



# IBC BIG SCREEN EXPERIENCE 2016

## A report for EDCF Members September 2016

. This year's IBC was bigger and better than ever. A growing strand within IBC is the Big Screen element which focuses on cinema. Chaired brilliantly by EDCF Board member Julian Pinn, the committee also contains several other EDCF members: Dave Monk, John Graham, David Hancock as well others from around the industry. The Committee spends nine months bringing together ideas and people into a world class conference and content viewing. This year's big coup was bringing Ang Lee to present footage from his upcoming 'Billy Lynn's Half Time Walk' and to discuss the film-making process for two hours on stage.

The below document gives EDCF members a flavour of what happened at IBC this year.

We have also included the reaction to Ang's footage from David Hancock, Julian Pinn and Patrick von Sychowski within this overall document.

### **Friday**

#### **Advancing the art & science of motion capture towards the control of facial performance in live action**

Derek Bradley, Disney and Matt Rank, ILM

As described by Derek Bradley, Disney Research in Zurich sounds more like a university than a facility of a major Hollywood Studio. Their business is to develop technologies to advance the production process EG Medusa motion capture for working with facial nuances. Derek is currently involved in fundamental research "Face Director" which will allow directors to change the expression on an actors face during post. An impressive demonstration of blending from from one live-action take to another, in this case sad to angry, was demonstrated by Derek. The obvious question was asked: is this aimed to eliminate actors? The answer was a strong No but it should speed things up on location.

ILM's Matt Rank then demonstrated how ILM had used Medusa in Star Wars; The Force Awakens.



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## Saturday

### Light field camera technology

Siegfried Foessel (Fraunhofer Institute) delivered a tutorial on the physics of Lightfield technology. This was followed by Jon Karafin explaining and demonstrating the Lytro camera which enables re-focusing, re-framing, re-lighting, re-keying, re-lensing and viewing from alternative angles in post-production.

### HFR and Synthetic shutter; separating the “look from the frame-rate

Tony Davis from RealD explained that shooting with HFR and no shutter (360 degs) enables a synthetic shutter to be created in post to minimise temporal artefacts and enable control of the “look” across different delivery frame rates

### Virtual Production Kevin Baillie, Atomic Fiction and Robert Zemeckis

In a lively presentation and accompanied by a recorded interview with Zemeckis, Kevin described his work creating Virtual sets for The Walk including creating the Twin Towers and the roof of Notre Dame Cathedral in a Montreal sound stage. Having seen this presentation, you would have to conclude that anything is possible with this technology and a certain amount of creative talent.

**The Saturday night movie** was a screening of **Jungle Book** with Dolby Vision HDR projection, Dolby Atmos sound, and Dolby 3D at full 14 fL. Before the screening, Dolby’s Stewart Bowling demonstrated the spectacular 1,000,000:1 contrast ratio of Dolby Vision; there can't be many occasions when a white spot on a black screen gets a round of applause.

## Sunday

### Laser Update

Chaired by David Monk, this was a lively discussion between the audience and the key players in the laser business namely Mark Kendall of NEC, Walter Burgess from Power Technology, Mark Clowes from Sony and Bill Beck from Barco.

Conclusion: RGB and phosphor laser have established their own separate positions in the market. Retro fitting is also a viable option. It was interesting to note that Barco will cease to offer a Xenon option in the near future.

**Immersive Audio update.** Also chaired by David Monk, this was the second ‘critical update’ session of the day featuring panellists: Brian Claypool of Barco, Dean Bullock of Dolby, Chris Witham of Disney, Chris Burdon of Warner Bros De Lane Lea, Fadi Malak of DTS, and Julian Pinn representing UNIC. The audience was soon wowed with a beautiful scene from “In the Heart of the Sea”, mixed by panellist Chris Burdon, to demonstrate the power of immersive audio—which was also presented in HDR as a bonus.



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The session weaved nicely around the sensitive topic of how the open-standards immersive audio work that is being demanded by the studios and exhibitors is balancing the needs of all the key stakeholders in this chain. Answering the ultimate question, what factors need to be in place to ensure cinema sound develops in the right economic and experiential direction, the main conclusion was that, in addition to the open bit-stream standard, the industry must also agree to a standardized minimum loudspeaker installation setup or set of performance criteria that enables the creative intent to be faithfully reproduced.

## EDCF Global Update

**David Hancock**, EDCF President & IHSMarket Research Director for Film and Cinema started proceedings with a global review of technology in cinema providing a 'market update' with the latest facts and figures about everything from the global market (166,000 screens with 2100 of them PLF and 3000 with immersive sound) to the progress of 4D and immersive seating. He gave details of the faster than expected roll-out of laser projectors, both RGB and laser-phosphor, and regaled us with the fascinating fact that Estonia has highest proportion of RGB laser screens in the world (8.3%).

Electronic distribution: market consolidating, there are two major players in EMEA market now, through consolidation and strategic partnerships: Ymagis group and Deluxe/Unique but other players are still in the market, and not all small players, they have a solid base from which to operate. These smaller players make useful partners in completing a network.

The market is still a little muddled and there is no urgency to accept digital delivery. It needs a market push from a major player to send out the message that digital delivery only is the near future of film distribution.

Analytics: the next frontier for cinema

Software development has taken time: grew out of the TMS and market leaders tend to come from that direction: Arts Alliance; Unique; GDC

Next phase is the use and spread of analytics (see the details of Monday's IBC session)

Providers of such services are springing up: Vista is building a stable of related companies, focusing on audience insight for campaigns and in-cinema exhibitor services. Also, comScore acquiring Rentrak has provided a powerful player in box office analytics.

in Summary, Analytics needs to provide insight into consumer behaviour or operational reality, in order to provide a business reason for spending money.

He concluded with 'Technology is one of the principal drivers of the economics of cinema and the cinema experience'.

**John Hurst**, CTO of Cinecert, spoke about cinema distribution and the ever more important role of the TMS. With composition playlists, content delivery networks, facility list messages and everything to do with KDMs, there is an increasing amount of data being generated in our 'always on' business and this needs to be dealt with properly and to a high standard - 'cinema-class facilitated' - if we are to use it for the benefit of the business.



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The TMS is the star - it can do everything' was John's message. John also spoke about the advantages of systems like screenr.com (now closed) a crowd-sourced programming platform, suggesting that it was great for local material but more difficult for Hollywood content. He was asked whether the cinema should adopt block-chain technology to ensure the security of its many transactions, but felt that this would introduce extra overheads and that we should stick with the successful security systems that are already in place in the cinema industry.

**Julian Pinn, CEO of Julian Pinn Ltd**, presented innovative work that his company has been doing towards finding a solution for pre-show quality conformance. He also talked about his R&D work on 'spatial re-mapping' where it is now possible to take a central stereo sound signal and remap it to preserve the original intent faithfully but within the standardised 5.1 cinema environment.

**CJ Flynn of dcinematools** added some more diverse research to the loudness issue. It was a diversion from normal IBC technical stuff to discover that hairs in the human ear do not recover from damage but those in the ears of frogs do!

Barco's **Tom Bert** posed (and answered) the 5 most popular questions relating to laser projection.

What is the correlation between laser & WCG?

Rec.2020 primaries are on the locus vs. wider color gamut

Laser (primaries) choice for projection is linked to:

Luminous efficacy

Economical viability of components

Wavelength spread for best despeckling

Native color balance for DCI white

Containing and exceeding DCI P3 in both 2D and 3D

Rec.2020 with laser projection is only possible with P3 (but then you have speckle)

Unless the Rec.2020 spec becomes relaxed, it will remain a theoretical spec

What is the correlation between laser and HDR?

Brighter whites and blacker blacks

Conflicting parameters in a transmissive system like a projector

Brighter whites

Combination of input power and system efficiency

Blacker blacks (is a matter of extinction)



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Brute force: 1000x1000

Realistic: Barco 5-6000:1 LHC (laser helps via higher F number)

Out of the box: light steering (enabled by laser)

Barco's Laser projectors have >2400:1 out of box + higher uniformity + no lamp flicker + higher brightness all pieces of the image quality puzzle

What is the correlation between laser brighter 3D?

Situation today

Current industry practice: 2-4fL

Customer branded PLF: 6-9fL

Some peoples' ambition: 14fL

Laser can enable:

Higher brightness (with state-of -the-art cooling) but not to infinite levels.

Dimming to 25% prevents lamp swaps (unavoidable with 14fL 3D and lamp)

What is the luminance efficacy of a laser projector?

Single Xenon (e.g. Barco DP4K-32B) an average (75% brightness) = 24.750lm  
7.5kW

Single Barco DP4K-60L (Projection head + chillers)

Average (90% brightness) = 50.400lm

10kW

What is the meaning of 30k hours of a laser projector?

RGB laser: 30khrs to 80% full power

**Mark Stephen** from Unique Digital presented a review of electronic distribution in Europe

European Summary:

Using admittedly not perfect IHS data, there are 9,000 to 14,000 sites of which 50% are electronic split between Satellite and Broadband 50/50

There is much overlap in services with a bias towards Northern Europe



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## His findings:

- File sizes are on the up
- increased use of versioning
- Network price point pressure
- Government control/investment /active Trade Body
- Fragmentation between vendors in Europe
- Multiple vendors in Territory and Content availability

## Forecast

- Increased penetration
- Consolidation of providers is still a possibility
- New players struggling
- Satellite model struggling with increased versioning and charges

**Andy Maltz** from The Academy provided an update on the deployment of ACES latest and linked this into the Academy's on-going work with archiving standards. The Digital Dilemma remains; i.e. there is no standard for archiving digital content but Andy concluded that progress is being made and seemed more hopeful than has been the case in the past.

**Toby Glover** of Technicolor Deluxe, and an EDCF Board member, outlined the plan, the results to date and the plan for the immediate future for the EDCF/ UNIC SMPTE DCP project.

## The Plan:

The Primary objective is to support the transition to SMPTE DCP in Europe. We will approach it on a territory by territory basis. Aiming to prioritise territories based upon recent screen conversion to digital, a single electronic distribution service provider and the percentage of electronic distribution coverage, which limits it currently.

Lastly, we have created European-specific SMPTE test content.

## Implementation:

Netherlands and Norway were selected as initial territories for the testing. This is for several reasons: 100% recent digital screen conversion, 100% coverage from a single electronic delivery vendor (GoFilex & UNIQUE), a trusted single point of contact who also translated test communications and online survey into local language. 2D Test Content was sent to all sites in territory w/c Dec 7th 2015

## Initial Test Results:

### Netherlands

- 100% Feedback (161 sites)
- 14 sites with ingest issues
- 9 sites with playback / sync issues
- 9 sites with audio routing issues



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Norway

100% Feedback (202 sites)

4 sites with ingest issues

9 sites with playback / sync issues

14 sites with audio routing issues

95% overall success rate on first test

All issues resolved locally, primarily via software updates

Lessons learned from the tests:

- Results higher than first expected
- Territory selection criteria successful
- Testing prior to planned releases essential
- Single point of contact for exhibition for tracking test results
- Pre and Post comms in local language to exhibitors a major benefit
- Majority of issues resolved via software upgrades of equipment

Next Steps:

- Test content released in Finland awaiting final results
- Engagement with national cinema associations in UK and France
- 3D subtitled test content in progress

**Rich Welsh** from Sundog Tools, broke new ground by presenting about visual artefacts but with the ground-breaking step of having no PowerPoint presentation! He talked about what HDR and HFR are likely to mean in terms of data and data rates, saying that although the 120fps Ang Lee material could be delivered as a DCP, the 120fps 3D version needed double the normal data rates and couldn't sensibly be delivered as a DCP. This led him to talk about data compression and the need to improve the current compression systems by a factor of more than two to make such high data rates practicably usable.

Work had shown that it is possible to pre-treat content before compression, but at the best this could give perhaps a 20% improvement - good, but not good enough. He pointed out that a 120fps picture stream has lots of noise, not normally visible to the eye, but the JPEG2000 coding system sees this noise and wastes lots of bits trying to work on it - effectively making the signals harder to compress. It isn't all negative - he explained how HDR signals, because they are subjected to transfer function curves, are actually easier to compress. It will be interesting to see the results of future work to improve or replace the JPEG 2000 system. Rich pointed out how compression problems can affect movies which are sent to film festivals (and others), perhaps modified with foreign version extras, with double compression artefacts sometimes being really bad. He recommended that in such cases, where it is known that modifications will be necessary, DCDMs be sent rather than DCPs.

**Cédric Lejeune** from Eclair introduced us to its new EclairColor™ mastering technology which combines a new feature film mastering process with specific projection system technologies in cinemas. With side by side 'slides' he demonstrated how the system provides better image contrast and greater colour fidelity from existing images, offering cinema exhibitors the opportunity to enhance the quality of their screenings. EclairColor has been developed around a range of existing digital cinema projectors so it will be possible to equip all types of cinemas to project films mastered using EclairColor technology. The success of EclairColor will be dependent on getting movie directors and DoPs to adopt the system as well as enough cinema screens modifying their kit to screen Eclaircolor.



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**Don Shaw** from Christie gave a presentation about their Mirage projectors, which would be used at IBC to show Ang Lee's revolutionary 4K 120fps per eye 3D images. The projectors, 'the world's brightest', were originally developed for simulation and high-end theme park applications, and have, with small modifications, shown just how good a job they could do for the cinema industry. To gain DCI certification, to allow their use with cinema content, the main features to be added would be those relating to the DCI security / anti-piracy requirements.

EDCF President **David Hancock** concluded the session by announcing the first EDCF Convention which will be held in Munich on December 1<sup>st</sup> and invited non-members in the audience to sign up as EDCF members now under the "special offer" 15 months membership for the price of 12.

The session concluded with a drinks networking session sponsored by Unique Digital.

## Monday

### Ang Lee keynote Speech

A major coup for IBC Big Screen was to present Oscar winning Director Ang Lee as the keynote speaker. The occasion was the upcoming release of his movies "Billy Lynn's Half-Time Walk" shot in the unprecedented format of 4K, HDR, 120 frames per second per eye 3D ('the whole shebang' as Ang himself terms it).

The audience were treated to some 13mins from the key scene in the movie courtesy of 2 Christie Mirage laser projectors and with Dolby Atmos sound. The screening was a stunning experience. Audience comments afterwards included:-

"The most emotional experience ever felt in a cinema"

"Revolutionary"

"The biggest development in film-making in decades"

Having looked at lower frame rates Ang Lee concluded that only 120 frames per eye created the reality and immersion that he wanted for the audience. He described the shooting experience as exciting, intimidating and humbling. Everything had to be relearned. Everything is so clear, so they couldn't use any makeup on the actors. Filming in this way reduces motion blur but little depth of focus so you have to work out how you will pull focus, how to light & how to direct the actors with performances needing to be more realistic and more subtle. Actors can't be seen to be acting, and every little twitch and facial movement becomes apparent.

Following the screening there was a discussion with Ang and his team of Tim Squyres (Editor), Ben Gervais (Technical Director), Scot Barbour (Head of Production Technology Sony Pictures).

The release will be at 60fps 3D or 120fps 2D as well as at 24 fps as no commercial cinema can currently screen at 120 fps per eye. It was demonstrated that lower frame rate prints derived from the higher format are superior to, say, shooting at 60fps and distributing at 60.

Impact on post – 7.5TB footage is produced each day!



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As for the future Ang would like to use smaller cameras with bigger and better sensors because at 120fps you lose 3 stops. "Bigger sensors usually means a bigger camera but I want a smaller one. I'll leave it to the manufacturers to figure that out"

IBC Ang Lee Impression from Patrick von Sychowski, Celluloid Junkie

If you had shown a clip of a contemporary television soap opera like "Coronation Street" or "Day of Our Lives" to a person from the 1950s, how would they have described the look? Television back then had none of the "video look", so they probably would have said "life-like" or more "filmic" than the black & white low-resolution broadcasts at the time.

We have always lacked the adequate expressions to describe motion picture's teleological move towards greater approximation of reality, ever since audiences purportedly fled the arriving train at the Lumiere brothers' first projection. This struck me during the panel discussion and Q&A after the Ang Lee "Billy Lynn's Long Halftime Walk" Keynote and screening, which was bookended with a misplaced questions about the backlash to Peter Jackson's HFR version of "The Hobbit" and a lengthy statement about the film's supposed 'video look'.

Ang Lee was far too polite to criticise his fellow director and Oscar-winner Jackson, saying instead that this was a new medium and early days and that we are all still learning. But it is clear that "Billy Lynn" achieved something that "The Hobbit" aspired to but fell short. Whether the move from 48fps or even 60fps to 120fps crossed a psych-visual threshold that allow us to perceive it as reality, or the combined effects of laser-bright 4K 3D with immersive audio helped augment the experience, this was indeed a "historic moment" as Julian Pinn stated on stage.

When the life-size soldiers stepped off the ramp in unison, it was as if we were watching a well-lit theatrical stage production, where only a cut to a different angle informed us that we were not in fact observing on-stage reality. Vue's Executive Director of Technical Services Roland Jones dubbed it 'Theatrical Reality', an oxymoron that neatly encapsulates the experience that was had watching "Billy Lynn".

Or perhaps we could call it CinemaV, short for 'Cinema Verite', which the French New Wave directors considered truthful stories, often shot with hand-held 16mm for greater authenticity. With "Billy Lynn" Ang Lee tries to get the viewer to experience the raw feeling of the battle scenes and the barely suppressed PTSD the soldiers feel when fireworks go off all around them. Surely Truffaut et al would have approved of the move away from make-up, obvious acting and other artifices of 35mm film making.

But the 'V' would also stand for 'visceral', a term which came up more than once in describing the reaction to seeing the footage. IHS' David Hancock said he had only experienced something similar with a particularly realistic VR session. If the big screen can keep pace with the most advanced new innovation in personal media consumption, then it bodes well for its future. Finally V also represents the fifth stage of movies' technical evolution, following moving pictures, audio, colour and stereoscopic 3D.



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Watching Ang Lee's *Billy Lynn's Half Time Walk*

David Hancock, IHSMARKIT and EDCF

Initially, I didn't like the images in front of me. It felt too realistic and too immediate but I told myself to put those feelings to one side and just watch. Within a minute or so, my heart was beating faster and I was completely immersed in the action on the screen. The footage we saw was of an Iraqi firefight between young US soldiers intercut with the Superbowl half-time entertainment. The words that kept coming back to me were immersion, immediacy, and realism...raw emotional power.

I was totally immersed in the film, feeling I was there, feeling I was next to the participants and if not a part of the film then at the very least watching it from within the film itself.

I have ventured on several occasions that I see a role for Virtual Reality in cinemas (and been laughed at!) but that I couldn't quite work out what this is. I don't mean that all films will be watched with headsets in cinema auditoriums, and I could mean that cinemas could have dedicated VR spaces within them with professional equipment and specially-purposed content. But as I watched, it occurred to me that there was no need for individual VR headsets in cinemas, this film was almost a perfect encapsulation of VR: it was that realistic, that immersive and that powerful. It could well be cinema's own version of Virtual Reality.

The other thing that occurred to me was the level of detail: it takes filmmaking and viewing to a completely new place, but it also does not fit in with the current strategy of major studios toward tent pole releases and their use of VFX. The images in this film would not sit well with computer-generated effects- an extraordinarily high level of detail in the live-action set against the necessary low detail level of the VFX would jar. This being the case, the current place for this technology would be for less mainstream films, or mainstream plot-led titles, which in turn puts a curb on the potential rollout of the equipment necessary to screen it. As Ang Lee says, this is the beginning of a new way to make films, and we are experimenting.

The key issue that the film will need to face seem quite obvious, and will take some overcoming. No commercial cinemas can play the film in 'the whole shebang', with the footage we watched at IBC being played out on two specialist Christie Mirage projectors, set up specifically for IBC. We will only be able to watch this film in downgraded versions at cinemas for some time to come. It is also a US-centric film, which may limit its international appeal.

Be that as it may, this footage was awe-inspiring, turning on its head the traditional methods of making and viewing a film, and overturning my dislike of HFR based on previous titles. It took my breath away. I cannot yet see how this would fit into the mainstream of film production and distribution, but I am willing to say that I hope it does.



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## On presenting Mr Ang Lee on his creative artistry and transformational vision of cinema

*Julian Pinn's perspectives*

It was a great privilege to host Mr Ang Lee at IBC this year and be 'in conversation' with him on stage for his keynote and the following technical deep-dive. I had reached out to Ang some 18 months prior with the concept of his being our Big Screen keynote and showcasing clips of his ground-breaking new work at 120 fps and he encouragingly suggested we targeted 2016 instead. In spite of being in the process of wrapping *Billy Lynn*, Ang and his team plus key senior members of Sony Pictures Entertainment were super-supportive in bringing this all together with almost constant communication from around April time this year. Moreover, and with so much up in the air until literally the very week of the conference, we had faultless and unquestioning support from Christie, Dolby and 7<sup>th</sup> Sense Design in bringing together world-class technical engineering skills and a unique equipment setup to facilitate the world's first ever screening of this particular HFR footage in Atmos immersive audio. I would like to stress that the engineers involved, many of whom I've had the pleasure to know and work with over many many years at pivotal screenings around the world, achieved absolute technical perfection at IBC and my hat is off, as should be those of the entire industry, for what they achieved.

Ang's was a humbling reaction to what 120 fps gave him as a film-maker and what this new technological palette offers and demands of such a high-class auteur. This is history in the making; indeed, breaking away from 24 fps is a sticky quest but a necessary one in my view. So much 'look', whether a 'wanted look' or 'unwanted look', is baked into the rushes when shooting at 24 fps with the required typical camera shutter angles. For me, Ang's *Billy Lynn* is not so much about drawing a line in the sand that says, '*from now on we project at 120 fps*', but rather one that says, '*from now on we shoot at 120 fps*'.

Because doing this removes the need for a camera shutter; all shuttering can now be synthesised in post-production on a scene-by-scene basis to ensure the 'look' we see as an audience is always the 'wanted look'—and pretty much at whatever the actual frame rate of the presentation and even if this is the classic 24 fps-180° look. The result is that more control is offered to film-makers to deliver their vision and artistic intent across a wider range of formats both on and off the big screen—and this is of course a very good thing.

Even with all this control over lower presentation frame-rates and formats, presentation at the very top level of 120 fps 4K 3D at 28 fL indeed unlocks the entirety of Ang's artistic intent and unfortunately the DCI/SMPTE D-Cinema standards and industry norms and cinema equipment are a step behind and will be for some time. The current limitation is: 120 fps 2K 2D at 14 fL or 60 fps 2K 3D at typically a miserable 4.5 fL; these rates also push the bitrate requirements of JPEG to the very limit. And even then these limitations are theoretical, are largely untested, and with much of the detail as to how to set up macros and other projection settings still to be worked out. So it was a very rare opportunity that the IBC audience got to experience this new development in its full glory and they, the audience, were not disappointed and neither was I.

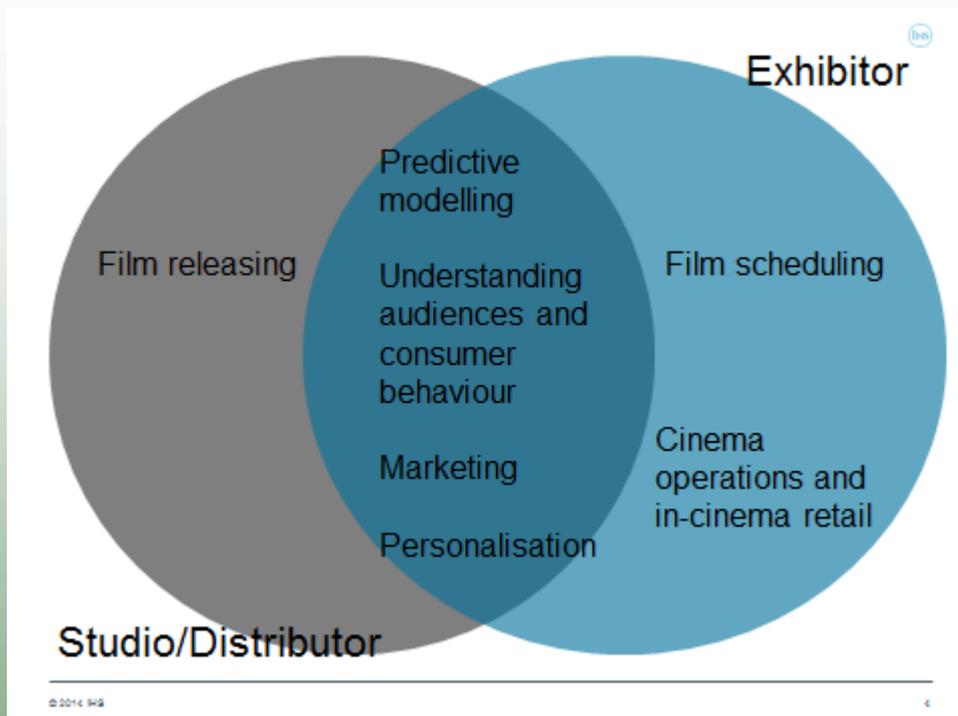
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My personal reaction to this new format was and is a confluence of what I experienced directly during the movie screening itself together with the emotional memories that find myself constantly revisiting since then. Somehow this particular combination of technological parameters, and the work-of-art that was so expertly honed within that combination, opened up a powerful and direct connection with my experiential memory-store: are the scenes and images that I now recall from a direct actual experience or was it just a movie? I've always said that as a story-telling medium gets ever closer to reality the easier it is for the audience to be convinced of the reality that the director wants them to have—however unreal it is. And Billy Lynn's Long Halftime Walk at IBC in 120 fps 4K 3D at 28 fL was one of those occasions where that connection was made and we as an audience had no say in the matter! But this new reality was not a video-look as one lone voice mentioned; this was still very much our beloved cinema: yes, a hyper-real cinema—but cinema absolutely. My only want was to add high dynamic range to the mix in the same way that my only want when watching high dynamic range is to add high frame rate to the mix. Well, an HDR grade for Billy Lynn was indeed announced back in April. Perhaps that's a combination for IBC 2017—no promises!!!

## Transforming the Big Screen with Big Data

The panel, chaired by **David Hancock**, explored how leaders in the film industry are using data to influence each stage of the movie lifecycle. From how films are now programmed on screens to how they are optimised for in-cinema performance, how audience insights are being leveraged, and how data-centric strategies are now challenging conventional business models.

David kicked off the session with a breakdown of how analytics is being used and split them into categories.





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There are many areas of overlap between exhibitors and distributors when it comes to data, but it remains the case that not enough data is being considered 'shareable' by both parties, and for industry-wide analytics to develop further this will need to be overcome. However, at a micro-level, the cinema business is now seeing analytics taking steps at all levels. On the exhibition side, **Steffen Schier**, Head of Film, CinemaxX Entertainment (owned by Vue) explained to us how he is using analytics to determine the scheduling of films in his cinemas. The cinema circuit runs 7,420 screenings a week, and by using data they already have, they can determine with far more precision how to maximise the profit on each screening, and which films to play, and where. This does not replace the programming staff, but is a tool for them to do their job more effectively.

The session co-producer, **Sarah Lewthwaite**, Strategic Partnerships Director, EMEA, Movio, discussed how her company can help exhibitors and distributors work out the ROI on film runs, tapping into the POS system to provide more data on customers and their behaviour, and allowing targeted communication (the right message at the right time to the right person) with those customers. According to Movio, Moviegoers targeted with Movio Media campaigns bought tickets on average 9.7 times more than those who didn't receive any targeted campaign for that film. The average incremental uplift in gross box office revenue was 34.8%.

The next speaker was **Jolyon Spurling**, Chief Design Officer at Showtime Analytics, who was discussing analytics at an exhibitor operational level, integrating a range of data sources and visualisation techniques to help exhibitors be more efficient in their daily operations. This includes selling concessions, tickets, staffing performance, weather patterns and their impact and so on.

The last, but certainly not least, speaker was **Matthew Eric Bassett**, of Gower Street Associates, who drew on his background with a studio to discuss how his start-up (co-founder) can help plan release dates with a potential upside in box office. The point he was addressing was that everyone else has all the data, so how can you use data science to predict your audience. Smart scheduling can lead to an overall improvement in box office performance, at a film by film level and ultimately at a market level.

When asked the final question, is the effect of analytics transformative or incremental, three out of the four panellists said that it was incremental with one stating that it will be transformative for the industry.

### Digital Cinema Investment 2.0. Where's the ROI?

The IBC Big Screen experience 2016 had seen some impressive demonstration, stunning images, and amazing technologies. But for these to appear in regular cinemas, someone will have to pay for them and that someone is often the cinema owner.

The last panel of the IBC Big Screen thus gathered representatives of the cinema business to assess the return on investment (ROI) potential of all of the new cinema technologies that clamour for attention in the post-digital conversion phase, where no new virtual print fee (VPF) is going to pay for the second generation of technology enhancements. If cinemas want any of these shiny new toys they will have to pay for them themselves and hope that the audiences in turn will want to pay to experience films this way.

The panel included **Roland Jones**, Executive Director of Technical Services at pan-European cinema major **Vue**; **Jerry Murdoch**, Sales Manager for installation and service company **Cinema Next**, part of the large Ymagis Group; **Domien De Witte**, Strategic Marketing Manager for projector manufacturer **Barco** (which also does immersive audio, lobby experience and more) and **David Hancock**, Head of Cinema at research company **IHS**, as well as the President of **EDCF**. Moderating was **Patrick von Sychowski**, Editor of **Celluloid Junkie**.



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The format for the panel had been lovingly ripped off from a popular UK-based reality TV competition, re-named "Strictly Come Digital" ("Dancing With Digital" in the US). The idea was to have a dozen competing categories of new cinema technologies and the panellists acting as judges, scoring each one on a scale from '1' to '10' and justifying their decisions.

The caveats were that these were personal opinions and not those of the companies for whom the panellists work. Secondly, these were opinions about categories of technologies, rather than specific brands or solutions. It provoked some interesting discussions, audience interjections, disagreements and insights, with results that few could have predicted when the final scores were tallied.

The final results were as follows:

Immersive audio: 7/5/6/5 = 23  
HFR 5/8/3/3/ = 19  
Laser projection: RGB 9/7/6/8 = 30  
Laser projection: blue phosphor 8/8/9/7.5 = 32.5  
HDR 7/8/9/7 = 31  
Immersive motion seating/4D 7/5/2/7 = 21  
Virtual reality 3/4/1/8 = 16  
Improved seating/bar/food 9/6/9/7 = 31  
IMAX/PLF 9/7/6/9 = 31  
Analytics/Big Data 7/8/6/7 = 28  
Multi-screen (Barco Escape / CGV ScreenX) 4/8/7/7/ = 26  
Premium Small Format (MagiPod, bijou screens) 6/7.5/9/5 = 27.5

Respecting these caveats we will not reveal what individual panel members and judges thought or scored, but the results were interesting, with Virtual Reality coming last with 16 points, while blue phosphor laser projection was the clear winner with 32.5 points, ahead of a shared second place for HDR, improved seating/bar/food and IMAX/PLF with RGB laser projection third. Failing to make the top three was everything from Big Data to HFR, both of which had been major topics at the IBC Big Screen experience.

The closing **Monday Night Movie** was a screening of the multi-awarding-winning **The Revenant** with Dolby Vision projection and Dolby Atmos sound in 2D HDR. The audience members were treated to some of the very best in modern cinematography, acting, directing and film-making in general—and in one of the very best viewing setups on the planet. Sincere thanks are due to both Twentieth Century Fox and to The Walt Disney Company for providing this year's movie.

This was a fascinating IBC, with a very strong Cinema programme. We learned a lot about new subjects and more familiar ones. The evolving world of cinema is a very interesting place to be right now, with many fundamental developments underway. We do not yet know how the new world of cinema will pan out, and which technologies and players will come to the fore, but the annual IBC Cinema event gives us a deep insight into this new world.

If you have anything to add to our round-up, please let us know.