



The Editor's Pick - Jim Slater highlights some of the more interesting and important recent happenings in the cinema business.

NORWAY COMPLETELY DIGITAL

Film & Kino, the Norwegian Cinema Association, has achieved the historic milestone of enabling Norway to become the world's first country whose cinemas have gone completely digital - no more 35mm movies will be distributed. All cinemas in Norway were digital by July 2011, following the roll-out of 420 screens all over the country. The roll-out started in June 2010 and took a year. Mainly Christie projectors and Doremi servers have been used in the roll-out, but 65 Sony 4Ks have also been installed, and about 80 percent of Norwegian Cinemas are 3D capable. UNIQUE were the main integrator for the rollout, converting a total of 344 screens, including adding 25 existing installations to the network, installing 258 Christie 2K projectors with Doremi servers and 61 Sony 4k systems. In addition Unique have installed 62 of their RosettaBridge theatre management systems. The advertising content of Capa (Norway's leading advertising media house) has been converted to DCP delivery, and advertising scheduling and distribution has been fully integrated with each cinema TMS.

REVISED DCI TEST PLAN

DCI has posted a revised Compliance Test Plan (CTP) Addendum on the Compliance web page on the DCI web site. The CTP Addendum dated 4 April 2011 is withdrawn and replaced with the CTP Addendum dated 26 July 2011. The Confidence Retest cited in the revised CTP Addendum will be defined in the next update of the Compliance Test Plan, expected to be released later this year.

www.dci-movies.com/compliance

GDC SUCCESS IN JAPAN

Digital cinema solution provider GDC has signed a digital system VPF agreement with Toei Co.,

Ltd., a leading diversified entertainment company in Japan, best known for special effects dramas. Under the non-exclusive agreement, Toei will pay usage fees to GDC relating to equipment installations carried out in Japan until 31 March 2014. The VPF agreement with Toei is GDC's first major deal with Japanese distributors, offering an ideal cost recoupment model for Japanese exhibitors to undergo digital conversion.

KINOTON COMPLIANT



The entire line of DCP Series II projectors manufactured by Kinton has completed the strict testing procedure for certification as compliant with the safety and technology standards of Digital Cinema Initiatives, LLC (also known as DCI), a joint venture launched by several major motion picture studios. The DCP 30 LX II, DCP 30 MX II, and DCP SX II projectors, which are based on projection technology provided by Barco, passed all of the tests for compliance with the DCI specifications. The tests were performed by expert technicians of the U.S.-based company of CineCert, LLD.

HARKNESS DSS CHOSEN BY MAJOR EUROPEAN SCREEN BUILDER

Harkness Screens' **Digital Screen Selector** is being used for major European multiplex builder Woodman-Rohde's cinema projects. Dortmund-based Woodman-Rohde has been building multiplex cinemas for over 20 years. The Harkness Screens Digital Screen Selector service, a free tool available on

the company's web site, gives users such as Woodman-Rohde expert analysis of the type of screen that would best fit an install, based on auditoria and screen size and other equipment being used, in order to optimise performance and cost. Woodman-Rohde has developed and built several Palace cinemas in Hungary, Slovakia and the Czech Republic, handling all architecture and project management work. Most recently, three projects were completed including the Eurovea Shopping-Center in Bratislava, Slovakia; a Multiplex cinema in Ústí nad Labem and a Multiplex cinema in Liberec, both located in the Czech Republic - all using Harkness' Digital Screen Selector. The company is using the DSS, which provides an immense amount of information needed for a project, from the very first draft to the official drawings, and praises its functionality, the detailed selection for each type of digital projector and screen, and its ease of use.

...and a new face at Harkness

With over a decade of commercial marketing experience across various industry sectors including recruitment, education and construction Richard Mitchell joins the company as Marketing Services Manager where he will be responsible for managing and developing the Harkness brand, creating integrated marketing programs, building and initiating strategic customer and industry partnerships and building new markets. Richard will also be responsible for relationships with service providers, such as creative agencies and event organisers.



FTT OPEN NEW OFFICE IN ITALY

FTT has announced the opening of a new subsidiary in co-operation with KINOROMA. FTT has always had close ties with Italy, from 1972 to 2009, for example, marketing Cinemeccanica products, and they are pleased to enter this market once again, in conjunction with a competent partner. The second shareholder in FTT-DCI, KINOROMA, has a long-standing experience in the cinema industry and has been among the leading cinema outfitters in Italy for many years. Tony Vagnarelli, Managing Director of the newly founded company, says that the Italian market is now ready for D-Cinema rollout on a large scale, and that by sharing their experience and know-how FTT DCI can move forward digital technology in the Italian peninsula. The first success of this new partnership is already taking shape as FTT DCI will carry out the installation of 40 D-Cinema screens in the framework of an XDC VPF financing scheme with an Italian cinema circuit.

CINEMAXX TO INSTALL SONY 4K ACROSS ITS CIRCUIT

CinemaxX, the European cinema chain headquartered in Hamburg, Germany, has signed a Memorandum of Understanding with Sony Digital Cinema to install Sony Digital Cinema 4K projection systems on all screens across its circuit under a Virtual Print Fee (VPF) agreement. CinemaxX operates cinemas in Germany and Denmark, with a total of 34 cinemas, 292 screens and approximately 78,000 seats. It is considered a pioneer in modern multiplex cinema design and a leader in cinema innovation and the commercialization of cinema technology. CinemaxX has already installed approximately 100 Sony Digital Cinema 4K projection systems across its venues, and, following the suc-

cess of the first installations, the VPF agreement will see the chain equip the rest of its screens with Sony SXR4 4K projectors. As part of its VPF agreement, Sony will be providing CinemaxX with the funding and delivering an end-to-end solution, including the projector system, Central Library server, Sony Theatre Management System, the CineWatch remote monitoring system, support services backed by a 24/7 NOC, ongoing marketing support, comprehensive staff training and project management services.

220 CHRISTIES FOR for CCI, 20,000 WORLDWIDE

Christie is supplying a batch of some 220 Digital Cinema projectors to Cinema City International (CCI) - the largest multiplex theatre operator in Central and Eastern Europe (as well as Israel) and the third largest overall exhibitor in Europe.



CCI currently operates a total of 885 screens, and the new deal with Christie which includes a combination of Christie CP2220 Series and Christie CP2230 Series projectors will be another step towards CCI going all-digital. Deployment will be in Israel and Europe's eastern bloc (including Poland, Romania and Bulgaria). Christie also announced that it has shipped and installed more than 20,000 digital cinema projectors worldwide. The accomplishment includes the sale and installation of DCI-compliant Christie Solaria™ Series 2K and 4K projectors, including the popular Christie CP2220 and Christie CP2230. Christie projectors were shipped to cinema customers in Australia, Belgium, Canada, Finland, France, Hong Kong, Japan, Mexico, Norway, Romania, Russia, Singapore, Spain, Turkey and the United States in May, with the 20,000th shipment going to Cinema City International in Arad, Romania.

QUBE IN INDIA, UK AND IRELAND

Qube Cinema has seen significant interest in its new Qube Xi 4K Integrated Media Block. Along with full 4K capabilities, the Qube IMB allows for innovative new theatre layouts, including boothless projection designs. Escape Cinemas recently launched a luxurious new 8-screen booth-less multiplex in Chennai, India and placed an order for the Qube Xi IMB to upgrade their screens to 4K. Numerous chains planning new construction or renovations have also committed to boothless designs thanks to the flexibility and space efficiencies this offers. Escape Cinemas said that the Qube Xi Integrated Media Block was chosen because of its support for 4K and high frame-rate 3D. All Escape screens will shortly be upgraded to 4K and will adopt high frame-rate 3D as soon as that is available. The photo below shows a boothless projection system in an Escape cinema.

Qube have also seen rapid growth in Europe, with Qube Cinema and Arts Alliance Media recently agreeing to work as partners in the UK and Ireland.



MASTERIMAGE3D MARCHON

Marchon3D™, a division of Marchon Eyewear, has signed a distribution agreement with MasterImage3D to provide premium 3D eyewear. The partnership will consist of a pan-European and Asian rollout of "in-theater" displays and vending machines featuring the patented EX3D line

of glasses. MasterImage3D has digital 3D cinema systems in over 60 countries around the world and claims to offer audiences the clearest, sharpest 3D experience while providing exhibitors with a compelling ownership-based pricing model.

The MasterImage MI-2100 digital 3D cinema system offers high-quality presentation, with single- or multi-use eyewear, and is easily portable between screens. The MasterImage MI-1000 glass filters are universal and work optimally with MasterImage3D glasses for oversized screen installations. EX3D is Marchon3D's line of circular polarized 3D glasses, retailing in cinemas for between 20 and 60 Euro. MasterImage 3D, which has very strong relationships with independent cinema owners around the world, believes that the partnership will ensure the marriage of best-in-class 3D projection with best-in-class 3D glasses. The exclusive renewable contract includes full sales and marketing support to promote the EX3D line in theaters.

ARTS ALLIANCE & FINNKINO

Arts Alliance Media (AAM), Europe's leading digital cinema company, and Finnkinno Cinemas, Finland's number one cinema chain, have announced a deal to digitise all of Finnkinno's screens across the country. The VPF deal will cover all of Finnkinno's 88 screens across 14 sites, and will see each screen converted to DCI-compliant digital cinema over the next 18 months. Finnkinno screens which are already digitally equipped will be rolled into the deal and covered by existing VPF agreements. Arts Alliance Media, which already has over 3,000 European screens signed up to its VPF deals, will be the Finnish scheme's exclusive integrator, and as well as installing and maintaining the equipment will also manage collection and administration of VPF payments. Finnkinno sites will also be installed with AAM's Theatre Management System and Library Management Server, to control all aspects of the digital screens and content. Each site will also install a satellite

system, in conjunction with AAM partners Arqiva, to receive digital feature and trailer content, as well as live alternative content events.

MAJOR CHANGES AT UNIC

UNIC, the European grouping of cinema trade associations, has announced major changes intended to strengthen its effectiveness and influence as the voice of European cinema exhibition.



The organisation, which represents territories accounting for over one billion cinema admissions and 33,000 screens, has appointed Jan Runge as its new Chief Executive. He will oversee the establishment of a new Brussels office, marking the relocation of the organisation from its previous Paris base. Runge said that this is a very exciting point in time to join UNIC and to promote and defend the social, cultural and economic contributions of cinemas across Europe. UNIC's new office will help ensure that policy-makers in Brussels and all over Europe recognize cinema operators' capacity to fully embrace innovation and to attract audiences with an upgraded and diverse cinema offer.

The European Commission is about to launch a range of new initiatives under the umbrella of the European strategy EU2020. and UNIC stands ready to collaborate with the EU and relevant stakeholders on issues such as copyright enforcement, rights licensing, release windows and digitisation, which are all crucial to the future of cinema and the benefit of consumers and the wider film industry. In announcing the appointment and relocation, UNIC also confirmed the establishment of a

Autumn CTC Training Course

Following the success of the first CTC training course specifically for digital projectionists at Warner Bros Preview Theatre, the Cinema Technology Committee has arranged a similar course this time at Dolby HQ on Wednesday 12th October.



To provide a better chance for those who don't live around the London area to attend the course, which we hope will also be mounted at other venues around the UK in the following months, we have been fortunate to get permission to use Dolby's excellent preview theatre and projection facilities in Wootton Bassett, Wiltshire, for the autumn course. The Dolby HQ is only a few miles from Swindon, which has excellent road and rail links with the Midlands, the West of England, and Wales.

Readers will have seen how the new practical course requires access to a good many technical facilities to demonstrate just how to make the best of alternative content sources, both sound and picture, and the comprehensively equipped Dolby theatre will be ideal for this. It may also prove possible for those attending the course to have a look around parts of the Dolby HQ.

The cost has been kept down to £10 for the day to encourage as many projectionists as possible to attend, and as this course will undoubtedly prove very popular, please make an early booking.

**email: cinematech@btinternet.com
or book directly via www.bksts.com**



Dolby's Julian Pinn writes:

"Dolby is delighted to be offering its facilities to the Cinema Technology Committee in order to help them host their next projectionists' training course. Dolby is an active member of the CTC and fully supports the committee's important initiative in furthering industry education. Whilst being held at Dolby, I must stress, this course is very much delivered to you by your committee and by its wide-range of industry experts and will therefore be as non-partisan, unbiased, as practical and as valuable as always."

SONY SHIP 8800 AND ANNOUNCE NEW DEVELOPMENTS

Sony announced that it had shipped 8,800 Sony Digital Cinema 4K projection systems globally by May 2011. In a statement about future technological innovations the company talks about Sony Digital Cinema 4K's support for higher frame rates in 3D. All Sony Digital Cinema 4K projectors already support 48p and 60p 3D by DVI input since April 2007 for SRX-R220 and October 2009 for SRX-R320. With an upgrade expected to be available next year, which will come at a potential upgrade cost, all Sony Digital Cinema 4K projectors with their integrated media blocks will be able to support 48P and 60P 3D screenings, offering the ultimate 3D experience to its exhibitors and their customers.

At CineEurope, Sony also showed its Closed Caption Glasses prototype. This is a technology concept Sony has developed, which aims to support the hearing impaired community. This prototype see-through eyewear displays a virtual closed caption to the hearing impaired wearer, enabling users to join friends and families to experience the same movie going experience. I saw this in action at the Sony Japan HQ last year, and was impressed at the way in which this could enable exhibitors to make subtitles available at all performances, without inconveniencing those who don't need to see them. Another interesting announcement was that we can expect a physically smaller 4K Sony Digital Cinema projector, tailored for small and medium screens, but it looks as though we shall have to wait for this until the autumn of 2012.

NEW DCP ANDROID APP FROM QSC

QSC announces a new Android application for control and monitoring of cinema sound systems equipped with QSC's DCP cinema processors. QSC goes beyond just control of the processor by also monitoring amplifier and loudspeaker status. Along with volume and audio

preset control, the application turns DCA amps on and off and monitors the entire system for amplifier clipping or overheating and open or shorted loudspeaker loads.



The Android connects to the DCP's via Ethernet and standard wi-fi routers. Password protection ensures control is limited to authorized devices. The system is ideally suited to "booth-less" theatres since theatre personnel do not need to physically access the equipment for daily operation and for troubleshooting in case of problems.

QSC's advanced DataPort connection between the DCP and DCA amplifiers allows the DCP to monitor amplifier and loudspeaker loads and report their condition via the new Android application.

The free application may be downloaded by searching for "DCP Connect" in the Android marketplace.

QSC Audio Products, LLC is a leading manufacturer of power amplifiers, loudspeakers, signal processing, digital signal transport, and computer control systems for professional audio markets worldwide.

For further information contact: publicity@qscaudio.com
www.qscaudio.com

BARCO 'FIRST' DUAL 4K DLP

Partnering with D3D Cinema and Dolby to produce an immersive 3D movie experience, Barco made history by providing its DLP Cinema® Enhanced 4K DP4K-32B projectors for the inaugural installation of a 4K Double Projection System in the DynaTheater at the New Mexico Museum of Natural History and Science. Barco provided an immersive, giant-screen movie experience for thousands of patrons by using two of its brightest projectors in a dou-

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ble-stack configuration, which marks another industry first for the company. The new system features two DP4K-32B projectors, digital surround sound, and a new five-story matte white screen designed to maximize projector brightness. The DP4K-32B is the brightest digital cinema projector in the world, and earlier this year, Barco and D3D Cinema partnered in an exclusive demonstration, in which Barco's DP4K-32B was matched against a conventional 15/70mm film projector in a side-by-side movie presentation comparison at the inaugural Digital Cinema Symposium in Galveston, Texas. Barco's 4K digital version was overwhelmingly preferred – both in terms

of image quality and overall presentation – by an audience of more than 120 movie industry veterans.

OMNEX APPOINTED HURLEY SCREEN DISTRIBUTOR

Omnex Pro film has entered into an agreement with Hurley Screen U.S.A to distribute products in the UK and Ireland and other European territories.



Hurley Screen have been established in the U.S since 1935. The Forest Hill, Maryland based factory produces a comprehensive range of screen surfaces for the cinema industry and frame assemblies for cinema and the audio visual industry. All Hurley screens distributed currently in the UK have fire test certification to BS 5867-2:2008, these include matt white, Superg-

lo surfaces with gains of 1.5, 1.8, 2.1 and Silverglo 3D 2.4. The unique Hurley Screen printed surfaces provide perfect reflective performance and uniformity across the whole viewing area. Delivery to the UK is normally within 3 days and production around 2 weeks subject to factory loading. Omnex MD Jed Atherton states, 'Our experience with Hurley to date has been superb, the surfaces are faultless and their service is speedy and very professional'.

CONGRATULATIONS TO MARK AND NICOLA

Mark Nice, Technical Manager of London's Odeon cinemas at Leicester Square, West End and Panton Street, married Nicola on Saturday 11th June 2011.



It was a beautiful day for a lovely wedding by the River Thames at St Nicholas Church Shepperton, followed by a reception at the nearby Warren Lodge Hotel. Mark's friends in the Cinema Technology Committee had celebrated the forthcoming wedding on the previous Wednesday, with a champagne toast, and their many friends in the cinema business wish Mark and Nicola every happiness.

SONY CHOOSE VERITEK FOR EUROPE-WIDE CINEMA SERVICING

We have reported elsewhere how non-traditional companies are moving in to the cinema business. The latest manifestation of this came in August as Sony signed a ten-year service agreement with Veritek Global Ltd. to deliver service support to cinema exhibitors across Europe. Veritek, although previously unknown in the cinema industry, is a sizeable company which achieved 12th place in the 2011 Sunday Times



International Track 100. It has hundreds of service engineers all around the UK and in Europe and has many years expertise in the installation and servicing of complex imaging equipment, photo-processing machines and ophthalmic imaging equipment. Sony are currently rolling out their 4K projection systems to the complete Vue Cinemas network, and as part of that overall agreement, Sony sought out a qualified third party support company. Veritek, who Sony have worked with previously in other areas, met their requirements, and worked with Sony and Vue to obtain full accreditation to deliver field engineering support for the ongoing maintenance of their cinema systems, once they are installed. Since the 18th of July, Veritek have been providing 364 day per year coverage between the hours of 9.00am and midnight, guaranteeing a same day response for priority calls logged before 4pm. Veritek see this as a great opportunity to transfer its superb reputation for providing unparalleled levels of expertise and customer support into a new and exciting market, working in partnership with one of the world's best known technology brands. Sony are committed to delivering high end solutions to their exhibitors, including first class after sales service, and know that Veritek will meet their requirements. Vue Cinemas are aiming to provide improved customer experiences throughout Vue cinemas nationwide, and are confident that Veritek will be at the heart of maintaining the technical delivery of these experiences.

their fans in certain city or geographical area. The fans also create movie merchandise using a Design Kit, which includes Iron Sky themed graphics, fonts, pictures and other materials, with which they can create their own suggestions for Iron Sky merchandise. Designers are rewarded with movie tickets, cash, and tickets to the Iron Sky premiere. A videogame is under development, and there will be also Iron Sky content on mobile platforms, including an Iron Sky iPhone game and an application which brings the latest Iron Sky news and content to the user's phone.

More exhibition-related was a talk from **Simon Morris, founder and CMO of Lovefilm.com**, which has recently been acquired by Amazon.



He gave some of the company's history and, rather surprisingly, declared that data is at the heart of everything that Lovefilm does. He said that their real business is helping people to find a film and be able to watch it on as many platforms as possible, and they are using an increasing number of tools to help people do this. The Lovefilm idea works without customers being forced to sign fixed contracts, and this obviously appeals, since although customers can end their relationship with Lovefilm at the end of any month the actual 'churn' of customers leaving is very low indeed. Although Lovefilm provides films for people on a wide range of platforms, from DVDs to downloads, to TV receivers, and therefore might be thought to be in straight competition with the cinema business, Simon reported the surprising fact that **the average Lovefilm customer is 11 times more likely to visit a cinema than a normal member of the public**. He said that he was glad that they had originally named the company Lovefilm, rather than something containing DVD, Video or Internet, since the core of their proposition was to address lovers of film, the actually technology being used being irrelevant.

A very lively presentation by **Fernando Evole, CEO of Yelmes Cines** really got the audience thinking about the future of cinema. He described himself as a second generation Spanish exhibitor who well understands how

the exhibition industry currently works, but who is taking a completely new approach. He introduced us to YouZee as an entertainment platform by moviegoers for moviegoers, saying that 'you choose when, you choose where, and you choose what you see'. He said that the rules of the cinema game are changing, and that current release windows are likely to become an irrelevance – piracy impacts all the windows at the same time, and release windows won't cure that. He believed that subscription VOD (video on demand) is the way to go, and that on-line cinemas might soon begin to offer Premium VOD, saying that the YouZee system effectively kills piracy. Three major themes emanating from YouZee are the building of communities and engaging with them, the collection and use of data – allowing you to understand your customers and their requirements, and entrepreneurship – don't let digital just 'happen' to you – take control. Fernando said that the cinema operator needs to keep looking ahead – he is looking for partners to replicate the YouZee business model in different countries.

Please switch on your mobile phone!

Addressing cinema operators, he urged them to move away from providing customers with a fixed, unchanging cinema offering where they get to see what you are providing that week, and to move towards a demand led business, something very different from what is on offer today. This led to some interesting discussions, and one idea that I found particularly interesting was to take note of the current behaviour of teenagers in cinemas, where they use their mobile phones and pads to send messages during a show. It was suggested that instead of 'tutting' and trying to change behaviour and stopping this from happening, a true entrepreneur might realise that the teenagers, the new Facebook generation, were demanding a different way of watching movies, and arrange to publicise one of the auditoria as 'phone and pad friendly'. In this screen everybody who wanted to would be encouraged to use their phones and pads whilst watching the movie, interacting with other people inside and outside the cinema, discussing the movie and generally having a great social time, without upsetting more traditional moviegoers who



could be watching the movie in another 'phone-free' screen. Perhaps the youth audience could be offered on-screen games in the interval, or as part of an interactive advertising package that would be sure to attract more attention than the usual ads. All this is quite a thought for the future, and it wouldn't take much to give the ideas a try!

Cinema of the future

At another interesting seminar, various industry experts focused on new technologies in projection, sound and cinema design. Although there is sometimes a feeling in the industry that once the process of changeover from film to digital in the projection room is complete 'that will be it' for several years, the truth is that the industry is undergoing a fundamental change. The technological changes will have implications for every aspect of movie operations.

The panel, including Tony Adamson of DLP Cinema, Rolv Gjestland from Film and Kino, Oliver Pasch from Sony, and Julian Pinn from Dolby, provided their thoughts and predictions on what is likely to happen next in the cinema business.

Sound is at the heart of the cinema experience and is sometimes overlooked. It went digital long before the image side of the equation and for 40 years Dolby has been at the heart of this progression. Keeping cinema's premium experience will be the key to its health over the next ten years, and with Dolby Surround 7.1 well on the way to kicking off this next decade, Julian Pinn of Dolby gave us an insight into the future of cinema sound as Digital Cinema takes hold. Julian started his 15 minute slot with a re-cap of the history of cinema sound, from Fox's MovieTone News reels to today, looking at both the successful and the not-so-successful innovations and what can be learnt from these. He finished off this history lesson with a summary of Dolby's recent work with Disney Pixar, which led to the launch of Dolby Surround 7.1 in June 2010 to just a 800 or so theatres - and already a year later the 7.1 theatre-count is in excess of 2100, with dozens of 7.1 titles already released or confirmed for release. One key lesson that history has taught us is that any new innovation must provide added value for content-creation and for distribution and for exhibition and for the cinemagoer. And all this with a carefully considered cost-benefit balance for each, and an understanding of how these elements of the industry work together technically and as a business. Julian then provided some glimpses into Dolby's recent research: its experiments at Skywalker on an 11.1 format using clips of The Incredibles courtesy of Pixar, and with Gary Rydstrom on a 13.1 format using clips of Avatar courtesy of Lightstorm. Both formats further the programme to find the most effective



tive way to add height and extra resolution to the surround sound theatre experience that's compatible with the way movies are made, distributed and experienced with Digital Cinema. Based on this early research on what works and doesn't, Dolby is now furthering its research in real cinemas to help ensure that any new innovation brings meaningful improvements to the creative palette that movie-makers can use to tell their story and wow the audience.

Oliver Pasch (above), Head of European Digital Cinema Sales at Sony Professional, closed the seminar with his presentation which was all about the statement that exhibitors need solutions, not products, for the digital future of their business, which included that provocative but fair point that "your first digital cinema projections system will not be your last", with reference to ongoing discussions about higher frame rates, brighter 3D projection etc., bringing us into the "beyond DCI" age. No surprise that Oliver had his own view on 4K whilst using the analogy that even if a lot of TV stations still broadcast standard definition signals, nobody would buy a non-Full-HD television set these days. Presenting various technology examples such as digital signage and face tracking systems, but also the very analogue slides for kids that CinemaxX have installed in their cinema lobbies, Pasch's main point was that it is all about the use of technology to enhance and differentiate exhibitors business.

Dolby's higher frame rate demo

As well as having a stand on the exhibition floor, Dolby had their own technical demonstration area in the RAI, a specially fitted out mini cinema with a Barco DP2K-23B digital projector fed from a Dolby DSS200 server.

The demo had been set up to show the practicalities of one of this year's hot technical issues - the showing of digital movies at higher frame rates than the normal 24fps. It was great that you didn't have to make an

appointment but could generally turn up and see the demo within a few minutes, and Projectionist Antonio Marcheselli was on hand to provide all the information needed to accompany the excellent Dolby pictures and sound.

We began with a standard 24fps presentation of a piece of specially selected test material showing a fast moving circus carousel featuring complex picture patterns and people wearing striped and patterned clothing, deliberately chosen to show up the strobing, judder, and 'moiré-type' effects which have been part of cinema since its inception. The shutter angle on the originating camera had been set to 135 degrees rather than the more usual 180 degrees, in order to provide sharper definition and to highlight these effects.

The pictures were deliberately very bright in this small cinema area, in order to highlight such problems, the projector being equipped with a 4K lamp run at 2.5K. The 24fps images from the server used the DCI max data rate of 250Mbit/s.

We were then shown a separately originated clip of the same carousel material which had been captured at 48fps, and again this was played from the standard Dolby server at 250Mbit/s, but this time at 48fps. There are thoughts that 48fps might require a higher data rate, and the Dolby server could cope with this, but care will have to be taken not to exceed the maximum bandwidth that the HDSMI interface can cope with. The 48fps pictures which we saw were 10 bit resolution 4-2-2, a limitation of the projection connectivity.

I have to say that the results from the 48fps demo were stunning – virtually all the undesirable effects disappeared completely and the pictures looked superb. I was particularly interested to see that, for some reason, the pictures still looked like 'cinema' - they certainly hadn't been transformed into TV-type images, which was a concern that I had

had prior to the demos. I asked Dolby if they could provide some images of the 48 fps v 24 fps carousel piece to illustrate the difference, but it is clearly next to impossible to provide a meaningful still image that illustrates motion artefacts.

However, I did receive the following description from Julian Pinn instead. "The human visual system is typically sensitive to flash-rates below about 48 – 70 flashes per second (fps) depending upon each individual, the light level of the stimulus, and the position of the stimulus on the retina. At 24 fps, 35 mm film projectors typically present each frame by flashing it twice in order to achieve a flash-rate of 48 fps, which is needed for the brain to fuse the images and not see flicker. However, this technique, whilst it saves on print, causes motion-artefacts that can be perceived as a doubling-up of the objects that are moving (a spacing apart that is greater the faster the pan or move). This artefact can be reduced or converted to a temporal blur if the camera shutter timing is adjusted to effectively integrate the motion over the complete 1/24 second. And this is actually how Digital Cinema effectively differs from 35 mm film insofar as it presents each frame for practically all of the 1/24 second period of time, avoiding the flashing problem because the DLP mirrors are flashing thousands of times a second anyway in order to create the correct pixel colour. So at best, 24 fps provides temporal blur that gets more noticeable the greater the distance an object moves between frames. At 48 fps, the temporal blur is much less obvious; the distance between frames of moving objects is halved and the rate presented is approaching the fuse rate of many individuals. 48 fps tends to offer very significant improvement over 24 fps for everyone; 60 fps offers some improvement over 48 fps for some people and further significant improvement for others who are more sensitive like me! 3D with one DLP projector requires flashing between image-channels and this challenges the low rate of 24 fps too. So the high frame rate initiative aims to remove the historical limitation of 24 fps, for the benefit of both 2D and 3D, so that cinematographers can pan without thinking about technical temporal limitations of blurring, doubling, or aliasing; any 'cinematic quality' effects can be added in as an artistic decision and not because of any unavoidable technical limitation."

The third part of the demos used the Dolby 3D system, and the images were probably the brightest 3D I have ever seen, and all the better for it. I never believed those who said that 3D is fine at 4ft Lamberts so long as it is mastered for that light level, and the Dolby demos at Cine Europe just served to confirm that - we fought for years to get our cinemas at 14fL, and we shouldn't accept less for 3D!

tions. It currently works at 24fps and 48fps and will be upgradable to 60fps. Rather than using a PCI Express extension cable, the Qube Xi 4K is Ethernet-based, allowing the projector and the server to be separately located, which could open up new possibilities for cinema design. The stand was also showing QubeMaster Xport, a DCP mastering plug-in for Final Cut Pro users and Qube KeySmith, a KDM management system.

The impressive **Sony** stand was packed with a whole range of products, from computers to displays of all types, the aim being to showcase not just digital cinema projectors but the much wider offering that Sony can bring to the exhibition industry, making it part of the wider digital entertainment experience that is Sony's core business. The message was that for Sony it is as much about content as it is about 4K projection. Digital Signage was strongly featured, with the multi-screen Ziris system demonstrating its flexibility, but Sony's Wimbledon Live 3D and its Computer, Music and Picture entertainment systems were also featured.

Unique Cinema Systems were showing their wide range of customisable software solutions for the management of digital cinema systems and were particularly pleased that Pearl and Dean had chosen its Advertising Accord campaign management and content distribution solution for cinema advertising. The Advertising AccordTM system combines a suite of modules, and at its heart is a complex rule based scheduler that is fully configurable by the sales and operations staff. It will allow P&D to continue to manage & schedule its existing 35mm screen portfolio whilst providing future proofed digital

content management and distribution.

USL had ads on the stand claiming that they are 'Cloud Ready' and offering an Ultra-Deal booth package, but technically what was probably most of interest was their Remote Theatre Manager System, a handheld remote device that can control your entire digital cinema projection system. It utilises a modular approach that allows direct communication with your digital-cinema equipment, which should not only save labour but also also improve your cinema operation. It is compatible with both new construction and existing cinemas, and work is ongoing to approve more manufacturers' equipment that will work with the RTM.

One of the brightest, most colourful and eye-catching stands was that of **Vista Entertainment Solutions**, which readers will know as one of the leading producers of software

for the cinema market worldwide. As well as information about how their software works for Box Office, Concessions, Back Office and Web Ticketing, the stand highlighted an innovative Vista Facebook application that allows people to organize a night at the movies with their friends, all from within Facebook. This Facebook application enables customers to look up showtimes, purchase (and pay for) tickets, make bookings with friends and check bookings, all from their Facebook page. Reserved seating is also a key function of the application. The Vista Facebook application is easy to add; users simply search for the application or accept an invitation from their friends. It is sure to appeal to the new generation of cinema goers.

Xpand 3D showed a new generation of active 3D cinema glasses that it claims offer lighter weight, greater transparency and higher

performance than any other 3D glasses. The new XPAND Infinity™ 3D Cinema Glasses offer pristine cinema image quality and long-lasting comfort. They feature greater transparency, which the company says translates to a 37% brightness improvement over previous models – and we are all looking for brighter 3D images. They offer a contrast ratio of 2000:1, claimed as the highest in the market, they weight just 56grams, and are powered with a replaceable CR2032 coin battery, with a life of 300 hours in Triple Flash mode. Xpand 3D say that while other 3D systems suffer a decline in performance as the viewer moves to the left or right from the centre of the screen, the XPAND Infinity 3D Cinema Glasses perform extraordinarily from any viewing angle, ensuring an optimal 3D experience no matter where the viewer sits in the cinema.



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Jim Slater takes a look at some 'alternative technology' at Sony

There is much more to cinema technology than 4K projectors at Sony



In recent issues we have discussed cinema signage and described how the traditional multi-sheet posters inside and outside our cinemas are slowly being replaced by huge video screens. These hi-tech solutions include software packages that allow for HD images of all shapes and sizes to be displayed, split across multiple screens, and the Sony Ziris Canvas system, shown here in use at a Vue cinema, is a good example of the breed.

Whenever I talk with Sony about their involvement in digital cinema it soon becomes apparent that their pioneering work in 4K digital cinema projection is just one modest part of a holistic company-wide policy to involve Sony products in all areas from origination, through production and post-production, to exhibition. It is a similar strategy to their aims in the consumer electronics market where they provide HD video camcorders, still cameras, DVD and Blu-Ray players, right through to large screen HD and 3D television displays.

What is the cinema connection?

On a recent visit to Sony HQ in Basingstoke I was initially surprised that, as part of a day talking with their various experts (I reported on my experiences of their Theatre Management System in the previous issue of *Cinema Technology*) I was invited to a session with Mr Yu Kitamura, European Marketing Manager, who wanted to talk about 'security systems for cinemas'. Having inadvertently, per-



haps, raised my eyebrows, wondering what this might be to do with *Cinema Technology* magazine, it soon became clear that there is far more to Sony's involvement with cinemas than their range of 4K projectors.

A wide range of camera kit

I was first given a demonstration of the latest security cameras that the company is offering as part of a solution to several different cinema requirements. The cameras, typical ones shown alongside, are small and easy to mount in a range of different situations. Some of the range can be mounted in 360 degree plastic domes for protection and concealment, and infra-red lighting rings are also available for use in the dark. The cameras

provide HDTV quality digital video images from CMOS sensors, in a range of different resolutions and frame rates, with higher resolution 3 megapixel images available from some.

Good images in difficult conditions

It is important that security cameras can work well in a range of different lighting conditions, and I was shown how the Sony View-DR Dynamic range enhancement system can provide good pictures even with strong backlighting. View-DR combines the power of an Exmor CMOS sensor with Visibility Enhancer software. The camera can take up to 120 pictures per second, and, as the diagram on the right shows, four of these pictures, each taken with a different exposure time, are then combined using a complex algorithm. The Visibility Enhancer software then automatically enhances the colour tones and brightness further. This feature is invaluable in scenes which suffer from strong backlighting, allowing the camera to be installed anywhere whilst giving brilliant picture quality in all lighting conditions. The technology will not introduce motion blur and does not limit the camera's frame rates or resolution.

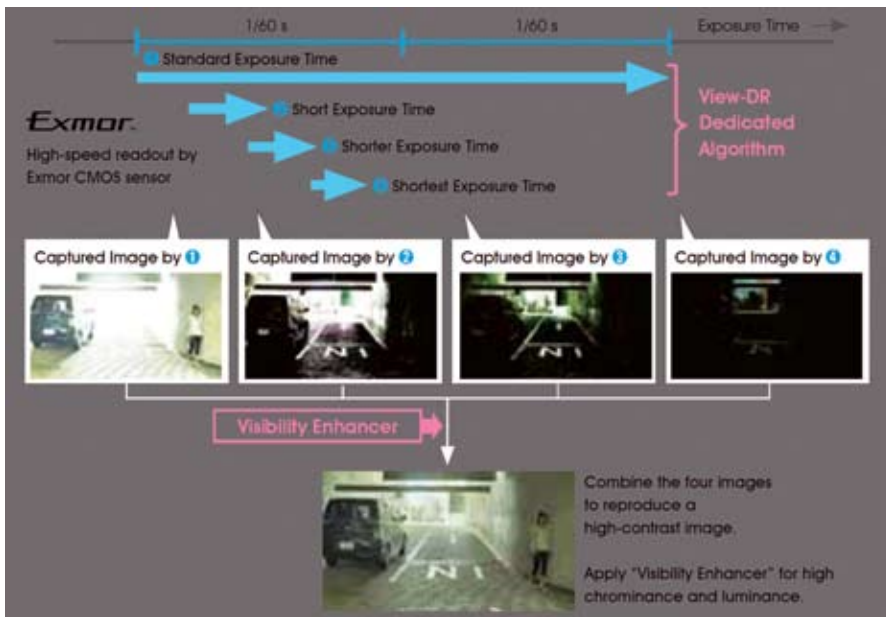
Data compression

Mr Kitamura said that standard H.264 data compression is used to provide high-quality video at a much lower bit rate than standard



MPEG-4 or JPEG. The use of this type of compression represents a significant benefit to network security camera operations, offering enhanced images with reduced bandwidth. Typically the H.264 transmissions from these HD cameras might be at around 1-2 Mbps, requiring perhaps a fifth of the bandwidth that the more familiar JPEG pictures would take. With better compression, stored files from the cameras will take up much less room on a server, potentially saving significantly sums in network storage requirements.





It is all networked

The cameras are connected to the cinema network, which uses a standard IP (Internet Protocol) system, via Cat 5 or Cat 6 Ethernet cabling. With Power over Ethernet (PoE) capabilities, the system enables cameras to be easily mounted anywhere, with just a single Ethernet cable connecting each one to the network. Such an all-digital system is ideal for new installations, but the company also has a hybrid solution that allows existing analogue security camera equipment to be integrated with the digital security network.

An intelligent system

Mr Kitamura was keen to tell me that the Sony security system, as well as being engineered around high quality cameras, involves a specialised intelligent video analysis software system that really allows cinemas to make the best use of their investment in the cameras. It is this intelligent use of the information that is the company's unique selling point, and I was given some interesting examples of the benefits that the use of such camera systems in cinemas can bring.

Intelligent Motion Detection (IMD) enables a cinema management to set up automatic actions based on specific movement parameters. The built-in IMD function can trigger a variety of actions for prevention, monitoring and apprehending people if required. For example, a particular motion pattern could trigger the activation of lights, alarms or other local devices through its output relays. Alternatively, it could prompt the storage and transfer of images for later analysis. False alarms caused by noise and repeated motion patterns are minimised thanks to an advanced Sony algorithm

Automated control

Video surveillance has historically been dependent upon human intervention and control, the system operator often providing the interface between alarm activations and required

actions. The introduction of intelligent video and alarm analysis provides a reduction in operator workflow by the addition of pre-configured alarms, linked to pre-programmed actions. As a result of its processor intensive requirements, video analysis can be cost prohibitive for many systems, but Sony's Distributed Enhanced Processing Architecture (DEPA) addresses this issue with an innovative design approach.

SONY DEPA is an embedded technology providing pre-processing of image data within its camera technology, processing of image data within its recording and monitoring solutions. Alarm and image meta data generated by the camera is transmitted on demand to the recording solution where appropriate alarm actions may be initiated.

This distributed architecture allows for intelligent use of network bandwidth and reduces potential bottlenecks.

Utilising SONY's Intelligent Motion Detection to determine real or environmental movement and further advanced algorithm to monitor the image for violation of a predetermined rule, DEPA provides highly accurate image meta data for recording and monitoring. A comprehensive range of enhanced predetermined alarm filters includes tamper alarm, virtual fence, tripwire, people counting and anti-loiter options. When used in conjunction with Sony video recorders and software, a multitude of filter functions are available. These allow a cinema to initiate alarms based on specific movements, such as passing a virtual borderline.

In the cinema

Examples of the use of the Sony security camera systems in cinemas, as well as the normal security camera functions, include:

- People counting
- Reduce theft and embezzlement
- Compare numbers of people entering the cinema with the number of tickets

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- People flow - see which areas are the most used, which areas are subject to queues building up
- Check for people using camcorders and mobile phones in auditoria
- Check people trying to re-use tickets - set off alarm
- Speed monitoring and traffic observation in cinema car parks
- Talking camera - triggered reminders to people to return 3D glasses
- Talking camera - say 'Thanks, have a nice day' as patrons leave the cinema

And, as the salesman always says when he has run out of ideas - other applications are only limited by your imagination!

And although Sony didn't suggest it, I would love to see a system where HD cameras are used to constantly check that cinema pictures are in focus and that the correct aspect ratio is being used - perhaps driven from the Theatre Management System - alerting the projectionist immediately to such problems. This becomes more and more important as a sole projectionist (or multi-skilled operator?) has to look after more and more screens as well as taking on an increasing number of tasks around the cinema.

Jim Slater