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Where do you see your company's comparative advantage or uniqueness in this crowded marketplace?

Hallen In addition to being the leading service provider for QA and testing services for the film industry, we are also known as the leading provider of testing services for the Digital TV, video game, software and consumer electronics industries. This scope of expertise and our global footprint of five facilities around the world, gives us a powerful and unique advantage as these industries continue to converge.

Bisdas We focus always on the clients and their needs to complete their projects. We stay on top of the technology available in order to offer the latest solutions and, of course, our low prices makes these propositions unbeatable.

Bono Probably the ability to adapt to changes and rapidly offer new solutions to the local marketplace.

Breitfeld With FluxDVD (DVD2App), FlickRocket (White Label VOD Stores) and Protect Software's content protection solutions for DVD, USB and online, we offer the perfect bridge solutions that enhance physical media and help take content online. There are very few companies that have expertise in both the DVD and online DRM worlds.

Evans I don't think 'crowded' is the word anymore, seeing as there are very few places still offering authoring as a primary service. The Pavement still has a unique angle in that it servi - ces music, TV and Ffilm pretty evenly, and we still pick up the occasional larger budget title that requires a little more than your regular disc.

Hall We have established relationships with some of the leading comedy agents, which enables us to gain a valuable foothold on the stand-up comedy DVD genre. We also have our own broadcast platform to see as and when programmes and series succeed in terms of audience. And finally, because of our standing in the DVD marketplace and status as a brand and label, we can carefully select which brands and titles we release during Q4.

It means we can offer more in-depth and detailed marketing and PR support during peak trading periods, therefore maximising sales opportunities and concentrating on regional advertising and support for the artist/programme in question.

Fitzgerald EDC has been actively developing the business targeting independent music labels, video distributors and publishers. EDC is now an independent, privately-owned company that allow us to speed up decision-making since the owners are at the table. We have extended the sales base in Germany, the UK, France, Benelux and Scandinavia. Alongside this we have strengthened manufacturing and logistics capability to support our investment in the independents sector. Investing in our team and support structure has enabled us to demonstrate scale, flexibility and a longer term commitment to the entertainment packaged business.

Ingold I offer technical consultancy in premium Video-on-Demand delivery through my company mireality. My commercial advantage? I'm one of the few people in this industry who has built a full end-to-end (content acquisition through delivery) VOD infrastructure and services for the most premium content – films from the movie studios in the first rights window.

As Head of Technology for FilmFlex Movies, I architected and delivered FilmFlex, the Virgin Media cable movies on-demand service, and the broadband product that powers Virgin Media Online Movies, Film4oD and hmv-on-demand. I delivered these solutions for a fraction of the cost and resource of other major VOD solutions in the market.

Hosp It is simply no longer sufficient to produce and deliver a perfect product. If you want to be a general contractor serving the media industry, as we are, you have to include the sales processes and especially direct sales in your strategy and modus operandi. With kdg mediadirect we have created a division which takes care of precisely these activities as their focal point, namely multi-channel consultancy and direct sales.

Remblier I don't think any production company has a uniqueness, but only advantages. Mine is to be specialised in 3D content and we have several films that got awards at festivals around the world for the quality of the stereoscopy.

Tussai Our strategic location. Optical Disc Solutions SRL is one of the most important Eastern European player. We are CDSA and MPAA-certified. Maintaining a high quality of services, proper customer management, solution focused are our key strength. Also, we enjoy flexibility and diversification in connected areas like fulfillment and packaging, content management, distribution. etc;

Kohlen Being an independend company with over 15 years' experience in DVD and having all expertise in house from encoding to subtitling, we can offer good prices and fast turnaround times. Everybody is hands-on to the production and eager to innovate to get a better product.

Lauchenauer We produce 3D content not many of us out there do.

Amongst the range of services you offer, which one grew over the past two years and which one diminished?

Hallen Testing, related to digital distribution formats, has grown significantly through the past few years, and especially this year. There has been an evolution in the kinds of testing, as well. Today, it's not just about content and image quality, but there is keen interest from the market to ensure device interoperability, website and portal testing, and content streaming functionality.

We have strong expertise in-house around UltraViolet and we've seen a significant increase in UltraViolet-related work as our clients are depending on us to support them in this initiative. We have also seen significant growth in our video game and digital TV business lines over the past year, as well.

Bisdas We offer the last two years DCP mastering services among others and we saw a small grow in indie market as the big studios always sell their content directly to our local distributors. It is a small breath of fresh air if you think how bad thinks are here in Greece. The service that was significantly down was Blu-ray authoring.

Breitfeld Generally speaking solutions which combine physical DVD and online delivery are seeing huge growth. Specifically Digital Copy for DVD releases like *The Inbetweeners* and *The Untouchables* in the entertainment market, and secure online content distribution and stores with FlickRocket for corporates. We are very excited at the prospect of the new DVD2App solution which converts DVDs into iOS and Android apps, keeping the menus, subtitles and audio tracks and adding web links.

Evans Digital Copy and BD-Live came and went in the blinking of an eye. No service grew in importance, but what did grow was the need to change how we make discs as volume, low budget, simple titles are the way things are going, so we're actively trying to adjust our processes to streamline and try make it worthwhile doing the work.

Hall Digital sales has increased in importance over the past 2 years, on iTunes and through monthly subscription sites Lovefilm and Netflix. Value-added material has decreased – retailers prefer an increased margin in terms of cost rather than special packaging at present.

Fitzgerald DVD and music inde-

One hears alarmist opinions about the rapid demise of packaged media in the face of online delivery. What is your view as to how long discs will be around? And what could become their main target market?

Hallen We believe that packaged media will continue to be around for another decade. However, being able to earn revenues and profits from servicing into these supply chains will certainly be the primary challenge as services become more commoditised. This in turn creates the challenge of making sure we are innovative in making the process more efficient. That approach will continue to be an important focus for Testronic moving forward.

Bisdas In our market discs still play an important role, but as things gets tighter from austerity measures people are looking for rental or free-to-air solutions.

Bono I honestly believe there's still a demand for physical media for many years to come, but the decrease will be in the number of titles worth releasing. The focus should be in high quality – both in content (sound, picture and added value) as well as packaging.

Hall I believe DVD/BD will be around for at least the next 10-15 years, there are two factors holding back a sharp increase in online delivery – domestic broadband speed (and 4G mobile networks) and the consumer's confusion over the varying digital formats and lifespan of buying. This has been illustrated with hesitancy over UltraViolet and also Bruce Willis's battle with Apple over his music collection! It highlights the question of who owns the digital product.

Breitfeld Physical media will not go away and will stay the primary method of premium video content delivery (next to TV) for at least the next 5 years in most regions. But online delivery will start to have a real impact in terms of price pressure and the need for enhancing physical content with online elements like digital copy.

Evans I think packaged media has a few years to go because of the money it still brings in, and even at a year-on-year decline of 11%, it's nowhere being made up by online. Online just can't replace the profits yet for a few years.

Fitzgerald We feel that packaged media does have a long life, though estimates vary as to its lifespan. What we do see and expect is that different products will appeal to different consumers. Discs will always have a place with certain consumer groups and fans. We firmly believe that one must be steadfast in supporting the format and the customers. Diversification is key, but not at the cost of today's and tomorrow's business.

Ingold We hear about the decline of DVD and the increase of Blu-ray and on-demand. At the moment the consumer often perceives more benefits from physical media, e.g. extras, portability and ease-of-use, but there are also perceived downsides, e.g. media takes up space and discs degrade. Discs will be around as long as the customer feels that they get more value from them and the studios feel they can monetise them more than on-demand.

Lauchenauer Untill downloading become easier to access and operate for both the consumer and the content owner, there is no real rival to physical media. And we think discs will be around for a long time.

Remblier I don't like online delivery. I love to have a disc and its leaflet in my hand! I am not a good customer for online delivery because I think it is too much computer dependant. I think cloud is not a good way to store films and music. How do you access them when your mobile or your computer can't connect to the Internet? What if some kind of censors decide that this or that content is not good anymore and can destroy it on your cloud account? That's why I still buy Blu-rays, DVDs and CDs.

Tussai We think packaged media will diminish in the coming 5 years, especially because of the online piracy, if no important enforcement measures are taken. This could go down the same way as the vinyl.

Kohlen The packaged media market is getting smaller, but I do believe Blu-ray will drive it for a few years. We have not seen a VOD system delivering the same quality and interactivity as Blu-ray.

pendents have rapidly developed across all territories for us. This has seen further investment in Blu-ray as well as growth in special packaging requirements alongside full distribution solutions for customers who need turnkey solutions. We haven't seen much diminishing services over the past 2 years.

Remblier S3D is a growing market. My company grows with this market. We provide S3D expertise on corporate movies, live captures of concerts, shows and events. This sector becomes an important part of our work.

Ingold mireality launched in June 2012, building on my 5 years of experience with FilmFlex Movies as Head of Technology. I've watched how consumers, who now have access to more and more high-tech devices at home, are now driving what they want from the industry – they want it everywhere and they want it now!

Lauchenauer 3D has grown for us, but the corporate post-production nearly disappeared for us.

Hosp Surprisingly enough, it is our traditional area of replication that has grown. Last year, we climbed the ladder to become the leading 'real' independent Blu-ray replicator in Europe. Virtually all replicators call themselves independent nowadays, but we have been operating as such for more than 25 years.

In Blu-ray, we are now in actual fact the first port of call for the indie suppliers. In line with market development, CD production has, of course, declined. But as a general contractor we are required to continually adapt our services to the new circumstances.

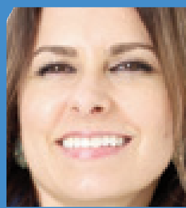
Logistics has also been a key growth area for us for many years now. Indeed, this summer we opened up the third warehouse in five years and have invested more than 3.5 million euros in our logistics site. We attach a great value to the fact that we have all of our service expertise within our company. Our portfolio ranges from customer consultancy to IT. Thanks to the kdg Group's IT expertise, we can respond to customer requirements speedily and with great flexibility. This in turn increases our clout as a key logistics provider.

Tussai Fulfillment and packaging activities increased significantly while replication slightly decreased.

Kohlen Encoding, transcoding and subtitling is growing. More files are delivered digitally and need to be transcoded to a range of different formats, each fully compatible with the ecosystem it is needed for including subtitle and audio languages.

Seth Hallen
CEO
Testronic Labs

John Fitzgerald
CEO
EDC GmbH



Maria Ingold
CEO
mireality

Panos Bisdas
General Manager
Authorwave

Leon Kohlen
Managing Director
i-Frame

Olivier Lauchenauer
Director
Pogo Films

The ever lower margins on Blu-ray discs makes the economics of BD authoring and replication very challenging. What needs to happen, what features need to be added, to make it a viable business for independents?

Bisdas The main problem here is that consumers have not been properly informed about the benefits of the Blu-ray format or even the main difference from DVD. As a result almost everyone has an HDTV, but very few know that only a BD disc can offer the HD resolution to optimise the TV.

Bono One could think of joining forces in order to compete with the pricing advantage a major studio has through quantity.

Evans Forget features – they are not wanted by clients – they just add cost and lengthens the production time. I wish HD-DVD had won the war as it would have pretty much satisfied the requirements today and saved a lot of money for everyone in licensing costs to Sony (AACS) and replication upgrade to the lines. See if you can find any independent UK label actively using BD-Live, BD-J or Digital Copy. I don't think there is anything you can do.

Clients need discs made as cheap and as fast as possible. Added to that the inevitable move by clients to large one-stop shops making it even harder for the independent authoring houses. I don't think it is a viable business going forward when less money is spent on the design and creation of a Blu-ray than is spent to make a tape duplication of the master tape.

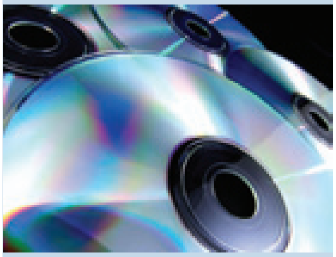
Hall The cost of replication, mastering, AACS, etc, needs to fall markedly to ensure lower price points are viable at retail level. The breakeven point for BD at present is too high for indies to release more BD titles than today.

Lauchenauer Consolidation and the market needs to find its bottom level to grow again.

Tussai I consider Blu-ray will not become attractive for medium-size replicators.

Breitfeld As lower margins do not allow for individual enhancements of the experience, automated ways of authoring, with little additional work, become more important. I expect to see increased use of automated mastering, online integration with standard content management systems and widespread adoption of digital copy.

Fitzgerald I think there are many ways in which Blu-ray can become the format of choice and this depends on a number of factors working together: Retail pricing needs to reflect confidence in a premium product. Distributor pric-



ing are to be reasonable. Manufacturing costs are high due to two main factors – the cost of manufacturing equipment and patent royalty. These costs should come down. Replication prices have already come down sharply and authoring costs are beginning to follow suit which makes Blu-ray a better business proposition for independents. If the industry is to ensure the format survives then harmonising the above is critical for all elements of the supply chain to co-exist.

Hosp Here, the MEDIA-TECH organisation is very ably representing our interests when it comes to the question of royalties. The royalties are a significant cost factor, which leaves the replicators with practically no room for manoeuvre due to the real market prices. Investments in Blu-ray are so high that a ROI is only possible if the conditions and performance on the part of the licensor are reliable, clear and stable. But since the start-up costs for Blu-ray are disproportionately higher than for the DVD ten years ago, we hope that the industry is not falling into the same destructive pattern again.

Remblier Once again, the new support was a justification to hike prices. You want the Blu-ray market to grow? Sell them cheaper!

Kohlen Volume and pricing will always be an issue. So, in order for the Blu-ray market to be a viable business the volume needs to go up. Thus, more TV series and good back catalogue titles have to come to the market.

Given the apparent slower than expected take-up of 3D, do you think 3D is here to stay or consumer interest in stereoscopy is temporary?

Hallen Starting with cave paintings, through to photography, then moving pictures, sound color, HD, and on…humans have an in-born, insatiable, often inexplicable need to re-create reality. Consumers will continue to demand "3D" in rich media and video games until the next iteration of virtual reality comes around. Is holographic projection next?

Bono Seeing is believing, and I don't think the potential of actually showing what the consumer is missing has been explained fully, especially in the hardware stores. Many consumers don't even know a BD player can play DVD as well – not to mention how little more they would pay for the same 3D home theatre equipment compared to the 2D version. Of course, 3D content is still lacking – at least in our local market. I am putting some hope in broadcasters to bring 3D forward.

Breitfeld It is here to stay, but will become successful only in niche markets. Most devices will support it, but I don't see mainstream content usage.

Evans I'm not sure, mainly because of the poor consumer marketing that has surrounded Blu-ray 3D compared to the cinema. From an authoring perspective, it's already creeping towards the fact that if 3D assets exist, then let's make a Blu-ray 3D as it also satisfies the regular Blu-ray too – if it can be authored at the same cost of a regular BD.

Hall Personally, I believe 3D has yet to fully evolve into a format – limited TV and products available for consumers to buy. Until consumers can watch 3D without glasses, the format will always be limited. People don't want to put on glasses for a long period of time.

Fitzgerald Interesting question. On researching the web, we find that the first full-length 3D film was the *Power of Love* in 1922. On this basis 3D will always be around and create interest in various ways. Providing the films are made in a way that complements this method of watching, I am sure the choice of 3D will be around for some time to come.

Lauchenauer As it stands, with glasses, 3D is going to be a niche product. Once the glasses-free 3D displays come around 3D will be here to stay. But remember it took 10 years for HD to get going so 3D will not become an overnight market fixture.

Hosp 3D will only succeed when it inspires consumers. That will be the case when consumers can immerse themselves in these virtual spaces without glasses and without feeling dizzy. The ball is thus still in the technology camp. Glasses-free 3D TVs are already in existence, but it will certainly still take a while until this new generation of devices finds its way into living rooms.

Remblier Slower than expected? 3DTV sales are better than HDTV or 16/9 TVs used to be. What we need now is more broadcasters, more Blu-ray 3D discs, more contents, more money to produce contents. 3D is not just a gadget, it is a new way of watching content and I really think it is here to stay.

Tussai I think the stereoscopic interest is only temporary and that 3D will remain a niche market.

Ingold I delivered the 3D movie on-demand service to Virgin Media cable, several days before BSkyB launched theirs. We learned a lot about the variation in 3D during testing! 3D can be an incredibly powerful experience, even with 3D glasses. Films like *Avatar*, *Hugo* and Disney's *A Christmas Carol* all showcase 3D at its best. These are films that were designed in and for 3D. Many films and sports events add 3D after the fact. Because the content wasn't created with 3D in mind, and because the Z-depth is often outwards only, the experience is frequently not as good. Both poor 3D content and poor 3D hardware adversely affect 3D interest.

To make 3D successful there needs to be a mix of technology that renders it well and content where 3D actually adds value. I remember the first time I watched *Avatar* in the cinema. I felt like I was an avatar in the film, just on the edge. It would be amazing if all 3D movies were like that every time.

Kohlen 3D is here to stay, there is no way around it. Many consumers already have a 3D TV without even knowing it. We need more content and 3D TV sets with glasses-free autostereoscopic systems to make it work for everybody.

Do you see the arrival of 3D as the shot of adrenaline the Blu-ray disc format badly needs to progress in the market, or do you think consumers will make a success of Blu-ray irrespective of whether 3D develops?

Bisdas 3D is the same story as BD; people do not fully understand HD and 3D, except in the cinema context. Even though people have a better knowledge of 3D cinema, 3D packaged media and 3D TVs do not register yet in consumers' shopping list.

Bono It should be the boost. Again, I see the lack of awareness as the problem, not the quality and advantages of the product.

Breitfeld I don't think 3D is a critical factor from a consumer perspective.

Hall As previously mentioned, authoring and manufacture prices need to drop before BD is seen on the same level as DVD. I don't think 3D BD will see the necessary upturn in sales to enable the product to be seen as a success.

Fitzgerald All methods of supporting and advancing the format should be welcomed and embraced, providing we ensure the consumer understands the product and its use and benefit. This I believe is one of the simpler messages for the consumer to understand.

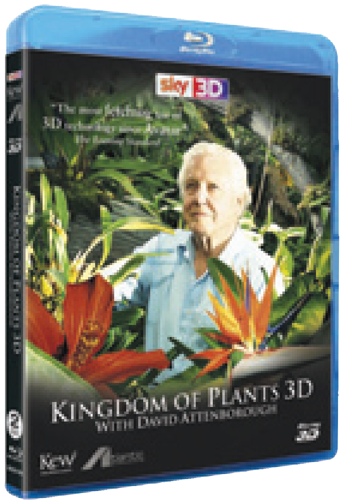
Ingold As noted above, 3D can only make a positive difference if the viewing experience is enjoyable. When it's good it might make a difference. When it's bad, it certainly won't.

Remblier Blu-ray 3D could be this shot of adrenaline. But consumers have to know that 3D content exists. Distributors have to promote this support. I think *Avatar*'s Blu-ray 3D in October will be a big success and will help to promote 3D and Blu-ray 3D.

Lauchenauer I think it helps Blu-ray to make it more special. But I am not too sure if people understand that a 3D Blu-ray disc is also a HD and 2D disc.

Hosp It will still take some time until 3D finally breaks through. In the meantime, one needs to see a greater household penetration of BD players that will push sales of BD discs. The industry should wake up to the unfortunate and alarming fact that many consumers still don't know they can also play DVDs and CDs on their Blu-ray player.

Kohlen I don't think 3D will help in the success of Blu-ray which we all hoped for. We need more content like TV series and back catalogue on Blu-ray as we do now on DVD. I think that will boost the BD market more than 3D will do.



Tussai 3D may influence the consolidation of the format, but it seems that it will not be the only trigger for the future of BD.

Evans Absolutely not.

Do you think the consumer take-up of 3D depends on the arrival of glasses-free 3D systems. If yes, how many years do you believe consumers will have to wait for a high-quality glasses-free system to rival the existing active shutter glasses systems?

Bisdas I think 3D might help BD more that the HD content, but 3DTVs must become glasses-free. Maybe with the arrival of autostereoscopic 3DTVs consumers might start investing again in a new technology.

Bono This is one of the problems faced by the current format. Good quality glasses-free 3D is still years away, but the hype around it makes consumers think it's just around the corner. So, they hold back from embracing today's perfectly good frame sequential 3D solution. 3D glasses are getting ever more comfortable nowadays.

Breitfeld I don't think we'll see high-quality glasses-free 3D TVs for family viewing within the next 10 years. The consumer electronics industry is entering a new phase where new technologies are delivering diminishing returns. The focus is on content discovery and availability on multi-platforms, not new experiences or formats.

Evans I think it will have a definite positive impact, but not what we think as I'm concerned that consumers might have lost interest.

Ingold Not necessarily. Current 3D takes advantage of existing HD masters for side-by-side delivery for 2 viewing-angles (left eye and right eye). Autostereoscopic needs around 8 viewing angles to view the set from different positions. It often renders this automatically. Only if and when that technology renders well, will it be a pleasant enough experience and not a gimmick, like a lenticular postcard. The best 3D is content that is rendered with 3D and viewing angles in mind.

Fitzgerald I have read recently that researchers in South Korea have already developed a concept for 3D images without glasses for the cinema, and at a recent Media Tech conference we witness a 3D TV solution without glasses (parallax barrier method). So, the technology exists. Again, this is a format choice and not totally reliant on the glasses alone, although doing without glasses is important.

Hall Yes, I do believe glasses-free systems are the way forward for 3D. I am guessing, but I believe we are at least 5 years away from consumers able to buy an affordable selection of glasses-free TVs.

Lauchenauer It will be a niche untill the glass-less option comes along. Autostereoscopic 3D will come, but it will be interesting to see how the price will come down. I think TV manufacturers will be very interested as they are struggling to make money out of today's TV sets.

Hosp Of course, it depends precisely on this. But it will take another two to three years until the relevant devices have been sorted out and possibly another two years still until their prices are attractive to the mass market.

Remblier I don't think that glasses-free 3DTVs will be there soon. Two reasons for that. First is that to have a good quality, autostereoscopic 3D needs 4K or 8K TVs. And even with 8K TVs you still see lenticular artifacts. Second, autostereoscopy requires 8 viewing angles, but broadcasters do not have the bandwidth to do that. The take-up of 3D needs only a few things: more broadcasters and more exclusive content. Also 3D content is made to be seen in 3D and should not be broadcast in 2D.

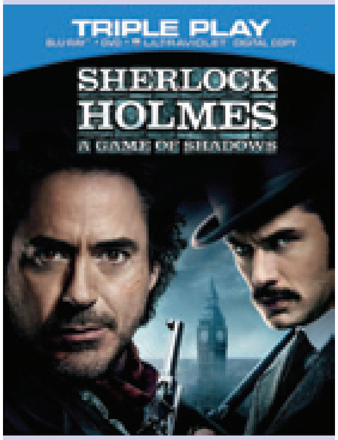
Tussai Yes, 3D depends significantly on the arrival of glasses-free autostereoscopic systems.

Kohlen A high-quality glasses-free system will boost the 3D market and will get the consumer to accept and buy 3D content. I do think it will take 5 – 7 years before this technology is ready so it will display the same quality as 2D does now.

Cloud-based UltraViolet digital copy is making inroads. Do you see it as potentially increasing the sales of BD discs or be the death knell of packaged media?

Hallen The promise of UltraViolet is that it will support sales of packaged media and serve as a well-managed bridge to digital format, creating better consumer confidence in home entertainment in general. As a studio service provider and supply chain partner, we will do everything we can to support this promise.

Bisdas I think the studios' intention is to use packaged media as a medium to involve more people in cloud-based distribution. It's important to take the first step using packaged media and train consumers to enter internet-connected devices to download.



Bono I am a big fan of Ultraviolet, if implemented as intended. Underestimating consumers' need for flexibility to watch our content is one of the biggest problems we as an industry have created. UltraViolet is a very good step towards gaining the consumers' trust. I may be an optimist, but I do believe UV will spread the digital use of legally consumed entertainment on all platforms.

Breitfeld Ultra-Violet is one of many solutions for Digital Copy. It is very clear that any form of digital copy helps sales of physical media. What is important to content owners is that the process of creating the digital copy is simple and low cost, and delivers a great experience on every device. Our digital copy solution has been successful because it is available today, requires no upfront investment in tools, is very quick to implement and has extremely low per unit costs.

Evans I think it's a great idea to hopefully extend the life of packaged media whilst introducing customers to cloud-based delivery. As it stands, it's still only in the reach of Hollywood studios as the entry costs for independent labels is just too high. So, just like BD-Live, BD-J, and a bunch of other Blu-ray features, there is a danger of independents never really grasping UV or taking quite some time to get there. From an authoring house perspective, we'll struggle to gain much additional revenue without major investment.

Hall Cloud-based digital copy will increase as mobile devices and tablet sales increase, but I don't see UltraViolet as the death knell for packaged media. Consumers prefer the physical product for keepsake values, and there is no confusion over formats and no lifespan for playability, unlike UV, as previously mentioned.

Fitzgerald Yes, potentially, I see this increasing the sales of BD discs. This offers consumers another method or choice of accessing content. Over time it may become the preferred method of watching movies. On hearing various consumer panels, the consumer understanding remains low and this is the determining factor.

Ingold As with everything there are a number of perspectives to consider. Here we have the studio, the retailer, the suppliers and the customer! The studio, retailer and suppliers all want to make money. The studio and suppliers (e.g. transcoding companies, CDNs etc.) can make money from this model.

Simply fulfilling the digital copy from a BD disc doesn't allow a non-studio retailer to generate revenue, unless they are also a seller of physical media, like Walmart. Non-physical retailers can make more money by creating a digital-only shop, allowing consumers to buy the Electronic Sell Through (EST) ownership file for say £9.99, rather than rent it for say £3.49. If the retailer receives 30% of that sale (and the studio gets the other 70%) then EST or upsell from rental as purely digital would be financially viable to the retailer.

Customers don't want to be worse off with a digital copy. Where it represents perceived value, and they want to own the content, they will use that model, whether it is a Blu-ray or a digital-only copy.

Lauchenauer Not too sure, we shall see how the market reacts to downloads. I think streaming is more appealing, a little bit like Spotify, but that is a very very low returns business.

Hosp The concept is exciting; there's no question about that. But it is still, proverbially, up in the air. That's because UltraViolet has still not penetrated the entire industry, let alone reached the end consumer in a significant way. To survive packaged media will have to prove it has value that set it apart from online and cloud distribution.

Tussai It can potentially increase the sales of Blu-ray discs, but it is difficult to predict.

Kohlen I strongly believe it will increase the sale of BD discs. Consumers do want a physical copy to hold, share and give as a present. However, we can't ignore the digital world and adding a digital copy to the physical product will give the consumer more freedom to watch his title.

What do you see as the opportunities, but also the pitfalls associated with Digital Copy on a disc?

Bisdas Digital Copy on a disc might represent a short window of opportunity for transcoding material for post-production houses. In the long term, every movie will be converted by the studios from their inception and place on a cloud-based platform for global distribution. The only thing they cannot do is to translate in local languages.

Bono To me Digital Copy on a disc is a waste of disc space that should be utilised to provide actual physical content quality. Any digital copy should be cloud-based. This will also serve as a step towards enticing the consumer to adapt to UltraViolet.

Breitfeld Digital Copy gives customers legal ways for multi-platform consumption of their purchased content while maintaining the safety and compatibility of physical media. It can help sustain physical media sales and at the same time keep people away from piracy sources. Pitfalls are certainly the complexity and cost involved with some Digital Copy solutions as well as the lack of compatibility.

Evans Opportunities for who? None really for the authoring house or replicator, or to be honest the clients that own the content. The companies hosting and streaming the content – they could be laughing!

Ingold Again, this depends on your perspective. Ultraviolet Digital Copy codes have been for sale on eBay, but that could also be looked at as advertising for the value of an UltraViolet Digital Copy!

Hall Opportunities – the ability to own the product across a wide variety of formats, devices, etc, ability to sidestep the high commission levels charged by Apple, ability to control the size and compatibility of the file, protect with security codes, build an online DC library. Pitfalls – it annoys Apple customers, as seen with *The Inbetweeners*! There also needs to be some tidying up in terms of the consumer downloading the file from disc, it's a bit cumbersome at present, and the consumer needs to be able to control the size of the file so they can choose the level of quality.

Fitzgerald Opportunities for rights holders to gain more interaction and knowledge and greater insights of their consumer. Pitfalls are over innovation, consumer intrusion and making a simple message complex.

Lauchenauer Not too sure.

Hosp Steve Jobs showed the music, then the telecommunications industry, how you can write history with new products and eventually change entire industries. The recipe was frighteningly simple (therefore probably very difficult): the products have to be simple, highly functional and attractive. Digital Copy on a disc is certainly none of these at present.

Tussai Increase sales may be an opportunity, but this will assist the further spead of piracy, especially if this trend will be allowed in Eastern Europe.

Kohlen The opportunity is ease-of-use for the consumer. We need fast interactive access to the high quality content at any time and any place. Pitfalls are quality and licenses. In Europe, there are many small independent licensors of the same movie.

How much of a revolution Smart TV represents, given that consumers are already comfortable using other screens (laptops, tablets, smartphones) to access Internet-delivered content?

Bisdas A smart TV, or a TV to be more precise, is the home media revolution. Laptops or tablets or every other second screen is only for information purposes, not entertainment. A large TV screen for cinema will always be what we want as the best viewing experience. So, smaller screens (smartphone, tablet, laptopns, etc.) will only have a supporting function.

Bono Smart TV is a logical step towards the future way of consuming when, what and how you want. There is certainly a screen for everything, Smart TV being the 'big screen' and the heart of family home entertainment, while tablets, smartphones, laptops perhaps represent more the personal, individual screen.

Breitfeld In my opinion the TV will continue to be the central point for long-form video entertainment for the foreseeable future. The "smart" elements will enhance "live" TV with access to video-related IP services such as catchup TV, special-interest content and digital copy of premium content. Other screens are used primarily for short-form content and functionality unrelated to video.

Evans I personally just don't think they offer that much. The ones I've experienced just seem so clunky and old school.

Hall I use a smart TV, and it is extremely useful for watching Netflix and Lovefilm, but in my opinion, that is all it is useful for at present. I don't use it for internet as it's difficult to type in web addresses and navigate. So, no, I don't think Smart TV is that revolutionary.

Fitzgerald The technology already exists and is popular in tablets, computers and so this makes some sense naturally. At some point families will reach a tipping point in terms of the number of devices around the home. At this point they may want an integrated solution. It could well be that competition will restrict this.

Ingold Most of what I've seen in the last decade has been an evolution, not a revolution. It's easily possible to end up with a TV with Freeview or freesat, a Smart TV interface with apps, a set-top box, a media server, a Blu-ray player with its apps, and a tablet/laptop and a smartphone on the sofa next to you connected to the wireless with their apps. So, there's choice!

The service that customer uses in their home, at that time, is the one that wins. That may depend on what content is available, what the quality is like, the cost of the service, whether they subscribe or want to pay by transaction, the awareness of the service's brand, how easy it is to use (and pay for content) and on what and how and who with they want to consume it.

Lauchenauer Could be massive… but needs Apple to make a standard that everyone is going to copy and get sued on….

Hosp The revolution lies in the fact that the devices are now connected to one another with maximum convenience. You switch from the smartphone, via the tablet, to the TV screen, use the smartphone or tablet as remote control, surf the web, load films in real time, play video games and take part in life-size-image video conferences on the TV screen – just like we've always wanted.

Tussai It seems this is the best solution for Internet-delivered content in this part of the European continent, however it opens up new dimensions and comfort zone for local "pirate content consumers generation."

Kohlen If the user interface would be up to scratch and the ease-of-use speedy it would be a great product. At the moment access is slow and the quality is most of the time less than DVD.

How to you see Hollywood squaring the circle between the inexorable fall of high-revenue producing packaged media and the unstoppable rise of low-revenue generating online digital delivery?

Hallen This is the primary challenge the industry is facing as consumers associate online viewing with "low-cost" or even "free." We believe that UltraViolet is a crucial part of the solution to get consumers to understand the value and pay for the ability to view content – especially premium content – online and off-line across multiple devices, and shared among multiple users.

Bono I do believe that all is not worth releasing on a physical support. Let good quality replace quantity.

Bisdas In our times it's difficult to sell pricy discs to consumers when they can get the same content for cheaper (of free) online albeit with a lower resolution. Though high bitrates Blu-ray discs may offer the best quality, H.264 divx codecs now offer a very good video quality at lower bitrates. Squeezed by economic hardship, US and European consumers might be fine opting for online delivery with a lower bitrate, but still good HD picture.

Breitfeld Markets change and companies must react to new customer requirements by developing new products, services and channels to market, in this instance digital delivery. If you focus on delivering customer value, profits will follow.

Evans They can't. DVD was a unique moment in time. The good times of DVD will never be seen again. The world loved and adopted DVD from every angle, but now with so many platforms, formats, devices, a new generation of kids – there just won't be the same effect ever seen again anywhere on anything.

Remblier Choices have to be made. Is it still possible to continue to sell content with high prices and thus open the door to piracy or should the price come down drastically and attracts more buyers on both supports?

Hall I don't think Hollywood has a preference for packaged or digital media – it is very reliant on back-end revenue, but I don't believe it cares where the revenue comes from, so long as it is there.

Fitzgerald I think the tendency will be for the two to become revenue channels for Hollywood and choices for consumers. Both delivery methods will offer different consumption and ownership for which consumer will pay in different ways. Thus, studios and partners will continue to benefit and supply the consumer with what they want.

Tussai Online delivery is a process that will generate low quality productions.

Lauchenauer Digital downloads will slowly become more profitable. It's still a mess out there for the consumer.

Hosp Online digital delivery isn't a foregone conclusion. Added to this is the fact that margins for both suppliers and service providers are extremely low. This means that there is still no supporting business model and the entire industry is thus required move along via trial and error.

Kohlen Make the online digital delivery work. Meaning a fast, easy-to-use and high quality experience that needs to be as good or better than Blu-ray. The user interface need to be fast and friendly.

If you let your imagination run wild, what system, format, application aimed at delivering content to the home would you like to see implemented in 10 years time?

Hallen More user-friendly ability to search, access, and catalog digital content; the ubiquity of everything, which will be available on-demand.

Bisdas I think a better version of a WiFi internet TV with a voice recognition software instead of a remote handset will be the best device for me.

Bono UltraViolet is a good way. I want to see my blockbusters with maximum sound channels and bitrate, be it 4K 3D BD, and my favorite TV series on a tablet in the background. Flexi-glass screens sounds like a great new way to wallpaper your living-room!

Breitfeld We have just done the Digital Copy for the Triple Play re-release of the original *Total Recall* using our FlickRocket platform. So, yes, I would love to see some form of direct cortex delivery of enhanced life experiences, using our upcoming Neural Copy and DreamRocket systems. Not available on packaged media, sorry.

Evans Wow! Tough one. I'd love there to be a revival of old school, just like there is with vinyl. A huge section of the market rejecting all these new multi-screen, multi-device, subscription-based, no physically-owned content, uzi-9mm-superduper-whizzbang content transmitted directly into your brain delivery mechanism……and a demand continues for a lovely shiny disc with your favourite film you know how to work and watch, with no interruptions or adverts selling you something. Oh yes, and trailers you can skip on a Disney disc!

Hall High-speed broadband on all public transport so people can watch TV and movies anywhere (not necessarily in the home!).

Fitzgerald Well, let's have a go: a central HD server at home with no download requirements, that understands each member of the household and uploads content and gives consumers instant access. A kind of Home Sub-Cloud. I hope the opportunity to own a product will continue to be available and at the click of a button.

Ingold As a consumer who has seen way too many *Star Trek* episodes, if it's out anywhere and at anytime in the world, I want to able to watch it, however and wherever I choose:
- at super-high resolution, 22.1-channel surround-sound ultra-plush cinema (or even a very steep cinema with high-backed, full-sensory seats that included individualised audio (including subwoofer feel) to get around the audio "sweet-spot" issue in cinemas);
- on-demand on my ultra-thin, self-retracting (into a one-inch transparent roll at ceiling level) wireless OLED wall cinema;
- into my Gucci prescription glasses that toggle to sunglasses in daylight and display my computer screen when I'm sitting on the tube, controlled by voice recognition and/or fingertip spatial-recognition points for "touch-typing" and gestures;
- numerous mini-shops or kiosks that allow global archive search (type or speak search terms), personal library addition (into my rights locker) and the ability to create standard physical media.

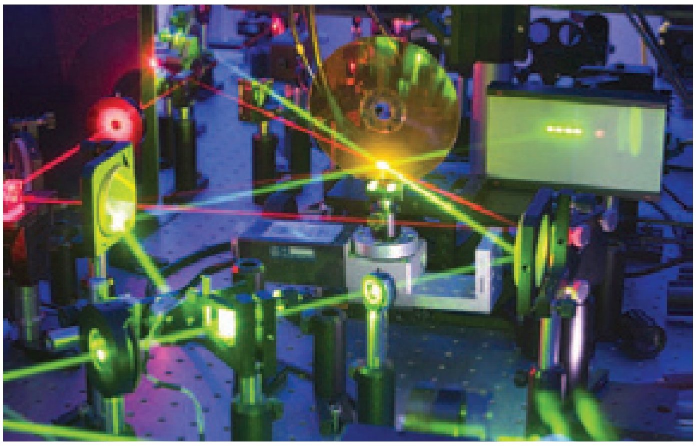
Mini-shops would allow for the social aspect and physical browse element (probably for high-value content) and kiosks would have the ubiquity of bank machines and replace large-scale stores as rising rents close down large retail spaces and physical storage facilities. This helps the environment by only creating the content people want to consume.

Lauchenauer Something that streams and I don't have to own. Just call up and I can watch it on any device or screen I like.

Hosp In ten years, we will once again be happily writing letters on paper and buying portable typewriters at flea markets, because it reminds us of the good old days. But, in all seriousness, Siri (perhaps it will be called something different by then) will be able to read our thoughts and navigate us through life whether we are online or offline. And because the best ideas come to us while we are sleeping, we will read them early in the morning in the bathroom mirror and then send them to the office. On light particles, perhaps.

Tussai Holographic interactivity with less and less physical remote control or touch screen maybe?!

Kohlen It will all be in a pink cloud!



4,000-line Super HDTV is pointing on the horizon. Do you anticipate this to be the next TV format? If so, could it lead to the arrival of a next-generation larger-capacity Blu-ray disc to deliver this content, given that broadband could be inadequate?

Bisdas Before packaged media might play a role in delivering higher resolution content to Ultra HDTVs it requires that content be produced in that format in the first place. This make take 2-4 years, which might give enough time for broadband to offer higher speed and bitrates.

Tussai At first glance it seems an extreme technology which will only be reserved for a small niche of customer who might notice the differentiation with HD.

Breitfeld I don't think there will be another mainstream physical media format for video after Blu-ray.

Evans I find it hard to believe that there will be a higher capacity disc delivering 4,000 super HD content, when they are struggling to sell Blu-rays carrying standard shot HD produced programming.

Hall I don't think this will be a far-reaching TV format. TV pictures are already good quality through satellite. Super HD is only for hardcore tech and film buffs. I don't see people buying Super HDTV for evening viewing.

Fitzgerald Super HDTV was on display at the Berlin Consumer Electronics Trade Show [IFA]. It is very impressive. There is surely a possibility for a larger capacity BD, but in my opinion not very imminent at this stage.

Ingold Advances in optimising compression with, for example, H.265, a.k.a. High Efficiency Video Coding (HEVC), certainly make 4K Super HDTV technically possible and it seems likely that this is the next evolutionary step.

However, both the content availability (more than that pretty field of sunflowers) and desire to consume it (i.e. it has a perceived value) have to be there. Even with HD sets and HD set-top boxes being largely standard now, HD VOD content, Blu-ray and some HD channels cost more to consume than Standard Definition. Most of the research I've seen seems to indicate a cost-conscious trend amongst consumers right now, so many consumers still watch in SD where cost is an issue. The trade-off between quality and cost has to be worth it, as we've seen with 3D uptake in the home.

Lauchenauer Broadband is already struggling with HD! I think it is going be great, but I see it more for events and cinemas.

Bono I certainly hope so, I love my bitrates!

Hosp This TV format is the condition for a 3D space experience without the glasses. And yes, as it appears, we are therefore not only reaching limits with the data networks again, but also with the permanent optical storage media we presently have available. Two years ago, the BD 50 was considered at the time as the last permanent optical storage medium. Things remain exciting in our industry, and we like it that way.

Remblier I may be wrong, but I don't believe in this format.

Kohlen We can never have enough TV lines and bandwidth. I do think it will be a big opportunity for the next-generation larger-capacity Blu-ray disc to display 4K video.

It is said that diversification is the best way of staying afloat in the face of market uncertainty. How do you see your company's range of services evolving over the next 2 to 5 years?

Hallen We are on an evolutionary path, and one example of that is our emphasis on building a better understanding of the consumer and how and why they interact with technology. We will continue to enhance our offerings in user experience and usability testing to provide the valuable user data required to create great user experiences.

Bisdas That is true, especially now as every service must be very profitable as the economic crisis does not allow for big revenues. We have invested in a color correction suite to provide services to clients that prepared DCP version for cinemas. Here, we cater mainly to indies and students.

Bono Key is to manage any new technical solution in the most time and cost-effective way, alongside with implementing new, innovative ways of exploiting all the exiting possibilities they offer.

Breitfeld I think we are well positioned for the physical-to-digital transition. We already have solutions for DVD, online and USB content distribution for video, data, interactive and software.

Our goal now is to expand and diversify our geographic and channel offering, extending our partner network to get these solutions to service providers, replicators and duplicators for their content owner clients.

Evans I don't see us growing DVD or Blu-ray at all – rather managing its decline as a service we offer before it's all taken away from us. The big guys like Deluxe and DADC will very soon complete the wrap-up of the majority of the work because budgets dictate that as much as possible gets done in one place – DVD, Blu-ray, UltraViolet, iTunes, VoD, etc.

The Pavement does not offer the complete range so I expect a large amount of work to be out of our reach. We need to either move out of the authoring market completely or just refocus on projects from those who want to work with us like some music and director-led programmes we have relationships with.

Our diversification is coming from new integrated areas with sister company Goldcrest which include short-form post-production (trailers, promos, epks, etc), mobile app development and a studio in New York opening up this Winter.

Hall We are looking at alternatives to the retail market – we already use marketplace business online alongside Amazon, Play, eBay, etc, and we are in the process of setting up an online shop within the Channel 4 website.

Remblier Even though we specialise in S3D, we are still working on 2D projects. Last year, 2D films accounted for half of our activities. I think this sector will decline over the next years.

Fitzgerald Because of the declining packaged media market, EDC engaged in a diversification programme a few years ago. While the entertainment business will still be a robust pillar in our strategy, we are increasing our range of logistics services to customers outside of the entertainment industry. In addition, we are developing new products based on our high precision moulding technology for customers in other industries.

We will use our depth of experience in manufacturing micro-structured products with functional surfaces for totally new applications. The future is exciting and promising in these new areas.

Tussai We foresee that replication will further decrease. Packaging activities will increase and we are in the process of developing a connected activity which is warehousing and logistic services for our clients.

Lauchenauer Now we are moving our core business to where it is more profitable for us, which is production.

Hosp We see ourselves as a general contractor serving the media industry. It is thus obvious that we are constantly required to optimise, further develop or completely reinvent services.

Kohlen I think we have found a solid base in services that can be used in several markets. Now, we encode and transcode for DVD, Blu-ray, Internet, Video-on-Demand and Ultraviolet. There might be more formats coming out, but understanding video and having over 15 years' experience in encoding we can deliver the best quality for each format.

Hosp Everything could be so simple as a replicator. We are all part of a supply chain and want an honest day's pay for an honest days' work. Our industry, indeed our world, seem to demand that everything becomes ever cheaper, faster and better. So, we are continually pushing ourselves dangerously to the limit.

Over the years we replicators have contributed to a ruinous price war with the result that many of our competitors have close their doors. No doubt others will follow suit, because without margins, no business is sustainable. Some remain blind to this reality and continue playing the game until they are no longer around. As a reputable company we have to have the courage to address this situation straight on.

We can only continue providing excellent services and be a reliable partner to our customers if we receive a fair remuneration.

Tussai In Eastern Europe, online piracy is the main cause of the continuing fall in revenues in the media sector. Packaged media is directly affected by this. The lack of even the most basic legal actions for years against online piracy has shaped the current status where especially young generations don't even think of spending any money for their source of entertainment, meaning, CDs, DVDs or legal downloads.

This local "trend" also heavily affects the level of Western European revenues. How? The large majority of the locally-established pirate sites full with the latest blockbusters and valuable catalogues are also accessible in Western Europe…

Several million of Eastern European people are working in Western Europe. Their habits regarding download has not change with their West-bound migration – maybe slightly – but local rumors confirm that actually they manage to teach their "practices" to the native population! The results are easy to predict.

As a solution to fighting this type of piracy, we propose that the main actors in our industry set up a pan-European collaboration with a view to developing a common set of measures destined to restrict the actions of those pirate websites.

Kohlen Video quality. It seems over the years video quality is no longer that important anymore, especially for the digital copy market and VOD systems. We see many VOD systems playing digital or delivering digital files that could have been encoded with more passion to get a much better result. No need to encode files in the wrong aspect ratio, with tape errors, wrong levels and field dominance errors!

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