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Where do you see your company's comparative advantage in this highly competitive market?

Evans I still produce home entertainment digital products including DVD, Blu-ray, Apps, etc, and my advantage is that I specifically look for projects that find it hard to fit the predominantly cookie cutter factory facilities that have had to focus on volume to reach the prices demanded by the food chain. Projects that either have direct artist, director or management drive and/or input. These projects normally take a bit longer to do and change like the wind.

Hitzel With its Optical Disc segment Singulus Technologies is the market leader for CD, DVD and Blu-ray Disc production equipment and ready to provide the machine technology for 3-layer Blu-ray Discs with a storage capacity of about 100GB.

Deuschmann For us, arvato Entertainment, it was always key to be in a driver's seat when it comes to new formats and innovative developments. The current discussion about the new formats, essentially the new games console format Xbox One as well as the newly-introduced Ultra HD formats in 4K, are the focus of our attention. In this respect a 3-layer 100GB Blu-ray Disc is also a new topic drawing our attention.

Hall Our chief advantage is that we are a terrestrial broadcaster – we can reach more consumers and understand our target audience better than other labels due to our extensive Channel 4.com database. We have access to more marketing and sales channels, we have first-look deals with production companies and comedy agents, we can utilise terrestrial advertising during peak periods, and the Channel 4 brand is one of the strongest in the UK.

Fournillier We manufacture metal cases named Futurepak. We use stronger tinplate material than our main competitor and we can also do 3D multilevel sculptured embossing which they do not offer. We also offer many options like free insert of client logo inside our plastic trays and the option to have colored trays.

Fitzgerald EDC has a capacity of 1 million discs per day and does service customers who are global market leaders in their fields. The manufacturing plant is directly connected by conveyor to the logistics warehouse where we have a high degree of automation and the capacity to pick, pack and ship up to 120,000 orders daily to retailers and wholesalers in Europe and overseas. The degree of integration is high, the geographically central

location and years of experience have enabled us to reach a consistent high level of speed and service for our customers.

Redfern We are able to efficiently produce high quality media and packaging in small as well as large quantities. In effect, it allows our customers to access services and products which would normally be reserved for high volume replication runs only. Our products can be used for promotional and retail purposes, with turnarounds of as little as 3 to 5 days.

Bono Excellent customer service, our dedication to producing the best possible result in a cost-effective manner, and staying on the bleeding edge of new technologies.

Gish Testronic has a wide range of QC services that are complementary to the workflows of our clients. Whether testing games or film and television content, we can offer services throughout the process from design all the way to the end product. As an example, Testronic can test the wire frames of a new game or app and give early feedback on design, UI and usability, then testing of the app or game functionality and content can begin prior to launch. If there are localized aspects, Testronic can perform localization QA to confirm the translations make sense and are up to colloquial standards. Any final version can be tested in a stage or live environment depending on need, to ensure final product meets expectations.

Brown Our ability to provide our clients with a complete end-to-end supply chain gives us our advantage. Being able to accommodate any stage of order fulfillment, from order to cash

to putting product directly into a consumers hands', truly differentiates us.

Hettler There are several. CDA is independent and can therefore guarantee that our clients are served on the same service level over the whole year. CDA is an international group and can serve clients from two facilities, one in North America and one in Europe. CDA has a full portfolio of optical media starting from CD, and DVD to Blu-ray Disc including 80mm formats and specials such as vinyl look, braille script or holographic patterns. And we offer other formats such as flash storage media on top of this. To summarize our core competencies are in excellent service around the product, the product portfolio, a great flexibility in manufacturing and a global presence.

Kohlen Having over 20 years of experience in digital media and being a relatively small, efficient company with all the expertise in-house, we can offer great services at very good prices.

Gilliat-Smith Post-production security. True file encryption 'at-rest' to combat leaks in post-production appears to be a unique solution that we can offer to TV companies for high profile series premiers, and to film studios for motion picture releases. (Encryption 'at-rest' is where a file remains encrypted after it has been distributed and while being worked on).

Weger Our comparative advantage is being an independent general contractor, offering our customers a complete and diverse range of services. These services include everything from authoring and the production of packaged media to physical and digital distribution. Without a doubt our biggest strengths are customer focus and adaptability, which enable us to react quickly to the demands and changes of the market.



Amongst the range of services you offer, which one did grow in importance over the past 2 years, which one diminished, and which new service(s) will you be offering in the coming 2 years?

Evans Packaged media, nothing changed, grew or diminished and I will continue to produce products as long as they are out there and need my services, but I'm not pushing hard to grow or maintain the business in an ever decreasing market.

Hitzel Singulus Technologies has developed over the years a high level of expertise and skills in combination with processes and scientific know-how and smart solutions in equipment engineering for vacuum technology, thin-film deposition, thermal treatment as well as wet chemical processes. Now Singulus machines are employed by global operators for their products in segments like Solar, Semiconductor and other coating applications. New application areas will increase in importance in the next two years. The company's spare parts and service business for the installed base of thousands of machines we sold is a strategic roadmap of our business.

Deutschmann We will continue with the existing formats of optical discs in accordance with the requirements and the demands of our customers. This means that CD, DVD and BD will remain a significant part of our offerings for many years to come. The decline of the CD and DVD segments are expected to go on, although the CD market is apparently more resilient in the recent months than predicted. Also, as we have stepped into the archiving business a few years ago, we will expand this field with further services. For example, we have recently added the digitization of analogue film-rolls and provide HD-based scanning and restoration services.

Hall 2014 saw the release of the 2nd *Inbetweeners Movie*, which remains Channel 4's leading brand. We altered the Film 4 release structure – previously funded by major labels in return for DVD/DTO rights – so that C4 could release in-house and retain creative and retail control. Movies seem to be a more profitable area for us now that the TV home entertainment market has diminished on back-end revenue due to set-top boxes and the increase in streaming services. I think disc-on-demand could be a rising force in home entertainment consumer spending, but there has to be a unified strategy by retailers in terms of implementation, especially after the failed Tesco launch a couple of years ago. Subscription streaming will also continue to increase, although if the likes of Netflix can allow download-to-device content similar to SkyGo and iPlayer, this will accelerate growth. Film 4's 4OD is planning to introduce this feature in early 2015.

Fournillier DVD and Blu-ray numbers are going down even with big key titles so we are now focusing a lot of video game packaging. We also developed a new range of 'goodies' that video game companies can put in their collector boxset.

Fitzgerald In the last two years, the number of special projects and special collector editions has grown and, accordingly, the number of bespoke and elaborate special packaging. The amount of covermount products with discs in a sleeve has declined. We started to offer a widening and extensive manufacturing-on-demand service since November 2014 for customers requiring very small quantities thereby dramatically reducing their inventory holdings.

Redfern Our in-house custom packaging has grown in importance, mainly due to the services and products that we can offer. Our ability to supply card packaging within very short timescales, and in low volumes, is unique. Demand for traditional packaging options such as jewel cases and Amaray cases has probably decreased for us. One of our major USP's is that Alpha can supply and print DVD, Blu-ray and USB products and packaging in-house. We understand our markets, and reactive sales are a major part of our business.

Bono Physical media is down while VOD, EST and iTunes are up. We are investing heavily into UltraViolet as our main source of business in the future.

Gish Testronic's game testing division has grown very quickly over the last 2 years. This growth is due to three main factors: 1) our Quality of Service. Our testers are highly skilled and experienced. We consistently have great catches, actionable issues, timely turn-arounds and excellent customer service. 2) our Breadth of Services. Many of our games clients use us for functionality as well as localization QA. Some even use our DVD and BD testing services for the testing of marketing material such as teaser trailers and such. 3) the Economy of Market. Clearly the economy has been tough over recent years and this has had an effect on the industry. For us, this has been a positive effect. Our position as third-party, agnostic, testers, with great flexibility and scalability, has propelled us in an otherwise down economy. We have seen some leveling out of our film and television services in the area of DVD and BD testing. Although these formats have quite a lot of life left in them, they aren't seeing the growth of previous years. There have been unex-

pected dips in retailer sales of these formats followed by some unexpected spikes. Consumer purchasing trends are becoming harder to predict, but consumers are indeed still buying discs and will continue to do so for some time, although it is smart to expect a downward trend in the coming years. Luckily, Testronic has been able to find success in some new areas. New technologies and formats such as UltraViolet, 4K, Ultra HD, High Dynamic Range, and new and exciting audio formats like Dolby Atmos and DTS Headphone X have kept our Film and Television team busy. Testronic remains on the bleeding edge, continually seeking out new technologies and forming critical relationships in order to obtain and maintain the knowledge base necessary to provide our clients the most up-to-date test environments and services.

Brown We are having a lot of success with our eCommerce Fulfillment services. Both new and existing clients are paying more attention to reaching the consumer directly and we're having many positive conversations around this concept.

Kohlen Consultancy grew the most. More and more clients need advice on what is possible in the chaotic digital world.

Gilliat-Smith Our MediaSeal file encryption 'at-rest' product is attracting a lot of attention especially in a year where there have been some very high profile content leaks. It has the added credibility of having been developed in conjunction with NBC Universal which helps. Interestingly, Patronus anti-rip for DVD has had a record year – we did not envisage that DVD protection would still be so prominent in 2014. Much is for pre-release screeners (DVD PIN-Play where a credit card-style pin is required for playback). But there is still a big demand from special interest publishers where high value is attached to a disc set and, of course, from some of the studios. If implementing protection has a noticeably positive impact on sales, compared to leaving content unprotected, publishers will go for it. Demand for Blu-ray protection on the other hand has been very limited. This may be because content owners don't know that protection can be applied to recordable Blu-ray discs in manufacturing-on-demand, for example.

Weger As we began early in experimenting with 3D and 3D Blu-ray, this is the service that did grow the most in the last 2 years. Our DVD production diminished a bit, but the last months we see again a rising demand in DVD services. DVD will also be around for the next 2 years, so our services for DVD, BD and 3D BD will be available in the near future.



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Are you considering a strategic move, or have you already implemented one, into a completely different product or service market?

Evans I've already made that changed in 2013 with the setting up of production company Mad As Birds Limited, and have already completed our first feature film "Set Fire To The Stars" starring Elijah Wood. Within a year my three partners and I conceived, wrote, raised funds, shot and delivered a completed film. Once done, I was back in familiar territory with distributors to take the film to market.

Hitzel Singulus Technologies is continually expanding its technological core competencies, i.e. know-how in the areas of vacuum coating, nano deposition, thermal processing, wet processing, automation, process technology as well as the integration of production steps in order to open further, attractive work areas. In this context, internal growth from the development of proprietary solutions as well as acquisition opportunities for the generation of external growth are analyzed with respect to their feasible implementation.

Deutschmann As mentioned, we are exploiting the digital asset management services constantly. Once we have digitized the media – and this can be audio, music as well as video material plus books and documents – we are offering access and search optimization functions. Accessibility of the digital content can be provided via cloud-based services and neutral platforms. In addition, we can offer financial solutions for these services as well. Besides the archiving business we are also taking care of direct-to-consumer shipments and the related e-commerce platform. For media customers we are running their merchandising logistics and the D2C business. This will be also of more interest in an environment when games and media are mainly consumed online. The opportunity related to figurines, for example, should not be forgotten, and we are about to extend our service scope in this area.

Hall As mentioned before, Channel 4 largely relies on the market to drive its decisions in terms of strategy, as we don't own our content nor have the budget to launch a groundbreaking new service, unlike other labels/broadcasters.

Fournillier Yes, we did start already. We are now active in the food sector and supply chocolate and biscuit companies with tin boxes, wooden boxes, and cardboard boxes.

Fitzgerald The core of our business is optical disc manufacturing and distribution.

Redfern We've witnessed a marked move away from large stock holding, with enquiries for shorter, more frequent production runs. As an extension of this we have been monitoring the developments of manufacturing-on-demand within publishing and felt that this could provide our clients with a risk-free way of offering back catalogue or niche products to their customers. The product is only produced on demand, thus removing the charges and risks associated with holding stock which may or may not be fast moving. Our Minimum Order Quantity 1 programme (MOQ1) means we are able to produce CD and DVD packages, dispatched direct to consumers.

Bono We are sticking with home video as we believe it has a bright future thanks to digital delivery solutions.

Gish I delivered the 3D movie on-demand service for Virgin Media cable, just prior to BSkyB's

3D launch. There is a wide variation in the quality of 3D content and the technology that delivers it. 'Great 3D' content has been designed in 3D with 3D in mind. 'Good 3D' can provide extra clarity and sharpness, but we can experience that with higher frame rates and resolution. 'Bad 3D,' which has been converted from 2D to 3D using techniques like rotoscoping and with Z-depths pointing outwards, can really detract from the experience. It will be interesting to see how 48 frames per second (fps) proceeds. *The Hobbit: An Unexpected Journey* received mixed reviews after being screened at 48fps and 3D. I found it took my eyes an hour to focus correctly on that combined level of detail and depth.

Brown With our steep history in managing content for the Home Entertainment industry, we remain focused on the diversification of media distribution and best serving the evolving needs of our clients. But we have also honed in on key strengths which have been a part of our DNA for decades. Our ability to physically manage and move product for clients is something that we're focusing more on and are now offer to clients in new markets.

Hettler Today, we have three active independent business units – Media Manufacturing,

Flash-Media Solutions and Functional Solutions. Some of our clients are served from one business unit others from two or even from all of them. And this on a global level. And of course we have more ideas and even projects for the future which we will disclose when the time has come.

Kohlen In addition to all services needed to create DVD, Blu-ray and VOD productions we are developing more efficient and flexible tools. Think of automated cloud-based encoding for dailies and making high-end encoders like CinemaCraft which are capable of reading more file formats than just uncompressed QuickTime V210.

Gilliat-Smith Much of our work comes out of partnering with content owners and distributors for special development projects. For example we are just completing a secure set-top box project with Swank Motion Pictures for non-theatrical digital distribution where studios can open up additional revenue streams for early release content to private audiences.

Weger We have developed an enormous expertise after operating in the high precision injection moulding business for more than 30 years. Thus, we founded our new start-up company kdg Opti-comp last year in order to establish ourselves as an European competence center for high precision optical injection moulding.

arvato Replication

arvato Replication is a leading entertainment and media service provider and realizes an extensive range of services and solutions for its business partners in the games, video, audio, publisher and TV/broadcasting industries. Its global branch includes sites in USA, Mexico, UK, Germany and Hong Kong. The outsourcing provider supports global and national customers at the highest quality level, following a tradition going back over 50 years. The integrated solutions portfolio includes every step of media asset management from replication, printing as well as special packaging solutions, archiving and digitization to physical and digital distribution and anti-piracy solutions.

All of these processes are supported by innovative end-to-end IT systems. In recent years arvato Replication has further invested in Blu-ray Disc manufacturing equipment, especially in respect of the upcoming shift of the video games consoles. In parallel to the market launch of the newly introduced X-Box One console the new disc format of X-Box One will be based on Blu-ray. arvato Replication with its global reach is one of the certified manufacturers and meets the highest security standards.

With its solutions arvato Replication creates added value for its customers and equips them to meet the challenges of today's market.

arvato Replication (for more information see www.arvato-entertainment.com) is part of arvato AG. arvato AG is a leading international technology service provider that lives and breathes digital technology. More than 66,000 employees design and produce innovative solutions for business customers from all over the world, covering a wide range of business processes along integrated service chains. These include Digital Marketing, Financial, CRM, SCM and IT solutions, as well as all services related to the creation and distribution of printed products and digital storage media. arvato is a wholly owned subsidiary of Bertelsmann SE & Co. KGaA. More information is available at www.arvato.com

There's a lot of alarmist talk 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 the main target market of packaged media?

Evans That old chestnut! For the first time I believe the answer lies with the outlets selling the discs. I used to say people would drive the demand, but I believe the outlets' desire to keep selling them – giving them shelf space – will dictate the speed of demise.

Hitzel There are still so many areas and countries with low internet capabilities and also many other good reasons for packaged media to be available for many more years to come.

Deutschmann I would disagree somewhat. For some products we see a deeper involvement in innovative packaging designs. There are lots of special editions, something the digitally distributed content cannot offer on its own. Looking at the 'niche' market, vinyl records may support this observation: Even albums, which have been published 20 years ago, are produced actually for re-orders. The key word is "packaged", because the design of a brilliant artwork will provide value for a long time. I would not be surprised if discs – especially CDs – are around as long as vinyl records and even beyond. An optical disc is also an archiving media. It can be kept and stored for many years – much longer than the standard hard drives in a home computer. Although it will not stop the growth of the online consumption, there will be a place for optical discs for a long time.

Hall Discs will be around for as long as the consumer wants them. The general confusion over ownership of digital content and cloud-based UltraViolet in general, plus the fall in retail price for DVDs and Blu-rays means that physical media is still very desirable, especially during peak trading season, both for consumers and retailers. The success of HMV during 2014 in the UK underlines this. We find that lower buying prices are favoured in order to secure lower pricing for consumers, instead of exclusive packaging, similar to the Amazon buying model. The lack of online competition to Amazon can only help the high-street grocers and retailers.

Fournillier I think discs will be around for another 4-5 years. However, we are producing now

an increasing number of special collector boxsets for vinyl for 15 to 20 euros each. It shows there are still some fans out there to buy these collector pieces.

Fitzgerald The packaged media market is definitely declining, but it will still exist in 10 years time. There is still a significant difference between the experience of purchasing and collecting a physical product and hitting a key to download or stream content. Consumers must have a variety of consumption option and each will choose their own preferred way. The physical retail channel will still remain a lucrative one for years to come.

Redfern Physical and online media have diverged, almost into two separate markets. Speaking

downloadable content. The environment is chaotic right now, with many ways to consume content. There are plenty of hardware and software options available, such as directly through an app such as Netflix, Hulu, Vudu, Amazon, etc., on a connected TV, or using a Sony PlayStation or Apple TV devices. There are lots of places to find what you want. It seems the complexity of the market may be slowing things down a bit, but services like UltraViolet could help simplify the market from the consumers point of view. Once high quality content is easy to find and be accessed, consumers will become more loyal and the erosion of the packaged media market will speed up. This may take longer than previously expected, but ultimately, the speed of erosion is contin-

record. This is a growing and very profitable niche market. Ten years ago nobody would have expected this turn around.

Brown CDs and DVDs have done well this year; in fact they have grown by some measurables. I foresee the disc format maintaining strength for another 5 - 7 years, perhaps even longer for Blu-ray.

Bono For several more years. Packaged media is stumbling right now, but it's not going away until a large majority of consumers are connected to a very fast internet connection and have easy access to digital services.

Kohlen Discs will be around for a very long time. If they will be used for DVD, Blu-ray or video formats beyond remains to be seen. I do think Blu-ray still has a chance if we can get retail prices down even more. At the moment we keep hearing the AACIS license



loosely, people have two options. Online media tends to be streamed rather than downloaded, making it transitory. Physical media is still used when people want to own and keep the media (and get the packaging, notes, etc.) or give as a gift. We are confident that physical media will be around for a while.

Gish Well, it is obvious that the consumers are buying less packaged media, and who knows what will happen with future generations. People are consuming content in different ways and much of it is not through a packaged disc of any sort. We have seen tremendous growth in streaming and

gent on the quality of "digital delivery" offerings. In other words, it will be the consumer experience that really dictates the speed of online adaptation. And even after packaged media is "dead", there is likely to still be a niche market, for a long time, just as there is for vinyl today. Blu-ray Discs have incredible quality and there is potential still for even higher quality. I think they'll stay around for quite some time.

Hettler We trust that optical media will still be there when analysts don't expect them to be in the world any more. To give a determined life span is hard, but look at the revival on the vinyl

fee is stopping labels from producing Blu-ray discs. For small labels, 500 discs is the volume to start with, leaving them with next to no profit margin.

Gilliat-Smith To my earlier point, disc protection is very much alive. The protection levels we have developed are very high. Discs are obviously on the decline, but they do work for certain markets.

Weger Despite all prophecies, our expectation is that discs are going to stay around for a while although not in the used quantities. The disc-market will change over time and become a niche market for collectors.






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|---|------------------------|-----------------|---------------|--------------------|-----------|-----------|
|  COMPACT disc | CD Mastering | ● | ● | | ● | |
| | CD Burning | ● | ● | | ● | |
|  DVD | DVD Authoring | | ● | | | |
| | DVD Burning | | ● | | ● | |
|  Blu-ray Disc | Blu-ray Disc Authoring | | ● | ● | | ● |
| | Blu-ray Disc Burning | | ● | ●* | ● | ●* |

*with 3rd party burning tool

Cloud-based UltraViolet digital locker makes inroads in Europe very slowly. What needs to happen for consumers to embrace this digital delivery service?

Evans UV needs to achieve one major step – allow independents the chance to get titles out there. They are still put off by the huge membership fees. Remember that all independents together sell as many, if not more discs than the Hollywood studios, yet they are pushed back at step one because of costs.

Hitzel On a long run consumers will only use services which are easy to handle with good content and at a reasonable price.

Deutschmann The question is always whether the consumer sees the added value. I have my doubts that the marketing and brand effort have been sufficient to make UltraViolet more popular.

Hall The sign-up process needs to improve for UV to become a success, and UV needs to reduce its costs for other independent labels and producers to be able to afford uploading content within the UV locker. The idea is there, but the costs are prohibitive and the consumer needs to be able to set up and access his/her content in a much more streamlined way than at present. Netflix is leading the way in streaming and UV and Amazon have a long way to go to catch up.

Fournillier I think Amazon Instant Video and Netflix will win over UltraViolet since consumers want an easy and simple solution.

Fitzgerald UltraViolet is a good idea, offering consumers greater choice and flexibility. It needs to function rapidly and with simplicity for it to be embraced. There is of course a danger that the offering of Amazon and Netflix hinders its growth.

Redfern Cinram has been putting content in the hands of consumers for over 40 years and UltraViolet adds yet another secure method to do this. UltraViolet is a heavily supported, comprehensive solution to provide secure content. Adoption at this stage will depend on the consumer-interfacing platforms which drive the UV standard. This is something we plan to be a big part of. Watch out for an upcoming release.

Bono Average internet connection speeds need to increase

across the board. UV user experience will need further streamlining, and there's never too much advertising and consumer education around it. Netflix is a threat, but as it's a subscription model and most of the content is rather old it's a different model compared with UV. If studios work together in support of UV large retailers will eventually either drop their own digital locker systems and adopt UV, or they will merge their systems into UV somehow.

Gish This all boils down to ease of use and quality of product, and of course a relevant catalogue. Whoever can meet these criteria most successfully will own the market. UV could potentially be superseded by a retailer if a retailer could provide a better experience, with high quality content, and a very large catalogue. So far, UV has the upper hand because it has a huge selection across content owners.

Brown Cloud-based systems will grow. UV is great, but poorly executed. The cloud-based approach will be retail-based and I have no doubt will continue to grow and prosper as digital offerings and its infrastructures improve.

Kohlen It is hard to imagine that since Netflix started in the Netherlands a little over one year ago it now has 4.2 million subscribers, this is about 50 % of the Dutch households. The name Netflix means more to people than Blu-ray.

Gilliat-Smith Although UV becomes more common place we hear less about it now than we did last year which must be a good sign, that is, it sits in the background and consumers don't have to worry about its complexity.

Weger UltraViolet is not the tool to increase attractiveness of packaged media for the consumer. It is a redundant strategy: The European customer either wants one or the other. The decisive battle for the future home entertainment customer however has already shifted into the internet and its various services. And those providers that can offer their users persisting and interesting up-to-date content at the best terms and conditions will certainly prevail.

New License Term begins at DVD FLLC

DVD Format/Logo Licensing Corporation (DVD FLLC) is a company whose primary concern is better DVD products through the format compliance, everywhere. Established in 2000 by the ten originators of the world-standard DVD technology, DVD FLLC issues DVD Format/Logo Licenses for use of the DVD Specifications (Format Books) and the DVD Logo* for commercial purposes. All of DVD FLLC's license holders (Licensees) are manufacturers of DVD products, such as pre-recorded discs, recordable discs, hardware (including DVD players), and software devices. Only DVD FLLC's Licensees are authorized to place DVD logos on their products, after successful completion of the verification process.

Format compliance of DVD products is extremely important, as it ensures a high level of interoperability – which directly affects DVD's success as a format. Without Format compliance, there are chances that a DVD player would not playback a DVD disc, or a DVD recorder would have trouble writing on a DVD disc properly. Format compliance is maintained through a verification process conducted by the authorized laboratories with the expertise to evaluate DVD products using the DVD FLLC Test Specifications.** If a product is found to be non-compliant, the manufacturer will have the opportunity to modify the product until it passes verification. DVD FLLC's two principal concerns are consumer satisfaction and success of the DVD industry – and that is why we take format compliance so seriously.

January 1, 2015 marks the beginning of a new License Term for the DVD Format/Logo License. All manufacturers of DVD products, whether former Licensees or newcomers, are requested to apply for the license so they can use the formats and logos. Companies should apply for the license promptly to avoid any gap in the licenses' coverage; the DVD Format/Logo license is not retroactive, and products manufactured before obtaining an effective License are considered unlicensed. If there were Logos attached, the products infringe the trademarks of DVD FLLC, and they could be seized by government authorities.

Because of DVD's tremendous popularity, many companies try to trade in unlicensed products. To check trade in unlicensed and possibly non-compliant products, DVD FLLC collaborates with government authorities, who have implemented border protection measures. In the past ten years, several million DVD products have been seized, and the infringing goods were ultimately forfeited and destroyed.

DVD FLLC also initiated a market Inspection program soon after its establishment. Each year, DVD products are randomly acquired and inspected. The types of products inspected in the past include DVD-Video discs, DVD-Video players, and DVD-R discs, to name a few. The samples were examined by the authorized labs, using the same test specifications as used during verifications. Presently, a new market inspection initiative is underway, and the outcome will be used to raise the level of compliance with the DVD specifications, and improve interoperability of DVD Products in the market.

DVD FLLC believes that initiatives such as customs border seizures and the market inspection program benefit consumers and the DVD industry. The message from DVD FLLC is: "Become a Compliant One. Get a DVD Format/Logo License."

**DVD FLLC owns the world famous DVD Logo, which is a registered trademark in over fifty countries.*

***Available for download from www.dvdfllc.co.jp.*



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

Evans I think it's an interesting one to watch. Removing third-party boxes, and having online content directly accessed from the TV is great, but it needs consistency across TV sets and a big PR push.

Hitzel Maybe not a revolution! But it will be an interesting add-on for the new generation of Smart TVs.

Deutschmann Connected TV has to be seen, it's too early for any guess. Second screen is user-friendly, people can move with their smartphone across rooms and still follow the movie on the device. A TV screen is fixed on the wall. My guess is that both

formats and devices will converge.

Gilliat-Smith The TV set is the most comfortable way to watch television. If consumers could get content more easily onto their TV sets maybe they would watch more on it.

Hall Connected TV is a vital cog in the transition from physical to digital media, but it all depends on broadband speed and data. The difference between watching HD content and streaming is noticeably different and mobile devices remain the preferred medium for viewing, especially now that 4G is more widely available in the UK. Until fibre-optic broadband becomes widely

accessible and bears up under the strain of increased traffic during evenings and peak viewing periods, mobile will continue to lead.

Redfern Give the consumers choice. We provide the delivery of great content that our customers produce. The method of watching that content is up to the consumer. The more places they can watch it, the better.

Brown The biggest growth opportunity with the connected television will be in the area of OTT channels. Seamless data connection to the larger screen will give both content creators and consumers more options. However,

we also need to be cognizant of potential increases in piracy, as connected televisions essentially remove a layer of complexity for viewing pirated content on a larger screen. The OTT offerings will have to be user-friendly and consumer-budget conscious.

Fournillier I think many people use their phone to access internet, and movies may be watched on TV screens and mobile phones or tablets. I think the young generation does not mind anymore watching on smaller screens. Just look around when you are in a long-distance train journey and consider the number of people who are watching movies on tablets and mobile phones.

Do you think UltraViolet has the potential to increase sales of BD discs (as the studios intended) or will it be the death knell of packaged media?

Evans Neither. Different demographics will buy whatever suits their requirements.

Hitzel If UltraViolet will be accepted by the consumers and if it makes sense to bundle it with packaged media, then there is definitely the potential to sell BD discs with it. However, UltraViolet is a service and a name that is not well known in the German market yet. Therefore, this still needs a lot of marketing activities and consumers education.

Deutschmann I'm skeptical that UltraViolet will support sales of Blu-ray Discs – why should it? From the standpoint of the consumer, the question is how often do I watch a movie? Once, twice? But certainly not ten times. However, that is what I do with music titles. So, for a video title which will be seen once or twice (and the first time might be in a cinema), why put a movie onto my tablet, using gigabytes of storage?

Hall The addition of UV to BD has always had the potential to increase sales, but registration and access to this content must be easier for the consumer. It has always been understood within the industry that BD will not be replacing DVD as the main source of home entertainment sales. However, the BD/DVD split is much closer than before, especially with the latest blockbuster movies. Therefore, if BD is to take over from DVD, then UV must adapt to consumers' needs.

Fournillier I am not so sure since UV has not really picked up so far...however as a packaging solutions company we hope this will still work and that people will still buy discs and boxes.

Fitzgerald If consumers appreciate the added value that UltraViolet offers, then it will help increase BD disc sales.

Redfern I think it has the potential to increase the sale of BD discs. Packaged media, with marketing initiatives, will continue to drive sales of new products.

Bono As consumers learn more about UV, it will be recognized as added value and will impact disc sales positively, although eventually consumers will move to electronic sell-through (EST) only. It's important to ramp up the launch of UV speedily.

Gish Arguably, UltraViolet has already increased the sales of BD

discs. Many access code redemptions in the UV ecosystem are from consumers' buying discs. Will it be enough to get UV to the saturation point where it needs to be? That's a better question to ask. Certainly, used as an incentive to purchase packaged media, UV is doing a great job.

Brown UV will not be the death of physical media. Consumer education is still a problem for Blu-ray.

Kohlen It will potentially sell more BD discs, but we shouldn't get our hope up.

Gilliat-Smith There will always be different camps with those who want to own their content and those that are happy just to watch once. For those who like to own, UV is a great concept and it should build BD sales.

Weger Neither one nor the other. In our opinion the impact of UltraViolet is simply overrated.

Fitzgerald I believe there is not much of a revolution for the reasons mentioned in the question.

Bono Not much of a revolution at all until CE manufacturers crack the problem of poor, unfriendly user interfaces.

Gish This is a good example of how the market is being further complicated. It is akin to putting a VCR at the bottom of the TV sets; people may use it occasionally, however, with the saturation of game consoles, and the need of those consoles to play the greatest games, it is unlikely that connected TVs will replace a separate box anytime soon. People are used to using their console to play games, and thus more likely to use it to connect to the internet for all their apps, simply because they are used to it. This is probably also somehow true of Blu-ray players.

Weger Internet television is already an experienced reality, which is why this channel is becoming more and more of an important and interesting supplementary business.



Facebook servers

How do 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?

Evans I just can't see how this can be done. Studios have had the good days and profits that came with it. It's a different world and you should ask them your Question 2 and 3.

Hitzel Hollywood has to produce more Blockbusters! If we see more titles like *Avatar*, *Lord of the Rings* or *James Bond* movies in the cinemas, this is likely to influence directly the sale of packaged media.

Deutschmann An optimal combination of all available distribution channels will lead to more incremental business. Finding the right balance is for sure one of the biggest challenges.

Hall By doing what they are doing now – selling exclusive rights to forthcoming big-budget TV series to online subscription retailers. Bigger advances are paid, and there are no timelines or broadcast restrictions for consumers to watch content. The success of "Breaking Bad" and "House of Cards" has totally altered the perception of TV content, and in a way, has also aided physical media sales due to its exclusivity online.

Fournillier To be frank, I think their margin is better with online digital delivery and they need far less human resource. They make higher margin only if they sell with special packaging. If they sell their movies only in Amaray boxes, their profit is not so high.

Fitzgerald Hollywood is full of very intelligent and capable managers who have superior marketing skills and have the ability to monetize film and video rights over a varying array of distribution channels as they have done for decades.

Redfern This has to be on the premise of differentiation – packaged media will deliver the best quality home entertainment experience for years to come. The interests of film studios and CE manufacturers alike will be best served by educating consumers to understand the quality benefits of packaged media. This will be especially true of 4K.

Bono By creating a high-revenue producing digital online product

that consumers actually want to own. We believe strongly Ultra-Violet is the answer.

Gish This just isn't true. If consumers were to purchase most of their content online, the studios could see similar, or better, profits. Much of the online content has a purchase price comparable to the DVD or BD, respective, to the digital version of standard or HD. There are no more trucks to ship and plastic packages to make, but there are different expenses to set up a digital storefront and maintain servers and so on. One would think that, after the heavy lifting is done of setting up a digital infrastructure and storefront, the profit margin would be better in an online offering. The issue may come down to a different dilemma within the online offering, namely, consumer's purchasing habits. Are people purchasing or renting? Rentals do have a much lower price point compared to purchase, but it seems likely that people will rent movies and shows that they wouldn't buy. We are just coming out of the infancy of this ecosystem. It will be interesting to see how people consume and how studios and retailers react.

Brown Brown I think instead of millions of transactions at \$10 we will over time see five times more transactions at \$2 dollars growing to 10 times the transactions at \$1. The demand and absorption of content will remain, that is the economic model which will change as the world's digital infrastructure does.

Kohlen Packaged media will become a niche market and digital delivery will take over the way we watch content. Companies like Netflix are unstoppable.

Gilliat-Smith Better quality blockbusters with better marketing will help, but online is the way forward for the younger generation.

Weger Simply speaking, squaring this circle will not work. Only the true blockbusters productions will pay off, B- and C- class productions will encounter more and more difficulties of achieving a reasonable ROI, as the margins in a purely digital distribution will not cover costs.

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Ultra high definition 4K TVs are coming to the market. Is this a response to consumers demanding a better quality picture or a push by CE manufacturers who need to introduce higher-margin products?

Evans What's the point of 4K TVs when the products that can deliver 4K are decreasing?

Hitzel Blu-ray discs with HD content already deliver a very good picture quality. 4K further gives an even more brilliant picture quality. However, so far 4K is mainly driven by the CE industry. It will certainly help the packaged media industry if there are players for UHD available, real UHD content and Blu-ray Disc with 100 GB storage capacity.

Deutschmann The latter one. I haven't heard of a consumer-driven demand in this context – no blogs or documents based upon the interest of consumers to ask the CE industry to develop these new devices. Was it?

Hall 4K TVs seem to be a more accessible and viable alternative to 3D, which continues to be burdened by consumer scepticism and reluctance to watch content with specialist goggles. The gradual decline in 3D-broadcast content is testament to this. Consumers are always insatiable for new technology, and the demand seems to be there for 3D, especially as viewing 4K content is so much easier.

Fournillier I think this is just a way for manufacturers to keep selling equipment.

Fitzgerald I believe it is more of a push that is trying to tickle the

interests of consumers to upgrade sooner or later for better quality and features, carefully.

Refern I remember attending a presentation by an entertainment industry executive in the early days of Blu-ray at which DVD and BD pictures were shown side-by-side. He couldn't distinguish between the two! Sadly, my own experience is that the majority of consumers don't fully appreciate the quality of 1080p. I've often heard "DVD quality is good enough" and I've never heard "Blu-ray quality isn't good enough." I'm certain that 4K is being driven by CE opportunity rather than consumer demand, but that doesn't mean that 4K can't be commercially successful. However, I believe that much consumer education will be needed in order for 4K to become successful.

Bono Mette It's totally a push by CE manufacturers, there's no doubt about it. The average consumer is not asking for more resolution.

Gish It's probably not fair to say that this is a result of one or the other. Of course, manufacturers are always eager to bring about a new technology that drives up the cost of their products, but it is true that consumers are starting to care a bit more about quality now that there is saturation in the avenues through which a consumer can get a movie or televi-

sion show. 4K and UHD, which are not necessarily the same thing, cannot be a direct response to consumer demand. Most consumers don't know what 4K or UHD are and probably can't tell the difference between these new TV sets and a previous year's HD TV sets. At least not yet. But there are plenty of consumers who want the best quality available even if they don't fully understand the technology. When HD came out, plenty of

Brown It's a hard sell. Most new technology in the history of Home Entertainment has been driven by the CE manufacturers; we know this as Cinram has been involved in all advancements since the 8-track. When technological advancements are driven by consumer demand, heavy consumer education is not required; Apple has proven this with the success of iTunes. We still have a way to go, as technology such as Blu-ray is still not fully understood.



people were guilty of watching shows and movies in the wrong aspect ratio.

There is a learning curve when higher quality is introduced to consumers in the form of a new technology. I do think people really do want the best quality, but it takes some education to understand what these new technologies are. Once consumers understand the better quality and can actually see it, then they will not settle for less. With 4K and UHD we are creating a consumer base with high expectations, for better or worse.

Kohlen Not because consumers are demanding a better quality. It is more like evolution, before we know it we are watching in 8K.

Gilliat-Smith I suspect the latter – most of Europe hasn't yet embraced Blu-ray quality.

Weger The main motivation behind launching 4K TV sets is to reinvigorate the dying TV electronics market. It is still uncertain if this effort will be successful. The consumer is currently conditioned to invest in smarter and smaller devices than in gigantic TV sets.

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Do you think 4K could be the shot of adrenaline Blu-ray needs, given that a BD disc is best suited to bring ultra HD content to the home?

Evans My concern is whether there is money in the food chain to justify the production of 4K BD discs. Just at the authoring end-clients have pennies left to make a disc. Will they pay more for 4K?

Hitzel That could happen if we see good marketing by the CE industry and the Blu-ray Association and if they use good consumer education to promote the new UHD Blu-ray Disc.

Deutschmann Although I would hope that this is the case, I'm skeptical. If this is true, why then are there still DVDs around? From my point of view, there are definitely consumers who do care for the best available quality, but there are others who are just interested in the content and take the current resolution as a given. After all many people are watching video content nowadays on their tiny smartphone screen?

Hall For blockbuster movies and high-production content, yes, I think 4K would benefit BD, but for all other content, DVD will reign supreme. Having said that, the contrast between picture quality may alter this perception over the forthcoming months/years.

Fournillier Blu-ray quality is already good enough. The real question is do people want to pay for content or stream it illegally? Unfortunately, many in the young generation do not want to keep and archive boxes anymore unless they are really special (tinbox, wooden box, leather box for example). For video games, for big franchises like Assassin Creed, gamers will buy a new title every other year. Consumers feel less strongly about DVD and Blu-ray.

Fitzgerald I do hope so, but let's observe the trend over the next few years!

Redfern I'm not convinced that 1080p is widely appreciated yet as an improvement on SD, so it will be interesting to hear what consumers generally make of 4K. Rather than a shot of adrenalin, I think that 4K on BD will most likely lead to greater confusion amongst consumers. How many times can we expect consumers to upgrade hardware?

Bono Probably not. While a disc-based format will offer the

highest quality 4K for the foreseeable future, 4K itself will remain a niche format for several years, making 4K Blu-ray a niche within a niche. Once internet connection speeds go up sufficiently, all disc formats will eventually disappear, 4K BD included.

Gish 4K BD will certainly help BD sales to some degree. But the stars need to line up a bit for this to really happen in a big way. There needs to be enough 4K receivers out there, at the right price point, and in time for any large scale 4K BD studio push. Given that this is such a new technology, it may not really saturate the market for another year or more. There are some big movies coming out in the next year and if these were to be released in 4K, and the technology was ubiquitous and affordable, we could see a pretty huge spike in the 2015 holiday season.

Brown Blu-ray is a great product, and 4K will truly do justice to content formatted in the highest of definition. The CE launch will be the key.

Hettler The question is here who will buy this and who produces content, devices and what is the real benefit for the end client.

Kohlen It might be the last chance for the Blu-ray format. It is really a shame it is taking the Blu-ray Disc Association so long to finalise the 4K specifications. They missed the window of opportunity. We all know it has to support the minimum of HDMI 2.0 and the HEVC video format up to 8K (and beyond) as well as high frame rates.

Gilliat-Smith Yes, definitely, but I think it will take time to take effect.

Weger Not really, bearing in mind that the consumer would have to equip himself again with a new TV set and player. Furthermore, the exploitation of 4K Blu-rays will be more intricate and expensive than with traditional Blu-rays. This shot of adrenalin will rather be a panic reaction when confronted with the final bill, as 4K Blu-rays will only pay off for major productions. Consequently, it will not be an issue for the independents in the next few years.



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What is the next technology or service leap you are anticipating?

Evans I'm not. I'm kinda burnt on Home Entertainment technology.

Hitzel We think that the entertainment industry has to deliver integrated services for the different consumer target groups. Cinema and TV will be only the traditional way of entertainment. Mobile entertainment around the clock will open many opportunities for new businesses.

Deutschmann There will be a demand for Ultra High Definition content. Xbox One is offering gamers a really advanced entertainment experience in playing a video game. In this context, we will prepare and build up the services for the 4K segment.

Hall HD streaming for mobile devices on the back of 4G, and 4K streaming for connected TVs. Once the broadband infrastructure is in place in Europe, higher download speeds will lead to better quality streaming and wider uptake of the subscription format. Maybe a wider roll-out for UV on the back of the Blinkbox deal and support from the BVA?

Fournillier There very possibly is a market. The BD player has a solid penetration rate in many countries, allowing customers to play HD audio discs without investing in new equipment. BD provides a format that can deliver the high resolution audio quality desired through a stereo system in the same way that a CD does.

Fitzgerald 4K TV with 3D without glasses.

Redfern I find it intriguing that conventional wisdom suggests successive generations of technology deliver greater quality, yet the biggest revolution the music industry has faced, namely MP3, represents a degrading of quality compared to its forerunners. Consumers have been happy to trade quality for convenience. Yes, vinyl is seeing a revival, but this will only ever be a niche market. Super Audio CD and DVD-Audio both had their supporters, but were never commercially

successful. Pure Audio Blu-ray will have its proponents, but it too will only serve a niche market.

Bono Insanely fast always-on wireless internet connection that works reliably across the planet.

Gish If you subscribe to Moore's law, it becomes very difficult to predict with any certainty future technologies. Maybe the silicon chip will become an antique in a few years? We are currently focused on improving the things we are used to using. Television sets, settop boxes and game consoles have not changed fundamentally. The iPhone, however, introduced an entirely new way to consume, communicate, learn, interact, and so on. There may be something new like that on the horizon. Something we can't fathom yet, but that will change our world. Sci-fi movies often give us a good indication. Maybe that's where we should keep an interested eye. The future may not include televisions or game consoles. It may not include smartphones, but it may include some technology that we are seeing now, like apps, and maybe Google Glass is onto something. Whatever future technologies, they will likely be something that brings the world to you in a personal, intuitive, and portable way.

Brown Fast, reliable and easy-to-use and operate digital retail systems. From anywhere on anything at anytime. Whether that's a one-off transaction or a subscription basis.

Kohlen Focusing on Pure Audio Blu-ray productions. It will be a niche market, but it is there. And educating the VOD customers that we need a better quality level overall. Audio and video encodings are done badly and subtitles are sometimes unwatchable. Nobody seems to care what is out there from a quality point of view.

Gilliat-Smith Not really, no.

Weger Definitely "The Internet of Things". This will revolutionise our industry again.



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Philips, Sony, JVC define Video CD

IN a move aimed at establishing CD-i as the world's definitive digital video carrier format, Philips has announced that it has signed an agreement with Sony, JVC and Matsushita to establish a new "linear" digital full-motion video format called Video CD, which is based on the Karaoke CD standard (also known as The White Book). Effectively, this means that there is now a global, MPEG-1 compatible standard for the transfer of films to the CD format, and that any such "Video CD" will be playable on a CD-i player.

Among other things, the move ensures Video CD compatibility with the rival interactive CD format to be launched this autumn by 3DO — which is also backed by Matsushita — as well as various computer-based CD Rom systems (including Commodore Amiga, Macintosh, and PC-compatibles). This should greatly enhance Philips' dominance of this particular market.

It also forestalls any attempts by UK-based Nimbus to create its own *de facto* video CD standard based on "double-density" discs, which are

Continued on page 2

Karaoke primes Korean CD-i

UNDERLINING the importance of the Karaoke-CD market to the growth of CD-i in the Far East, In Ku Kang, executive vice president of the Korean Goldstar Co, revealed to the recent CD-i Conference in London that by 1996 his company was forecasting sales of 3 million Karaoke boxes, distributed through 200,000 stores. Present figures, said Kang, stood at sales of 0.3 million boxes through 20,000 stores.

Explaining the phenomenon (also evident in the Japanese market — see last issue), Kang said simply that "most Koreans like to sing: there are thousands of Karaoke clubs in Seoul, last year over 10,000. There are 20,000 clubs in Korea in total, and many of them have 15 Karaoke boxes each."

CD-i — or now, more correctly, Video CD (see lead story) — is an ideal vehicle for Karaoke, the Japanese-originated singalong craze. A Karaoke player plays whatever track the singer chooses — but strips out

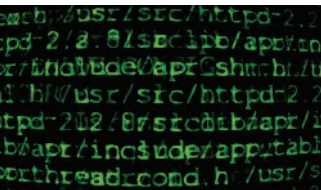
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If you let your imagination run wild, what system, format or application aimed at delivering content to the home would you like to see implemented in 10 years time?

Evans I'd like to see a service where you could pre-order or walk away from a cinema with the right to watch that film at home before anyone else because you went to the cinema to see it.

Hitzel Virtual reality meaning that users can play an interactive part in the story/game could be the new type of entertainment in 10 years from now.

Deutschmann In the long run media consumption and social interaction will be merging and converging. In respect of devices, I can imagine more integrated functions. Like Google Glasses or Oculus Rift, it might be that there won't be classical screens as we are used to them today. Sitting in a car, media content might be presented in certain areas in the windows itself – embedded in the glass. We will see flexible screens being embedded in various materials – maybe even in cloths.



Content will mainly be streamed from the clouds and will be accessible almost everywhere. Your peers will know where you are on this planet and will know what you're going to do, consume or even think. Occasionally, some people may want to disconnect, not being always a part of a connected world of this new type. Shut off the phone and enjoy a good old fashion Blu-ray disc on a winter's day. Who knows. Will this be in 10 years? No, certainly not, but some day it will be and smaller steps will go continuously in this direction.

Hall Something similar along the lines of "Minority Report," where consumers can control their TV with hand signals (and no remote) whilst seated in their armchair! Ultra-fast broadband across Europe. And maybe a universal app on smart phones/tablets collecting all individual content across all apps (Apple, BBC, 4OD, Flixster etc) into one convenient place for the consumer to access and watch. That would break down the barriers between digital scepticism and acceptance if

everything was in one place rather than in multiple apps/locations.

Fournillier I think we have all formats ready and more and more people will be stream legally or illegally.

Fitzgerald A smart watch that streams content from the internet and projects it in 3D into the air like a head-up display.

Redfern A one-time, simple, generic, studio- and vendor-agnostic membership system, allowing consumption of content. Standards are the key here, with the user experience seamless in delivered content whether in the cloud, on the home server or on physical media.

Bono Huge amounts of digital storage space on a media the size of a SIM card; full sensory recording devices that capture all you see, hear, smell and feel on that media so you can experience again and share your life's great moments with others – for a reasonable fee, of course.

Gish I wonder if we may see another flash of 3D, but in a totally new way. Something more immersive, more akin to the Holodeck from Star Trek TNG. Wouldn't everyone want a Holodeck at home where they can watch movies that surround them and include very realistic sound? 10 years is a lifetime when it comes to advancements in technology. So much can happen in that timeframe, especially considering the speed at which technology currently moves. Keep in mind, the iPhone was first announced at the Macworld convention in January of 2007. Look how far we have come since then!

Brown Wow, if I told you what my imagination really sees I'd be disclosing what we are working on. Let's just say, easier, better and more immersive experiences in entertainment viewing.

Kohlen A holodeck at home.

Gilliat-Smith Immediate seamless viewing of new movie content on my home TV for which I would be happy to pay a premium.

Weger Total digital networking in all areas of life.



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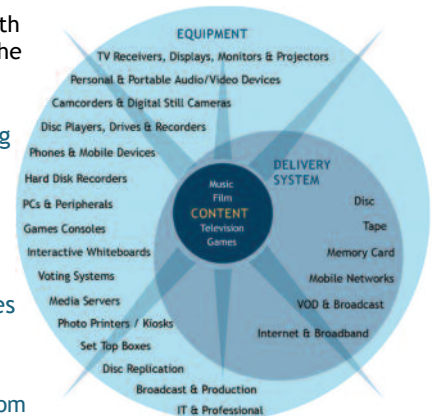
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