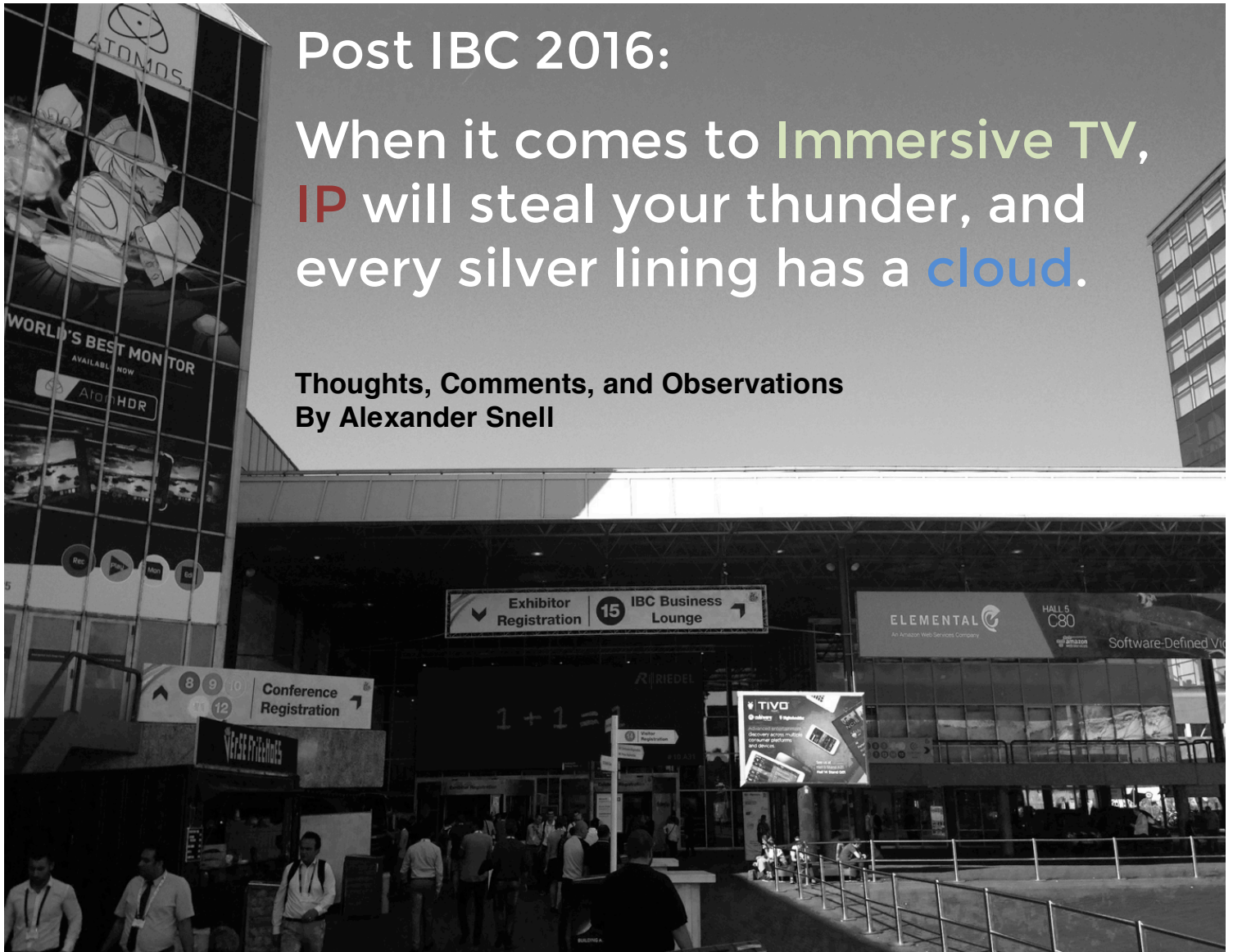# Post IBC 2016:

# When it comes to Immersive TV, IP will steal your thunder, and every silver lining has a cloud.

**Thoughts, Comments, and Observations**
**By Alexander Snell**

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I was walking to a conference session on the first day of IBC, when a poster caught my eye. It rather brutally defined the shift that the industry is in the midst of, and set the tone for me for the following days, although it inevitably has set the tone for the start of my career and beyond. It simply read: "SDI MUST DIE". These three words somehow managed to encapsulate the biggest focus of the convention – IP, and the way things are heading – more IP. Of course, everyone knows how important IP is, but attending IBC meant getting fresh insight into current trends, and being able to see some of the most advanced communications technology in the world. All set in the beautiful city of Amsterdam, the visit couldn't not be a success.

As laid out in the presentation given to the IABM in May, I set some goals for IBC, and I will try to address them throughout this report, as well as reflecting on things that I learnt or discovered.

# TV Broadcast Development

Obviously a very wide field, this is something I was keen to dedicate the majority of my time to at IBC. One of the main reasons for wanting to attend this convention was to get an idea of where exactly the industry is right now, to best situate myself for future study and career choices.

**"The Magic Triangle"**

I recognised a triad of themes at this show, which seem to be the magic ingredients for business success. If you can master all 3 of them effectively, you can dominate broadcast and media markets. They are IP, Cloud, and immersive TV (Immersive TV meaning: UHD, HDR, WCG, HFR, immersive audio, VR/AR and beyond). It seemed to me that if you have a strong cloud based architecture, all obviously built on IP infrastructure, you could remain agile, scale your deployment appropriately, and deliver immersive TV to an expanding number of devices, in addition to supporting clever monetisation features like local ad insertion. Combined, these appeal to multiple consumer markets such as Linear, OTT, and VOD. For many "broadcasters", this is the dream, but the technical challenges and threats from non-traditional business competitors that limit this utopia are currently large.
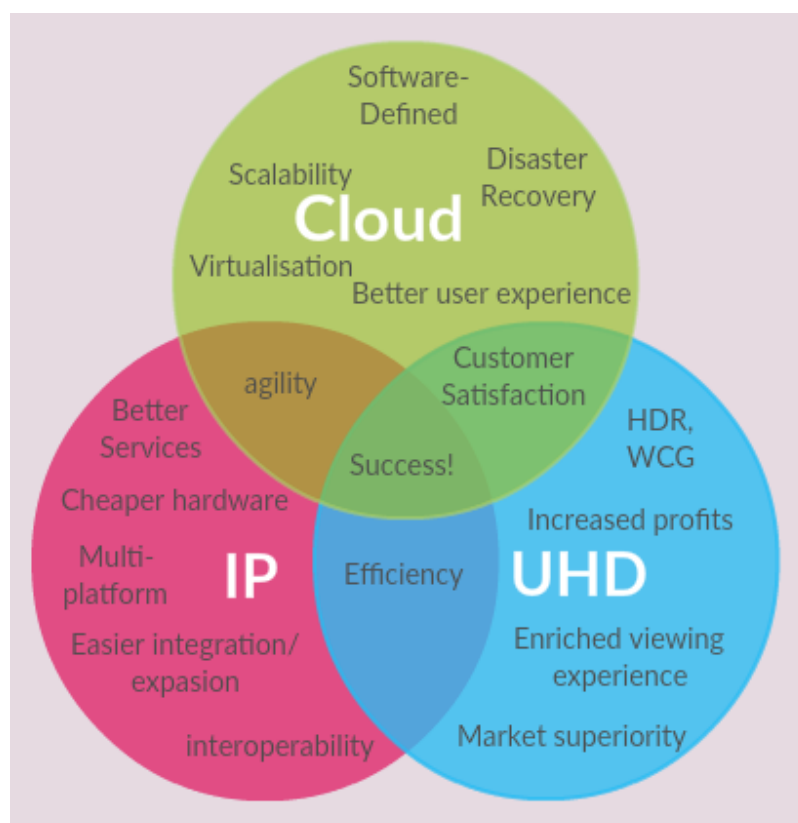


**The Magic Triangle: As a Venn diagram**

A representation of this triangle in this format makes it easier to see what I envisage as being the key to success.

Obviously there are more aspects to this, and it's a rough diagram, but I feel it illustrates the point well.

## Standards (and lack of standards)

One of my biggest interests in the development of this industry are standards. Everything is built on them (hopefully), yet there is still not a definite answer to the question of how to deliver immersive TV experiences to the TV in the home, or to the laptop on the train, or to the mobile in the valley, or to the tablet in the garden. Because the broadcast industry and consumer lifestyles have been so stable for so long, it has struggled to keep up with the earthquake of VOD providers. In order to compete, broadcast technology needs to move fast, and it can be difficult to agree on a standard or a best way of doing things, but HEVC, and HEVC-based codecs seem to be the most efficient way to meet this challenge (the clue is in the name!). IBC shed some light on the use of HEVC, which is something that I knew barely anything about until this visit. Dynamic Adaptive Streaming (DASH) is something I knew a little bit about pre-IBC. After attending sessions dedicated to this, it looks like the answer to non-linear delivery platforms, which combined with HEVC, makes for a very promising proposition. It can also be used in linear play-out, and during the show was used by BT sport in conjunction with Ericsson to deliver UHD coverage of a rugby game. If organisations like AIMS can cultivate an environment in which IP can be allowed to flourish, the future is bright.

## More pixels, more money

The focus from most of the exhibitors, in one way or another, was UHD. Generally that meant 4K, but some were brave enough to pursue 8K. Unsurprisingly, the production vendors were all marketing their UHD gear, cameras and vision mixers and the like, the satellite providers were all showcasing their new vessels that had the capability of transporting UHD, and there were lots of UHD screens. Lots.

The problem I have with all this UHD is the need for it in the first place. For me, 1080p is good enough, and while 4K is nice, I'd rather have more services in 1080p, than fewer, but in 4K. It was hard to find definitive evidence that consumers are completely in "need" of 4K, or whether this is just a way for vendors to sell more profit generating equipment. Only time can provide the answer to UHD's success or failure, could we be witnessing another 3D TV "flop"? That said, 76% of 130 companies polled by the IABM said UHD was on their agenda, so from the side of business operators, there is a need for the development of it.

# Conference Sessions

These were what I was most looking forward to about IBC, having extensively watched previous IBC sessions on their very well populated VOD website. Being able to attend these sessions provided me with lots of knowledge, and also getting to see some "idols".

**Clouds gather before a storm**

A huge area of uncertainty that faces this industry is cloud computing. It was impossible to attend a session that looked forward and didn't mention the cloud in some way. One of the first sessions I attended was entitled "Cloud processing and changing business models". This was fascinating, because the cloud is something I knew very little about prior to IBC, at least from a broadcast perspective. The feeling seemed to be that cloud architecture is capable of transforming the way businesses work, but there was still a lot of hesitation due to security and privacy concerns. If mind-sets can be changed, and cloud can be embraced, there is going to be a storm, which will shake the foundations of the broadcast ecosystem.

**New era, new skills**

One of my favourite conference sessions was called "New era, new skills in broadcast and media". This session was particularly interesting because it filled me with lots and lots of hope. As someone who will be finding their way into the industry as a professional and not a student in 2 years time, this session was extremely encouraging. There seemed to be a resounding consensus from all of the panellists: that there is a shortage of skilled people.

One statistic that really hammered this home was one obtained from the IABM's survey of their members. Andrew Jones noted in this conference session that about 70% of the participants blamed lack of skill for not being able to progress as much as they could. As a student from a course that embraces a wide range of skills, and as someone fulfilling a year of internship work, this filled me with hope and aspiration. In an increasingly diluted and fickle job market, it was fantastic to learn that the jobs will be out there for those that are multi-skilled.

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## Exhibitors

### 1. Ericsson

One thing I mentioned earlier was cloud. I am interning for Ericsson, in their currently hardware-centric TV sector, which faces an uncertain future. They recently acquired Envivio, a software-processing vendor, which was a hugely clever move. That allows Ericsson to adapt its hardware-focused approach to broadcast, and slowly re-shape it for the age of software and cloud. It was interesting to compare their exhibition stand to that of companies like Evertz, who were peddling a lot of hardware products. Although Ericsson and Evertz have slightly different places in the ecosystem, there are many parallels, particularly in the realm of hardware. As a comparison, Evertz had racks of gear, and many different products, but Ericsson are focusing on a service approach. The following photos will illustrate my observations.



Pictured left are 2 of Ericsson's new flagship hardware products. Interestingly, the Ericsson employee said they are taking the focus off of the actual units themselves, and moving towards a system where either unit can perform some compression based on the compute and time allowed, making the system more flexible.

Ericsson's approach to simple GUI interfaces makes using their products really friendly. This was the GUI of the AVP C2 (middle unit above), the hybrid "mux of the future" as I like to consider it.



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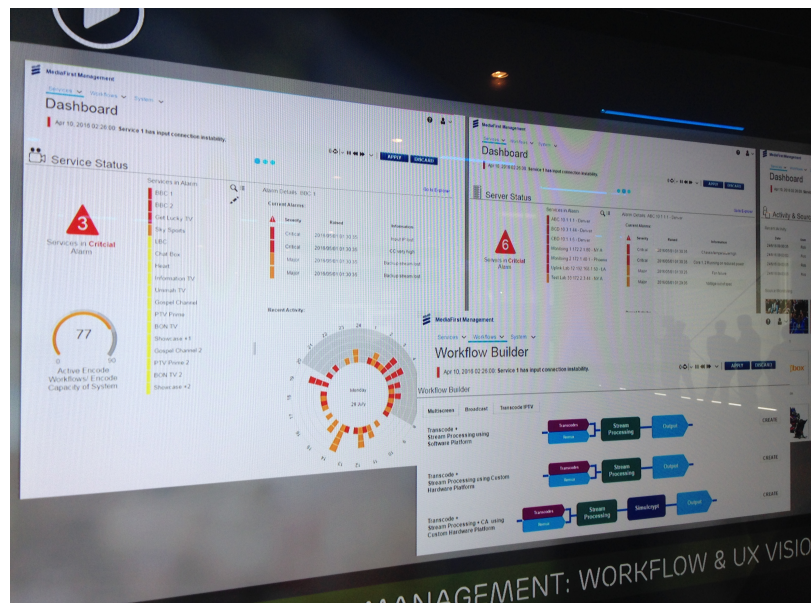
## Live UHD Broadcast

On display here was a solution for live broadcast of UHD content. The black box on at the top of the picture below is a receiver that can handle a HEVC stream in just 1RU. In a photo on the next page is the equivalent of that BT sport currently do, where they use 4 receivers to receive a quadrant each, then stitch the video together. This new solution is much better than the best effort of the 4-receiver stitch.





The display above had some pre-recorded content, but later in the day, Ericsson showcased the equipment in action with the live rugby that I mentioned earlier in this report.
This made big waves, and the article entitled "Ericsson and BT showcase cutting edge live HEVC 4K broadcast at IBC 2016" [1] is an interesting read.

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[1] https://www.ericsson.com/news/2041075

**Ericsson & BT Sport**

As an employee of Ericsson and a customer of BT sport, it was really awesome to see the use of this tech for sport broadcast.



This was one of BT's new fleet of UHD OB trucks. They only have 3 for UDH, one with built-in satellite uplink capabilities (this one), and an additional fly away system that can be transported in any van large enough.

Below is the exterior of the truck, which is supplied by a UK company called Megahertz.

**Changing Business Models.**

I had the opportunity to talk to some Ericsson employee's from other parts of the UK, France, The Netherlands, Germany, UAE, and the USA. This was awesome because these are different business units, and meant more of a rounded overview of what Ericsson provide. One of the French employees talked me through HEAAS – Head end as a service. Historically, the division of the company I work in (Ericsson Television – formerly Tandberg Television) specialised in hardware compression that would be sold to broadcasters for them to integrate into their systems. But now that Ericsson has the capability to provide play-out for anyone, running it as a service, they can be much more flexible.

The HEAAS architecture, a very interesting way of delivering content!
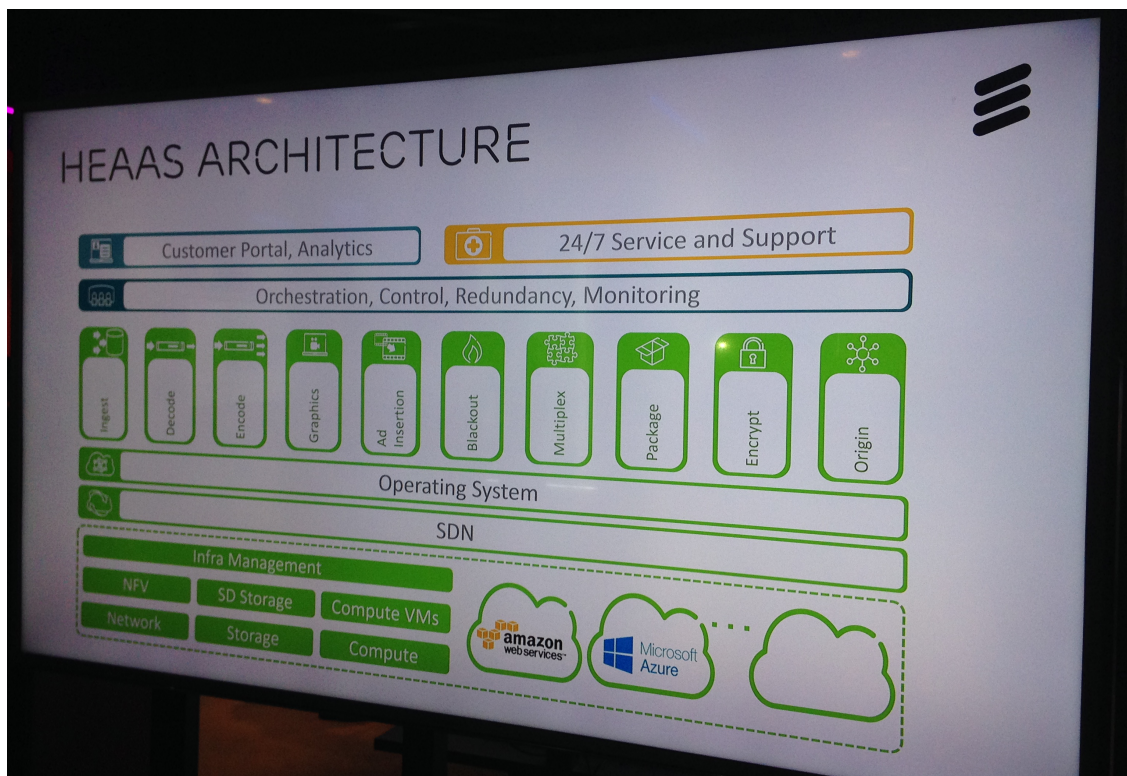
**Ericsson Innovation Lab**

**VR**

This was perhaps one of my most exciting finds at IBC, the "future" – the projects on the cutting edge of innovation at Ericsson. One demo that particularly impressed me was a solution to future customer support, that took the fault resolution platform into a VR headset. This means the support engineer is able to "see" the customer's issues in a very interactive way, and I can see support being done that way in the future.

**AR**

More imminent perhaps is the use of AR for sports. In this demo, an AR headset allowed you to see a game of football on a screen that only existed on the glass of the headset, and below the screen, a field with football shirts that represented the players. In the example, you could select players based on where you looked, and the camera feed of them would appear on the screen. You could also have the goals and attempts on goal to be seen on the field of play, and walk around and see the lines of the shots from all angles. I found this particularly interesting, and made the experience of TV viewing really interactive and much better than what we currently have.

*The author wearing the aforementioned AR headset*

## 2. Evertz

I have already mentioned Evertz in comparison to Ericsson, but it was interesting to see how a company that makes very similar products to Ericsson do things. I was particularly interested in their system control software, as it had parallels to the Ericsson software I am familiar with in many ways.
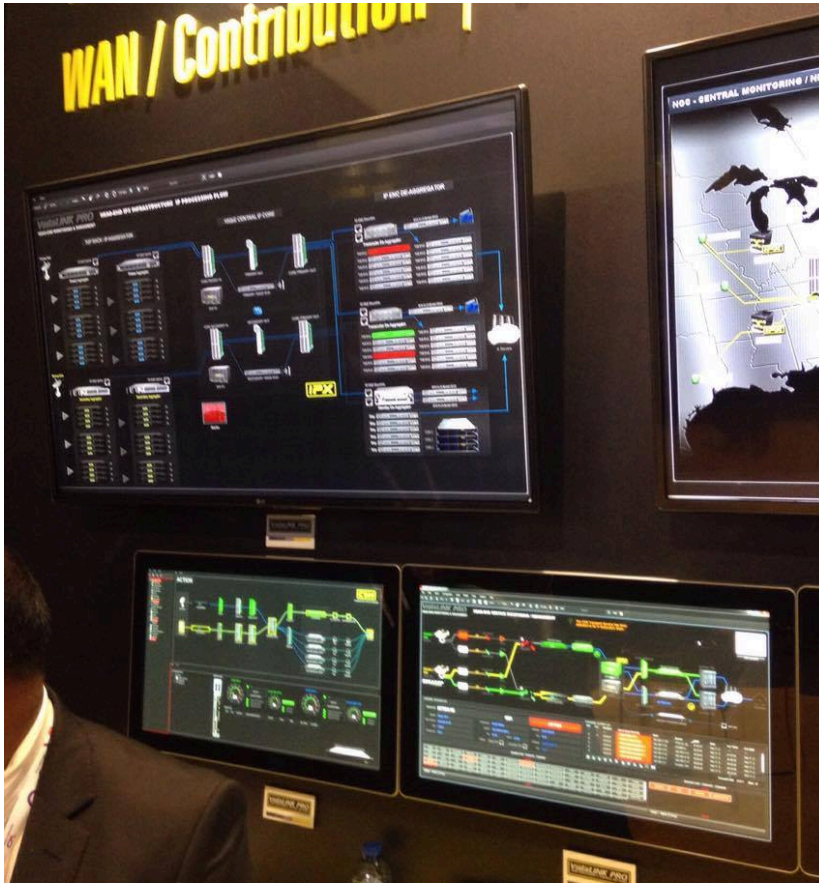


The GUIs that the Evertz software had were really intuitive, and as someone who enjoys visual representation, I really liked the way their control platform was arranged.
There was also a focus on rack based hardware, with many different solutions on offer for practically every scenario.
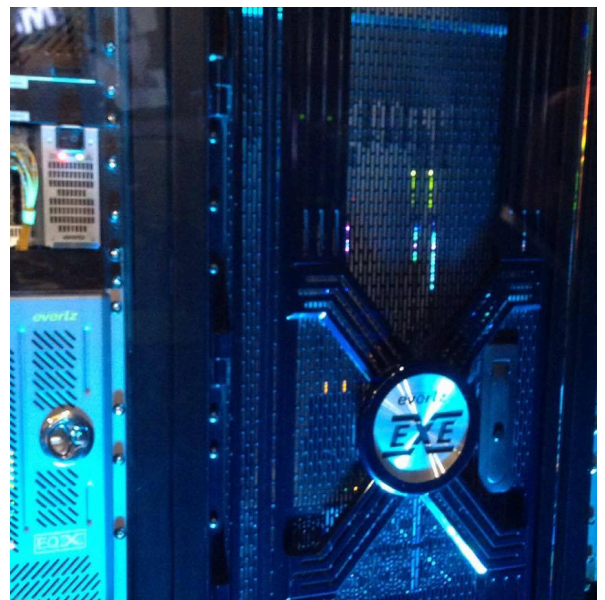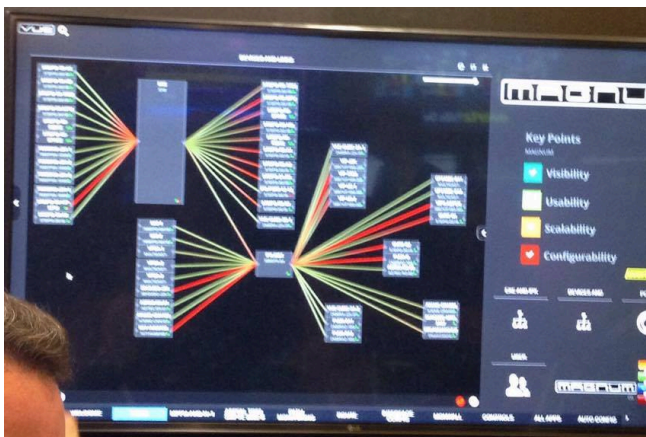
## 3. GoPro

While not directly related to my studies or work, GoPro is a company I have followed for 4 years or so since buying my first camera from them. The point of IBC is to see the weird and wonderful parts of companies that might not usually be in the public domain, and GoPro was no exception. They are an example of a production company that are attempting to enable VR interactive video to make viewing media more satisfying, so they do play into the Immersive TV section of my magic triangle.



The Odyssey was an example of a solution to 360-degree video with really seamless results. This rig was still very much a prototype, but if applied to VR applications, could make for very immersive experiences. I tried one of their VR demos, but my issue was with the image quality. The cheap VR headsets they were using made the image quality poor, and as my first experience of VR, I was quietly disappointed.

Also of interest were the custom build cameras they have developed. These are changing the way sport is viewed, and could play a role in VR/AR applications in sports broadcast in the future.

## Other mentions

There were things at IBC that I didn't think I would see; here are some of my favourites…

Right,
A manned mini-helicopter for filming arial shots, cheaper drones could phase this type of vehicle out very soon, but it was very cool none the less.
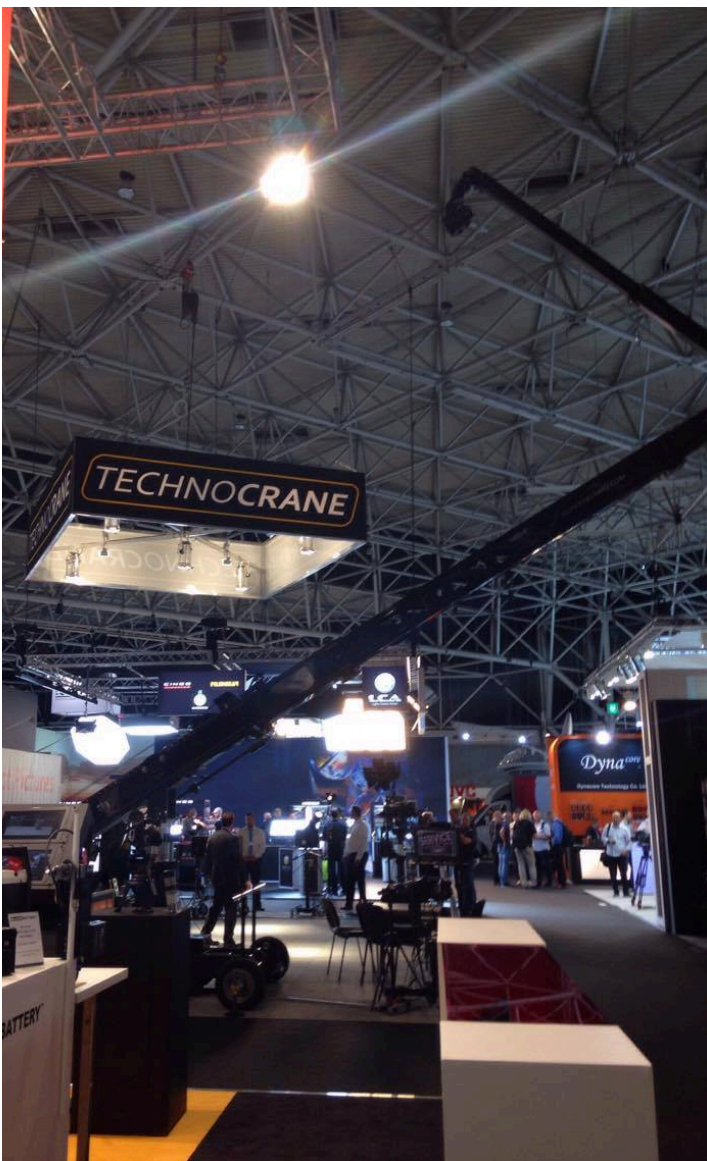




Left,
Technocrane, an American company that specialised in camera cranes were showing off their automated systems. Their cranes can be operated with a control panel or they can lock onto an object and track it in a scene. Again, not related to my direct interests, but as an engineer, it was a fascinating piece of kit.

# FInal words

The experience of IBC 2016 was one which I will never forget, and it was nothing but excellent, in every way possible. The biggest thing I took away from it was expectation and aspiration. I am driven and determined anyway, but before this, the "industry" was always something I felt quite detached from. Now I feel more included, and understand what it means to live and work in this sector.

The people I met were all extremely friendly, both inside the RAI and in Amsterdam generally, and I wish to return as soon as possible. I realise how lucky I was to be granted this opportunity, and am eternally grateful to the IABM for sponsoring the visit.

If there's one last thing to say, I think it should be that through uncertain times, the broadcast and media sector is still extremely relevant to society, and will continue to progress through whatever challenges it faces – as it always has done.

And remember…



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