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CUE03 Entertainment Training Resource

ISSN 1320-559E




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NEWS: ALL THE BIG STORIES MAKING BIG NEWS IN ENTERTAINMENT. WHO'S TALKING MERGERS? CAN ALL THESE PEOPLE REALLY BE CONTRACTORS? AND JUST WHAT, EXACTLY, IS GOING ON?

THE NEWS MAGAZINE FOR ENTERTAINMENT TECHNICIANS AND MANAGERS

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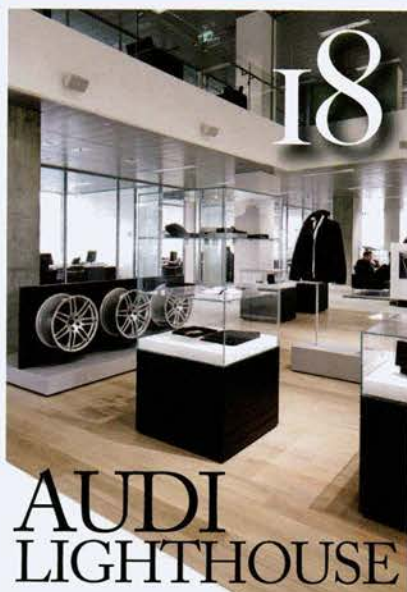
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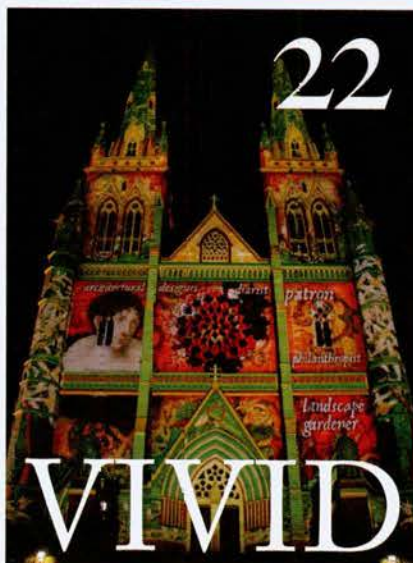
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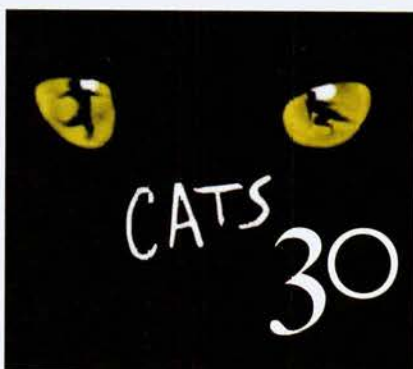
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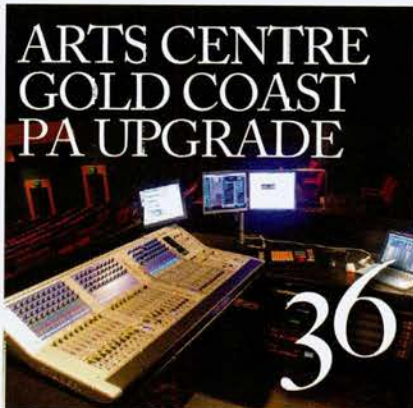
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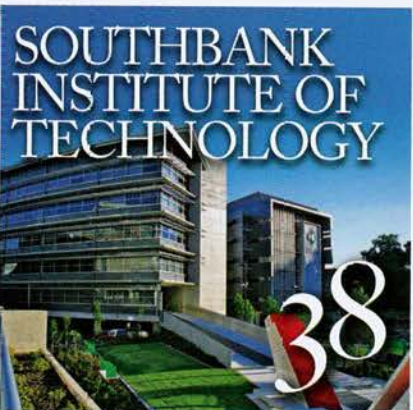
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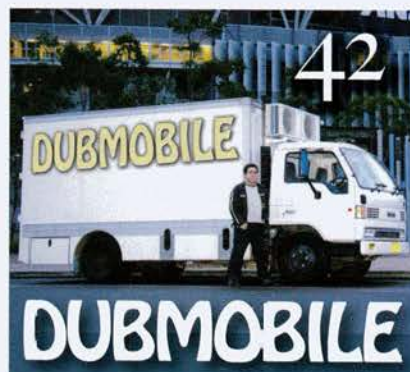
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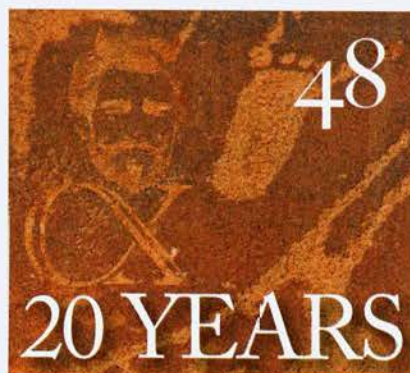
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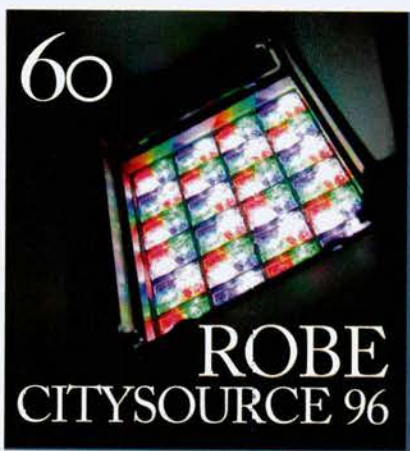


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CUE03

Entertainment Training Resource

This magazine contains much information which is a direct resource for anyone studying from the new Entertainment Training Package, named CUE03. From 2006 we will start to map certain articles direct against the relevant Unit of Competency within the package. This makes CX magazine a very cost effective resource for schools, colleges, and universities. Note that we offer a copyright release where articles in CX Magazine may be photocopied and distributed to students within an accredited course.

EDITORIAL

20 YEARS

Déjà vu as we sail into our 20th anniversary – the very first issue of Channels was headed 'Jands buy Samuelsons' referring to the buy back of Jands Production Services from its UK owner at the time. This issue we report briefly on the nearly done merger between Jands Production Services and Johnston Audio – an event that has deep significance for concert audio production across the region.

DIGITAL SIGNAGE

In our news pages is a story about how the AV installers and integrators are happy with the new growth channel that is digital signage. The USA leads the field and its excellent Digital Signage trade Magazine (out of New York) is careful to align itself with the AV industry. Some people think Google and the I.T. nerds will soon own this market, but remember: you need on the ground skills to install these things, and you need content to make them work.

TRAINING

Thank goodness someone else does training other than us – sometimes it hasn't felt like it. But this issue we have a nice story about Southbank Institute of Technology in Brisbane. There are other worthy training organisations across the region. Charles Sturt Uni's TV Degree is one, NIDA, WAAPA, and there are plenty more. Then there are those that produce useless studio audio graduates who've learned best practice as applies to a 1984 vinyl album session.

TV STUDIO

We are opening our new TV studio here on campus during this issue. It has been made possible by donations of equipment from Madison, Presonus, Rode, JBL, Jands and many others. We also must thank Les Bishop for his help. The studio will debut at our 20th Party on August 21. Are you coming? Log on to <http://cx.myevent.com/> for info!

Julius

WELL DONE, OLD MAN

Twenty years of this, and he's still at it – more than that, he still really cares about this industry and the people in it. To people outside the magazine business, it may not look that complex, but putting together something like this is a fairly substantial undertaking.

The workload in the days when he was doing it all by his little own self, complete with laying it out on the electronic abacus he used to use as a computer and a monthly publication cycle, must have been crushing.

So let's all raise a glass to the old man of the industry – I've no doubt he'll raise one back – and drink to Julius, his survival for twenty years of this, and his continued commentary for twenty more.

KIDS AND SHOWS

It's four years since I first took offspring to see the circus. At the time she was four and it was all an exercise in wide-eyed wonder.

Four years later, she's a cynical and jaded eight year old carrying the emotional burden of two little brothers – and she doesn't impress so easily.

Still, when she saw the posters up for the circus the other day, she recognised that it was the same one we saw back then, and her eyes lit up as she pleaded to go.

When you do it day in and day out, sometimes you forget how much what we do can effect people. Every now and then, it's nice to be reminded.

If anyone's looking for me, I've gone to the circus.

MORE TRAINING

The Training Package for Vocational Training in Entertainment (known as CUE03) is well overdue to be reviewed and changed, so it's time for the industry skills council, Innovation & Business Skills Australia (IBSA) to start talking to you and to us – the industry. If you get an invitation to talk, please share it with us as we haven't heard anything yet.

Andy

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CXNEWS

DEVICES, PEOPLE AND CONCEPTS

CX PRESSURED NOT TO REPORT STAGE ACCIDENTS



If no one is hurt and the insurer pays up, is that the end?

CX has collated a known list of accidents and incidents including the two horrific stage deaths in Sydney – the Her Majesty's Theatre mechanist and the Star City ASM. We recently asked for feedback in our CX email newsletter and it came in volumes.

Did anyone have any info on the fire during a Toyota product launch at Sydney's Oran Park Raceway? How about the fall of a followspot operator at Boy from Oz in Adelaide? Or the stage roof failure before a Red Hot Chili Peppers concert, also in Adelaide?

Along with information on these we had many more emails and calls. We also had some terse words from people close to some of these incidents.

"No one was hurt at Oran Park – it should not be on this list. The insurers mopped it up to everyone's satisfaction and solicited comments from third parties would not be helpful in any way", emailed one senior industry identity within

minutes.

At the same time came this allegation, regarding the follow spot fall "the person failed to adhere to safety instruction and unhooked himself as he was getting into his spot chair and fell. He was not the person assigned to that job but took it upon himself to do it. He recovered. No production company or anyone else was found at fault (and) investigated by work cover and ended with no action taken... the END".

Sensitivity at the reporting of accidents is understandable – aside from reputation issues, no one likes recounting the losses when a show is delayed or scrapped. The regulators investigating accidents can wield heavy court action and often write fines to a conga line of personnel who may have had only slight involvement or were in the wrong place at the wrong time.

When ShowSafe started a similar list online in the late 1990's, an accident

Continued page 10▶

JOHNSTON AUDIO TO MERGE WITH JANDS PRODUCTION SERVICES



d&B J-Series, new live array from Johnston

The Australian live sound production business is about to change significantly with the proposed merger of Sydney based JPS with Melbourne firm Johnston Audio. Together the two firms would account for the majority of concert touring and festival audio production in Australia, and become the largest operator.

At presstime the parties were undertaking due diligence, with a closure

Continued page 10▶

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Continued from page 8

at Opera Australia became a political handball. Mechanist Mathew Court had his big toe severed and a second toe lacerated when handling a set. Management at the Opera phoned this writer, at the time a board member of ShowSafe, and aggressively sought to suppress the story.

Our position is we need to publish, so others can learn and avoid the same situation.

Our catalogue of accidents and incidents is kept updated online in the CX Forum at juliusmedia.com and you can email us at juliusmedia@me.com CX

CONTRACTORS AND THE NEW INDUSTRIAL AWARDS

"My crew are not covered by the new awards"

CX has had many calls and emails from both crew and employers regarding whether contractors are covered under the new Live Performance Award 2010 [MA000081] and the Broadcasting and Recorded Entertainment Award 2010 [MA000091].

Modern Award pay scales started on July 1st this year, where all work on Sunday is to be paid at double time, and penalty rates with rest breaks are mandated. At the lower paid end of the industry the new pay scales have seen costs rise as workers are paid more.

But the contractor argument has become intense.

For some guidelines look no further than Fair Work Online. "The Independent Contractors Act 2006 in conjunction with the Fair Work Act 2009 protects the rights and entitlements of independent contractors".

Here are some tight definitions:

"An employee performs work, under the direction and control of their employer, on an ongoing basis. (But) An independent contractor has a high level of control in how the work is done."

Then this: "An employee generally works standard or set hours (note: a casual employee's hours may vary from week to week). Under agreement, an independent contractor decides what hours to work to complete the specific task."

Contractors who would otherwise be casual workers and are paid by the hour do not meet the definition of a contractor, under either act. The Fair Work act underpins the other, by tightening up loopholes that were exploited after 2006.

CX advises that any crew hired by the hour or by the day or week must be paid the minimum under the award. If

crew are paid the bare minimum and are required to issue an invoice as a contractor then they are still underpaid, as they require their own insurance and carry risk.

Fair Work Inspectors may take an employer to court if they find the employer is involved in sham contracting. The courts may order the employer to pay a penalty of up to \$33,000 per contravention. This means, if the employer is involved in more than 1 sham contracting arrangement, they may have to pay a penalty for each arrangement. A test case in each industry is expected, with some already underway.

It would defy any reasonable risk management to underpay contractors while waiting for either a test case or a visit from a Fair Work inspector.

Employers, employees, crew and contractors should examine this website: www.fairwork.gov.au CX

...continued from page 8 RHS

expected in August.

Should the merger proceed, the combined organisation would be considerably strengthened, with strengths on both sides complementing the entity. CX



L-Acoustics K1 Stadium WST Line Source from Jands.

ENTERTAINMENT INDUSTRY LARGER THAN THOUGHT

Previous estimates of turnover grossly wrong

The Entertainment industry generated revenues of \$1.88 billion in 2008 and contributed \$1.1 billion to the Australian economy making it larger than film and video production, sports and physical recreation, book publishing and horse and dog racing. Live Performance Australia commissioned a study which shows considerably more economic activity than previously thought.

The industry, which employs 13,800 full time equivalent positions, is made up of many diverse sectors ranging from ballet and dance to classical music, theatre and to rock festivals. Non-classical (contemporary) music is the most significant contributor by event category, comprising 40 percent of the industry's total value-add.

Chief Executive of Live Performance Australia (LPA), Evelyn Richardson said the study is broader in scope than those previously undertaken by the Australian Bureau of Statistics (ABS), and demonstrates the significant economic contribution of the industry, despite limited government investment in certain event categories.

"This study provides a snapshot of the live entertainment industry's economic contribution in terms of gross output, value-add and employment during 2008," Richardson said.

The live entertainment industry also generates a number of intangible benefits that are not reflected in economic metrics like this benchmark study. These include improved social cohesion, lifestyle improvement, diversity and increased creativity.

"This industry is a sophisticated contributor in terms of financial, employment, and quality of life metrics to the Australian economy. Regular benchmarking enables the industry and importantly its private and Government stakeholders to see its real and tangible value."

www.liveperformance.com.au CX

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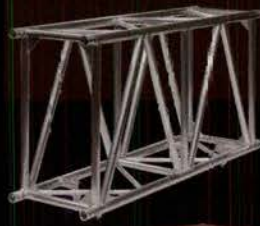
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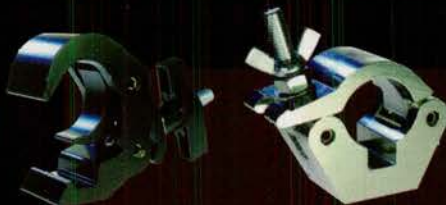
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SENNHEISER AND HARMAN PROFESSIONAL LEVEL UP

Half Billion each for 2009

When people talk about the entertainment industry rarely do they understand its global fiscal size. Latest results from the two largest pro audio manufacturers show us this.

Sennheiser electronic GmbH & Co, based in Germany, presented its balance sheet for fiscal year 2009 showing gross sales of US \$488.2 million, just shy of half a billion. This was up slightly on 2008, but also includes headphones and consumer lines which are growing fast.

Across the pond, diverse Harman International reported sales of US \$492.8 which excluded their large consumer division but included some niche hi-fi lines. Their sales were down somewhat on the previous year, reflecting soft market conditions.

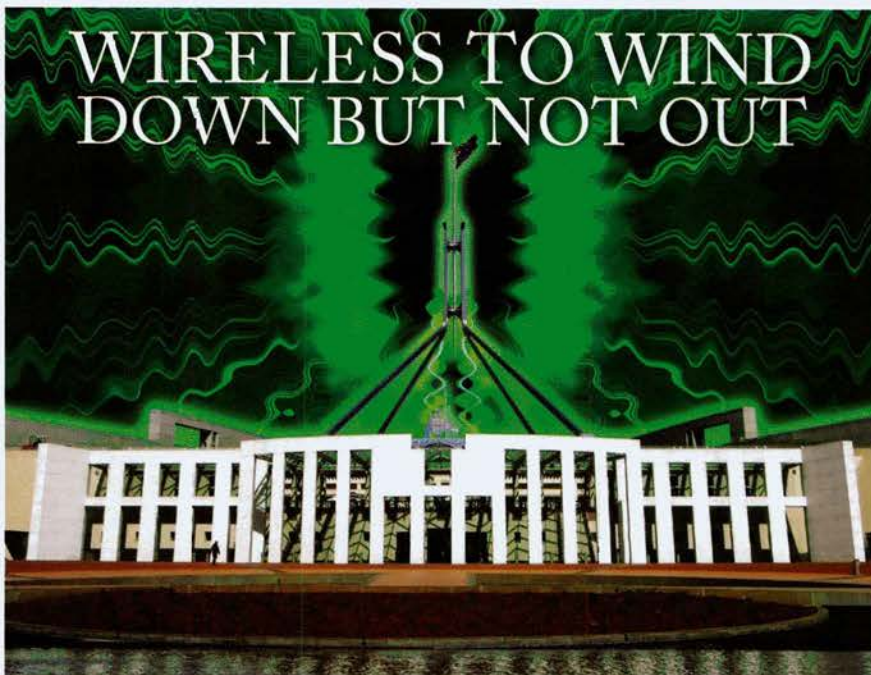
"In view of the worldwide recession and the particularly difficult economic situation for Sennheiser in 2009 in the project business, that is an acceptable result," explained Volker Bartels, Speaker for the Executive Team. On average throughout the year, Sennheiser's worldwide workforce was more than 2,132 employees.

"In fiscal year 2009, sales of headphones experienced particularly strong growth, and Sennheiser was able to record an increase of 18.8% in this sector. By contrast, sales of wireless microphones fell by 6.1%; the reasons were a general reluctance to invest due to the economic crisis and insecurity among users concerning future operating frequencies for wireless microphones."

Harman own JBL, dbx, Lexicon, Soundcraft/Studer, Crown and AKG which are all leading brands.

"Professional sales decreased 21 percent in 2009 compared to the prior year. The decline in sales compared to the prior year was due to the effect of the weak economy on both our distributors' liquidity and market demand", reported Harman. AKG sales of headphones and microphones were higher than in the prior year and sales of Soundcraft and Studer mixing consoles were higher reflecting successful new product introductions.

Sennheiser reported sales in the Asia and Australia region increased from €40.4 million to €44.0 million (+8.9%).



Don't panic, says industry

As Australia starts to shut analogue TV networks, the Government is planning to auction the bandwidth in late 2012. UHF wireless microphones and in-ear systems worldwide have traditionally inhabited gaps in the analogue TV spectrum, around 600 to 800MHz.

Telco's worldwide are anxious for bandwidth for forthcoming 4G LTE services, and are prepared to pay well for it. The UHF TV frequencies are inevitably going to be sold off and in Australia this process is called The Digital Dividend. The Australian government have announced it will be sold.

"Yielding the digital dividend will require the closest of cooperation with the free-to-air television industry," The Australian Communications and Media Authority (ACMA) chairman, Chris Chapman, said in a statement. "Other uses of affected broadcasting spectrum will also require consultation and the development of options for future

operations. For example, some wireless microphones used for stage productions and small-scale public address will be affected by this decision.

"The ACMA is confident that suitable spectrum will be found for the continuation of wireless microphone operation."

A similar situation exists in the USA and Europe, where Digital TV has been rolled out sooner than Australia.

In the USA, users of wireless systems operating in the 700 MHz band were banned from using them after June 12th.

"Wireless microphones, in-ear monitors, and other professional wireless devices will continue to be permitted in the remaining UHF TV band (470-698 MHz)", read the FCC order in the USA.

Shure offered a trade in for non frequency agile equipment prior to the ban, and Sennheiser have extensive information online to allow continued use of its products in different markets.

The message from industry is 'don't panic'. At least not yet.

MISSING PERSONS UNIT

We get calls from time to time to attempt to locate people. If it's a debt collector or dubious or unclear why, we don't assist. This time we have three in a row.

If you have contact details for the following people, please call them and ask them to call CX on 1800 635 514 or email juliusmedia@me.com. If they don't want to be found, that is OK too. CX believes these are legitimate people

looking to make legitimate contact here, so if you can assist, please do.

Bob Payne. Road crew from 1970's, known to live (or did live) at The Rocks in Sydney. Former champion figure skater.

Paul Burkinshaw, son of Philip (deceased), Philip is of course a former Melbourne staging guy and pioneer of rock and roll lighting in Australia.

Paul Knight. Roadie, around 52 years old, lost his right arm in a car accident years ago. Grew up in Kingsgrove (Sydney).



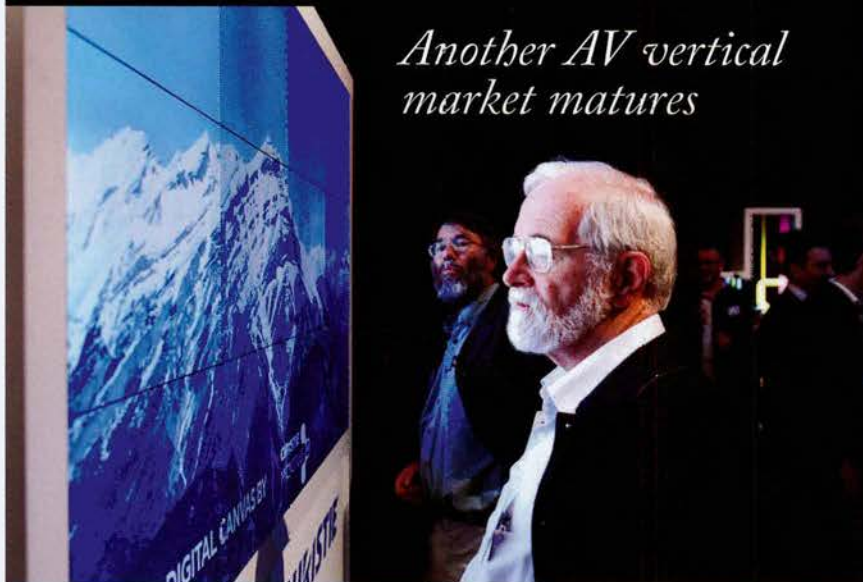
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DIGITAL SIGNAGE MARKET MERGES WITH AV



Another AV vertical market matures

VR Solutions launch Christie MicroTiles in Melbourne.

Look around Las Vegas and you'll see the future for large screens. But just like data projectors –v- cinema projectors, the screens are all going hi-def. Or doubleplex with 3D. The future for large display screens is actually lots of smaller, modular ones.

This year more than 1 million screens will be installed as digital signage around the world, and the New York based industry magazine Digital Signage says this will double in two years.

But it's electronic media that typifies the way the screen is going, and content is everything. The audio visual integrators have the box seat as more uses and more

users walk by, while architects, designers and consultants draw screens into public spaces.

With the local launch of Christie MicroTiles by VR Solutions, the separation between consumer screens and pro screens has become well defined. The MicroTile is a high-res long life low maintenance screen for installation, allowing infinite variation of end image size.

Christie have been reaching out to pro AV installers and consultants world wide, as the digital signage business becomes a valuable part of their business


www.digitalsignageweekly.com 

JANDS AT HOME

Brisbane next stop for expo

The Jands at Home program started last year. It places management and product engineers for a week in cities around Australia for meetings with customers and end users alike. The aim is to give the local industry unprecedented access to Jands business and product managers as well as an up to date overview of the Jands range of audio, lighting and staging solutions.

With a definitively more Production feel this time, Jands at Home will hit Brisbane on the 27th and 28th July. Times are Tuesday: 10am – 8pm and Wednesday: 10am – 4pm.

The venue is the Powerhouse Theatre at 119 Lamington Street, New Farm. Jands encourage registration (www.jands.com.au) but you can just roll up. CX encourage anyone working in the industry to have a look. 



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SPX delivers more light to the stage (up to 63% more than current industry benchmarks) which gives users energy saving options such as the use of a lower wattage lamp or through using SPX at lower dimmer levels (less power). It provides a crisp white light with no pinkish hues or other colour cast for high definition pattern projection.

The application of Cool Touch technology, as pioneered by the Pacific range, means the lamp module with its large grab handle and the lens tube are able to be handled without the use of gloves minimising the chance of burns when adjusting focus.

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md16ae	16 Channel Digital I/O
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mrc	The "Tweak" Wireless Remote Controller



mi8



mo8



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For more info

For more information on the Pro Co range contact Madison directly on **1800 00 77 80** or email proco@madisontech.com.au



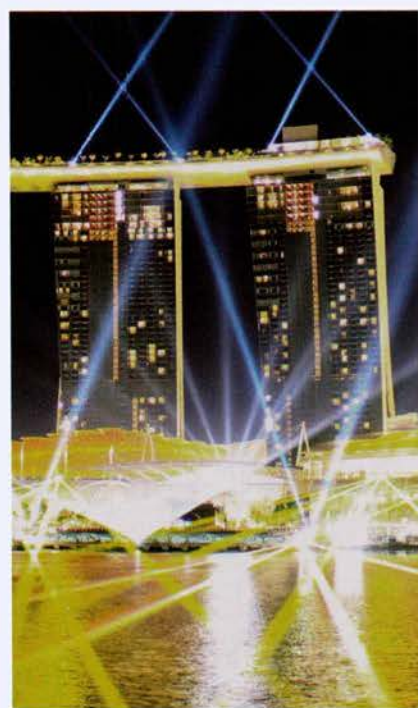
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THE MARINA BAY SANDS OPENS

Singapore's new casino, one of Asia's largest, opened at presstime. The 2,560 room luxury hotel is equipped with a 120,000 square metre convention and exhibition centre, designer shopping mall, restaurants, Art Science Museum, two theatres and a spectacular 340m SkyPark suspended 200m in the air with an observation deck set on top of the world's largest public cantilever structure. Sydrey based Laservision was engaged by The Las Vegas Sands Corporation to conceive, design, produce and deploy an opening event to bring to life this iconic structure as night fell.

Laservision deployed lasers, thousands of lights and firepower to execute the launch. The Convention and Exhibition Centre, Casino and twin Theatres' concave roof were illuminated with over 1000 LED fixtures transforming the one kilometre of roofing into a colourful canvas.

The Art Science Museum, affectionately referred to by the Singaporean locals as the 'Oper. Palm', was brought to life with multiple searchlight beams extending from the water oculus up into the heavens. Fifteen metre high flame effects on the finger tips were used to create further positive energy.

The highly-anticipated Sands SkyPark, which sits 60 stories high and features a 150-metre-long infinity-edge swimming pool was under-lit with a dramatic animated 'water' gobo lighting effect to further enhance the architects' dream of a ship floating in the night sky.

www.laservision.com.au



RIEDEL ARTIST 1100 SERIES INTERCOM CONTROL PANEL

Riedel's new 1100 series features the next generation of high-res color OLEDs. With 65,000 colors and a resolution of 140 dpi these new displays provide excellent readability and are able to show up to eight highly detailed characters of up to 24x24 pixels, ideal for displaying icons and Asian characters. Definable marker colors for the keys complete the labeling options and provide instant function identification and signalization, e.g. for incoming calls.

The panel provides individual rotary encoders to adjust the listen level of every talk key. Furthermore all 1100 Series control key-panels provide 5 dedicated function keys, a built-in high-power

loudspeaker with improved audio quality with higher volume, an XLR headset connector and a removable gooseneck microphone. 3 GPIs and 3 GPOs are available for system-wide programming as standard. Two sets of balanced line level audio inputs and outputs are also provided as standard. An expansion slot for future expansion modules prepares

"The intercom world as we know it is changing dramatically. Demands for the more flexible labeling of talk keys and additional functionality are growing. As studio technology integration is progressing we see intercom panels becoming a more universal user interface, which could also include audio or video routing", says Thomas Riedel, Managing Director of Riedel Communications.

www.riedel.net



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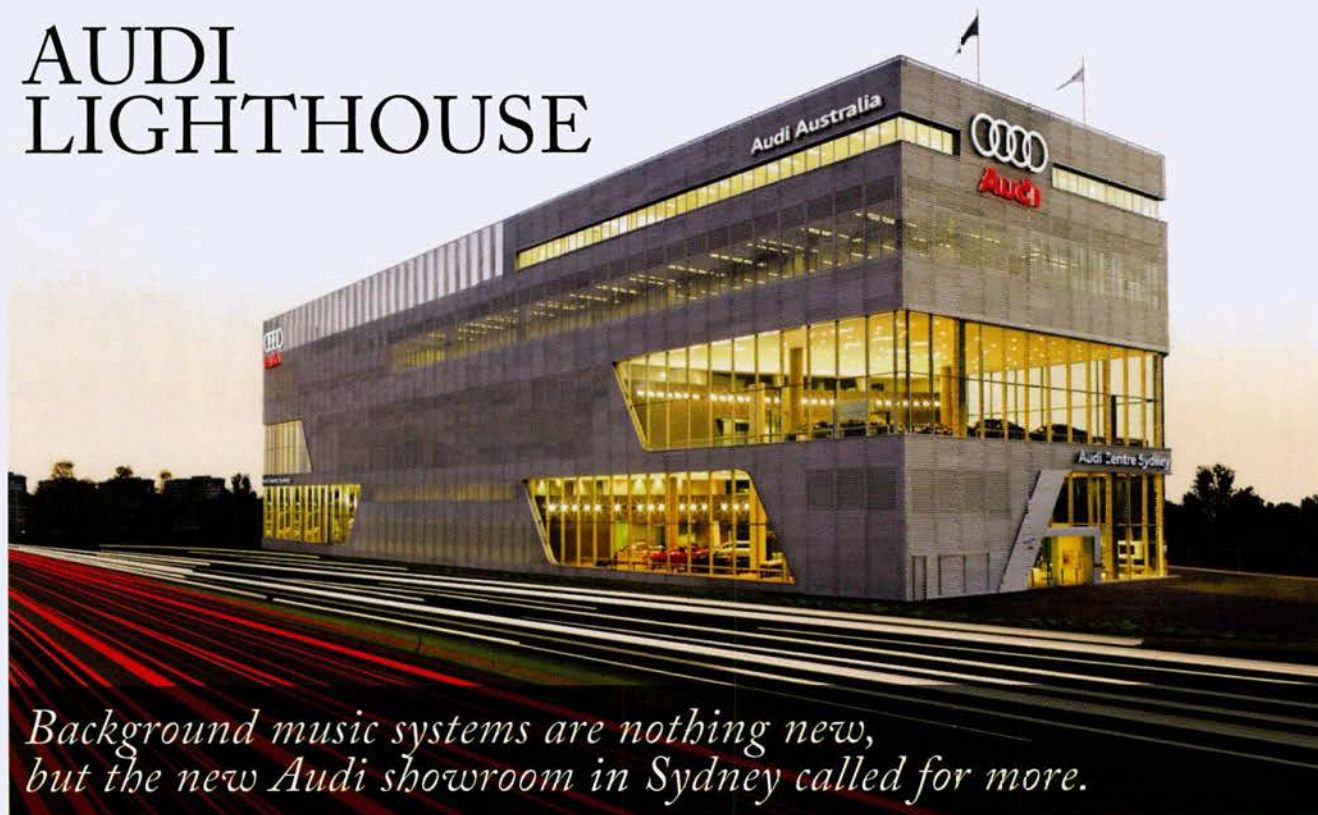
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AUDI LIGHTHOUSE



Background music systems are nothing new, but the new Audi showroom in Sydney called for more.

Buying a car has changed. Abandon visions of “Honest Ron” - the dodgy ex-pat Texan touting his wares in an open car yard, with the fluttering of plastic bunting forming the underlying soundtrack. Buying a car just got sexy. Goodbye Honest Ron, hello Audi Lighthouse.

The Audi Lighthouse sits on the main city approach from Kingsford Smith Airport, and is passed by some 45 million cars each year. Audi intend it to be a

beacon to the motoring industry, thus the name. It opened in August 2009, sits eight stories high, and cost in the order of \$50 million to build. There’s even a rooftop BBQ area. Audi aims to deliver a high-end brand experience to its customers, so when a suitable audio fit out was required they put the job out to tender. It’s nice to have options.

The tender was eventually awarded to Credible Audio Visual Solutions, with the project headed up by Alan Moffat

and system design by Alex Smyth. The installation was no easy task - the parts of the building which aren’t concrete are glass and the main showroom ceiling is 6m high. Acoustically challenging to say the least!

Several outcomes needed to be achieved with the installation. First up, it had to deliver background music in a smooth and consistent fashion. Hot spots and dead spots were to be avoided. Secondly, the system needed to adapt for speech



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and high-level music to accommodate functions for up to 600 guests. It needed to be more than a background music system. Finally, it had to match the visual appeal of the building itself – aesthetics carried significant weight in the system design.

THE SYSTEM

The system itself is split into 7 individual zones, with each zone separately controllable. The system is managed by a Biamp Nexia SP signal processor, with an interface custom designed for Audi. Background music runs from an iPod loaded with a selection of Audi approved tracks.

TOA F-2852C in-ceiling speakers were selected for their 120° dispersion pattern as well as their visually appealing profile. 29 of these units were matched with 8 TOA HB-1 in-ceiling subwoofers in the main showroom area to provide full range frequency response in the areas most regularly populated by customers. The system was analysed using Smart 6, and tuned within the Nexia DSP to provide a flatter frequency response. AKG radio mics (1 hand held and 1 lapel) manage vocal duties for functions.

Does this seem excessive for a car showroom? No more so than the business suite or café does. The Audi Lighthouse is presently the largest Audi centre in the world, and clearly a flagship project. Consider the expectations of a consumer wanting to buy an Audi R8. It only makes sense that the experience of purchasing one should equal this.

CX

FURTHER INFORMATION

The Audio System: <http://www.audioproducts.com.au/>
The Cars: <http://audicentresydney.com.au>

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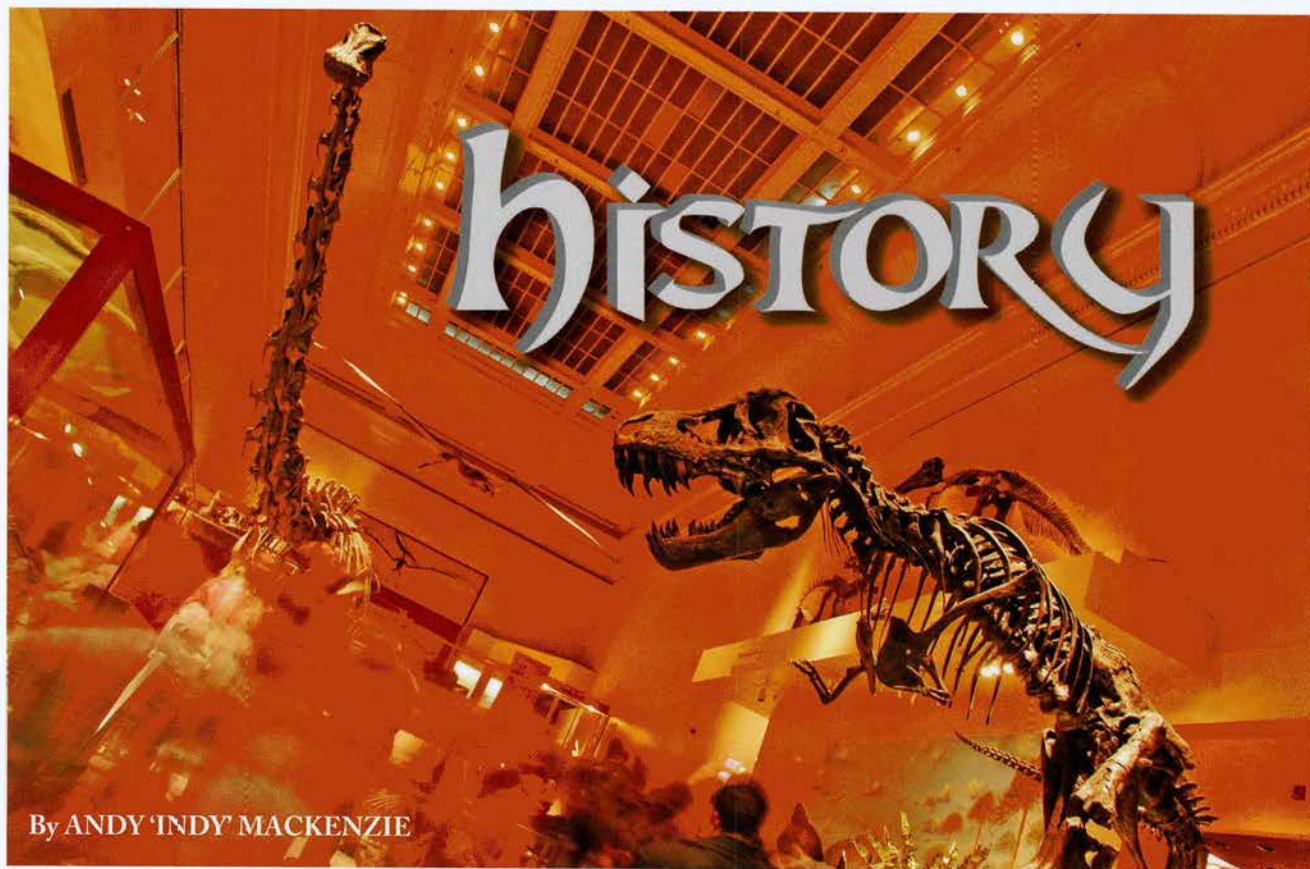
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By ANDY 'INDY' MACKENZIE

Feeling a little like Indiana Jones, minus the rugged good looks and easy charm, I set off once more into the cobwebbed darkness of the CX archive to see what horrors lie within...

15 YEARS AGO: CONNECTIONS AUGUST 1995

Not one of our greatest covers, but a long way from the worst. The beast looks a little confused or angry – maybe he's just looked at the 'Clubland' logo to see that someone has stolen the A, the B and the D. Or perhaps that's just the first hint of a diminishing commitment to reporting on nightclubs...

BLEAK NEWS

In the middle of winter it seemed that a blight had fallen on the industry. Four industry leaders died young in quick succession, including Julius' friend and mentor Roger Barratt. Obituaries are never easy, and having to run four in one issue is profoundly depressing.

IN OTHER NEWS...

We were happy to report on the development of industry-based training for AV workers, courtesy of Kevin Hammond of AVS Presentations. Phil Tripp drummed up business for the Music Industry Conference by demonstrating that it was cheaper and

easier to get CDs by mail order from the US than from local retailers.

CONSOLES OF THE FUTURE

In 1995, the future of audio consoles was uncertain. Plenty of manufacturers were still churning out analogue boards, with the introduction of Soundcraft's K3 and the Mackie SR24-4. At the same time, we wrote up the imminent release of Yamaha's O2R digital mixer – which arguably became one of the most significant moves in the history of console design. Meanwhile, the Tactile Technology M4000 introduced us to the concept of remote racking – with analogue audio circuitry remotely controlled by a digital control surface.

BEAST OF A SHOW

Will Burston wandered down to the Princess Theatre in Melbourne to look into the production of Disney's *Beauty and the Beast*. What he found was pretty impressive – massively complex set automation '...in one cue during the show twenty-seven pieces of set are in motion', a 'vast light show' including

65 Vari*lites (still requiring a dedicated controller) and over 800 conventional fixtures, and an audio system controlled by JPS' two shiny new fully automated Midas XL4s.

STUDIO STORIES

The studio section ran 10 pages, and we also ran a buyer's guide to studio consoles. Remember, this was back in the days before the computer and digital audio revolutions collided to leave everyone in the world with a fully featured lap-top studio...

Meanwhile the LX section told us that John Norton had taken over as head of lighting for channel 7 in Sydney, and took us on a trip to visit a bunch of Brisbane lighting companies.

WHAT WE PAID

- 48 channel lighting consoles – Jands ESP II \$3,995, Theatrelight Cuemaster \$4,650, Strand MX48 \$4,451
- Soundcraft K3 16 channel \$22,000, Mackie 24-4 \$3,995, and the O2R was expected to be released at about \$15k

10 YEARS AGO: CONNECTIONS JULY 2000

Similar cover feel and colours here to those of five years earlier, but two pictures – one nice montage of shots from Slava's Snowshow, and a rather risqué one of Ricky Martin dancing with one of his friends...

IN THE NEWS...

There were some venue issues in Sydney as Her Majesty's Theatre went under, losing too much business to the new Star City venues. Meanwhile promoters were turning up their noses at the Sydney Super Dome (now Acer Arena), citing problems with transport infrastructure as a primary concern and sparking fears that the state government might try to ensure return on investment by shutting down the Entertainment Centre – thus forcing shows into the Homebush venue. It never happened, and both venues are still ticking along nicely.

IN CONNECTIONS WORLD

Our sister magazine, Presentech, folded as an independent entity after a year of valiant struggle. This saw a few changes in the bunker, with John Grimshaw agreeing to take on the poisoned chalice of editorship.

PROJECTION ON THE RISE

Five years earlier, not a single mention of projection graced our pages. Now we ran a report from Infocomm in California in



which John Grimshaw gave us his picks from the 76 projects that were lined up for a shootout. There was more projection in the story about Hyundai's big launch, where a combination of PIGI and video projection was used to impressive effect. Vision was also a clear and present element on the Ricky Martin set.

SLAVA IN THE SNOW

Anyone who saw it will remember the visual brilliance of this show – it was an amazing demonstration of how effective sensitive lighting can be. Our story exposed an interesting element of Slava's attitude to lighting. "We may use them [automated fixtures] for special effects but not for the main acting lights because Slava doesn't like the restriction of programming because he likes to improvise." As a result, the entire show



was lit with conventional fixtures, with bail out states programmed for when Slava changed his mind...

WHAT WE PAID

- Duncan Fry was appalled when a family crisis forced him to buy a return flight from Melbourne to Brisbane – at standard economy fare of \$959!
- An Allen & Heath ML5000 48 channel audio console was \$63,995, while Mackie's new 1642-VLZ PRO was \$2,595. The majority of consoles appearing in the magazine were still analogue, showing that it took a while to get the digital ball rolling.
- Hugh was ready to sell you nine Robocolor Pro 40C lights, complete with cases and data cables, ex Silverchair's 1999 touring rig, for only \$8k

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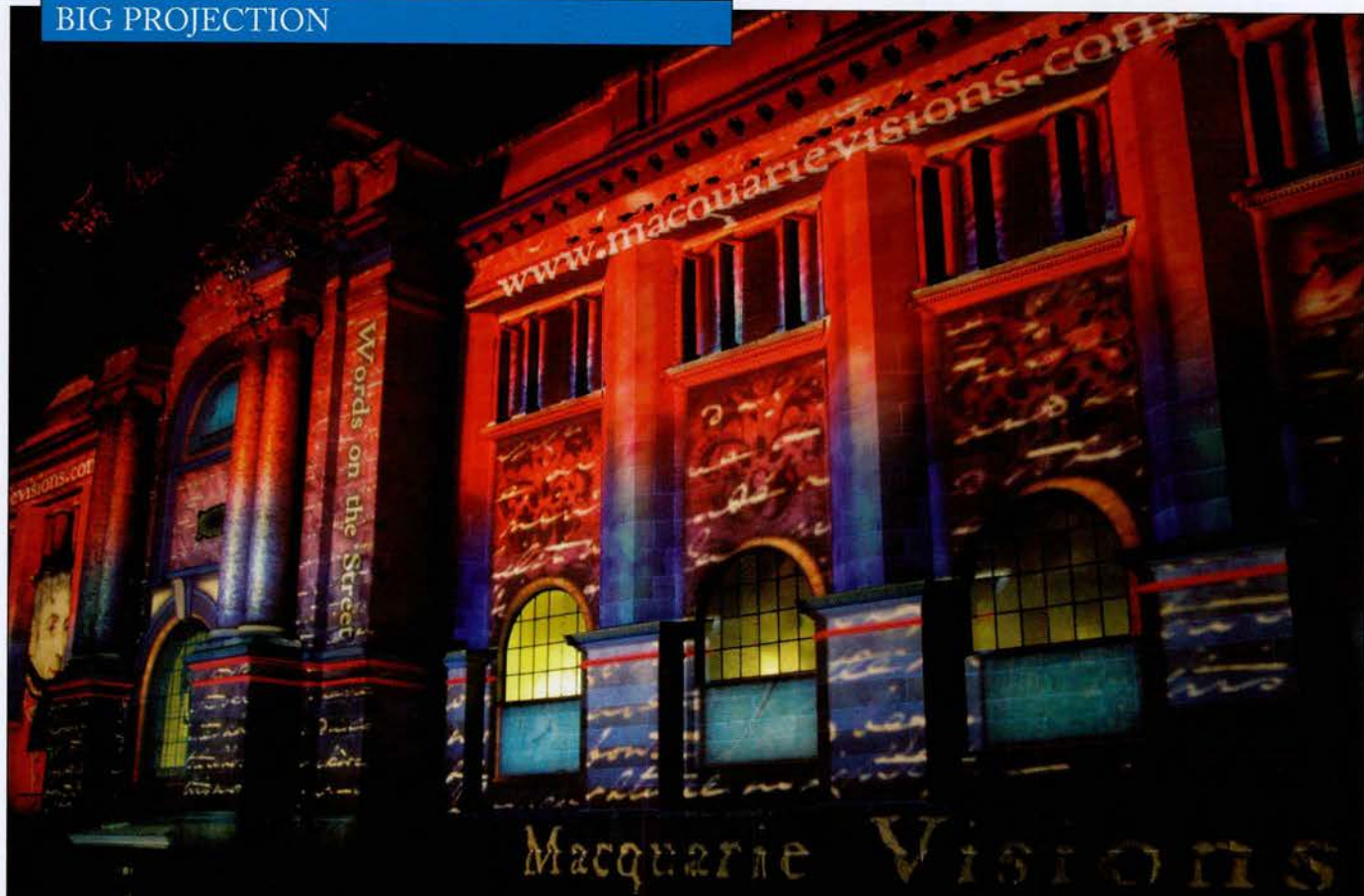
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ALL THE WORLD'S A SCREEN

Shakespeare reckoned all the world was a stage, but we all filter what we see through our own interests. When The Electric Canvas' Peter Milne looks at the world, he sees a huge collection of projection surfaces.

By **ANDY MACKENZIE**

The Electric Canvas have the distinction of being the only specialist projection company I've ever encountered who own a total of no screens. That's right, none. Dozens of projectors – big, high powered projectors – but nothing to aim them at.

The single driving reason behind this is that they have no need of them. As specialists in the field of very large format projection, The Electric Canvas use the surfaces they're offered – building facades, sports fields and stadiums, you get the idea. As the only company in Australia, and indeed the southern hemisphere,

to be geared up with PIGI projectors, they've been involved with many of the country's biggest events. Their work on the 2000 Sydney Olympics, 2003 Rugby World Cup, and 2006 Melbourne Commonwealth Games has ensured that pretty much everyone in the country has seen what they do, even if we haven't known it at the time.

Even if the angles are sometimes extreme, at least sports fields usually offer flat surfaces to work with. The Electric Canvas' other part trick is buildings – big architectural projections. "Does the fact that buildings usually aren't flat create problems?" I ask Peter.

"No, not really. I was a lighting

designer before I got into this – it's why I got into this – and I still see it in terms of light hitting a three dimensional surface."

So it's not just about the image, it's about how the image interacts with the surface it's projected on.

MACQUARIE VISIONS

For four weeks in June, The Electric Canvas was busy providing projection for Macquarie Visions – part of the City of Sydney Vivid Festival. The project involved projections onto the facades of six iconic Sydney buildings celebrating the life and legacy of Governor Lachlan Macquarie and his wife Elizabeth –

remembered as visionary leaders who made a massive and lasting contribution to the development of Australia.

Each of the buildings presented its own challenges, as did the artwork to be applied to each. Different shapes, sizes and projector positions make it impossible to take a 'one size fits all' approach, and mean that inadequate preparation – like just turning up with a pile of projectors and figuring it out on the day – would guarantee failure.

TOOLS OF THE TRADE

The weapons of choice for this event were primarily PIGI and Christie Roadster 20k projectors. The Christies are pretty familiar to most people, and let's face it, the differences between video projectors are mostly matters of scale. This one might be a bit brighter, this one might have an extra however many pixels, but essentially they're the same animal.

PIGI projection, however, is nowhere near as universally familiar. Readers over the age of about 35 will remember back in primary school the teachers sometimes used a slide projector with a special attachment to show filmstrips. PIGI is like that, but on a grand scale. In essence, a PIGI projector consists of a stinking big 6k xenon lamp and a lens mounting system that will accept a variety of suitably sized lenses.

Between the lamp and the lenses is the film handling section. This consists of two scrollers, each with its own film. The scrollers are independently controllable and can move as quickly or slowly as required – quickly to advance between two still images, or more slowly

for scrolling image effects. The entire scroller assembly can also rotate, allowing film to scroll vertically or horizontally.

The film itself is quite large – I didn't have a tape measure with me, and if I had I doubt anyone would have appreciated me poking it in there, but I'd say the image size on the film is about A4. There's a lot of light pouring through the film, and corresponding amounts of heat, so there's fan-forced air rushing across it to keep it at a safe temperature. Even so, like any other absorptive medium (think lighting gel), the film fades with use. For long-running shows it can be necessary to make multiple prints of the film.

MECHANICAL BRAINS

All of this projection business requires some sophisticated control systems to get the job done. A system involving a single projector is easy enough to control, but where multiple projectors are involved – as they are in all the Macquarie Visions installations – a little more is required.

All the projectors involved are hooked up to PCs, and all the PCs at each site are hooked up to one another. Depending on the projector type, each PC is using either Onlyview or Onlycuc software.

The Christies are driven by Onlyview – this package is designed for dealing with multiple video projectors and is commonly used in super-wide screen applications where multiple projections are blended into a seamless whole. This is not by any means the limit of its application, and here it is used to perform a range of different image manipulations, the most obvious of which is masking.

Square images are all very well when

you're dealing with normal screens, but when the target surface isn't square, you need to do something to avoid spilling light onto objects behind your target.

The PIGI projectors don't require any image manipulation – by the time the images are committed to film, that's all been done. And if it hasn't been done right you've got a problem, because it's too late to change it even if you want to...

The only thing the computers can do here is control the lamp output and the motors associated with scrolling and rotating. This is exactly what Onlycuc does, and it ties in with Onlyview so you can synchronise your PIGI projections with the others.

PIGI VS DIGI

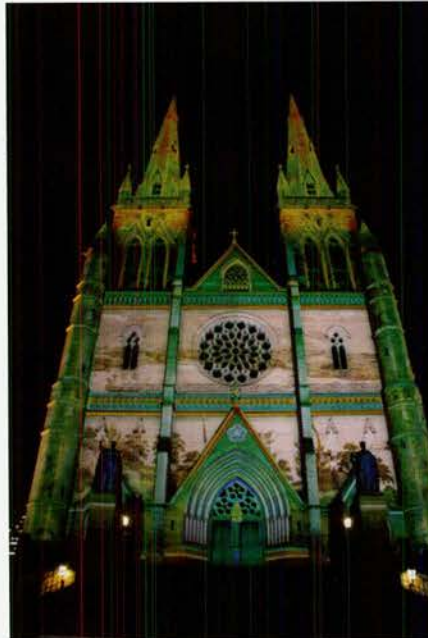
But why would you need to combine PIGI with digital projection? The way Peter explains it, it comes down to the differences between the capabilities of the two projector types.

PIGI is good at bright. Really good. There are four PIGIs deployed at St Mary's Cathedral, and while Peter concedes that he could get a similar result using only the Christies, "...it would take a lot more. Probably about twelve." That's a lot of extra hardware, a lot of extra labour, and a lot of extra dollars to get the same result.

So why not just do the whole thing in PIGI? "Animation. A filmstrip projector can't do animation." If you want any kind of frame-by-frame moving pictures, PIGI won't do it – you either need to use a cinema-type film projector (wildly impractical at best) or go to a digital projection solution.



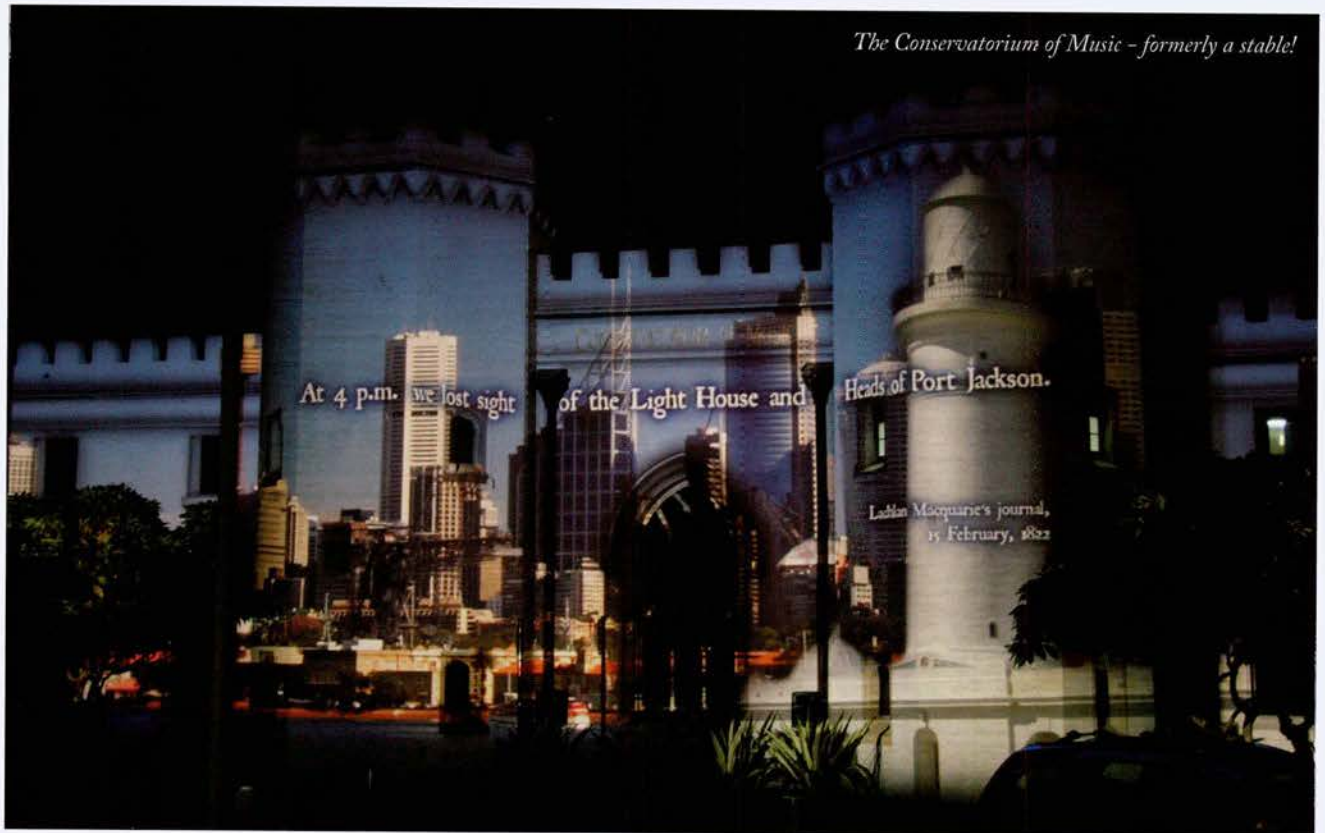
This much is covered by the Christies...



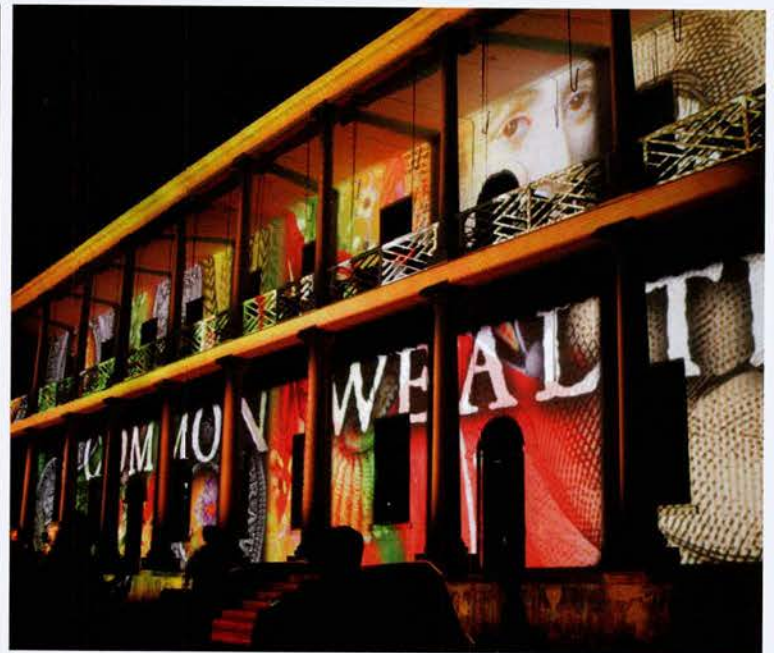
...the rest is only covered by PIGI



The combined effect is impressive. Pic by David Clare



Chief Technician Glenn Williams has been with *The Electric Canvas* for ten years.



The 'Common Wealth' projection on the Mint.

ANATOMY OF A PROJECTION

The Electric Canvas' Chief Technician, Glenn Williams, met us at St Mary's and talked us through the projection there. This is the largest of the Macquarie Visions projections, and the most technically complex

There are four PIGI projectors and

four Christies deployed here, all in the one projector tower. This makes the power feed to the tower pretty substantial – the Christies each suck 15A from a single phase supply, while the PIGIs draw 12A/φ each. Then there's all the computers, fans and various other essential peripheral gadgetry...

The façade of the cathedral is roughly 800 square metres, and the tower is

about 85m out. The length of the throw is significant, as it makes precise projector lineups critical – from 85m out, if a projector is out of whack by a single degree the image will be shifted a metre and a half by the time it hits the building. The lineup on this particular projection took a solid eight hours in the pouring rain – unfortunately for the techs on the bump-in, Sydney enjoyed a good couple

of weeks of really solid rain leading into the event.

Coverage for the façade is achieved using two images in the PIGI projectors. One image covers the upper half of the cathedral – the spires and roof – while the other covers the lower half. There are two projectors overlaid on each section, partly for additional brightness, but mostly for improved functionality. With a single projector, you can only change slides through black or by scrolling from one to the next – neither of which looks real good. Using two projectors, suitably synchronized by Onlycue, gives you the capacity to crossfade from one image to the next. Much nicer.

The Christies, meanwhile, cover only the lower half of the building. There is no overlay here, just four projectors blended at the edges to deliver a single image. This is laid over the top of the PIGI content and provides all the animation – the moving parts of the image. All the image manipulation is done by the Onlyview software, and it's tied to the PIGI stuff by the interaction with Onlycue.

THE POWER OF TOWERS

Projector positions are extremely critical in these applications. All the image sizing, shaping, masking and so on is based on the projector being in a precisely defined place in three dimensional space. The information for the image processing is obtained by using a rather splendidly high tech survey camera – the lens to be used in the projector is fitted to the camera, then the camera is placed in the exact position set aside for the projector. The resultant image provides the necessary spatial information.

Lining up multiple projectors is a precise art – even with a flat square screen. Throw in the additional complexity of having the image line up precisely with architectural elements on the projection surface, and it's little wonder The Electric Canvas own and set up their own scaffolding for the towers. Imagine trying to explain to the scaffolding contractor that this deck needs to be 50mm higher and the whole platform needs to shift ten centimeters to the left...

THE OTHER SITES

Heading down Macquarie St, we pass the other installations in the series. As we pass each one, Peter explains the technology that's gone into it. The first is the Hyde Park Barracks, showing content relating to the Macquarie



The Electric Canvas' founder and Technical Director, Peter Milne, maintains a hands-on approach.

history of social reform. There are three Christies and two PIGIs at work here. The Christies are overlaid on the façade of the main building and firing mostly animated images.

The two PIGIs are supplying content on the wall out the front. To the left of the gate, a timeline image scrolls horizontally, while on the right a list of significant events scrolls upward.

Peter tells me a story about the strange things that can afflict a show like this – apparently a bunch of kids with skateboards developed a liking for a trick which required slamming into the side of the tower. So for a couple of days, the projector was slightly out of alignment each day when it was powered up.

The front of the mint is the simplest of the projections, involving only two PIGI projectors – side by side to cover the width of the building. The big challenge here is the very short throw distance of only about 15m. This challenge is met using some super-wide Barco lenses from old LCD projectors. "Newer digital projectors use DLP chips which are much smaller than the old LCDs. This means that new lenses are also smaller – too small to use like this," Peter explains.

Two PIGI projectors are in use again at Parliament House, along with two Barco R10 digital projectors concealed in the shrubbery. Once again, the PIGIs do the bulk of the work while the Barcos provide animation, but in this case the Barcos are used on sections of the building unlit by PIGI.

At the State Library, there are three PIGIs and two more Christies hard at work, doing a similar job to those at St Mary's. The PIGIs provide the background while the animation is overlaid by the Christies. The forecourt of the library is fairly congested with trees, statues, staircases and whatnot, so the projector towers are offset at fairly severe angles. This makes the image



Projector guys Steve Wyley and Brian Mahoney.

manipulation and projector positions extremely critical here.

The final stop in our tour is the Conservatorium of Music. Looking at this impressively tiered structure, you can't help but think it a little extravagant for its original purpose – as a stable. There are three PIGIs here, each covering a section of the building. The one covering the centre section scrolls sometimes horizontally, sometimes vertically, while the others run horizontally. Particularly impressive here is the way the projectors are so tightly synchronized that an image can scroll all the way across the building as smoothly as if it was a single projector.

ART AND DESIGN

The Electric Canvas' contribution to the event doesn't start and finish with the projectors. It actually starts rather earlier, with the development of content. About five weeks before the show was due to run, the organizers provided Peter with the scripts – the 'what we want this to say'. There's no particular information about images, colour schemes, etc. Just the words.

The team at The Electric Canvas take what they're given and run with it, developing all the content that we later see on the buildings – a process running in parallel with the technical processes of figuring out projection details. As with the other parts of the process leading up to the event, Peter is intimately involved with the design. Not as a designer, but as the guy who knows what will and won't work.

"The designers do their thing, but they're seeing it on a computer screen. I'm good at knowing how it will translate into three dimensional space. So they come up with the ideas, then we look at them, figure out what will work and make any changes we need to make it all work." CX

SYDNEY OPERA HOUSE PROJECTIONS

It's not part of the Macquarie Visions event, but it is part of Vivid Sydney – the larger festival of lights and images. Walking down to Circular Quay, it's impossible to miss the projections on the side of the Sydney Opera House. Last year the sails were illuminated with the work of Brian Eno, this year they show the art of festival co-curator Laurie Anderson.

The projections on the Opera House are also being handled by The Electric Canvas, and before I can even see the building Peter has told me about the first issue they faced on this job, and on many others. "People can't get their heads around the scale of it. Laurie already had

a lot of material in a digital format, and was hoping to reuse some of that content, but the resolution just isn't high enough. It's fine for most normal scale projection, but it doesn't work on this scale."

DOWN BY THE WATER

Leaving Peter at the Conservatorium, I strolled down to the Quay and across to the Overseas Passenger Terminal. The public viewing deck of the OPT is doing extra duty as a projector platform throughout the festival.

The projector tech on duty at the OPT is Steve Paul, a graduate of Julius College, and when I arrive I find him posing by the rail so the tourists can take

pictures of the guy who lit up the Opera House. As they leave, he pulls his jacket back on – obscuring the bright orange and the logo of his shirt. Apparently this happens a couple of times a night. When I tell him we want the same pic the jacket comes off again, putting the logo front and centre. Good bit of PR.

PROJECTION TECHNIQUE

There are fourteen Christies deployed down here. Onlyview controlled to give not only brightness, but clarity. "When it's this big, resolution is important," Steve tells me. "You can do it with less projectors if you treat it as a single image and just stack them up to get the brightness, but the resolution is lower. Doing it this way is about 6000 pixels wide."

'This way' involves breaking the projection area into four sections, then passing part of the image onto each. The two largest sections each use four projectors for brightness, while the two smaller sections get three each. The lenses on these projectors are 7.5-11.5 zooms, almost out to their maximum, to cope with the 450m throw from the OPT to the Opera House.



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At that throw distance, projector lineup is anything but easy, and it was important to get it right, as the Opera House didn't want light streaming into their foyers and upsetting their patrons.

The other side of the Opera House is lit too – by three PIGIs from Mrs Macquarie's Chair, an impressive 650m away. To get this range out of the projectors, Peter has once again specified Barco lenses – 100mm ones for the extremely long throw.

The fact that you view the Opera House from so many different angles as you walk around the Quay and out towards Mrs Macquarie's Chair offers you the opportunity to see what sets this kind of architectural projection apart from ordinary screens – the shape of the surface means that what you see changes with where you are.



Julius College graduate Steve Paul was the tech taking care of the Opera House projections.



Even in midwinter, the fourteen Christies aimed at the Opera House need some serious cooling

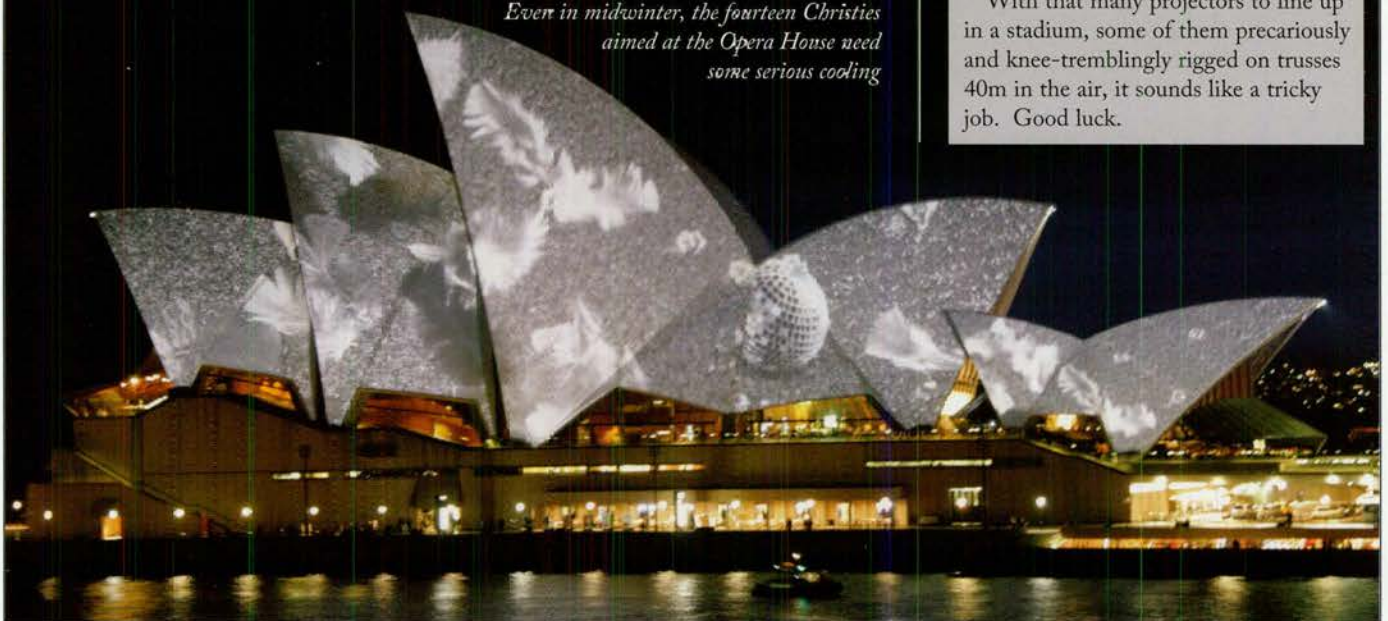
OFF TO SINGAPORE

There's no time for rest when this is over.

The Electric Canvas are the only supplier of PIGI projection in the southern hemisphere. This means they're onboard for a large number of major events throughout Asia as well as in Australia. The day after Macquarie Visions bumps out, a number of the crew and about seven tons of the gear will be on planes bound for Singapore and the National Day parade.

For the event this year, The Electric Canvas are supplying fourteen PIGI projectors from their own stock, plus another eight hired out of France along with all the films and technical expertise required to make the show happen.

With that many projectors to line up in a stadium, some of them precariously and knee-tremblingly rigged on trusses 40m in the air, it sounds like a tricky job. Good luck.



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play,*

*They've been going in and out of
style,*

*But they've got to turn down for
a while,*

*Otherwise Julius says they're in
breach of OHS regulation 125 part
B paragraph 9(d) which states that
no member of the audience must be
allowed to enjoy loud music!"*

By **DUNCAN FRY**

Sorry. Lost my Sgt Pepper thread there for a minute.

I first bumped into Julius 20 years ago when he and his missus at the time (Caroline, hereinafter referred to as v.1) swept like Sydney royalty through the hallowed aisles of one of the AES exhibitions in Melbourne. I had just published the first edition of the Live Sound Mixing book, and he stopped, picked up a copy, and moved on. Later on he came back and said he liked it and was going to feature it in Channels, the forerunner of Connections/CX.

Which, true to his word, he did. A few editions later I suggested to Julius that I should write a regular column loosely connected with Live Sound matters, plus some reminiscing – 'An Old Fart Remembers', Traveller's Tales and stuff like that. Amazingly he agreed, and I started the sausage machine cranking them out.

So if it's 20 years since all this began, it means that at approximately 10 to 12 stories a year I've written well over 200 stories, most of which have been vaguely related to this industry. Plus extra stories (and pix) for The Best of Duncan Fry paperback, now a favourite of the 20 cent box at your local Op Shop! Who knew I had that much inside me just waiting to get out?

Hmmm...my proofreaders have just pointed out that apparently everyone knew I was full of it. At least, I think they said 'it'. Sounded like 'it' anyway.

Here's a small extract from a story dated 1993 about working with a funk band...

...The band had got itself a gig at a large all night party down the coast.

From the crew's point of view, the highlight of the night was a topless dancing competition, with the girls dancing on tables for the grand prize of a block of hash! It was certainly more exciting than the band.

During one of the breaks the guitarist latched on to the winner, a stunningly good-looking girl, with a chest that was a definite dead heat in a zeppelin race! They disappeared into his car for a spot of 'hide the sausage,' emerging half an hour later so that he could get back on stage to play.

In the next break he wandered over to the mixing desk, and said to us,

"Wow, what a great girl. You'll never guess where she works, never in a million years."

We agreed we'd never guess, so he told us.

"The Salvation Army! Can you believe it - the Salvation Army!" and he wandered off to find somebody else to astound with his news.

However, the string was in the tail, so to speak.

At a gig week later, he wandered over and told us that the same girl had given him a rather nasty infection in what could only be described as his toilet area!

Col and I nodded solemnly and tried to keep a straight face, while the words 'Serves you right' drifted through our minds.

"Shit," he said, "I tell you what. That's the last time I buy the bloody War Cry!"

I look through those early stories and see that they were written in Word Perfect. Anybody remember Word Perfect in these WYSIWYG*** days? An early word processing program that was right at the top when Word was right at the bottom. Along came Windows, which Word blended seamlessly into, and poor old Word Perfect, which didn't, disappeared without trace.

Another reminder for me that it's almost 20 years since the book first came out is my daughter, Fifi Trixabelle Britney Lourdes, who is almost 20. At the time she was busy being born, and in between maternity ward visits I would home to feed the dog and keep him company, and also type up the pages of



The Harris Tweeds band – Paul Spano, Bruce Reid, Duncan Fry and Leigh Lansdown – are playing a 40th anniversary gig at the Hampton RSL.

Still rockin' 40 years on

For some reason it looks like my head's been crushed in a vice, but at least they spelt my name right!

the book at the same time.

And during night-time feeds I would be typing out some more with one hand while holding the bottle in the other. Interestingly enough that's not entirely dissimilar to my writing method these days, just minus the 1 month old baby. Hic!

My computer at the time had a mammoth 20 Megabyte hard disk!!! Not much these days – a standard 3 minute song as an uncompressed WAV file is over 30 meg. And to be truthful, it wasn't much in those days either. With only 1 meg of RAM, there wasn't much room for any graphic stuff at all. But Bill Gates had assured us that no-one would ever need more than 640K to run any program, so by that reckoning I had 360K spare (the size of an old 5¼" floppy disk).

By using a utility called Disk Doubler, I managed to turn my hard disk into 40 Meg, and that gave me just enough space to run a publishing program called Express Publisher, which was like a stripped down version of Pagemaker but didn't need Windows.

So I would print out the text on an HP LaserJet 2 printer I had brought back from the US as it was well under half the price it was here, cut the text up and paste it down onto the actual master pages of the book. It was slow but that's how things were done in those days, which makes me appreciate today's graphic and publishing programs all the more!

Speaking of anniversaries, it's not the 20th but the 40th anniversary of the founding of the Harris Tweed Band, the loose collection of musicians that I mix and play with on the Bayside geriatric party circuit.

Named after a character from the old Eagle comic – 'Harris Tweed, Extra Special Agent', we're particularly targeting 60th birthdays at the moment, pointing out to prospective birthday celebrators that it could well be their

last chance to have a rip-roaring old-fashioned badly-behaved birthday party.

So we decided to have a 40th Anniversary gig that would bring us to the attention of our target market. We took over the local Hampton RSL club, and even managed to get a story in the local leader newspaper, plus a colour pic. A surprisingly large number of people came along, some from as far away as Brisbane. Who knew they were that starved for entertainment up there?

"Kick on before you kick off" was the hook that we hung our viral marketing campaign around.

It's not viral as in continual reminders on social media like Facespace or Mybook, but viral because everybody and their dog seems to have the bloody flu! Jeez I can honestly say that I have never known a winter where just about every bastard that you bump into is coughing and spluttering flu germs all over you. I wouldn't say I was as bad a germophobe as Howard Hughes, for example (well, just a little bit, maybe). But if I'm full of ghastly respiratory viruses (virii?), I do my best not to come into close contact with other people, and certainly not touch them. Don't people know how these things are spread? Didn't they do basic biology at school? Obviously not, since



Dunk strapping on the Flying V at the Harris Tweed band 40th anniversary gig

they insist on sneezing into their hand and then trying to shake yours with it. I just make the sign of the cross with my two index fingers and hide in the corner yelling 'Unclean' until they go away!

But I digress.

All in all it's been quite a month of timely celebrations. Twenty years of CX, and it still hasn't lost its bite, its typos, its love of a headline, and its all-round Sydney-ness! It must be a difficult thing to keep up for that long, because let's face it - 20 years is a long time.

Unkind people might say that you get less than that for murder.

But not me; I say 'No worries mate'. So let's have a toast to Julius, Andy, Jimmy and the rest of the workers: drones from Sector 7 that do all the hard work on the magazine. Ering on the next 20 years!

***Acronym for: What You See Is What You Get. Word Perfect was unfortunately WYSIOAWAOWYGIYL - What You See Is Only A Vague Approximation Of What You'll Get If You're Lucky!

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TOURING WITH CATS

AN AUSTRALIAN PRODUCTION TOURS ASIA FOR YEARS

By JULIUS GRAFTON

Greg Yates is lighting programmer and operator for the Asian touring version of Cats. Here's his story about life on the road with a touring theatre show, as told to Julius Grafton.

In May 2004 Tony Davies put my name forward to go to Beijing to system engineer lighting for Cats in the Great Hall of the People. It's the meeting hall of the people's congress. It is a ten thousand seat meeting hall, we were there for a couple of weeks. A season in Taipei followed in June.

As I set up, I generated 13 pages of notes about how the show gets put together lighting wise. Then I came home.

At the end of 2006 Dave Hodsdon, the new technical manager thought my 13 page document showed I had a handle on the show, and he asked me to be lighting director. At that stage we had touring dates until about September 2007 in Korea. There was a tentative concept of four months in China and other things to follow.

This is a touring version of Cats, which means it needs to go together quickly and

easily and fit in all sorts of venues.

We have done every type of venue ranging from the latest and newest theatre complexes in China and the Charlotte Theatre in Seoul which was built to Lion King specifications. We did an old Soviet era music hall in Beijing and its friend The Majestic in Shanghai where we had to cut half the flown scenery and make big changes to the light rig because the roof would not support the weight. Generally we play traditional proscenium theatres of 1500-2500 seats, having also done 5000 seat sports arenas a few times.

TOURING PRACTICALITIES

Word one is adaptability! We do our best with trying to get plans or do site visits before we go somewhere. But sometimes those plans can be wrong or just not how it's going to happen on the day, so you get used to working out alternative lighting positions quickly.

The basic layout of this touring version is 3 straight trusses plus house positions where possible. We use the FOH lighting bridge of the venue as the main front light position and then the 3 trusses hang over the stage floor, essentially as a front, mid and back truss.

Korea was the first place I went. We started in Daegu in the middle of Korea, a city of 3 million. I met a few of the cast and crew on the plane going over for the first time. I went to the theatre the next day and met up with the other two lighting guys – one Aussie guy I knew and a Taiwanese girl.

Korea is lovely – it's well organised and nice. I love the people and the country.

We have 8 containers touring – 2 for lighting, 1 for sound, 4 with the set and 1 other for production with costume, wigs, band backline and junk.

The lights had been prepped at Chameleon in Australia beforehand.

A WEEK IN THE LIFE OF CATS

Here is a normal setup pattern: day 1 start at 8am. We tip the containers, hang the trusses, organise everything. We have 12 loaders who unload trucks. We have 6 to 8 lighting crew who know the venue to hang lights. We have trusses up and floating by about lunch time.

After lunch we continue with the front truss. It doesn't impede the set boys too much so we do that last. That evening we hang anything front of house, get followspots in place and usually finish off day one by 10pm.

On day 2 we come in before 9am and keep going with whatever else we have yet to do. The set guys have got enough of the set built by then that we can start to put set electrics up. There are Egg strobes all over the set, festoons, Cat's eyes. The set resembles a junkyard – anyone who's seen any version of Cats will remember it straight away

By midday I aim to have a system on line and all rocking and rolling. Then I can sit at the console (GrandMA 1) and do positional fixups for the movers. There's a set in place by then.

That afternoon I sit at the console while the other LX crew do set electrics, some FOH stuff and we finish off by 6pm. Then the sound guys want quiet so they can tune and everyone else goes home.

Next morning is day 3. At 8am we are back to focus. We focus three trusses in 2.5 hours. Then the band starts soundchecks, some of the principal Cats check mics. I keep programming as needed, then at around 2pm the Cats come in and stand for us in the auditorium and other locations needing lighting specials. In the show, the Cats appear at different places in the auditorium, so we sort out all those positions.

After dinner, we do a full show run top to tail. It's house lights out, overture go, we are in show mode. The curtain comes down at 10.30 and the next day, it is shows!

I have 300 cues.

CAST AND CREW

We have five follow spots in total. The Taiwanese girl, Wing Tsou, on our crew called them throughout 2007-2009. She retired from Cats by marrying an Italian guy and living in Rome. That's what you have to do to get away from Cats!

We stole Vanessa from Adelaide to do the spot caller job in January.

Some of the cast have been with the show for 10 years performing in various productions of it. There are quite a few long termers. Ron Morrison, head wardrobe, and Sharon Case, head wigs and makeup, both worked on the original Sydney version in 1985.

JoAnne Robinson, the director, was involved with the original London and Broadway shows. That's just fantastic. The knowledge and love for the show is deep.

We even have kittens being produced by one of the couples!

We've been on the road for three years. This tour, with most of the same cast and crew, has been running since 2007. The longest break was 3 months off.



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LIGHTING EQUIPMENT

We carry a lot of spares for the movers, all the way down to fans, belts, colour blades, flags. Not just spare globes.

Some of the gear has been on the tour for the whole 3 years. In a break (almost 2 years ago) it all came back to Chameleon and it was rebuilt.

The gear turns up in good working order, we get great service out of Tony and Luke at Chameleon, there are no issues.

The seasons we do range in length from as little as three days with double matinees, through to Seoul where we went 8 weeks. Usually we are in a place for 2 or 3 weeks. In Australia (Cats is now in Australia) we are in a city each month. In China we did one week seasons.

We haven't had any disaster stories – we look after the gear, we carry the right spares. As soon as something looks funky it indicates maybe it's time to look harder.

CULTURAL DIFFERENCES

Language barriers are interesting! The Chinese use their own name or word for things, so a Source 4 Profile for example, they have a Chinese name for it. But the Koreans use the standard English industry term and brand name – a stream of Korean interspersed with English words. I knew from the pointing and the names what they are saying.

But after all this time, I think I can only count to four in Mandarin and ask for a beer in Korean – that's it. And say thank you' in most countries. I'm pathetic really!

We've been to Thailand, Taiwan, Singapore – we have a bunch of crew from Taiwan – great work ethic, they speak Mandarin. Every department gets one or two.

All the cast of 26 are Australian. There's 55 in the touring party.

It's very convivial – we all socialise well, sightseeing, drinking, eating. Cats has

taken me to Beijing 3 times now, and I've lost track of how many times we've been in Korea.

I understand Asia so much more – the last trip to China was probably the biggest eye opener, and the light went on, so to speak, as to how China works. We go to a new theatre – the ushers are permanently attached to the theatre – they are there all day, cleaning things, helping out. Staff doing whatever needs to be done. It's the work collective thing.

Work ethic isn't race based – there are great lighting guys, and poor ones, great crew, poor crew. It doesn't matter where you are.

ASIA BY NIGHT

Sometimes the little street food stalls are the best – and cheap. Korean BBQ's rock! There's nothing like a load of beer and BBQ at midnight. The street food in Chongqing China is fantastic too.

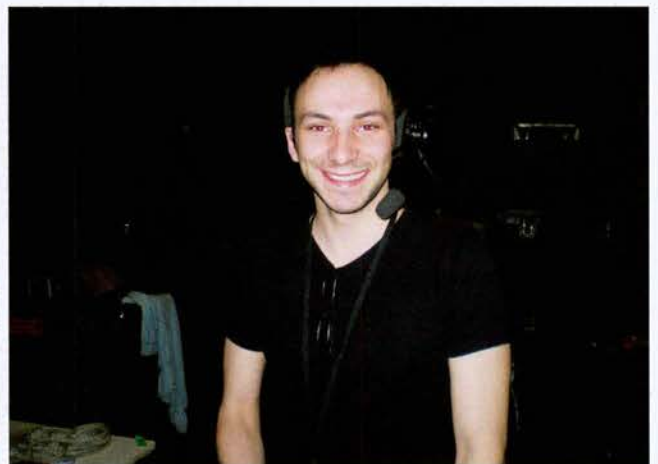
Asian cities have these amazing shopping areas that just leave anything in Australia or the west for dead. We, being the techo and fix it guys, usually need to hunt down the Tool Town in a city. In a tool town you can get whatever you want now because there is shop after shop selling much the same thing. There will be 20 electronics shops in a row, then that may morph into a load of electrical tool shops.

Mong Kok in Hong Kong is pretty good, so is the one in Daegu Korea, but for just sheer size and awesomeness it's the Cheonggyecheon area in Seoul. It's just unbelievable what you can get.

Cats just keeps going, it seems. It's been fairly continuous for the last 3.5 years. The current schedule has us ending in Taiwan at the end of September, with concepts floating around at this stage for what comes next.



Greg Yates Lighting Operator/programmer.



Drew Cipollone Deputy Stage Manager.

CATS 2010 CORE/REGULAR TOURING CREW AS AT SYDNEY SEASON

SURNAME	FIRST NAME	ROLE
Watts	Peimy	General Manager
Windsor	Bec	Company Manager
Quarry	Peine	Production Stage Manager
Allardice	Zoe	Assistant Stage Manager
Cipollone	Drew	Deputy Stage Manager
Claassen	Bronwyn	Physiotherapist
Case	Sharon	Head of Wigs
Hinton	Teresa	Wigs Assistant
Morrison	Ron	Head of Wardrobe
Noyes	Darren	Deputy Head of Wardrobe
Thompson	Alan	Head Sound Engineer
Pratt	Chris	Deputy Head Sound Engineer
McErlain	Claudia	Radio Mic Technician
Runge	Shane	Head Rigger
Bergin	Tory	Mechanist
Lowe	Kyn	Mechanist
Li	Hoa Wai	Scenic Coordinator
Yates	Greg	Lighting Operator/programmer
Baker	Robert	Floor LX/System Technician
Stevens	Vanessa	Dome Supervisor

CATS

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 28 x VL2000 wash
 3 x ATOMIC 3000 strobe
 4 x Martin QFX
 100 x Source 4 profiles
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 400m of 4 way coloured festoon
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 dimmers and power distro.
 20 x 1 ton Lodestar hoists
 66m x 18" box truss
 Lighting supplier is Chameleon Touring
 Systems.
 Sound supplier is System Sound.
 Other crew... and honourable mention:
 David Hodson - Technical Director,
 Ryan Sturgeon, Wing Tsou and Largent
 Wilson - previous LX system crew



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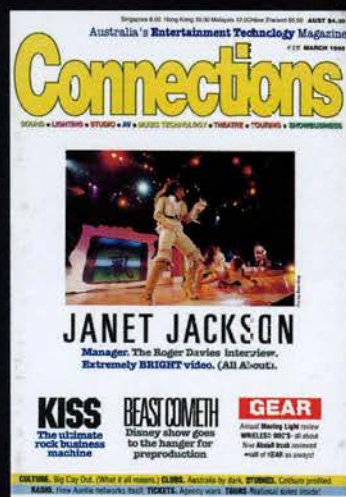
NEUTRIK

MAKING CONNECTIONS

You do a lot of covers in twenty years. It stands to reason that some will be better than others, and that some will be worse...

By **ANDY MACKENZIE**

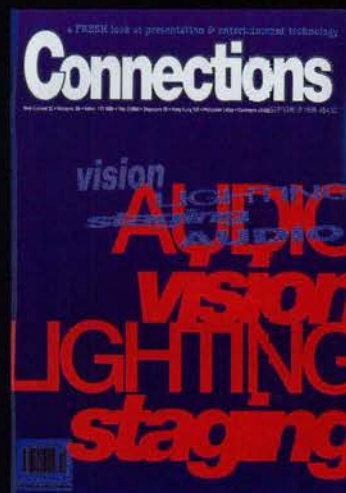
We haven't bothered going all the way back to the Channels days, when the covers were more like newspapers than magazines, but we've picked up in the early days of Connections. The covers have gone through multiple phases and followed a variety of different approaches, some of which worked while others didn't. Gathered here are the good, the bad, and the ugly.



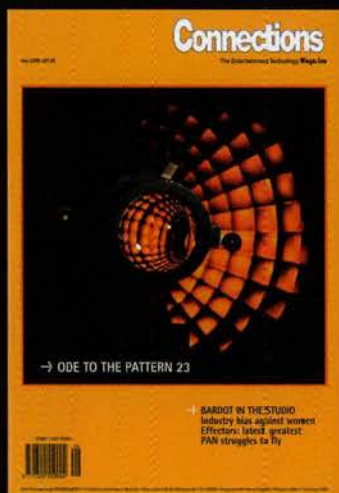
This one's pretty good. This era of white background wasn't bad looking, and this was one of the better photos.



Spacy, futuristic, and utterly incomprehensible. What does it mean? Who knows? At least it's eye-catching.



We had about six in a row which were same stuff, different bucket - different font & colour, same words.



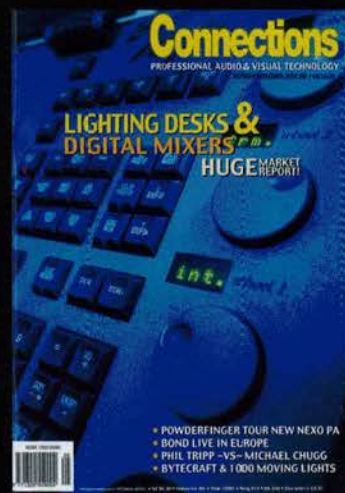
Nice pic, in a nice cover era. Sparse words, uncluttered layout and a great look for the Patt 23.



Hmmm. Little photos and a big green cover. Not one of our best, but it was early days...



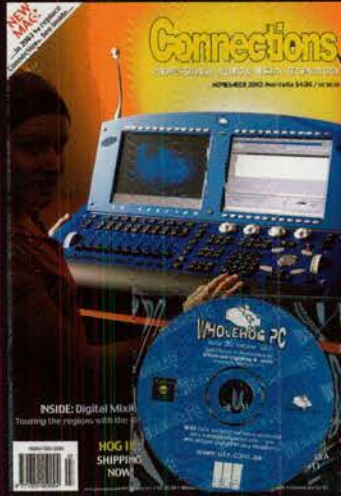
This one scores high on the 'World's worst cover - ever' scale. None of us can think of a single nice thing to say.



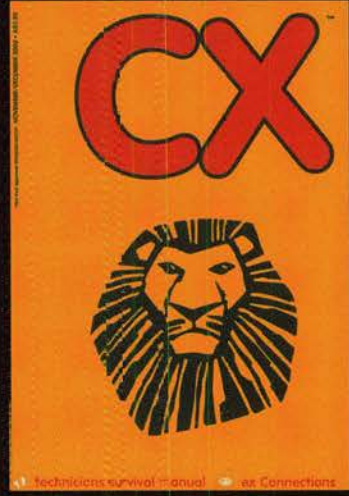
This series of artsy-fartsy cover shots of gear still graces the walls of the palatial CX complex



This is the first of Silverchair's three cover appearances, and it's a cracker. After this picture, the story was almost superfluous.



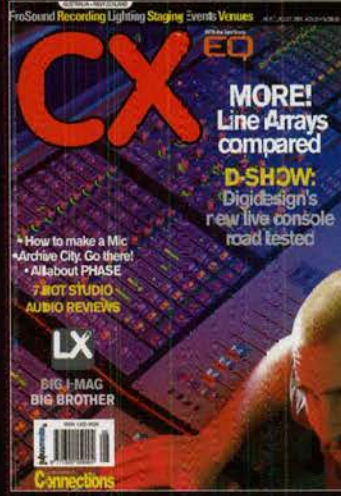
Julius' daughter with the Hog III. And that's not all! ULA came up with free copies of Hog PC for all!



This is probably our most atypical cover. For a news-driven mag to drop the cover text is risky, but it's strangely compelling.



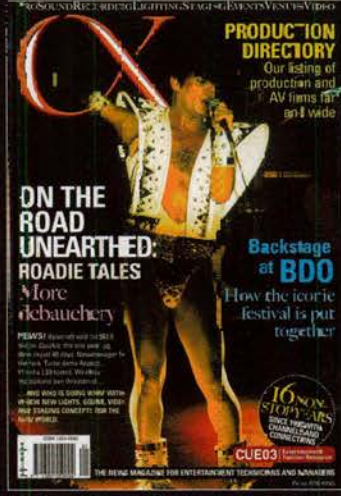
What? A cover that's fun? This one ticks all the boxes - theatre, gear, women in the industry, and not taking yourself too seriously.



Not good. No; good at all. Crainy pic with the misshaften lamp I use for a bead in the corner. No-one needs to see that...



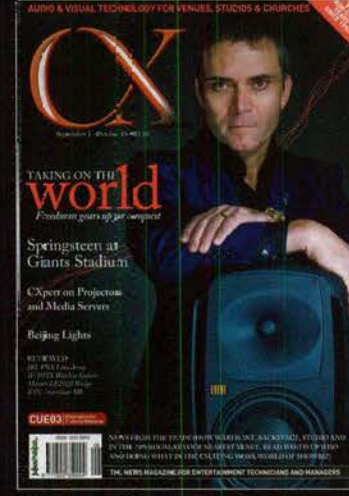
Another nice photo from concert snapper extraordinaire, Bob King. Bob's been a feature of many of our covers, and it's because he's so good.



This is the ugly in the intro... Gary Glitter did some bad things, and this is part of the punishment.



Yeugh! Too dark and too busy. Nice enough kids, but they make a seriously lousy cover.



Freedman takes on the world - and his eyes say it all. One of our most compelling cover photos.

ARTS CENTRE GOLD COAST PA UPGRADE



The ACGC plays host to everything from orchestral performances through to eisteddfods, and they have recently installed a new in-house system to better accommodate the needs of their diverse range of clients.

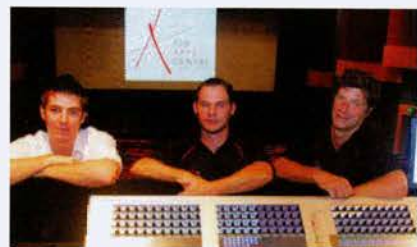
The ACGC comprises multiple function rooms and performance venues, with the largest of these being the Arts Theatre. The Arts Theatre seats 1139 patrons, and has a 20m wide stage behind the 12m wide proscenium complete with counterweighted fly line system. Typically the performance area used is 12-14m wide and up to 14m deep. The number of shows run and tickets sold to these make ACGC a very busy venue by Australian standards.

Audio needs in the venue are difficult to typify as they vary greatly depending on the show. The previous system was installed some 10 years ago, and comprised a Cadac F Type console and a selection of Meyer Sound CQ series cabinets as the main FOH rig. These were supported with additional UPA-1P and MM4 units for centre cluster and delays respectively. While the system was adequate at the time of commissioning, advances in speaker technology as well as a need for greater capabilities necessitated the upgrade. The Cadac console with its 20 matrix outputs and 10 VCA masters sounded great, but was limited by only having 30 mono input modules. The venue is funded by the Gold Coast City Council who requires technical systems to be kept up to date, and either replaced or refurbished at roughly ten year intervals. So while the existing system was still functional, other factors dictated that it was time to upgrade.

WHO, WHAT, AND HOW

Richard Muecke is the Head of Audio for ACGC, and managed the upgrade project. Some key objectives were that the new system needed to sound great and fit within a budget. Usability for visiting audio professionals, as well as intuitiveness and enjoyment were important factors too. The aim was to extend the possibilities for installed sound reinforcement, and ultimately better serve the audience.

The first big challenge Richard encountered was sifting through the large number of quality audio products available for him to choose from. Initially Richard sought out a new speaker system. Line arrays were cut since too many elements would be required to achieve the necessary coverage – this wouldn't have flown on a budgetary or visual level. He consulted with many product specialists, and eventually this led him to Harley Richardson from Meyer Sound Australia, through whom he subsequently discovered Meyer Sound JM-1P cabinets. The JM-1P is a point source type cabinet with 60°H x 20°V dispersion characteristics. Four cabinets arrayed together yielded the 60° x 80° dispersion pattern required for the main speaker system in the venue. The CQ cabinets formerly used as left and right have been refurbished and several of these now form the centre cluster for the main PA. Four Meyer Sound 700HP subs are mounted above the main PA



Chris Dbais – Venue Operations Manager, Michael Benjamin – former Senior Audio Technician, Richard Muecke – Head of Audio (Left to right).

in an end-fired array configuration, and delayed to the main PA. Phase reversing and delaying the rear pair of subs to the front pair allows the sub array to achieve a cardioid dispersion pattern. A pair of UPA-2P cabinets provides in-fill at either side of the proscenium arch, while MM4 boxes are mounted into the front edge of the stage.

But wait, there's more. The system runs in 5.1 as well as LCR, so additional UPJ-1P cabinets at the back of the venue look after this. UPM-1P units mounted under the balcony provide further coverage for this area. Most elements within the system run off independent outputs of the Galileo 616 system controllers, so it's very well set up to achieve nice even coverage throughout all areas of the venue. It sounds right too – other than a very tiny filter to compensate for a standing wave in the room, the system basically runs flat.

Once the PA was chosen, it had

SYSTEM SPECIFICATION

FOH

1x Studer Vista 5 Digital Mixing Console with 4.2 Theatre software including 56 mic/line inputs, 32 analogue outputs, 16 analogue inputs, 16 AES/EBU inputs and 16 AS/EBU outputs in addition to standard Vista 5 local I/O, 1x Studer VST FX Engine, 1x Merging Technologies Platinum Ovation System, 2 x Meyer sound Galileo 616 System Processors fed via AES/EBU from the Vista 5, 2 x Denon DN-C640 Networked CD Players, 1 x Denon MD Player, 1 x MOTU Midi Time Piece, 2 x Klark Teknik DN-370 Graphic EQ, Meyer Sound Remote Monitoring System

MULTICORE

1 x Studer D2™ I/O system including redundant DSP 84 x Analogue Sends, 12 x Analogue Returns, additional Analogue patching between Stage, Rx, Bio and FOH

MAIN SYSTEM SPEAKERS

8 x Meyer Sound JM-1P (Main Left/Right), 2 x Meyer Sound CQ-2 (Upper Centre), 1 x Meyer Sound CQ-1 (Centre Down), 4 x Meyer Sound 700HP, 2 x Meyer Sound UFA-2P (In-fill), 2 x Meyer Sound 650P (2 x additional on request), 14 x Meyer Sound MM4 (in stage front fill - seven only operational at one time), 7 x Meyer Sound UFM-1P under balcony delay fill, 9 x Meyer Sound MM4 over balcony delay fill, 2 x Meyer Sound MM4 PFL monitoring at FOH, 4 x Meyer Sound UPJ-1P Vari O Rear Surround

MONITORS

1 x Yamaha LS9 32 mixing Console, 6 x EV X-Array XW-15 Active Personal Monitor Wedges, 6 x EV T221M Personal Monitor Wedges, 4 x EV Fri-2082 Personal Monitor Wedges, 4 x EV ZX1 Flown Side Fill, 2 x Sennheiser EW300IEM In-ear Monitoring systems

AMPLIFIERS & PROCESSING

4 x EV P3000, 2 x EV CP1800, 2 x EV P2000, 5 x Crown Com-Tech 810 for Meyer Sound MM4 2 x Crown CTs 8200 for paging system, 2 x EV D38

COMMS

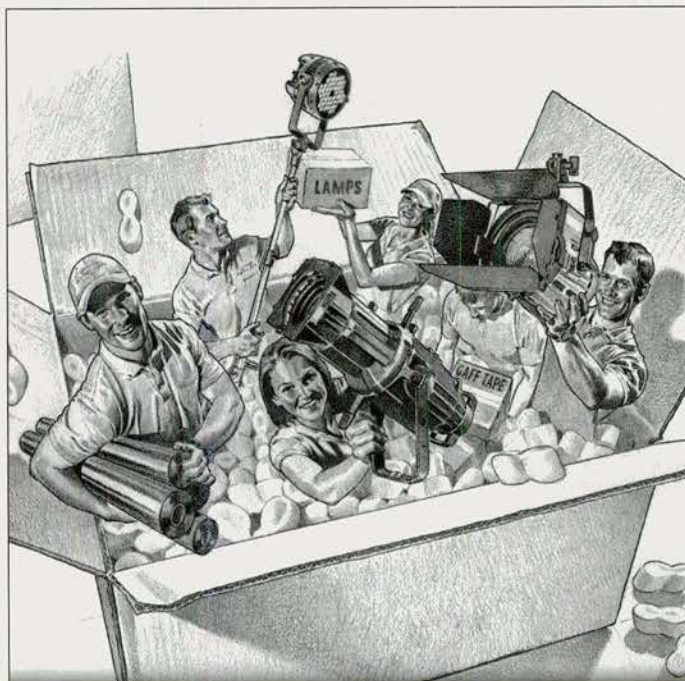
1 x ClearCom Eclipse Pico Digital Matrix, 1 x IMF-102 Matrix Plus Interface Frame, 1 x PL Pro PS-464 ClearCom power supply unit, 1 x ClearCom Master Station, 3 x ClearCom IC5102 Matrix Plus Master Station, 1 x Radiocom BTR-800 with 4 x Headsets, 10 x ClearCom Hard Wired Belt Packs

to be installed. This involved the long and arduous task of rationalizing the existing cabling infrastructure. The audio, video and data cable networks were completely rebuilt. Redundant cables were removed from cable trays, as were runs which no longer conformed to standards. New neater cable paths were established, and the drive racks were moved into a secure air-conditioned room. The beloved Cadac console was farewellled in favour of a new Studer Vista 5, with 56 mic/line inputs, 32 outputs, 16 analogue inputs, as well as 16 AES inputs and outputs and the Vista local I/O. Channel count should no longer be a problem. From this point, the commissioning of the system was reasonably straightforward, and the venue was back into running shows within a couple of days of the install. Some minor tweaks have been done along the way, but all up it's been pretty smooth sailing.

Our thanks to Richard Muecke for the rundown on the system!

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SOUTHBANK INSTITUTE OF TECHNOLOGY

NOT A SECRET ANYMORE

With so many education facilities offering 'real world' audio production courses, it's refreshing to find one that delivers training on analogue and digital equipment in a purpose built environment, and the opportunity for students to gain valuable work experience at live gigs and festivals.

BY STEPHEN BRUEL

The Southbank Institute of Technology (Southbank Institute) is located in the middle of the Southbank precinct, directly across the river from the Brisbane CBD. With neighbours including the Queensland Conservatorium of Music, JMC Academy, the State Library and the Queensland Performing Arts Centre, this is Brisbane's cultural and arts education hub. Housed in a building completed in 2008, the Southbank Institute music department delivers three diplomas (music performance, audio engineering and music business) and boasts an impressive facility with a comprehensive list of digital and analogue audio equipment.

'FACE TO FACE' WITH IAN TAYLOR

Apart from teaching studio and live sound subjects, audio course co-ordinator Ian Taylor also designed the layout of the studios and how they would work together. With a background including work as a tour manager and FOH engineer for The Angels, live sound for The Baby Animals, The Divinyls and Keith Urban, and recording

Powderfinger's Blue EP in his co-owned Broken Toys studio, Taylor was well placed to undertake the design.

"I went to America with The Angels and got to mix a gig at the Whiskey in LA with The Angels, Angry Anderson, Axel Rose and Slash all on stage together," said Taylor. "Now that's rock and roll. I was in heaven."

TAYLOR TAKES A 'LONG LINE' WITH AUDIO EDUCATION

Additionally, Taylor has a long association with Southbank Institute.

"I started teaching part-time back in 1992 when we were still a TAFE," said Taylor. "Our contemporary music centre was founded by some of Brisbane's leading music representatives after lobbying the QLD Government for a college to prepare local musicians and technicians for the industry. Now nearly 20 years on I am still co-ordinating all things audio, looking after the incredible live room and main studio."

According to Taylor, the old studio, although it had a 'great vibe', grew too small. As the course was popular, and getting great results with ex-students working in every aspect of the industry, it was a natural progression to upgrade

to a larger facility to better service the needs of students and indirectly, Brisbane production companies.

"Tertiary education and on-the-job training must go hand in hand to be truly effective," said Taylor. "A large live show or important studio session carries a lot of responsibility and accountability that is very hard to replicate, let alone the pressure to perform. Having a facility such as our Rockschool, we can emulate a lot more real world scenarios. I also believe that education must be targeted for employment, whether that's touring the world, recording kids music or doing sound at the local pub. They all pay the bills, some better than others."

THE NEW STUDIOS

The new complex consists of studio A (main studio), studio B (smaller studio), a live room, four rehearsal rooms, three project studios, three computer labs and a sound lounge. The main studio has a Sounceworkshop 34CMF analogue mixing console, an Otari MTR-90III 2-inch 24-track recorder, an Otari MX55 ¼ inch 2-track recorder, a Pro Tools 8 HD3 system, dual cinema HD displays and two x 3GHz Quad core Intel Xeon Mac Pro computers. There is also an eight-camera system for the main studio,

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Taylor with Southbank students.

control room, live room, rehearsal rooms and the sound lounge.

"The main studio has 11 spaces hanging off it, some linked by copper and others by optic fibre," said Taylor. "The set up allows us to record full live performances in the live stage area, with multiple high definition cameras for editing in Final Cut Pro and ProTools, as is the case at say 'Live at the Chapel' or any of the morning TV shows."

For monitoring in the control room there is Urei 813c room monitors with a single AT18" sub, Emes Blue HR active nearfield, Tannoy Reveal nearfield and Extron ceiling mounted speakers. The studio has JBL Control 5 and Martin Audio Blackline F10 speakers and S12 sub-speakers. Studio B is a smaller affair and consists of a control room and performance area. It has a Digidesign 003 interface running ProTools LE, a Novation midi keyboard, an iMac and is set up for 5.1 monitoring courtesy of Acoustic Technologies Sierra model speakers.

"Some of this gear we have had for 20 years and things have just grown from there," said Taylor. "We spent \$10 000 replacing the heads on the 2" machine. It's always good to teach the kids where it all came from. I still like to use the 1/4" tape machine for my delay when I print final mixes and using real rooms for reverb."

THE LIVE ROOM

The live room has a Yamaha M7CL digital console for FOH and a Soundtracs Megas Stage 32/8 analogue console for monitoring. The speakers consist of an Acoustic Technologies Blackbird TLA306 line array. There is also a small lighting rig with non-moving fixtures.

"The live room has a transformer

isolated split to the studio," said Taylor. "The main studio recording room is set up to record a band in one hit if necessary, with the main live room handling the kit and 5 isolation booths with varying reverb times for vocals, guitars and bass."

According to Taylor, isolation between all of the rooms is achieved by the rooms resting on separated floating concrete slabs. Reverb times and early reflections are achieved through the use of moveable ghost panels, and there is even a live room off the main room for recording the drum reverb.

"I have worked with floating timber floors in the old studio and found I didn't like the separation and what it did to my guitar cats," said Taylor.

PROJECT STUDIOS AND COMPUTER LABS

The three project studios have a control room and playing room smaller than studio B, and consist of an iMac, ProTools 8 LE on Digidesign Mboxes, a Novation midi keyboard and 2.1 monitoring through Acoustic technologies Sierra model speakers. The three computer labs contain 50 iMacs with Mboxes running ProTools 8 LE and Logic Pro Studio 9, and Novation midi keyboards. The four rehearsal rooms have Yamaha MG82CX mixers, AT LPW02P Powered Wedges and are all linked by optic fibre to studio. The sound lounge has 5.1 monitoring, a high definition wide screen projector and is wired with camera and audio back to Studio A to record lectures.

Warren Huck from Brisbane-based Hux Electronics undertook all the wiring for the new complex.

"Working with Warren in the planning

process was great," said Taylor. "I designed it then he fixed it. The studio and live room noise floor is fantastic. The power star earthing system has been done with love and it shows. Get that wrong and you have a storeroom for expensive equipment, not a creative music-making environment.

Noise is something you don't care about till it's there and you can't get rid of it."

TAYLOR THE GEAR COLLECTOR

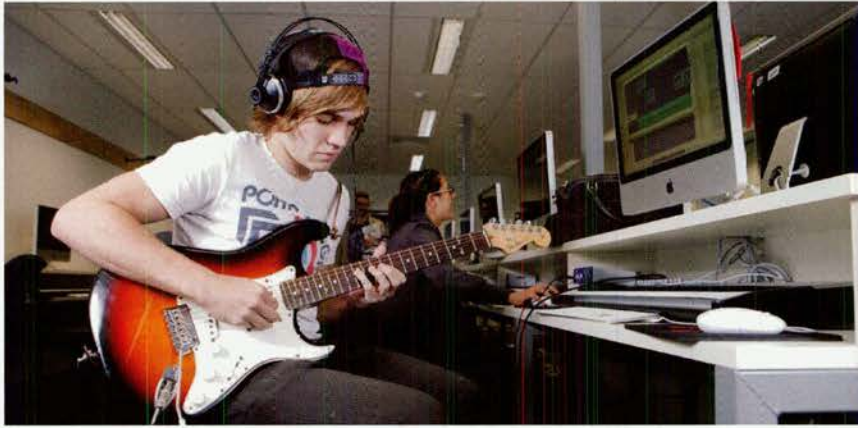
The facility boasts an impressive list of audio and musical equipment, much of which is from Taylor's personal collection.

"I own a lot of gear myself that resides in the studio including guitars, microphones, processors, amplifiers, drums and other cool bits and pieces," said Taylor. "The kids get to hear and see things that they wouldn't normally. The different sound of guitar pickups is an interesting class."

Highlights from this impressive list include Neumann, Rode, AKG and Earthworks microphones, SSL, Urei and Drawmer compressors and Lexicon reverb processors. Guitar-wise there is a solid selection of Gibson Les Paul models from the 1970s, and some more recent Fender Stratocasters, Telecasters, Precision and Jazz bass guitars. Amplifiers include Marshall stacks and combos, Fender twins and VASE valve models.

It is this real world environment of modern studios and live rooms, equipment and student tasks and projects, according to Taylor, that set Southbank Institute apart from other educational facilities.

"We integrate the music performance



THE STUDENT'S PERSPECTIVE

For current student Marcello Milani, the decision to study at Southbank Institute was made due to the fact that Taylor runs the course.

"I have friends who did the course in the 1990s and they always raved about the whole experience and it was clear that Ian had a lot to do with that," said Milani. "And industry-wise, it's also clear that in the live arena, Ian's students stand out from the pack ... erm, actually they are a large portion of the pack. I get to do stuff in the amazing recording studio here, and also get to do live gigs here and elsewhere, including the Byron Bay Blues and Roots Festival."

THE FUTURE

According to Taylor, the future of Southbank Institute is to always try to improve the teaching and learning environment, and keep up with current technology and applications.

"I will be doing a gig with some of my students where we have to mix 17 iPhones as an orchestra and I haven't done that one before," said Taylor, "We also plan to get all of our in house shows streamed out of the studio on the web."

program and the music business program, with our technical students recording studio albums and live performances to create learning activities that mirror the real world," said Taylor. "All this is done in-house with a guaranteed outcome, because we are self-sufficient."

REAL WORLD TRAINING IN THE UM...REAL WORLD

Technical students that show a love for the music industry and impress Taylor with their work ethic also have the opportunity to work at real gigs and events with him.

"For the last 15 years, I have been taking students to the Byron Bay Blues and Roots Festival where I'm the longest serving FOH audio engineer," said Taylor. "Having them work with arguably Australia's best crew and many major international acts is pretty special. A funny situation is that some of the kids are that young, that they don't know who they are working with. A couple of them thought 10CC were a cover band. So, a week away in that type of environment changes a student's perspective of what it takes to succeed in the industry. It shows what is out there if they wish to work their asses off. They always come back more focused than when they left."



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Dr Danger's

SCIENCE BOY

Who knows where Doctor Danger has gone this month? Certainly not Science Boy, who claims to know nothing about the disappearance...



Almost everyone knows (or at least should know) the dangers of overloading an amplifier. For those who don't, it works like this: Pro audio speakers have loop through connectors, and most of the time these enable us to connect multiple speakers in parallel. Each speaker we use has a nominal impedance – most of the time it's 8 ohms. But here's the kicker, each speaker you connect takes you closer to plugging a short circuit into the output of your amplifier. Most amplifiers are stable to 4 ohms, some of the newer brainy amps will run down to 1 ohm.

The rule of thumb for calculating impedance of multiple speakers connected in parallel works as following: Speaker impedance divided by the number of speakers. This is ONLY valid when all your speakers are A) the same impedance as each other and B) connected in parallel. So 2x 8 ohm speakers gives us a load of 4 ohms. Simple yes?

I was thinking about this elegant simplicity as I came into the lab early one day. Very early in fact. Sweet morning dew lingered delicately on the grass outside. It was the kind of tranquility which called for some serious noise, and hopefully fire too!

WHAT WOULD DOCTOR DANGER DO?

Who cares, this is about real science and not some liquor infused pyromaniac's twisted views on it. In the absence of the good (well, not that good) Doctor, I decided to find out just how little impedance was too little.

First task was to steal Archchancellor Grafton's truck, then use that to "acquire" some speakers. Lots of speakers. 16 of them. A big pile of plastic fantastic joy, along with 16 speakon leads. Then I needed an amplifier. Last time I tried to blow up an amplifier it was one of those brainy ones, and thus quickly put an end to my fun. I needed something old. So I found an authentic Aussie Monitor AM 1K2.

Ooh, lots of stuff to experiment with. Exciting..



The science itself was easy enough, I plugged in the iPod to the amp and started playing some full range music out at roughly unity (at +4dBu, I went via a mixer). Then I turned the amp on, and up a bit. Then I stopped to measure the temperature of the amp (22° C at the fan outlet – in other words room temperature). This is science after all...

Time to connect speaker boxes. I started with one. It sounded okay. So did 2. So did 4. In fact, it sounded okay till I got about 9 speaker boxes connected, whereupon things got weird. I kept going till I had 16 speakers connected to a single channel of the amp. That's a total impedance of half an ohm away from a dead short. To its credit, the 1K2 drove them all – well sort of anyway. The boxes at the start of the chain sounded okay, but the ones at the end seemed to be lacking in low frequency response. Completely lacking. Listening to them in isolation they were fine, but on the other end of the string of 16 they sucked. I jumped cables around a bit in case I had a dud speakon or something, but the results seemed to be consistent. The amp had picked up a degree or two in temperature too.


Not yet content that science had been done justice, I grabbed some earplugs, then grabbed the attenuator on the amp and turned it all the way up. The result? It still sounded horrible, but now it was a much louder and more distorted kind of horrible. It took only seconds for the amp to hit 30° at the cooling fan outlet, I suspect the heat sink inside

No smoke from the amp sadly, so I had to make my own.



was significantly hotter. I didn't leave it running long enough to thermal the amp, but it wouldn't have taken long to get there.

WHAT HAVE WE LEARNT?

Loads! It's widely known that plugging too many speakers into an amp overloads it, but nobody's ever been game / clever / stupid / daring enough to try it then publish the results. Low end falls off at the end of a chain of 16 speakers. This is probably associated with the load each crossover progressively places across the line. I'm not certain these results would be the same in every situation, and I haven't a logical explanation for the fact that they didn't all crap out at the same point. Lastly, we've learnt that AM 1K2 amps are tough – I was expecting the amp to crap out, and it didn't. But it did get hot. Anyway enough of that, I need to go and get a lab coat tailored. 

OH&S AGONY AUNT

With Julius Grafton...



This issue we recount the index of accidents that led to our main page news item. We seek to report accidents and incidents so others can learn from them.

Here at Juliusmedia we have been reporting accidents on stage and in venues for almost 20 years. Now we've searched and collated our list of accidents, incidents, fires and deaths and some frightening trends emerge. There are more though, so we throw the wires open to you - tell us your recollections, and give us leads to more incidents we can collate here.

These are directly linked up in our FORUM area at juliusmedia.com, so a précis below leads to a lot more on our website. There are also a rash of fatalities in the 70's, 80's and 90's caused when agents and band managers insisted on overnights. Most recent of these is the tragedy near Coffs Harbour where a Geelong band ran off the road while trying to get from Brisbane to Sydney for a gig. Most poignant was the Swanee truck crash and inferno where Allan Dallow and Billy Rowe lost their lives in 1978.

Of course there are more, and once again - we list these, to learn, so that we don't have more.

April 2010. Perth Western Australia Near Misses

A reader reports those little things that

could have been much, much worse. We need to learn from these.

April 2010. Mexico City Mexico Stage Collapse for Elton John Concert. Another high profile stage collapse.

July 2009. Marseille France Two workers were killed during the construction process of a stage for a Madonna concert when four cranes which had been lifting the roof slipped.

January 2009. Santika Club Fire In Watthana, Bangkok, Thailand 66 people were killed and 222 injured during the New Year's celebration.

March 2007. Moscow Russia The 911 nightclub fire killed ten after a performer accidentally set his clothing alight; this then spread to a nearby container of spirits.

December 2004. Buenos Aires Argentina A fire broke out in the República Cromañón (Spanish for "Cro-Magnon Republic") club when a pyrotechnic flare was set off and ignited foam in the ceiling, killing 194 people and injuring 714 of the roughly 3,000 people in attendance.


February 2003. Rhode Island USA The Station nightclub fire killed 100 people, four of whom died after being admitted to local hospitals. Another pyro-related fire, this one engulfed the club in 5½ minutes.

April 2004. Sydney Australia Death at Her Majesty's Theatre Sydney.

There will always be work to be done on safety in the industry. The death of mechanist Geoff Richards in 2001, killed by falling counterweights knocked from their cradle, will always haunt the industry as an accident that should never have happened.

June 2003. Penrith NSW Australia Evan Theatre Fire. How does a set of fire resistant curtains managed to get burning? Two of them. One at each side of the stage. And how did the two Mole Fay come to be located under the curtains?

August 1998. Sydney Australia Death of ASM at Rocky Horror. Entertainment technicians and managers everywhere sent condolences to the family of Dale Jewel who was fatally injured in an accident on the set.

1937 Wilwaukee Sentinel Set falls over, Donkey refuses to perform. W.C. Fields was on stage during Earl Carroll's 'Vanities' when a set representing the side of a building fell over. He abandoned the script to help the stagehands right the structure. "All I can say", he panted, "is that they are not building these houses the way they used to." Plus read how a donkey on stage refuses to cooperate. A good story on the hazards of theatre, circa 1930's! 

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NAVIGATING THE WORLD OF AUTOMATION

By RICHARD CADENA

Let me just get this out there right off the bat - I'm not a rigger.

So what am I doing in an automation and control class? I'm glad you asked.

I've been involved in the production industry in one form or another for over twenty years and I've successfully dodged learning much about rigging and automation. Until now.

Some people have an aversion to math, some people have an aversion to heights; I have an aversion to taking responsibility for hanging things over people's heads. But I received an intriguing email about the Navigator class offered at Fisher Technology Services, Inc (FTSI). The more I thought about it the more appealing it sounded. Take some motors, a bunch of hardware, some electronics, and a bunch of software, put it all in one pot, simmer, stir, and voila, instant automation.

Okay, it turns out there's a little more to it than that, but that's kind of what

goes into it.

So this Monday morning I found myself driving far north of downtown Las Vegas in search of FTSI. The GPS on my iPhone pretty much guided me into the front door of the 56,000 square foot facility across the street from the Las Vegas Motor Speedway.

I was directed to a smaller 5,000 facility behind the building where four Disney employees (Chuck Brandt, Christine Chan, and Brian McGuire), a freelance rigger (Mark O'Brien), and an employee of FTSI (Randy deCelle) were waiting to take the class.

The class was led by Dana Bartholomew, VP of FTSI and an affable, very knowledgeable guy with lots of interesting stories about automation. We started by touring the facilities and walking through the rental, fabrication, R&D, and tech areas. It didn't look much different than the dozens of production facilities I've seen around the world except instead of lights and trussing there were lots of winches, controllers, and peripheral gear. And since they fabricate practically everything in house, there was also CNC machines

and a huge water jet cutter. The very high ceiling in the warehouse space was an indication of the kind of testing that goes on in there, and indeed there was a 3D automated camera rig set up temporarily.

Back in the class, we got a brief history lesson on the company. Scott Fisher and Joe Champe'li both worked for Siegfried and Roy and the company's first job was the "Big Freakin' Roller" curtain in Cirque du Soleil's "O." Today they have systems installed or are installing systems in Hyperion Theatre, Le Rev, World of Color, Spiderman on Broadway, and they have contributed to movies such as "Green Goblin," "Avatar," and "Vacancy." They also supplied automation systems to Tait Towers and Show Rig.

Navigator is their control software and it was specifically designed to fly people. Therefore, it has many levels of safety, redundancy, and security, which is the key to making it work safely and reliably. In this class we'll spend three days learning the software before we go out in the warehouse and play with the hardware.

The hardware is made up of a variety

of components. The muscle of the system is provided by a gear motor, which is the combination of a servo motor and a gear box. Coupled to the motor are two brakes – one motor brake and one secondary brake. The motor brake is rated for three times the output of the motor while the secondary brake is rated the same as the motor. On the back side of the motor is an absolute encoder and another encoder, an incremental encoder, is coupled to the winch drum. Both are used to track movement and when they get out of synch or they detect travel beyond the safe zones then it signals the controller which then stops the system. The drum is helically grooved and moves the load by taking up or letting out cable.

The system has a 10:1 safety factor, or as some people call it, a 10:1 factor of ignorance. That means that the brake can hold two to three times the rated load of the gear motor while the other components in the system, including the drive shaft, mounting bolts, the line, etc., have 10 times the rated load of the gear motor. Part of the safety of the system includes a series of stops that signal the console when the load travels beyond the normal limits as tracked by the encoders. There's a soft stop, a hard stop, and an emergency stop. Each is tracked by the encoders but they all react differently. The soft stop is normal end of travel and when it is reached it causes the controller to slow down and stop the motor. The hard stop is just beyond the normal limits of travel and when it's tripped it stops the motor and trips the hard stop relay, which disables the system. It can be reset from the console. The emergency stop is set to the point at which damage may occur if the load travels beyond that point. When the emergency stop is triggered it opens the e-stop relay which removes power to the system and applies the brakes.

The stops work because the encoders are monitored by the Navigator software, which communicates with the axis control unit (ACU), and that, in turn, communicates with the motor interface board (MIB). The MIB converts the digital information to motor control signals and directly controls the motor. This feedback loop from the motor to the encoders to the software to the controls and back to the motor is what makes the system work.

Automating and motorizing machinery is nothing new. It's been going on since the beginning of the distribution of electricity. What has allowed it to progress to this level of sophistication is the speed and power of computer hardware and the capabilities of the software. Combine that with a feedback loop and multiple points of monitoring and it becomes incredibly fast, accurate, and safe.

The beauty of this system is that it draws from every corner of the entertainment industry: designers, riggers, electricians, technicians, programmers, operators, and carpenters. It employs the services of machinists, mechanical engineers, electrical engineers, software and hardware designers, consultants, and CAD operators. It represents the culmination of the sum total of much of the body of knowledge in the industry. It sits at the intersection of a range of disciplines and applies them in unique and creative ways. For example, imagine a rig with automated lights on RSC Lightlocks, each of which is on a carrier controlled by a Navigator system. Not only would the lights pan and tilt, but they could also move up and down the length of the truss while adjusting trim in real time. Or what if some automated lights were mounted on articulating robotic arms? Or what about putting automated lighting on a single motorized cart controlled by the automation system? The possibilities are practically limitless and the industry has only scratched its surface. That's what makes me think that automation just might be the most exciting area of the industry today.



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DUBOLOGY STUDIOS

DUBMOBILE

Dubology Studios recently completed construction of their new mobile audio recording truck – CX took a look.

By JIMMY DEN-OUDEM

The DubMobile came about when Ivan Ordenes of Dubology Studios went to record a Veronicas show at The Oxford Arts Factory one night. He found himself sitting in a cramped improvised control room built into back of a van, and realised there was a better way. Thus it was conceived.

BIRTH OF THE DUBMOBILE

The DubMobile is a small truck with gig capability. It was designed to service both music and broadcast industries, providing live on-site recording/mixing of concerts as well as functioning as a mobile recording studio. It wasn't always an audio truck – it originally belonged to the Army (who in typical fashion looked after it with military precision). Ivan acquired it with 40,000km on the clock. Initially there were mechanical and body checks performed to ensure the vehicle would be reliable, and soon after this, a team of carpenters, electricians, and technicians worked hard to convert the truck into something completely new. The installation was done at Sony in North Ryde, and headed up by Grant

Sassall, Luke Kungl and Geoff Innes, who collectively managed to pull the project together in just 4 weeks.

Asked about challenges in building the truck, Ivan replies "The main challenge in building the DubMobile was time. We wanted to have the facility ready for a couple of jobs which included the recording of Robbie Williams' performance at the Metro Theatre. Our aim to achieve the best possible result did not permit us to launch it on such a memorable occasion, but it rolled out of Sony just a few days before Christmas, although too big to fit in Santa's bag."

I NEVER DID MIND THE LITTLE THINGS

The DubMobile's compact exterior belies its capacious innards. It sort of has a bit of Tardis going on – it feels bigger inside than it looks outside. I spent a gig hanging out in the truck with Ivan while he recorded a show, and discovered that it's very comfortable. As a person of relatively tall stature, comfort in small spaces is not something I'm always afforded so I appreciate it.

Physically the truck is split into two separate rooms – the mix room is the larger of the two and accessed via an integrated stairway through the side

door. When working at the console you actually face the back wall of the truck, however between you and that wall is the second room – the machine room. This houses all the computers, converters, UPS, power distribution and other things which would generate unwanted noise & heat if installed in the mix room. Heat is managed by a pair of split system air conditioners – so it's comfortable inside and all equipment is maintained at optimal operating temperatures. The machine room has ample space to accommodate additional gear such as remote racks. The truck even travels its own cable ramps.

INS AND OUTS

Getting in and out of the truck is as easy for signals as it is for people. A custom patchbay sits to the rear at the side of the truck, and includes twin Optocore connections for remote racks, local analogue and digital patch, sync inputs and outputs, network connectivity, vision inputs, SMPTE timecode input and output, and 3 phase power connection. Internally, a DiGiCo minirack looks after interfacing within the confines of the truck. Furthermore, additional audio, sync, network and USB ports are strategically placed around the mix room.

The mix room is designed for two operators, one at the console and another at the opposite end who can run replays, Pro Tools, or whatever from the monitor at the back of the room. All the monitors are patchable, and any computer (or even the console overview display) can be displayed on any screen.



HOW IT WORKS

Roll up to the gig. Unlock the doors, attach power, and start up the equipment. Roll the stage rack out into position for the gig, and attach the Optocore (you can have a redundant connection too – up to 1.5km!). Patch in your lines to the stage rack, then head back to the truck and set your levels. Load up a new recording project, then relax – everything else is already good to go. Too easy huh?

One of Ivan's big beliefs is that the tools are only part of the equation – people and reputation are just as important: "We are very proud of our DubMobile, it represents our determination to provide the best possible service to all of our customers. We believe that its size provides practicality, and its infrastructure makes this facility capable of any job. We like to relate our business with experienced and friendly staff. Great relationships with highly skilled freelance operators and technicians allow us to ensemble the most reliable and friendly staff. Most of all, Dubology Studios has made the most of its years within the Australian industry. We rely on our experience to offer the best possible in our range of audio services."



DUBMOBILE SPECIFICATION

Vehicle: 1994 Mazda T4000 – turbo diesel engine

Dimensions: 5.8m (L) x 2.0m (W) x 2.8m (H)

License class: C (Car license)

Console: DiGiCo DS00 with dual MADI card IO and two EX00 extension chassis for a total fader count of 52

Maximum Channel Count: 128, or 96 if internal effects are used

Recording, playback and mastering: MacPro and PowerMac each loaded with dual RME MADI cards

Software: Nuendo, Digital Performer, and Boom Recorder. Full redundant recording of up to 112 tracks

Additional recording: Mac with Pro Tools HD2, SSL Delta MADI HD Interface – up to 64 additional channels of recording & playback

Splits: Up to 40 channels of passive isolated splits

MADI Matrix switching: RME MADI Bridge

Clocking: Rosendahl Nanosync HD & Apogee BigBen

Audio Monitoring: Genelec 5.1 with Auto Cal, all connections in AES

Metering: Talia MB630

Video monitoring: 4x 20" & 1x 22" LCD screens. Zandar DX multiviewer with up to 16 SDI inputs.

Power: Nisko 2kVa to all technical equipment. Power consumption of truck is 3 phase @ 32A

Additional converters, microphones, IEM units, and onboard processing available on request

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BACK TO THE BEGINNING

*The saga continues –
part two of our story of 20 years of publishing.*

By **JULIUS GRAFTON**

Last time we talked about the Channels era from 1990 through 1993, when the first issue of Connections appeared. It seemed like a dream, because from the time that the break with Channels was announced, we had a literal rush of advertisers. Which is where most publishing revenue comes from.

The Apple Mac IICX had given way to a Quadra 800, so we could see colour on the screen for the first time. Back then a Quadra, flat scanner and black and white laser printer cost \$25,000 – equal to about \$60,000 now!

Not having much desktop publishing experience we did it all the hard way. The printer was the same offset company from Channels, and to do full colour they had to pass the paper through a two colour press twice. In technical terms the registration, that is the alignment of the four colours, was not great.

Most of our magazine was black and white, and those early pictures were transferred to the printing plate by contact. Each photo was reshot by

a reprographics guy who then made a bromide print with the screening embedded – 85 dots per inch. So our early black and white pictures were slightly cheesegrater-ed.

TRAVEL

The first mag had up to the minute coverage of the infamous NAMM trade show at Annahiem. I went over on United Airlines and they still had smoking up the back. Because I paid a low \$1900 for the ticket (\$4000 in today's money) I ended up in row 78 or somesuch with the gaspers.

Surviving this was nothing compared to the Peavey dealer and press day that I sat through on arrival. An endless parade of new combo amps, drum kits, slab PA mixers, and – drum roll – a new concert PA. The late Peter Hayward from Australis was a gracious host, took a bunch of us for dinner after and by then the jetlag and the Coronas had kicked in.

Finished that long day with a session in the Hilton Bar where I photographed an array of working girls who appeared complete with nomdeplumes in the debut issue. Which went to press just after I

got back.

Thus followed several years where one of us – partner and wife Caroline or myself – would go to PLASA, LDI, AES, NAMM, RIMINI or INFOCOMM every year. It got out of control, but it spawned that ENTECH trade show we created in 1994.

For the first six months of Connections we did almost everything ourselves from home, aided and abetted by the talented Catriona Forcer who had moved to Sydney from the UK. Eventually we rented office space, hired people, and ended up with this overblown monster that had a cadet journalist (Natalie Apostolou), PR person, administrator, five freelancers, Cat, Caroline selling adverts and me – doing all the layouts and writing stuff.

We were a monthly mag and the deadlines were crushing.

Several years on, we bought a house up the road from home and turned it into a sneaky quiet office. These were probably the best years of that era, but all things change and in 2000 the partnership collapsed. You can be a great married couple, or you can be great business

Print production is now direct from Mac to press. Most of our time we had to commission film first, so the files went to a middle man who made four pieces of film for each page. Cost thousands, took several days.

We would strip down the film later from the big sheets (this magazine is printed 8 pages to view on one large sheet of paper) in case an advertiser wanted to re-use an advert and save the \$80 cost of film.

Enough of this production speak!

partners. I haven't met too many couples who honestly can tick both those boxes.

NEW CENTURY

With the end of a massive era I took the broom to everything, and probably in hindsight ending almost all magazine contract relationships was a little abrupt. I went on alone, and in 2003 the pressure of deadlines overcame me and we changed the magazine into CX – at the time, published every other month.

I thought I could do a better magazine less often. It was better and now we publish 8 times a year which is around every 6 weeks. I also thought the advertisers would spend more each issue, since we had just halved our schedule. They didn't. So our money halved. Try that someday.

Luckily the ENTECH business was super solid and then I sold it in 2004 and pumped the money into what is now our college campus.

Since 2004 the college hasn't made money but the magazine has carried it. And I think that sums up an argument that says twenty years of magazine publishing is an outrageous success if it raises your kids and then supports a college where several hundred kids have so far done a one year production course with most of those graduates now working in our industry.

HIGHS AND LOWS

Some of my favourite articles: Madeleine Murray write a nice piece on Groupies. I interviewed Roger Davies, Australian uber manager to mega stars like Pink, Tina Turner and Joe Cocker, and then wrote the amazing story of Tom Misner and his book. It is on our website, Google Tom and read what could only be about a unique person.

The lowest days are the obituaries. Most magazines don't do them, and I know why. It's hard here at CX because we usually knew the deceased. One rotten month (June 1995)

WHAT OUR READERS LIKE

- News. We set an agenda.
- Duncan Fry polarises but always comes up with majority support.
- Julius Grafton – as above. We each poll 75% like, 25%.
- Product shootouts.
- We say it like it is.
- People pictures.
- Tour or show reviews
- Scandal, gossip, catastrophes. These all sell magazines.

WHAT OUR READERS DISLIKE

- Nice stories about people. Actually, the people in the subject circle love them. But if you don't know or don't care, you skip these.
- Product reviews that don't conclude anything.
- When Julius once was disrespectful in an obituary.
- Too much 'personal' opinion. (A fine line in these pages!)
- Anything about politics.

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WHAT WE'VE HELPED TO ACHIEVE

We would like to think that we've influenced a few things in our industry over time.

- Better understanding of pay scales and work rights. Helped by the new national Modern Award system that has just commenced.
- Better acceptance of success. We love successful people and ideas, in a corner of the world where some people can be nasty or petty.
- Better awareness of training and education. Took years to calibrate this one, and there is more work to do.
- Vastly improved safety culture, against occasional complaints that we are boring or that OH&S work practices are our fault.

Roger Barratt died and then three others. I was very close to Roger, but had to balance his obit along with the others.

Journalism takes you to places you wouldn't go. The half crazed founder of Media Link showing me around his Seattle penthouse as it teemed with cold rain outside. "Look, Jewli-arse, here is an original Thomas Edison crapper". I had no idea Edison invented a flush toilet.

This guy had one, a throne like a throne.

Tropical islands where some sweating tech shows me his salt encrusted audio visual system. Circus tents where old carnies stop and mug for the camera. Rock and roll where the backstage stuff is 'off the record'. Festivals, arenas, dining clubs, and bush gigs where Australian performers get real and meet their biggest fans and harshest critics. One where the crowd were sitting with arms crossed, then a guy walks over the empty dance floor and hands the singer a note. "A request", he beams. Opens the folded scrap of paper and shoulders slump. "There's a taxi outside for you and your friends." it read.

Old theatre levies, young switched on theatre folk (please drop the gay talk unless you are gay!), keen eyed techies everywhere and always looking younger. Ours is an industry affinity that goes way back to my roadie days from 1973.

I love the camaraderie and the tightness of a small industry spread wide. An industry worth one sixth of the entire global market for potato crisps.

We had a few legal actions that looked like they might run us down. I received a few threats. We had some advertisers pull out angry. You just never can tell. I ran a story a few years ago about how Media Link had won distribution rights to Mackie (that would be good news for them, right?) and drew the

blatantly obvious connection with their Billy Hydes music shop chain. The outrage that followed was ridiculous. 'Incandescent with rage', the sales manager wrote. 'Never talk to us again', emailed a director. Both are no longer there.

We had one super pissed off production company guy recently do a ringaround of advertisers to pressure them to drop us or he wouldn't buy their stuff. We had a few narky letters from some lighting wheenies. (Clint Delieu, please write some more, we miss you!) That's it.

The noises you hear loudest are usually the noises from the disaffected few and if you know when you've crossed a boundary or gone too far, you apologise and move on.

The biggest satisfaction is how most people in the industry understand what we stand for, and are welcoming and gracious when we call or turn up.

Finally thanks for the commitment and the love from the colleagues who get what we are doing, see the values (education, crew welfare, production excellence) and understand the enemy (liars, cheats and exploiters). The people who work here put up with what the media guys call 'An Industry Curmudgeon'

Looking forward to more. Thanks for your support.



20 YEARS: WHAT'S CHANGED?

The rise and rise of the innovators is in plain view. Jands, LSC, Dynalite and Selecon all punched above their weights and now are major players in the global stage lighting business. Lake DSP and Fairlight developed significant audio intellectual property while ARX, Quest, Australian Monitor, AT and Astton all export Australian designed audio to the world.

Several of the above have failed and been reborn. All have had hard times.

In 1990 pro audio and lighting equipment pricing was only just starting to become realistic. The prices we paid in the 1980's would bend your mind. Concert mixing consoles when we started publishing were well north of \$100,000 (\$240k in today's money). In 1990 a CRT projector was the only professional choice and 2000 lumens was very bright.

While equipment prices declined as the world's workshop that is China ramped up, broadcast equipment stubbornly remained ridiculously priced. Only now has it started to equalise with reality as the medium explodes with countless cable TV and internet channels eroding established networks.

On the coalface the population of production firms expanded exponentially, almost exactly matching the collapse of the recording studio. In 1990 you had few choices for concert audio or lighting. In 2010 there are two dozen arena capable firms. Below that there are hundreds of smaller operators having a go.

Proof of this is the financial viability of outdoor festivals which hangs off the production community's ability to do them at a

realistic cost. 1990: seven outdoor festivals. 2010: 430 with more coming!

Post production is following the recording studio to the land of the do-do, as Final Cut on the Mac eats away at AVID. Pro Tools had a decade of dominance as the digital audio workstation before buying AVID (or v-v) and together they now slow dance as cheap or free software (i-Movie, Garageband) lead consumers into lower priced professional options.

In the lifetime of this magazine you've met email, mobile phones and the internet which were all high cost niche options when we started. The world was not wired. Long distance phone calls were charged in three-minute blocks. Beep beep beep!

One thing that hasn't changed is high production values. Well before 1990 great Australian technical folk were exporting themselves and it gives us joy to see some of our college graduates do the same thing twenty years after we started.

- The show must go on.
- The curtain must rise on time.
- The best lighting is not noticed by the audience.
- The best mix is the one no one complains about.
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CLOCKAUDIO DESKTOP WIRELESS MICROPHONE SYSTEM

We've all seen radio microphones used in live production, now ClockAudio has brought them into the conference and boardroom arena.

By JIMMY DEN-OUDEM

While the early origins of conferencing can be traced back to cave people sitting around a campfire grunting at each other, nowadays the conference or boardroom is a more common environment in which to find these people. The campfire has now been replaced with alluring pelmet lighting, and so too we're seeing audio come out of the dark ages.

ClockAudio have released a range of wireless desktop microphones. They're compact, rechargeable, and frequency agile. The bases are available in 3 different variations, and their sleek appearance means they look at home on a conference table.

One of the brilliant things about radio mic technology is that it eliminates the need for cables. In a boardroom or conference situation this is a good thing. I saw an installation happen in a boardroom once – it was a nightmare. Even the simple act of getting cables to the table led to a long heated discussion about chasing cable channels through the concrete floor. In the end the mics wound up hanging off the ceiling, which was unsightly and yielded less than ideal results. When people talk around a table they look at each other, so the sound goes down. Reflected sound off a table loses intelligibility. This is what makes desktop

mics good. Absence of cables makes them practical.

LOOKS FAST, SOUNDS GOOD

The mic bases are compact – they sit comfortably in the palm of your hand. They look cool – the finish is carbon fibre-esque and shiny. The CW9006 model features an XLR connector into which you can connect a standard gooseneck mic – the unit supplies 24v phantom power which will work for most common condensers. The CW9005 unit comes with an in-built omnidirectional mic capsule which is good when you a need low profile design. It sits about twice as high as a standard plate mic. My favourite was the CW9004 which includes a Tini Q connector into which fit a selection of ClockAudio's gooseneck microphones. These are available in several different lengths to suit different applications.

All transmitter units feature a membrane on/off switch with a red LED to indicate the unit is active. The switch can be programmed to work as momentary or latching depending on your requirements. While I'm not a fan of membrane switches for lack of a solid tactile action, the LED responds quickly leaving you in no doubt that the switch is in fact doing its thing. Beneath the unit is the main power switch, as well

as frequency display LCD and control buttons. The receivers are fairly standard looking units – half a rack unit wide and one unit high. Two units can be ganged together with an optional bracket, and there's a 4 way antenna splitter option as well as an in-line booster. An intelligent charger allows you to recharge two transmitter bases simultaneously.

Really, the technology behind this range is less remarkable than what it enables you to do. It is equally suited to a permanent install when the mics are not always used, and just as at home as part of a mobile kit used for fast deployment of mobile conferencing systems. The range seems good too; we comfortably achieved 30m with a couple of gyprock walls and metal framed doorways between – the average boardroom should pose no challenge. Pricing on the ClockAudio systems is about what you'd expect for a decent wireless kit, and the gear sounds every bit as good as it looks. **CX**

BRAND: CLOCKAUDIO

Model: CW9004/CW9005/CW9006

RRP: CW9004/9005 plus receiver - \$1,284.00 plus GST. CU2 Charger \$311.00 plus GST.

AB9000 active antenna (pair) - \$346.00 plus GST.

Product Info: <http://clockaudio.com>

Distributor: <http://madisontech.com.au>

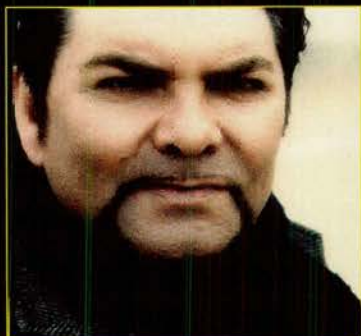
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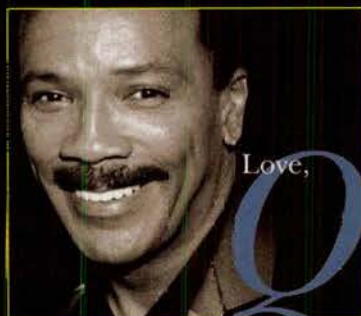
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PERSONNEL MANAGER STAFF ROSTERING SYSTEM

Staff rostering can be challenging and time consuming, with notification of shifts and availability being big issues. CX took a look at an online system to simplify things...

By JIMMY DEN-OUDEM

My local café rosters people onto shifts by writing their names into a diary, then drawing arrows to indicate their start and finish time. The owner knows when people are and aren't available and factors this in. The staff wander in frequently enough to check their upcoming shifts, most of which never change. It's a good system for a café, but is a bit inadequate for something like a production company.

Production companies work differently from many other businesses. Many if not most staff are freelance operators.

The initial setup is probably the most complicated part of using the system. Essentially, you need to go through and define crew and client details, as well as activities and rates. When you define an activity, you set a default rate as well as how much the activity will be billed out to the client at. Staff can then be linked to one or more activities, and even ranked in order of preference.

Then, as jobs come in you enter these into the system. You can define crew requirements, then the system will allow you to select suitable staff from a drop-down menu. If you don't have a preference as to who does what, you can

the shift to make sure the staff haven't forgotten they are rostered on.

CREW INTERFACE

Crew members can log into the site using their mobile number, and see what shifts they have coming up. They can also put in times at which they will not be available – the system uses this information to remove them from the list of crew for any conflicting shifts.

Speaking of conflict...one of my peers on a festival gig once had a rather heated argument with one of the performers on said festival. Both refused to work with the other from that point on. Personnel manager gives you the scope to input crew/client incompatibility to avoid situations like this one.

Once the gig is done, crew members just SMS their hours worked back to the system, which then records this. The system is capable of sending out invoices to clients quickly and easily. It will also report how much you need to pay each staff member at the end of the week, and staff can see this online too. It's quite intuitive and wouldn't take long to pick up. There's even a "how to" page on the Personnel Manager website for your staff to read.

There's a lot to be said for Personnel Manager. The initial setup will take some time, and the larger the business the more time. That said the time taken is likely to be reclaimed fairly quickly once the system is in regular use. Furthermore, the SMS reminders to staff before shifts are a nice feature, and could potentially save you from a reputation-wrecking no-show, which is of far greater importance than a bit of setup time alone. **CX**

There's no set roster. There are no set shifts. There's no set pattern to how things happen. Different people charge different rates, and get billed at different rates. Shifts don't get checked by people simply wandering into the office. Staff aren't always available. Sometimes they cancel on short notice. Half of them have never even met the person who signs their paycheck. Personnel Manager seeks to resolve these issues.

Personnelmanager.com.au is an online staff rostering and invoicing system. It's entirely web based, so you can access it from anywhere you have internet.

get the system to try and fill the shifts for you. It will give the shift to the crew member with the highest ranking who responds the most quickly within a given timeframe.

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**BRAND: PERSONNEL
MANAGER**

RRP: Currently \$500 setup fee then \$50/week

Product Info: <http://personnelmanager.com.au>

ETC ELEMENT



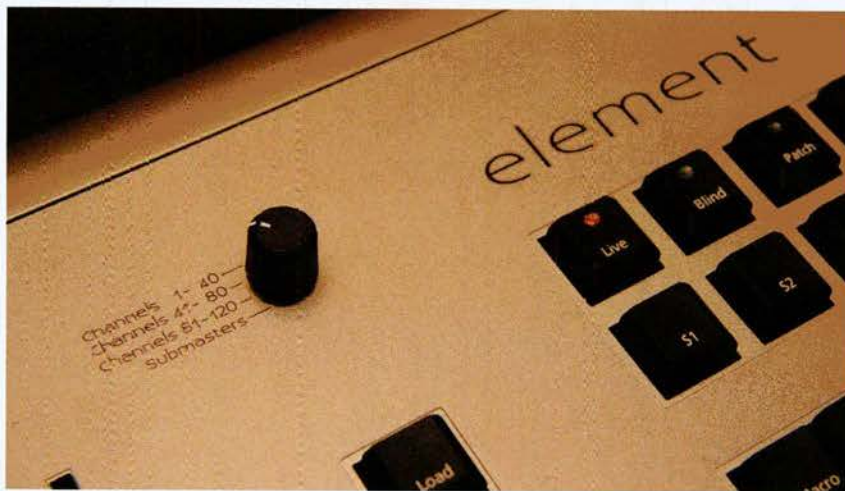
The guys from Jands brought the Element around to the CX bunker on a rainy Tuesday afternoon. I was tired, grumpy and not really in the mood to learn a new console, yet somehow the afternoon worked out better than I expected.

By JIMMY DEN-OUDEM

The Element represents the newest addition to ETC's console line up, and is the baby of the Eos family. The Element was developed to serve the smaller market sectors – sub-theatres, performing arts schools, and other situations where the power and size of a full sized Ion or Eos console is not required. It's certainly not a flashy console to look at – it borders on boring. But boredom is quickly revealed as modesty once you start using it.

FROM THE TOP

The Element is available with either 40 or 60 faders, and within each of these models you can choose 250 or 500 "channel" versions. All models support



1024 output parameters. There are a bunch of buttons, a keypad, a single vertical encoder, and a notable absence of wheels, joysticks and displays. There's also a very clever rotary switch above the fader banks, which we'll look at later.

Around the back you could be forgiven for thinking you were looking at a computer rather than a lighting desk. You'd almost be right – there are DVI ports, audio and network connectors, a pair of mic and DMX outputs, and 6 USB sockets (there's another USB socket

on the control surface). The console is essentially built on top of a computer, which runs Windows XP embedded. A last unlabelled port on the back has a potentiometer next to it – presumably this is the desk lamp socket and dimmer.

Much of the functionality of the larger EOS console control surfaces has been transferred from the physical layer into the virtual. This has two effects – firstly it's much cheaper to manufacture an on-screen button than an actual keyswitch, so the Element console costs

less. The second reason behind this is market driven – the Element is designed for situations where not everyone’s an expert, and too many buttons can just get confusing. Modest in appearance? Yes. Intimidating? Not so much. The desk even defaults to a 1:1 patch, so you can just switch it on and push faders for instant results. Features like moving light control are done on-screen using a mouse. The advanced feature interface is such that you can attach a touch screen overlay and use your finger instead of a mouse.

THE CLEVER KNOB

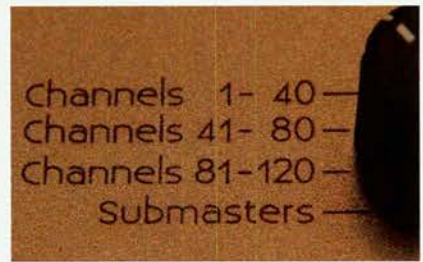
250 or 500 channels, but only 40 or 60 faders – how’s that work? Simply enough, by operation of a rotary switch at the top of the fader banks. Turning the switch changes which bank of channels the faders will control. If a fader is a different position to the channel’s current value, you need to move the fader to the current value and “collect” the channel. It’s simple and it works well. There are no channel numbers above the faders, and while this annoys me immensely it is understandable since each fader can refer to several different channels. It’s a relatively small annoyance which could

be rectified with some tape and a sharpie marker. The faders are grouped in banks of 10, which seems unnatural to me but does in fact make it easier to count which fader you’re on.

The format and expand buttons are very cool, and used in conjunction with the vertical encoder allow you to quickly change the on-screen information layout to something which suits your personal tastes. The console will run in either live or blind mode, and when you switch between these two the on-screen colour scheme changes to reflect this – blue for blind mode and yellow for live. Blocking and tracking are also supported, which though not new features are perhaps less common in the Element’s price bracket.

MOVERS AND SHAKERS

Like its larger counterparts, the Element is capable of quite advanced moving light control. The main difference here is that there are no dedicated buttons or encoders on the control surface to achieve this – these features are accessed on-screen by pressing the ML Control key on the console. The controls themselves (colour pickers etc) are fairly



intuitive and with some basic background knowledge you’d probably be able to put together a simple show without needing to read the manual. It’s that simple. For a relatively advanced console the whole thing really is quite simple. There’s little to trip beginners up, but if you want an advanced feature it’s usually there for the having. ETC have picked their target market and successfully designed a console to suit it.



BRAND: ETC

Model: Element

RRP: Starting at \$9795 inc GST for the Element 40-250 through to \$12995 inc GST for the Element 60-500, with 2 models in between.

Product Info: <http://etconnect.com/>

Distributor: <http://jands.com.au>

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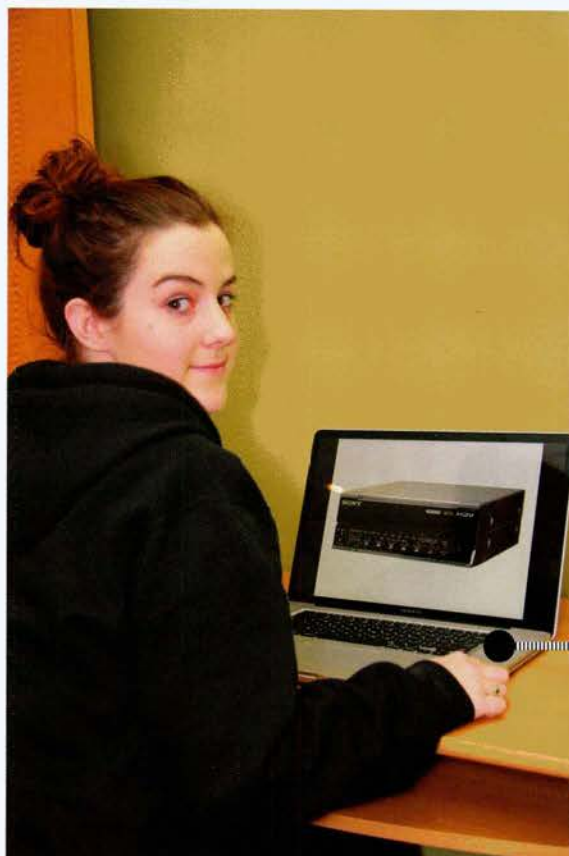
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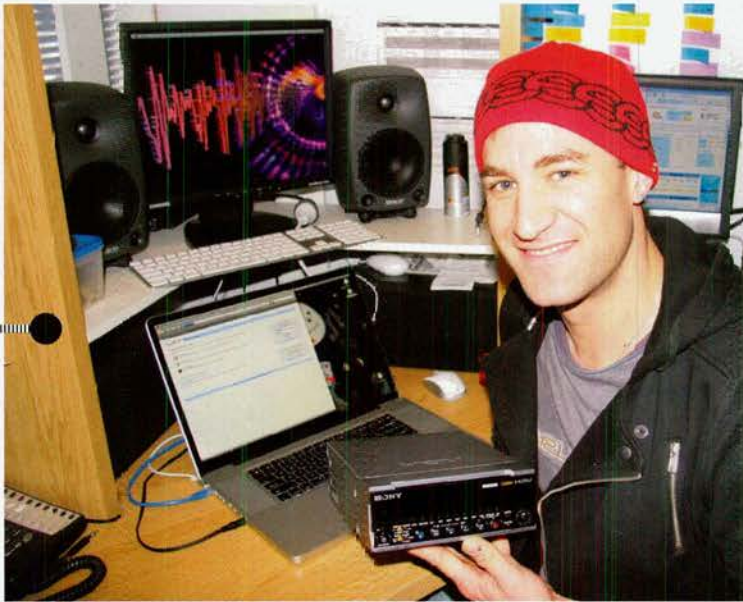


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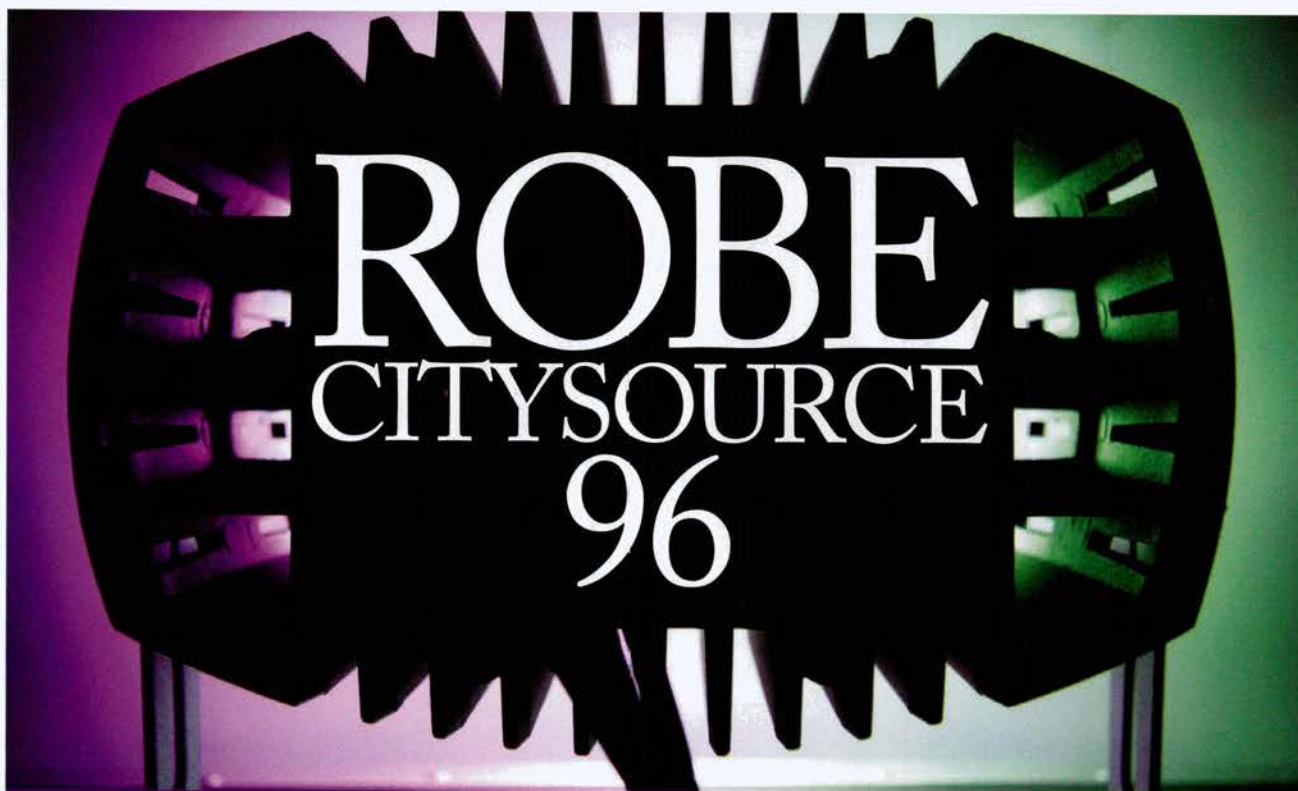
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Last issue we looked at Robe's monstrous CityScope Xtreme. This time around we scale down to something less massive, but no less impressive.

By ANDY MACKENZIE

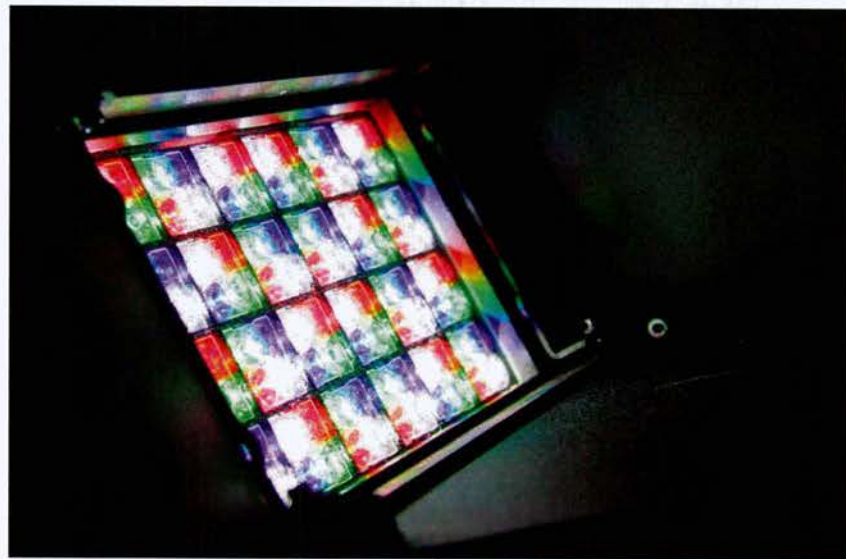
The CitySource 96 is another in Robe's lengthening line of LED products. Like many other manufacturers, Robe seem to have come to the realisation that sinking plenty of R&D into this section of the market will pay dividends in the near future as environmental levies and high energy prices make efficiency an economic necessity.

With familiarity comes expectation, and you come to expect certain things from manufacturers. My expectations of Robe are that the product will be solid, simple and workmanlike. On most of these grounds, I got what I expected.

FIRST IMPRESSIONS

As soon as I got this out of the box, I was struck by the design. Traditionally, lighting devices are pretty rudimentary in terms of design – after all, they're not really for looking at – but the CitySource is a very classy piece of work. Heatsinking and dissipation are important considerations for any fixture, but the implementation here is particularly elegant.

Beyond that, it meets my expectations – the construction is robust, and it feels like it's here to stay. Once again, it's IP65



rated (with the exception of the DMX connectors), so it's totally usable outdoors. The long life and minimal service needs of LED fixtures make them a good choice for this kind of work, so it's good to see people making nice weatherproof ones.

RIGGING AND ACCESSORIES

The CitySource is designed to be rigged from a bar using the supplied 'omega holder' or stood on a flat surface with the included floor stand. Given the number

of fixtures that will stand up on their own these days, the need for a stand irritated me a little, but only for a few minutes – really, fitting it's less arduous than bolting an H-stand onto a parcan. I don't know who originally came up with the idea of the various twistlock things that hold the rigging hardware onto the world's lights, but I think I owe them a beer.

You also get a 25° lens module as part of the kit, and there are 45° and 45x15° versions available as add-ons. Also available as add-ons are barndoors and top hats.



So you've got it out of the box and rigged. What now?

CONTROL AND OPERATION

Hook up the power and the DMX and away you go. If you're using an RDM capable controller you don't even need to do any addressing or anything at this stage – you can do it via RDM once the

rig's in the air.

If you're sticking to the old ways, the addressing and menu structure fits the classic model of up, down, enter and exit buttons coupled with a four digit display that gives you just enough information to get away with. Much as I like the higher resolution displays, encoders and touchscreens that turn up on some current lights, I can understand that they're not really practical on a device designed to be exposed to the elements for long periods.

There are multiple operating modes ranging from two channels up to twelve. The two channel mode gives you intensity and colour macro control only, while the others offer incrementally more control. It also allows the usual Robe array of stand-alone, master/slave and pre-programmed options.

LEDS AND LIGHT

The LED colour mixing system is RGBW – recently I've seen far more devices using this or RGBA than simple RGB, and it gives them much better colour capabilities. For those who prefer it, the CitySource is also available in an RGBA version, along with single colour options.

The LED panel here consists of 96 LEDs – 24 each of red, green, blue and white. This is controllable as two separate panels so you can run each in a different colour. If you prefer to only do one colour at a time from each fixture, you can select a lower channel count mode.

Light intensity is good and the colour mixing is what you'd expect. The standard beam angle is pretty tight at 12°, but that seems to be about par for the course with LEDs. The availability of the wider lens modules adds some functionality.

CONCLUSIONS

All up, I'm pretty happy with this. It does all the things I need it to, plus a few that I probably don't, and it's easy to get it to do any of them. And it's an attractive piece of design. Form and function in one package – can't complain about that. CX

BRAND: ROBE

Model: CitySource 96

RRP: \$5643 inc GST

Product Info: www.robe.cz

Distributor: www.ula.com.au



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RADIAL JX44 AIR CONTROL GUITAR SIGNAL MANAGER



The Radial JX44 is an active switching unit, designed to solve the headaches encountered by many guitar techs when multiple guitars, effects, and amps are involved.

By JIMMY DEN-OUDEM

If you've been to or worked on any kind of large scale concert you'll be familiar with the image of multiple guitar amps, multiple guitars, pedals, effects, and the dude or dudette whose job it is to persuade them all to work happily with each other. Sometimes this can be a challenging job.

Radial designed the JX44 active guitar switcher to combat such problems. In a nutshell, it's a 4 input, 4 output switch unit and while switching is one of its functions, it's not the only one. CX took a closer look.

HARDWARE

Like other Radial gear, the JX44 is a 1RU device built from 14 gauge steel and finished in a cheery yellow paint. Before you even look at the connectors, start by looking on top of the unit at the helpful schematic which illustrates how the thing actually works. If you understand this, then move onto the other side of the top panel for instructions on programming the output banks. If that makes sense too, then you can probably throw away the manual – you won't need it. This is the first good point about the unit – it makes sense.

IN AND OUT

All the input and output connectors are sensibly grouped on the back of the unit, and everything feels good and tough. Let's take a closer look at the various processing stages of the unit, starting with the inputs. There are four of these, and the first two have connectors on the front panel which override their equivalents on the back. The first two inputs have Radial's "drag" feature which allows the user to vary the impedance of the input to accommodate passive pickups. Each input has a select button and an LED on the front panel – when you select one input it de-selects the previous selection. Inputs 3 and 4 have a trim control to allow for level compensation.

The JX44 has 4 output selections, and two of these have dual outputs (presumably to drive dual cab setups). Each output socket can be phase reversed independently (so you have have 3A out of phase with 3B for instance). Each output can also be ground lifted, and run with the effects loop in-line or bypassed. These selections are made by way of recessed push switches – you'll need a small screwdriver or other pointy thing to press these buttons. The output side of the unit can run in two modes – one mode allows you to toggle each output on or off by

pressing its respective button on the front panel. LED indicators confirm which outputs are active. The MUTE button turns all outputs off, and when pressed for 3 seconds puts the output section into "bank" mode, where each of the four output keys recalls on/off settings for all four outputs. Programming the bank settings is easy and instructions are on the top panel of the box.

While the input and output select keys are kind of tiny, that's actually okay since the JX44 is designed to be paired up with a JR5 pedal board, which connects to the JX44 via XLR on the back panel, and makes for easier remote switching on stage.

MORE FEATURES!

The Direct Out is on an XLR, and may be independently phase reversed, ground lifted, and switched pre or post effects loop. You can also choose its source as whichever you have selected on the front panel, or link it permanently to input D. The effects loop has send and return connectors on the back panel and as mentioned may be switched into the path of any of the outputs as desired. There's also an SGI interface, which enables you to route signals via distant effects units using the SGI44 module. This uses

Radial's SGI balanced protocol.

There's a dedicated tuner output on the JX44, and another on the SGI44 if you use it so tuning up doesn't require you to use up an output. A mute input allows you to control the mute function from a footswitch if you just require simple output muting. Lastly, in case everything goes horribly wrong the PANIC button on the front panel generates a hard connection between input A and output 1, so you've got a failsafe there – it even works if the JX44 loses power.

Ultimately you could use a pile of pedals, transformers, adapters and cables to build a big nest which would do the same things as a JX44, but let's face it: this is tidier and more likely to work without hassles.

BRAND: RADIAL

Model: JX44 Air Control

RRP: \$2849 inc GST for the JX44, add \$489 inc GST for the JR5 remote.

Product Info: <http://radialeng.com>

Distributor: <http://ambertech.com.au>



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RIEDEL ROCKNET 300



When is a multicore not a multicore? When it's a Cat5 cable, and you can do smart routing within it. Welcome RockNet...

By JIMMY DEN-OUDEM

RockNet is a family of products from Riedel which allows multiple audio channels to be encoded onto a redundant ring Cat5 cable network. The system comprises various analogue and digital input and output units, all of which are rack mountable and designed to replicate the industrial strength stage plates we all know and love. Additional modules are available to input and output signals from digital mixing consoles, as well as run the RockNet signal over longer distances. Analogue input to analogue output latency is 850 microseconds (within a 10km network perimeter). Digital in to digital out is shorter. RockNet 100 series represents the entry level system, while RockNet 300 is the flagship product in the range.

100 series products will transport up to 80 channels of audio at 24 bit 48kHz, while on the 300 series this capacity is doubled - 160 channels at 24 bit 48kHz or half this at 24 bit 96kHz. The dynamic range on all input units is 114db, and all

the units in the network automatically self address - you can run up to 59 of them in one network. The network topology is simple and easy to understand, though I suspect there are some vastly complex processes occurring beneath the surface to make it all work this easily. The system can be built up without the need for a computer, though there's an option to use one if you want more advanced control (more on this later).

COMMON ELEMENTS

The entire range of RockNet products include locking connectors for everything even remotely important. This is a good thing - especially since you're equally likely to find these products buried in tailboards on OB trucks as you are on the side of a stage. In either environment there is a danger of cables being inadvertently pulled out - locking connectors reduces the chances of this. The whole range is designed to resemble the industrial strength stage plates we all know and love, and it really does feel strong yet somehow it does so without carrying a lot of excess weight. All units



RockNet RN101 + RN334MD

have extensive status monitoring - there are lots of diagnostic LEDs on the front panel so you know what's going on. This is a system that's designed never to fail. It's not cheap, but then again nor are the consequences of system failure - especially on this scale.

Where multiple interfaces to consoles exist, one console controls the master gain for input devices and all other consoles will track changes to this and compensate with appropriate attenuation.

In other words, if one operator makes a gain change the others won't be affected by it.

BLACK BOXES

RockNet 100 series audio interfaces are all analogue units, and available in 16 in 8 out as well as 8 in 16 out. All inputs are mic/line capable with switchable 48v phantom power, and all outputs are line level. RockNet 100 also has a Yamaha console I/O card, which supports up to 16 channels in & out.

The RockNet 300 series is more modular, with all units being 1RU boxes and supporting either 8 analogue channels or 8 digital channels in or out. There's even a model which performs sample rate conversion. Add to this a support for both Yamaha and Studer consoles by way of expansion cards, as well as a 56/64 channel dual MADI bridge and you start to realize the full potential of the system. It's serious. Riedel's website carries some very good application diagrams and is worth checking out. Additional network accessories are available in the form of in-line



RockWorks software

repeaters and fibre converters. The network will run up to 450m on copper with 2 repeaters, and up to 20km over single mode fibre.

RockWorks is the software package which allows you to configure RockNet using either Mac or PC. You can set up channel labels, route audio between modules, and see status of all devices on the network. You can control the whole network from your computer just by connecting it to one RockNet I/O device. Not just you in fact, but multiple users can access the system simultaneously.

RockNet doesn't appear in any way geared toward the architectural audio market – it's over-engineered for such an application. Its true home is live production and broadcast situations, and that's where its cleverness sees RockNet find its feet. α

BRAND: RIEDEL

Model: RockNet

RRP: RN301 8 mic/line input module – list \$4012.20,

RN302LO 8 line out module – list \$3282.71,

RN334MD dual MADI module – list \$5471.18.

RockNet 100 RN101 16 mic/line in 3 out module –

list 5099.14, RN141 Yamaha MY interface card

list \$1159.89.

Product Info: <http://riedel.net>

Distributor: <http://riedel.net>

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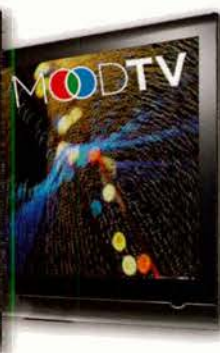
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*To gain VNC capability, your Nightlife system should be connected to a wireless PC network (through your IT Support company).

To find out more, please call Nightlife on 1800 679 748
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