eventec have released their WDMXXLRRXA Wireless DMX XLR Plug Receiver, 2.4Ghz with W DMX protocol. The WDMXXLRRXA is the ideal solution for fast set ups, temporary installations, touring and production situations. It has a 5V DC power supply, a maximum transmission power of 22dBm, and transmits in the 2.402Ghz - 2.480Ghz ISM band over 79 Channels. The unit supports seven channel groups in Gz Mode and six channel groups in ELDMMX Mode, and retails for \$169.00 inc GST.



Australian Distributor: Eventec
www.eventec.com.au or (02) 9897 3077

07 GEFEN EXT-UHD600A-44

Gefen's 4K Ultra HD 600 MHz 4x4 Matrix for HDMI supports 18.2 Gbps of bandwidth and 600 MHz TMDS Clock frequency, the highest specified under the HDMI 2.0 standard. Full bandwidth support allows the EXT-UHD600A-44 to accommodate resolutions up to 4K Cinema-DCI. Recognising that audio is just as important as video, it features analogue and digital audio outputs that break out the audio stream (2 channel analogue, 2 channel PCM, and up to 5.1 channel Bitstream) from each HDMI source, allowing the de-embedded audio content to be sent to external amplifiers.



Australian Distributor: Amber Technology
www.ambertech.com.au or (02) 9998 7600



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08

HITACHI LPWU9100



Hitachi has announced the LPWU9100 10,000 lumen 1-chip DLP laser light source projector. The new laser diode light source offers approximately 20,000 hours of operation time and is maintenance free. It can provide 24/7 use for digital signage applications and suits large auditoriums, conference rooms, museums, and concert or stage productions. With 10,000 ANSI lumens light output and 20,000:1 contrast ratio, the LPWU9100 runs at WUXGA (1920 x 1200) resolution, has motorised zoom, focus and lens shift, and is covered by a 5 year or 20,000 hour warranty (whichever comes first).

Australian Distributor: Hitachi Australia
www.hitachi.com.au or (02) 9888 4100

09

MARTIN MAC ENCORE PERFORMANCE



A whisper-silent, full-featured, LED moving head that delivers levels of light quality and consistent operation never seen before in an LED-based stage lighting unit. Designed to produce premium white light in a wide variety of applications where critical lighting is required, MAC Encore Performance is available in two dedicated colour temperature variants: WRM for 3000 K warm incandescent emulation and CLD for crisp, 6000 K neutral daylight.

Australian Distributor: Show Technology
www.showtech.com.au or (02) 9748 1122

10

SONANCE PS-C43RTLTP

The Sonance Professional Series PS-C43RTLTP is a 70V/100V/8 Ohm selectable In-Ceiling Speaker that features a shallow 3.43" (87mm) construction for installations in restricted spaces such as beneath HVAC ducting or in 2'x4' stud bays. It also features a one-piece bezel-less grille that is magnetically secured and allows for a one-step painting process to simplify installation and minimise visual distraction. The optional Square Grille Adapter allows speakers to match the aesthetic of square downlights and HVAC grilles to achieve continual sight lines, as well providing an excellent solution for in-wall installations.



Australian Distributor: Amber Technology
www.ambertech.com.au or (02) 9998 7600

TMB PROPLEX EZ-LAN

11

TMB ProPlex EZ-LAN makes today's complex show networking easier and accessible for everyone. These simple to operate Gigabit Ethernet switches distribute up to four discrete networks – lighting, audio, content, server, console, or communications. Users untrained in the complexities of managed networking can easily isolate networks and access and change VLAN assignments with a single button press. With 16 ports assignable in up to four separate groups, EZ-LAN is designed and built to withstand life on the road.



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www.lexair.com.au or 0477 539 222

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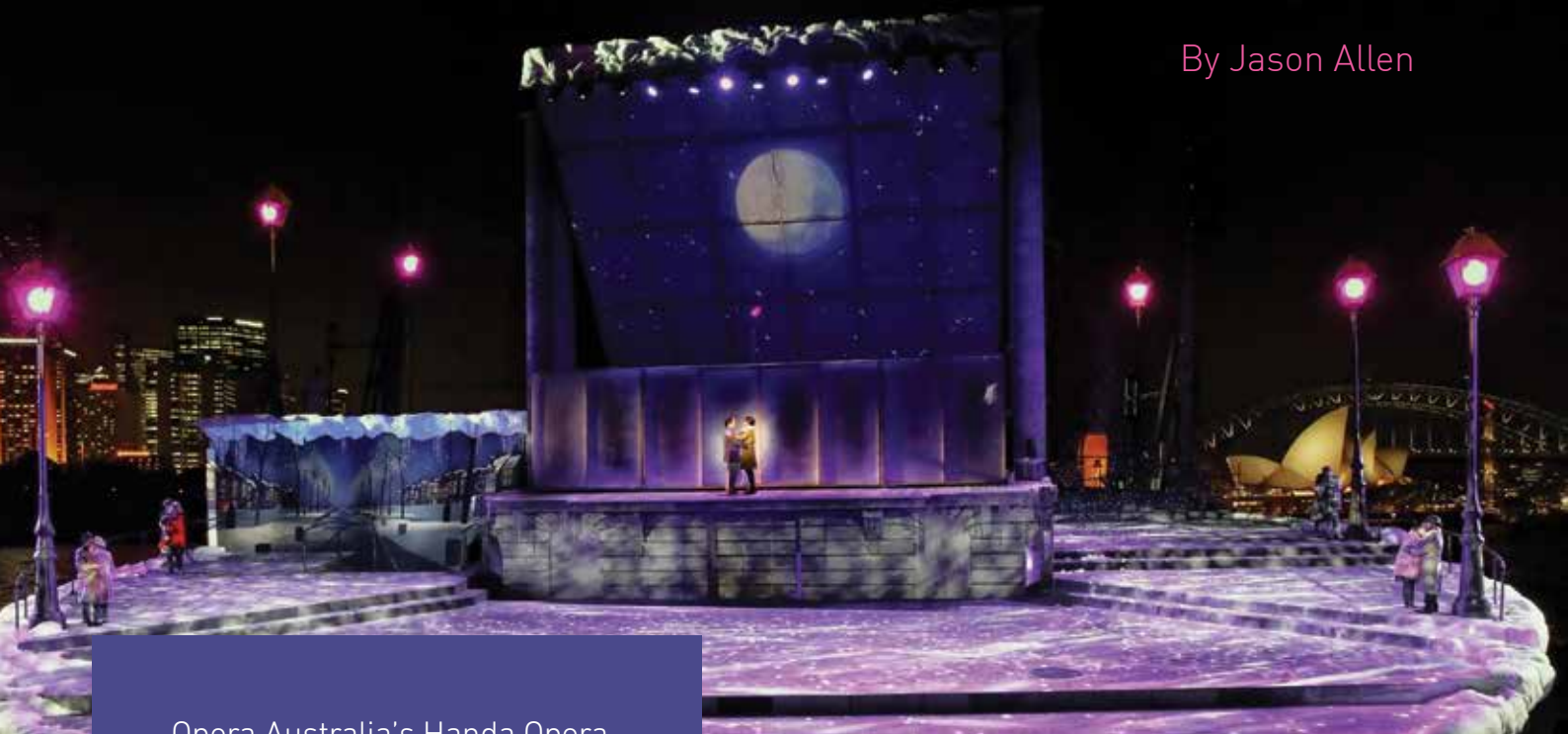


www.claypaky.it

Track The Light Fantastic

Radio Tracking on *La Boheme*

By Jason Allen



>> Ho-Yoon Chung and Iulia Maria Dan*

Opera Australia's Handa Opera on Sydney Harbour is always breathtaking, and it takes an army of technicians to handle the complex lighting, sound, and effects infrastructure it needs. In a trial of a new system for OA, this year they employed a Zactrack radio tracking system to partially automate the lighting rig, with spectacular results...

Zactrack is a simple yet powerful system in which small radio transmitters called tags are carried by performers or attached to set elements that beam their coordinates in x-y-z format to a control system (see in-depth Zactrack feature on page 20 for a full-run down). "OA had been looking at Zactrack, and they asked if I was interested in doing a trial on this show," said lighting designer Matthew Marshall. "I've always wanted to do back follow-spots, but never had the budget, so that capability alone plus solving some tricky problems with moving elements made it worth pursuing. We're using it in key moments, but in the end we've used it a lot more than I thought we would."

Fixtures on La Boheme automated with Zactrack include Martin Mac III Profiles, Claypaky Alpha 1500s, Claypaky Sharpies, and Martin Mac Auras. "Normally we have two follow-spots," added Matthew, "but we've replaced them with Zactrack. There's some effects in the show that are only possible with Zactrack. One of the briefs was to be spectacular, and I realised tracking could help us achieve that. We use it in subtle ways as well. For example, in Act Three there's back follow-spot moments where the leads are followed from upstage. It's a beautiful look you can't normally do unless you have two people in harnesses all night standing-by."



Matthew Marshall >>

Custom Parameters

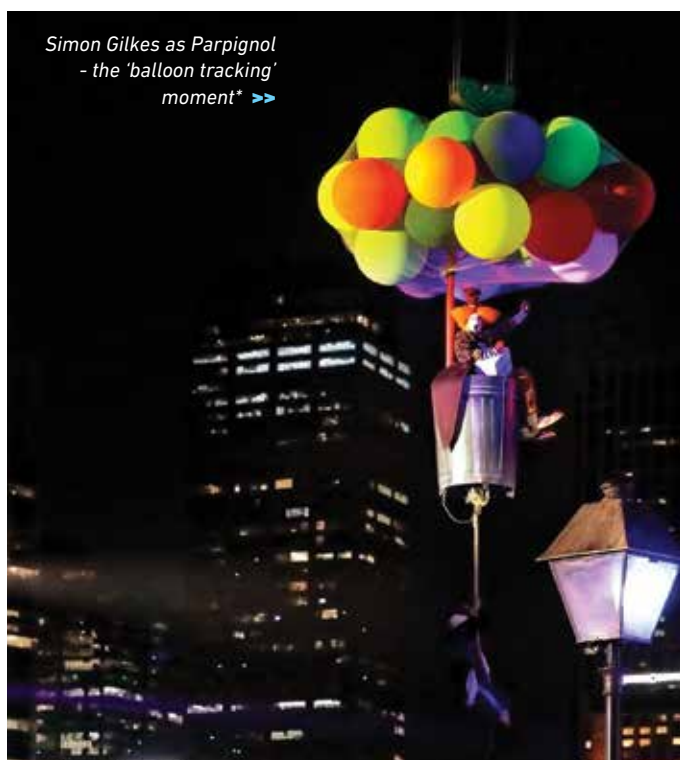


Peter Rubie >>

Working closely with Matthew was Peter Rubie, lighting programmer tasked with getting their GrandMA2, the fixtures and Zactrack to play nice with each other. "For each fixture that can be controlled via Zactrack, I've built a custom fixture profile," Peter illustrated. "We've expanded each profile to include parameters just for Zactrack,

like tag number assignment. As soon as we change the tag number, all the lights assigned change to following that tag. We can offset the x-y-z coordinate values as well. Zactrack centres the light on the performer, but sometimes we want to light from the waist up, or a do headshot, so we change the z offset by 80 centimetres or so. During the moment when there's a performer flown with balloons above them, we offset the z value by a metre to hit the balloons above the performer's tag. It also means we can use one Zactrack transmitter and light multiple targets."

"We've also incorporated other assignments like mode channels that determine what happens if the fixture loses the transmitter," continued Peter. "There's a perimeter defined around the stage, and if a performer leaves the stage and we forget to fade a light out in a cue, Zactrack will fade it out for us. The GrandMA2 is doing a lot of work in taking information from the console, sending it to the Zactrack server, and then getting it back. We send out our data on a lot of different universes, Zactrack listens to that, takes control of all the parameters it needs, and sends the changed data back to us, while passing through everything it doesn't need. The reason we don't go straight out of the desk is so we can keep control of both Zactrack and all of our fixtures."



Simon Gilkes as Parpignol
- the 'balloon tracking'
moment* >>



2.



1. Julie Lea Goodwin
and John Bolton Wood*

2. Julie Lea Goodwin
in the dress that acts a
mirror ball!*

3. Nick Bojdok



Precision Effects

The effect on the show is quite subtle overall, giving the impression that they have a lot of very well-rehearsed domies. "So much of lighting design is about focussing attention down to fine details," observed Peter. "It's such a huge stage; if you have to wash the whole thing to cover faces, you lose so much of the atmosphere. Having more control and more options is really good - there's a moment where we track a car, and we use framing shutters to shape the light into a box that's the shape of the car, so it's not just this big circle hitting the rest of the stage. With precise fixtures like the Sharpies we punch a whole lot of light onto one performer's reflective dress, and she lights up like a mirror ball. Half way through that scene, she does a throwing gesture, and we change the tag assignment and so all the beams instantly all track to another performer."

It's not just the lighting crew who are benefitting from Zactrack's tracking data - scenic video projections are using it to stay focussed too. "We've got three 32K Barco laser projectors on different parts of the scenery being driven by main and backup disguise servers," said Nick Bojdok, Technical Manager for video provider Big Picture. "Some of the scenery is movable, and we've got Zactrack transmitters mounted on them. Zactrack is giving us PosiStageNet data to track them up and down stage, and the disguise changes its mapping. It's simple, and it gets rid of any discrepancies in positioning."



Sound Spatialisation

Meanwhile, sound designer and FOH mixer Tony David Cray is eying the data output by Zactrack for future use by the sound system. "This year, we're just monitoring. Next year we're adding it to the mix," he confirmed. "There's an unreleased kit from DiGiCo that can take OSC data that Zactrack outputs. Panning is only one part of it; we're looking at putting in a spatialisation engine. That science is maturing. Barco's ISONO has wavefield synthesis, but comes with processing delay that is a sum of the width of the system, so when we used it on Carmen here at Handa Opera on Sydney Harbour, we had a large delay on the system due to the size of the auditorium. But d&b audiotechnik's Soundscape and L-Acoustic's L-ISA take a different approach, and their processing delay is down to milliseconds."

Tony is excited by the technical change heralded by 3D audio.

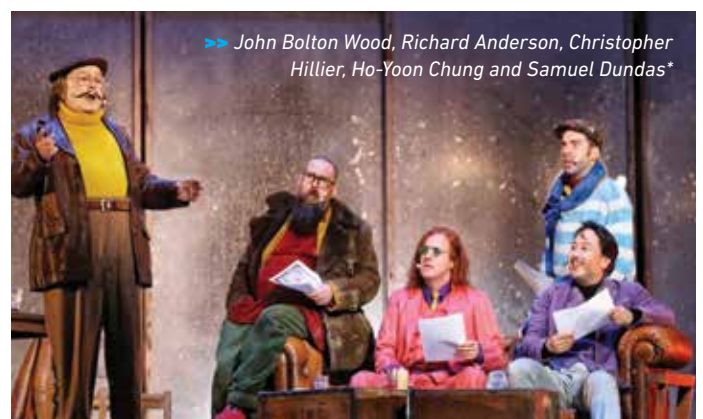


>> Tony
David Cray

"Companies that will survive this change will be the ones that are open to it," he predicted. "I can sit here and write a programme in Max MSP and say, well, for this show I don't always want the actors to come from where they are tracking on stage. Sometimes it's like a film mix, where for a big aria, you want them front and centre sound-wise, even though they might be on the far end of the stage. We're anticipating writing software that sits between tracking systems and the desk, then feeds it to a spatialisation engine."



>> Samuel Dundas*



>> John Bolton Wood, Richard Anderson, Christopher Hillier, Ho-Yoon Chung and Samuel Dundas*



>> Ho-Yoon Chung and Iulia Maria Dan*

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ZACTRACK

How It Works



>> Paul Roch with the CORE tablet interface

With a gig as globally prestigious as Handa Opera on Sydney Harbour, and Opera Australia sizing up the tech for future use, Zactrack CEO Werner Petricek and Project Manager Paul Roch were on-hand in Sydney to make sure the OA's techs had all the guidance they needed. We talked to them in detail about the system...



>> Werner Petricek with a Zactrack tag

Zactrack's transmitters, known as tags, are small rectangular boxes that transmit ultra wide-band radio in the 3-4GHz range. They're low powered, and are in a license-free band with little or nothing else in it in all major markets, including the EU, USA, Australia, and Japan. They're ideally placed high on the performer, under the costume. As it's not line-of-sight like an infra-red system, it can be hidden anywhere except behind significant amounts of metal, which interferes with radio.

The tags run on a rechargeable lithium battery, with a recharging station capable of charging 30 tags at once. The largest amount of tags Zactrack have used on one show is 53, but the system could use more if necessary.

GET ON TRACK

"Zactrack is one of the oldest companies doing tracking," explained Werner. "We've been active since 2005, and have been doing large touring shows since 2009. Tracking itself is tricky, and took us some time to get it to this level where it's now applicable to 90% of situations, and easy for designers to implement. When we started out, we underestimated the amount of math we needed to cope with. We learnt our lessons, and now we have a different idea of how tracking on stages works."

"We divide the task of tracking into three distinct processes," continued Werner. "Creating and receiving the positioning data, doing the math that calculates all of the parameters, and lastly, communications and control. Only when all three parts are right does it work. Every section takes time; calculation time and computing time. It's a lot of prediction mathematics to know where the performer will move next so you can get the light ahead of them, sometimes up to half a second ahead."

ANCHORS AWAY

The Zactrack system's antennas are called anchors. "On a stage production, we typically use a minimum of ten anchors," Werner elaborated. "Having more anchors doesn't make the data more accurate, it's about getting total coverage of complex spaces. For BMW, we once tracked cars through tunnels, and we used 28 anchors. In an open field, six would likely be enough."

Setting up the Zactrack system for lighting tracking is a three-step process – mount, measure, and align. After the anchors have been mounted in the space, their positions are measured using a Leica Disto S910 laser device connected to the same WiFi network as the processor, from a defined zero point on stage. Each anchor has a yellow dot, and the laser is shone onto to each dot to confirm to the system the anchor's position in 3D space.



Leica
Disto
S910

Zactrack
anchor
rigged at the
rear of the
seating area



ON THE NETWORK

Zactrack puck, tag charger, and tags



Zactrack tablet interface



The next step is using the ingenious sensor puck – a small puck with a light sensor built in. Pucks are positioned at four points on the stage where the 3D coordinates are known. They are activated and connected to the Zactracks WiFi network, and each light shone onto the puck four times, taking five to 10 seconds per light. The Zactrack CORE software can then calculate everything it needs to know from that data.

The heavy lifting is done in the Zactrack CORE computer. "It receives the x-y-z coordinates, which are accurate down to plus or minus 5 centimetres," Werner stated. "CORE then does the calculations to get the correct pan and tilt angle of the lighting fixture. To calculate that, it needs to know where the light is and the orientation of the light. From that, it can calculate every position in 3D. On the output side, we support any kind of lighting protocol; ArtNet, DMX, sACN, OSC or whatever else you want. We take the info from the console and can control any moving light on the market. We have found that the accuracy of fixtures varies from manufacturer to manufacturer, and the speed of the fixture is an issue if the performer is moving quickly and stopping fast."

TOUR-PROOF

Werner believes Zactrack is now mature enough for use in almost all production situations. "With new technology, there's always fear and uncertainty," he mused. "We learned there's a difference between having a working piece of technology and it be suitable for use on tour. Tours need to

run for six months, load in and out in 10 hours, and not take too long to align the lights. We can get these systems aligned in around an hour. Zactrack is tour-proof, accurate and fast enough to do lighting, robust enough for bad conditions, works in the dark, and works in the sun."

LISTEN HERE

REVERB: THE CURE AND THE CURSE

BY: ANDY STEWART

You've recorded all the parts, edited them, started getting your mix into shape and now it's time to add some reverb. But your mind starts spinning as you grapple with the endless choices – a hall, a chamber, a gated room or plate? How do you choose between these options and what makes them different anyway? In the absence of a clear decision or proper understanding of what all their crazy parameters even mean, you go with Preset 1 – Large Hall.

Too many mixes go down this path. Everything starts off hunky dory – the recordings are sounding good, the performances epic – but right around the time when you choose your first couple of mix reverbs, the whole vibe of your track seems to wash away like footprints in sand.

The reasons why this happens are varied and subtle, and in reality we could fill a whole magazine with examples and solutions. So let's cut to the chase here and find some answers, fast.

YOU – THE ILLUSIONIST

Reverb is all about creating the illusion of space where none (or very little) existed before. So let's stop right here and ask ourselves a simple question: 'what is the space I'm creating that I'm trying to convey to the listener?'

If you can't answer that right now, do nothing. Don't choose any old reverb preset. Hold your fire until you can imagine the type of space you want your sounds to inhabit.

A couple of brief tips here; often people choose a much bigger space than a song arrangement requires or can accommodate, which can quickly cause the track to 'wash out', especially when it's up-tempo. The trick with many reverbs – though this is by no means a rule – is to have them dissolve to nothing (or at least audibly nothing) before the next fundamental beat in a track. This stops the reverb from piling up and weakening the strength of the rhythm elements.

Also, make sure the reverb isn't too loud in the mix. A little typically goes a long way, as they say. One cool way to check if the reverb you've chosen

sits well in your mix is to 'pressure test' it: turn it up while you're trialling it. If it sounds awesome up loud, chances are it will be good down low too. Conversely, if it sounds wishy washy and mediocre up loud – be brutally honest here – that's usually not the reverb for your track. A reverb that sounds ordinary and confusing when it's turned up will often make for a messy, cloudy and mediocre mix when it's turned back down.

So if you're not convinced a reverb sounds good, keep trialling new ones, don't just settle. In the end, turning your poor first or second choice down low as a method of solving your reverb dilemma is no solution at all.

EARLY REFLECTION & PRE-DELAY

These are two of the key elements of good reverb mixing. Why? Because they're both vital to creating the illusion of physical space, and that's what we're trying to do here: see further into the mix by creating transparency and depth, not make things more cluttered and washed out! Understanding how these two parameters work helps you crack the reverb code and demystify its contribution to your sound.

An early reflection, in a nutshell, is the dominant first response of a reverb. If you were trying to create the illusion, let's say, of a sound in 'a big outdoor setting' the early reflection might represent a flat wall nearby, like a building perhaps. If you've ever noticed an echo reflecting off a wall when you walk down the street, that's an early reflection. It's more obvious than the overall reverb; the dominant 'signature' of the ambience around you.

Pre-delay, meanwhile, unlike an early reflection, is all about the time it takes for a reverb to be energised by a sound source. This parameter separates your dry audio signal from the beginnings of reverb by a certain length of time. A stadium reverb is a good example of how pre-delay functions, and the type of sound it generates.

When you're standing in the middle of an arena there's a clearly defined gap between the sound of your voice and the response from the stadium. The delay is obvious, and cool (unless you're mixing a live band at the time!), and the strange silence between the two signals is the result of a lack of early reflections off the first 100 metres of flat grass between you and the stadium walls. When the stadium does finally 'respond' the sound has by then travelled 200 metres (out and back). Given that sound travels at around 343 metres per second on average, (or 2.913 milliseconds per metre travelled) if you want the lead vocalist in your mix to appear to be standing in such a space, you'll want to set your pre-delay at $2.913 \times 200\text{m}$, or 582.6 milliseconds. The point here is that setting reverb parameters is in some respects about understanding physics and geometry. The parameters aren't just made up; they're designed to help you mimic three-dimensional space.

PICKING THE RIGHT TONE

Ask yourself these sorts of questions about the sound you want to affect: is it spiky and harsh (like a sibilant voice), punchy and bright (like a snare), round and smooth (like a bass) or sustained and full-ranged in its tone (like a string section)? Answering these questions will help you navigate your way through all the options

towards the reverb you require. A long, dark reverb, for instance, might wash out your mix long before a bass guitar energises it. By the time you do eventually hear it in the mix, the reverb will have swamped the track with a tidal wave of sub-harmonics! So too a sibilant voice might only sound worse when patched across a bright hall reverb. Maybe the bass would be better suited to this sort of reverb instead, and vice versa. In most situations (though not always) when you add reverb you're trying to emphasise the sense of space without necessarily exacerbating an instrument's most sensitive or obnoxious characteristics.

DUCKS & GATES

Two other quick tips. Gates can be powerful if you really want a big sound without things getting too messy. Set up the right way, gates allow you to hear more reverb before cutting off (slowly or dramatically) to accommodate the next beat or sound in your mix. In short, gates are your

friend, but if used overtly, expect your mix to start sounding quite '80s. Ducking and side-chaining reverbs by allowing other instruments to influence the tail's shape can be a cool effect too. If a reverb is long, for instance – and you like that – but at times it masks another sound, use that other instrument to duck the reverb. That way the reverb tail won't be so linear in its decay, but rather have steps or holes punched into it. The best way to do this is with the key input of your reverb units, common to hardware and software effects alike.

LUCKY LAST

Four last quick-fire tips: the closer you want an instrument or voice to seem in your mix, and the bigger your soundstage, the larger the pre-delay value of the closest object needs to be for the illusion to be convincing. As things move further back in your mix, they should get a bit wetter overall, but the pre-delay shorter. Things right at the back should be wettest and have essentially no pre-delay,

because the reverb and source should theoretically arrive together, or at least this would be typical of physical three-dimensional space.

If your reverbs are too fizzy, try putting a de-esser across the aux send before the reverb unit. You might like the tonal space of the reverb overall but not its response to bright, transient signals. Knock these on the head on their way to the unit.

Another tip about a reverb's size: what sort of space would you record in if the song you're mixing had to be recorded all at once by a band? Would you really record in a big hall or stadium then? Imagining the preferred recording space can sometimes be a good first visual cue for the type of reverb that will suit your track.

And finally, as a mix develops some of your early reverb choices might become unsuitable. Keep pressure testing them to be sure they're still okay.

That's it, I'm out of... space.



Andy Stewart owns and operates The Mill in the hills of Bass Coast in Victoria. He's happy to respond to any pleas for recording or mixing help... contact him at: andy@themillstudio.com.au



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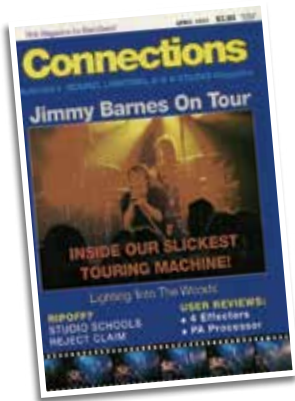
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history

1993: 2013

History, where we look at what the Australian entertainment tech industry was plugging in, listening to and focusing on 25, 15 and 5 years ago this month as reported in CX Magazine.

➤ 1993, Magazine Connections #3 / 25 years ago



Tough times in publishing: ACP's Sonics magazine was cut back to six issues yet we forged ahead, optimistic that the likely support for the arts by a re-elected Labor government would be positive for the ENTECH industry.

Production coverage included the Sydney Gay & Lesbian Mardis Gras; Sydney Theatre Company's \$1.3m production of 'Into the Woods' (Sondheim) lit by Roger Barratt; Jimmy Barnes (on the cover); and Elton John - we spoke with Steve Cohan (lighting) and Clive Franks (sound, with Elton for 21 years).

Technical reviews included the Yamaha D2040 Digital PA Processor and Sony's range of DSP effectors, and for \$1200 you could pick up either a used Optikinetics Terrastrobe & Controller or a fully road-cased Otari 2

track mastering machine. Bandana Systems were advertising their ARX system for hire, as used by The Black Sorrows, Choirboys, Mark Williams, James Blundell, Buddy Guy and the Celibate Rifles.

In Studios, we toured Metropolis and sounded the alarm about the value of studio audio engineering courses: "Most are simply an opportunity for second rate studios to fill downtime," said producer Mark Moffat. Platinum Studios' Jim Mountford commented that one audio course 'graduate' needed 6 months training to reach assistant standard.

Great Mistakes involved a hastily attached tow-ball for a 2SM daytime beach tour in the early 1980s and dealing with superior-minded Melbourne road crews of the era.

➤ 2003, CX Magazine #1 / 15 years ago



Since 2003's March-April edition was covered in last month's column, the following are extracts from the advice section of the issue.

In audio, took a leaf out of a pilot's manual and came up with 'The PA Preflight Checklist', a set of useful lists under the headings Before Power Up, Before System Check, Before Sound Check and System Sound Check, with the following observances: "... A note about 'Room Trip Point'. There are three maximum level conditions we search for when doing a system check. One is amp clipping, we run under that level. Two is where the room acoustic 'collapses'. We call it the 'trip point'. Three is the point of feedback. We run under that level too..." Read more at www.juliusmedia.com/category/history

In LX, we ran a feature on servicing moving lights with advice from Luke Radin, then with Chameleon Touring Systems: "The day we visited Luke, he and his crew were testing and preparing a bunch of older Stage Scans for a hire. Hung underneath a specially rigged and wired sections of tri-truss, each unit was opened up, fired up, tested, checked, repaired and checked for reasonable colour matching of the light output..." And, "Some people advocate the use of compressed air to "blast" the dust out. However, this is not a good idea for two very important reasons. Firstly, all you are doing is "moving" and not "removing" the problem. Secondly, com-pressed air is quite moist and often carries droplets of water ..." Read more at www.juliusmedia.com/category/history



Aaron Chugg

We turned our attention to 'turnkey' production houses, attractive to clients because they supply everything including carpets, backdrops, chairs. BUT the key to success is a good and personable production manager. Cue Frank Madzin who talked us through his approach (including a plethora of Schertler microphones in inventory). In Industry News we reported on a US court case where Chris Isaak's long-time lighting designer alleged serious bullying and phobic slurs on tour (search 'Isaak' on juliusmedia.com to read). Locally, the sale of the Integrate trade-show by Alchemedia Events was another nail in the coffin for large AV trade exhibitions.

In People News, we wished Toni Childs (yes, the American music identity) and Aussie audio guy/ composer Mik Lavage all the best for their true-love-met-on-a-plane future in Byron Bay, and sad news with a vale for Aaron Chugg, a well respected tour manager - just 52 years at the time (poignantly appearing in the March 1993 edition too.)

Live production coverage included the Barry Gibb tour with Howard Page from Clair Bros on FOH (ex-pat BTW), and when Howard offers advice on setting up your digital console for a live show, you might want to follow it. Productions for Garbage and Soundwave rounded out this section.

We profiled lighting designer Tony Youlden, formerly of Strand/Rank and Head of Lighting at NIDA. Some informative notes on early Strand equipment and general LX advice: "Nothing beats a Patt 23 with a gobo you made from a pie tray punched out with a toothpick during your lunch break for a fussy lighting designer."

Technical advice included stage safety and fatigue, 'Lighting for Clubs', and how to mitigate your in-house PA system from being abused and fused by the DJ or the band's mixer-friend - with equipment recommendations. As always, CX advisories aim to save lives, careers and equipment.

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A Blanck Canvas

White Night and Beyond



>> Joe Blanck with one of his creations

A
Blanck Canvas
is a Melbourne-based
company that creates
unique, custom 2D and 3D
artwork. Known for their Melbourne
White Night performances of 'The
Messenger, a 5.5 metre tall humanoid
puppet, March saw them take the
show on the road to Ballarat for that
city's second annual White Night.
Jason Allen dropped by the
studio and into Ballarat to
witness the magic...



A
Blanck Canvas is the brainchild of Director
Joe Blanck, a talented and experienced
puppet, creature and prop designer, builder,
and painter that has worked in the industry
for over twenty years. Joe started his own company
five years ago and has added an exceptionally talented
group of individuals to the team. In addition to puppet
and prop-making wizards, core members of the team
include mechatronics engineers, special effects
professionals, international performers, costume
designers, graphic designers and event co-ordinators.
A Blanck Canvas' clients include the Melbourne
Museum, Jakarta Aquarium Indonesia, Cirque Du
Soleil, Coles, ICC Cricket World Cup, White Night, and
The Victorian Opera.

Following a colourful beginning in the street art scene,
Joe landed work at Scenic Studios, Melbourne. Many
years later, after training under Ross Turner and Paul
Kathner, Joe was painting backdrops and sets for



>> 'The
Messenger' at
Ballarat White
Night



some of the biggest theatre productions to hit Australia. During that time Joe branched out into other mediums such as pavement art, exhibitions, illustration, design, directing, puppet creation, manipulation, and performance. In 2007 Joe finished up at Scenic and began working for The Creature Technology Company, the world leading animatronic and creature workshop behind the 'Walking With Dinosaurs' and 'How to Train your Dragon' stadium shows, and theatre production 'King Kong'.

If You Build It...

For the last three years, A Blanck Canvas has made its home in a warehouse in Coburg. "I spent all my savings setting up Coburg as a shared space where other artists could rent workspace temporarily," said Joe. "I had no money left when we opened here, but we soon got work, and then we



>> A Blanck Canvas' Turtle for Cirque du Soleil



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needed the whole space to ourselves. I've now employed a core team of six for the last three years. The configuration of the space itself changes to suite our different projects – one week it's fibreglass sculptures, the next costumes, then steel sculptures. Everyone is multi-skilled, and our whole building changes to suit our workflow."

"Most of our work is for theatre," Joe continued. "We make a lot of large scale puppets. We also do a lot of work

for festivals, installations for nightclubs, and fibreglass sculpture and suit puppets for movie promotions. We just did a series of big puppets for the Moomba Festival, and we're starting on a contract with Melbourne Zoo to make a series of big creature puppets. We also develop our own productions and performances, which is where 'The Messenger' came from."

Spreading The Message

'The Messenger' is an awe-inspiring, futuristic-looking Archangel. Eight puppeteers activate this puppet which is internally lit with DMX controlled LED lights that highlight the armour-like body. Projections appear on the face, under the hooded head of the puppet, that transition between faces of different ages, genders and nationalities. When extended, the six metre long wings are also projected with dreamscape patterns. 'The Messenger' is operated by a counterbalanced boom-arm chassis weighing about 800kg which gives it the ability to walk as well as fly off the ground. Loudspeakers mounted on the chassis pump out ambient electronic music that synchronises with the projection and lighting components. 'The Messenger' also speaks quotations from a variety of different religious leaders, artists, musicians and authors. "We already knew how to build 'The Messenger' as we'd built a similar character, 'The Don', for the ICC World Cup," Joe explained. "We did the R&D, built the chassis, and then pitched the idea to White Night. They loved it, and funded the rest of the build. It's all run off QLab on a Macbook Pro 15". There's a Cellulon PicoPro projector in the head for the face projections, and the wing projections are handled by Casio Core XJ-V110W data projectors. The soundscape and speech comes through two JBL EON15-Ps and an Alto sub. Six Tec Art Control 4 LED drivers run the 24 metres of RGB LED strip, and the whole thing is run off three lead acid batteries with inverters."

Chrysalis Mass

While 'The Messenger' strode up and down Ballarat's main street, another Blanck Canvas work, 'Metamorphosis' was installed at the edge of the celebrations. 'Metamorphosis' consists of 25 giant cocoons built by A Blanck Canvas in conjunction with The Indirect Object, a puppetry and experimental arts group. "Their creative director Beth McMahon had the idea," related Joe. "We then all pitched in, and came up with interactive, touch-sensitive, light and sound activated cocoons. There are speakers inside them which played sound effects when touched, and a soundscape by Tom 'Soup' Campbell, who worked on 'The Messenger'. The lighting changes colours when touched. We ran it in a couple of small festivals, and it went well, so we pitched to White Night. It's spread over eight square metres and it's a beautiful place to hang out. Next time we'll add deck chairs!"



>> 'The Don' for the ICC World Cup



>> Playing with 'The Messenger' in the studio



>> 'Metamorphosis' lights up Ballarat



>> A Blanck Canvas installation
- The Mushroom Bar

Creative Team

- Joe Blanck- Creature Designer/Director
- Meagan Short- Creative Operations
- Morgan Durst- Steel Fabricator
- Tom 'Soup' Campbell- Sound Design
- Geoff Adams- Lighting Design
- Izumi Pennicott and Jai Hallam- Projection
- Tim Shepheard- Foam Fabricator/ Puppet Maker
- Deiter Barry- Puppet Maker

Puppeteers (for Ballarat)

- Neal Holmes
- Mike Snow
- Jhess Knight
- Nathan Reardon
- Jonathon Macmillan
- Zel Tulloh
- Danny Miller
- Lachlan MacLeod

Tech Team (for Ballarat)

- JLam Nguyen
- Deiter Barry
- Jacob Kyriakidis
- Rennie Watson
- Nick Calver

Stage Manager (for Ballarat)

- Bo Kitty



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>> Group Shot! Meyer Sound and Audio Brands Australia staff with event attendees



Meyer Sound's

Australian Charm Offensive

By Jason Allen

With a new distributor in place, a major new product to show off, and a decent sale to brag about, Meyer Sound staff, including founders Helen and John Meyer, descended on Sydney en-masse in late March with a two-day system optimisation seminar followed by a product launch and meet-and-greet at Chatswood's Concourse Theatre.

The three-day Meyer Sound love-in brought together system techs, consultants, designers, production staff and integrators from around Australia, and Meyer fly out their entire A-Team: John and Helen, Director of System Optimisation Bob McCarthy, VP of Solutions and Strategy John McMahon, VP of Global Customer Engagement Antonio Zacarias, Director of Digital Products Tim Boot, Application Director of Digital Products Steve Ellison, Director of Communications and Artist Liaison Jane Eagleson, Senior Marketing Manager Eve Bryggman, Senior Technical Support Specialist Matt Salerno, and Demonstration Coordinator Joshua Korbel.

Chris D'bais, Business Development Oceania and South-East Asia for Meyer Sound was also in the house, along with new distributor Audio Brands Australia staff including Director Don McConnell and Sales Engineer Jeff Shoesmith. Chris and Jeff had the pleasure of announcing to the house that Wollongong-based CMG AV had just launched as a Meyer Sound Australian Rental House division with the purchase of 36 elements of LYON array, 50 elements of LEOPARD array, 24 1100-LFC subs, 18 900-LFC subs, 16 MJF-210 stage monitors, and 13 Galileo Galaxy processors adding to their existing LEOPARD and 900-LFC inventory. Not a bad first month for a new distributor.



>> Helen and John Meyer at The Concourse, Chatswood, NSW



>> Antonio Zacarias flanked by LINA and 750-LFCs



>> Audio Brands Australia's Jeff Shoesmith and Meyer Sound's Chris D'Bais announce the CMG AV purchase

New Blood

"We're excited, it's a dream for us," said Jeff Shoesmith. "Audio Brands Australia are here to take care of sales, technical and design support, promotion and marketing here in Australia, and in New Zealand in partnership with Pacific AV. We work closely with the Meyer Sound factory, and with Chris D'bais. We are here to support the dealers, integrators, consultants, acousticians, live production techs, and end-users in venues."

With a two-day system optimisation course run by Director of System Optimisation Bob McCarthy behind them, the assembled crowd were treated to a preview of new install products; the unofficially named UP-4Slim, a compact version of the UP-4XP measuring just 109mm x 403mm x 144mm, and the also as yet unnamed Installation Subwoofer, which runs 2x 10" long excursion drivers, and is based on the design of LFC subs. A simple 2.1 system ran in the foyer, and for a diminutive product, delivered a ludicrous amount of power while maintaining Meyer Sound's legendary intelligibility.

New Approach

In the theatre, it was all about Meyer Sound's new LINA very compact line array and accompanying 750-LFC subwoofer. LINA is all about small, fast and easy. It has a 'native mode' in which time-pressed techs can run a single signal to the whole array, daisy chain the boxes, and get up and running in 20 minutes. "You can run one cable to LINA and do a show in native mode," said John Meyer. "That's the future - you don't want to get too complicated. I resist bringing complex sound into arenas as it's too hard to set up. It takes time, and you can't do one-nighters. We've been doing surround a long time - we did it with the Grateful Dead! Surround doesn't make a concert. It's about the music and the feel. Multi-channel surround is expensive. The feeling from the band is what the audience is looking for."

"With LINA you're hearing the legacies of what we've put into it," said Helen Meyer. "The technical aspects inherited from MINA and the LEO family. It's very small, very powerful, and easy to set up, and you don't have to do a lot

of tweaking. It's got so many applications, and that's the way of the future."

Future Spaces

With John and Helen travelling to Melbourne the day after the event to commission a new Constellation system, we asked about their views on the immediate future of spatialisation and 3D audio. "Concert halls that are versatile are used a lot more," stated John. "If you can change the way your hall functions, you can attract young people, and that's the future. We need to find consultants and designers who can see that now, not wait 20 years. This is the virtual world we're starting to create."

"What we've been doing with Constellation is to create rooms that are very natural. We're changing the room, we're not trying to close mic everything; that's what we were doing in the 1970s and you don't get the natural sound of an orchestra. A Dolby Atmos-type solution works for a movie, but what we're doing is more subtle. It's not an effect - we're trying to push the envelope with spaces that don't exist physically. Dolby has already done it, and we need to take the next step."

Future Faces

The appointment of Audio Brands Australia as distributor after the recent dissolution of Meyer Sound Australia has been quick and painless, ensuring continuing support in the region for the brand. "Our team has been working for a long time to see who could work with us successfully in the region," explained Helen Meyer. "It's a marriage of what we want and what Audio Brands Australia want. It felt right. It's all about people and relationships. It feels like we're starting off well."

"You are doing a lot of incredible things here in Australia," observed Helen. "It's not a small market, and it's one of the most exciting. You've got a film industry, concert halls, and a huge touring market. There's a lot happening and we want to be part of it. In coming here for these events, we wanted to reach out and see as many people as possible, to show them what we're doing. We wanted to thank people for their support and say that we're excited about what's happening here. Actually, it is my first time in the country, and it's a thrill to be here!"



>> Don McConnell of Audio Brands Australia



>> The new UP-4Slim



>> L to R - John McMahon, Don McConnell, Tobi Pinazza (CMG AV), Steve Biermann (CMG AV), Helen and John Meyer, Ben Wright (CMG AV), Antonio Zacarias, Aaron Taylor (CMG AV), Chris D'bais



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Ed Sheeran

By **Cat Strom**

Photos: **David Youdell**

Checking your Facebook feed through March seemed like every other friend was at an Ed Sheeran concert. Over one million people snapped up tickets to the singer's stadium trek through Australia and New Zealand, breaking Dire Straits' 1986 record for most tickets sold on a tour of Australia and New Zealand.

After touring the world for several months in support of his latest album ÷ (Divide), Ed Sheeran's Divide World Tour finally reached the Stadium stage with its' debut in Australia. Lighting Designer Mark Cuniffe joined Lighting Director Matt Jones on the tour in order to refine the looks. The show is all about video, with lighting to reinforce the concept and compliment the content. Mark Cuniffe designed a goblet-shaped set, fondly named 'the chalice', working closely with Production Manager Chris Marsh and Jeremy Lloyd from international technical production practice Wonder Works. The chalice comprises five curved video screens (crowns); four lighting crowns which sit in between each video screen and five video screens dubbed 'the ceiling' which sit horizontally above the



stage that have triangular lighting 'pods' filling the gaps. Additionally there are five video screens making up a back wall and giving a continuous 'flow' of video surface from the top header, through the 'ceiling' and down the back finishing at stage level where the video angles back on to the stage.

The structure was engineered by Tait Industries who custom-built the 63 foot wide main stage. Colonel Tom Touring provided the 5mm Roe Carbon tiles which go together with Tait touring standard and custom frames for the curved portions of the set.

The unusual semi-circular structure had several high point loads which were transferred across the grid throughout the build sequence, and used chain hoists that travelled within the truss. The fan shaped mothergrid is lifted by thirty two ton LoadGuard hoists. Rigged within the mothergrid are fifty one ton motors from which fly the lighting trusses and AV screens including four moving lighting pods which drop down on Electric Hoists on Kinesys control during the show. Unusually, the one ton motors remain pre-rigged within the mothergrid in transit between shows.

Moment Factory created ten pieces of video content that use 3D architectural illusion to completely transform the mushroom-cloud shaped stage design. Cuniffe's brief was to move away from traditional IMAG and wherever possible immerse the artist within the visuals created. No small task considering that Sheeran was the only person present on stage. Throughout the concert, live close-up shots of Sheeran layer into the video, giving fans a front-row view from anywhere in the arena. The aim is to bring Sheeran and his music closer to fans without overwhelming his solitary presence on the monumental stage.

Video Director Phil Mead ran two active disguise servers, triggered by ArtNet from MAs. He did have a small MIDI controller for fine controls over the dry/wet for some of the notch effects. A Blackmagic ATEM 2ME switcher feeds two MEs and two auxiliaries to the servers.

For this tour, Cuniffe's brief was to make the stage space really dynamic, so he created an elaborate video set and a



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highly versatile lighting rig which includes 134 Claypaky Mythos 2, 16 Claypaky Scenius Unico Spots, 12 Martin Atomic LED, five TMB Solaris Flares, 24 SGM P-10 Floods, 56 SGM G-4 Beams, two MA Lighting grandMA 2 Full Size, one grandMA2 Light, two MA Lighting NPUs, six Luminex DMX 8 nodes, four Luminex GigaCore 16 Xt switches, four MDG theOne stadium hazers and four Robert Juliet 4K Lancelot follow spots. There is also 10 kilometres of DMX-controlled RGB LED tape that lights the set very effectively.

The four aforementioned moving light pods are on three variable speed motors, which are controlled by a Kinesys Vector system. Each pod holds ten Claypaky Mythos 2 with the rest of the Mythos in the crown, the base and in front of Ed's riser. Claypaky Scenius Unicos are hidden in the mother gird in four trusses of four; when the lighting pods come in, upstage of that are four linear trusses with the sixteen Unicos that shine through the holes. However, you can't see the source as it is rigged eighteen metres high; just the beams.

The Stadium show sees an extra sixteen Claypaky Mythos 2 across the top section referred to as the crown. SGM P-10 washes were added around the walls of the roof to light up the divide scrim that is wrapping the stage. Two delay towers were also added and they accommodate twenty-eight SGM G4 on each.

"It's the same look and structure, although the video panels have gone up an extra panel length of 1.2 metres," said Matt.

Matt commented that the stage and lighting goes in surprisingly quickly, with a rhythm and routine followed. Towards the end of the arena tour they were getting it done in four hours.

At FOH Matt had a networked grandMA2 system to control lighting and playback video. This is not a timecoded show as there is no way to run this show on timecode due to the dynamics of Ed's performance.

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Chris Marsh



Mark Cuniffe

"The running of the show is like Ed – very dynamic," stated Matt. "He's inherently a very fluid performer and obviously strings will break and that needs to be factored into running the show. You can't just let timecode run and carry on, I can't keep doing my cues – I need to wait until he's got himself into a position where he can continue on building the track up on his loop pedals."

Matt further remarked that running the show is very live and that he uses stab buttons, although he predominantly runs it on a cue stack for every song.

"Every song has its own page and cue stack as I like to be able to step to a new page knowing there's nothing running in the background, a clean fresh start for every song," added Matt. "It's easier that way, as I have a set list that is very structured which in some ways isn't how Ed runs but is necessary for the video content. The video content is in sections and is cued on a timeline basis so it's important to have a fairly structured cueing system and I prefer to run that on a cue stack with the stab buttons to add in punches or colour / intensity flashes."

Chris Marsh is not only Ed's Production Manager, he runs FOH and monitors too. "Sometimes I cook as well and I've been known to clean the trucks," he quipped. "Whatever people need me to do!"

When Ed took 2016 off from touring, Chris began planning this show with Mark Cuniffe with input from Ed himself. Knowing there would be a

stadium run after the arena tour, they actually designed a stadium show that could be scaled down to fit arenas.

"It's the first time in the seven years that I have been with Ed that he has taken an active interest in what is going on around him and behind him!" said Chris. "We wanted a show that would be different, would be scalable and would somehow highlight Ed as a solo performer in the centre of the stage. As the rooms get bigger and bigger, this gets harder to achieve as people are further away. Consequently IMAG and video become a much bigger part of the design."

As with previous tours, a Meyer Sound system is deployed with Leo main and side hangs, and 1100-LFC sub woofers flown behind the Leo and on the floor.

"Consistency is absolutely key with Ed, and with the Meyer system I am entirely confident it will sound the same everywhere," explained Chris. "It really does sound good from the farthest nosebleed seat to the front row. We have Lina as front fills and Leopard as outfills, plus Milo as delays. In Australia, Norwest Productions supplied ring delays of Milo and Mica for the hard to get to places at the top of the stadium and they did a brilliant job."

Chris remarked that the stadiums in Australia had all been very different with a variety of roof shapes which come into play with buildup of various frequencies as you get up to the higher stands.

"That buildup of course resounds back

around the whole stadium, this becomes part of the overall mix and we have to adapt accordingly," commented Chris. The biggest difference to the stadium shows versus arena shows is that we can be very happy with the audio as we walk around in the afternoon and really get quite intricately tuned, but it changes drastically in the evening with temperature changes, humidity changes and the people really make a huge difference."

System engineer Charlie Albin tunes with a Meyer SIM 3 audio analyser system to try get the EQ the same throughout the stadium and he time aligns as he goes through that process. Chris then gets a little wild by using actual music to tune the system.

"It's crazy I know, but we use music to tune the system and we walk and use our ears!" he revealed. "It's a radical idea."

A DiGiCo SD7 is Chris' console of choice saying that it has everything he needs on the surface so he can make changes on the fly with ease.



Matt Jones

As with previous tours, a Meyer Sound system is deployed





"With the redundant engine if anything goes wrong, the other engine will take over and we'll still have a show," added Chris, noting that this has never actually happened. "There are less than twenty channels coming from the stage which only derive from Ed's vocal and guitar. I break up channels; for example Ed's guitar comes to me as a single channel but I break it into three parts of low, mid and high sections. That way I can control the sound of the guitar to a much better effect. I end up with over forty input busses on the console from twenty inputs."

Within the console Chris utilises pretty much everything it can throw at him; dynamic EQ, multiband compression, and a few of the onboard effects, especially delays. However there are still a few outboard favourites such as an Avalon 737 on Ed's vocal, an Eventide Eclipse harmoniser for harmonising vocal loops and two Bricasti M7s, which Chris describes as the most natural and wonderful sounding reverb available.

Ed's monitoring is very simple; a long time ago Chris preset some monitor states for different songs and Ed's criteria is that he doesn't want it to change.

"He doesn't want anyone to mix it," added Chris. "If he makes a mistake or he plays quieter, it's because he wants to hear it quieter. He's very dynamic in what he's doing. He builds the mix himself by his method of playing and the last thing he wants is someone to correct him, he needs to hear it as it is. As a FOH guy I find that an easy thing to do and unless there's a major problem I don't touch the monitoring during the show."

Ed has two Meyer MJF-212 self-powered monitor wedges for when he takes his Sennheiser 2050 IEMs out to hear the audience and a pair of Meyer 900-LFC sub woofers onstage for a great feel.

Ed has been using Sennheiser microphones from the very start and switched to Digital 9000 during his 2014 US tour for his vocal, loop vocal and guitar packs.

"For the loop vocal I use an MMD 945 super-cardioid capsule," says Chris. "As this vocal gets looped and repeated throughout the songs I can't risk there being too much background noise, so the tight pickup of the 945 is perfect. Ed's main vocal is a cardioid MD 9235 dynamic capsule which captures a lot of detail. Importantly, it copes very well with being handled heavily and cupped a lot, which is Ed's style."

Ed's live act is synonymous with his customised super loop pedal, and the Chewie Monsta II Looper is the latest version. This custom pedalboard is the hardware side of a dynamic, Ableton Live-based looping system. It allows Ed and Chris to have eight separate tracks of loops dedicated to guitar, vocals, and percussion, which can be treated with different effects like reverb and a harmoniser. With the board at his feet, Ed has complete control over recording, playback, and even undoing a loop if need be. Chewie II also has screens to monitor the program's record/overdub/playback functions as well as showing the time frame of the loop itself. The Chewie II also allows Ed to mute tracks, giving him better control over song structure.

Ed's live act is synonymous with his customised super loop pedal

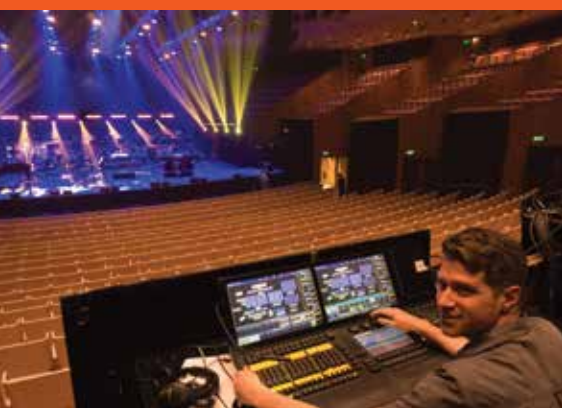




ESKIMO JOE

By **Cat Strom**
Photos: **Peter Rubie**

Eskimo Joe
are the latest
act to team
up with an
orchestra



Before relocating to Sydney, lighting designer Peter Rubie worked for many years in Perth across different production companies and venues. One of the venues was Perth Concert Hall where he eventually became Head of Lighting.

"Perth Concert Hall is home to the West Australian Symphony Orchestra (WASO) so as well as the rock and roll gigs, I had many contemporary orchestra shows to build up experience in lighting both a contemporary artist or band with orchestra at the same time," commented Peter. "Since then as a freelance LD I've worked with many different orchestras Australia-wide who have teamed with a very extensive variety of commercial artists including bands, cabaret singers, opera singers, pop artists and musical theatre. They like the quality of work and the impact the lighting designs have on their shows, but also appreciate someone who knows the classical side of the equation too."

A project two years in the making, the Eskimo Joe Orchestra tour all started with a conversation between Natalie De Biasi (Program Coordinator at WASO) and Catherine Haridy (Eskimo Joe's manager), who agreed that an orchestral collaboration would be a fitting and exciting way to celebrate the band's 21'st Birthday in 2018. Natalie at WASO then commissioned the show, including all of the orchestral arrangements, for the Australian tour. Peter had just come

off a great run of shows with Megan Washington who also toured the orchestras and was put in touch with Catherine Haridy Management.

"They were excited by the concept of coming up with a design that could be used for all three shows so I worked with WASO in putting together the design right from the start," said Peter. "The band were very easy to work with, and after seeing some concept 3D renders I did up for them of the proposed rig, they were excited and eager to proceed."

In Peter's experience, so much of it is about finding the balance between producing a design that benefits the artist and audience experience but also keeps everyone on stage happy. For a show like this we're not just talking about three guys with a few guitars, talented vocal styles and drum kit. There has to be consideration for the 50-plus other musicians on stage too. The shows are often a collaboration, not just 'band X' with the backing of the symphony orchestra. Different orchestras and different musicians face different challenges playing when production lighting is added to their environment, so it's important to make sure everyone on stage can still do their job, while providing dynamic lighting to enhance the audience's experience.

The formula Peter usually follows, aside from covering the musicians from a number of different angles, is finding some lighting positions between the floor and air to enable



him to fill out midair space with colour and beams or texture. With an orchestra, it's a big stage setup with a lot of musicians, so it's important that the space also feels full, otherwise everyone gets lost in the large concert hall spaces.

"For this show it was important to produce a design that felt very rock and roll but also felt full and encompassed the whole stage, so that the orchestra were as much as part of the show as the band," explained Peter. "I worked closely on the design with Alex Spartalis from CCP who provided us a fantastic rig for the Perth show. Alex also works regularly with WASO so having that collaboration was invaluable."

The end result of many discussions was a set of five raked truss fingers that reached out from upstage to downstage giving a canopy of available lighting effects over the whole stage. Some more fixtures were arranged just above head height to fill the aerial space with texture and beams and had the option of kicking back down into the stage for more intimate moments.

The Perth leg had some different fixtures, but for the concert with the Sydney Symphony Orchestra, Peter had twenty Martin MAC Quantum Profiles overhead and nineteen Robe Spiiders. The truss fingers were also complemented with ShowPro Trussmates and a smattering of Duet Blinders. Rigging trusses in this configuration at the Sydney Opera

House comes with a few weight restrictions so fixture weight was a big factor.

"At only 23 and 13kg for the Quantum and Spiider respectively, they were perfect for this job," Peter said.

"Although I would have preferred a brighter profile, the Quantum is a good little workhorse and I'm always impressed by its crisp projection and flat field. Being LED I also don't need to worry about them all being different brightness of lamp life in a symmetrical rig of twenty units which is a relief.

"The Spiider from Robe is my current favourite LED wash light. The flower effect feature is very cool to reveal a couple of times in the show, but tricks aside, as a wash light it outputs a beautiful quality of light with some lovely colours. There are a few other similar lights in its category which try to do brightness over quality. I find they are often too bright and the head produces far too much glare for most looks anyway, so I'd rather a wash fixture that is just bright enough but delivers a better quality of light without needing an aftermarket louver accessory to reduce the glare."

Just above head-height, wrapping around the stage, were an additional six MAC Quantum Profiles and eight Claypaky Sharpys for that rock and roll beam look. Between each of these units was a Sunstrip which, along with the Duets above, provided that all important

tungsten element which you just can't truly emulate with LED fixtures. FOH lighting the orchestra and the band were seven MAC Viper Performance and a bunch of MAC 101 CTs which, according to Peter, make for excellent moving band specials when you can't send someone up there with a harness.

"Fixture choice wasn't as big a problem for this particular orchestra collaboration as Eskimo Joe are quite rock and roll but normally I'm chasing silent fixtures," added Peter. "I'm pleased to see this is finally starting to become a focus from manufacturers and there have been some good options released in the last year for fixtures that are bright enough for shows this size but quiet enough to be used in noise-challenging environments with classical musicians. These shows are often put on in concert and recital halls that have been acoustically designed to naturally amplify a stage of classical instruments. Unfortunately they often amplify fan noise too, so I'm looking forward to seeing larger quantities of these type of units available at the local suppliers over the coming year."

Peter used an MA Lighting grandMA2 light at FOH as both PCH and SOH have these in-house so it made sense for consistency's sake. The show has more life in it yet and is next headed to Hobart with TSO. For this show Peter will tour his MA command wing setup.



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HOT DUB WINE MACHINE

By **Cat Strom**

Photo: Brayden Smith

Sydney's Tom Lowndes, better known by his stage name Hot Tub Time Machine, has gained incredible traction over the last few years touring his time-travelling DJ sets around the world. The winery spinoff, Hot Dub Wine Machine, now in its second year, is the brainchild of management team Falcona, and with a bunch of huge names by their side, the party is proving hugely popular.

Hot Dub Time Machine's concept is a great idea; he mixes tracks throughout the decades with their accompanying videos on the big screen, starting in the 1950s.

Colourblind have been on board since Hot Dub's first headline performances, so were a natural choice as lighting designers and production managers for the festival as it tours the country.

On the road are Claire Casement as Production Manager and Nicholas Beachen as Lighting Designer. Nick's concept for the show is to keep the rig simple whilst being very effective for the touring LDs and himself.

"The brief from the act is simply to match or better the rig from the first time the festival ran in 2017," added Nick. "Currently I am using the same rig with slightly more fixtures in some areas. The biggest addition being custom RGBW letters spelling 'Wine Machine', a simple idea but very effective branding when programmed into the show."

Nick's admits that creating a rig that is scalable between shows is a challenge. They use a different stage for each show on the tour, the smallest being eight meters wide and the largest 22 metres wide between legs, which is quite a difference.

Purposely keeping the stage setup and trussing simple helps with scaling between cities so there are three overhead lighting trusses plus an upstage and downstage row. Each truss simply has six profiles, six wash lights, six beams, six strobes and six blinders.

"Although I do have preferred fixtures I will use anything that matches a type," commented Nick. "I also place dedicated key lights on the front, upstage floor, and downstage sides for ease of use during the show. Hot Dub remains very well-lit throughout the entire show."

Mediatec supplied the Roe Linx18 for the main upstage wall with Nick describing it as a great quality mesh product that goes together very quickly with minimal weight. There are also two IMAG screens of Mediatec X7. Although it's a basic set up, it really looks big and bold and meets the artists' requirements.

Hot Dub also has a custom DJ table with Roe Linx7 on the front which they've been using for a few years now. According to Nick, it's held up to the harsh treatment on tour.

Content for the Hot Dub show is made and controlled by Tom Lowndes himself as part of his show. The rest of the content for the festival came from Colourblind's Green Hippo Hippotizer V4 controlled on MA2. Some artists provided media and logos and Colourblind had some logos and emergency slides produced for the show. However, it's

Photo: Brayden Smith





Photo: Brayden Smith

The rig is
simple yet
effective

mostly just stock background and effects for the day running on Hippo, controlled by the festival console.

Control setup is two grandMA2 with an MA2 network at FOH with one NPU, controlling the rig via ArtNet nodes on stage, with two Hippotizer V4 Portamus are controlled via ArtNet. "However, my favourite part of the control set up is the MA2 console shades we purchased at LDI last year!" added Nick.

There was evidence of a great day had by all as the masses exited through a sea of discarded wine bottles, cans, food containers and picnic rugs, while Hot Dub Time Machine dropped his final track with fireworks lighting up the background and confetti floating everywhere. If the increased scale of this year's event is anything to go by, this is probably not the last we'll see of Wine Machine.



Photo: Pat Stevenson



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Mamma Mia!

The ultimate feel-good musical *Mamma Mia!* is touring the country throughout 2018, having commenced its national tour in Canberra in November 2017 where it was the biggest theatrical production to play at the Canberra Theatre Centre to date.

By Cat Strom



It's one of the most commercially successful pieces of entertainment of all time, having grossed US\$2 billion since its 1999 West End premiere. This Australian production has a completely fresh and new design with lighting by Gavan Swift and sound design by Michael Waters. "The only constant is the story and the score, all the design elements are brand new," remarked Michael, who also did *Muriel's Wedding* last year so is now quite an expert on ABBA's music. "Gavan and I were the new kids on the block as everyone else had a very long and deep relationship with *Mamma Mia!* having done it so many times in the past. My main challenge was integrating with the people who knew the show far better than what I did. Otherwise, it wasn't a complex process. In fact, it was a very enjoyable experience." Unusually, the band are located in a purpose-built room to the side of the stage (inherited from *Matilda*) and Michael has to work out where to put that in every theatre. There are also four vocal booths where the ensemble sing for most of the night- there aren't that many songs where the cast are onstage singing. Michael credits musical supervisor Stephen Amos, who has done over 2000 shows of *Mamma Mia!* and consequently knows the musical intimately, as sharing

his knowledge to get the vocals in the right place at the right time with the ensemble.

"Of course he knows the score back to front too so he had the band worked out perfectly," added Michael. "He was able to secure most of the ABBA keyboard sounds from the original production of *Mamma Mia!* so that was a big bonus for me."



Photo: James Morgan



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Michael had to ensure that the monitoring was easy and uncluttered for the ensemble so that they could come and go easily into their booths.

"In the past I've used headphones which means an awful lot of wires, cabling and twisted spaghetti messes so I decided to go with a fairly streamlined version by using an Audio Technica AT4050 large-diaphragm condenser mic set to a figure-eight pattern," Michael explained. "I added a JBL Control2 as the monitor speaker and had that addressing off-axis to the side of the figure-eight pattern. So if the booth had six people in it, you'd put three either side of the microphone and the monitor would be on the off-axis side, but not bleeding into the mic. It worked out really well."

Audio is supplied by JPJ Audio with the production touring an L-Acoustics Kara system comprising thirty-six cabinets. There are four SB28 subs, 5XTs for front fill and delay speakers, with Michael primarily using thirty six 5XTs as a left, right and rear surround system, although that varies from theatre to theatre. At the



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➤ Phillip Lowe, Ian Stenlake, Josef Ber
Photo: James Morgan



➤ Alan Luggier



➤ Melissa Panettiere

Capitol Theatre there were also eight 108P for the first delay ring and a delay cluster upstairs of four Kara.

"There's no need for a separate delay ring up in the Gods of the Capitol because the Kara throws so well and the intelligibility is great all the way to the back of the theatre," said Michael.

Control was a DiGiCo SD10 with no Waves and just a couple of outboard tc4000 reverbs, with Michael saying he doesn't worry about that Waves stuff! "It's just something else to break, isn't it?" he laughed. "The trickiest thing in the mix is making sure the vocals are good and clear, particularly in the louder numbers because sometimes it can get quite up there in volume. I aim

for crystal-clear vocal quality, which was quite a challenge in Canberra because the theatre was not a very nice sounding room."

The musical has no sound effects at all in the book scenes, although there is some multitrack playback at the start of Act Two in which effects such as vocoder, voices and various iconic ABBA sounds are embedded. There's a lot of noise being sent around the theatre by the surround system and the main PA, which then timecodes to the lighting console with the lights triggered off a QLab system.

For vocal microphones Michael chose DPA 4061s, with the two main leads wearing doubles, with Shure UR1M



micro packs. For the band there's an Audix D6 on the kick drum with a Shure Beta 91, Shure Beta 57 on the snare top and a standard Shure SM57 on the bottom, and Audix D4s around the toms. Added to that are Audio Technica AT4050s for overheads and an AT4050 set to figure eight in between the timpanis.

"I was actually able to use nice condenser mics on the acoustic guitars because the band is in a box and I don't get any spill from anything else," added Michael. "Rather than using DIs, I get a much nicer sound off a condenser mic such as the Neumann KM84s."



>> Alicia Gardiner, Natalie O'Donnell, Jayde Westaby
Photo: James Morgan



>> Jessica Di Costa, Sarah Morrison, Monique Salle
Photo: James Morgan

"I'm very happy with the result. We had the international licensing police person come out from the UK for the Sydney opening and he was extremely complimentary of the sound so that's all I need to worry about along with keeping the Australian producers happy!"





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ROLAND V-60HD VIDEO SWITCHER



By **Jim Kumorek**

First published in Church Production Magazine

With video becoming so prevalent in houses of worship, cost-effective video equipment is needed to support expansion.

But cost effective sometimes means compromises on quality or capabilities. With this in mind, Roland introduces a new video switcher to the market: the V-60HD. This eight-input HD switcher has an SSP (suggested sell price) of \$4,799 AUD inc GST, making it a reasonably-priced option for the smaller church doing IMAG, live streaming, or studio/live multi-camera capture. How does it live up to its specifications?

OVERVIEW: INPUT CHANNELS

The V-60HD is an HD video switcher designed to handle a small number of video inputs. It provides for four HD SDI inputs; two HDMI inputs; an analogue component input that is shared with one of the HDMI inputs; and two still-image stores. For output,

there are two HD SDI outputs; two HDMI outputs; and one HDMI multi-view output. The internal video processing and video output can be configured to be 720p, 1080p, or 1080i. SDI inputs must be conformed to whichever of these you select; the HDMI inputs and component input will be scaled internally to the selected operating mode. No genlock signal is required as the switcher has internal frame synchronizers to match up the input signals.

The switcher will handle HDCP (a digital rights protection protocol) signals from protected sources like a Blu-ray player when the HDCP system option is activated; when active, the SDI outputs will be inactive (as SDI does not implement a digital rights protection system) and the HDMI outputs must be connected to a display system that honours HDCP to operate. All video inputs allow the user to adjust the brightness, contrast, and saturation; they also allow for flipping the image horizontally. Inputs five and six (the

HDMI/component inputs) additionally allow for custom scaling and adjustments to the red, green, and blue channels. In addition to the video inputs and outputs, the V-60HD has an audio mixer built into it, enabling you to combine embedded digital audio from the six video inputs with six analogue audio input jacks. Physical level knobs are provided for the analogue inputs; the digital inputs can be adjusted via the menu system. The switcher also lets you embed specific audio sources into the SDI outputs to create a multi-track audio transmission. This would enable you to do things like add the pastor's mic as a separate channel to a video overflow room in addition to the two-track mix to give the destination more control over the audio mix.

COMPOSITING

The V-60HD provides several compositing features. Of highest interest to a house of worship would be the down-stream keyer, or DSK. The DSK enables you to take one input, typically from a computer running presentation software like ProPresenter or EasyWorship, apply luma or chroma keying to the source to turn the background of a graphic transparent and superimpose it on the video output. The keyer can be set to remove blue, green, black, or white, with controls to set the tolerances for the colour it is to key. This is how you get your lower third graphics, such as bible verse, or song lyrics, over your live video. The name DSK indicates that it occurs

down-stream of any other compositing and processing options you choose, such as those described next. The switcher supports two picture-in-picture preset buttons, each with its own configurable size, position, shape and border parameters. You can also composite two inputs into a split-screen configuration.

OUTPUTS

The four video outputs of the switcher can be assigned to any of the three output functions of the switcher: program out, preview out, or aux out. Program out is the "live" output of the switcher and is selected by the upper row of "crosspoint" buttons; preview out is the input channel loaded into the preview bus via the lower row of crosspoint buttons; and aux is a separate video output that is switched using the smaller buttons above the program row of crosspoint buttons.

SWITCHING CONTROLS

There are several controls for initiating a switch to a different input. Besides pressing a program crosspoint button directly, you can activate a control that transitions the preview crosspoint over to the program crosspoint. The cut button makes an instantaneous switch; the auto button uses the selected transition (mix, wipe one or wipe two) to perform the transition in the length of time selected by a rotary control on the panel.



V-60HD rear

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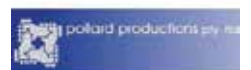
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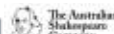
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MENU

Lastly, there's also an LCD display panel which shows the current status of the switcher as well as giving access to the system menus for configuration. A rotary knob with integrated push-button function lets you navigate the menus and make changes.

IMPRESSIONS

On unboxing, I found the switcher feels very solid and well-constructed. All controls have a quality feel to them. Based on my time spent with the V-60HD, I would expect the switcher to withstand the demands of a typical church quite well. Setup was very easy. All connection points are easily accessed and clear to their function. I was able to set up the switcher and start using it without using the user manual. Once I got into using the still image store system, I admit I needed to break out the manual. But even the DSK module was pretty self-explanatory — at least for someone with a bit of video production experience.

The outputs looked great, both HD-SDI as well as HDMI. The multi-viewer screen presented all inputs and the preview/program outputs in an easy to see format. The menus were reasonably clear, but perhaps a little bit clunky. However, once you're set up and have picked your operating modes, loaded your graphics, etc., you probably won't be in the menus a lot. In the menus, it would be helpful if some sort of indicator was present to show that there's another page you can navigate to. I completely missed the settings in the menus for the audio signals embedded with the video input signals because I didn't realize there were more menu pages — the last analogue audio setting page seemed like the last page to me. I spent several hours working with the V-60HD, trying different input sources, and working with the down-stream keyer. Operation was for the most part easy and smooth. The wipes (as opposed to the basic mix/crossfade) felt a little bit jerky, but I imagine no one other than someone working on video would notice. There are "soft" versions of all the transition options, which feather the edge — this provides a "motion blur" type look and does not feel at



■ V-60HD top

all jerky. It took me a while to figure out how to control the volume of the embedded audio in the HDMI signal from the Blu-ray player. There are no physical controls to manipulate the audio from the video sources; to control the volume of these you would need to go a few levels into the menu system. This is a bit awkward, and would make it almost impossible to adjust levels quickly if needed. You might consider taking a discrete audio output (or use an HDMI audio splitter) to bring the audio into one of the analogue inputs instead.

EXPAND

I was far more impressed with the DSK module than I expected to be. To get the cleanest lower-third graphics you would want to use a graphics system with an embedded alpha channel (a fourth signal channel that indicates transparency in the image), and have a switcher that provides a way of bringing the alpha channel into the DSK. Transparency is then handled beautifully and flawlessly. However, you would likely pay a lot more for such a switcher. In the case of a switcher like the V-60HD, you create your graphics with a black, white, green or blue background, and then key out that background colour in the DSK. If your graphics have areas that are semi-transparent, you need to tweak the settings a bit to get it to work well, and it's unlikely to look exactly like it would with an alpha channel.

In the past, when I've worked with other switchers that use this method, I've found it's either difficult or impossible to get the semi-transparent areas to look right – they often looked pretty bad. With the V-60HD, this actually worked remarkably well, and the semi-transparent areas looked pretty good – even with a motion background lower third. They are not as good as if you had an alpha channel, but quite usable. You would probably need to be a bit selective on the specific graphics you use for this to work well. In the case of graphics without transparency, the key would have benefited from some anti-aliasing at the edges, but it wasn't much of an issue. I noticed this particularly with letters directly over video; if I placed the letters on a solid

square background, this removed the slightly jagged look on the curved parts of the letters. And if I made the square background a colour close to the keying colour (a cornflower blue square over a chroma blue background, for example), I could adjust the keyer such that the square became semi-transparent as it was close to the keying colour.

The audio mixer does have an automix capability. When turned on, you can give a "weight" to the various inputs, which dictates how much those inputs are lowered in volume when signals from other channels are present. So, for example, you could designate the pastor's mic with a weight of 100%, and the other inputs a weight of 60%. When the pastor speaks, all other inputs would get lowered in volume, and raised back up when the pastor is done. Latency (the delay from input to output) of the V-60HD is stated as being two frames or less, according to Roland.

Roland indicated that future upgrades will include a camera tally system that works through your camera operator's smartphone, and a software remote control that will run on a computer.

LAST WORD

I was impressed with the V-60HD. The quality of the DSK took me by surprise, and the switcher was easy and intuitive to operate. The few areas of improvement that exist would not prevent me from recommending it. For \$4,799, you get a very capable package that volunteers would quickly learn to operate. It's absolutely worth checking out.

Brand: Roland
Model: V-60HD
Pricing: SSP (suggested sell price) of \$4,799 AUD inc GST
Product Info:
proav.roland.com
Distributor: www.roland.com/au/

HIGH END SYSTEMS SOLAFRAME THEATRE MOVING LIGHT

WELCOME TO THE SOUND OF SILENCE



By **David Martin Jacques**

First published in Church Production Magazine

David Martin Jacques is a professional lighting designer, architectural lighting consultant, and Head of Stage Design at Long Beach State University. His book, *Introduction to the Musical Art of Stage Lighting Design*, is available on [amazon.com](https://www.amazon.com)

For decades, lighting designers have been waiting for a powerful, high intensity moving light with framing shutters suitable for extreme noise-sensitive live entertainment environments, including opera, theatre, concert halls, television studios, and of course, houses of worship.

The SolaFrame Theatre also has an iris, a linear CTO filter (that matches perfectly to a Tungsten Halogen lamp), and a four-faceted prism.

Many moving light companies have searched to find that balance of intensity and fixture cooling that would result in a light that has very quiet motors, cooling fans, and internal moving parts (gobo wheels, zoom mechanisms, shutters, and the thousand

of other gears, belts, and tracks). High End Systems (an ETC company) has developed a revolutionary fixture that addresses and meets these challenges.

The new SolaFrame Theatre moving light is a welcome addition to the recently developed SolaFrame line, which also includes the SolaFrame 750, SolaFrame 1500, and SolaFrame 2000. What separates the SolaFrame Theatre from the others in the SolaFrame family is that this is the only light without any cooling fans. In addition, this fixture has a very high CRI of >90 with an output of 15,000 field lumens. The light engine consumes 440 watts and has a color temperature of 6,000 Kelvin. The SolaFrame Theatre also has an L70 LED-life rating of 50,000 hours. It's RDM compatible and runs on 47 DMX channels. This fixture is ideal for

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Tony Boyadjian presents.-

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small to medium-long throw applications (10-40 feet), which applies to most houses of worship.

So how does the SolaFrame Theatre get away with no cooling fans? The engineers at High End Systems came up with an ingenious liquid cooling system that circulates a coolant throughout the fixture. And no, you don't fill it with anti-freeze.

HANDS-ON TRIAL

High End Systems sent us two SolaFrame Theatres to test in our lab and theatres at California State University Long Beach. We ran our tests in a real-world environment by using these fixtures for front light for our production of *Wonderland*. We were also able to directly compare these fixtures to our SolaSpot 2000s, since five of them were also used on this production.

As we pulled the SolaFrame Theatres out of their cleverly designed road cases, we immediately noticed how beefy they were. No doubt, this is partially due to their elaborate cooling system. But this cooling system allows for completely silent operation. I am

not kidding; these lights are super quiet even when they reset.

Like the companion models, the SolaFrame Theatre is built solidly with high-quality materials. High End Systems tells us that SolaFrame Theatres are presently on several tours and have been holding up well, which after careful inspection in our lab does not surprise us. The student lighting designer for "*Wonderland*" wisely placed these lights in a front of house catwalk position. They were used in most of the light cues as area lights, front specials, colour washes, and effects. They never failed and were dependable for the entire run of the show (which is a good thing because we didn't have a spare).

FINDINGS


What did we like about the SolaFrame Theatre? Well ... just about everything. Let's start with the quality of the field of light. We have not seen a smoother field in any other moving light that we have tested over the years. Throughout its entire 7-degree to 42-degree zoom range, the SolaFrame Theatre (and the SolaSpot 2000s, for that matter) has an incredibly smooth and unbelievably even field of light with very little drop-off. In fact, you cannot see any drop-off with the naked eye. This is due to a combination of the fixture's high quality optics and its panel LED light engine. The high CRI of the LED engine enabled us to see the true colors of the costumes and skin tones. This is crucial for front light. We were able to compare the white light quality of the SolaFrame Theatre to our SolaSpot 2000s. We found that with careful manipulation of CTO and CMY, we were able to get the 2000s very close to the high CRI quality of the SolaFrame Theatre. But in comparison, the SolaFrame Theatre is slightly more accurate in colour rendition. You would never see this from 12 feet away, but you may if you are using video in your services.

The CMY colour system is exceptional. There was no colour creep in any combination of

colours. The field of colour stayed consistent and pure, even during complex colour fades. We were able to mix to just about any colour. For deep primaries, you can dial them in with the dedicated seven-position colour wheel. The SolaFrame Theatre passed our LED-dimming test with flying colours. We expected no less as all of the High End Systems Sola models that we have tested have excelled in this challenging test. The dimming is smooth and perfectly linear from 0-100%. The designer programmed several subtle pulsating dimming chases for her show and the fixtures performed flawlessly. The fixtures also passed all strobe and video flicker tests.

Brand: High End Systems
Model: SolaFrame Theatre
Pricing: \$14,000 ex GST including roadcase.
Product Info:
www.highend.com
Distributor:
www.lexair.com.au





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Anatomy of the **ACETA** Inaugural Convention



Vision, Expectations and Projected Outcomes

The inaugural ACETA industry convention is fast approaching and delegate registrations is steadily increasing, as are anticipation levels. We need to alert those who haven't yet made their bookings that ACETA needs to submit final numbers and make final payments for the venue and catering by Thursday the 19th of April, therefore delegate registration and gala dinner dance bookings by necessity will close on this date. If you haven't already, you need to register and make your other bookings soon.

Leading into the convention it is now timely to address the most commonly expressed questions, which revolve around planned outcomes. In summary, being an industry first, and without a guiding template, we have avoided erecting numerical boundaries that could limit expectations, disappoint or create unsustainable goals. This includes financial aspects, and having passed the sustainable attendance number, if we realise a surplus it will benefit the membership. If we are on the other side of the ledger, we can afford it on the basis of nothing ventured, nothing gained, and finally, be assured the focus for this event is 'best' as opposed to 'big'. The commitment to 'best available' includes; most suitable region, most suitable time of year, best venue, best catering and gourmet food, best regional drink list, best entertainment, best golf course, best

value for money and importantly the best and most diverse seminar program possible, which will inspire and have participants completing an experience so valuable they will want to do it again.

Aside from personal and corporate development opportunities, the role and responsibility of an effective industry association is to improve standards and the convention is the platform to achieve these imperatives. The convention program will flow logically from start to finish beginning with the important opening plenary on Friday, then harvesting the resources gathered in the seminars to feed consensus at the ensuing industry sector workshops, to be ratified and prioritised at the concluding Sunday afternoon plenary. Not only will delegates participate in personal and corporate developmental forums, but the industry will realise new and improved standards, there is no downside. So, let's dissect the program, one that addresses the needs of all sectors including manufacturers, manufacturer's representatives and service providers:

Matters financial will be addressed by two leading practitioners in their field. Tony Boyadjian of Compass Global Markets, a practitioner and commentator on foreign currency trade who will take us inside his

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industry, and economist Bernard Stapleton of SV Strategic Solutions who will address the economy today and speculate on the future. Dealing with the impact of contemporary marketing methods and media trends of the future will be presented by Jason Allen of VCS Creative Services.

Progression in terms of compliance, self-regulation, member certification and accreditation across all sectors will be resourced by a number of seminars. Tiny Good of Show Tech Australia will present the International Code of Practice for Entertainment Rigging (ICOPER), Roderick van Gelder of Stage Safety will present the Australian Event Safety Resources Guide (AESRG) and the Australian Communication Media Authority (ACMA) will deal with product compliance and the Digital Dividend.

Corporate development is well covered in a number of streams. Industry veteran David Bell will conduct a two-part strategic planning workshop, and a seminar that delves into the vital but difficult task of hiring staff. Sheree Cross of SV Strategic Solutions will deal with facilitating corporate change, a timely subject as some organisations are currently exploring amalgamation, acquisition and resource sharing opportunities. The City of Wangaratta will present a most interesting corporate re-location program to their region. Personal development will be led by Frank Hinton, in a two-part leadership mentoring seminar that will analyse desirable communication, organisational and time management skills along with the parameters that define leadership.

In support of the manufacturing sector, AusIndustry will provide insights into how

they can assist creators bring their technology to market, Austrade will then follow with the role they can play in assisting those who wish to export. And for an interesting change of pace that will engage all participants, Glenn Dickins a senior Dolby Laboratories developer, will overview future technology innovation and opportunity in the field of spatial sound test and measurement.

Nearing convention conclusion on Sunday will be an interactive, independently facilitated workshop for manufacturers, manufacturer's representatives and service providers, with the aim of establishing and prioritising issues that will manifest into programs and improve the standards landscape for our members. There are many items to canvass at the convention and one of these is a request that ACETA take on the role performed by ESTA in the USA and PLASA in the UK, with many others it will be placed on the table for discussion.

All that remains is to acknowledge the many hundreds of hours of voluntary time generously committed by a few to make this critically important event possible, and it is all worthwhile in the realisation of your support. On a lighter note, we look forward to networking and socialising with you at the golf day, the civic welcome and the gala dinner dance.

All the best
Frank Hinton
President ACETA

BATTERIES

- Get
Intelligent!



By Simon Byrne

How many batteries do you think are sold each year into the Australian market? About 310 million units! And I'm talking only of your bulk standard AA, AAA, C, D and 9 volt batteries. And how many of those batteries are recovered and recycled? About 2.7%. From an environmental point of view, 300 million used batteries going into landfill is a travesty.

The production industry would have to be in the "worst offender" category. On a pub level show, with say 6 radio mikes, 4 in ears you've gone through 20 batteries. On a big show, you can easily rip through 100 batteries or more.

Apart from environmental harm, the cost equation is a no brainer. Rechargeable batteries can be recharged and used again between 500 and 2000 times, yet the cost of a good rechargeable is only about 6 times more than its Alkaline counterpart. That is, after 6 uses they've paid for themselves.

We are prime candidates for rechargeable batteries but many users worry that rechargeables will fail mid show, which simply must

not happen. However, technology is always marching forward and things have improved. For those who have not made the change, perhaps it's time to move away from those costly, single use alkaline batteries.

NICKEL METAL HYDRIDE BATTERIES

The most common AA size rechargeable battery is Nickel Metal Hydride (NiMH) which is a successor to Nickel Cadmium (NiCd). You do not want Nickel Cadmium, it is now old technology and Cadmium is horrible stuff. Ingestion of any significant amount of cadmium causes immediate poisoning and damage to the liver and the kidneys. At a minimum, quality NiMH batteries is what you should be after.

The latest AA NiMH batteries provide approximately 75% of the capacity of alkaline AA batteries at low drain rates, but the good news is that they can exceed alkaline performance in high drain applications (i.e. wireless transmitters). That means in today's modern power hungry gear you can expect comparable, sometimes

better performance.

Due to their chemistry, Nickel Metal Hydride batteries deliver 1.2 volts where as an alkaline battery initially deliver 1.5 volts. Some manufacturers may claim that their devices need the full 1.5 volts to work properly. I say...in most cases, not really true.

An alkaline cell does not deliver a constant voltage. The voltage drops as the battery discharges, and it also drops due to internal resistance as the load increases. Therefore, they'll deliver 1.5 volts initially, but will quickly drop to about 1.2 volts, and then even lower as it discharges.

A 1.2 volt NiMH cell is much more linear in its discharge in that it starts off at 1.2 volts, and pretty much stays there for most of its life, and then falls really quickly after that.

This is both good and bad. The good is that you have a consistent voltage source but when it drops, it drops off a cliff so it is difficult, if not impossible to accurately monitor battery condition.

Therefore the best way to monitor battery condition is by time. That is, plan to have plenty of battery time up your sleeve.

I set up a test rig using eight wireless microphones. Using my RF Explorer and Touchstone Pro, I can accurately log the RF output of the microphones. The runtime on average for alkaline batteries (Duracell Coppertops) was 10 hours and 32 minutes. The NiMh (Eneloop) was slightly longer, 11 hours and 6 minutes. Using these figures, I can comfortably do a show using NiMh with runtime to spare.

What about memory effect? Memory effect is reduced battery performance over time, mainly due to overcharging, and not maintained with periodic deep discharges. With NiCd batteries it is a significant problem (another reason not to use them). With NiMh it is much less of an issue, but they still degrade over time. Around 15% over two to three years as long as they are cared for.

The most damage done to rechargeable NiMh batteries is done by over charging, and over discharging. An intelligent charger solves this so they are absolutely critical to maintain good battery performance.

Intelligent chargers do 3 things that their dumber counterparts do not:

Charge rate - The internal resistance of the battery changes as it is charged. An intelligent charger monitors and accounts for this change and adjusts the charge so that the battery is not overcharged.

Trickle charge - in the final stages of charging, the current is reduced to a trickle which ensure the batteries are charged to their maximum capacity, but not overcharged.

Intelligent Discharge - NiMh batteries are damaged when they are over discharged. That happens when a load is applied for too long and the battery continues to discharge beyond which the chemistry inside the battery is designed for. The chemistry actually goes into reverse and damage is done. Intelligent chargers in discharge mode monitor the voltage as the battery discharges and stops before damage can occur.

Up until now, I've only discussed AA sized batteries which deliver 1.2 volts. The 9 volt size batteries only deliver about 8.4 volts for similar design reasons. Once again, this should be fine for most applications.

LITHIUM ION BATTERIES

Not to be confused with their non rechargeable namesakes, the rechargeable lithium-ion batteries are widely used in mobile phones, digital cameras, and laptops because of their long life, high energy density, no memory effect and fast charge.

Why then, are they so rare when it comes to AA sized 1.5 volt batteries? It is due to the chemical nature of the batteries themselves. The inherent voltage of a lithium battery cell is 3.7 volts, while that of normal AA battery is 1.5 volts. Because of this, It is hard to make a AA sized, 1.5 volt Li-Ion battery because you need to efficiently convert 3.7 volts into 1.5 volts within the AA package. You also need to have a way to charge them because the charge voltage need would still be well above 3.7 volts.

Despite these shortcomings, there are some 1.5 volt Li-Ion batteries available made specifically for the pro audio market by Ipowerus (link at the end of this article). If they live up to their claims, these sound ideal for devices that absolutely need the full 1.5 volts.

Li-Ion batteries are harder to keep safe as they contain a flammable electrolyte which can catch fire when overcharged, may be kept pressurised and have a lot of energy contained in a small space. Remember the 2016 Samsung Galaxy Note 7 recall for battery fires?

However, when the equipment has an option for Li-Ion batteries, it is absolutely the way to go.

For example, Shure's Li-Ion battery option for their ULXD series is superb. Long run time, no memory effect and more accurate battery life metering (that is displayed in hours and minutes instead of bars (sometimes displayed on your mixer's screen too!)) as well as clever features such as turning off the transmitter when it is put in it's charge cradle.

You can get 9 volt format Li-Ion batteries, unfortunately though their nominal voltage is only 7.4 volts which is too low for many wireless microphones. Probably best to stay with NiMh in these applications.

HERE ARE SOME MANAGEMENT TIPS IF YOU USE NIMH BATTERIES -

- As soon as you purchase new batteries, write the purchase date on them in permanent marker. They will age so a record of when they were put into service is important.
- Buy an intelligent charger, it is super important as it will minimise any memory effect and prolong battery life. You don't want dumb chargers as part of your system as they'll do more damage than good.
- Buy name brand quality batteries.
- Regularly (but not always), fully discharge your batteries using the intelligent charger only.
- Develop strong procedures amongst your team so that you know what batteries are charged, and what ones are not to be used.
- Unless your wireless microphones have a specific mode for monitoring battery condition for NiMh batteries, don't rely on the display. Keep a track of the time that the batteries have been in use (you put new ones in for every show anyway, right?).



The sky did not fall in when we changed wireless microphone frequencies as a result of the restack. We educated ourselves, got smarter, bought the right gear and improved our planning. The same should be for battery management. The environment will thank you, and importantly it is great for your bottom line!

DEFINITION OF TERMS -

Voltage (Volts) - Think of it as the electrical equivalent of pressure in a water hose. If you have a very high voltage, it is at "High pressure" voltage.

Current (Amperes or Amps) - The flow of electricity, or in the hose analogy, the flow rate of water.

Amp Hour - A measure of current capacity, over an hour. For example 2700 Milliamp Hour is 2.7 amps over an hour, or 1.35 amps over 2 hours.


Power (Watts) - A measure of work. Power equals Voltage times Current.

Watt Hour - A measure of work capacity over an hour. So 2,700 milliamp hour time 1.2 volts, can deliver 3.24 watts for an hour, or 1.62 watts for 2 hours.

Resistance - The measure of the degree to which a conductor opposes an electric current. Using the water analogy, a tap can have an extremely high resistance (tap closed) and anywhere to very low resistance (tap fully open).

Ipowerus Li-Ion batteries






<http://www.ipowerus.com/products/aa-1-5v-2600-mwh-lipolymer-rechargeable-battery/>





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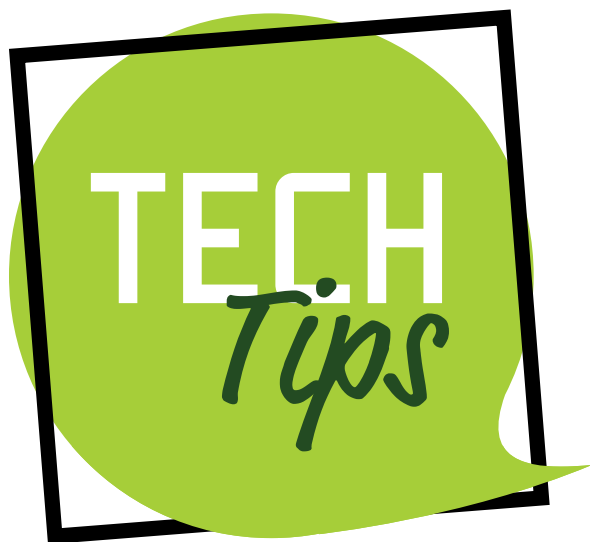


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Here is this month's collection of random tech tips to make your life just a bit easier!

By Simon Byrne

Y-CABLE INTO 2 CHANNELS

Julius has this tip:

I always Y split the main vocal input and had it on two faders if I was sending monitors from FOH because then I could do unique EQ on the main house fader, and have suitable or different EQ on the monitors.

Plus if I adjust input gain on the main FOH input, it would not affect the monitors. It also seemed I had more 'control' using the 100mm fader instead of a rotary auxiliary pot.

With digital desks, you often can route the input to several faders without the need of a Y cable.

Makes life easier for sure!

AIR TRAVEL WITH BATTERIES

The airlines are acutely aware of battery safety now. Because they pack a lot of energy into a small space, the risk of causing a fire is real. A fire on a plane is not a good thing!

The rules are complicated but generally speaking, batteries fitted in devices may be carried in the hold but loose batteries must be in carry-on baggage only, with their terminals protected from shorting out. No more than 20 spare batteries in total, for personal use, are permitted per passenger.

Airlines are now strictly enforcing their rules to ensure passenger safety. We were in Adelaide Airport the other day and my cameraman copped his usual lecture from Qantas about batteries, but this time it was different. This time Qantas were really thorough and knew what they were talking about!

At that particular airport, the Qantas baggage handlers identify loose batteries in passenger luggage about 12 times every day. When that happens, the passenger is paged, the luggage is off loaded, batteries are removed and the passenger often misses their flight because of it! It must be happening hundred's of times a day around the country.

Qantas Battery Rules

<https://www.qantas.com/travel/airlines/dangerous-goods/global/en#batteries-%E2%80%93-spareloose-powerbanks>

Virgin Battery Rules

<https://www.virginaustralia.com/au/en/plan/baggage/batteries/>

BOUNCY BAD

A really quick and dirty way to see if an alkaline battery is used is to drop it onto a hard surface from about 10 centimetres. The more the battery discharges, the greater its bounce.

No bounce? The battery is good.

The reason this works is because the electrolyte within the battery is a gel like consistency which hardens as the battery is exhausted. It is the hardened electrolyte which causes the battery to bounce more.

Have
you got
any **tech tips**
worthy
of publication?
Send them
to

“SHOW MODE” ACCOUNT

Many of us use our own personal laptops at gigs for playing out music, network control, running Smaart and so on. Great! But this exposes us to issues which may arise because it is set up for your daily work. Things like software updates, email and IM alerts, processes running in the background, screen savers and energy settings putting the machine into standby.

You could turn all of this off manually but a much better solution is to have a 'Show Mode' user account. That's another user account on your laptop purely for gigs where anything that could get in the way of your show is turned off.

It means that it will run more reliably with the added bonus that your personal data cannot (easily) be accessed by others.

POWERPOINT AND KEYNOTE DIRECT ACCESS

In corporate gigs using Powerpoint or Keynote for slides, you can access any slide directly without exiting slideshow mode as long as you know it's number.

Need slide 34? Simply type “3”, then “4” followed by “Enter”.

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AESRG	48, 49	Lexair	35
ACETA	53	LSC	41
Amber	29	NAS	FC, IFC
Backdrops Fantastic	25	NW Group	27
BS Sound	64	PAVT	13
Chameleon Touring Systems	55	PROtech News	64
CMI	5	Rentalpoint	64
ENTECH AU 2019	IBC	Show Technology	15
ENTECH NZ 2018	32	Subscriptions	57
Entertainment Assist	64	TAG	19
Eventec	23	The Look	39
Forefront Productions	43	The P.A. People	34
Jands	3	ULA	45, 61, BC

Are you concerned about your mate's mental health?

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

Support those around you and register for free mental health training



¹Passion, Pride, Pitfalls Dec 2014

www.entertainmentassist.org.au

Supporting the mental health of Australian entertainment industry workers

DUNCAN

Fry



**Throw
away that
stuff?**

Are you
kidding?

No way



We've all got a cupboard or drawer where all the electronic gadgets and assorted music stuff go when they stop working, get replaced, or are no longer needed. Mine get shoved into the big drawers in the TV/entertainment unit, conveniently underneath the TV.

But after moving to a new apartment with a different layout, the old TV unit now stuck out halfway across the front door, making in and out access very awkward.

The solution to this problem came in the form of a new, much smaller and shorter TV unit which fitted the available space perfectly, but sadly with only two drawers, not the four that the old bigger one had. The old one was going to be put up for sale on Gumtree, but before it did, a bit of sorting out and shrinking of whatever was inside had to take place.

I pulled open the bottom drawer. It refused to budge. I pulled harder and with the cracking sound of tearing chipboard, the front of the drawer came off in my hands! So much for going to sell it!

A mass of unused RCA cables spewed out onto the floor. At least one or two for every consumer video/DVD/CD unit that had been bought in the last 20 years but never used, as I already had the correct length cables from previous units.

But you never know when you're going to need another set of them, so they were chucked in the drawer 'just in case!' Hmm; Justin has a lot to answer for because in the intervening years they were still unused! In fact they were all still rolled up with that twisted piece of plastic coated wire that all the manufacturers seem to use.

What else was in there? Old external hard drives that had given up the ghost; ditto old internal hard drives from at least four old media players that no longer worked. One of them had even clattered to a stop the day after I moved all my old black and white TV series onto it, including the original BBC TV version of 'Quatermass and the Pit'. Gone forever unless I can get one of those hard drives working again!

And, of course, the wall-wart power supplies that ran each of these things, tangled up together in a Sargasso Sea of low voltage DC power leads, each with a different connector on the end. One for each of these gadgets, I supposed, but which one?

Some of the transformers in these power supplies were 12 volts, some were nine volts, a few seemed to be five volts, and one was even 18 volts AC. It was very hard to tell, because the warning details on a lot of them were not printed but embossed on the plastic in the smallest typeface that I had ever not seen! There were so many of them, it was as if they had been breeding in secret in the darkened drawer.

Other leads tangled up in the same mass of wire were some with USB connectors on one end, but never the one you wanted on the other end. Mini USB, Micro USB, Firewire of some kind, and one USB lead with a totally obscure mini connector that came with a Kodak digital camera. Never seen one like it before or since, so looks like it's gone the same way as Kodak itself!

Underneath all this mess was my original Apple Newton, the first ever PDA (Personal Digital Assistant), the gadget that cured me once and for all of being a technology early adopter. It arrived in 1993 with so much fanfare and then disappeared without a trace a few years later when Steve Jobs came back into the Apple fold.

The Newton was much touted when launched as being able to learn your handwriting and transform it into text. Utter bullshit; it didn't do anything of the kind. What it did do was force you to write the way it wanted to see it, which isn't the same thing at all. It was also too big and quite heavy. John Sculley, the Apple CEO at the time, said that the Newton had to fit in his pocket, so the design team joked that they would break into his house and sew much larger pockets into his clothes! The original list price was a mind boggling US\$700! I bought mine in a computer store on Hollywood Boulevard for just over US\$400.

I dug deeper, right down to the bottom of the drawer. Wow - my old US Robotics Palm Pilot 5000, a PDA that really worked at last. An ultra-compact little device with a whopping 512k of memory! And it really did fit in your

hand and pocket. List price was US\$369, but I bought mine in 1997 for US\$280 at a Fry's Electronics store in Anaheim while at the NAMM show.

"Family discount?" I asked the cashier as I slid my credit card across the counter.

"One moment, please," he replied, and took my card into the back office. He returned a minute later. "Nice try," he laughed, handing back the card.

Like the Newton it needed a little stylus to write on it but I kept losing mine. It had a contacts list, calendar, to-do list, and memos. What's more, it ran forever on a couple of AAA batteries and easily fitted into a shirt pocket. Despite all this, though, I still found it easier to write on the back of my hand with a ballpoint pen; I called that my Palm Pilot Backup. Palm - back of my hand, geddit? Never mind.

I opened the next drawer. It moved slowly but felt very heavy. I peeked inside as it slid open. It was jammed full of the paperwork for all of the stuff in the previous drawer: manuals, installation notes, CDs and DVDs, printouts from websites, warranties, and thermal cash register receipts now completely blank!

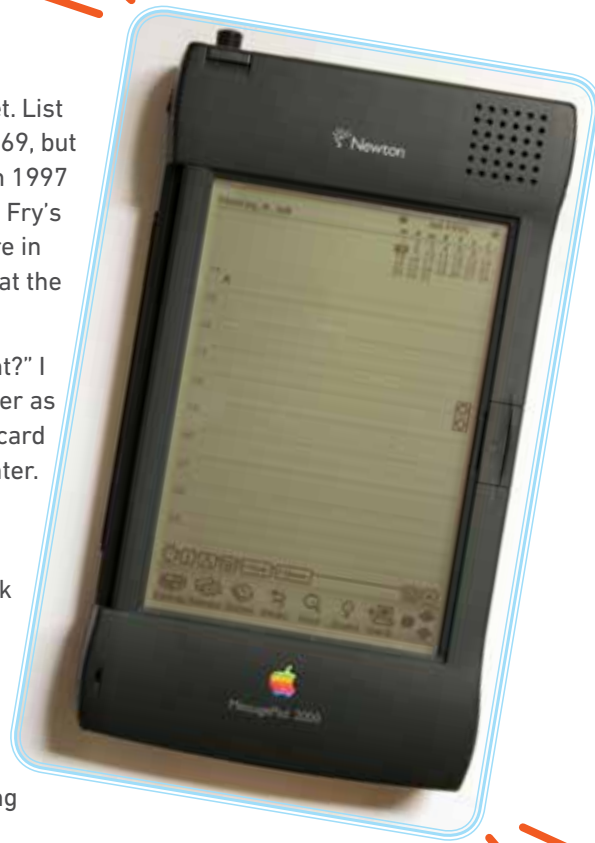
All this went straight into the bin without a second glance. If I hadn't looked at it for many years, if ever, then who else would be going to look at it.

I sat there on the floor for a while, staring at all this superseded or broken technology, wondering what to do. How do you work out what to keep, what to throw away? I'm sure I'm not the only person with this problem, because we all know you're going to need it as soon as you throw it away.

Doesn't matter what it is - as soon as you plop it into the wheelie bin and the garbos take it away, a couple of weeks later you'll wake up in the middle of the night thinking - what did I do with that old Widgetronic 5000? And then an endless loop of video starts running in your head of you casually tossing the aforesaid Widgetronic into the bin, while the lid of the bin flaps up and down laughing at you.

No? Well it does in my head, anyway!

So what did I do with this pile of tish in the end? Well I tipped it all into a cardboard box and put it in the shed of course! I'll have a look at it again in another 20 years or so.



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