

one to one

GRANADA:
MAKING CLASSIC
CONTENT HI-DEF

3D FOR BD:
THE KILLER APP?

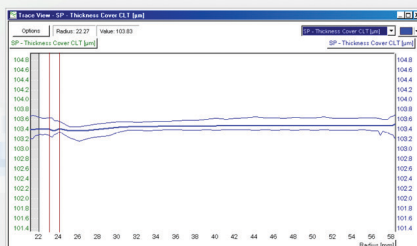
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■ LAST WORD ■ BARRY FOX ON STANDARDS ■ NEW PRODUCTS

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one to one Technology and business for media manufacturers

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A game based on a movie can boost revenue, but
it does not guarantee a success

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Toppin how it brings classic content into the
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could open up BD to a whole new market

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History shows that without standards, new
formats will not succeed. This has been proved
once more with ODS's EcoDisc

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Jim Bottoms of Understanding & Solutions
talks to Debbie Galante Block about the
future of Blu-ray Disc

editorial

It's all change this week, with company
mergers and people moving on.



I CAN'T START WITH ANYTHING but a sad
farewell to Lucy Wykes, the *One to One* group
advertisement manager, who has decided to
pack her bags and head to Bangalore for a
complete change from this industry. She is
going to be voice, accent and culture trainer
for Infosys, so will be part of a large language,
communication and training team of a leading
offshore business processing solution provider.

Lucy joined the magazine in 1997, at which
time she was a freelance ad salesperson and I
was deputy editor. There seemed a certain
inevitability that some day she would be in
charge of the ad department while I took the
role of editor. I'm just sorry that our time as a
team has been relatively short, and I am sure
the huge circle of industry friends that Lucy
has built up will join me in wishing her the
very best of luck in her new endeavour.

There have been a lot of changes at the
magazine and in the industry since I stepped
over the *One to One* threshold back in 1994.
However, one thing we all end up saying, along
the lines of the *Godfather* movies, (or *The
Sopranos*, depending on how you look at it) is:
"Just when I thought I was out... they pull me
back in". On that note, hopefully we will see
Lucy back in the optical media fold one day.

Also on that note, Paul Reynolds, whom
many of you may remember from some years
back when he first worked on *One to One*
magazine, will be returning to the fold. After
working on publications in a number of areas,
Paul is keen to take up the opportunities and
challenges of the new Blu industry.

On the subject of the Blu industry, it seems
that, despite all the reports about the China-only
hi-def format, many leading Chinese companies
are signing up for Blu-ray, and are showing a

keen interest in the
format. (See lead
news story on page
5.) There seems to be a generally increasing air
of optimism from most people I speak to
that – provided we prevent any under-capacity
problems, don't drop margins too much too
quickly, and educate everyone properly across
the board – there is a good chance that Blu-ray
will provide a boost to what have been flagging
fortunes of late.

That is not to say that there is not still life
in the DVD format globally, as our story on
South Africa (page 6) shows.

And speaking of late, as in this editorial text
being way past its deadline, sometimes that is a
good thing. I've just had word from
Understanding & Solutions of a merger
between that company and Decision Tree
Consulting (DTC), creating a new market
tracking and consulting organisation. The new
company, Futuresource Consulting, will be
headquartered in the UK, and full details are
also on page 5.

The downside of this breaking news making
it straight to press is that, in addition to being
the 'last word' interviewee, Jim Bottoms is
quoted extensively throughout the magazine,
so all the references to Understanding &
Solutions are now slightly out of date.

Still, an overall positive result, I feel; I wish all
the people at Futuresource the very best and
look forward to continuing the great
relationship that *One to One* has enjoyed with
Understanding & Solutions for many years.

Elizabeth Toppin
editor

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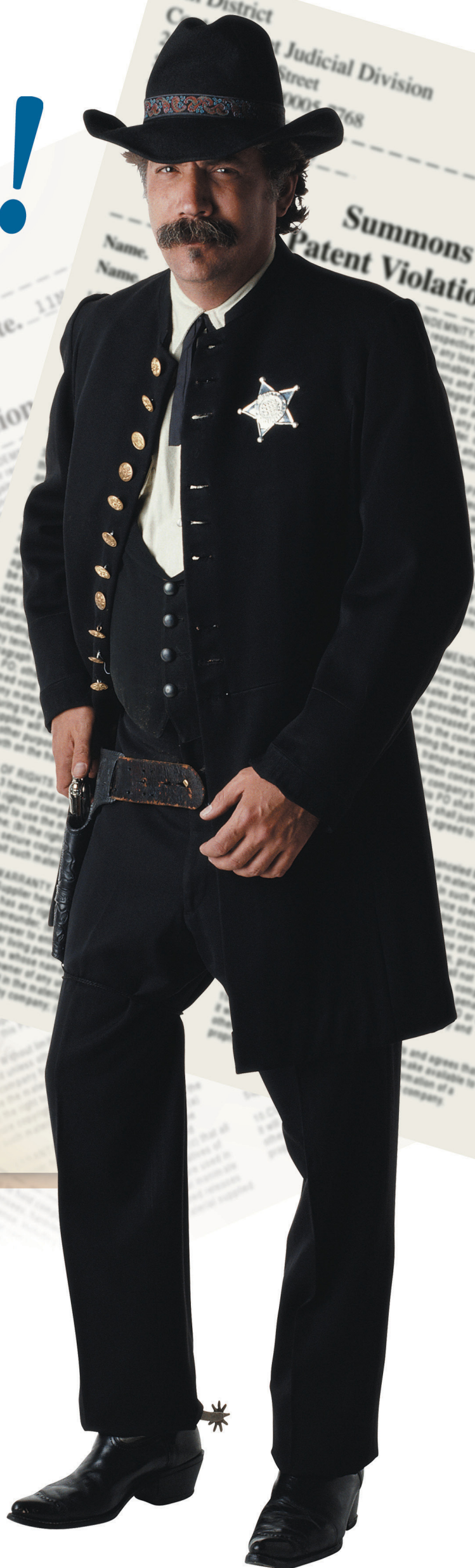
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China companies sign up to BD

RECENT NEWS INDICATES that Chinese interest in BD format is growing, as the Blu-ray Disc Association (BDA) reports that 11 high-profile Chinese companies, including TCL, Malata and Desay, have been authorised to produce BD media and players as of next year.

According to the BDA's China Promotions Taskforce, the BD victory in the format war led these companies to sign up to the BDA, membership of which now stands at 187. This adds up to the BDA having signed over 190 licence agreements and indicates "the high number of companies globally that are developing products and services based on the Blu-ray Disc format".

One to One sought further comment from the BDA about how continued Chinese interest will affect the format's success. According to Victor Matsuda, chair of the BDA's Global Promotions Committee, this is very a good sign. "The BDA has always believed that a

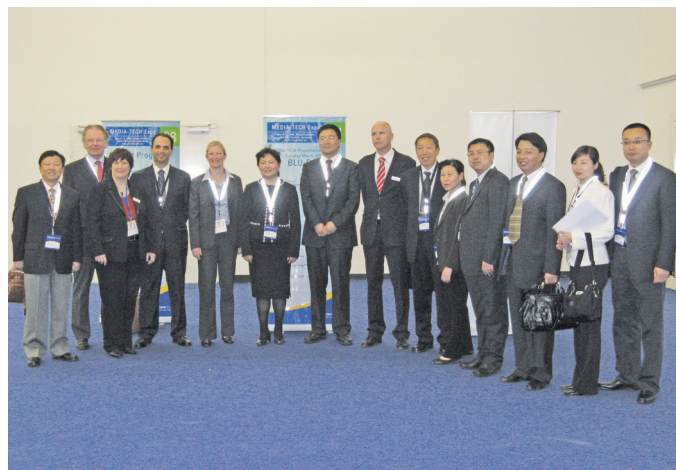
worldwide standard best serves the entire industry, so it's particularly gratifying to see Chinese manufacturers beginning to embrace the BD format," Matsuda stresses.

"We have made a significant effort to promote Blu-ray in China through the formation of a special task force to help spread the word about the format through numerous format seminars, press events and trade show exhibits. All of this has helped to increase Blu-ray Disc's profile in a country that hosts significant manufacturing presence in the electronics industry."

Part of this spreading the word took place at the recent MEDIA-TECH Expo in Frankfurt, where a delegation of executives from the Chinese government attended the show as guests of honour. Members of the MEDIA-TECH Association (MTA) board, along with Frank Simonis of Philips and the BDA Europe, took them on a tour of the show floor, following which they attended some of the presentations.

"Since the first discussions of China developing its own hi-def media format, the MEDIA-TECH Association and the Blu-ray Disc Association have realised the importance of working with the Chinese government to encourage more investment in BD," says MTA managing director Bryan Ekus.

Global adoption of BD should indeed be good for the industry in general, Matsuda adds: "More manufacturers supporting Blu-ray on a global basis provides significant benefits. First, a broad range of

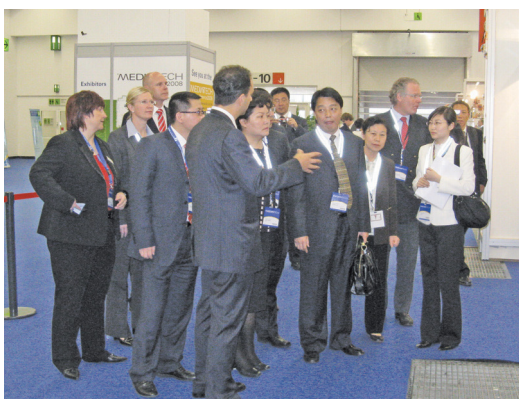


The delegation from China at the MEDIA-TECH Expo

brands means a wider range of products for consumers to choose from, which also tends to reassure them that Blu-ray is here to stay and is a safe investment. Of course, more competition among manufacturers is also a benefit because products that appeal to many different consumer budget levels tend to appear on the market, thus expanding the market size.

"Finally, by having a single format that's supported around the world, we can expect greater efficiency – as with DVD, Blu-ray now provides an opportunity for everyone in the industry to put their creative energy into moving all consumers in a common high-definition content direction without wasting resources arguing about opposing formats."

www.blu-ray.com



Beginning the tour of the show floor in Frankfurt

U&S in merger

UNDERSTANDING & SOLUTIONS (U&S) and Decision Tree Consulting (DTC) have signed a merger agreement that will, say the companies, create a major new market tracking and consulting organisation – Futuresource Consulting. All key people from both companies will continue to play defining roles within the new company.

"The combination of our two companies ensures we will continue to deliver the highest level of service to our client base, while extending our expertise across the entire research and analysis chain," says Sarah Carroll, director strategy consulting & continuous services.

"We are pleased and excited to join forces with Understanding & Solutions," says Tony Bicknell, managing director, business development. "U&S's market insight and unsurpassed forecasting skills will take our pricing monitors and real-time research systems to the next level."

One of the key client benefits of this merger, say the senior executives, will be the integration of the two companies' complementary methodologies. DTC's data manipulation and presentation software will form a solid bedrock for U&S's forecasting capabilities.

"A number of shared clients already combine DTC and Understanding & Solutions' expertise to ensure the market knowledge, forecasts and strategic support that they access delivers the best possible results," says Jim Bottoms, managing director, corporate development. "This merger will provide these full benefits across our complete service range. The integration will enable us to build on the expertise that we've developed in the past 20 years and will be another major step as we continue to explore further growth opportunities."

www.futuresource-consulting.com

Lucy Wykes leaves *One to One* group

LUCY WYKES, THE *ONE TO ONE* group advertisement manager, will be leaving the magazine after more than 10 years of working across the group titles, particularly on *One to One*, *MediaPack*, and *The Gold Book*. She has also been involved with the various digital products introduced during recent years. She will be taking a completely new challenge outside of the industry, working with Unisys in Bangalore as a voice, accent and culture trainer.

"Lucy and I have worked together in one way or another for more than a decade, which sounds scary but has been great fun," says *One to One* and *MediaPack* editor Elizabeth Toppin. "She has been a well-known face at all the major trade shows over the years, and has been a great ambassador for the group's titles. Lucy's contribution has been invaluable, and she has built up many excellent working relationships over the years."

"I'm sure our readers and advertisers will be as sorry to see her leave as I am, and I wish her all the luck in the world in her new and exciting venture."

This is the last issue of *One to One* magazine to carry Lucy's name on the masthead. She will be replaced by Paul Reynolds, who has worked for the *One to One* group in the past, and who will be taking up the post of sales manager with immediate effect.



A farewell toast from Lucy Wykes

"I've thoroughly enjoyed my time with *One to One*. It has been a pleasure to work with Elizabeth and all the people who have supported the magazine," says Lucy.

"I have met so many people and made many friends over the past 10 years, and it has been great to be a part of the optical media industry throughout all these exciting and challenging times."

www.oto-online.com

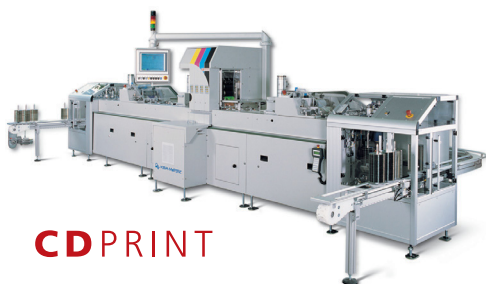
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DVD growth in South Africa

WHEN IT COMES TO OPTICAL MEDIA, South Africa rates as a true emerging territory and the potential growth for DVD is enormous. *One to One* was given an insight into this emerging market by Tom Peet, general manager manufacturing at Replication Technology Group (RTG).

"With a population of 47 million, DVD player penetration at 13% is still very low compared with more developed countries," says Peet, "but with a sense of great enthusiasm and an improving economy the future for DVD penetration in the coming years is very bright."

Currently the growth rate for DVD sales is around 15% a year and set to increase. "This is historical growth for the past few years. As an emerging country DVD penetration in South Africa is still well below developed countries at under 15% of households, but the format is set to continue forward despite economic challenges."

RTG employs over 130 permanent staff, and a casual workforce flexed to demand; it provides a full range of services all under one roof at its 15,000 square metre site. These include CD and DVD, and even audio cassette, with content including movies, music, corporate, promotional and government work, and games.

RTG has capacity of around 15 million DVDs and 6 million CDs annually, says Peet, and apart from the usual seasonal and title-driven fluctuations, the facility usually runs at around 60% of that capacity.

"Our customer are mainly local distributors," says Peet, "however we are expanding our warehousing and distribution services and looking to attract more international studios." RTG has about 20-25% market share in South Africa – a figure set to



The RTG facility in Johannesburg

increase with new acquisitions, details of which could not be released just yet.

South Africa's troubled political history still has an effect when it comes to business and manufacturing, says Peet: "The appalling apartheid era officially ended in 1991, but the scars will linger for many years to come." One way in which RTG was able to make good progress was in a number of initiatives introduced by Peet to create a rapid change management programme.

"As always, change programmes are difficult and can be strongly resisted, but I must say the directors, staff and employees warmly embraced the need for substantial process improvement."

This programme was largely rewarded in May when RTG was awarded with ISO9001:2000 accreditation which, says Peet, now sets the company on course for significantly increased volume as a world-class manufacturer.

www.reptg.co.za

For your diary

JUNE

23-26 Cinema Expo International – Amsterdam, The Netherlands
www.vnuifilmgroup.com

24-25 HD Masters – London, UK
www.hdmasters.com

AUGUST

11-15 SIGGRAPH – Los Angeles, US
www.siggraph.org

29-3 September IFA – Berlin, Germany
www.ifa-berlin.de

SEPTEMBER

3-7 CEDIA, Denver, US
www.cedia.net

11-16 IBC – Amsterdam, The Netherlands
www.ibc.org

17-19 Popkomm – Berlin, Germany
www.popkomm.com

30-4 October CEATEC – Tokyo, Japan
www.ceatec.com

OCTOBER

13-17 ShowEast – Orlando, US
www.vnuifilmgroup.com

FEBRUARY

3-4 MEDIA-TECH Conference 2009 - Los Angeles, US
www.media-tech.net

APRIL

21-23 MEDIA-TECH Expo 2009 – Frankfurt, Germany
www.media-tech.net

Shorts

Singulus bullish about Blu-ray

Singulus Technologies has reported good success with BD line sales, with orders for 21 BD50 machines received in the first quarter of this year, and further orders following in Q2. Stefan Baustert, CEO, says: "This means that the orders for Blu-ray in the first year of the dual layer technology already by far exceeded the volume at the start of the DVD 11 years ago, with 17 machines."

Singulus says the acceptance of Blu-ray has been increasing since the end of the format war. "With respect to the business prospects of the future Blu-ray market," says Baustert, "the Blu-ray Association forecasts a significant increase in volumes sold during the second half of 2008."

www.singulus.de

Taiyo Yuden acquires JVC share

Japanese optical disc maker Taiyo Yuden has acquired 65% of JVC's recording media unit – a move analysts say is the latest example of consolidation and restructuring, as media manufacturers try to survive tough competition.

Japanese media manufacturers have been hit by steep price falls and cheaper alternatives from overseas, and have been forced to restructure. JVC is also scaling back or selling non-core businesses. The recording media business, which makes magnetic videotapes and optical disks, was due to be spun off on 1 July with Taiyo Yuden acquiring a majority in the new company on 1 October.

www.t-yuden.com

Luck is not an option



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Springtime in Paris: PEVE and optical media

WHILE THE 300-PLUS PEVE 2008 delegates congregated at the Maison Internationale at the Cité Internationale Universitaire in Paris, designed and built in 1936 as a replica of the Château de Fontainebleau, their attentions were very much turned to the future of packaged media in a changing marketplace. Now under the sole stewardship of Screen Digest, the conference remit was broadened to include, in addition to traditional topics on packaged media retailing, panels on digital delivery platforms, video games, manufacturing on demand, and even 3D home entertainment. And, of course, Blu-ray.

It was fitting that it should be Ron Sanders, president of Warner Home Entertainment – the studio whose decision to join the Blu-ray camp triggered the series of events that led Toshiba to throw in the HD DVD towel – who opened the proceedings. He forcefully put the case, with a battery of statistics, for why consumers will be breathing the Blu air sooner rather than later. Screen Digital forecasts there will be 45 million standalone Blu-ray players and 25 million PlayStation 3 consoles in homes by 2012, translating into 40% of TV households in Europe.

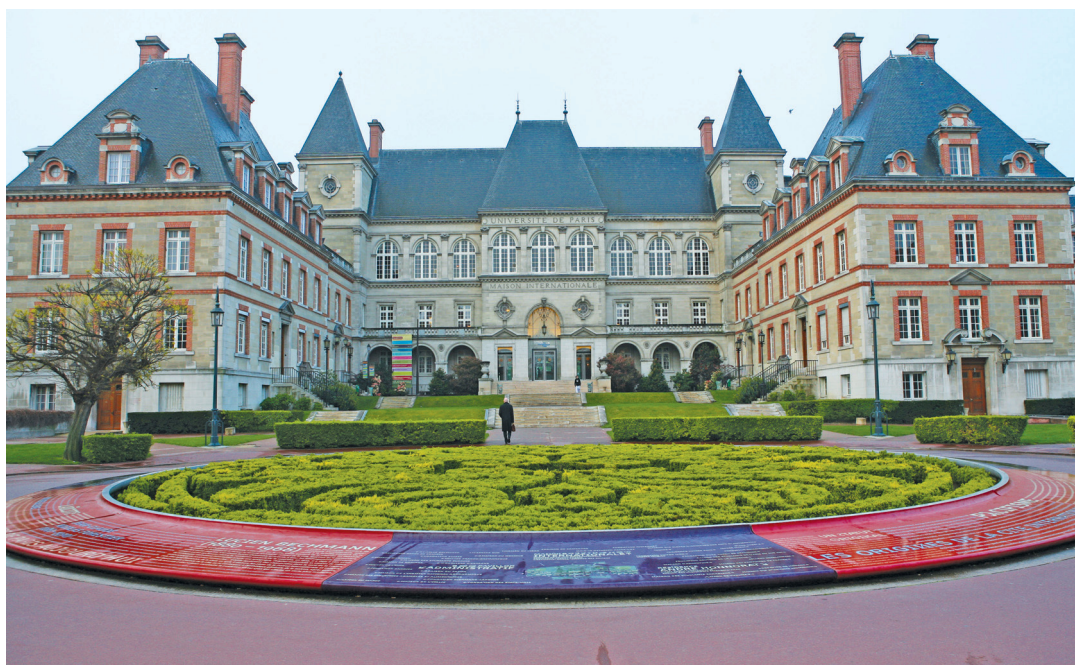
To achieve this objective will require “converting PS3 owners into Blu-ray movie watchers”, said Sanders, in an interesting new strategic twist in the ongoing debate regarding how to build the Blu-ray market. This is a tall order according to some recent UK data showing that the number of BD movies purchased by PS3 console owners (the so-called attach rate), already below one copy per user, is falling with the arrival of richer pickings in PS3 games.

Sanders and fellow keynoter Matt Brown, EVP international for Sony Pictures Home Entertainment, urged delegates from across the industry to capitalise on Blu-ray Disc’s ability to fill what Brown called the HD content gap – the fact that Screen Digest data shows that by 2012 75% of European HDTV households will still not be receiving HD broadcasts.

Kim Hansen, product area manager for Denmark’s Co-op, warned that some BD products released so far were very bad. “Quality will be critical to encourage regular consumers to jump to HD, past the early adopters. You need to explain to consumers why they have to pay €40-€50 per BD title when regular DVDs can go for so little.” Hansen reckons it will take longer than the three years usually cited by optimists for Blu-ray to reach 40% of the market.

HOW LONG A BLU-RAY MOVIE will maintain its premium price and the corollary, its perceived value, are questions that exercised the mind of many. The answer has a bearing on the publishers’ commitment to producing advanced, web-connected material, a key unique selling proposition of the BD format. It also has a bearing on independent replicators’ commitment to heavy investment in BD lines if margins drop quickly.

“My plea is to look carefully for what’s to be done to make it successful,” exhorted Frank Simonis, head of the Blu-ray Disc Association Europe. “HD screens are penetrating the market fast. People are



PEVE venue: the Maison Internationale at the Cité Internationale Universitaire, Paris

getting hungry for Blu-ray as the best source of high-definition content. The industry needs to make sure it can deliver this perfect quality.”

THE RAPID FALL IN THE PRICE of DVDs is a worrying precedent, and a similar trend is unavoidable, delegates were told. The UK illustrates the worst-case scenario, according to Lloyd Wigglesworth, former MD of the largest independent distributor, Entertainment UK. There, some 30 million DVDs were sold for under £3, and 50 million were free cover mounts. “UK supermarkets have been selling blockbuster titles such as *Casino Royale* as loss leaders for £7. This undermines the one or two week premium price buzz.”

David Stevens, VP international marketing Europe for 20th Century-Fox Home Entertainment, described price as a double-edged sword. If BD is too expensive, people will turn to something else, such as games or digital downloads. “Look at supply and demand: last year, 10,000 DVD SKUs were put into the market and it was a flat market. That is on top of the 275,000 titles already there. There will be price degradation; we cannot control the price, we have to live with it.”

Jim Taylor, senior VP and general manager, advanced technology group, Sonic Solutions, went even further. “Price will erode even faster than with DVD. This is partially because the studios benefited from the incredible growth of DVD and now it has plateaued. They need something to replace that. Such is the pressure to maintain revenue that any temptation to lower prices to improve market penetration will be hard to resist. This includes letting retailers use BD discs as loss leaders.”

A recurring theme was the need for the industry to ramp up BD replication capacity fast enough to meet such a potential increase in demand. The onus is on independent replicators, but so far only Germany’s Infodisc, France’s QOL, and

LaserVideo in Russia have committed the large investment needed to install BD50 lines. Given that Sony DADC dominates (less generous observers said monopolises) BD replication in Europe, it takes some courage for smaller players to commit the huge investment required, not knowing how fast BD will develop and how long discs will maintain their premium price.

Michael Gutowski, MD of Infodisc – sadly the lone European voice for the panel on the future of the high-definition format – tackled this issue. He recalled that, at the start of DVD, Warner’s manufacturing arm, WAMO, created an affiliate system for DVD production. “It decided to manufacture only 60% in-house and offload 40% to the affiliate partners who got certain territories. It was nice. At the end of the 1990s it was the most successful story to tell to promote the format. Maybe it would be worth having a few thoughts on a system like that for Blu-ray.”

Gutowski also addressed the high cost of AACS copy protection – a concern among smaller, independent industry players. The compulsory AACS licence costs \$25,000 plus a \$1,400 certificate per title. “I am pro-content protection. But if a test disc has glitches and needs to be redone, you have to pay the fees again. It cannot be right. It’s very difficult to understand why I have to employ two American lawyers, one in New York, the other in Los Angeles, to sort out a 105-page AACS contract.”

The BDA’s Simonis said a letter was sent to AACS asking it “to be supportive and cater for smaller territories than the US, and to address the many European languages. It should be more market responsive, customer driven.” A timely statement emailed by the AACS office to the conference organisers addressed some of these concerns. This said, in part: “We have already taken several steps to address these concerns related to cost.”

Written by Jean-Luc Renaud

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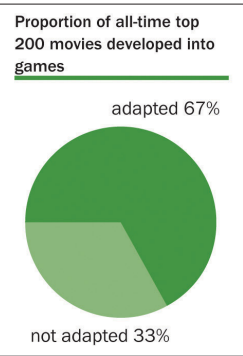
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BOOKINGS CLOSE SOON.

Fun and games or cash and games

A game based on a movie may add to a title's revenue, but it does not necessarily make it a hit game

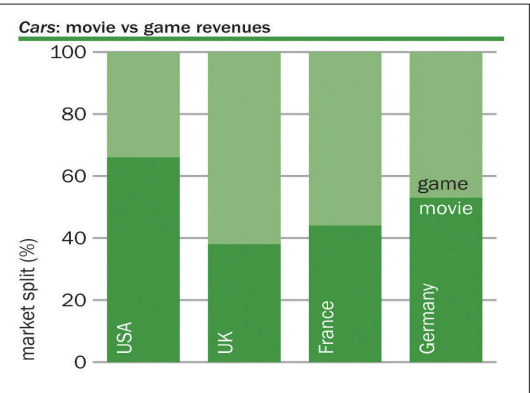


Top movies as games
Source: Screen Digest

According to research by Screen Digest and analysis by Vivendi Games in France, there is a clear relationship between box office success and the adaptation of movie IP into video games. Of the top 200 movies, based on worldwide box office takings, 67% have been adapted into video games. For the top 30 titles this proportion rises to 90%.

The idea of adapting movie IP to video games goes back to the early 1980s with games based on *ET: The Extra-Terrestrial*, and *Star Wars: The Empire Strikes Back*. However, says the research, consumer spending on movie-based games increased by 50% between 2003 and 2007, generating about €1.2 billion across all game platforms in the US and the three largest European markets (France, Germany and the UK) in 2007. According to Screen Digest data, this compares with 15% for the games market overall.

For movie producers, video games offer a lucrative opportunity to exploit existing IP beyond the traditional movie value chain, says Screen Digest. Games developers are guaranteed a large potential audience for titles



Revenue splits
Source: Screen Digest

based on movie IP. And both parties stand to benefit from cross-promotion of the two platforms, with the launch of tie-in games generally timed to coincide with either the theatrical or DVD release of the relevant movie.

However, using movie IP certainly does not guarantee a hit game. In 2007 just six of the 30 bestselling video games worldwide were based on movies, and only 12 of the top 100. Overall, Vivendi Games estimates that movie IP accounts for 10% of the video games total volume sales worldwide.

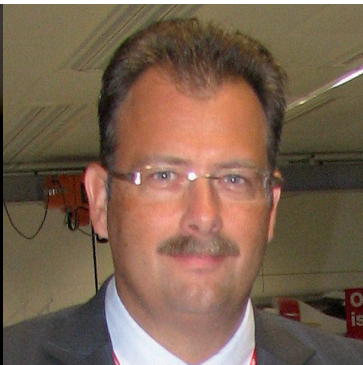
Nonetheless, a successful movie-based game can sometimes generate more revenue than the film's box office takings. US games publisher THQ's adaptation of Pixar movie *Cars* (ranked 26 in the worldwide games Top 30 in 2007) generated more through games sales than at the box office in both France and the UK. However, if DVD revenues were taken into account, the

Highest-grossing movies based on games IP			
	released	world box office	
			\$m
Lara Croft: Tomb Raider	2001	274.7	
Lara Croft Tomb Raider: The Cradle of Life	2003	156.5	
Resident Evil: Extinction	2007	147.7	
Resident Evil: Apocalypse	2004	129.4	
Resident Evil	2002	102.4	
Hitman	2007	98.2	
Silent Hill	2006	97.6	
Doom	2005	56.0	

Money-making movie games
Source: Screen Digest

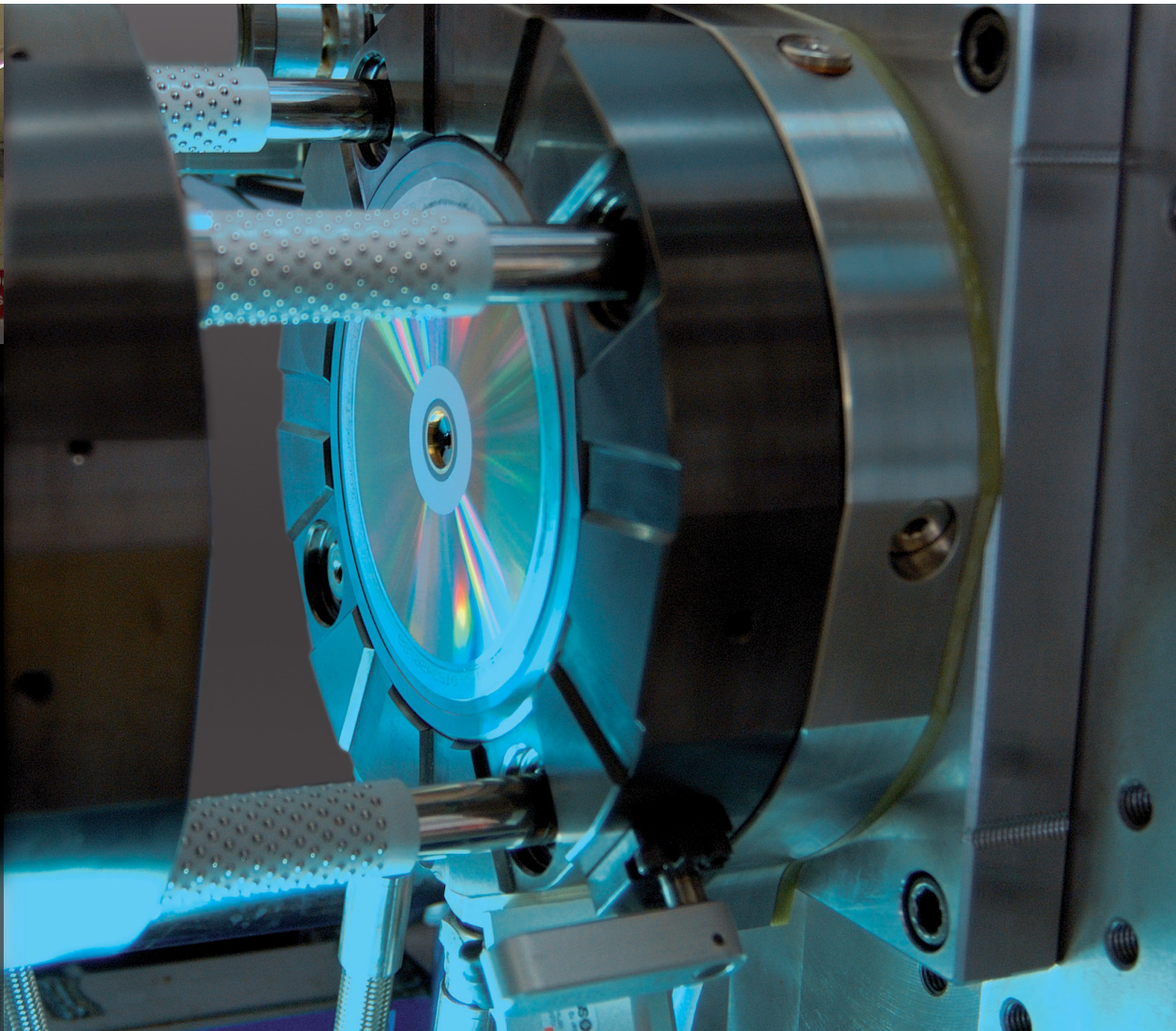
video game's share of the total IP revenue would be much less significant.

To date, movies based on games IP have produced relatively modest box office returns. Paramount's *Lara Croft: Tomb Raider*, released in 2001, remains the highest-grossing games-based movie, generating \$274.7m at the box office worldwide.



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The Blu buzz in Frankfurt

While recovery from the format war may be slightly slower than some people had hoped, there was a definite air of optimism at the recent MEDIA-TECH Expo in Frankfurt, as *One to One* discovered



Keynote speech by Dieter Daum of Sony DADC

THIS YEAR'S EXPO WAS, on the one hand, a reflection of a shrinking industry, with much less floor space than at the show last year in Long Beach. On the other hand, that was a function of smaller booths rather than fewer exhibitors – according to the MEDIA-TECH Association, there were the same number of exhibitors as last year, but many companies elected to go for less floor space.

Attendance, however, was way up compared with last year – a statement we haven't heard for some time in the industry. While visitor numbers for last year weren't released, this year there was a total of just over 3,000 registered visitor badges, with roughly 2,000 other participants, such as exhibitors, press, organisers and speakers. The networking party was a huge success and went on well into the evening, despite sponsorship ceasing early and a cash bar taking over.

On day one, the MEDIA-TECH Association board played host to a delegation from China, with a number of government officials interested in learning about Blu-ray Disc technology and how it might be a better solution for that country than a China-only hi-def format.

"These are all positive indications that there is still life in the optical media industry, and reinforces the need to keep the equipment show in Europe," says MEDIA-TECH Association managing director Bryan Ekus.

The name of the game this year was indeed Blu-ray Disc, this being the first major industry equipment show since the resolution of the format war. Reactions from exhibitors and attendees overall were positive – most companies had full appointment books throughout the show and were hopeful of turning some of their conversations into deals.

Many companies reported a good level of buying activity from Russia, set to be an area with good potential as it is one of only three European countries to date with independent BD replicators.

While Singulus had already launched its BD50 line at an event in its German headquarters, Anwell took the opportunity to show its own BD line on an invitation-only basis, with screens to prevent the wrong eyes from examining it. The sale of a BD line to Expedia Media, an independent replicator in southern California, was announced. The replicator also purchased systems from ODC Nimbus and DaTARIUS.

Singulus also reported a number of sales for its systems across the formats, from CD through to BD, including the sale of a DVD line into the United Arab Emirates. Anwell announced the sale of a DVD line into Spain, and M2 announced a sale of its SQM mastering system to MediaChain of Korea.

INTERESTINGLY FOR A MACHINE SHOW, there was not as much emphasis as might be expected on new equipment launches – it really did seem to be largely about networking. The huge turnout for the first night party certainly bore that out. "In fact," says Ekus, "in an informal survey of some members exhibiting at the show, nearly all agreed that the networking party should continue, with more than half of those companies willing to pay slightly more for booth space to fund a party."

With the show having been planned before the format war resolution, the MTA had worked hard to make it an event with something for everyone – in addition to a planned Blu programme on the first day, there was also a Green Day (environmental packaging and photovoltaic) on day two, and a Purple Day (Organic LED) on day three.

In a departure from previous years, there were no formal workshops or product demonstrations; all presentations were given in the central Presentation Theatre on the show floor. In addition, Sony DADC ran its Blu-ray Roadshow for the first and second days of the event, providing demonstrations of the true power of proper high-definition sight and sound.



Lacquer Bonding

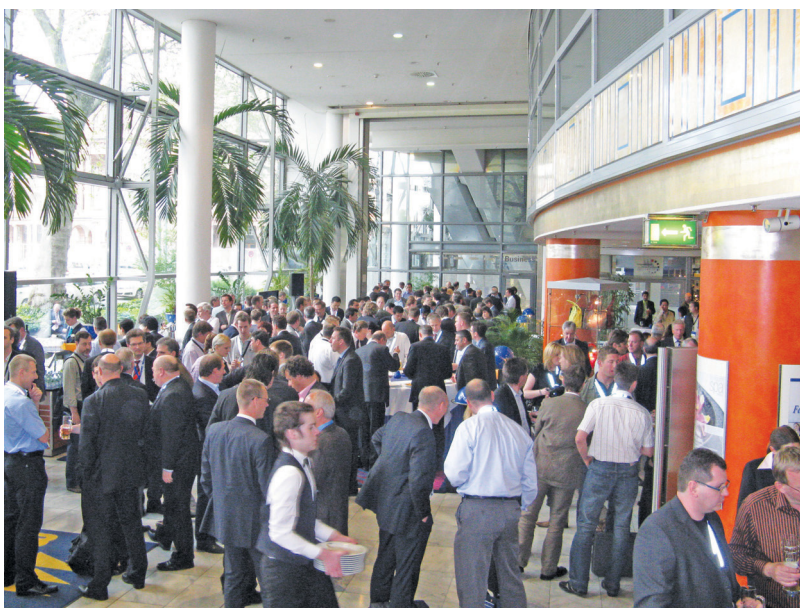


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Networking is key: the first night party

The keynote speaker on Day One – Dieter Daum of Sony DADC – exhorted the industry to take heart in the prospects offered by BD: “Blu-ray has captured the hearts of the consumers,” he told the audience. A choice of manufacturing systems, coupled with the increase in independent replicators moving into the format, is a good sign.

On the down side, according to Daum, there may not be enough capacity to satisfy the demand that he expects to see later this year. “Current industry investment does not keep up with demand and supply. Shortages for sure will drive studios and consumers online.” This means, he stressed, that it is the responsibility of the replication industry to make sure that the required investment will be there in this year’s peak season and the peak seasons to come.

Other Blu speakers giving overviews of the industry and prospects included Frank Simonis from the Blu-ray Disc Association (BDA); Richard Cooper of Screen Digest; and Jim Bottoms of Understanding & Solutions. Simonis introduced the BDA, its remit and its vision going forward with one hi-def format. “The main issues for 2008 are to rapidly increase both the player market and replication capacity,” Simonis stressed, along with working towards efficiency in the authoring process.

Cooper from Screen Digest painted a potentially profitable future for BD, with unit sales of DVD set to start rising again as consumers take up Blu-ray: unit sales should recover as consumers switch to Blu-ray, with BD accounting for one in three sales by 2011, according to Cooper. While consumer spending has been declining since 2004, this trend could be reversed – provided the price premium is maintained. A similar picture was painted by Bottoms, who also believes BD sales are set to explode, with sales of over 600 million discs by 2011 in the US (450 million) and Europe (180 million). By then, all titles in the US are likely to be BD-Live enabled.

The Green Day drew a variety of people – the Green Packaging Summit (moderated by *One to One* and *MediaPack* editor Elizabeth Toppin) included 12 speakers from leading packaging companies. Environmental concerns, largely driven by Wal-Mart in the US, and putting green pressure on the



The AudioDev team takes a break before the networking party

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The Tapematic team – success with digital print

studios, are the main focus for companies in the business of making media packaging. Different speakers outlined different aspects of the 'green wave', along with various solutions and, indeed, raised a number of questions themselves. One of the recurring themes, which seemed to be upheld by most speakers, was that there is no single, simple solution to green packaging. It's not a case of paper is better than plastic, or recyclable

What the exhibitors said

Silvio Perez, M2: "We are expecting a good show – all of our sales people have full appointment books and we are hoping to turn those appointments into orders."

Reto Morger, Netstal: "We have been very busy meeting with customers. These have all been existing customers, interested in learning about the technology of our products, rather than new customers. Netstal definitely still believes in the market and we want to be a part of this industry."

Bob Hermann, Concept Finishing Services: "We've sold two machines at the show – one to the UK and one to Russia. Of those, one was a new customer, and we have had a huge number of enquiries so far at the show. This has been very successful for us."

Leonard Beckmann, Epson Europe: "We have had a great deal of enquiries and made a lot of contacts. Shows like this are very useful to help us learn what our customers are looking for."

Barbara Pierini, Due Cie: "The show is small but it has been very worthwhile attending as we have had many visitors."

Marianne Sernevi, AudioDev: "We have had lots of discussions and we have a reasonable expectation that people will start investing. We have seen customers from all over the world. The networking is the important thing at the show: even the bigger companies are tending to take smaller space and show less equipment now."

Ron Goodwin, Tapematic: "This has been a good show. We sold one machine and we have seen customers from across the globe. The presentations have been good and well-organised, with some interesting topics being discussed."

Rie Akine, Lintec: "It has been good having the show in Frankfurt again. We have seen a lot of replicators who are now looking at how to make BD, and who are interested in our film technology rather than the spin-coating process."

Maria Bosolotti, MIP: "This is always a good show for us, and a useful way of meeting people. This year it has been very busy for us, so we are very pleased."

Grant Bowden, technotrans: "It is a relief to see a winner in the format war and this has had a huge impact. People are generally upbeat and we have had a lot of enquiries at the show – more than we expected."

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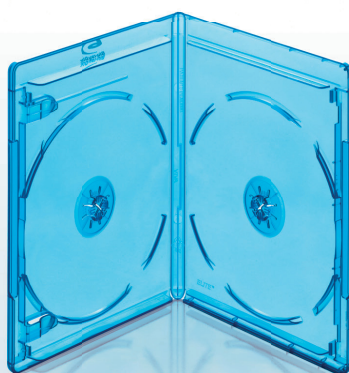


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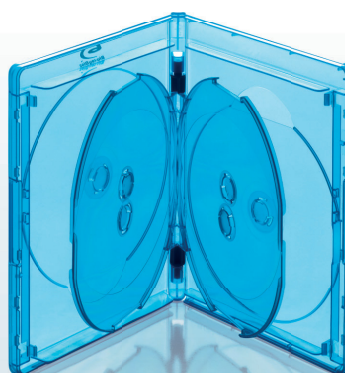
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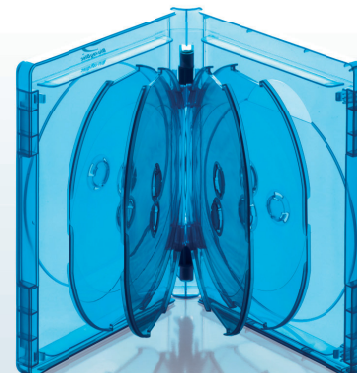
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The One to One team setting up for the show

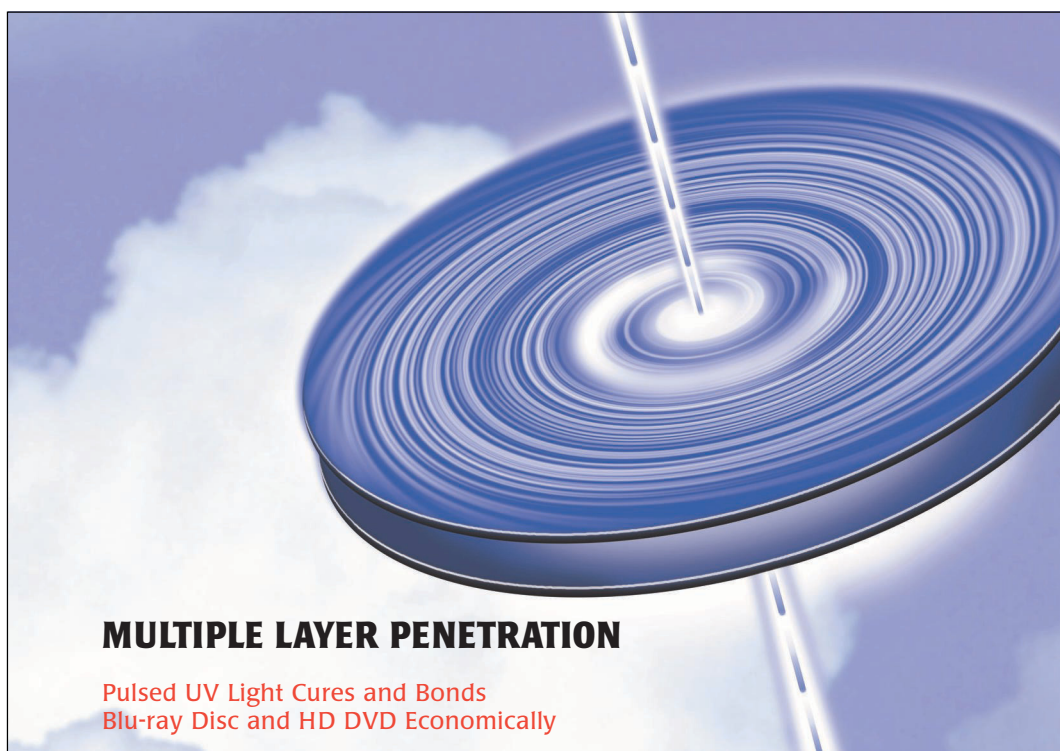
is better than biodegradable – there will need to be different solutions for different audiences.

The Green Day also provided a number of presentations on the solar industry, as many optical media companies look at moving into this arena. "We wanted to make sure we provided something of interest for all our members, exhibitors and visitors," says Ekus. "However, while there is a great deal of interest in solar from this industry, a new photovoltaic association has recently been established, so there will not be any solar presentations at future Expo events."

The Purple Day also proved quite popular, particularly with print companies that are looking at the printed electronic applications of RFID. In fact, the Expo badges this year were a test by PolyIC, using a new printed RFID technology. The badges allow for more information from scanned badges than just a printed bar code – to monitor attendance at a particular session, for instance.

Overall, there was certainly more of a buzz to the show, particularly compared with last year in Long Beach. "In an informal poll of member exhibitors at the show, the feeling was unanimous that Frankfurt is the best venue for this industry's equipment show," says Ekus. "The overall view was that US events should continue to take the Showcase and Conference format, and should be held on the West Coast to be closer to the content community. As the industry begins to look to BD to help it recover from the recent lean years, it is increasingly important for the MEDIA-TECH Association to receive and act on input from its members and the industry in general."

Dates for next year have been set as 3-4 February in Universal City, California for the Showcase and Conference, and 21-23 April for the Expo to return to Frankfurt in Germany.



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Bob Dobbins of DaTARIUS says goodbye to Lucy Wykes



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Bryan Ekus with show organiser Bastian Soltysiak



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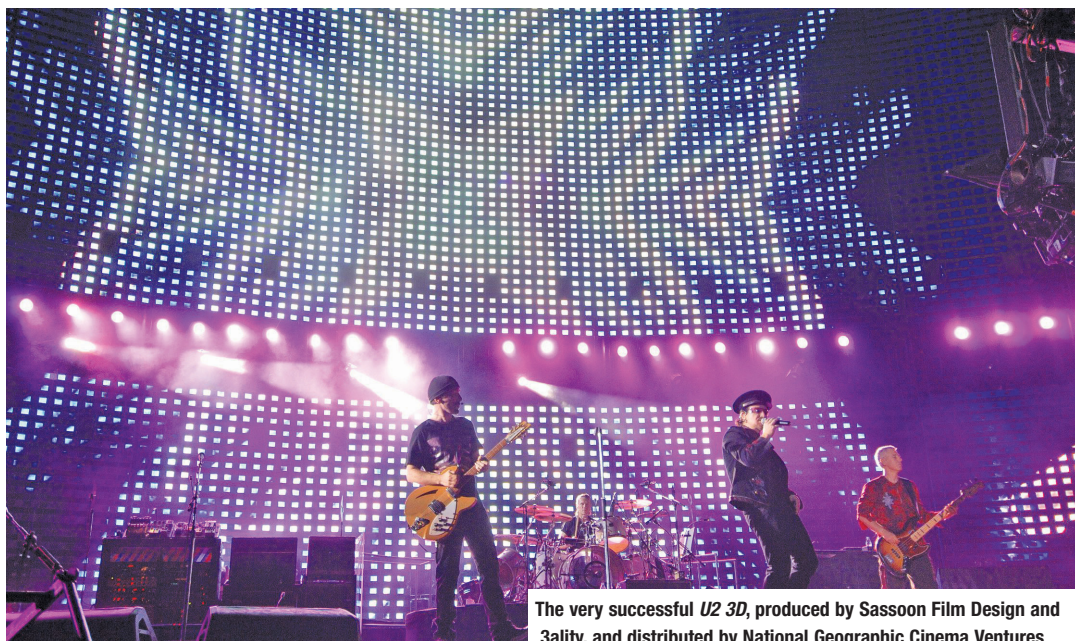
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3D: extra dimensions for Blu-ray Disc?

New technology is poised to make 3D the “new colour TV”. **Joy Zaccaria** examines the market and technological issues that need to be resolved in order to make 3D a compelling draw for consumers to buy content on Blu-ray



The very successful *U2 3D*, produced by Sassoon Film Design and 3ality, and distributed by National Geographic Cinema Ventures

REPORTS FROM BROADCASTING technology show NAB, held in Las Vegas earlier this year, were mostly centred on the buzz about stereoscopic 3D technology and aesthetics. Many sectors stand to benefit from the proliferation of 3D video. In addition to higher end post-production facilities that require training in 3D, display manufacturers, broadcast equipment suppliers, disc replicators and content companies will all have plenty of work with the introduction of the new dimension. “Let’s not forget the retailers,” says Jim Bottoms, co-managing director at UK-based Understanding & Solutions. “Retailers love new products and titles. It’s good for foot traffic.”

3D is infiltrating the mainstream consciousness in digital signage, advertisements and corporate and sporting events. It’s a natural progression for the shorter form projects that pack a punch – such as advertising – to build interest and familiarity in 3D so it is eventually a norm in the home. Bill Foster, senior technology consultant at Understanding & Solutions, describes a digital signage system for public places from Philips called 3D WOW that requires no glasses. It is designed to catch you as you walk by, not for presenting a two-hour movie. “People say it’s 10 years out for consumers,” said Foster. “So we’re going to be stuck wearing glasses in the living room.”

Excitement is building, but issues such as standards for production and delivery, and finding a comfort zone for the eyes to watch 3D for a feature-length movie need to be resolved. At the same time, filmmakers are called on to re-examine how they approach a project in 3D. Another issue raised at NAB is the looming ‘train wreck’ if studios and theatre owners don’t come to a quick settlement over digital cinema fees. If the screens ready for 3D are not as prevalent as they should be in the theatres, there’s even more motivation for Hollywood studios to try to recoup through secondary sales – that is, Blu-ray.

The 3D buzz for the big screen means plenty of work for the home video market. Some see it as potentially the ‘killer app’ for Blu-ray. “In the short- to mid-term,

Blu-ray would be the only way to access 3D content to view in the home,” says Bottoms. “One wonders if Blu-ray’s strongest supporters had 3D in mind when they pushed so hard for it. Some of the 3D technologies involve about 1.5 times the data rate. The capacity of Blu-ray is definitely going to be a benefit.”

STUDIOS HAVE BEEN PUSHING for digital cinema for a number of years but they haven’t been successful in deploying any large-scale initiative. “With 3D, studios would be able to jump-start the whole thing,” says Nicholas Routhier, Sensio president and CEO. “Studios are making the same bet on the consumer market. We’re in discussion with them for DVD and Blu-ray. They’ve made it clear that Blu-ray is their champion.”

Sensio is a small company based in Montreal that has been developing 3D technologies since 1999. “We’re building the bridges between Hollywood content and the Asian display manufacturers,” says Routhier. Sensio works with studios to encode their movies in Sensio formats. The company has 16 titles on the market, such as *Spy Kids 3D Game Over* from Disney, and they have rights to 40 titles.

As a technology company, Sensio brings content to the market, as well as working directly with 3D display manufacturers to integrate its decoding technology in their products. Working to bring the various factions together, Sensio is a founding member of the new 3D@Home Consortium, along with Samsung, Disney, Warner and 22 other big players. The mission of the non-profit alliance, headed by Chris Chinnock, president of Insight Media, is to promote the deployment of 3D in the home. “To speed the commercialisation of 3D into homes worldwide and provide the best possible viewing experience by facilitating the development of standards, roadmaps and education for the entire 3D industry – from content, hardware and software providers to consumers,” is how the consortium describes it.

“We form working groups from studios, manufacturers and tech providers to discuss

different challenges and how to come together to solve them,” says Routhier.

“In 2008, millions of TVs capable of showing stereoscopic 3D content will be purchased by consumers,” adds Chinnock. “The value of DLP, PDP and LCD TVs sold in 2008 that are capable of showing HD-quality, stereoscopic 3D content is expected to exceed \$2 billion, making this market large enough to attract the interest and attention of many players.”

A big part of the 3D at home equation is gaming. “Gaming enthusiasts won’t mind wearing the head gear,” says Bottoms at U&S. “It will considerably enhance the whole gaming experience. There will be more and more titles as part of the same franchise and the 3D needs to be maintained. “If you just played the *Pirates of the Caribbean* game in 3D, you wouldn’t want to watch the movie in 2D.”

Understanding & Solutions sees the studios as driving the push for 3D. “It’s considered by the theatre owners to be a means of keeping people going to the theatre,” says Bottoms. “Then the studios are saying, ‘Well, if we’re making these movies in 3D, we ought to be putting them out in 3D’. Particularly companies such as Disney and Fox and, to a lesser degree Universal – but they’re all involved in it.” Studios are aggressively looking at how quickly they can make more of their content, especially animated, in 3D and how quickly they can get that out on the market. Disney, DreamWorks and Pixar have all committed to 3D for every movie they make from now on.

Tim Sassoon is president and creative director of Sassoon Film Design in Santa Monica, California. He sees



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'Fitou' has been a short feature in every French movie theatre to introduce 3D for a number of feature movies

the studios as starting to dip their toes into 3D waters. "The pace is somewhat slower than many have hoped, both in conversion to digital theatres – which is what enables the current 3D projection technologies from Real-D and Dolby Laboratories – and for 3D release schedules to drive conversion," he says. "Most of the near-term releases are fairly small films, including Walden Media's much anticipated *Journey to the Center of the Earth 3D*."

BUILDING A FOUNDATION OF FAMILIARITY with 3D starts with shorter-form projects and advertisements. "The acceptance of 3D in the public is related to the quality of the contents available already," says Philippe Gerard, 3D movie director at 3Dlized in France. "*Hannah Montana & Miley Cyrus: Best of Both Worlds Concert* in Disney Digital 3D and National Geographic Cinema Ventures' *U2 3D* have been very successful." These successes usher in alternative content and a new way of seeing 3D in the movie theatre. "The market now is comparable to the way it was in the 1960s or 1970s with preshows before the big movie," says Gerard. "Instead of starting with producing feature-length

movies in 3D, we have a good position to produce content such as cultural and sporting events in 3D." Live events with 3D presentations on display simultaneously are offering more exposure to the concept.

"We're enabling the distribution of live 3D events inside the theatres," says Routhier of Sensio. "The Metropolitan Opera in 3D for example is a huge success in theatres along with USC and WWE. Major groups want to do live 3D events in theatres. That's where we get involved." Sensio recently signed a deal with Access IT to distribute 3D content to theatres in North America.

While 3D production is working through its kinks, there are many ways to produce a 3D movie, some causing more headaches and eye-strain than others. "We expect camera manufacturers such as Sony, Samsung or Grass Valley to provide a good solution within the next year or so," says Gerard. "For now we have a temporary solution." The corporate video for Dassault Aviation that 3Dlized produced had a major constraint in the contract. 3Dlized would have had to pay a huge penalty if any of the viewers suffered serious headaches or other eye problems. "Because of that we were forced to create our own tools. At that time no tools were available to create the 3D Dassault was looking for. They wanted the plane to emerge from the screen at the real size, which means 26m on a 20m wide screen."

In these exciting early days of the new technology, everyone is doing something different to achieve the same 3D goals. While the studios are pushing for 3D content, they are aware of the issues that accompany the progression. There are several methods of displaying stereo images on current displays, which aren't perfect, but do work in the here and now. "There's not much point in waiting. Whatever your solution is now, you'll be using something entirely different in two years, and different still in 10," says

Sassoon. "Audition the available technologies, and get your feet wet with whatever you feel is most practical now, while you have the marketing advantage of novelty. A decision to wait will be, in effect, a decision to stay out of the 3D market for many years."

STUDIOS DON'T WANT DIFFERENT MANUFACTURERS adopting different solutions. They are determined to standardise on the technology and on the solution adopted so that everything is interchangeable. "The content community is driving this as opposed to the hardware companies," says Bottoms at U&S. "I get the strong impression that the content companies are saying: 'We're going to work with you from day one because we want to have a big say in standardisation here'."

There are various systems for 3D presentation at home – some with glasses and some without. Foster from U&S estimates that 3D at home will be displayed using a simple system in the short term, meaning the glasses are shipped with the Blu-ray DVD. For the DVD of *Hannah Montana & Miley Cyrus: Best of Both Worlds Concert* in Disney Digital 3D, there will be a Blu-ray 3D format and glasses. "It will be a good indicator for the type of 3D they use and the type of glasses. *Hannah Montana* will be the experiment," he says. Blu-ray 3D format will have to be standardised in order to work with a variety of displays at home.

Different manufacturers are presenting their own solutions for 3D display at home. According to Foster: "There is a Mitsubishi 3D TV that currently has active glasses. Each eye switches off in turn so you get left eye, right eye. Philips has something where you don't need glasses." Sensio's Routhier mentions a rear-projection TV from Texas Instruments that requires a certain type of signal. "We feed that signal," he says. "The DLP system uses shutter glasses. We have also integrated our technology inside a TV from SpectronIQ."

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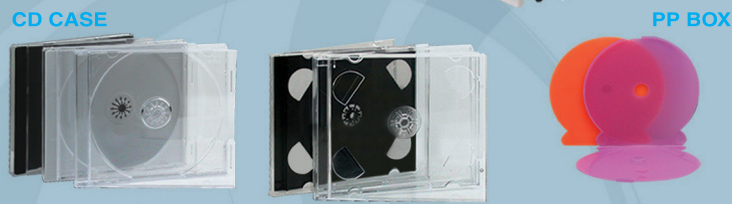
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“GET YOUR FEET WET WITH WHATEVER YOU FEEL IS MOST PRACTICAL NOW, WHILE YOU HAVE THE MARKETING ADVANTAGE OF NOVELTY”
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Iconix Video, a developer of end-to-end stereoscopic 3D workflow solutions, captured stereoscopic footage of boxer Amir Khan for a 3D film for Reebok. The film, entitled *Have You Got What it Takes?* may also be produced as a supporting feature in 3D theatres in the UK later this year, in addition to anaglyph web versions for download. The four-minute stereoscopic 3D film comes from UK-based 3D specialists The3DFirm.

Bruce Long is CEO of Iconix Video. As a filmmaker himself, he is trying to educate other mainstream filmmakers about the transition to 3D. “We’re mapping out a workflow for stereoscopic 3D that is not so different from 2D that it becomes cumbersome,” says Long. “We want to enhance what they’re doing with the second camera in the stereo approach.” The goal for Long is to bring 3D to the mainstream.

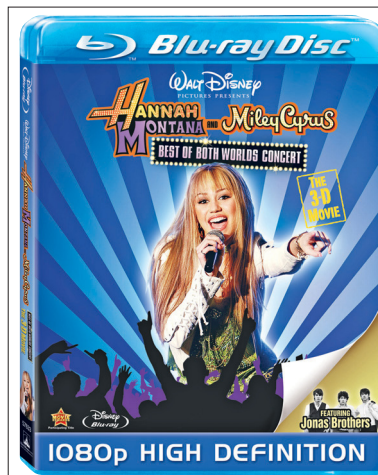
At 3Dlized, Gerard sees the importance of writing the story with 3D in mind from the beginning. Because of the added stimuli from the 3D aspect, the storyblock should not be too fast, the rhythm should have a more relaxed pace, and there should be longer sequences. “You don’t want cross fade which can hurt your brain,” he stresses. “You can express a time lapse in a different way.”

3D direction is the next step for 3Dlized for a feature film or a documentary. “I’m consulting on long movies that we don’t do ourselves,” said Gerard. “For commercials we insist on implementing these directing directives. Everybody doing 3D now is attuned to the fact that nobody wants to cause any discomfort to the audience. “If you go once to a 3D movie and leave with a headache, you won’t come back. Every producer is going to be aware of that.”

Gerard sees the importance of matching the advertisements to the movie for 3D pictures like Disney’s *Meet The Robinsons* or *Beowulf*. “For commercials, since it’s a short content, you can do very strong effects in 3D,” said Gerard. “That’s why we’re insisting on shooting commercials now in 3D for the big movies next year, like James Cameron’s *Avatar*.”

ONCE THE TECHNOLOGY EVOLVES and it becomes an easy experience to watch a feature film in 3D, Foster at U&S believes there won’t be any other way of watching it, like colour TV. “We need to lose restrictions such as glasses,” he said. “You’ve got to be careful of rapid head movements. If you turn around to talk to the person next to you and then turn back, you have to readjust to the 3D image.”

Subtlety seems to be key. There’s a limit to how many times something can come out and nearly hit you in the face. “Like the early days of stereo sound when things pinged from left to right,” Foster adds. “They’ll get over that.”



Hannah Montana & Miley Cyrus – leading the way for DVD success – and **Spy Kids Game Over 3D** from Disney, one of the Sensio titles



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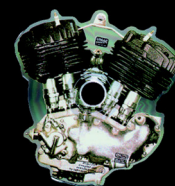
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The changing face of duplication equipment

With kiosks and content on demand becoming more prevalent, **George Cole** investigates what the duplication equipment market is doing to keep up with storage and format advances

NOTHING LASTS FOREVER and nothing stays the same, so it's no surprise that in the duplication equipment market changes appear to be afoot as new formats, trends and technologies emerge. Mark Strobel, vice president, sales and marketing, Primera Technology, thinks: "The most significant development in many years is, without doubt, the availability of highly water-resistant, inkjet printable CDs and DVDs. No longer do you have to buy expensive thermal retransfer disc printers to produce durable output."

Reducing costs is also something that Microboards has been focusing on, says Aaron Pratt, the company's director of marketing. "In our area the latest news is



"DUPLICATORS DOING SHORT RUNS ARE MOVING UP TO THE MORE PROFESSIONAL SYSTEMS TO KEEP UP WITH DEMAND AND KEEP COSTS LOW, WHILE REPLICATORS ARE STARTING TO PICK UP SOME HIGH-END DUPLICATION EQUIPMENT IN ORDER TO REACH DOWNWARD IN THE MARKET"

AARON PRATT, MICROBOARDS

lowering cost print. We've launched a product for the higher-volume user that brings their cost-per-disc in ink down to a dime," he says.

Steve Woods, managing director of Copytrax, says: "A lot of people are buying manually loaded towers. That means that if you want to do one lot very quickly – for example, 500 discs – which the client needs by the end of the day, and don't want to upset your existing production processes, you can do it."

He adds that many duplicators are buying such equipment rather than investing in a lot of expensive machines. Copytrax has launched the DaVinci 6-6 high-speed printer, which is designed to work with tower systems. It offers up to six colours and can print six discs in one pass – around 130 discs per hour.

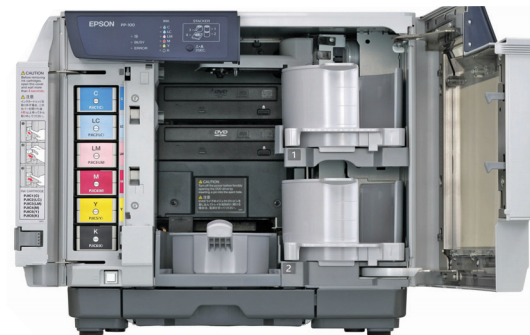
Woods says that duplicators can face a dilemma if a last-minute order arrives on their desk. He cites the example of a customer who turns up in the morning with an order for 400 discs by the end of the day. The duplicator has a number of options: he can tell the customer the order will take two days; stop another job and run the urgent job, but in the process compromise delivery of the first job; work overtime but run the risk of missing the courier's deadline; tell the customer that it's not possible to fulfil the order (and possibly lose future business with the client); or use equipment designed to produce 100 plus discs per hour and thus complete the order on time and charge a premium for the fast turnaround.

When it comes to market trends, Strobel notes: "A shift to smaller desktop equipment is definitely taking place. We don't see many disc publishing systems being sold for more than \$10,000 these days."

Leonard Beckmann, Epson Europe's business systems division new market development manager for EMEA, says the biggest trends have been the demand for reliability, print quality and ease of use. As for other trends, he adds: "It depends on which segment you look at. In the professional sector there are not many players, but with the low-end, semi-consumer sector you see many products for low-volume production." Woods has found that more duplicators are delivering content on flash media cards, especially in the US.

Although flash media has many advantages over optical disc, including its compact size, the price difference and limited storage capacity of flash media suggests that while this market will grow, it will not challenge optical disc storage, at least in the short to medium term. Wood adds that duplicators are also "diversifying and offering services such as authoring and printing. Duplicators are trying to be able to do everything to add value."

A NUMBER OF DESKTOP PRODUCTS have been launched in the duplication market. "It does seem that a lot of people have entered the small desktop arena," notes Pratt. "It's fairly saturated and I think it's resulted in some confusion in the market. I don't think it reflects any new demands in the market place. Some of these new entrants are simply products that manufacturers started on a long time ago – bringing a disc publisher to market takes a lot more work than it appears. You can't just slap together a printer and a burner and call it a publisher."



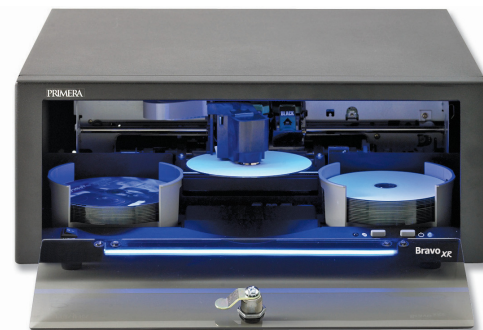
A shift to smaller desktop systems as shown by Epson's PP-100 CD/DVD duplicator

Woods is also sceptical about the value of such systems. "Desktop systems are mainly bought for offices and the publishing media, but most people like having separate systems for printing, copying, and so on," he says. "If you buy a system with four recorders and one printer and have a lot of heavy printing, the burning side is quick but the printing orders build up and slow things down. It's a different market."

So who is buying most of the duplication equipment? "Until recently, 1,000 copies was the borderline for replication," says Beckmann. "This number will slowly decrease. We are selling PP-100 to duplicators and all other segments, such as medical, storage, photo, design and music." According to Strobel, most sales are going to duplicators for making short runs, though many replicators also invest in disc publishing equipment.

Pratt says: "We're actually seeing content owners buy a lot of the equipment. Duplicators doing short runs are moving up to the more professional systems to keep up with demand and keep costs low, while replicators are starting to pick up some high-end duplication equipment in order to reach downward in the market. But the desktop systems are for people who want to do duplication in-house – usually very small run, or infrequent run-type business." Woods thinks that duplicators are mainly buying the equipment, adding that replicators have never really got into doing short-run orders: "I think they felt that duplication was a second-class system," he adds.

With tight profits and razor-thin margins being the name of the game in this market, is price the main sales driver or are there other important considerations for duplication systems? "Reliability of the equipment seems to be the most important factor," says Strobel. "With generally lower prices on equipment today, you can own



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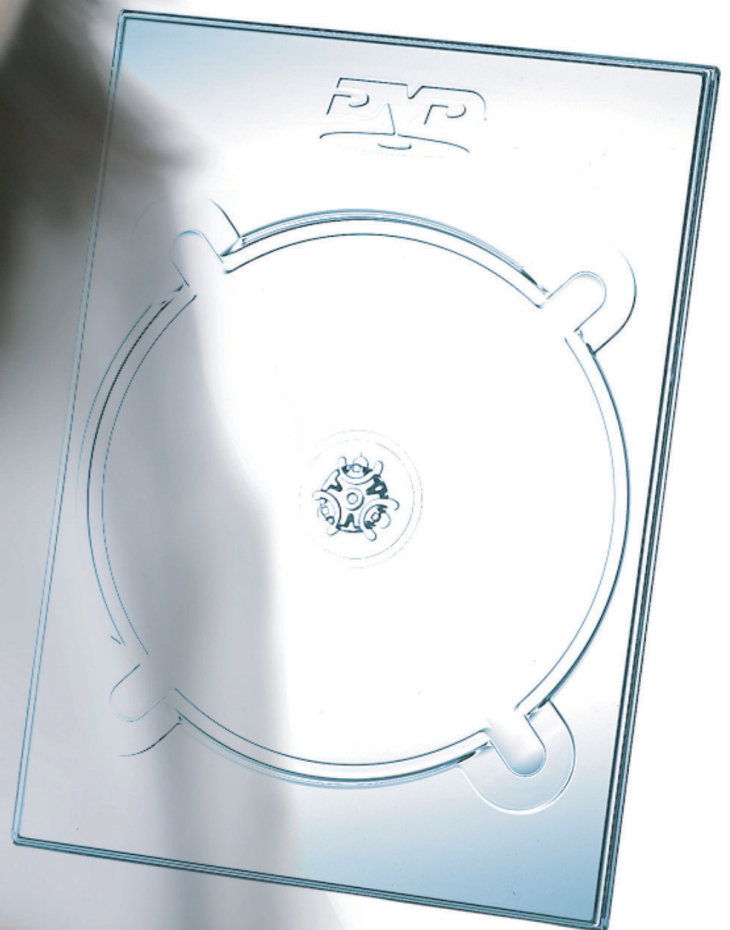
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Copytrax's DaVinci 6-6
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two or three disc publishers for the cost of just a single unit a few years ago. This gives all-important redundancy so that jobs can get done without delay. In addition, our industry has seen a lot of equipment companies come and go. Buyers need to make sure that the company they buy from today will be here next month or next year." According to Beckmann, price – or rather total cost of ownership (TCO) – is important but secondary to factors such as reliability and ease of use.

Pratt agrees that running costs are more important than simply the initial purchase price of the equipment. "With any technical product, especially printers (whether paper or CD), TCO is more important than purchase price. Of course, we see a lot of people trying to get started for the lowest amount of upfront cost possible, but ultimately if it is going to be part of your business, you need to consider things such as cost-per-disc in ink, print speed, and maintenance issues. Can a recorder or printhead be field-serviced? Is the product's warranty backed by a reputable manufacturer? These are questions that are just as applicable with a disc publisher as they are with any other investment."

Woods agrees. "Cost per disc has come to the fore. Even if you have the cheapest equipment, it's no good if it costs 10 times more to produce a disc and print. If a disc costs £1.20 (\$2.3) and you spend 45p (88 cents) making the disc and 34-40p (69-78 cents), printing it, it doesn't leave you with a lot of money. Our system brings the print cost down to less than 5p (1 cent). If you're making half a million discs per year that can represent a lot of money saved. People never used to notice things like that but they now realise that issues such as cost-per-disc and cost of ownership are important."

THE CD HAS BEEN AROUND since the early 1980s – a lifetime in the fast-moving world of digital media. So is it worth duplicators and duplication equipment manufacturers continuing to invest in CD equipment or does DVD now dominate the market?

The message from duplicators is that reports of the CD's demise are somewhat exaggerated and that there is still considerable demand for CD product. "We continue to see a lot of action with CDs. It's difficult to know for sure, but our feeling is that more CDs are still produced on our systems than DVDs," says Strobel. "Lots of organisations still need only to copy CDs – music and audio seminars are the best examples. But even those installations are planning for the future by buying DVD equipment."

Pratt believes: "There isn't a huge price difference in the hardware, so it makes sense to plan for the future." According to Beckmann, CD/DVD duplication systems will be around for a few years yet, but CD-only systems are dead. Woods observes that duplication equipment is geared up for both formats: "Printing is the same – it's still a 120mm piece of polycarbonate," he notes. "A lot of people are still doing a lot of CD production – 80% of our work is CD. The cost of producing CDs and DVDs is getting closer but DVD probably accounts for around 10% of production."



"MANY COMPANIES ARE NOW DOING BD. IT IS THE MID-TERM FUTURE FOR ARCHIVING. BUT THE BD-ROM-DRIVES ARE NOT YET WIDELY INSTALLED IN THE MARKET, SO IT WILL TAKE ITS TIME"

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Now that the high-definition format war has been settled and Blu-ray Disc has emerged the winner, it's logical to ask whether systems are being developed for BD duplication? The message from the market seems to be mixed. Woods says: "We can get BD equipment, but to be honest, we've never sold it. I don't know anybody who is. There might be some corporate and multimedia companies who are buying systems because they want extra copies, but no one in duplication is really doing it." Woods says that part of the problem is that people are concerned about BD licensing, and as a result: "It's all CD and DVD equipment and I think it will remain that way for the foreseeable future. DVD was slow to take off in the duplication market."

However, some companies, such as Primera, have made inroads into the BD market. "We optionally support BD-R on almost all of our models. Inkjet printable BD-R media is finally available from a number of manufacturers," says Strobel. "We're already selling many BD-R duplication systems, mostly for applications in wedding and event videography, video archival and many other business-to-business and industrial applications." Primera offers four Blu-ray Disc Publishing systems: the Bravo SE has a 20-disc capacity; the Bravo XR offers a 50-disc capacity; the Bravo XRP has a 100-disc capacity and the Bravo XRu is a network system with a 50-disc capacity. The XR and XRP are desk or rack mountable. Prices range from \$2,995 for the SE to \$8,995 for the XRP.

"Many companies are now doing BD," notes Beckmann. "It is the mid-term future for archiving. But the BD-ROM drives are not yet widely installed in the market, so it will take time."

Pratt is more optimistic: "BD is alive! We had a very strong response at NAB – the types of questions we were fielding about BD shifted from more

'atmospheric' in nature to very tactical, indications that people are ready to buy. And we've been taking the pulse on inbound inquiries and BD coming up."

Microboards has gone even further: "We have been shipping BD towers for well over a year. And we're about to ship our publishers with BD ability," notes Pratt.

CD, DVD AND BD are all 120mm discs, but each one is successively more complex than the last. This would suggest that BD presents duplicators and duplication equipment manufacturers with fresh challenges. The margin for error for DVD duplication is already tight, but this is nothing like the tolerances that have to be achieved to produce a BD disc that is free of significant errors and will play back on most BD-compatible devices. But duplication equipment

manufacturers are confident that producing BD duplication equipment is not such a daunting task. Strobel notes: "It's very straightforward for non copy-protected content. BD-R movies do not yet have the ability to record with AACs."

This view is shared by Pratt: "BD duplication is very similar to DVD, just with longer record times and higher media costs. I think any differences we observe will be on the authoring side. But burning or copying a BD disc is very straightforward." However, will there be a considerable demand for Blu-ray or will most customers stick to DVD, with Blu-ray being a niche, premium product?

"BD duplication will increase," says Beckmann. "In the same way that DVD will replace CD in some years, BD will replace DVD some day. We are happy that the better system has won the 'war' and customers can make decisions now."

Woods also thinks that it's good news that Blu-ray Disc came out on top and adds that the Project 37 digital printer (developed by Copytrax and Sun Chemical) will work with BD discs.

Many people would argue that DVD is more than sufficient for most customer demands, adding that much of the content produced doesn't come close to exceeding DVD's disc capacity. However, Pratt disagrees: "DVD doesn't have the capacity for any meaningful amount of high-definition video – and hi-def is what BD is building its value around. DVD-Rs are even limited in capacity compared with a replicated DVD. So BD burning will have a place. Whether it's driven by being able to fit more video on disc or by consumer demand for hi-def content remains to be seen."

By the looks of things, duplication equipment is about to enter a new phase, although the signs are that the CD and the DVD will remain significant players in this market for a long time to come.



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Restoring classic content to high-definition standards

Granada International restores classic content to its original state – in hi-def, and, as **Elizabeth Toppin** finds, this makes it ideal for getting consumers on board

THE GRANADA INTERNATIONAL FACILITY in Perivale, west London, is a testament to the power, and importance, of movies.

Contained within its walls are tens of thousands of titles and hundreds of thousands of film elements; some have been restored to eye-popping high-definition quality ready for theatre and BD/DVD release while others are beginning the – sometimes long and difficult – journey towards that state.

Fiona Maxwell, director of operations & servicing at Granada International, believes that for governments and foundations across the world that are keen to preserve national heritage in the form of art and architecture, movies and television must not be overlooked. “Film is one of the most significant influencers and reflectors of modern culture,” she stresses, “and investment is needed if much of the past century of footage is to remain intact.”

Restoration means exactly that for Maxwell – Granada takes old movies (and television shows) and restores them. “We always try to keep the original integrity of the film and make it look as it was once meant to look – not change, not enhance – it’s not going to be ‘better’ than the original.”

The true purpose is to ensure that viewers see the content in question as though they were watching it at the time it was first made. In fact, at a BAFTA tribute for Laurence Olivier, the actor’s widow shed a happy tear at the close-ups in *Henry V* because they were so crisp that it was how she wanted to remember him. “That was wonderful feedback to get,” Maxwell says.

THE PERIVALE ARCHIVE IS THE HEART of the Granada collection, but not just in the sense of storage – it is where all the restoration projects are carried out. That means overseeing the initial quality of the materials, comparing material from other storage vaults to establish the best method of carrying out a film restoration, who will work on the project, and whether it will end up as an HD master.

First of all, the restoration team has to establish that it has the absolute original version

length. “They measure it in frames and feet to make sure that, rather than a director’s cut, or a cut that’s been used for TV, they end up with what was the original version of a film,” says Maxwell. That can mean adding or removing something – perhaps finding a reel that had been removed for a censor cut, or making sure that it is the original version as released, rather than a director’s cut with material added later on.

“That can involve quite a bit of research into how the director and the cinematographer (who may be dead, given the age of some of our material) wanted the film to look.” Much of the actual restoration may be carried out by external facilities, but everything is overseen, prepared and reviewed by Maxwell’s team. “It all comes back to the viewing rooms to be overseen once the transfers have been done, but the critical parts mean looking at the colour grade and agreeing the actual look of the film’s colour.

“When we sell a programme we need to find a set of images that go with the licence – publicity for a magazine, for instance, or if there’s a TV show coming up for broadcast.” That could also mean a whole gallery of images for a DVD (or BD), that form part of the disc’s features and are not the standard publicity shots: behind the scenes, such as shots of the directors with their camera – the kind of extra that makes a restored title a collector’s item.

“Sometimes someone on the team may find a behind-the-scenes reel or an interview that was done at the time but never used.”

One instance Maxwell cites was the discovery of some old episodes of *Crossroads* – a popular British soap opera that originally ran from 1964 to 1988. The old episodes, discovered at the British Film Institute (BFI) had been aired and seen by viewers, but had been recorded on tape at a time when tapes tended to be wiped and original episodes were lost.

“In this instance, it transpired that some tele-recordings – where someone with a film camera stands behind the video camera and they record the action on film at the same time as it is being recorded on tape – had been made. The old black



Fiona Maxwell with a ‘movie wall’ in her Perivale office

and white film that was discovered provided the only record of some early episodes.

“There is a lot of the ‘fun stuff’ like that that is invaluable for the specialist film market, and inspires a great deal of online debate and discussion.”

THE CANNES FILM FESTIVAL has become an important part of Granada’s restoration activities, and has helped with the vision of films and television as being part of a historical culture that should be preserved. Granada International has been a co-sponsor of the Cannes Classics brochure for the past four years, which has been a spur for the company to ensure that it has one of its own titles going into the Festival.

“When we get involved in these sponsorship agreements we obviously like to have one of our own films going in – but it has to be selected by the judges on its own merit,” says Maxwell. This year two of Granada’s eight David Lean restorations – *Passionate Friends* and *This Happy Breed* – were chosen to receive gala screenings as part of the official Festival programme. “Cannes was shown all eight and they chose those two – they like to show films that aren’t as well known or haven’t been seen in a long time, rather than something like *Brief Encounter* which they will assume everyone has seen.”

The four-year Cannes connection began when Granada submitted a film to the Festival jury – a restoration of *Deadlier than the Male*, a Bulldog Drummond spoof James Bond-type movie starring Richard Johnson. (Who, ironically, was originally approached to be Bond, and apparently turned down the role, which required a multi-title commitment.)



Close-ups of Laurence Olivier in the *Henry V* restoration moved his widow to tears



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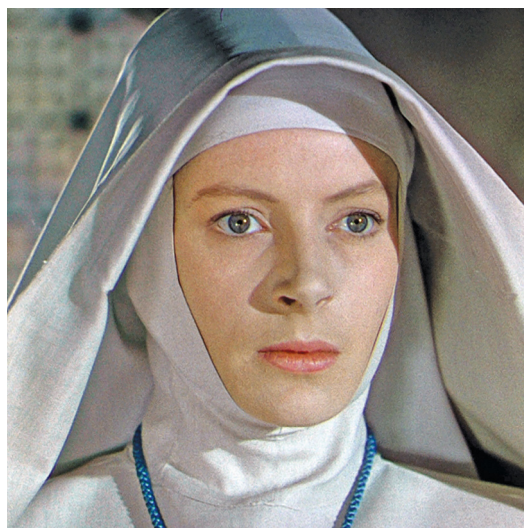
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Close-up highlighting the difference between the original and restored *Black Narcissus*

"Quentin Tarantino was chairman of the jury that year and chose the film because apparently it was the first movie he saw as a youngster and it remained one of his favourites. Once they saw the quality of the restoration, it grew from there. The following year was the Powell centenary; whenever we are planning special centenary restorations we will make sure to hold something back to premiere at Cannes – the jury won't accept anything that has been seen before."

The Lean restorations were carried out by Granada International, in co-operation with the BFI, to mark the centenary of Lean's birth. These restored movies were all due for UK screening in June and July, and the first of these screenings was taking place just before this issue went to press.

Choosing themes and years for special commemorative restorations is an ongoing decision-making process, according to Maxwell. Other names in the centenary celebrations have included Carol Reed, Powell and Pressburger, and Laurence Olivier. "We have a long list of possibilities for next year," says Maxwell, but those are pretty much still under wraps. "We have all been very focused on the Lean centenary this year."

The David Lean Foundation funded all the film restoration, with Granada funding the digital HD remastering that is required after the new film has been created. "Once you've created your pristine new element then you can go into the digital world and transfer that 35mm element into HD. This has been a really good collaboration. The upside is that we can not only use them for DVD and BD but we have them in a digital file that gives it a new life because we can take it to audiences that have never seen it on a big screen."

RESTORING MOVIES IN THE HIGH-DEFINITION ERA is another step up to a raised bar, says Maxwell. "When standard DVD was first released, with random access and better quality, it had a huge impact on us with regard to content for broadcast and VHS – we found that it drove a lot of restoration and remastering. People were expecting DVD quality from everything, and old masters that were previously acceptable for broadcast were not acceptable for DVD replication. That drove us back to original film, transferring it again, cleaning it up – that was even before we went hi-def."

Now, high definition takes it all to another level: "I think the bar has been raised again – when we do a photo-chemical restoration and take it to HD we always spend many hours doing the digital clean-up – that's where the time, money and dedication are spent." After a transfer has been done, Granada is sent check discs. "My team then needs to sit down, go

through them and write down time codes of what needs to be fixed. We do them frame by frame as well as the real-time clean-up."

While the more complicated projects could take up to a year, if the team already has the film in good shape for a digital HD transfer and clean-up, it can be done within a few weeks – depending on how much damage there was, and how much needs to be cleaned.

"MY RULE OF THUMB IS THAT IF WE ARE REMASTERING ANYTHING THERE'S NO POINT DOING IT IN STANDARD DEF, BECAUSE IN EFFECT YOU ARE SAYING IT DOESN'T HAVE A SHELF LIFE"

"With a transfer to HD you're getting high-definition scratches, and high-definition dirt and blemishes, which show up much more than they would in standard definition. For BD, it all takes up space and time, and costs more money to author if it hasn't been cleaned properly. The authoring system will try to replicate all of the detail and it doesn't know the difference between a straight line for a lamp and a scratch. The importance of getting more restoration work done before it goes to BD has definitely increased."

That is all done even if a title is then being down-converted to standard definition for DVD release, says Maxwell. "You get the benefit of the HD transfer because of all the hours of clean-up and regrading at this high level even when you come down to standard definition."

If it's worth restoring, it's worth restoring to high-definition levels: "My rule of thumb is that if we are remastering anything now there's no point doing it in standard definition, because, in effect, you are saying it doesn't have a shelf life," adds Maxwell.

"If you are spending money to restore something it makes sense to take it up to that next level. When we restore something it's about retaining the full length, and it's about restoring the quality, but it's also about the extras we can add to it. If people buy a re-release they expect some bonus material: perhaps the story of the restoration, a photo gallery, behind the scenes, that kind of thing."

People are still buying standard-definition DVD, but there is an increase in BD releases, and that goes for classic content as well as new releases,

according to Maxwell. Granada licenses its restored titles for release on both formats. "DVD and BD are very important. Our sister company, Granada Ventures, does the UK DVD releases and it is timing a box set of David Lean to come out after the anniversary. The theatrical screenings tend to drive the DVD demand."

RESTORATIONS FOR BLU-RAY are also timed to coincide with special events – not necessarily centenaries – for instance, *The Ipcress File*, restored and released on Blu-ray to commemorate Michael Caine's 75th birthday.

It is up to the licensees of the Granada International content to decide how titles are released, but Granada does promote that its titles are remastered digitally and in high definition. "In the UK, where the licensee is our sister company, I will involve them in what we're restoring and what we've got coming up, and try to time that with their release schedule for BD. They are just getting into the Blu-ray market now, so it's still just a toe in the water with that as opposed to DVD, but next year it will really ramp up."

Not only does Maxwell believe that there will be demand for Blu-ray, she has an interesting twist on who will want to buy Granada restorations on BD. "I do think our restored classics will increase the market for something like Blu-ray and make people want to buy discs more than they would otherwise. What we're dealing with is classic film and that's a collectable – in this day and age of internet delivery and download to own there is a balance between buying something to keep on a shelf and watch it again and what's disposable."

"There's a difference between, say, *Desperate Housewives* and *Hamlet*. You may want to download and watch *Desperate Housewives* now but do you want it on Blu-ray and do you want to keep it? I think classic HD content will bring in people who would not otherwise have gone and bought a Blu-ray player, who aren't the download-to-own market, and who may even have missed out the DVD stage and are now looking to replace all their bulky VHS tapes."

"It may be the time for these people to invest because the players are backwards compatible with DVD. I think it could be a strong driver for people such as film buffs, students and people who are investing in bigger screens for the whole cinema experience."



Fiona Maxwell with a fraction of the material in the Granada vault in Perivale

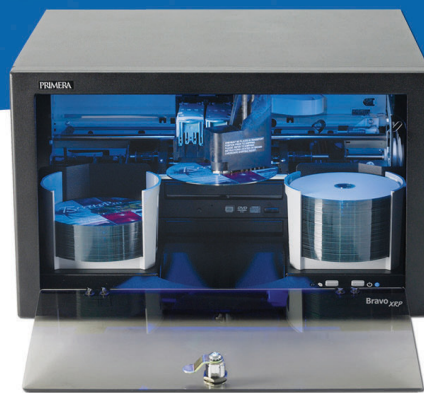
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A review of the latest equipment and raw materials for media manufacturers

Edited by Patrick Stapley

Sabic hi-def substrate solutions

SABIC INNOVATIVE PLASTICS is testing six optical-quality grades of its Noryl compound as a potential replacement for polycarbonate in Blu-ray Disc production. The company says that Noryl, an alloy of polyphenylene oxide and polystyrene, has the advantages of not absorbing moisture like polycarbonate, and is more dimensionally stable.

Sabic believes the material will help to reduce disc costs as, unlike polycarbonate, it does not require a moisture-barrier layer and lacquer coating. Because of Noryl's dimensional stability, the company believes that a less complicated moulding process is possible, leading to higher yields.

Sabic, which bought GE Plastics last year, is also developing an improved BD coating. The new material is said to combine functionality in one coating, eliminating extra processing steps.

The company exhibited, for the first time under its new name, at the recent MEDIA-TECH Expo.

"We continue to invest in research, development, and technical support to help the industry meet increasingly stringent requirements for optical media technology," says Steve Wyatt, global market director, Media & Product Security.

www.sabic-ip.com

Aleratec now supports Blu-ray

ALERATEC HAS RELEASED its first LightScribe-enabled disc publisher supporting Blu-ray. The new 1:3 Copy Cruiser Blu LS incorporates three 6x SATA Blu-ray drives and has an eSATA interface to the host computer for improved data transfer. It can duplicate BD, DVD and CD media, and produce LightScribe labels for DVD and CD.

Another new product is the RoboRacer LS, which is described as "the simplest ever" robotic auto-loading disc publisher with the fewest number of moving parts. The small footprint, lightweight duplicator has a 100-disc capacity and combines LightScribe-enabled DVD/CD recorders to produce laser-etched labels (using LightScribe discs).

Aleratec has also introduced the 1:11 USB Copy Tower SA. This standalone duplicator will copy, compare, or erase up to 11 flash drives simultaneously with all functions selectable from a simple controller with backlit LCD. The system additionally supports advanced asynchronous USB duplication.

www.aleratec.com

ODC Nimbus develops all-laser diode upgrade

ODC NIMBUS HAS DEVELOPED an all-laser diode upgrade for its M8000 high-density mastering system. This configuration is also being built into the company's new M8100 model.

Separate diode lasers are incorporated for the record beam and the integrated high-resolution playback beam. These replace

the Kr-ion laser of the M8000, and are said to improve long-term stability as well as lowering the cost of ownership compared with the gas laser platform.

The directly modulated record laser also allows for fewer optical components and faster modulation response facilitating faster Blu-ray Disc mastering speeds.

Additionally, the new Model M8100 configuration has a significantly smaller footprint than the earlier M8000 version.


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Eccentricity analysis from DaTARIUS

DATARIUS HAS INTRODUCED the Eccentricity Analyser Mk 2. This compact unit can be operated either as a standalone system (with the optional integrated display and PC) or connected to an external PC to show the value and direction of eccentricity (ECC). It supports all disc formats, at any production stage: stamper, blank substrate, sputtered substrate, and finished disc – including multi-layer.

Eccentricity has a number of causes: imprecise stamper punching, incorrect moulding due to the position of the stamper in the mould, and inaccurate bonding in the case of dual-layer media such as BD50 and DVD-9.



The Eccentricity Analyser Mk 2 supports all formats

The system includes a set of adapters for switching between discs and stampers. Measurement takes less than 10 seconds and, in addition to the exact ECC value, operators receive feedback to help optimise the position of the stamper in the mould, or to punch the stamper more precisely.

The vision technology used for ECC measurement also allows the inspection of the inner diameter of the disc/stamper. This enables the detection of cosmetic defects, such as burr in the centre hole. As an option, the Eccentricity Analyzer Mk 2 can also read Ident codes.

www.datarius.com

AudioDev increases measurement accuracy

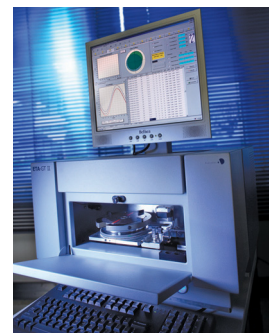
AUDIODEV'S LATEST GENERATION geometrical tester, the ETA-GTII, offers greater measurement accuracy than its predecessor and can now also measure Blu-ray media.

Two versions are available; the ETA-GTII for standard formats (CD and DVD) and the ETA-GTII Blue for standard and blue laser formats. Both testers can measure all types (recordable and pre-recorded, single and dual layer).

AudioDev has also automated disc handling for its CATS and Go! Blu-ray systems. The two testers can be connected through an automatic disc-loader and control software that simplifies the handling process, allowing for larger quantities of

discs to be tested. The system can be fitted with a number of recorders, and the recording and testing procedure is fully automated. Blank or recorded Blu-ray Discs can be automatically sorted based on pass/fail criteria on either the Go! or CATS analysers.

www.audiodev.com



AudioDev's ETA-GTII provide greater measurement accuracy

New faster mould from AWM

AWM HAS INTRODUCED NEW TECHNOLOGIES in its »six.one« mould which, says the company, enables field-proven cycle times as fast as 1.5 seconds for DVD-9.

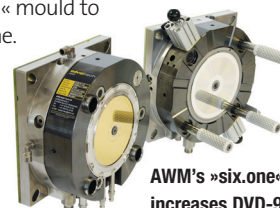
Since 2005, DVD-9 cycles have remained around 2.3 to 2.0 seconds per disc. However, in 2007 several integrators began incorporating new technologies in their lines that pushed the boundaries. This, says AWM, created new moulding demands, prompting the company to test new components in its existing »six.one« mould to achieve the targeted 1.5-second time.

Several key issues had to be addressed, perhaps most critically cooling and sprue handling. Because polycarbonate normally remains too hot to handle at these accelerated cycle times, the

cooling and geometry of the sprue had to be optimised, and several mould components modified.

"The development shows that even mature formats have room to advance, and that mould design and development are still playing a key role in the value chain of optical disc production," says John Ransdell, AWM marketing and sales manager. "DVD cycle times have been falling dramatically since the inception of the format. However, this latest improvement, in terms of percentage at least, represents a staggering leap and can rightly be seen as a breakthrough."

Ransdell also points out the strategic importance of this development to integrators and injection moulding machine manufacturers.



AWM's »six.one« mould increases DVD-9 cycle time

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And it's out with the old

Don't mess with standards – it usually ends in tears because there is no way of knowing how old players will cope with new media



IN THE 1970S PHILIPS-HELD patents and trademarks on the Compact Cassette. Licences were free – because that was the only way the company could get Japanese support – but they specified that the four tracks must be used in stereo pairs, running in opposite directions. Philips stopped people recording all four tracks in one direction, for four-channel surround. Special players would have been needed and the millions of mono and stereo players would mix backwards and forwards music.

The Red Book licences on CD let Philips and Sony block ideas such as recording different mono tracks in each stereo channel, to double the playing time for old archive material. Many people would have heard different performances from their left and right speakers.

The patents on CD have now expired so there is no control over the format standard. This opened the door to non-circular discs and copy protection systems, such as Sony BMG's disastrous XCP root kit releases.

JVC tightly policed the VHS standard, insisting on linear tracks on hi-fi FM stereo recordings so as to guarantee playback on all machines. So VHS HiFi was a success.

JVC then broke its own rules with Super-VHS, which needed new machines and new tapes. S-VHS never really caught on. Neither did Digital VHS.

The DVD patents and licence schemes are still active. Recent plans to bond half a DVD back-to-back with a thinner-than-usual CD, thus creating a hybrid disc that plays as a CD from one side and as a DVD from the other, scraped through only because the original specifications for disc thickness had generously wide tolerances to allow for poor pressing. But not all hybrid discs played in all players, and that idea also failed to catch on.

In 2002 DTJapan, a company in Tokyo that produces custom-pressed discs (for example, DVDs and CDs with anti-bacterial coatings, transparent



Can old players cope with new media?

Services. If anyone can describe in simple words who currently owns what chunks of the company, which are solvent and who is claiming what from whom, I take my hat off to them.

ODS is now riding the green wave, with the promise of 'eco-friendly' DVDs, or EcoDiscs, that use 50% less polycarbonate and need no non-biodegradable bonder resin. Any enquiry to the plant in Dassow is referred to 15 autonomous offices dotted around Europe. These claim that since EcoDisc was launched last December, 20 million have been given away around Europe, mainly as promotional

Marulanda refutes the suggestion that EcoDisc is just half a DVD. But he cannot say how and why it is more than that.

"Half a DVD won't work," he assures, claiming that ODS "has patents" on tricks that make it work. "There is a small saving on royalties too because we have our own patents. It's not all protected by the DVD patents, because it's not a DVD. But we have to compare it to a DVD when talking about it because people haven't heard of EcoDiscs."

A search through world patent filings revealed only two applications by ODS Optical Disc Service. One was made in Germany in 2002. It was for a Gebrauchsmuster ('utility model' or 'petty patent'), a type of filing used for ideas that are not deemed sufficiently significant to merit a full patent. DE20210140 describes a disc sleeve or envelope with no apparent relevance to 0.6mm discs. A much more recent filing from the company deals with DCT image compression, which also has no obvious bearing on thin disc pressing.

ODS has not responded to my request for patent numbers to back its claim that new, patented tricks are being used to make EcoDisc 'work'.

Because DVDs are read from below, disc thickness does not affect laser focus. But ODS admits that some of the 0.6mm discs have been jamming in Apple slot drives.

"The issue with slot load drives is not playability but ejection, because the disc is flexible," says Marulanda. "Apple changed the specification of its drives to make PCs slimmer. It's not our doing. Apple is bending the rules. Is there anything we can do? I don't think so – not without making the disc rigid. But our people are working on it right now."

"There's no way we were going to hold back. But the wallet and disc have a warning, which we try to make as clear as possible. But, of course, some people tend to find they have a problem. Sometimes the problem can be solved by pressing eject several times – other times it needs dismantling. Our R&D at Dassow is working on it, and Apple has requested sample discs which we have sent."

The DVD Forum has now given EcoDisc the thumbs down, in the same way it did for DVDSlim. An "important notice" on the Forum's website warns that a "0.6mm thick optical disc does not use DVD Format in a proper manner. It is only imperfectly and inappropriately using the format. The DVD Forum judged that such a disc is not compliant with the DVD specifications."

And now comes news of another "new format". In what Fox Home Entertainment calls an "industry first", the studio is releasing the original 1966 movie *Batman* on Blu-ray Disc with a bonus hi-def audio recording of the sound track music (by Frank Sinatra's arranger, Nelson Riddle). Listeners get the full score in super quality, lossless DTS 5.1 surround.

The problem is that Blu-ray Discs are often region coded, still without any clear explanation on the packaging. So the "industry first" could well prove to be an audio recording that won't play on all players.

DVD FLLC, the DVD format and logo licensing corporation, is now studying the whole issue of thin discs and how makers can label them.

"ODS claims that since EcoDisc was launched last December, 20 million have been given away around Europe, mainly as promotional discs and newspaper cover mounts for the *Mail on Sunday* and *Independent* in the UK"

and coloured discs, and discs with integrated ID chips), announced DVDSlim. This was a flexible DVD, 0.9mm thick. DTJapan was working on the theory that although CD and DVD players are designed to play CDs and DVDs that are 1.2mm thick, they have the tolerance to play discs anywhere between 0.9mm and 1.5mm thick.

The plan was vetoed by the DVD Forum, an *ad hoc* association formed to encourage the dissemination and exchange of information on DVDs, and sank without a trace.

Much has been written about the tangled structure and restructuring of German replicator ODS, aka Optical Disc Service, aka ODS Business

discs and newspaper cover mounts for the *Mail on Sunday* and *Independent* newspapers in the UK.

There is no deal yet for North America, but ODS claims it is providing discs for travel companies in Barbados and Jamaica.

It doesn't take a genius to see the secret of EcoDisc. Instead of being 1.2mm thick and made from two 0.6mm discs bonded back-to-back for rigidity, EcoDisc is one 0.6mm flexible disc.

ODS commercial director Franky Marulanda says: "The pressing cost is similar to a DVD5, and depends on the price of oil. It's slightly less – not a huge difference – a fraction of a euro, but if we are pressing millions it mounts up."

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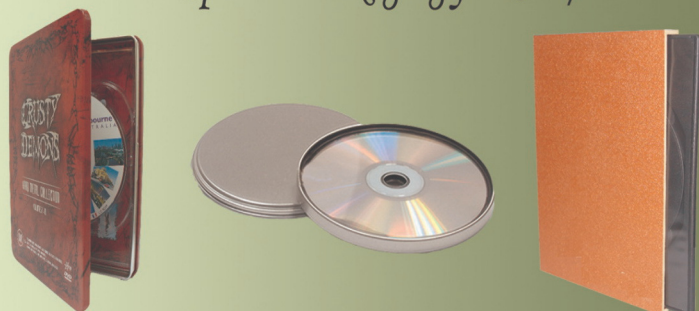
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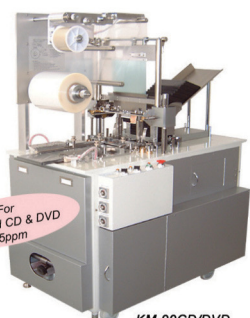
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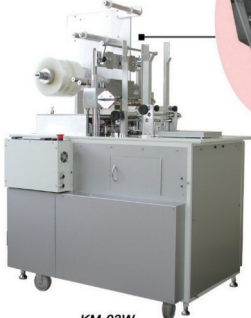


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Jim Bottoms, co-managing director of Understanding & Solutions, talks to *Debbie Galante Block* about the driving forces behind Blu-ray Disc, consumer interest in the format, and what the future might hold for the industry

With the economic slowdown on both sides of the Atlantic, the question on everyone's mind right now is how well will this new video format take off. What is your view on this?

While consumer electronics is generally recession-proof, people do hold off on replacing items, so I don't think BD will automatically fit into the recession-proof category. That being said, factors driving Blu-ray include lower prices, PlayStation 3, and the fact that consumers are still buying panel televisions, many of which are HD-ready. There is a kind of momentum behind it, and retailers are getting behind it. We believe that Blu-ray will be a big seller on both sides of the Atlantic in Q4. Once the stores start to get their holiday price promotions going, I think we're going to see very attractively priced hardware.

Do you think the format war hurt the Blu-ray Disc launch?

On the positive side, one thing the format war did was create awareness. Lots of people wrote about the format war and, when it was over, wrote about that as well. Now, the consumer is saying, 'I'm hearing Blu-ray is the winner, so I'd better go and find out what it is all about'. Some very good titles are available, particularly in the US. Hollywood sells. I think we should see strong consumer interest this year, but we are 5-10 years away from any market peak.

If there is a decent amount of consumer interest, that might create another problem. I've heard a lot of mumblings about capacity shortages this Christmas. What do you expect?

It's a very real concern. If the market picks up the way we anticipate, then it is quite likely that in Q4 there will be Blu-ray capacity shortages. The replication industry, which is not in good shape, is being asked to go out and invest quite a lot of money in new lines, and at the same time they're hearing mixed projections as to how long the market will be there.

Since the format war has been decided, have you heard of any new capacity coming on line?

There appears to be a reluctance to install new capacity. That's why there is a very real concern that there will be capacity shortages by the peak selling season this year, and possibly next. In the early days of DVD, companies were putting in 30 lines at a time, but it would appear that those days are pretty much gone. No company can afford to do that right now.



Are the UK and the US on a similar track with Blu-ray acceptance and penetration? And what about the emerging markets?

The UK is probably about 12-18 months behind the US. Other markets can't be lumped together. I don't think we'll see any real change. I don't expect there will be massive opportunities opening up that haven't been opened up at this point. I believe there is already a Blu-ray plant about to launch in Russia. There may be opportunities for manufacturing in these markets, but not from a local market standpoint.

Is there anything besides a good quality picture that can put some excitement behind Blu-ray? Or are consumers indifferent when it comes to Blu-ray?

3D is relevant. The content companies in particular are doing more and more in 3D. Disney is leading, but there are others. For instance, DreamWorks has announced that all of its animation releases will now be in 3D. (*Monsters vs Aliens* is the first 3D film slated for a domestic release date of 27 March 2009.) One of my colleagues saw a redone version of *Star Wars* in 3D, and he said it was absolutely stunning. So there is the capability to go back and effectively turn 2D movies into 3D movies. 3D does extend the Blu-ray roadmap because you will be able to put a 3D movie on a Blu-ray Disc.

BD Live will also give the format some legs as we'll start to see product rolling out now. In fact, some of the studios have a very aggressive roll-out plan in terms of title releases, but it is fair to

say that early on the content companies are going to be experimenting with what works and what doesn't work.

The hardware companies are a little further behind, although PlayStation 3 is BD Live-compatible. Two or three years down the line, you probably won't be able to buy a Blu-ray player that is not BD Live.

Are high-capacity discs necessary for consumers looking for 3D content, or are there content delivery alternatives that are just as acceptable?

At the moment, broadcasters are putting more and more high-definition content out, but here in Europe there are technical obstacles to terrestrial high-definition broadcasting, which still dominates in Europe. So broadcasters are going to struggle in the short term with 3D. Potentially the only way the consumer can access 3D content in the home is by disc.

If discs are the only way to get *Hannah Montana* on 3D, that could give a massive boost to the overall disc market.

In some instances, it seems there is more excitement about mobile phones than any other technology. Do you see the mobile phone market co-existing with discs?

Mobile content will co-exist with discs. The mobile phone market is obviously going very well. We're starting to see signs of mobile music and video services picking up. The next 12 months are going to be critical for some of these services. Very often, however, it's a different type of content than what is available on a video disc. Short-play content, five or 10 minute bursts, is being watched on mobile devices.

We don't see the technologies being competitive, but rather complementary, with the overall business opportunities. Perhaps people can see a few special clips on their mobile, but then be encouraged to go out and view the movie in the theatre or buy it on disc. Mobile content is more like filling the gap rather than watching an end-to-end movie or even a half-hour programme. We call it snack television.

There are different driving forces for physical media than in the past, aren't there?

Choosing a format today is not a cost issue; it's a convenience and lifestyle issue. Nobody is standing up and saying online delivery is going to be a fraction of the cost. DVDs are very cheap. However, in terms of cost-effectiveness, we believe Blu-ray is the most cost-effective vehicle for the mass market.

Profile

Jim Bottoms is a co-founder and co-managing director of Understanding & Solutions, which was established in 1987, and has close to 30 years of consulting experience in the consumer media, home and office electronics, data storage, and music and video entertainment sectors. He maintains a strong set of personal consulting and advisory relationships with a number of blue-chip companies in the entertainment domain. Bottoms is considered to be an international expert on the music, video and entertainment markets and is a regular speaker at industry conferences worldwide.

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