

CX

MONTHLY TECH NEWS
AUDIO · LIGHTS · VIDEO · STAGING · INTEGRATION

CX84, ONLINE EDITION AUGUST 2013 \$5.50

Audinate's Dante
Gone Global

Production

Bon Jovi's World Tour

GEARBOX REVIEWS:

- VUE Audiotechnik H Class
- Chauvet Professional Legend 230SR Beam
- Chroma-Q Studio Force
- Mackie DLM
- GoPro Hero 3 White Edition

CX NEWS:

- aceta - wireless reform
- Sydney Tradeshows mull Glebe Island
- Barnzie salutes Aussie Road Crews
- Venues, disability access
- SMPTE, JANDS add Studer & more!

Australian Success
Syntec hits 40

Australian Dance Theatre's Proximity

Road Skills
EOTS, Flume, Jesus Christ Superstar

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CX84 AUGUST 2013. ISSUE 84. ONLINE EDITION

EDITORIAL BY JULIUS GRAFTON

THIS MONTH:

We track the fortieth anniversary of Syntec International, original named as Synchronized Technology by founder Clive Sloss. It takes some serious commitment and strategy to stay on top of your game for forty years.

Earlier in the mag our News pages report the ongoing success of the Australian Road Crew Association which is a lot more than a party society. Successful associations are hard to get off the ground in Australia, but this one is a runaway success.

Likewise ACETA which is a more prosaic group of like minded distributors and manufacturers who all have a common interest in maintaining a viable audio, lighting and vision industry. Their objectives are transparently mapped out, and they manage to conduct professional and mercifully brief meetings.

We touch on a hot topic that has rated high on CX-TV, that of the forthcoming closure of Sydney Convention and Exhibition Centre, along with the Sydney Entertainment Centre. The latest excitement on this front is the crazy bad Glebe Island Expo 'pop up' facility that will sit on a lonely wharf at the end of a very narrow little windy road. Any exhibitor buying trade show space down there needs to be aware of exactly what they are buying.

Continuing our journey this month Jason Allen details an Australian technology firm that keeps scoring large on the world stage – Audinate. Right afterwards, just over the page we head off to Bon Jovi world for a blow by blow inside view of how they do the visuals. This will be a 'must see' tour for anyone interested in video visual design.

Andy Stewart dives into the Muddy Mixing topic in Listen Here, and irony of irony, Duncan Fry's story this month is a redux from a decade ago on The First Gig I Ever Mixed.

Cat Strom brings us Flume, Empire of the Sun and Jesus Christ Superstar in Roadskills. This section of the mag is rating as very popular in our focus group. Also regular is my Biz Talk page which this month attempts to parallel business partnerships with marriage. Minus the sex.

Live Performance Australia pop up later in this issue to remind all employers, staff and crew that pays have changed back on July 1st. We remain amazed that the Government doesn't properly direct the Super Funds to report missing contributions to members, which still leads to unpaid super being an issue with the raft of company failures that seem to pile up in our newsroom in-tray.

And finally, after a record number of posts on cxmagblog.com it seems the activities of Steven Jackson formerly of Jackson's Rare Guitars will be investigated by the NSW Fraud Squad. Liquidator Jamieson Louttit has done a splendid job attempting to reunite owners of consigned guitars with their property, and it appears a form of justice is in the wind. Which does not always happen when firms shut down and accusations are made.

- Julius**PUBLISHERS PANEL**

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NEWS

CX INDUSTRY NEWS

LAST CHANCE FOR WIRELESS REFORM ELECTION 'OPPORTUNITY FOR CHANGE' SAYS ACETA

The Australian Government has taken over \$2 billion by selling off TV frequencies used by wireless audio without supplying an assistance package. Flagging chaos when many frequencies are made illegal in 2014, ACETA have called for a petition.

AWAG (the Australian Wireless Audio Group, run by ACETA) says the current plan for the transition to digital spectrum will not work. By way of example, the regulator ACMA has issued a draft proposal about grandfathering of existing products with a requirement that every box

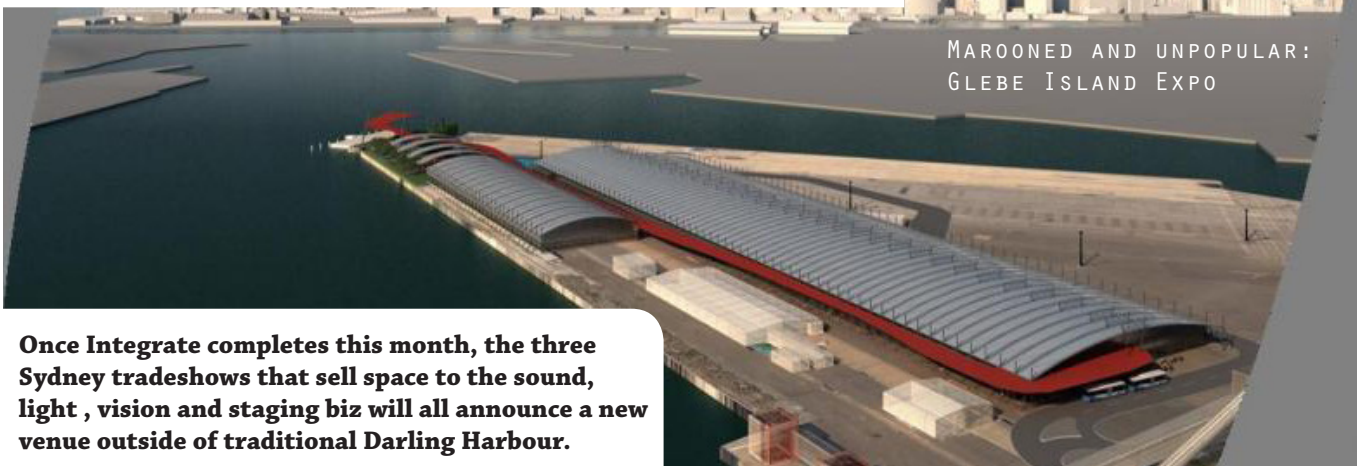
containing a product that operates in the 694-820 MHz range be opened before being sold and a leaflet included that advises the purchaser of the unsuitability of this equipment after 31

December 2014. It is unclear who will police that measure.

AWAG say the next Communication minister needs to understand the problems, otherwise the whole digital switchover will turn into a crisis as ministers of religion, teachers, fitness instructors, convention speakers, musicians and more become criminals under the Radiocommunications Act 1992. **More in ACETA, page 78**



SYDNEY TRADESHOWS MULL GLEBE ISLAND VENUE ARMAGEDDON AFTER SCEC CLOSES



MAROONED AND UNPOPULAR:
GLEBE ISLAND EXPO

Once Integrate completes this month, the three Sydney tradeshows that sell space to the sound, light, vision and staging biz will all announce a new venue outside of traditional Darling Harbour.

Re-booking and rehashing the same basic format each time around is staple fare for ENTECH, SMPTE and INTEGRATE, all commercially run by large trade show organisers. But the demolition and rebuild of Sydney Convention and Exhibition Centre later in 2014, forces trade shows out for at least three years.

The Government supplied temporary facility, to be built from portable structures on Sydney's Glebe Island and named Glebe Island Expo, has left most industry exhibitors ice cold. The site is not accessible to pedestrians, despite being clearly evident from the Anzac Bridge. Instead road access is a long loop road that adds

2km to the 4.5km total distance to the city.

The single lane road that serves the site also feeds the new Cruise Ship Terminal, subject of consumer backlash from tour customers slugged \$25 for a taxi, when they can find one. Glebe Island Expo claim they will supply transport and 'pop up bars and restaurants'.

At presstime ENTECH had named dates for the new site, while SMPTE and INTEGRATE were expected to also confirm they would use this facility instead of other sites or cities. Glebe Island Expo will cost organisers around 20% less, offering an opportunity to pass savings over to exhibitors.

JIMMY BARNES SALUTES CREW ARCA KICKS OF IN SYDNEY

Crew of a certain age filled the Bald Faced Stag Hotel in Sydney's Leichhardt in July for the first Sydney reunion of crew who worked professionally prior to 1992. Several hundred survivors gathered to pay homage to the 80 who have passed since, and to celebrate life in general.



PIC CREDIT: THANKS TO JIMI BOSTOCK

Jimmy Barnes entertained the masses after official thanks and proceedings. The Australian Road Crew Association P/L (A.R.C.A.) is a not-for-profit company, with the motto: Supporting our own with feeling and a 'Whole Lotta Love'.

Its first event was The Founders Launch in 2012 at St Kilda. "The reaction was bigger [and considerably

more emotional] than any of the organizers could have anticipated. Simply amazing - a respect and a love for each other that's never been diminished ... just like we saw each other yesterday", founder Ian 'Piggy' Peel said.

The next reunion event is scheduled for Queensland. See www.australianroadcrew.com for more.

CX NEWS BRIEFS

Crestron has appointed Stuart Craig as its new Executive Director of Crestron Asia, Australia, and New Zealand. Stuart previously held the position of General Manager at Crestron Australia (as part of Hills SVL), where he established the

Crestron brand in the region. Based in Sydney, Australia, Stuart will be responsible for leading the sales and marketing efforts in the Asia Pacific region, an area marked for high growth.



PRODUCTION SHOP SPLIT SPAWNS NEW FIRM WELCOME ENTERTAINMENT PRODUCTION SUPPLIES



PICTURED: GRAEME HICKS

Graeme Hicks was the face of The Production Shop in Brisbane until a strange announcement appeared on its website, headed 'Change of Directorship' in June.

Now Graeme has re-emerged as Entertainment Production Supplies, or EPS in short. He told CX the split with The Production Shop was 'just a bad divorce'. The business was a partnership with Sydney based Garth Tanswell, a canny investor who runs Herkes Electrical and Graftons Lighting.

The Production Shop ran into headwinds with the compulsory acquisition of its Brisbane premises for the Clem Jones Tunnel. Forced to move quickly, Graeme says they probably paid too much for the current premises. The GFC then affected the bank valuation on the premises. A cyclone, flood and change of state Government all affected the business.

Long story short, Graeme and Garth split up, Garth is now in sole control of The Production Shop and Graeme has commenced EPS which he says is running really well.

"This is back to where we started - now I have no pressure to sell equipment that is not fit for purpose", he said. At presstime he was on a road trip to Cairns with Alex Mair from Lexair, who represents High End Systems.



**Phone them: +61756084149
www.entps.com.au**

DISABILITY ACT STYMIES VENUES CRAZY ACCESS REQUIREMENT STOPS PROJECTS

The Disability (Access to Premises - buildings) Standards 2010 (the Premises Standards) commenced in May 2011 and now presents major difficulties for any established or proposed venue seeking any building consents.



Sydney music venue consultant Sam Zagami told CX he had a music venue with a stage just 260mm high that required a wheelchair access ramp with a slope ratio of 1:4 – resulting in a four metre ramp that ate much of the small venue's public space. The project has been delayed by this and other 'red tape' requirements that he says make opening new venues almost impossible.

Architects tell **CX** the act means any public space, venue or retail, now must accommodate the needs of potential disabled visitors, whether or not they are likely to attend. In practical terms this leads to raising or lowering floor levels for level access, and installing disabled toilets, even in small retail shops.

The act is broad – venues submitting even a small development application suddenly find themselves exposed to requirements for things like hearing assistance loops along with level access and toilet requirements.

People with disability are, as any other group, entitled to access buildings. But it is unclear whether the legislation was foreseen to curtail development to the extent that it has.

SHRINKING SMPTE FACES ISSUES AUSTRALIA COULD LOSE ONE TV NETWORK

As SMPTE staged its final expo at the Sydney Convention and Exhibition Centre, which is to be demolished next year, wider industry issues were the talk of the aisles.

As trade shows decline in importance, so too has the floorplan for SMPTE which this year featured notable gaps and reduced participation from many leading suppliers.

While 3D TV was a hot topic at the last SMPTE in 2011, networks have gone shy on producing expensive content that requires stereo cameras and duplicate edit channels.

Nine Network boss David Gyngell flagged the possibility one of the three commercial networks may fail, with reduced revenues and new Hybrid Broadcast Broadband TV (HbbTV) to launch next year – requiring yet more investment.



Meanwhile cable TV suppliers report shrinkage at the top end of the subscription market, which puts pressure on content suppliers to make more with less. Most significant portent of this was the enormous Blackmagic Design stand at InfoComm, with cut price 4K equipment and price tickets up to 75% less than equivalents in 2011.

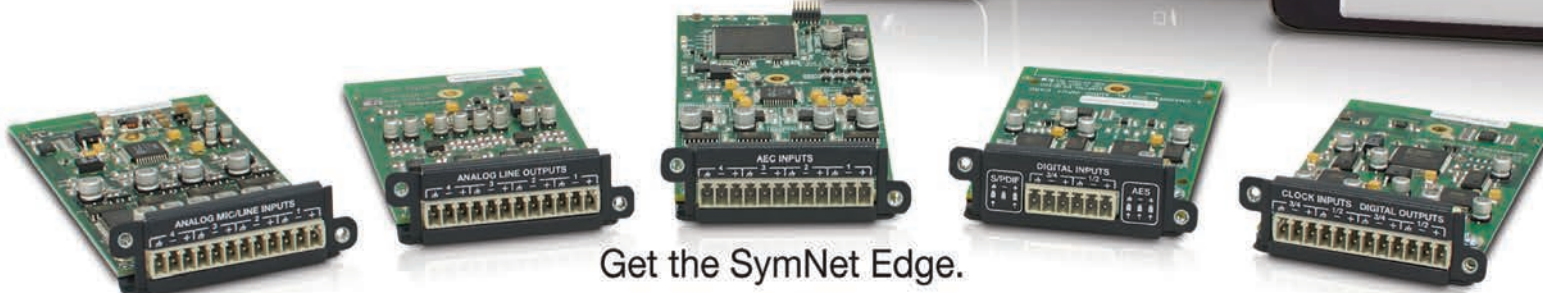
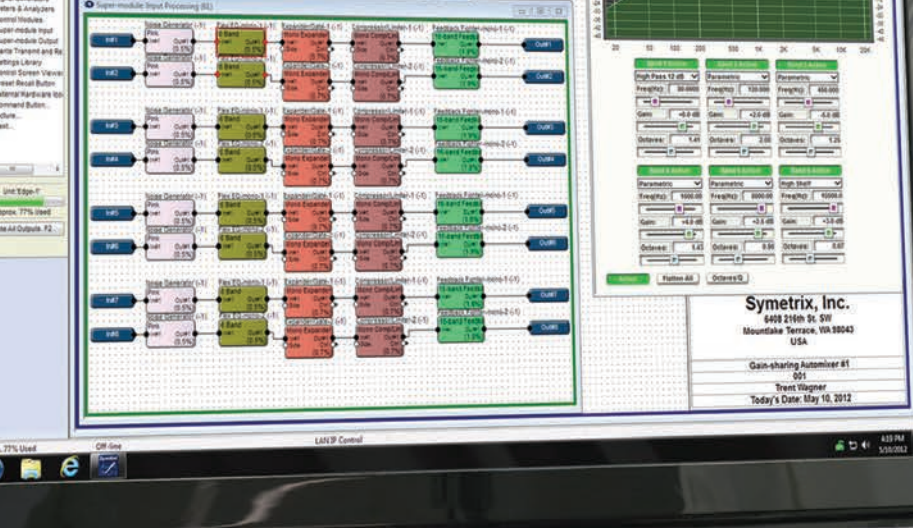
CX NEWS BRIEFS

Peavey Electronics and Audio Products Group (APG) have decided to part ways. Peavey has announced its new distributor in Australia and New Zealand as Australian Music Group (AMG). The trading names AMG and MusicLink were bought by Con Gallin's Australian Musical Imports when AMG, which consisted of Allans, Billy Hydes and MusicLink, collapsed in 2012.

Mersive, a leading provider of visual computing software, has announced that Image Design Technology (IDT), one of Australia's premier importers and distributors of audio, video and data distribution and display technology has been appointed as a Distribution Partner for Mersive. IDT will introduce Mersive's visual computing software solutions to the Australian and New Zealand markets.

RØDE Microphones has purchased rights to the FiRe audio recording application for Apple iOS devices from US based developer, Audiofile Engineering. RØDE has taken complete ownership of the app as well as the fundamental code to continue to refine software in this growing market sector. In the next few months RØDE will release improved versions of its existing app based on the FiRe platform, RØDE Rec, and is working on advanced hardware.

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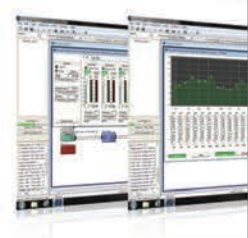
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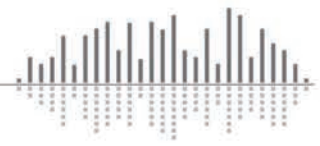
End user control options for Edge include Symmetrix' ARC wall panels, ARC-WEB browser-based remote, and SymVue custom standalone user control application.



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JANDS ADD STUDER DENMARK'S DIS ALSO REPRESENTED

Jands have expanded their product portfolio, adding Swiss brand Studer and Denmark's DIS to their stable.

DIS (Danish Interpretation Systems) manufacture conferencing products and are a division of Informationsteknik Scandinavia Group of Copenhagen, Denmark, which Shure acquired in February 2011. DIS is a leading brand of advanced conference technologies, providing discussion and conference systems to the global meeting industry. It offers complete packages for simultaneous interpretation, discussion, voting, language distribution, online streaming of meetings, and software management.

Founded in 1948, Swiss based company Studer is one of the leaders worldwide for professional audio. Over the years the company and its brand name Studer became synonymous for broadcasting and recording equipment. Today Studer is able to offer solutions for nearly every application in the field of Professional Audio.

Studer products begin at the affordable On Air Digital Radio consoles up to the world renowned Vista 5 and Vista 9 for Outside Broadcast and Studio Applications. "With the Vistonics platform readily accepted worldwide across both Studer and Soundcraft products, in both the Broadcast and Live Sound markets, Jands will be able to offer a complete suite of products to these markets," said Jeff Bolt, National Sales Manager of Jands.

STUDER
by HARMAN



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DISCOVERY CHURCH UPGRADE WITH EAW AND PAVT

Based in Mount Evelyn, one of Melbourne's outer eastern suburbs, Discovery Church is one of the city's largest churches, with 1,700 people attending services each Sunday.

As a growing and dynamic church, it had outgrown its old PA and was in need of a new system to meet its needs. The first of three staged upgrades was recently completed, which now delivers controlled, high-quality audio for the congregation.

A church sound system is always a design challenge, as it needs to be able to communicate the smallest whisper through to the loudest shout. Church bands can be simple acoustic duos through to 15 piece rock and roll bands. Peter MacLean, both a member of the church and a PA design consultant, worked closely with Production Audio Video Technology to create an EAW solution.



Short Technical Courses in January



Juliusmedia and The Concourse (Chatswood) have partnered to deliver short sharp technical training courses within Sydney's newest performing arts centre. These new CONCOURSES draw from a decade of training experience at Juliusmedia and take advantage of the latest technical equipment installed at Concourse. Concourses are for people interested in developing skills for live production in theatre and venues. Concourses are INDUSTRY ACCREDITED.



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Syntec Hits 40

Longevity in pro audio takes skill and dedication. CX visited Syntec International, a family owned firm in Sydney, to share the journey.

BY JULIUS GRAFTON

SYNTEC CELEBRATED 40 YEARS AS AN AUDIO DISTRIBUTOR RECENTLY, BUT THE STORY STARTED DECADES BEFORE WHEN FOUNDER CLIVE SLOSS DIDN'T GET SHIPPED OUT IN THE SECOND WORLD WAR. AT THE TIME RADIO WAS AN ESSENTIAL SERVICE AND CLIVE WORKED FOR A MELBOURNE BROADCASTER.

Clive's career revolved around audio and he reached an epiphany at the age of 51 when the Simon Gray Company he worked for, was sold into a larger group. He went home and talked with his 28 year old son Robert (Bob) Sloss about going out on his own.

"What will you call it?" Bob asked. "Synchronized Technology", Clive replied, so the firm became a more practically named Syntec.

In those early years of the 1970's, four track recorders were high tech and after sales service required specialist technicians. Radio and TV stations needed bundles of equipment, and distributors would package up products from other distributors to win a job. Syntec acquired its first brand; Rycote professional audio wind shield and shock mount systems.

Clive worked from home in Sydney's Castle Cove before moving into a nearby shop. He added Orban (audio processing), and took on Bryston and Tascam.

Bob worked in retail, before becoming a sound recordist for the ABC Film Department. He found himself working on Four Corners for nearly a decade, and was away on assignment overseas, when his son Michael was born. Bob has been married to Raine for 44 years, they also have a daughter; Nicolle.

BOB SLOSS IN YOUNGER DAYS



SHARPY WASH 330

THE LITTLE WASH-LIGHT THAT MAKES A BIG DIFFERENCE



Sharpy Wash 330 is an extraordinarily compact, lightweight 330W washlight, with the luminous efficiency, graphic and optical performance of a more powerful 1000W fixture. It is extremely silent and quick, fitted with a complete CMY colour system, additional colour wheel, 6.5 – 48 degree zoom, mechanical dimmer, beam shaping filter and motorised top-hat. It is an eco-friendly light, consuming very little power therefore saving on consumption costs.

The optical system is highly versatile with a zoom that ranges from 6.5° (a "narrow" angle that makes it quite similar to the Sharpy) to a striking 48°, which is perfect for theatrical and television environments.

Bob says he didn't want to travel on assignment after Michael was born, having been to all corners of the earth and twice to Vietnam during the war. "That wasn't pretty", he said. ABC relented and he worked on 'Bill Peach's Australia'.

Golden Years Of Recording

Clive suggested Bob join the business and leave the ABC, so he started wrapping parcels and doing deliveries. They sold Studer multitrack machines into Australian recording studios, which were expanding from 8 to 16, then 24 track to 48 track. Syntec had SSL consoles in the golden era, where doorways were widened and holes were knocked in walls to install them.

"We had Dolby as well. That was great because for every channel of audio, you could sell a channel of Dolby SR as well". Bob said.

In 1989 Clive turned 65 and sold the business to Bob and Sennheiser appeared – when its former distributor took a wrong turn and ran into trouble.

Wireless microphones were not new then, but Sennheiser had already made a mark with the SKM 4031. Most of the business in 1989 was professional microphones, like the MD421, MD441, MKH415 and 815.



BOB AND MICHAEL SLOSS



MICHAEL SLOSS AS A YOUNG SENNHEISER USER

Sennheiser Takes Off

Syntec had a good stable of brands that served the pro audio broadcast, live and installation markets. Sennheiser quickly became a star brand in aviation when Qantas ordered 70,000 headphones for their aircraft, (in addition to their normal pilot headsets). The order was placed in Germany and the airline picked up the headphones in Frankfurt.

Sennheiser pushed hard into retail both M.I. (with the then new Blackfire range) and headphones through hi-fi stores. "Sennheiser were big in headphones and maybe they started to question where that market was going. However Apple launched the iPod and the ear bud/headphone market took off", Bob says.



At that time Syntec sold over 90 per cent by value into the professional market. A decade later, consumer is larger than professional, almost wholly off the back of Sennheiser headphones and earbuds. This year Syntec sold almost three quarter of a million sets, which would mean one in ten Australian's has or has had a Sennheiser product in the last five years or so.

Audio Business In 2013

At 68 Bob is not showing signs of retiring. He and his son Michael, who works in the next office work well together "Michael started like I did at the bottom and learnt the whole business. Now he is our Operations Manager. He is very methodical. We try not to talk about work outside of the business, however it's never far away from thoughts."

With 55 staff in Australia and New Zealand, Syntec are a sizeable firm in the local audio industry. Sennheiser are also probably the largest brand in professional audio, with over 580 million Euro turnover last year.

The world is getting smaller. Counterfeits, grey importing and online sales affect our industry, but Bob isn't terribly worried. "Shure and Sennheiser work hand in hand in China chasing counterfeiters down. And the key to grey importing



CLIVE BEING HONOURED BY ASSG

(where someone imports genuine product sourced from a third party) is to where possible, work on the price here. Online is becoming fairly important, it puts pressure on Australian business but it's good pressure. I enjoy working here. It's a winding road; you move a little and then have a look at where you are going. We have to adapt and change."

Syntec - History in decades

<http://en-de.sennheiser.com/about-sennheiser/at-a-glance/animated-history/history-in-decades>

TEAM POWER

AN INTERVIEW WITH MARG CROMPTON

By Jeanne Hurrell

THERE'S POWER IN PASSION IF MARG CROMPTON'S CAREER IS ANY INDICATOR. STAGE AND PRODUCTION MANAGEMENT WASN'T HER ORIGINAL CAREER CHOICE BUT SHE'S BEEN AT IT NOW FOR ALMOST THIRTY YEARS AND HAS NO INTENTION OF SLOWING DOWN. OVER COFFEE RECENTLY, I ASKED HOW IT ALL CAME ABOUT. CLEARLY, SHE LOVES HER JOB AND HAS SOME SOUND ADVICE FOR THOSE WHO WANT TO SUCCEED.

JH: Why did you decide to work in technical production?

MC: I was in my mid-twenties in Brisbane and had always loved the theatre. My mother was artistic and I'd been doing amateur theatre for years so I took the plunge and enrolled in the theatre course at what was then the Darling Downs Institute of Advanced Education, now the University of Southern Queensland. But it didn't take me long to realise that I would only ever be an average actor. My lecturers wisely suggested I might move into the stage management class.

JH: Why did you decide that stage and production management were for you?

MC: I remembered being in the chorus for an amateur show and being fascinated by what the stage manager was doing side stage. And, as an actor, I was more worried about my props than the motivation of my character. I wasn't enamoured of things with knobs and sliders so I couldn't see myself as a tech. I wanted to work with people rather than with things — to come at it from a people perspective.

Peter Smith was my lighting and stage management lecturer. He'd come from NIDA and been manager of Strand lighting for many years. Bill Dowd was the design lecturer. It was a good all-round theatre course. We did history of theatre, lighting, sound, simple set and props construction as well as acting and voice. There were six in my class and they're all still working in the industry.



MARG CROMPTON

I resisted going into Production Management for a long time. I liked the work in the rehearsal room too much. But, after I had my two kids, Production Management offered me more flexibility so I eventually gravitated in that direction. These days, it's mainly what I do and I love juggling all the parts of the production jigsaw.

JH: What do you like and dislike about being a stage manager?

MC: The best part is the process in the rehearsal room and being able to contribute to it — the creativity and thinking on your feet — it's a privilege. I least like looking after other people's time sheets. 25 actors are a pain.

JH: What aspects of being a production manager interest you most?

MC: Filling in the gaps — being the glue for the production. Managing people, not things — although there's still a lot of 'thing' management — the challenge of getting teams to work together.

JH: How do you manage your life as freelancer?

MC: Very carefully. I've been fortunate to have regular jobs or longish contracts and on-going work on favourite festivals and events. This keeps me connected with industry colleagues and new practices. It's hard work but great fun. When my kids

were little, I worked at a reduced level. After college, I was lucky to get full-time work with QTC then MTC and lots of touring. I also worked the World Expo on Stage in Brisbane and with Rock 'n Roll circus and other 'ratbag' companies who were great. In 1994, I came to Adelaide for love but found a settled lifestyle in a community that valued the arts.

JH: Where do you work and what is your favourite venue?

MC: I work at the Adelaide College of the Arts as Production Manager for student productions. There's plenty of glue required as we train baby techs and stage managers. I love watching the new techs test out their skills in a supporting environment then watching them spread their wings in the industry.

But my favourite venue is a dusty corrugated iron shed in Amata in the APY Lands in far north-west SA. There's a small stage, a sound system unloaded from our touring trailer, musicians and instruments from the community, a couple of touring artists and everyone out for a great time, the culmination of a couple of weeks of workshops. The entire mob was involved in the set-up, operation or performance. Little kids doing the bum dance on the dirt and the dust in the atmosphere created the most amazing 'haze' effect.

JH: Who have been the most important drivers of your career directions?

MC: My lecturer, Peter Smith — old school and inspirational; Roger Hodgman who invited me to work at MTC; production manager Keith Tucker who started me in festivals; Lee-Ann Buckskin my manager for the APY Lands project. They gave me opportunities and then left me to work it out — to sink or swim.

JH: What has been your most satisfying gig?

MC: It's hard to beat the desert shows in the APY Lands, but also working on new Australian plays. It's fantastic to be sharing the page to stage moments with writer, director and cast. In the days of fax machines, I remember actors in a tech suddenly reading lines I'd never heard. Turns out David Williamson was furiously writing new scenes and faxing them through to the office staff who delivered them direct to the actors.

I loved Rock 'n Roll Circus too. I was ticket seller, popcorn maker, usher, mech, dresser, SM, LX board op, follow spot op, sound op. It was theatre on the fly but their ethics, hard work and discipline meant they never injured themselves on stage and we always worked as a team.

JH: What's been the gig from hell?

MC: There's a few. The acrobat who smashed his ankle into 88 pieces on stage — the ambos took 45 minutes to get to the theatre! On High Society at Melbourne's Comedy Theatre, the cyc ripped from bottom to top as a cable caught around a moving revolve. Another show had a set segment breaking down multiple times on closing night – four visits

from prompt corner to centre stage to apologise to a 2000 seat Lyric Theatre audience for yet another set issue...

JH: What advice would you give to someone who wanted to work as a stage or production manager?

MC: Be flexible, reliable, and punctual, finish the task completely, think laterally, and get to love Officeworks and hardware stores.

JH: Is there anything else you'd like to add?

MC: Keep asking yourself questions like:

- Are you a team member? If you just 'phone it in' go home now.
- What's the condition of your paperwork? Is it ready for someone to step in? The hit by a bus scenario happens!
- Am I the person who remembers not the person who forgets? Go out there and do your job better than you've ever done it and with grace and care. Whether it's vacuuming or changing batteries or whatever, it's all contributing to the show and you should feel proud of your role in the team.

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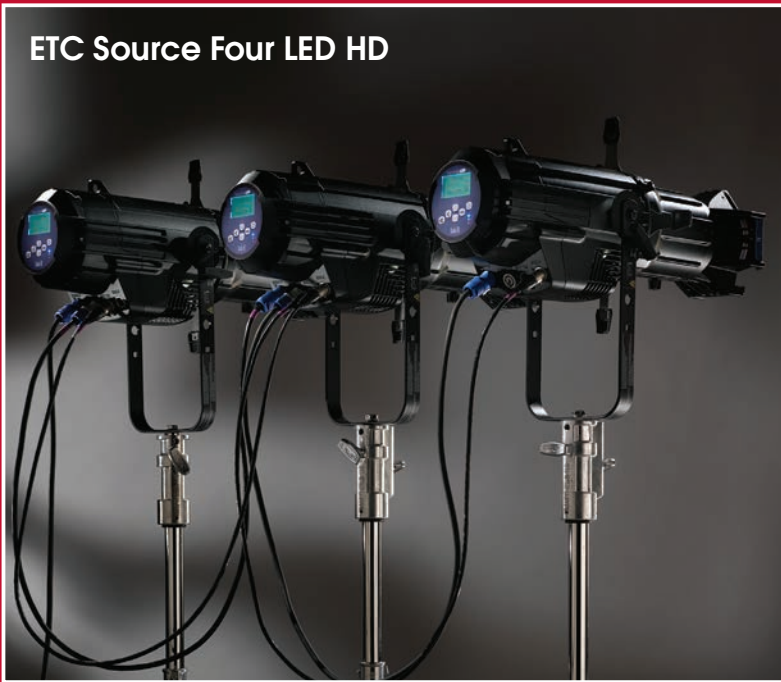
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EDITED BY JASON ALLEN

ETC Source Four LED HD



ETC's new Source Four LED Studio HD spotlight was designed to perform in a high-definition production world where people need to look their best. Studio HD's flicker-free mode prevents the undesirable side effects that commonly arise when using LEDs with high-speed and rolling-shutter cameras. On-board controls mean no external controller is required.

The Source Four LED Studio HD's presets can be copied to multiple fixtures. The PWM output can be adjusted between 9 20-1500Hz and High 25K for flicker-free, high-speed camera work. It accepts all conventional Source Four accessories and can also control other Source Four LED and ETC Desire fixtures.

www.jands.com.au

Christie Mirage Projectors

Christie has introduced the Mirage 4K25 and Christie Mirage 4K35 projectors for 3D applications for advanced visualisation in automotive, location-based entertainment, government, military, oil and gas and more.

These new 3-chip DLP projectors, anchored by the new Christie TruLife electronics platform with proprietary 1.2 Gigapixel per second, floating point architecture, offer full 4096 by 2160 resolution at 120Hz for 3D.

The Christie Mirage 4K25 and 4K35 provide outstanding flexibility in brightness from 10,000 to 35,000 lumens, a variety of input options including DisplayPort, HDMI and HD-SDI, and built-in Christie Twist for curved screens and blended array visualization applications.



EAW VFR-i Series



VFR-i Series
Loudspeakers Series

EAW has released the VFR-i Series Loudspeakers series providing a controlled, high-fidelity cabinet range for low-cost installs.

The VF Series leverages EAW's core technologies, originally developed for the renowned MK, VR and FR Series to deliver an unprecedented level of fidelity, output, and pattern control for cost-sensitive applications.

The VFR "i" revision continues the original series' high performance, packaged in a more traditional looking cabinet. The VFR-i series are available in black or white, with or without side-handles and pole-mount capabilities. Driver options include – 6", 8", 10", 12" & 15". All models are horn loaded, with superior beam-width control.

Martin M-Series V3 Software

Martin has released a new software version for M-Series consoles with hundreds of improvements and a new user-interface. The new v3 software features faster start-up time, show loading and more efficient access to functions. The user interface has been optimised for touch and gesture technology. Users can swipe to move from view to view, access other playback banks quickly or change parameter selection. Double tapping on playback status accesses its functions and options. Additionally, users can enlarge the quick slide out for visual parameter control.

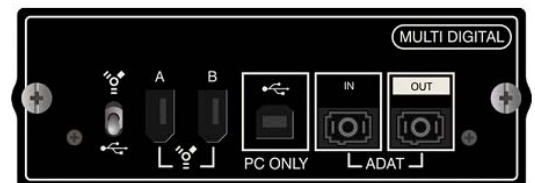
Martin's M-PC v3 is a real PC-based controller with a user-interface optimised for any Windows 7 or Windows 8 PC. M-PC Free Edition is available for one universe over Artnet as well as the popular ENTTEC DMX devices.

It's also possible to use the M-PC with two universes using any Martin Duo-DMX box. When using its One-Key dongle license, the universe count can be increased to 8 and even 64, making M-PC one of the most powerful lighting PC controllers in the industry.



Soundcraft Multi Digital Card

Soundcraft has announced a new option card in the ViSi Connect series of expansions for the Si Expression, Si Compact and Si Performer consoles, providing users of the console with a multi-channel, multi-format interface for live and studio recording to DAWs and other recording systems. The Multi Digital card provides 32 output channels (fed from the console channel direct outputs or other feeds) and 32 input channels for playback/monitoring from the recording system, often PC or MAC based DAW's. The card has connections for USB and FireWire, plus another eight channels of ADAT interface on TOSLINK optical connectors. A second FireWire port allows the connection of an external hard disk as well as a computer, which provides a more stable recording solution than using the computer's internal hard drive.



Soundcraft
Multi Digital Card

Elation EZ6 LED Video Panel

Elation Lighting introduces the next breakthrough in its expanding line of affordable LED displays... the EZ6 indoor LED video panel. EZ6 is a high resolution, 6mm pixel pitch, LED video panel. It is constructed of a die-cast aluminium frame with high precision CNC machining techniques.



Because of its bright output and modular, light and easy to handle body, it is ideal for permanent installations where hanging loads for screens are limited but brightness is required.

The EZ6 is ideal for use in halls, theatres, stages, clubs or any indoor public space where a high resolution/reliable video wall is required.

dbx PMC16 Personal Monitor Controller

The PMC16 is a 16 channel personal monitor controller which allows the user to create a custom mix from 16 channels of audio. Designed to be used with the dbx TR1616 or any other BLU link compatible device, the PMC16 allows for monitoring with headphones, in-ear monitors, powered monitors, or traditional wedge monitors. Multiple PMC16's can be daisy chained using CAT5e cable. The PMC16 comprises a 16 channel mixer section with full control of levels, panning, effect send levels, muting, and soloing. Onboard Lexicon reverb provides the finishing touch.

dbx
PMC16



Yamaha XMV multichannel power amplifiers



Yamaha XMV multichannel power amplifiers

Yamaha have added new 8-channel power amps to the four existing XMV Series 4-channel models. The XMV8280 and XMV8140 are equipped with Yamaha's newly developed YDIF digital audio format connectivity allowing for fast and easy setup with Ethernet cables. The XMV8280-D and XMV8140-D utilize Audinate's Dante digital audio network for larger venues where long distance cabling is required.

All XMV power amplifiers can operate in both high-impedance (70V/100V line) or low-impedance (4Ω/8Ω) modes simultaneously, eliminating the need for separate, dedicated amps or an external transformer. The newly developed "Double Power Mode" effectively doubles the output of selected channels in order to drive speakers of varying output power via a dip switch on the rear panel. In addition, the updated version of MTX Editor will provide users more detailed control of the XMV's parameters via its easy-to-use interface.

Sennheiser conference and visitor guidance headphones

Sennheiser has released new headphones specially created for conference and visitor guidance systems. The lightweight HP 02 and NP 02 on-ear headphones ensure high listening and wearing comfort while delivering optimal speech intelligibility. Features include an adjustable headband on the robust HP 02, while NP 02 has a neckband that accommodates additional headgear. The easy to change ear pads of both headphones meet high hygiene standards. In addition, the HP 02 is equipped with rotatable ear cups for efficient storage.

The extremely lightweight EP 01 in-ear phones are available in single and dual-sided designs. The dual-sided stereo model delivers excellent speech intelligibility while the single-sided mono version additionally allows an understanding of external sounds. Both in-ear phones feature changeable foam ear pads for optimum hygiene.



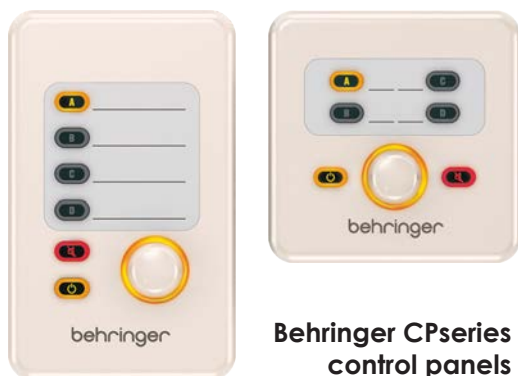
Sennheiser HP 02 and NP 02 on-ear headphones



Extron HDMI distribution amplifiers

Extron have announced two new, larger HDMI distribution amplifiers as part of its HDMI DA Series product line. The HDMI DA4 with four outputs, and HDMI DA6 with six outputs, are HDCP compliant and support HDMI specification features including data rates up to 6.75 Gbps, 12-bit Deep Color, 3D, Lip Sync, and HD lossless audio formats. They also support HDTV 1080p/60, 2K, and PC resolutions up to 1920x1200.

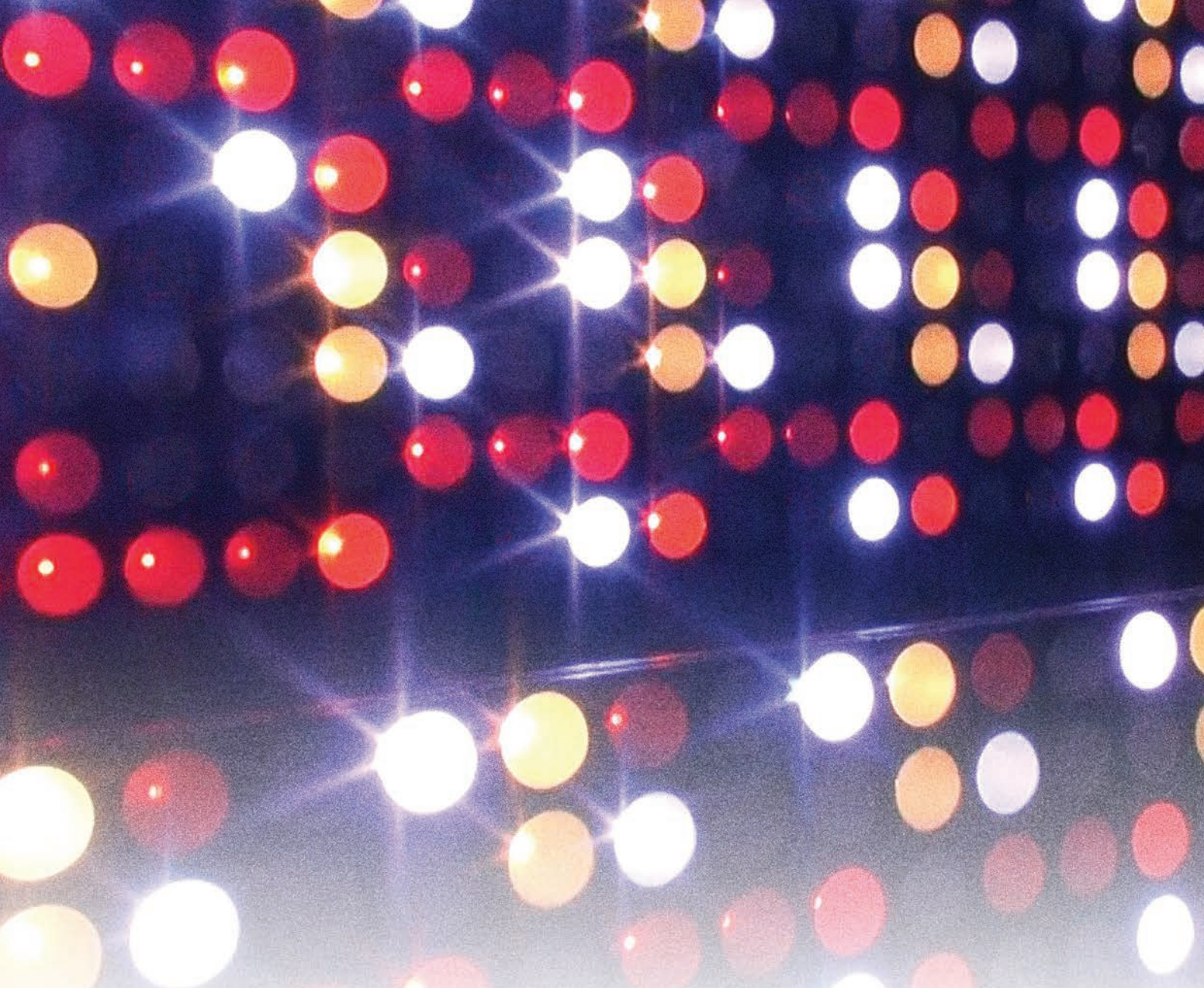
For ease of integration and reliable operation, the HDMI DA Series features two Extron-exclusive technologies: EDID Minder, which maintains continuous EDID communication between connected devices, and Key Minder, which continuously authenticates HDCP encryption between all devices, ensuring the simultaneous distribution of source content to connected displays. The HDMI DA Series is ideal for applications that require the distribution of an HDMI source signal to multiple displays.



Behringer CPseries control panels

Behringer CP6000 Series wall controllers for EUROCOM MA6000 Digital Mixer-Amplifiers.

BEHRINGER has added to the utility of the MA6000series of Digital Mixer-Amplifiers with the release of the CP series of wired remote control panels. CPseries control panels feature auxiliary input selection, mute and power on/off buttons, as well as an ergonomic volume knob and space for labelling auxiliary input sources. The volume control can be assigned to the main mix bus or to the four (A, B, C, D) auxiliary sources only, allowing remote control over program or master volume. Remotes connect to the MA6000 over standard Cat5 cable which provides data connections and power, including subtle illumination.



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Australian Dance Theatre's PROXIMITY – BREAKING THE LAWS OF PHYSICS

BY JASON ALLEN

Jason Allen interviews French multimedia, projection and software guru Thomas Pachoud about his mind-bending video works, custom app creation for shows and how to make robots dance

Based on concepts from neuroscience, such as the brain's habit of treating the structure and weight of objects we interact with as extensions of ourselves, the Australian Dance Theatre's Proximity is a work that uses real-time video processing to go far beyond the narrative limits of the human body. A creative collaboration between the ADT's artistic director Garry Stewart and Paris-based multimedia artist Thomas Pachoud, the work had its world premiere at the Adelaide Festival in 2012. Melbourne audiences get to see it in a limited run at The Arts Centre from Thursday 15 to Sunday 18 August.

Garry and Thomas' creative relationship began in 2011 in Paris, when Garry choreographed a new production of the early 20th century Stravinsky masterpiece "The Rite of Spring". Thomas provided visuals, incorporating a video effect he calls "Chronophotography": a camera is trained on a dancer, multiple still images are taken as they move and are overlaid in a real-time sequence, projected on a screen. The effect is like seeing a record of movement frozen in time, while the dancer continues to add to it.

For Garry, this was a natural progression to a concept he had already been working with. He had previously created a show called "Held", which featured legendary dance photographer Lois Greenfield on stage taking still shots of the dancers that were projected live. Thomas' video work was the next step in extending and enhancing the



Thomas Pachoud

dancer's presence on stage. Thomas was invited to Australia to develop a new show, and flown out to begin work five months before it was due to premiere.

Creative Coding

Thomas' background is in Computer Science. He studied multimedia engineering and graphics programming at the Ecole du Ingenier IMAC at Champs-sur-Marne, just east of Paris. He specialises in custom video and image manipulation for dance and theatre, mainly using VidVox's software VDMX as a basis for his projects. A confident coder, he writes custom applications in C++, and implements processing and control solutions through a variety of open source protocols including Syphon and OSC.

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The creative process began with a single HandyCam and an Edirol vision mixer at the ADT's studio in Adelaide. As the concepts and choreography developed, so did the tech – Thomas would experiment with different video effects, show them to Garry and the dancers, incorporate their feedback, write custom code and applications, and train the dancers to handle and manipulate video cameras.

The creative team were after three things; to be able to manipulate images of the dancers in time and space, to play with the “point of view” of the audience and the dancers, and to add custom video effects to illustrate artistic concepts. Proximity deals with ideas of unseen connection between our brains, our environment and each other, “A lot of the video in this work is about making those invisible connections visible”, said Garry.

After months of experimentation, the video design was finalised. Three video cameras would be deployed on stage, to be operated and controlled by the dancers. All vision would route through Thomas' dual redundant Mac Pros running VDMX and a variety of custom apps. Projection would be through three projectors to three screens in 4:3 ratio hung at the rear of stage, which could be addressed with three separate images or one large one. Thomas would operate the show from side-stage via his iPad running Liive's Lemur app.

MIND THE AIR GAP!

The first practical decision that had to be made was their choice of video camera. “I wanted cameras where the cable could be locked”, explained Thomas.

“So this meant we had to use an HD-SDI camera, for the locking BNC connection. We couldn't use HDMI, because it's so easy to unplug. The ADT's Tech Director called suppliers, and we tested all the cameras that fit our budget.

The Sony was the best in low light and easiest to manipulate for the dancers”.

Training the dancers to be videographers while performing a technically demanding choreography was the next task “They had to learn and experiment”, Thomas said. “They had to understand how to set the cameras up, how to manipulate each part of the camera, and if something goes wrong, how to fix it.

For example, the main issue was the camera going out of focus, particularly in low light.”

The camera feeds all came to Thomas for processing and routing. The most striking video effects in Proximity are all achieved with custom apps created by Thomas using OpenFrameworks, an open source C++ toolkit that provides a simple programming environment that unites a lot of commonly used code libraries, including OpenCV for vision processing. Video routing between the custom apps and VDMX was achieved with Syphon, an open source Mac OSX protocol that allows video and frame sharing between applications.

I'm NOT THE VJ

More commonly used as a VJ tool at dance parties, Thomas has been using VDMX for four years. "I love VDMX for live performance because setup is completely free", elaborated Thomas, "so for each performance I can build exactly the setup I need. There's a lot of stuff you can build in that makes everything automatic – like unloading clips when you're finished with them to free-up RAM."

The "Chronophotography" effect that first caught Garry's eye was bought into the show, along with a close equivalent. "Chronovideography", playing with the dancer's position in time and space. More complicated effects that add "particles" and "webs" to vision in real-time based on the contours and shapes of the dancers were created for the show.

The "web" effect is striking; vectored lines based on triangles are drawn from point-to-point on or between the dancer's bodies, creating a contour map of invisible connections. It happens perfectly, seamlessly, in real time, and the mathematics perfectly emulates the way a human brain draws relationships in time and space; a dancer's hands, held apart in a Cat's Cradle pose, are filled in with virtual string that sits and moves exactly as the real thing would. This effect creates a new and profound dialogue in our brain when used to illustrate the fast-moving relationship of two dancer's bodies as they twist through space.

Thomas achieves this feat by running the vision through OpenCV. He removes the dominant background colour, leaving the dancers outlined. He then sets a black/dark threshold for the image to get the exact contours of their bodies. This contour is then simplified mathematically before applying a Delaunay algorithm. A Delaunay algorithm, to cut the mathematics down to an absolute minimum, draws triangles from a given set of points with each interior angle maximised – i.e. no skinny triangles. These triangle vectors are then rendered as lines on the processed video.

Wireless, automated and backed-up

When he's available, Thomas operates the show from the wings via an iPad running the Jazzmutant's Lemur iPad control app. Sadly, he won't be attending the Melbourne season, so he's deputised his colleague Olivier for the run. Thomas chooses the Lemur app because it can be customised directly from the iPad and it can send OSC (Open Source Control) messages to multiple devices. This aspect is vital as it enables all show commands to be sent to the main and backup Mac Pros simultaneously, as well as give Thomas the ability to send different OSC commands to different applications.

The majority of the background automation, switching and routing is accomplished through tapemovie, a MaxMSP patch built with didascalie.net, a team of French developers. It records cues and can then be controlled via the Lemur app, giving Thomas or his stand-in a big green "Go" button to hit for each section. All video is being routed via HD-SDI and connected through a 16x16 BlackMagic router. Seemingly unable to stop himself from customising everything, Thomas wrote another OpenFrameworks app that can control the router through MaxMSP via OSC.

With Thomas remaining in Paris for the Melbourne run, we asked what was keeping him away; "At the moment I'm working with robots", he smiled. "We have seven little robots from Aldebaran, a French company. They're 70 cms high. I'm using MIDI tracks through Ableton Live to control them, the audio and the video projection". Cooooool! Look for a follow-up story in these pages as soon as new info comes to hand...



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THE MILL REPORT

40 FEET OF CLARITY



When there's no room left in your studio for more junk, don't clean up... just move the problem into a shipping container.

HOW DOES ONE ACQUIRE SO MUCH CRAP?

LAST WEEK I MADE THE MOMENTOUS DECISION TO BUILD ANOTHER OVERDUB BOOTH DOWN HERE AT THE MILL, INSIDE A SPACE THAT, THROUGH YEARS OF NEGLECT, HAS SOMEWHAT EMBARRASSINGLY MANAGED TO ACCUMULATE EVERYTHING FROM WHIPPER SNIPPERS AND OLD PAINT TINS TO OFF-CUTS FROM THE ORIGINAL STUDIO BUILD THAT I JUST COULDN'T BRING MYSELF TO CHUCK OUT.

The corner in question is a mess, but now that the area is going to be pressed into action as the new “quietest room in the studio,” all this crap has to go somewhere else... but into a skip and thrown out? No chance!

Thankfully I've found a spot for most of it already; though it's not a very good long-term solution I'll admit... it's the lawn outside the studio door.

It looks great out there right now... 'classy' you might say. There's the aforementioned whipper snipper, a new(ish) solar hot water system that I haven't had the time or know-how to drag up onto the roof, pine lining boards that were left over from the staircase, and were themselves recycled from the front bedroom of the house. There's a gas-fired heater that I collected ages ago but have never used, a couple of bikes, parts off the ride-on mower and a liquorice all-sorts of hand tools and fuel cans. If only I could shift it all into the national gallery, it would easily classify as pop art.

FOUND OBJECTS AS ART

I always find myself saying this but I really have no idea if it's true: collecting stuff and putting it aside for a rainy day is just part and parcel of owning a studio... an occupational hazard you might say.

BY ANDY STEWART

Hmm, now that I've written this quaint theory down, I'm pretty sure it's utter bollocks. I need to face facts here; I'm either a magpie or a slob.

But I can't just build another shed to house all this crap. That would take months. Besides, I already have a second shed on the property that's larger than the house, which, funnily enough, is *also* full of crap. I think there's a pattern here. I need a solution.

Cue the arrival of a 20-foot shipping container. Yep, I'm getting one from Melbourne... for, as luck would have it, my brother has *four* that he no longer needs.

TWO FOR ONE

But of course, this seemingly irrelevant fact – *that there are four* – has excited the magpie in me and reignited my desire to build a dedicated echo chamber for the studio as well... you know, a specific room containing speakers and mics that I can feed audio signals into and retrieve back as reverb, which I can then add to songs as a secret weapon. No plug-ins here folks; this will be bona-fide analogue mixing at its purest.

A shipping container would be like an 'instant' echo chamber! I wouldn't have to build it, I'd only have to line it and fit it out with some basic speakers, mics and a multicore... (he says, knowing full well there's far more to it than that).

So now it looks like I'm getting *two* shipping containers: one for all the crap, the other to act as a giant reverb tank. I think I should check myself into the local nuthouse.

PLANNED CHAOS

So here's the plan (subject to change). In the coming months, I'm looking to build an overdub booth, an echo chamber, produce and mix about five albums, as well as renovate the front room of our house to accommodate the arrival of a new member to our family... yikes! This is all starting to sound pretty unrealistic.

Actually, come to think of it, I think this may be the problem many of us audio engineer/producer types have... we're unrealistic about how long things take. I know I am. I don't think I've ever really sat down and tried to work out how long the average song takes to produce. How can you, they're all so different?

The overdub booth will be no different I suspect. A good mate of mine, Rick O'Neil will attest to that. He reckons I once told him I could build a quadratic residue diffuser (a fancy acoustic panel) for his mastering room in Sydney in about six hours... it eventually took three weeks. I've always denied it. I could never have been so optimistic about a construction time frame, could I? Umm...

Anyway, let's mark this point in time as the moment when the gun was fired and the overdub booth's construction began. Should take about six hours...



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THE MILL REPORT...continued

DESIGNS FROM NEAR & FAR

Next to me I have some plans for a studio that was going to be built about a decade ago, but never eventuated. Amongst the plans are details about an overdub booth that I'm hoping might suit my current situation. The design was drawn up by the late, great Richard Priddle, and I was to be his right-hand man on the project.

Richard was well known in the pro audio community as an acoustician, hyper-enthusiast and total brainiac when it came to mathematics and acoustics. Tragically, Richard died a few years ago now, and today I wish I could ring him up and ask him what half of this stuff on the plans really means. Richard was great at design, but his weakness was translating ideas into English. I was going to be his 'translator' on this job, but looking at the drawings today, I'm not so sure I would have coped.

My plan for The Mill is to build an overdub booth inside a space no bigger than 2.9 x 4.0 metres, with a (frustratingly low) height of 2.3 metres. But – and this is where I tend to slow up and the wheels fall off the time-line – I love consensus of opinion when it comes to stuff like this. Countless people have built overdub booths over the last

two centuries, and I figure it's crazy not to tap into the collective knowledge base for some external perspective on what makes a good one, or a bad one. Too many overdub booths go unused in studios, winding up as broom closets or equipment graveyards. I don't want mine to be one of those.

FEEDBACK REQUIRED

Given that it's 2013, the century of interactive multi-media, I'd like to put the call out to anyone reading this who might have built an overdub booth in the last 50 years, whether they were happy with it or not.

Contact me at andy@themill.net.au and hopefully in a forthcoming issue of **CX** we can compile a survey of some of the best (and worst) overdub booths in Australia.

In the meantime, I'd better get back to these plans and see if they're in any way relevant to The Mill.

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TOOLBOX review

A notable tool on the outboard rack at The Mill currently is a Radial Workhorse Cube housing SSL's new G Series Bus Compressor. The G Comp is a 'double wide' 500-format module based around the bus compressor from an SSL 4000 G console of yore. These original compressors have been strapped across literally millions of mixes over the decades, and for two simple reasons: their clarity and attitude.

The 'G Comp' 500-format equivalent relies on a third party's power supply to drive it – in this case Radial's three slot, carry anywhere Cube – so in some ways there's much that's different about the new 'double wide' SSL module. Operationally, however, they're much the same, sporting that now oh so familiar SSL compressor layout that's penetrated virtually every home studio on earth courtesy of the countless plug-in GUIs that mimic it.

I really like this compressor. It's fast and furious when you want it to be; clobbering mixes on the head mercilessly when required without the tonal balance shifting very far off course. The best thing about this compressor is that you can drive all your work through it without so much as a shadow of doubt about the quality of the signal path. SSL circuitry is as good as it gets, making it a safe bet for almost any mix. Ironically, I found the G Comp so familiar that it quickly disappeared into the woodwork here. I have at least two other similar SSL bus compressors in my rack, and have used the 4000 console bus compressor more times than I could count.

If you haven't used one – what is statistically the most famous mix bus compressor of all time – you owe it to yourself to try it out, and a great way to get in on the act is with this little beastie. It ain't cheap though, perhaps a little more expensive than I would have imagined.



Price: SSL G Comp: \$2699;

Radial Workhorse Cube: \$499

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International Standard BS EN 13200-3:2005 (Spectator Facilities) Annex A
WA Health Directorate 2004 (Guidelines for concerts, events and organised gatherings)
Crowd Control At Venues And Events. A practical Occupational Health and Safety Guide, WorkSafe (Vic) September 2006
Australian standard AS/NZS 1170 parts 0.1 and 2:2002 (AKA loading codes)
Australian standard AS/NZS 1664: 1: 1997 (Aluminium structures)
Australian Standard AS 4687-2007 (temporary fencing and hoardings)
MCK Metals Pacific. Strength and resistance load testing, November 2006
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What-If?

What if something fails?

CONTRARY TO WHAT THE TITLE OF THIS ARTICLE MAY SUGGEST, WE'RE NOT GOING TO DISCUSS HOW YOU DEAL WITH A TEENAGE CHILD FAILING THE HSC OR A DRIVER'S TEST. WE'RE GOING TO LOOK AT HOW A WELL DESIGNED SYSTEM HANDLES FAILURES – A DESIGN TECHNIQUE KNOWN AS “FAIL-SAFE” (ALSO REFERRED TO AS FAIL-TO-SAFE, FAILSAFE, FAIL-SECURE ETC).

BY ANDREW MATHIESON

The concept of Fail-Safe is simple – when a system fails, it is safe, or at least no less safe than it was before it failed. This may sound like an obvious way of going about designing machinery and machinery controls, but a few recent examples that we've seen make us wonder if it really is all that obvious.

So let's look at a few real world examples of the principle of Fail-Safe in action, not just machines and controls, but every day examples of “things” and procedures that demonstrate that it is possible to default to safe in most instances.

Luggage Trolleys at the airport. You have hundreds or thousands of people milling around going up and down ramps, with all those trolleys being wheeled around with pointy bits racing around at shin level. By the simple design expedient of leaving the trolley, by default, with the brakes applied, and requiring the user to grip the handle and lift the brake release bar before the trolley can move, you immediately eliminate the hazard of out of control trolleys careening all over the airport terminal.

Brakes on Railway Locomotives are operated by compressed air. The design of the brakes is such that they are applied by default (and via the magic of levers and springs), and it requires a working pressurised air circuit to lift the brakes. The brake control (pneumatic) circuit isn't used to apply the brakes, it is used to prevent the brakes from applying – if there is a leak or a fault in the pneumatic system, the brakes will automatically apply, or refuse to lift. If you've ever put your foot down on the brake in your car, only to be greeted by the sensation of your foot sinking

to the floor and no braking happening, just imagine that happening at the controls of a many-thousand-tonne train rolling down a hill.

The Apollo Space Program used many, many, very complex and “brave” systems to control the missions, but one very simple thing that was done demonstrates the concept of “passive” Fail-Safe perfectly – the “Free Return Trajectory”. When the Lunar/Command module was fired off from earth orbit in the direction of the moon, the trajectory that was chosen meant that the spacecraft would “slingshot” around the back of the moon and return back to the earth if no further actions were taken. This very simple and clever technique meant that if the engines used to put the craft into lunar orbit failed to operate, the craft would return to Earth all by itself – the free ride home.

Deep Sea Submarines (Bathyscaphes) are taken down into the inky dark depths with ballast – huge great heavy lumps of iron that make the vessel sink. The clever bit here is that this ballast is held on to the outside of the vessel by electromagnets. The electromagnets have to be working correctly for the ballast to remain attached. When the vessel wants to surface, the electromagnets are de-energised, the ballast drops and the vessels surfaces. The same thing happens if there is a breakdown or failure in the electrical systems – the electromagnets have to be actively operating to make the Un-safe thing (sinking) happen, and if they fail to operate, the Safe thing (surfacing) happens.

So that’s a few examples of the technique used in both simple and mind-numbingly complex systems to ensure that in the event of something failing to work or failing to happen, then the consequences of that failure are that the system is, at the very least, as safe as it was when everything was working.

The Dead Man’s Button in a machine control is an excellent example of a fail-safe control – you press and hold the “down” button to lower a load – you have to keep the button pressed for the machine to move – lift your finger and the load stops moving down.

In the working of the machine itself, we have the Limit Switch (or switches). These devices are switches that are struck (operated) when the machine reaches the end of its safe travel. Striking the limit causes the machine to stop. The relevance of this, however, is in how the switch wiring is arranged. The switch contacts are “normally-closed” and striking the switch causes the contacts to open. The control circuit is monitoring that the circuit is correct and completed – if it detects the circuit going open it stops the machine. In this way, an open circuit wiring fault causes the machine to be stopped. In other words, a Failure leads to a Safe outcome.

So where would we NOT want a Fail-Safe design to exist? Think aeroplanes. The last thing you want is for an engine in a plane to decide that, in the interests of safety, it should shut down arbitrarily, without the pilot’s consent or input. In most, if not all of the systems that you and I come across in the world of Stage Machinery however, Fail-Safe is the absolute rule.

This article forms general opinion only and must not be relied on without a detailed, professional risk assessment undertaken specific to your situation. Consult a professional staging company every time you consider anything that may involve risk with flown objects or people.

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Audinate's Dante

the local network that went global

BY JASON ALLEN

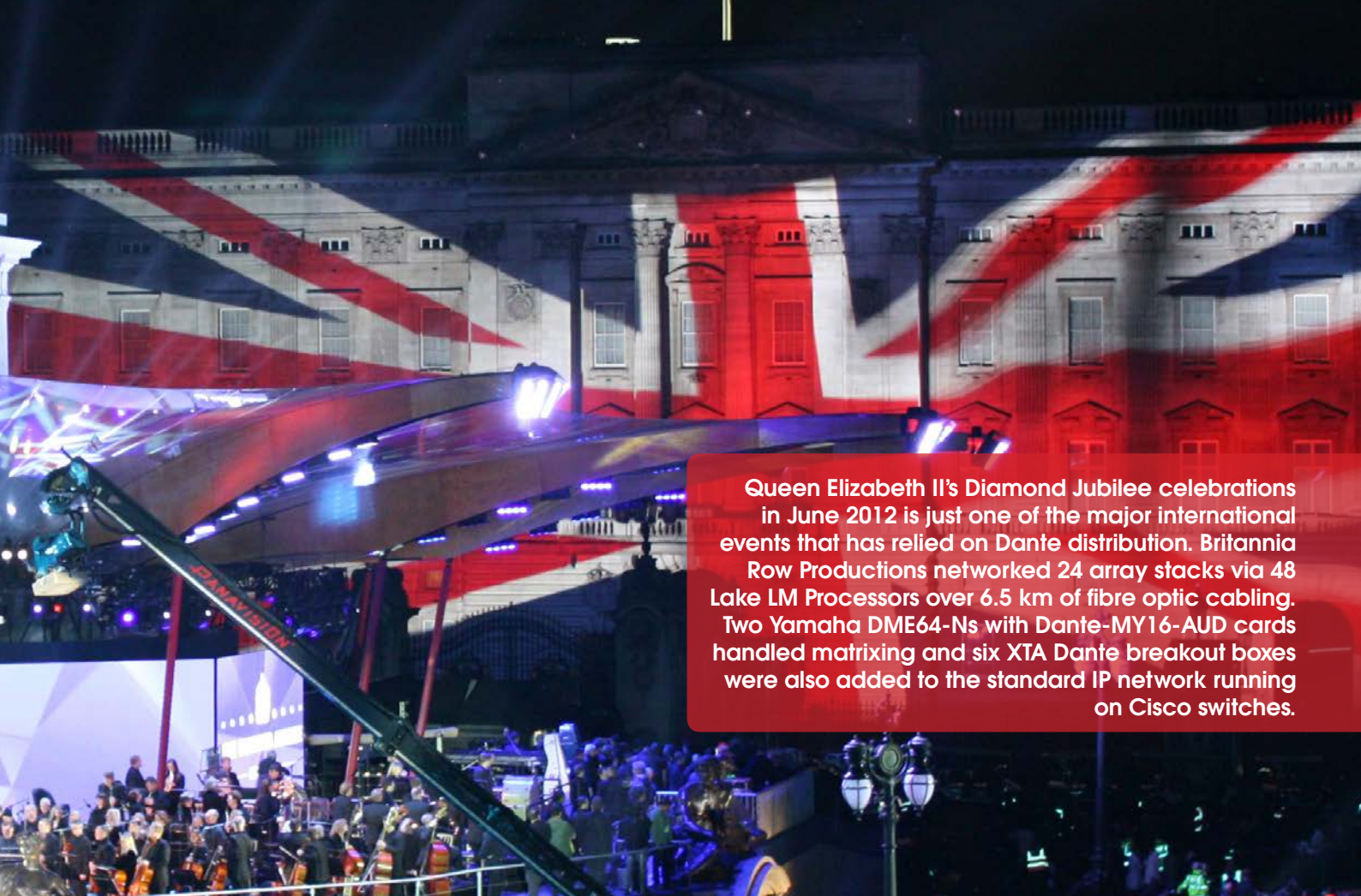
Audinate's Dante protocol is dominating the world of networked audio, yet many people don't realise that the company is proudly Australian. Jason Allen profiles the Aussie tech start-up that's changed the way we plug'n'play....

Dante ports are popping up on almost every digital audio device on the market. As of July 2013, 98 OEMs are including the interfaces in their products, a number so large it quashes any debate as to whether or not Dante can be considered a "standard". The pro audio world has embraced the technology incredibly quickly; the first Dante product was only released five years ago. And all of this has been achieved by a company that started up in Ultimo, Sydney, with a small team spun out of a government funded research project.

The founders of the company were all originally working on networking projects at Motorola Labs in Sydney. After the Tech Wreck of the early 2000s, Motorola closed its Australian research centre and laid off the staff. The team got together and pitched a research project to the then newly-formed National ICT Australia (NICTA), a research body set-up to fund R&D that increases Australia's experience and wealth in ICT. Five staff worked on new and innovative AV network products, inspired by their plug-and-play experience at Motorola and their passion for audio.

Plug and Play

Co-founder and current Chief Technology Officer Aidan Williams describes the genesis of Dante in his home studio; "I'm an amateur musician and I've done a lot of production work on DAWs", he explained. "I was connecting my synth to an analogue mixer and then to a soundcard, and then there was MIDI cables. There were just loads of different wires. To me, it looked like a networking problem. Why plug in four or five different types of cable when you could plug in a network and be done?"



Queen Elizabeth II's Diamond Jubilee celebrations in June 2012 is just one of the major international events that has relied on Dante distribution. Britannia Row Productions networked 24 array stacks via 48 Lake LM Processors over 6.5 km of fibre optic cabling. Two Yamaha DME64-Ns with Dante-MY16-AUD cards handled matrixing and six XTA Dante breakout boxes were also added to the standard IP network running on Cisco switches.

Audinate became the first company spun out of NICTA in 2006. Founding CEO David Myers and Williams created the company, bringing years of experience in management and product delivery for telcos, multimedia and internet services. Three members of the NICTA team, including Aidan, Varuni Witana and Andrew White, joined Audinate in 2007. The founders put in their own money for startup, along with an early investment from Melbourne venture capital firm Starfish Ventures.

Start Me Up

On start-up the team took a trip to the USA to talk to manufacturers to validate their ideas and determine what the market needed. "We were networking people, not audio people," recalled Aidan, "so we wanted to talk to as many companies building audio products as possible to make sure we were doing the right thing." Luckily for Audinate, a world leader in digital audio with an eye for innovation and the

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CEO Lee Ellison



COO David Myers



CTO Aidan Williams

vision to take risks was right on their doorstep; the late, great Bruce Jackson. Bruce had moved back to Sydney at the time as Vice President of Dolby's Live Sound Division, and was working on the Dolby Lake Processor.

Bruce liked what he saw in Audinate's work and decided it was the future. "Bruce Jackson decided to change the hardware in the Dolby Lake processor and put in a larger FPGA chip" said Aidan. "That meant it was capable of being firmware upgraded to support what later became Dante. That was a big thing for us. It was pleasure to work with Bruce - he was a visionary. We were the beneficiaries of his vision in how networking would work with his products. He was prepared to take a risk."



Showtime!

The Dolby Lake Processor became the first Dante enabled device to hit the market "The first big event we did was in Washington DC in 2008 on an early version of the Dante firmware." Aidan said. "Bruce was mixing on a Barbara Streisand tour. We had some reverbs running through the Lakes - they had AES inputs and were connected with Dante". Bruce continued to support Audinate; as audio director of the 2010 Winter Olympics in Vancouver, he used Dante to distribute to 160 Lab.gruppen amps on the opening and closing ceremonies.

After the first product came to market, the task was now to add more devices to the network. Dante needed to be "productised", and the business needed to grow. Lee Ellison was bought on as CEO, with David Myers becoming COO. Based in Portland, Oregon, Lee brought years of experience in telecoms, including with David Myers at Australian multimedia communication company Dilithium Networks. Lee started in November 2008; "Bosch was developing Omneo" recalls Lee, "and Yamaha wanted an MY16 card." At the same time, Peavey added Dante to MediaMatrix and Dolby sold Lake to Lab.gruppen, bringing Dante to their amplifiers. A signal chain had formed, and the company gained momentum.

Most of the big pro audio brands followed suit through 2009 to 2011, as companies like Allen & Heath, Shure, Symetrix, Midas, and DiGiCo, came on board.

"Probably the biggest validation for us was when Yamaha launched the CL Series with Dante built in at ProLight+Sound 2012" Aidan continued. "Four months later at InfoComm we had loads of people coming to us saying 'Yamaha has built it in. It's solid, we're committed. Where do we sign?'" It's been a snowball effect since, explained Lee; "Last year we grew from 50 OEMs to 98 OEMs aboard. Last quarter, there were 12 companies that announced products, some of them multiple products. Today alone we had two companies from China and two from Korea reach out and say 'we have to have it'."

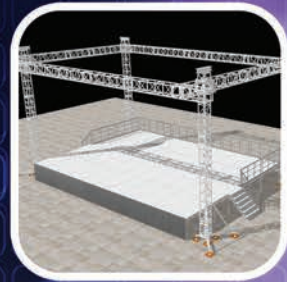




Tennessee Titans Stadium in Nashville, Tennessee. The new audio system installed in 2012 features Peavey Nion DSP, a Yamaha M7CL-32 mixer and a huge EAW rig networked via Dante.

HIRE & SALES

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Pictured:
Dante MY16 card
for Yamaha digital devices

So what is Dante exactly?

Dante carries a theoretically unlimited amount of uncompressed audio channels on standard Ethernet hardware. A network's size is only limited by available bandwidth. A gigabit switch, for example, will carry 512 channels at 48kHz. Dante has been built to be upgradable and interoperable, using standard Ethernet tools such as TCP/IP and DiffServ QoS that make it capable of "playing nice" with a huge range of equipment and protocols. It has incredible low latency – most Dante networks can run at 100 microseconds. It can also do some unique things like carry multiple sample rates and with ASIO

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Audiora's Scott Willsallen with Aidan Williams at Randwick for Sydney's World Youth Day in 2008.

driver Dante Virtual Soundcard, turn your computer's LAN port into a 64x64 Dante device. Most importantly for the end user, its device discovery, patching and administration are simple and intuitive through the Dante Controller software.

And what isn't it?

"One of the misconceptions people have is that Dante is a protocol or a format" explained Aidan. "Dante is actually a toolbox of all the pieces people need when they're building a product. We use standard TCP/IP, we use IEEE1588 (PTP) for clock synchronisation. We happen to have a transport that runs on top of UDP/IP that people latch onto, but the transport is just one piece. We use standardised multicast DNS and DNS service discovery as part of our discovery system. When I talk about Dante as a solution, I think it means to not just the end point implementation, but also things like Dante Controller and DVS. When you buy a Dante solution you get all of those things, not just a transport."

Dante is also compatible with the other big buzz in networking, Audio Video Bridging. As Dante has been written to use the same Ethernet standards as AVB, a firmware upgrade will be all that is needed once the IEEE Audio Video Bridging Task Group finish ratifying. "We have firmware that implements AVB as part of our Brooklyn II chipset Dante implementation" Aidan points out. "Our intent is to keep the same user interface and have our modules speak more than one networking protocol. We want Dante to interoperate with as much of the equipment



The Dante Brooklyn II module

on the market as possible. Standards come and go. If you think about a Cisco router, it doesn't get replaced by some new standard. You just implement a new standard in the router. It speaks several different protocols, it accepts new standards as they come out. I see Dante like that."

Conference Call

Both AVB and Dante are expanding into the huge commercial installation market, which is usually estimated to be around 10 times the size of the live production and production installation market. "We see the growth in the commercial installation and communications space", said Lee Ellison. "Where you traditionally have had a lot of compressed audio moving around, you're going to see more higher quality systems in the enterprise space – public address, evacuation systems and rail transport systems, for example". This has seen companies like Extron bringing Dante into their products.

Audinate is expanding into this market with their new Ultimo chip. "Most of the solutions for AV networking out

to date have involved a hardware FPGA or chip solution with high packet rates and large channel count.” Aidan elaborated. “Because the hardware cost has been quite high, they’ve been best suited to stageboxes and mixing desks. The goal of Ultimo is to have a cost-optimised solution with a couple of channels to go into the vast bulk of devices on the market, which only have a few channels.”

This opens up enormous possibilities for the company.

Every Class D power amplifier could be fitted with Dante networking if the price is right. There’s also strong interest from microphone companies. Even the domestic market and MI stand to benefit from the trickle-down effect of the technology. Audinate are teasingly reticent to talk about any developments in the MI space; “There’s some interesting musical equipment that implements our technology”, hinted Lee. ““There’s a lot of really big brands that we haven’t announced yet that are implementing Dante”.

Still Call Australia Home

Until recently, all Audinate’s manufacturing was done in Sydney’s St Peters by a company called Dayang. Despite expansion into China to cope with demand and Dayang’s merger with another company, Audinate continue to use some local manufacturing. The head office is still in Ultimo, with CEO Lee Ellison residing in Portland, Oregon. Audinate employ 30 full-time staff overall, mostly in Sydney, and are looking to grow out of their original office.

Audinate is also looking to grow into new product areas. Lee has a tantalising vision of the future of audio; “More systems will be connected via a common audio and video network”, he foresees, “and at some stage, more of that will happen in



Dante Virtual Soundcard

the home. Wireless will be the next frontier - we’re looking at a lot of things that will enable that right now.” Needless to say, the company that first cracks reliable wireless distribution of multichannel audio stands to revolutionise the industry, as well as make an unimaginable amount of money.

Das ist Cool...

Being at the cutting edge of audio distribution technology at the moment, we asked Aidan Williams what’s the coolest application of Dante that he’s seen. “German company Four Audio make a module for Wave Field Synthesis that has around 30 channels of Dante input to each array” he answered. “They go into these systems that have hundreds of loudspeakers for reproducing three-dimensional audio wavefronts.” Wave Field Synthesis is way of creating artificial audio spaces and sounds by generating custom wavefronts from hundreds of arrayed diaphragms. It’s based on the mathematical principle that any wavefront can be synthesised by superimposing the right spherical waves. Are these systems used in the architectural acoustics departments of Universities? **CX** asked. “No, they seem to be going into German nightclubs” said Aidan.



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BON JOVI

Because We Can World Tour

At first glance, the design for the Bon Jovi *Because We Can* world tour looks extremely simple. When the show opens, there is no video screen, just a wide-open stage and not a lot of lights. On the surface, it seems that Performance Environment Designer Doug "Spike" Brant has taken a severely minimalistic design approach. Nothing could be further from the truth; however. Instead, the environment reveals itself, literally at the cue of the video. Building on their dynamic visuals for the last few Bon Jovi tours, Performance Environment Design Group (PEDG) and Spike Brant have taken advantage of a convergence of new technologies and a few innovative companies to realize their most ambitious design to date.

BY MICHAEL S. EDDY
PHOTOGRAPHY BY STEVE JENNINGS
ORIGINALLY PUBLISHED IN PLSN
MAGAZINE

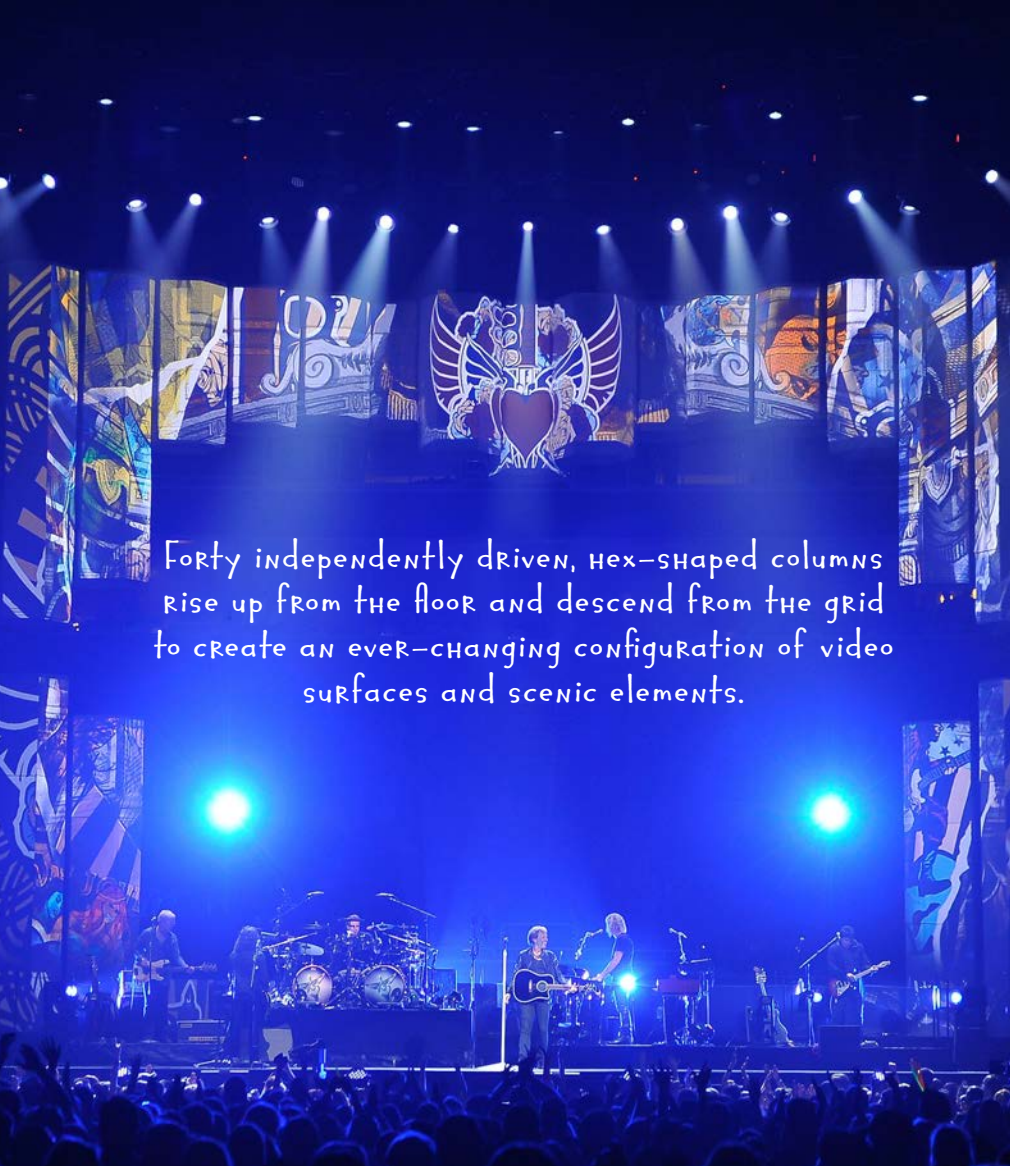


Transforming around the band like a kinetic sculpture, 40 independently driven, hex-shaped columns rise up from the floor and descend from the grid to create an ever-changing configuration of video surfaces and scenic elements while half of the automated lighting positions actually lower and rise on towers and winches in a constantly morphing plot. No two songs are on the same set or share the same light plot. And just to raise the bar that much more, the scenic automation is controlled either by positioning embedded in the video content itself or from cueing triggered through the video console. This complex and technically innovative kinetic environment wonderfully reflects the energy of Bon Jovi's music and the aptly named tour.

A Design Evolution

PEDG has been designing for Bon Jovi since 2000. Spike feels that this tour's performance environment is the culmination of a design concept that was first weaved into earlier tours.

"Two Bon Jovi tours ago, we came up with the Venetian design; where it's all about transformation and evolution throughout the night's performance," describes Spike. "The idea of coming into the venue to just a band on a blank stage, and then the show reveals itself as it happens." On both The Circle Tour and the following year's Bon Jovi — Live 2011 PEDG had some LED video screen elements and automation that played off the Venetian idea. This tour, Spike felt the timing was right to completely embrace the



Forty independently driven, hex-shaped columns rise up from the floor and descend from the grid to create an ever-changing configuration of video surfaces and scenic elements.

idea. "I asked 'How do we take it to the next level?' I felt that we couldn't get any more dynamic with LED, so we looked at projection. What we wanted to create was something that was almost entirely kinetic."

As PEDG began to look into the tangible possibilities for what the "next level" of their Venetian concept was, they found some innovative companies that were also moving to the next level. Spike recalls, "It was an alignment of technology; the timing of it all. We now had the ability to create the hyper-fast automation, plus the technology was there with the projection mapping; the video/ automation control, and the 40K projectors that were just coming on the market as well. It was this convergence of all these things resulting in this design. It's a very, very dynamic show."

Here a Column, There a Column

The set and scenic automation was engineered, constructed, and is supported on the tour by Tait, a company adept at solving complex scenic technology challenges. "Jon Bon Jovi is someone who continues to push the artistic envelope," states Adam Davis, Partner, Tait, "and the same is true of Spike." The project offered Tait plenty of opportunity to push the scenic technology envelope themselves with projection surface comprised of 40 individual columns, 32 lighting winches, 10 automated lighting towers, and five projector pods with integrated alignment devices.

"The telescoping hexagonal columns were definitely the most challenging aspects of the design," says Davis. The custom columns all move independently and serve as the projection surface — 21 floor hex lifts coming up from the stage and 19 flown hex winches that descend from the truss above. The lower hexagonal column lifts can rise upwards at 2.5 feet per second, from 6.5 to 29.5 feet, and carry up to 300 pounds of weight. They move through the show to numerous positions — at one point they even act as a staircase for Jon Bon



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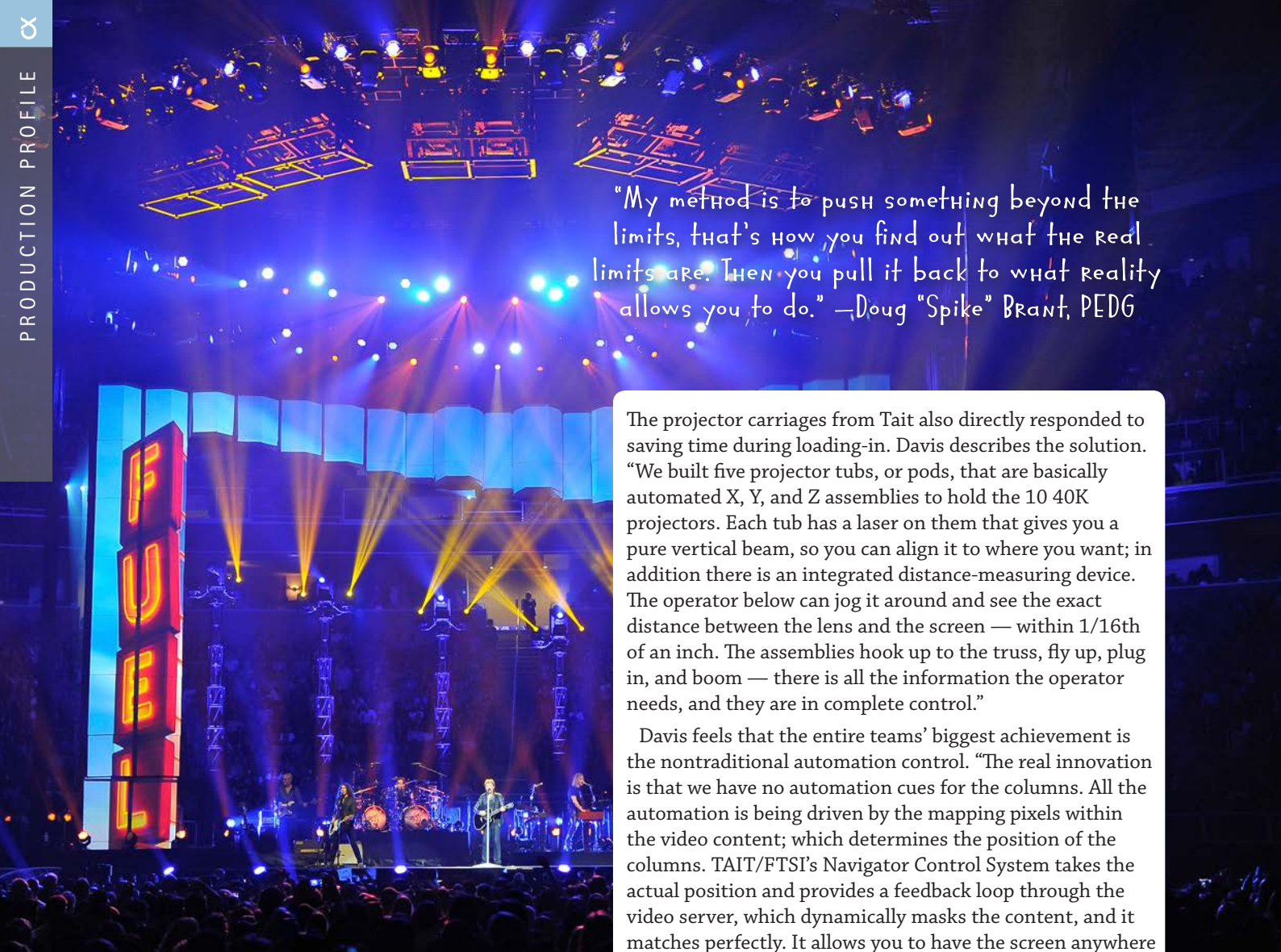
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"My method is to push something beyond the limits, that's how you find out what the real limits are. Then you pull it back to what reality allows you to do." —Doug "Spike" Brant, PEDG

The projector carriages from Tait also directly responded to saving time during loading-in. Davis describes the solution. "We built five projector tubs, or pods, that are basically automated X, Y, and Z assemblies to hold the 10 40K projectors. Each tub has a laser on them that gives you a pure vertical beam, so you can align it to where you want; in addition there is an integrated distance-measuring device. The operator below can jog it around and see the exact distance between the lens and the screen — within 1/16th of an inch. The assemblies hook up to the truss, fly up, plug in, and boom — there is all the information the operator needs, and they are in complete control."

Davis feels that the entire teams' biggest achievement is the nontraditional automation control. "The real innovation is that we have no automation cues for the columns. All the automation is being driven by the mapping pixels within the video content; which determines the position of the columns. TAIT/FTSI's Navigator Control System takes the actual position and provides a feedback loop through the video server, which dynamically masks the content, and it matches perfectly. It allows you to have the screen anywhere you want, whenever you want it. The image can appear and disappear right in front of your eyes." Davis continues, "We have broken away from LED and achieved real motion-controlled projection. It's an interwoven control system that's on the cutting edge of technology."

Jovi. The 19 upper hexagonal columns from above are a mirror to the columns from below and can extend down 31 feet at an incredible 5 feet per second. All of the columns can meet to form a three-dimensional wall projection surface, but are more often used in unique individual positions creating visually unique shapes. The columns consist of hard polycarbonate inserts and are covered with Trapeze Plus stretch material.

Each column is made up of a Hex Winch and Hex Tower — stacking like Dixie cups when closed. The exterior polycarbonate inserts and fabric have just enough give to allow the sections to stack shut but, when opened, restore to shape so the columns appear visually straight from top to bottom. "Sourcing the right material for the columns was paramount," notes Davis. "The material had to be flexible, but also have the right amount of gain to get the maximum out of the projection. With the precise alignment of gears and servomotors, the inside of each column is like a fine German car. It's a beautiful machine. The overhead columns are in tension, and the ground-based columns are in compression; each set bringing their own unique design challenges. The individual columns actuate at the same time within the dynamic system. It's a pretty remarkable feat."

To make it tourable, much of the automation is pre-rigged. The moving light winches ride in the PRG BAT Truss and the columns travel all together with everything onboard. As much of the automation elements as possible are plug-and-play.

Now You See It, Now You Don't

All of the video content is fed to the projectors via eight Avolites Media Ai Infinity servers [four main with four back-up] and controlled via a MA Lighting grandMA console. While the columns movement can be controlled via the Navigator console, PEDG wanted to have the ability to have control over the columns and lighting automation from the video or lighting console as well as from the actual content itself. PEDG brought in Control Freak Systems (CFS) to help develop and layout the control system solution that would be needed to realize PEDG's dynamic content and automation integration.

Stuart White, senior solutions designer for CFS, found the idea of the video itself actually controlling the automation an exciting challenge. He felt he could advance on the early steps that others had taken to do something similar; that this tour could really integrate the systems together. To make the columns move smoothly and accurately, White explains that the key was the approach to the displacement mapping embedded into the content. "I knew how it was done on another tour with a grayscale movie to offset where the image is.

That's okay, but that only gives you 256 steps of movement, which can look steppy. My idea was to make 16-bit values so we used two colors, a red and blue, in our displacement map. Those two colors were basically like course and fine control on a lighting console. The red was the course channel for DMX; blue was the fine channel. Using this level of control gave us 65,536 steps of control which was embedded into the content from Moment Factory."

CFS collaborated on the video mapping with the primary content creator, Moment Factory, who embedded the show control displacement map within the content for a seamless presentation. Montreal-based Moment Factory created almost all of the content for the tour. "I had not worked with Moment Factory before," says Spike. "I talked to [producer] Daniel Jean; and we ended up having them be the primary content creators. I had never done it that way before, but because of the time constraints it made sense to have Moment Factory put together one cohesive package." PEDG also brought in Lancaster, PA-based content creators Meteor Tower for content on a couple of songs and to deal with content management.

CFS worked closely with Immersive Ltd., who developed the main software solution, the Avolites Media Ai Infinity media server. Immersive's Dave Green worked as a technical consultant on the project. White explains, "The Ai media server is a really great system. Dave Green, the developer of the program, built the elaborate project file. I put in the DMX-to-column movement as well as the color conversion to column movement on top of that project file. We work a lot alike, so it was really cool." Green, Immersive's technical director, says, "I felt the Ai server could handle the dynamic mapping they wanted as long as the data it got was accurate and at a good, fast frame-rate. The Ai server is looking at the displacement map in the content, sending the data of where it wants the columns to be and then it also listens at a very high frequency back from the Navigator as to where the columns actually are at any point in time. It then uses that data to dynamically map the moving columns."

With potential automation control possibly coming from the lighting, video and automation consoles, there was potential for data confusion — or worse — unsafe conditions caused by a data or column crash. To avoid that, White created a custom software solution that sits outside of the media server, managing all of the control data and giving the data prioritization to the Navigator. "I wrote a program called [CFS] TraffikCONTROL that listens to all the different control data coming in from all of the different sources and evaluates it," explains White. "Between the two consoles — the video and lighting console — we came up with a pretty cool paradigm where we can, column by column, say which source it's going to be coming from and both have to agree even at a heartbeat level coming from each console. With all of these conditions met, then we tell the Tait motion control system to do this move, or not to do this move." There is also built in redundancy of data flow to Navigator for safety purposes that allow 'Motion' Rob DeCeglio, the Navigator operator, to take override control.

Spike is very pleased with the final control system. "The Ai Infinity server is very good. It has huge potential. And the CFS TraffikCONTROL means everything has to agree who

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is in charge; there's a handshake and a handoff. This whole system let us skip programming on the Navigator. We ended up pre-vizing all of that — the motion control of the lighting and columns in MA 3D; we pre-programmed it all." Moment Factory used an Ai server to previz the content. Immersive Programmer Martin Harvey worked with the CFS team. Kirk J. Miller of CFS is operating the media servers and the grandMA control console on tour.

True Moving Lights

Spike's lighting rig appears very minimal when you look at the equipment list — 80 PRG Best Boy 4000 Spot luminaires, 103 GLP Impression X4 LEDs, 20 Clay Paky Sharpys, and 20 Philips Color Kinetics ColorBlast LEDs. "It's very simple, but the design is very dynamic," Spike notes. "Also, it's less than 400 amps for the whole thing. That's it — probably the least amount of power draw that Bon Jovi has ever had for lighting on any show since playing in a bar years ago."

Choosing energy efficient lights for his design was a key priority for Spike and is a core philosophy of his firm PEDG. "Sustainability is something that I've always pursued; that includes in the choices that we make in design," he says. "The low power draw is just one of the things I love about the Best Boy; which is my favorite light. I knew I wanted a light with shutters in it, plus they're so bright, don't draw much power, and they do things that no other light does. It's amazing how much of a Swiss Army knife light that it is; I have them each doing a lot of things. Also, they look good, aesthetically."

At the core of his lighting design are 32 unique automated individual lighting arrays from Tait each consisting of a Best Boy mounted on RSC Lightlock stabilizers, Tait's new custom cable management system, and a high-speed hex winch. The lights can move at a rate of five-feet per second, creating an extraordinary amount of possibilities and turning the lighting rig into part of the overall visual kinetic sculpture. Spike states, "The light lifts are a slam-dunk home run. Lights on winches are something that I've always wanted to do, and with the invention of the Lightlock, that made it possible. When we did it last year with Syncrolites on Vario motors, it was very primitive. It was okay and it was cool, but the Best Boys on the winches and custom lifts from Tait are the successful elements which support the kinetic nature of the design." Adding even more movement on the stage level, Tait also created 10 light lift towers that can rise to 7.5 to 29.5 feet, which sit across the back of the stage. Each tower is topped with one Best Boy and two GLP impression X4 LED units.

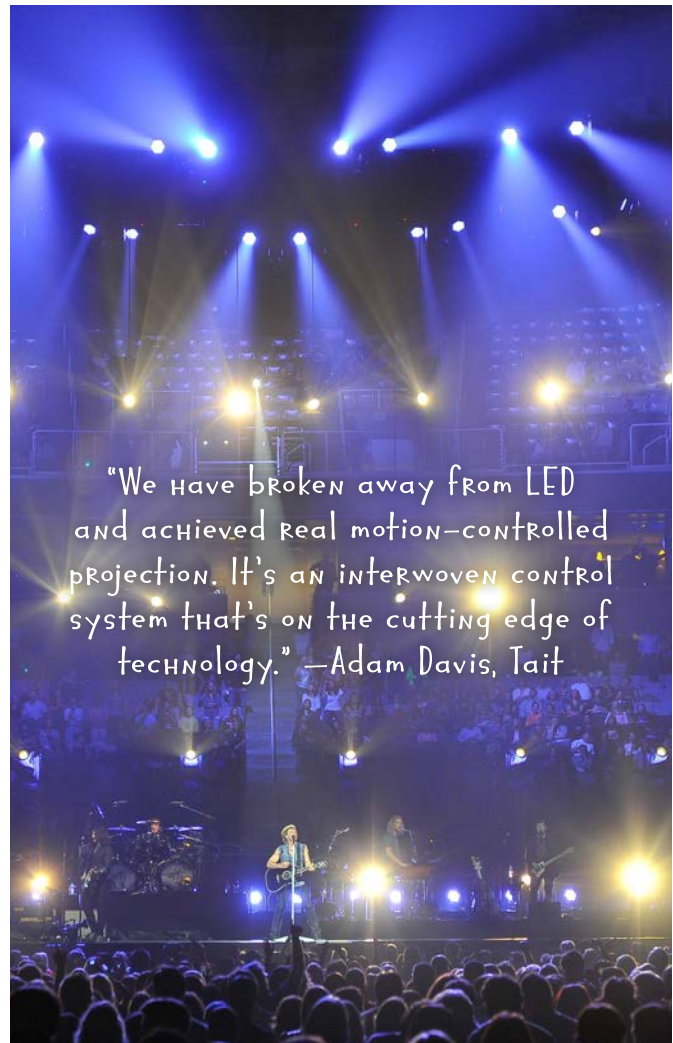
Lighting director Sooner Routhier, who's been out with Bon Jovi on previous tours, handles the lighting control. She operates a grandMA2 console with a grandMA2 light for backup. "I've worked with Sooner as lighting director before," Spike says. "It's always great; she's fun to work with and she's a designer herself." Programming and previsualization were done at Tait during construction and at Hershey, PA during rehearsals. The team only had the rig for five days, so they did almost everything in previsualization. Spike hired Felix Peralta to be the director of programming. "I've had a long relationship with Felix; we

talked a lot and he has an amazing eye," Spike says.

PEDG also brought in Eric Marchwinski as the lighting programmer to work with Peralta. "They just did an amazing job of cueing and programming the show," Spike adds. The complete lighting package was provided by PRG, who Spike says, "was nothing but a pleasure to work with. No drama; no issues. It has been awhile since PRG was out with Bon Jovi, and it's great to have them on this one."

PEDG and the entire technology team apparently took the "Because We Can" name of Bon Jovi's latest tour to heart, delivering a visual feast for audiences and a big step forward for entertainment technology. "Typically, I always want to do what hasn't been done before by nature," Spike says. "My method is to push something beyond the limits, that's how you find out what the real limits are. Then you pull it back to what reality allows you to do. That applies to lighting, video, motion, human resources, etc., because the thing about the design is that it's just the canvas; it's what you do with it."

The Bon Jovi *Because We Can* tour, the band's 15th tour, supports their 12th studio album, *What About Now*, which debuted in March 2013. The tour's initial North American leg began in Washington, DC in February, shifted with a different stadium design for shows in Africa and Europe in May, and will continue to tour Europe through July, when the band returns to the Americas. An Australian leg is also planned for December.



"We have broken away from LED and achieved real motion-controlled projection. It's an interwoven control system that's on the cutting edge of technology." —Adam Davis, Tait

Crew

Performance Environment Designer:

Doug "Spike" Brant/PEDG

Director of Programming: Felix Peralta

Lighting Programmer: Eric Marchwinski

Lighting Director: Sooner Routhier

Crew Chief: Andy Mitchinson

Lighting Techs: Chris Shaffer (Dimmer Tech);

Greg Gore, James Jones, Jason Hicks,

Jeremy Knight (Moving Light Techs)

Lighting Co: PRG

Video Co: PRG/Nocturne

Video Directors: Andy Bramley; George Elizondo

Video Crew Chief: Carson Austin

Systems Engineer: Jason Lipton

Lead Projectionists: Simon Schofield, Brian

Bateman

Projection/Cameras: Drew Welker, Steve Tomaneck

Camera/Utility: Cliff Hannon, Josh

Morano, Josh Phoebus

Media Control/Mapping: Control Freak Systems

Content and Mapping: Moment Factory, Meteor Tower

Content Producer: Daniel Jean/Moment Factory

Technical Director: Andy Babin/Meteor Tower

CFS Tour Operator/Screens Director: Kirk J. Miller

CFS Technician/Engineer: Troy Giddens

CFS Senior Solutions Designer:

Stuart White

CFS Technical Designer: Dirk Sanders

CFS Graphic Programming Artist:

George Toledo

Immersive, Ai Software Author:

David Green

Immersive, Ai Programmer: Martin Harvey

Scenic Design/Automation: Tait

Tait Vice President: Adam Davis

Tait Project Manager: Pat Seeley

Gear

Lighting:

1 MA Lighting grandMA2 console

1 MA Lighting grandMA2 light console

4 MA Lighting grandMA2 Network

Processing Units

6 PRG Series 400 Power and Data

Distribution Racks

2 PRG Series 400 Ethernet Switches

1 PRG Node Plus, Series 400 Mode

80 PRG Best Boy 4000 Spot fixtures

103 GLP Impression X4 LED fixtures

20 Clay Paky Sharpy fixtures

20 Philips Color Kinetics ColorBlast 12

TRX fixtures

5 Brite Box Flame followspots

6 Reel EFX DF-50 hazers

4 Jem AF-1 DMX fans

2 Ultratec Special Effects Versa DMX fans

19 PRG BAT Truss, 10' sections, 15" x 30"

1 PRG BAT Truss, 10' section, 15" x 24"

1 Clear-Com Headset System 4 Channels,

32 Stations

Video:

10 Barco HDQ-2K40 40K projectors (for column fronts)

13 Barco FLM-R22+ 22K projectors (6 for column backs, 7 for I-Mag)

4 Grass Valley Thomson LDK 6000

WorldCam HD cameras

6 Ikegami HL-45 HD cameras

1 Grass Valley HD Kayak 2 M/E switcher

1 32x32 router matrix

1 Fiber distribution system

Media Control/Mapping:

8 Avolites Media Ai Infinity servers (4 main, 4 backup)

1 CFS traffic control custom software

2 CFS Hex Freak Servers

1 CFS Router Bridge

1 MA Lighting grandMA2 Control Console

Automation:

Floor Hex Towers

Flown Hex Towers

Flying Light Mechanisms

Control & Power Distribution

Roll Drops

Camera Track

Staging:

Rolling Mainstage

Rolling Band Risers

Double Decker US Landing

Mainstage Monitor Shelves

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Band Four
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2 x EA600
4 x E110
4 x E110A
2 x EF45
450 3,600w RMS

EL-835 System
6 x E835
2 x E210SUBAS
2 x LSB1200

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LISTEN HERE

MUDDY WATERS

Everywhere I go there are people singin' the blues about why they can't seem to mix they're own music. It's one of the most persistent complaints in audio and it's not going away any time soon.

BY ANDY STEWART

I'd like a dollar for every time someone's said to me: "my mix is muddy" or "it's all too wet". These are the two most common ailments afflicting the mixes of self-taught, at-home D.I.Y.ers, but thankfully there are a couple of simple cure-alls that can get a mix rolling in the right direction *before* the wheels fall off.

Frankly, I think people should always get an outsider to mix their music for them - dare I say it, by an expert - but when someone has their heart set on doing it themselves it's usually pointless trying to convince them otherwise. It's like telling yours truly to hire in a professional builder to do all my house renovations. Forget it! I want to do them myself thanks very much.

For the same reasons people want to mix their own music, to me, hiring a professional builder - to put up a wall, hang a door or build an extension - seems like A: a waste of money, B: a wasted opportunity to learn something, and C: a recipe for an inferior outcome. Sound familiar?

D.I.Y. WITH FADERS & FILTERS

I both generally disagree, and genuinely sympathise with, do-it-yourselfers. It's precisely why I write so many articles about audio, and how I came to be in the audio business in the first place. Back then I was always frustrated by engineers and producers (so-called professionals) who seemed incapable of pulling the kinds of sounds we were

after. Eventually I thought: "Stuff this, I'm doing it myself!" But I've seen too many albums thrown on the scrapheap courtesy of D.I.Y. mixing to widely condone it. Having said that, if you're a musician determined to mix stuff yourself, in the end, it's your choice. Just don't kid yourself: there are risks involved and far more to this mixing caper than you might think.

DIVING IN REGARDLESS

This issue I want to talk about two of the simplest aspects of audio mixing that offer the greatest benefit to D.I.Y.ers: fader levels and EQ filters. These two fundamentals of audio mixing are simple to learn, provide a great platform to work from, and can get you a long way down the road before you need to look for more complex mix solutions.

It obviously goes without saying that fader levels are critical to any good mix, but somewhat incredibly, experienced and inexperienced engineers alike often overlook them. When a mix problem proves elusive, D.I.Y.ers in particular tend to gravitate towards complex solutions like parallel compression, layered effects and various other disaster-prone options that are easily mishandled by beginners.

But nothing is more crucial to a sound than its level. When your fader levels are out of whack, so too will be everything else relating to that sound: the automation, the EQ, the effects levels - everything. If you only remember one thing about this article, remember this: if there's something wrong with a sound in your mix, try turning it up or down *first*, regardless of whether you're five minutes, or five days, into it.

FADERS ONLY

If you have a recording that you want to mix yourself (or one that you've already tackled and come away from battered

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and bruised), dispense with every other technique and work on fader levels only. Forget adding countless plug-in inserts, bus compressors and EQs, sends to parallel returns and so on. Try mixing your work as if the faders are all you have. Consider it a dry run to see how far you can push things before you feel compelled to pull up an effect, compressor or EQ.

Unfortunately there's no possible way I can tell you how loud or quiet things should relatively be in a given mix; that's something you need to teach yourself, and the best way to develop this instinct is through practice, countless mistakes and hard work. And while you're working on these basics it's best to avoid the more complex aspects of mixing that typically lead a novice up the garden path. Like learning to ride a skateboard, you don't start out trying to do the most dangerous tricks first. You start on the fundamentals so you don't break your neck.

I used to skateboard with a kid years ago who was always on the local half pipe just going up and down, up and down... endlessly, until the rest of us were all ready to throttle him. He never did any tricks, just the same thing over and over and over again. 10 years later he was World Champion - I kid you not. In truth, he is the perfect mix analogy: he got incredibly good at rolling back and forth before he added so much as a single trick to his repertoire. After that, the sky was quite literally the limit.



BLIND FREDDIE

Faders are the skateboarding equivalent of rolling up and down, and they're never irrelevant. One simple technique to employ when you're concerned about a particular sound's volume is to close your eyes and pull its fader down to silence. If you're using an analogue console, by all means mark where the fader was beforehand, but once that's established, go ahead and dump the old level. Now slowly turn the fader up again with your eyes shut until the level of the sound in question is about right, to your ears only. Open your eyes again to check the level and see where you ended up. (If you peeked during this process, start again from scratch!)

You may have ended up back on your original mark, or you may be out by 6dB; who knows. Either way, make a mental note of where the fader came to rest and repeat the exercise a couple more times. If you achieve the same basic result each time, great. Chances are the level under scrutiny is about right... for now. If you're all over the place each time, it may just be that the mix is tolerant of that instrument sounding good at a wide variety of levels, or you may be struggling because other elements are out of whack too. Don't despair. Leave it for now and work on something else. Come back to it when the balance has changed.

If you're disciplined, you'll be amazed how far a mix can be pushed with nothing more than good fader technique.

HIGH PASS, LOW PASS & HOSPITAL PASS

The other tool to consider using while you're still trying to avoid complex solutions is an EQ filter. These are great tools of trade because they're relatively simple, powerful and effective, and quickly train your ear about what's essential and unnecessary to sounds in a mix. Got problems with mixes sounding muddy... filters to the rescue!

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Filters, be they high or low-pass, essentially limit the tonal bandwidth of a sound. High-pass filters attenuate the bottom-end extension, while low-pass filters control the tops.

Filters are brilliant at quickly opening up space in a mix by encouraging instruments to occupy different tonal regions, rather than allowing them to grossly overlap one another, a phenomenon commonly known as ‘masking’.

For example, most ‘muddy’ mixes are the result of too many instruments being allowed to possess uncontrolled or irrelevant bottom end. When an instrument’s musical focus is elsewhere, say in the upper midrange, there’s often little point for that instrument to also voice energy down at say 50Hz, particularly if that energy primarily consists of woofy, inarticulate sound made up of a combination of vague

bottom-end from the instrument, proximity effect from the mic, and traffic hum from down the street. Get rid of this stuff and your mix will vastly improve in no time flat.

REVERB FREE ZONE

When things get cluttered or ‘masked’ in the bottom-end, way too many beginners quickly reach for reverb in a desperate bid to create space – something they also typically know very little about. But mistaking the need for tonal clarity for a lack of reverberant space only heaps tonal confusion on spatial confusion... great! Now we’re really in a mess.

The trick is to resist the temptation to reach for reverb every time you think there’s a spatial problem. Learn instead to craft each sound to emphasise its tonal strength first.

Discovering an instrument's natural mix focus can provide a vast array of tonal signatures that can transform a mix into a compelling and fascinating landscape, without the need for more so-called 'depth' or three-dimensionality.

CLEAR AS MUD

Take the example of a song comprised of an acoustic guitar, bass guitar, piano and main vocal. These ingredients may sound very simple, depending on the musical arrangement, but here already we have tonal complexity that can lead to a train wreck in the hands of the inexperienced mix engineer. All these instruments have the capacity to generate low-end into the sub-harmonics, as well as top-end out beyond the capacity of human hearing.

With nothing but faders and filters at our disposal, we can quite easily determine which of our four instruments are most capable of providing our mix with articulate bottom-end, clear high-end focus and detailed midrange.

For the purpose of this example let's say the bass has a good solid bottom end when soloed, but it's difficult to hear in the mix thanks to some pretty ordinary boominess in the acoustic and the occasional thump from the vocal. The trick here is to insert a high-pass filter across the acoustic at, say, 90Hz, and gently rock it back and forth above and below this point (below which the sound will drop away rapidly depending on how steeply you've set the filter gradient) until you're satisfied that the boom is gone while the essential tone of the instrument remains intact. Do the same to the vocal and suddenly the bass becomes clearer in the mix without the other instruments noticeably changing. Now put a high *and* low-pass filter across the piano to give it more midrange focus, less of that glassy top-end and woolly bottom and suddenly all the instruments are clearer in the mix, without any of them really appearing to change much overall.

NICE ONE

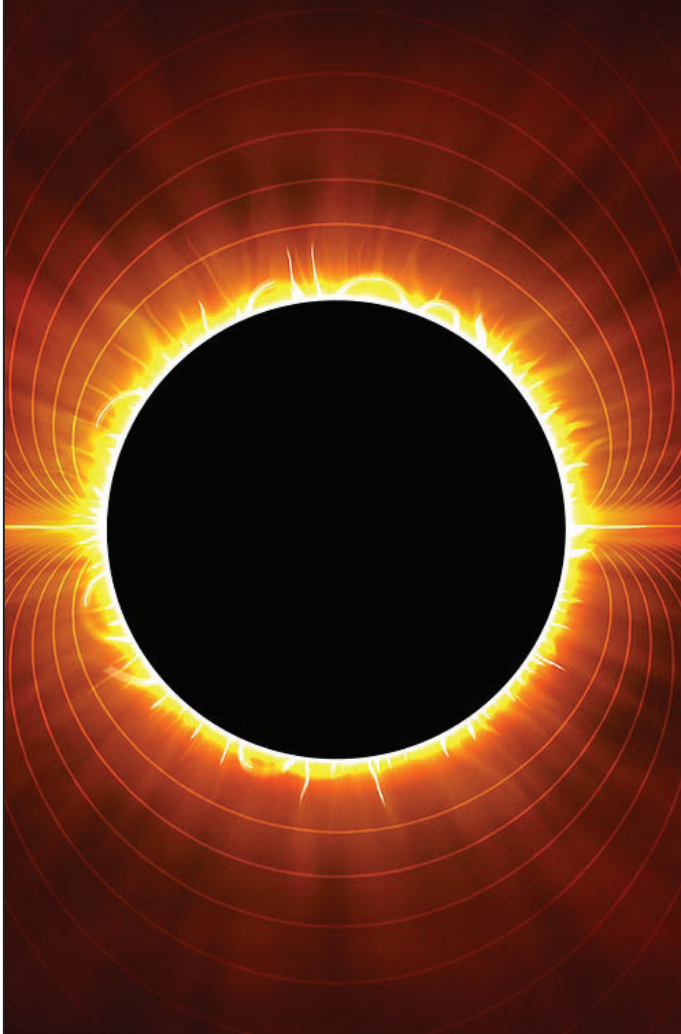
Faders and filters might seem boring, or only for beginners, but in fact they're crucial to good mix practise. Particularly if you're a D.I.Y. mixer, they're a good way to teach yourself about the inherent strengths and weaknesses in a sound, and how a mix fits together without it necessarily relying on reverb to create space and depth. A warning though: filters can be something you overcook quite easily when you first try them out, but like anything to do with mixing practice, the trick is to keep listening, adjusting and finessing until everything falls into place.




Andy Stewart owns and operates The Mill in Victoria, a mixing and mastering facility with clients ranging from Paul Kelly to Gotyé. He's happy to respond to any pleas for recording or mixing help... contact him at: andy@themill.net.au



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BY JIMMY DEN-OUDEM



VUE AUDIOTECHNIK HAVE A COUPLE OF DIFFERENT PRODUCT LINES, THE HIGHEST GRADE BEING THE H CLASS. I SOUGHT OUT SOME REVIEW PRODUCT AND FOUND MYSELF STARING DOWN THE BARREL OF AN H12W AND HS28 SYSTEM.

The h12W is a 12" and horn active speaker, with 100 x 50 (H x V) degree nominal coverage. RMS output power on the internal amplifier modules is 275W for the HF driver, and 830W for LF – and that's before hitting any protection. Protection mechanisms include input level, output DC, short circuit, under / over supply voltage, and thermal protection. It's pretty hard to break it without doing seriously stupid stuff. Frequency response is specified at 55 Hz – 21kHz (+/- 1.5dB), and maximum long term SPL is 120dB.

Both the LF and HF drivers use a 4" voice coil, but what really distinguishes the h12W is the Truextent Beryllium HF diaphragm. The background on Beryllium as a choice is that it's lighter than other materials, yet stiffer. So because it has lower mass, it's easier to accelerate and hence can produce higher frequencies better. Because it's stiffer, mechanical deformation is reduced. That's the official explanation anyhow, but what does it mean in practical terms? In a nutshell, killer HF reproduction.

The h12W is a very clean sounding box in general. It gets down low for a 12" woofer, and the crossover between drivers seems well managed. Low end is tight. High frequency response is detailed and very present. Really, it's a bit too present for the confines of CX central. It's more speaker than is appropriate for our room, but in a larger venue or outdoors I'd quite likely run it with no EQ. If not, it's easy to remove a bit of HF with an EQ, but much harder to boost a frequency which was never there to start with.

The cabinet itself smacks of quality, and at 32.75kg it certainly feels substantial. The front grille is glossy and not quite black – there's a coat of cherry red in there somewhere. It looks classy and feels solid. I really like the attention to detail of the overall finish.

SYSTEM SHOWN WITH
SLIPCOVERS AND WHEEL BOARD

The hs28 is a proper subwoofer, with frequency response of 35-80Hz (+/-1.5dB). You can't actually run it any higher than 80Hz. What initially looks like a single 18" cabinet is actually a dual driver unit, with each driver independently DSP controlled and amplified. The box combines direct radiating and band-pass driver configurations with a common chamber vent. The idea of combining configurations is to get over the "only good at one note" characteristic of other subs. VUE call it Active Compliance Management. Whatever the name, it works well.

With a nominal coverage of 360 degrees, it would be fair to say the hs28 is not especially directional. It does however sustain 127dB SPL and will peak up to 133dB, so it's unlikely to leave you wanting. The hs28 presents very well defined sound and plenty of it. It wouldn't fit on my parcel scales so I'm unsure exactly what it weighs, but let's just say there's a reason for the four carry handles. The clip on wheel-board and slip-cover make shifting it a more sensible proposition.



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H12W BACK PANEL WITH LOADS OF EVERYTHING!



IT RUNS IN THE FAMILY

All the h Class cabinets use very similar back panels – 10 LED indicators tell you signal level on each component, protect, temperature and sleep status. There's also a "wink" LED – more on that later. Both analogue and AES inputs are provided on each box, with the AES taking precedence when connected. There are loop through outputs for each input, and you can select which AES channel the box picks up.

Power to the delivery is via PowerCon. There's a power loop through on the h12W, but not on the hs28. Presumably this (and the larger PowerCon connector) indicate it pulls more juice. The final connector is an EtherCon, which allows each h Class cabinet to be connected to a data network for remote management.

System VUE is the software used to control the boxes, and joyfully there are PC and Mac versions available. Cabinets can be named and grouped for easier control over large

systems. Level and delay can be adjusted on each box, AES channel selected, and you can make them go to sleep or wink at you for identification (there's a wink LED on the front of the box too). The hs28 adds an option to recall different presets allowing LPF at 60, 70 or 80Hz, but that's all the control you get. In fairness, it's really all the control you should need.

I'd really like a second Ethernet port for easy box-to-box looping, and another preset for the h12W (with slightly tamer top end) might be useful for indoor use. But that's the worst of it. What initially reads like marketing hype does actually have scientific basis, and as near as I can tell the gear does exactly what the specs say it will. Feed it a good signal though, because this grade of product will make a crappy source stick out like a sore thumb.



BRAND: VUE AUDIOTECHNIK
 MODEL: H12W AND HS28
 RRP: H12W-\$9299 INC GST.
 HS28-\$10583 INC GST. SYSTEM VUE-FREE!
 PRODUCT INFO: WWW.VUEAUDIO.COM
 DISTRIBUTOR: WWW.AMBERTECH.COM.AU

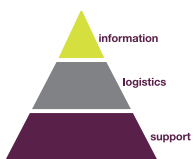


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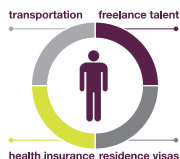


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CHAUVET PROFESSIONAL LEGEND 230SR BEAM

BANG FOR BUCK

BY JIMMY DEN-ouden



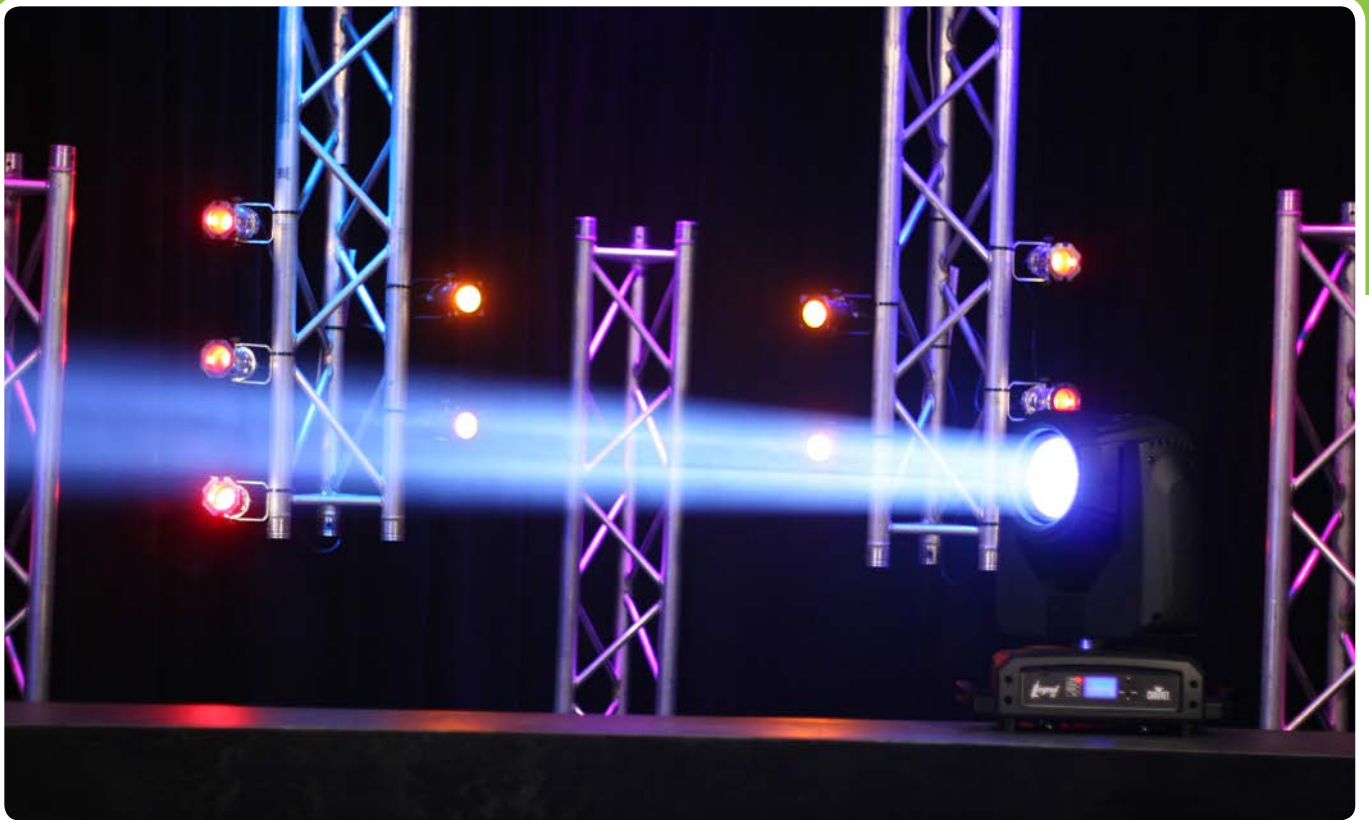
LEGEND 230SR BEAM IS A LONG MODEL NAME INDEED, BUT SINCE IT'S A LONG THROW FIXTURE I GUESS IT'S AT LEAST SOMEWHAT APPROPRIATE. FOR ECONOMY OF WORDS I'LL REFER TO IT AS THE 230SR FROM HERE ON. UPON OPENING THE BOX IN WHICH THE FIXTURE ARRIVED I WAS ALARMED BY SOME TINKLING NOISES THAT EMANATED FROM WITHIN THE CARDBOARD CONFINES - AS LUCK HAD IT THIS WAS JUST THE ROTOLock BOLTS RATTLING IN THE INCLUDED HOOK CLAMPS. I PULLED OUT THE RATHER COMPACT 230SR AND WAS SURPRISED BY THE WEIGHT - 18.7KG ACCORDING TO THE SPEC. QUITE HEAVY FOR THE SIZE.

I dragged the machine into the studio and applied electricity via the PowerCon input. The unit only consumes around 2A at 230V, so using some piggyback leads you could happily hang several off a single 10A circuit. DMX is via 3 & 5 pin in and out, and you have a choice of 15 or 18 control channel modes. Pan and tilt

are 540 and 270 degrees respectively - seems like this has become the default standard for nearly every moving head.

The 230SR has a 14 + white colour wheel which is capable of split colours and continuous scrolling. 17 gobos plus an open position include an array of fun and useful shapes and breakup patterns. The 8-facet prism can be rotated and zoomed, and with the pinhole gobo engaged and focused it generates a great visual effect. The menu is backlit LCD and though a bit weird if viewed off-axis, at least all the menu items make sense. It's easy to navigate and has a backlight time-out setting.





Internally the lamp is an Osram Sirius 230W jobbie with a 3000-hour lifespan, and going by the spec it's good for 96,000 lux at 15m. This is of course not only a function of the lamp but also the beam angle of the 230SR. You might be tempted to compare the 230SR unit to another very narrow beam fixture from an Italian manufacturer, but since they sit in different markets it wouldn't really be a very useful exercise.

The 230SR has a 2.5 degree beam, so it will eventually diverge over distance. You might not hit clouds with it, but reaching the far end of an arena should pose no problem. Minimum distance to illuminated objects should be no less than 12m according to a warning label on the base, and they really do mean it. Because the entire output is focused very tightly there's a lot of beam heat. It quickly became apparent to me that putting one's hand in the beam even a metre away from the fixture was a bad plan, especially since this is roughly where the focal point sits.

Very worthy of recognition is the slow movement capability of the 230SR – it's extremely smooth in its movements, right down to a virtual stop. Also of merit is the very accurate position recall if the fixture is knocked. This seems to happen in two stages – a quick coarse re-alignment then some fine tweaking. Going on the weight I'm going to say it feels pretty well built, the pan and tilt transit locks are solid too. Assuming reliability is good, this fixture opens up some new possibilities for smaller production companies looking to add beam effects to their lighting inventory, and it does so at a very reasonable price.



BRAND: CHAUVET PROFESSIONAL
 MODEL: LEGEND 230SR BEAM
 RRP: \$4616.00 INC GST
 PRODUCT INFO: WWW.CHAUVETLIGHTING.COM
 DISTRIBUTOR: WWW.SHOWTOOLS.COM.AU

CHROMA-Q STUDIO FORCE

JUST LIKE A POLAR BEAR, IT'S STRONG
SOFT AND WHITE.

BY JIMMY DEN-UDEN

IT WOULD BE FAIR TO SAY WE'VE LOOKED AT A FEW LED FIXTURES HERE AT CX. IN NEARLY ALL OF THESE, THE LED IS THE LIGHT SOURCE. THE STUDIO FORCE WORKS DIFFERENTLY - IT HAS LEDS BUT THEY DON'T ACTUALLY PRODUCE THE LIGHT OUTPUT OF THE UNIT. THEY EXCITE A PHOSPHOR PANEL, WHICH THEN GENERATES THE LIGHT THAT IS OUTPUT.

This system has a few benefits, with the most obvious of these being the flat light output. Because the whole surface of the fixture is the light source, the output light is very flat across the field.

Physically the fixture doesn't look outwardly revolutionary or anything. It looks well built. I like the internal yoke locking mechanism because it's very secure, and it sits out of the way enabling you to butt multiple fixtures end to end. Power and DMX input on PowerCon and 5 pin XLR respectively, with loop outs for both. At 4kg weight and 150W maximum power consumption, many Studio Force units can easily be packed into a tight installation.

Being designed for video, there are a few important points about the Studio Force. First up the dimming is top notch - no flicker at all, and you can adjust the PWM dimming to operate at different frequencies (1200, 2400, 4800 and 9600Hz). For studio use you can select low or no fan modes, and in both of these the unit is temperature protected. For less noise-sensitive applications there's a "live" mode which allows the fan to run as fast as it needs to.

The Studio Force is available in variable and daylight white models. The daylight gives the highest output of the range, and on the variable model you can see the intensity increase as you fade between tungsten and daylight temperatures. The variable white model lets you dial up any colour temperature between 3200 and 5600K, as well as adjusting the intensity. It actually has the ability to output two different colour temperatures from the same piece of phosphor substrate. I don't know how that works, but I like



3200 KELVIN

that it does. There's also a hue adjustment to apply green or magenta tints.

Coincidentally these parameters match up with the three DMX channels you use to control the unit remotely. The touch screen user interface is completely intuitive and a superb piece of design. You can run the fixture in manual mode as well, and dialing up the required parameter values is dead simple.

The Studio Force V 12 Phosphor can achieve a CRI score of up to 91, and has a "Hot Lumen Output" of 1751 at 3200K, or 4202 at 5600K. Clearly the colder temperature gives way more output, so if you don't need the ability to vary it or match existing tungsten fixtures, the D 12 Phosphor model is an obvious choice.

Really there's no question in my mind about the quality of the output or noise level or dimming. It's all great, but remember that this fixture is a softlight, and that means the beam is (at my estimate) 170 degrees wide in every direction. This makes it very hard to control spill, so for best results I'd factor in some egg crate louvers or barn doors – both available as factory options.



5600 KELVIN -

NOTE WIDE BEAM ANGLE!



BRAND: CHROMA Q
MODEL: STUDIO FORCE
PHOSPHOR V12, D12
RRP: \$3100 EACH INC GST
PRODUCT INFO: WWW.CHROMA-Q.COM
DISTRIBUTOR: WWW.JANDS.COM.AU



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MACKIE DLM

YOU WANT POWER WITH PORTABILITY?

BY JIMMY DEN-OUDEM



DLM IS ANOTHER IN THE LINE OF MACKIE PRODUCTS TO GO THROUGH THEIR CREATIVE TEAM'S INTERNET VIDEO TREATMENT. 'YOU WANT POWER WITH PORTABILITY? YOU GO THROUGH VLADMIR'. AT THE TIME OF WRITING, THE VIDEO HAS HAD 38,000 HITS. I THINK THEY'RE ONTO SOMETHING GOOD.

DLM comes in three sizes and shapes, 8" full range, 12" full range, and a 12" subwoofer. All the boxes are self powered, with the amplifier spec listed as 2000W Class D across all three models. The full range models use a 1.75" HF compression driver in addition to the LF driver. I had a good long play with the 8" full range model – mostly because I figure the size makes it the hardest one to build right. The frequency spec is 65Hz – 20kHz (-10dB), and peak SPL claimed at 125dB @ 1m.

Both full range DLM models include a DL2 integrated digital mixer. This is basically a 2 source mixer, and figuring out how to work it took all of 30 seconds. There's a select key for each input. Pressing it once selects the input and sets you in level adjust mode. Pressing it repeatedly steps through EQ (low mid and high) settings and reverb send

level for the channel in question. My only real objection to the mixer is that the input level jumps from nothing straight to -20dB, then -10, and then upward in 3dB and then 1dB increments. -20dB is a bit abrupt as an opening level if you've got an iPod or similar device connected.

Input 1 has an XLR/TRS combo jack. The jack input is line level, and the XLR can be switched between mic and line level with the adjacent button. Input 2 also has a combo input, with the jack setup for instrument level signals. A pair of RCA inputs allows stereo line sources to be connected. The XLR "thru" connector can output the mixed signal or link directly from the channel 1 input. The DL12S sub has stereo XLR inputs with full-range and high passed outputs, also both stereo.

BACK PANEL INCLUDING INPUTS,
LOOP OUT AND DIGITAL MIXER

SETTINGS SAVED? YEP!



The DL2 mixer has a couple of additional functions accessible via the SYSTEM key, including an in-built feedback destroyer. It works okay, though the feedback needs to get pretty brutal to be recognized and subsequently destroyed. Not causing feedback to start with is probably a better choice. I like the little in-built kick stand which allows you to tilt the unit backward for use as a wedge. It even lands at the right angle!

The DLM can be delayed up to 300mS – useful if you need a couple of small delay speakers and don't want to mess about with external processing. As you adjust the delay time, the OLED display also shows what it translates to in metres and feet. The display is very good and clear, and I think it's cute that it speaks American too. There are a bunch of preset EQ settings which have various boost and cut functions, most of the curves are pretty sensible. When you kill the power, the DL2 mixer remembers where everything was set and that's where it comes back to next time you switch it on.

If you regularly take the DLM to certain venues you can save three presets – settings which recall all the settings of the device. Nice if you have a weekly house gig somewhere – hit the MEM key to access these. The whole thing is self protecting – I dealt out a fair measure of abuse and it didn't seem bothered – the limiter just kicked in.

Mackie state the DLM weight as "ridiculously light", and at 10kg for the DLM8 I'd say they've more than substantiated this. It's easy to carry and to operate. If only the DLM had existed years back when I was doing driveway hire of small vocal PA systems... Admittedly 8" and 10kg doesn't give a lot of scope for big full range sound, but Mackie has made the most of it despite these physical constraints. The peak SPL claim seems a little optimistic, but regardless the DLM8 does sound really good for its size. I suspect the DSP is partly to credit.

Positionally the DLM range sits in an interesting spot in the market. It's definitely a comfortable fit in the MI sector – an ideal product for little solo or duo acts. With an external mixer and a sub added into the kit you could use it for bigger things quite easily. It could work in the pro sector too. It sounds decent straight out of the box – a good thing for novice operators, and a time-saver for experienced ones.

BRAND: MACKIE
MODEL: DLM8, DLM12,
DLM12S
RRP: DLM8 - \$1499.
DLM12 - \$1799.
DLM12S - \$2099. ALL INC GST.
PRODUCT INFO: WWW.MACKIE.COM
DISTRIBUTOR: WWW.CMI.COM.AU



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GOPRO HERO 3 WHITE EDITION

HOW PRO IS GOPRO?

BY JIMMY DEN-OUDEM

AND WHY WOULD I EVER REVIEW IT? AS I REMEMBER IT, GOPRO KIND OF APPEARED ONE DAY AND COMPLETELY REVOLUTIONISED THE WAY WE CAPTURE VIDEO FOR EXTREME SPORTS, CAR SHOWS AND A BUNCH OF OTHER THINGS. THAT'S A PRETTY IMPRESSIVE FEAT- LITTLE WONDER THERE WAS A GLOBAL SHORTAGE WHEN I CALLED THE DISTRIBUTOR TO ASK FOR AN EVALUATION UNIT.

At a retail price of \$199.99 the GoPro Hero 3 White Edition is categorically the cheapest camera we've ever reviewed. It's also the first product I've bought for myself then decided to review. Hero 3 describes the current range of GoPro cameras, and the white edition is the cheapest of the three, followed by silver then black. The cameras jump \$100 per model, and the features improve as you go up. I suspect that internally there's not a lot of difference between them. My needs were basic and I didn't need a remote, so I went entry level.

The camera itself ships in a nice retail box and includes a waterproof housing with an interchangeable rear door. Use the "skeleton" door for low wind shooting (GoPro say <100MPH is "low wind"), or in situations where you don't need the camera to be waterproof. There are a couple of adhesive mounts, one flat and the other curved to apply to a helmet. I also bought a 32Gb SanDisk MicroSD card to record onto – it holds more video than the battery can shoot.

The Hero 3 White edition can shoot video in 1080 or 960p at 30fps, or 60fps at 720p. If you'd prefer still shots, it will do a 3fps burst at 5MP, or (my favourite feature) time lapse mode at intervals from 0.5 to 60 seconds, adjustable in six steps. The lens on the camera is wide – very wide, and there are three buttons to control the camera. Hold down the front button for power functions, or press it quickly for mode selection. The button on top starts and stops the camera, and adjusts parameters in the setup menu. The button on the side is for turning the built-in WiFi on or off. Whoever markets GoPro has really put some thought into it. The cameras on their own are very cheap, but once you add enough accessories to make them really useful the price starts to add up. Need an extra mount? That's \$30. Want to see what you're shooting? Add another \$80 for the LCD



**IT'S LOOKING A BIT USED NOW,
BUT STILL WORKING AS WELL AS EVER**

"backpack". Want to mount the thing on a normal camera tripod? Even that requires a \$15 adapter. It's \$20 for the micro HDMI cable. VERY smart marketing indeed.

I think a large part of the success of the GoPro is tied in with the things you can't control. You can't change the white balance, exposure, audio gain, or any of that stuff. It all happens automatically, and the auto everything deal works really well. The camera records in MPEG which is a bit of a pain to deal with in Final Cut, but it's a very practical choice to fit a lot of footage on a small memory card so I can understand the choice of format.

Really, as long as you charge the battery, there's essentially no way to screw up shooting with one of these things. The wide lens is super forgiving of less than precise aim, but a good way to be sure of what you're shooting is using the GoPro app for iPhone or Android and live preview your shot. At least it's possible in theory – I couldn't get my device to connect via WiFi even after two firmware updates. I'll stick to guesswork.

All price-of-accessories-related-bitching aside, the Hero 3 is a very cool product. The camera shoots incredible video under a variety of conditions. It seems to prefer a lot of light, with low-light situations getting a little grainy. I can forgive that though. I've taken the camera mountain biking and rock climbing, cable-tied it to an SM58 and

**JUST LIKE
EVERYTHING
ELSE ABOUT
THE GOPRO,
THE
CONNECTIONS
ARE TINY**



TIME LAPSE PHOTO SHOT EARLY AFTERNOON WITH GOPRO



STILL PHOTO SHOT AROUND DUSK WITH GOPRO



gone swimming, bolted it to the roof of Julius' car, and toured it around Australia on the **CX** Roadshow (check out the time-lapse video on the **CX** Facebook page). WiFi connection aside, every time I asked the Hero 3 to do something it delivered the goods.

If you want to use the camera in a production situation you'll need a composite or HDMI output cable, and it's probably worth connecting a USB power supply to make sure it doesn't run flat during the show. The GoPro makes an excellent effects camera, the only real downside being that a suitable HDMI to SDI converter will probably cost four times as much as the camera. Still, for under \$1000 all up, it's stupidly cheap for the results you get.

For me though, I'm happy enough to hook it onto my bike and go mashing around some trails on the weekend. The fact that it still works after I've dropped it on rocks a few times is an unexpected bonus. I think the nicest thing about the product is what it inspires people to do – check out the Facebook group to see what I mean.



BRAND: GOPRO

MODEL: HERO 3 WHITE EDITION

RRP: \$199 INC GST

PRODUCT INFO: WWW.GOPRO.COM

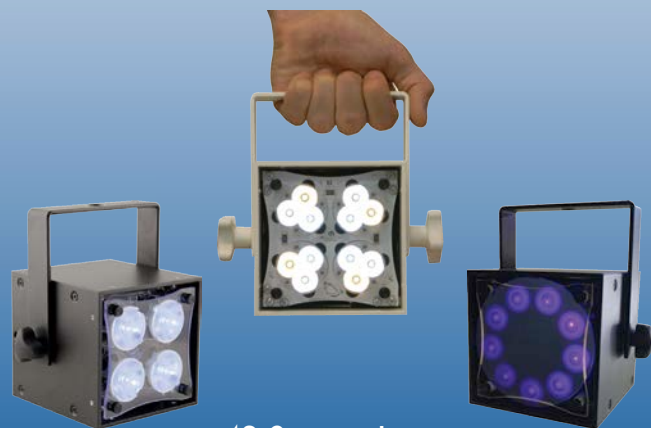
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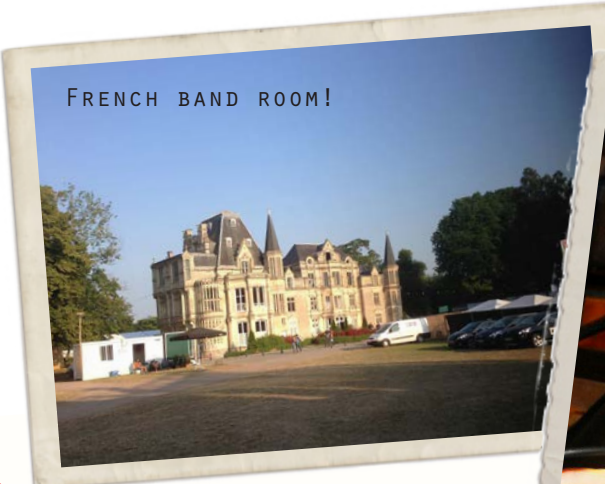
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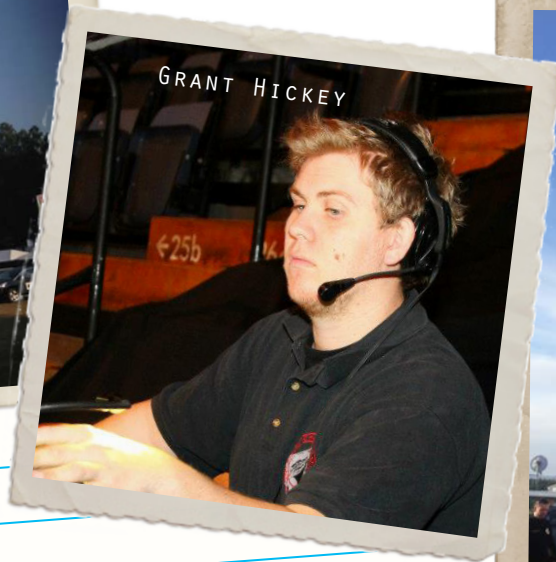
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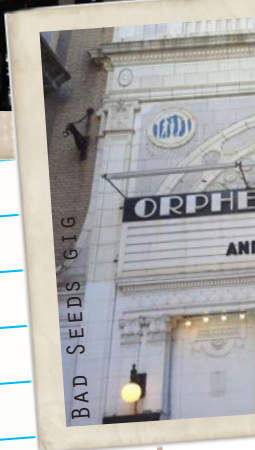
SHOW US YOUR GIG LIGHTING GUY GRANT HICKEY



FRENCH BAND ROOM!



GRANT HICKEY



Like so many others in the industry, Grant's career in live production began at high school. He started working on productions as a way to escape classes, and lighting was a natural choice because as Grant puts it "I was too tone deaf to do audio".

- What's your gig? Who are you working with at the moment, what's the show, what part do you play in it?
 I'm a lighting guy. I'm currently touring Europe with an LD, and I work as a programmer and assistant. My main job is to draw up lighting/stage plots, then update and pre-program the show to suit the festival rig.

- What does a typical day at work involve for you?
 My day starts on site at a festival or venue, and the first thing I do is to load up our consoles with a show file I've prepared in advance. The show files need to be updated to reflect the local production supplied rig. After this I update our floor package and roll it on-stage for sound check to make sure everything works. After that I roll it all off again, then wait till change over when it comes back on. After that, we do the show, roll the floor package back off and pack it up, then move on to the next gig. The day is punctuated with occasional stops into catering in-between all that.

- What kinds of venues do you find yourself working in?
 All sorts of places. Everything from dodgy night clubs through to theatres, TV studios and arenas. At the moment I'm mostly working on festivals

- Do you work for a crewing agency or as a sole trader?
 Sole trader/Freelancer

- What tools do you take to a gig?
 All the usual lighting guy things, as well as a positive attitude and a sense of humour. I don't usually leave home with out a laptop and an ethernet cross-over cable either.

- What's the best part about your job?
 The best part is the people I work with
 - I'm part of a good team. I like seeing the process of a show coming together from the drawing board, right through to the last truck doors being closed.



GLASTONBURY

- **What's the worst part about your job?**

Sometimes also the people I work with! Balancing work and my personal life can be tough, especially with the long working hours and extended time away from home.

- **Do you have a favourite band or artist you've worked with?**

They are all pretty good, but one particular artist who stood out for me was Kenny Rodgers.

- **Favourite bit of gear?**

Vector works and Grand MA2 Lite.

- **What's your most memorable gig?**

I have a few! Coachella 2013 and Glastonbury 2013 were both great festivals. Everything from the crowds and the vibe back stage through to the quality of production made both of these great gigs to work on.

The other memorable gig would have been the last three seasons of X-factor, Australia.

The combination of a great team and a challenging, constantly evolving show made it a great production to be a part of.

- **What trends do you see in the technology you use in your work? How do they affect what you do on a daily basis?**

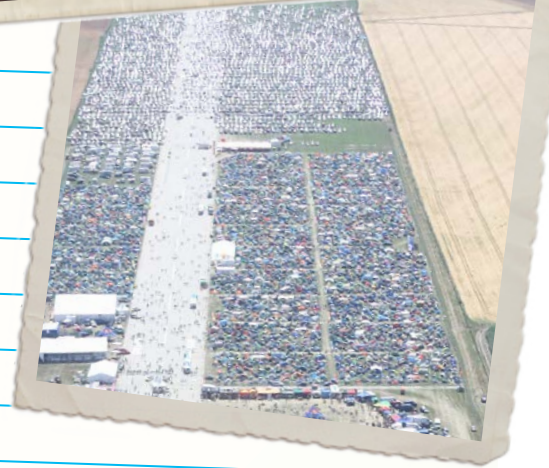
One thing that affects me on a daily basis is the ever-evolving control systems and data distribution. Fibre systems now make it possible to easily control a rig of 20+ universes with out having multiple bulky multi-cores. The WYSIWYG systems and Data switching systems are making big Festivals more capable of providing bands with a better opportunity to have their show on their console, rather than relying on the festival's

console and "party page". This gives LD's more time with the rig than they would otherwise previously have had.

- **What's different about working overseas from working in Australia?**

Language barriers! The main big difference is that having access to a bigger pool of resources allows productions to be staged on a scale which would be very hard to achieve back in Australia. It is still safe to say though that the quality of system techs and crews in Australia easily competes with our international counterparts.

POLISH BAND ROOM!



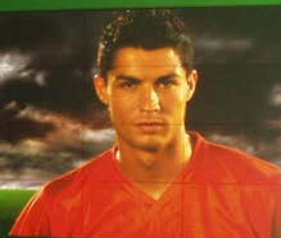
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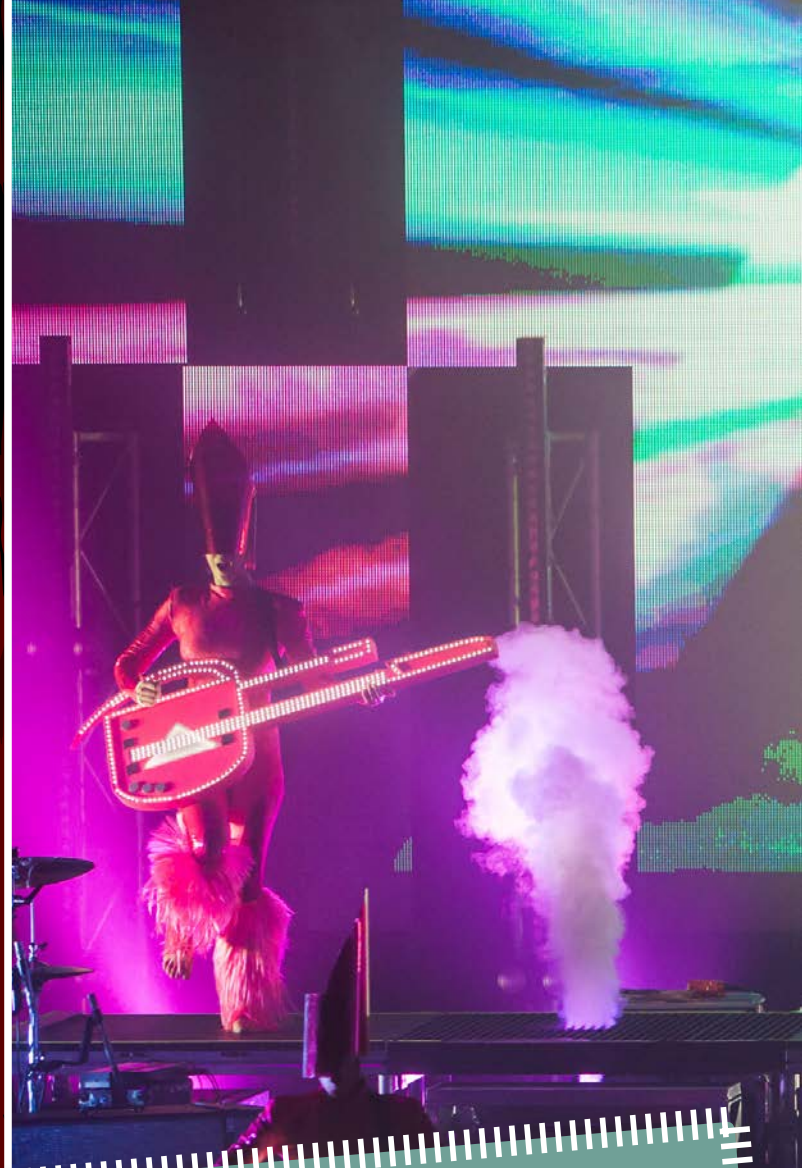
EMPIRE OF THE SUN

FLUME

JESUS CHRIST SUPERSTAR

BY CAT STROM

EOTS PHOTOGRAPHER - Danial Boud
FLUME PHOTOGRAPHY - Patrick Stevenson, Rob Nelson
JESUS CHRIST SUPERSTAR PHOTOGRAPHY -
Simon Zeolotes, Duncan Barnes



EMPIRE OF THE SUN
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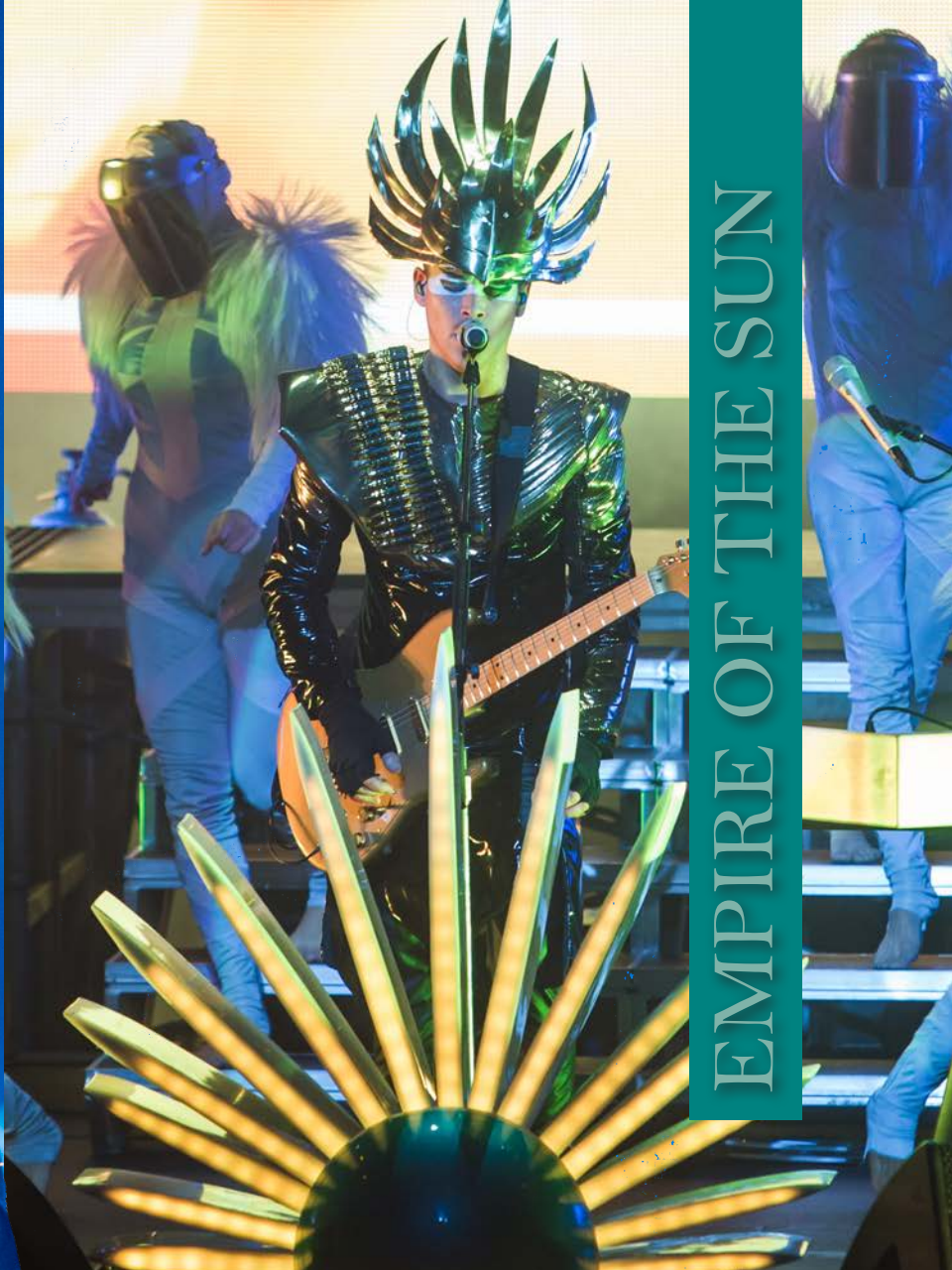
EMPIRE OF THE SUN



Simon Aitken has been lighting EOTS for several years and is preparing for a busy year with the band as well as designing and production managing the Stereosonic festival. His design for the Vivid gig formed the basis for further gigs in the US and Europe.

“I wanted to keep the design as simple as possible yet modern and effective using equipment that most hire companies would have, as there will be a lot of local pickups of extras” explained Simon. “The basis of the show is designed around PRG Best Boys or Vari-lite Profiles, as well as Clay Paky Sharpys, in the air. The floor package includes eighteen LED wash fixtures used as side light with VL3500 FX upstage as back light.”

Also in the rig were a bunch of strobes and molefay plus a back wall featuring LED strips built in with the LED screen. First preference for the show was Fusion Bars but as with all of this rig and the programming behind it, they can easily be substituted.



EMPIRE OF THE SUN

The set element behind which Luke tends to stand is nicknamed 'the Emperor's Ice World' and it holds over 1400 channels of LED strips, each cell of which can be individually controlled. Built by Rosemonts, the set piece has an inbuilt power supply and all of those channels are controlled via a Chamsys SnakeSys B4 four universe ArtNet to DMX convertor, running power over Ethernet.

Simon uses a Chamsys MagicQ Maxi Wing to control the show which he describes as not only a good little console but also lightweight. "The console is only 23 kilos in a Pelican case so it can be carted around the world very easily," he said. "You can get 64 universes of DMX from the one license, and it will work with any ArtNet Box. It also has inbuilt pixel mapping and media server which is very important for me."



The Emperor World staging and Chamsys console tour with the band as does four sets of All Access stairs containing LED strips (unfortunately they didn't turn up in time for the Vivid gig) and risers with LED strips, again all individually controlled LED cells that work on one of the LED Maps in the console.

"It was actually set design number three, the first two not working due to cost, however I think we've got a good result as well as a highly tour-able show that can fit easily into a festival set up," commented Simon. "Luke also now boasts a gold guitar embedded with LED's as well as an LED microphone stand that has over 400 channels of LED in it! It also runs on wireless DMX and a battery pack."

Smoke is an important part of the show and Simon chose Chauvet Geyser RGB fog machines which deliver not only smoke but more LED lighting!

"They incorporate 3 watt LED's and are great," Simon said. "We tour with eight of them, plus a spare, all running with a wireless receiver on each of them and they produce a CO2 Jet like effect but are also lit so you can get flame looks out of them."

The Vivid gig used the Opera House's gear, PRG Australia and Chameleon supplied the floor package.

EOTS' FOH guy Jonathan Gardner - better known as Jonboyrock - had the advantage of being one of the Opera Houses casual technicians and so he was more than familiar with the gear in the Concert Hall. He was more than happy to use most of the inhouse audio gear, including the d&b audiotechnik J-Series PA system, but did hire in an Avid Profile console.

"Given that we play a lot of festivals it's so much easier to use a Profile console as they're always available," said JBR. "They're very easy to use in a festival situation and although I would really like to try the new Midas digital console, it makes more sense to stick with the Profile. It's quite a hectic show so for change-over purposes we need to keep things as simple as possible. It's really an assault on the senses - performance, lighting, video and audio has a lot going on. There aren't many frequencies left!"

Extra d&b subs were bought in for the Vivid Festival shows in the Concert Hall and for EOTS larger side fill was added at the request of monitor engineer Sam Jones. Monitors was a combination of in ears and wedges.

"There's a lot going on with Luke's vocal," commented JBR. "On my Profile console there are three reverbs, two delays, two pitch shifts and the main vocals are split into a distortion as well. In fact Luke's vocal occupies about fourteen channels on the console. I try to make his vocals big, thick and a little bit shiny pop star as well."

Luke has a microphone on his Emperor World stage piece that feeds into a mixing desk onstage so he can do a lot of the effects himself on the fly.

"It's great because it's never quite exactly the same," added JBR. "All of the microphones are Shure and they're great, plus you can pick them up anywhere in the world. Again, it's trying to keep things simple amongst the madness!"

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FLUME

PHOTOGRAPHY BY PATRICK STEVENSON

Australian electronic music producer and all round boy wonder Flume (real name Harley Streten) completed his Infinity Prism tour of Australia in May and is currently touring Europe before a US tour in August.

Flume released his self-titled debut (via Future Classic) in Australia in November 2012, where it shot straight to #2 on the ARIA Album Chart (beaten only by a band called 'One Direction'). The 21 year-old from Sydney, is set to be one of the breakout stars of 2013 with his production ability matched by his live show.

The Infinity Prism references the kaleidoscopic imagery of his album cover in a live context by way of a hexagonal infinity mirror embedded with LED lights, that featured in both the live show and will also feature in his forthcoming trilogy of video clips.

Lighting designer Lynden Gare has worked with quite a few Australian acts including Kimbra and Cut Copy, but he credits his years at Channel Nine in Melbourne working with Rohan Thornton and Megan McGann as his most formative. The aforementioned set piece of the Infinity Prism forms the basis for Lynden's design and the prism idea is reflected throughout the stage set up.

The first design requirement was a 12 metre wide video screen, originally suggested by management, to be hung vertically at the back of the stage. However, instead of the usual backdrop scenario Lynden decided to turn the video screen into a ceiling with a vertical wall of lights at the back.

"It was important to carry the theme of the prism into the lighting and that could be seen in the screen and the Fusion Bars in particular, but there were all sorts of prisms throughout the stage," Lynden said. "We replicated the prism shape in the 'canopy' video screen by splitting it into thirds and folding the sides down towards the stage. Behind Flume we had the Fusion Bars which created diamond and hexagon patterns, mirroring the angles and shapes of the prism. They drew the eye towards the centre of the stage especially as they were a lot bigger than the actual prism set piece. It created another interest in the perspective of the prism idea."



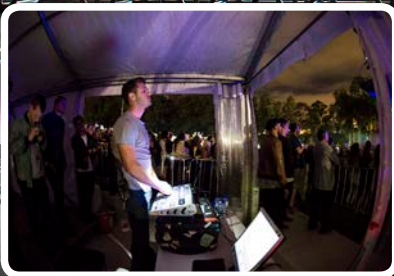


PHOTO BY ROB NELSON



FLUME

important for Lynden to keep light off of the mirrored surface of the infinity prism set piece.

Lynden agrees that lighting an act such as Flume allows a lot more creativity than your regular four-piece band may.

“I guess there’s a concern amongst some DJ / Producers that when they are on stage with a laptop and some equipment, some people may joke that they are checking their emails!” commented Lynden. “So from the outset it was important that we had a lot of reactive visual elements in the show which we achieved by some clever programming of MIDI and OSC. When Flume is on stage playing, as he is hitting drum pads there are MIDI triggers firing off white bursts in the video content and Atomic strobes.”

Onstage Flume has a laptop running Ableton Live and an APC40 performance controller, a Roland SPD-SX, two Ableton launchpads and through some clever programming in Ableton, Lynden is able to receive MIDI notes to his LSC Lighting Clarity system.

Lynden is a big fan of LSC’s Clarity, particularly it’s portability as it packs into a small pelican case and only weighs sixteen kilos.

“Having twenty executors on the wing makes it superior to similar products on the market,” he added. “It’s very adaptable and I like how it does cloning, how it handles groups, and particularly how easy it is to view just what’s in cue when you open it for editing.”

Eastern states lighting supplier was Resolution X, Novatech in Adelaide and Frontier Lighting in Perth. Rob Nelson from Mediatec looked after the video and the headache of rigging it.

“I chose Resolution X as I knew the quality of crew I would get, which was particularly important as I knew it would be an evolving design,” said Lynden. “I needed crew that would have a lot of patience! Res X provided Gus Wimmer and Eve Conroy and they were fantastic.”

JESUS CHRIST SUPERSTAR



PHOTO BY SIMON ZEOLOTES

JESUS CHRIST
SUPERSTAR

Mention that you're going to see Jesus Christ Superstar and most people in Australia wistfully tell you how great the in-the-round production was a couple of decades ago. I never saw it so can't compare but people still talk about Kate Cebrano's

performance. Fast forward to Laurence Connor's UK arena production which drags the story kicking and screaming into the 21st century with tweets, graffiti, and live video resulting in a veritable arena spectacular.



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JESUS CHRIST
SUPERSTAR

I'm no fan of 1970s rock opera, or Andrew Lloyd-Webber's music, but thousands around me were and eagerly sung along to every word. Including those sitting behind me.

The set, designed by the recently departed Mark Fisher, is deceptively simple being basically a massive staircase flanked by the musicians of the band. The stairs concealed various trapdoors and exits, behind which a giant screen beamed live footage of characters onstage, interspersed with pre-recorded footage such as projections of government and derelict buildings, social media streams and computer generated backdrops.

The characters are in jeans, t-shirts and hoodies, they have tats, they tweet, they text and they have dreadlocks.

The lighting design is by Patrick Woodroffe and programmed by Dave Hill. Touring the show is our own Luke Radin, an ex-Chameleon worker who has been in the UK for nine years working predominantly with Neg Earth Lights.

Rehearsal time was limited in Australia so the decision was made to ship the trussing and rigging from Neg Earth Lights in the UK, who had done the English leg of the tour, to save time whilst PRG Australia supplied the lighting fixtures. With a lot of cast to cover there was the need for a lot of lights. Clay Paky Alpha Profile 1500 and 1500 HPE's plus Vari-lite VL3500 washes and Martin MAC Auras, made up the bulk of the moving heads with a few Martin MAC700 thrown in. Added to that were 1 Lite Mole DWE's, Lycian follow spots and Martin Atomic strobes; all controlled by two grandMA classic consoles, one as a tracking back up.

"The lighting for JCS is typically theatrical with lots of effects and big looks, more easily achieved in a large arena space, than in a theatre" commented Luke. "It certainly keeps me busy with many lighting and spot cues."

Sound engineer Robin Sellars admits to being a tad out of place seated behind the Digico SD7 console at FOH. Robin is a studio man who has worked with Andrew Lloyd Webber for many years on his DVDs and albums and when the original 'rock'n'roll' FOH engineer appointed at the beginning of the tour in the UK didn't deliver, Robin was called in.

"He was very good at rock'n'roll but this is really a theatre show in an arena environment," explained Robin. "I may not know the inner workings of arena audio reproduction but I know how it should sound and with help from people around me, we have achieved this."



AND **ANDREW O'KEEFE**
AS KING HEROD

PHOTO BY DUNCAN BARNES

Robin's first ever gig was the O2 arena in London in front of 16,000 people! One his main hurdles was handling the forty headset microphones in continuous use during the stage.

"Obviously you have to ensure that as the actors leave the stage their mics are switched off and that wasn't happening so you'd hear coughing and chatting over the PA - a complete nightmare," he said. "We've programmed every scene and every song as well as sometimes within a song, so that everyone is muted off stage. When they come onstage they're not automatically on but they gradually fade up."

The various venues tend to pose sightline problems due to the large screen however Robin says the PA guys everywhere have been fantastic especially as the PA is flown quite a bit higher than normally expected. A L'Acoustics K1 PA was chosen for main hangs with dV-DOSC underhangs, L'acoustics V-DOSC for side hangs and delays with dV-DOSC underhangs and SB218's, ARCS, 108P's and Kiva's for fills etc. All had LA8 amps and network manager plus four Dolby Lake processors.

Fortunately Robin was familiar with the Digico SD7 which he describes as a fantastic desk and added to the onboard effects was a TC Electronic 6000 System with Icon remote for reverb. A Waves Puigchild hardware compressor, DBX 162 SL compressors and a KlarkTeknik 9696 recorder with 2x 9650 Madi Bridges were also out front.

A Digico SD7 console with 192kHz SD Racks with AVIOM output card fitted was utilised for monitors running a total of 76 aux mixes of which 28 were stereo IEM mixes.

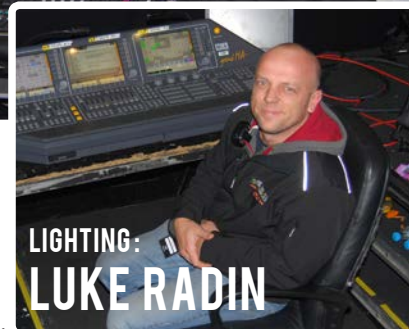
Shure PSM1000 personal monitoring systems as well as Sennheiser SR300 and EK300 and Aviom A16II personal mixers made up the IEM gear. Stage loudspeaker monitors were a mixture of L'Acoustics 115XT HiQs, 108Ps, and ARCS.

Eighty channels of radio were utilised for the tour and a complex aerial system was used to ensure blanket radio coverage across the stage. Radio microphones included Shure UR4D receivers, Shure UR1 transmitters and AKG



SOUND:
**ROBIN
SELLARS AND
ATTE
HEINONEN**

C544L cardioid headsets for all principles and cast. Robin admits that the first show in Sydney's notorious Entertainment Centre didn't sound quite as he wanted it to.



LIGHTING:
LUKE RADIN

"When we started it was like mixing in gravy but as the place warmed up it was better," he said. "It wasn't bad, it just wasn't what I wanted it to be. But today we have had the air conditioning turned off an hour before the show and it'll be fine."



LIGHTING SUPPLIER: PRG AUSTRALIA
LIGHTING CREW CHIEF: JEFF PAVEY
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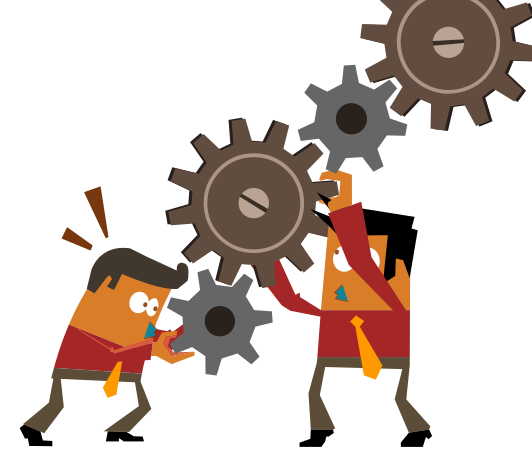
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BIZ TALK

PARTNERSHIPS



with Julius Grafton

For decades I've observed powerful partnerships, horrible partnerships, and some that just bumble along because no one is ready to quit. One of my more effective businesses was a partnership with my then wife, who remained the best business partner I ever had even when the marriage fizzled.

A business partnership is close to a marriage, minus the sex.

The strength of a partnership is when the combination outweighs the parts. Conversely a dysfunctional partnership will weigh down and sometimes kill an otherwise good business. Being alone as a sole owner is a lonely place to be, without someone who has 'skin in the game' to share the problems and workshop the solutions.

Friendship is a very bad reason to go into business together. Respect is required at all times, and also the ability to disagree without emotion. Conflict resolution and an equal sense of sharing are essential.

The key to any partnership is an agreement, easier in business than in marriage. A partnership agreement needs to deal with all the possibilities that can arise. These include how and when to share profits, whether the partners will be allowed to borrow money from the firm, and crucially how one will exit.

Imagine you decide to leave a partnership. How will your half be valued? Will you expect your partner to buy you out? What if your partner changes character or marries a grasping spouse?

Marriage almost never has a formal agreement, unless there is a prenuptial agreement. When I marry my next wife (identity currently unknown) there will need to be a pre-nup to protect her, since she will almost certainly be wealthier than I am. Well, she better be! The pre-nup would put an opening value on all our assets, so we would have a number to work off when or if we divorce. We will pay for a property valuation if necessary.

I had a conversation with a forensic accountant that sparked this article. She has a (quote) 'bimbo female client aged 38 with teenagers who is fighting a ten million dollar settlement offer'. The accountant sighed and explained where emotions and duplicity are involved, reason flies out the window. One client was so unrealistic she pulled all the files onto the meeting room table, and invited the client to go elsewhere. Which resolved the impasse and led to settlement.

Valuing a business for partnership purposes is easy if it is spelled out in advance. It is often done as book value

(the written down worth of the current assets), plus the difference (if any) between debtors and creditors. Imagine there are assets worth – say – 100 grand at current book value, then the firm is owed 50 grand by debtors. That's positive 150, but you need to take off current liabilities such as creditors, along with contingent liabilities like leased or financed equipment balances at the sale date.

In many cases I know of, a partnership business valuation for the purposes of an exit of one partner doesn't include goodwill – and this needs to be considered carefully, since some businesses that provide services have very little in the way of fixed assets. Think of a consultancy practice, or a crewing agency, where the asset is actually mainly made up of goodwill. How will you value that?

One method is an earnings multiple, say 3 or 4 times annual earnings, but once again do you use the written down tax adjusted earnings or the underlying EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization). I vote for this one!

The circumstances of a partner departing a firm need to be defined as well. If they just decide they don't like things and want to go, what is the timeframe between decision and settlement? Is there a first options for the partner to buy them out, with an expiry timeframe that then allows the stake to be sold to an outsider?

What if your partner goes nuts? Define crazy! Or brings the firm into disrepute?

A critical aspect of partnerships that needs to be spelled out in the shareholder agreement is funding the business. It needs to be one in, all in, so that when a bank loan or finance deal is required then both or all partners provide equal guarantees. Likewise if extra capital is needed, it has to come from each partner equally – otherwise extra shares would be issued to the partner contributing more funding.

Finally, how will partners decide on wages, loans and profit dividends? Some kind of guidelines are essential since not everyone clearly understands the complexities of business. Being profitable doesn't mean the profit is actually sitting in the bank account, often a profitable business is growing because the profits are being reinvested, and cash is tight.

Thinking about all this is sobering. Perhaps a marriage is easier!

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LIVE PERFORMANCE AUSTRALIA

GUIDE TO EMPLOYMENT ON TOUR

Most employees working in the live performance industry are covered by the Live Performance Award 2010 ('the Award'). The Award provides the minimum terms and conditions of employment. When an employee is engaged on tour, they should be employed under a contract that ensures these minimum standards are met. Any employee required to travel for a production should generally be engaged as a weekly employee rather than as a casual.

PAY AND ALLOWANCES

The Award sets out minimum rates of pay for employees that must be followed while employees are on tour. In addition, an employee on tour may also be eligible to receive travel allowances on top of their pay. They will generally be eligible where they are away from their 'place of residence' (defined as 'the place where an employee ordinarily resides'). Travel allowances are normally paid in advance.

The Award sets out a meals allowance and an incidental allowance. Both of these allowances have a daily rate with a maximum weekly cap. If the employee is travelling for 5 days or more, the weekly maximum amounts will apply.

The meal allowance applies whether meals are provided by the employer or not. If an employer wishes to provide meals in lieu of paying the allowance, they must vary the Award through an Individual Flexibility Agreement.

TRANSPORTATION

Under the Award, an employee who is required to travel away from their place of residence is to be provided with an economy class fare or equivalent to their destination or, if the employer does not provide such transport, the employee is to be reimbursed for the actual cost of the transport.

Employees are also to be provided with transport to and from the airport, or reimbursed for the cost of such transport to a maximum amount provided in the Award and provided with or reimbursed the cost of transportation of their luggage and/or instruments.

ACCOMODATION

Employers must either provide accommodation, or where they do not provide accommodation, they must reimburse employees for the cost of accommodation or pay a cash allowance in lieu up to the amounts specified in the Award.

Whilst the Award does not set out guidelines for suitable accommodation, the industry standard is between 3-4 star, close to the venue and with cooking facilities for stays over 1 week. An employer can ask employees to share accommodation but this must be agreed in writing.

TAXATION

An employee will not be subject to Fringe Benefits Tax for travel allowances under the Award. Allowances paid in accordance with the Award are fully deductible as an expense.

SUPERANNUATION

Employers should be aware that the amount of Superannuation payable to employees increased from 9% to 9.25% from 1 July 2013.

WAGE INCREASE

In addition to the increase in Superannuation, wages under all Modern Awards increased by 2.6% from 1 July 2013.





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**An open letter from ACETA
and the Australian Wireless Audio Group**



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E info@aceta.org.au

Dear Radio Microphone User,

Major changes to the operation of Wireless Audio devices announced by Government.....and complete silence on what it really means to users of radio mics and other wireless audio devices.

You may or may not be aware that there will soon be changes to the user radio microphones, and other wireless audio devices within Australia. These changes are now imminent and they will affect you.

What's changing

It will be no longer legal to operate wireless microphones in the radio frequency spectrum (between 694MHz and 820MHz) after December 31st 2014 meaning that:

- Around 40% of the spectrum previously available for use is to be removed, and that
- Around 150,000 radio mics currently in use will need to be switched off and scrapped. That represents the scrapping of around 4 in every 5 radio mics currently in use in this country.

To continue to use radio mics beyond December 31st 2014 users will either need to:

- Ensure your devices operate between 520 and 694MHz (just 1 in 5 currently deployed devices should do this) or;
- Purchase new equipment that will operate within the new approved spectrum

The use of devices operating between 694MHz and 820MHz beyond December 31st 2014 is punishable by fines and potentially jail under the Radiocommunications Act.

What does it mean?

Scrapping and replacing the existing devices operating in Australia between 694MHz and 820MHz is estimated to cost the businesses and community groups operating them up to \$220 million.

Yet no provision has been made by Government to assist with the transition despite:

- the Government pocketing over \$2 billion in additional income from the sell-off and re-use of the 694-820MHz spectrum.
- the Government assisting the TV broadcasters with their digital transition through the removal of hundred's of millions of dollars in licence fees
- the Government being fully aware that the direct cost of replacing existing radio mics is in the order of \$220 million. A cost apparently to be borne by business and community groups.
- that radio microphone use enables more than \$32 billion worth of economic activity each year. Sectors as diverse as music, live performance and entertainment, the fitness industry, tourism, meetings and conventions, broadcasting and others, in addition to;
- the value to derived through community activities including worship, in schools and in community arts and recreation.

Despite this being on the agenda for more than six years the Government and the Australian Communication and Media Authority (ACMA) have not communicated with any users to date, save for a single posting on the ACMA website. Even now, less than 18 months from the switch off date the Government and the ACMA show no inclination to even advise users or key industry or community groups of these changes, let alone support wireless audio users in this transition. If you are feeling angry at this point you have every right to be. This issue was not of the making of radio mic users yet these users are having to bear the brunt and the costs of what increasingly looks like complete and utter regulatory failure by Government.

What happens next?

Check your existing inventory

You should take some time to check the spectrum your existing devices operate within.

- If they are tuned to between 520 and 694MHz then they can continue to be used beyond December 31st 2014.
- Any other devices need to be ear-marked for scrap prior to that date

Replacing your existing inventory

New compliant product from most of the major manufacturers is now available. When replacing or adding devices you need to:

- Ensure they operate between 520MHz and 694Mhz or between 1790Mhz and 1800MHz
- Check if the product fits in and around the TV broadcasters in your area. This is a little harder but your supplier, retailer or the importer has this information
- Purchase product with the greatest agility or range you can afford. A product with a tuning range of say 520-560Mhz (therefore tuning across 40MHz) will cost more but give you more flexibility than a product that tunes for example over just 8MHz say from 520-528Mhz

Any recent product purchases are likely to be compliant provided it has come from a major brand. Nonetheless you should check the product specification or with the supplier to be sure.

It's time your voices were heard!

AWAG have been discussing this with the Government and the ACMA for over 6 years. The solutions by and large are not that difficult to achieve but in order to achieve a fair outcome, with minimal disruption to users and the activities they undertake an investment of some of the digital dividend windfall of \$2 billion to Government is required. Otherwise through ignorance or intent, (because they were left with no economic choice) around 150,000 radio mic users will become Australia's newest class of criminal. To assist in getting the message to Government join our petition at www.wirelessaudio.org.au and let's make ourselves heard.

More information

- Additional information and answers to frequently asked questions can be found at www.aceta.org.au/awag and also at www.acma.org.au
- Befriend the AWAG facebook page for up to date information www.facebook.com/awagastralia
- Your local retailer or Australian distributor will have specific information on both your existing and potential replacement products.

Yours faithfully,



Ian Harvey
Executive Officer of ACETA
on behalf of the Australian Wireless Audio Group

1/ Untethering the microphone, Windsor Place Consulting 2010



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GENERAL SERVICES

Australian Health Directory
W: www.healthdirectory.com.au

JIGSAW
Community Services Database
Online database of geographical community services
W: www.crisissupport.org.au/jigsaw

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W: www.health.gov.au

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W: www.salvos.org.au

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W: www.kidshelp.com.au

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W: www.lifeline.org.au

MensLine Australia *
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W: www.mensline.org.au

Salvo Crisis Line *
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W: www.beyondblue.org.au

Carers Australia ☎
Carer Advisory & Counselling Service
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W: www.counsellingonline.org.au

Counselling Online ☎☎
Alcohol & Drug related concerns
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W: www.counsellingonline.org.au

Life Circle Australia ☎
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Sane Helpline ☎
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W: www.sane.org

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Youth & Student Services T: 13 24 90
W: www.centrelink.gov.au

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W: www.theline.org.au

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W: www.1800respect.org.au

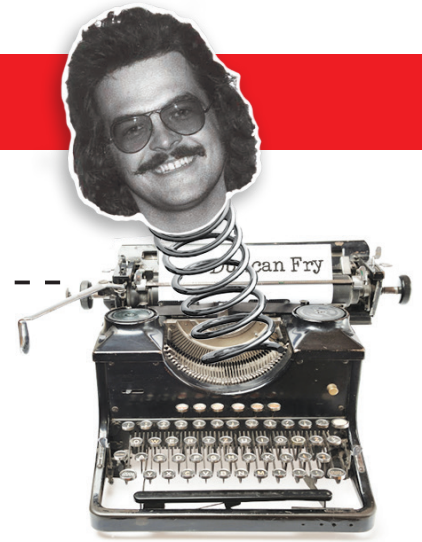
Al-Anon Family Groups Aust ☎
Hope & help for families & friends of alcoholics
T: 1300 252 666 (8am-5pm)
W: www.al-anon.alteon.org/australia

Alcoholics Anonymous ☎
W: www.aa.org.au

Relationships Australia ☎☎
T: 1300 364 277 (8am-5pm)
W: www.relationships.com.au

Family Relationships Advice Line ☎
T: 1800 050 321
8am-8pm Mon-Fri, 10am-4pm Sat except Public Holidays
W: www.familyrelationships.gov.au

Dunc is stalking the Tour De France at presstime. So we present another of the Best of Fry. From CX47



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The First Gig I Ever Mixed

The first gig I ever mixed was a night I'll never forget. It was at a pub in some town on Victoria's South West coast. I remember the gig but not the town. Must be old age catching up with me or the fact that the gig was so ratst that I've mentally blocked out where it all happened.**

Originally, the plan was that all I had to do was drive the truck down there, load in, hang around, load ours and then drive back at the end of the night. The band was supplying their own guy to do the mixing. What you would probably call a delivery and babysitting gig. But as I was rapidly to learn, things rarely went to plan at the grass roots level of the PA business.

For a start, we ended up with a lop-sided system, with only half the bottom end on one side. I'd had a fair amount of experience loading, but I had been lumbered with an assistant we'll just call John, who was doing his first (and last) loading gig. Just as we were tipping one of the bass bins out of the truck into our hands, he suddenly decided to scratch his nose! Crash, the box hit the concrete with a sickening thud while he stood there watching it with a finger up his nose! "Oops – was I supposed to hold that?" he asked. When we plugged it in to check it out, there was a deafening silence from the box. In fact, the only sound you could hear was my heavy breathing, trying to stop myself from strangling the stupid bastard on the spot!

Anyway, somehow we got it all set up. I plugged everything together, made sure it all worked, and then waited for the band and their Front of House guy to arrive. His name was Charlie, although everyone knew him as Chuck Chunder, his stage name from earlier days when he played in a band himself. Well, the band arrived and set their stage gear up, but ten minutes before showtime, there was no sign of the elusive Chuck Chunder. The minutes ticked away, and the crowd was becoming noisy and restless. Then one of the band came over to me and said that Chuck has just phoned to say his car had broken down miles away, so could I mix? S**t, talk about being dropped in the deep end!

I quickly checked out the mixing console, got the echo working and some noise coming out of the monitors, and that was it as far as soundchecks went. With a crash of cymbals the band appeared and launched into their first song. They were called 'The Nicest People', and if that conjures up in your minds the image of a neatly dressed

band doing covers, well you couldn't be further from the truth. There were no cover songs, only originals played to a fast reggae/ska music beat. And if the relatively conservative country crowd had found it a little hard to come to grips with the music, then they were totally devastated by Ken, the lead singer.

For a start he was totally bald except for a long pigtail. That was OK, they'd seen people with no hair before. He was also totally naked, except for a feather boa and a World War 2 gas mask tied around his family jewels, and he cavorted around the stage like a monkey on speed! Before the show I had been chatting with him in the band room, he had seemed to be quite a serious sort of person, totally unlike the popular concept of a rock musician. He was into some Eastern religion, and I was a bit apprehensive as to how such an unassuming guy was going to handle being the frontman for a band.

I needn't have worried. Once onstage, he was a totally different person. It was like Dr Jekyll and Mr Hyde. He leapt across the stage, jumped over the other musicians, even climbed on their backs and wiggled his World War 2 souvenir at the crowd, all the while singing in a throaty roar. When the guitarist knelt down to perform simulated fellatio on Ken's gas mask during one of the songs, the audience was horrified!

And who did they complain to? That's right, me! Like every audience at every gig around the world, they somehow assumed that since I was the person mixing, I had a telepathic link to the band, and could get them to do anything just by willing it. So, I got my first lesson in keeping a pub crowd happy. "They're f***n horrible". "Tell 'em to play something good or get off". "What a bunch of po**s"! I shrugged my shoulders. "Look mate, I'm only mixing. Talk to the band, not me".

Well I was nearly right. I was trying to mix. But to tell you truth I was at my wits end as to how to keep everything under control. It was like the musical equivalent of riding the mechanical bull, stuck on 10!

I just couldn't keep the levels from running away from me. Things would alternately be too loud or soft, but by the time I'd moved the appropriate fader the situation would change. And so it went on through the night, jumping around all over the place pushing things up and down. I despaired of ever getting things together – the sound was all over the place.

At the end of the night I felt relieved that it was over, and also a bit cheated. Whatever happened to the other guys that I'd watch mixing, just sitting back looking cool and casually adjusting a level here and there? If this was mixing, then it was hard work!

Of course, the minute the last note was played and the band disappeared off stage, who should arrive but Chuck Chunder, having fixed his car and all set to mix a couple more brackets.

He seemed unable to grasp the fact that the band had started and finished without him. I said he was quite welcome to help us load it all back into the truck if it helped him feel like he had contributed something to the evening, but oddly enough he wasn't so keen on the idea!

Still, the band was happy. And surprisingly enough, so was the audience. Once they had warmed up and got nicely plastered, they ended up singing and dancing along with the band, and complained bitterly when the final song was over. A philosopher might say it was a case of music transcending all barriers. Me, I just think it's very rare for a band to be so bad that it can't keep a roomful of drunks happy!

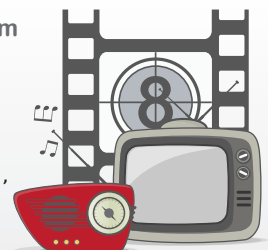


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