

IBC 2006

— best demo, best conference presentation
and best gadget

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Exhibition space at IBC 2006 was at a premium this year, as the organizers tried to squeeze in everyone who wanted to take a booth. Restaurant and bar premises were re-deployed as stand space – that’s how IBC added virtually an extra hall, devoted to the “Mobile Zone” which was a clear example of the growing interest in TV for Mobiles. IBC 2006 had the most booths ever, and the most visitors too – 45,000 was the final count.

Here, Nick Radlo looks back at the the most important and best things that caught his eye.



An Ultra HD camera

IPTV, TV for Mobiles and of course HDTV were much in evidence at IBC 2006, both in the show and at the conference sessions.

The best demonstration this IBC was probably the display by **NHK** of the ultimate in high definition – Ultra HDTV, 4000 line pictures, putting 720 or 1080 and even digital cinema’s 2000 lines slightly in the shade. As a viewing experience, it was truly spectacular, in terms of both image and audio sensation. An unbelievable 22.2 surround sound, good enough to convince some people they were watching something very close to 3D cinema!

I would liken the impact of this Ultra HDTV demo to the first time I saw high-definition analogue TV in the 1980s, back when IBC was held in Brighton (UK), and marquees on the beach in front of the Grand Hotel housed what was then the future horizon of TV technology. I’ll never forget those stunning pictures of the Grand Hotel in Brighton, coming through a small vision mixer in a flight case that a Sony engineer told me was worth a million pounds. The hotel was blown apart a month later when the IRA tried to assassinate the British Prime Minister, Margaret Thatcher.



The equipment used to stage the Ultra HD demo

NHK's 4000-line Ultra-HDTV may be impracticable, and it'll be a long time coming – one NHK person suggested the year 2025. The line-up of equipment needed to stage the demo was also impressive, including the huge camera and massive lens.

But I'll remember those pictures on a full-size cinema screen and the shots of the sun, the earth and even a field of sunflowers, with the same emotional appeal that must have moved Vincent van Gogh. Do try to see it if you get the chance.

The most startling small product I saw was from Rob Whittle of **Symbol Technologies**, which designs advanced laser displays. He took this little box out of his pocket, no bigger than a cigarette packet, and showed me a laser projector that could display perfectly usable TV pictures on to a wall or any other surface. *"We can make this even smaller, to fit into a mobile phone, so the next generation of TV for Mobile devices could have laser projection as an option"* he told me.

The IBC conference presentation that engendered the best *"Oh, now I see what it's for"* moment was from Blake Krikorian, the man behind **Slingbox**, explaining how his big idea came from the frustration he and his brother felt when travelling, at not being able to watch their local baseball team, the San Francisco Giants, as they battled to win the league title.

"I want my living room TV channel line-up, and my TiVo (i.e. PVR) content, wherever I am – and I don't want to pay additional monthly fees for the same stuff I am paying my cable/satellite company for" said Krikorian, the founder and CEO of Sling Media.

So he came up with Slingbox and his idea of "place-shifting" that lets those with the box access their home TV system wherever they are – on their laptops – via the Internet.

His presentation included video of his holidays – he and his wife enjoying a peaceful scene on a hotel balcony in Greece, whilst his two young daughters amused themselves watching their own content, accessed via Slingbox on a laptop, from the family TiVo back home.

TV for Mobiles

The IBC conference saw several European telcos explain how they are deploying Mobile TV.

In the UK, mobile phone operators Orange, 3 and Vodafone have built substantial video content offerings using their 3G networks. **BT Movio** has just launched its wholesale TV for Mobile service, which uses the data component of the DAB spectrum in the UK. Virgin Mobile is the first retail provider deploying this technology in a service that began on October 1st. Its Lobster 700 handsets, which feature a remote-control-type phone, has a starting offer of four to five TV channels and over 50 DAB radio stations, plus other on-demand video and audio content. According to BT Movio technical director Martin Coggin, speaking to conference delegates, more TV channels can be added when BT Movio adds another DAB multiplex to the service.

Coggin also said the Lobster phone can act as a PVR to record mobile output – the first time that kind of functionality has been seen on a pocket device. BBC1, ITV1, Channel 4 and E4 are the launch TV channels for BT Movio.

There was much discussion at the conference on which of the competing TV for Mobile platforms is likely to prove the winner in terms of roll-out. At another IBC session, BT Movio managing director Emma Lloyd said it had chosen **DAB-IP** for the launch of mobile TV, as it is the only format in the UK with spectrum ready to use. The **DVB-H** format which many think will be the eventual winner for mobile TV, has yet to have spectrum allocated in the UK.

Finland will be starting DVB-H services this year, and Italy is rolling out a DVB-H service right now.

Lloyd told the conference that BT Movio will add DVB-H capability to its handsets within 18 months – to take account of the likely demand for the format, if spectrum can be allocated.

Ofcom is considering what use will be made in the UK of the TV spectrum freed up by analogue switch-off and its “digital dividend review” is due to report by the end of 2006.

Currently, the UK’s terrestrial broadcasters want to see that the freed spectrum will be allocated to them for HDTV services, while the mobile TV proponents will be lobbying hard to get a sizable allocation for DVB-H.



The WorldDAB stand in the EBU Village at IBC 2006

“We want to be ready if spectrum is allocated – so we’re going to put DVB-H into our handsets at least 18 months before DVB-H could start” said Lloyd.

Consultant, Dermot Nolan, was enthusiastic about the prospects for mobile TV, citing *“the 83% consumer approval rating from recent trials in the UK”* ... and *“the 110,000 people who signed up for Italy’s DVB-H service in the first five weeks are also a positive sign”*, he added.

Nolan outlined the pros and cons for each of the competing formats, including Qualcomm’s MediaFLO format, which has taken a lead in the USA. Qualcomm bought spectrum from the FCC on which to roll out services, and US telco Verizon has committed to use the format for its Mobile TV service. However, in Europe, there are concerns that MediaFLO is a proprietary standard, in an age when technologists prefer open standards for every broadcast-related application.

Nolan had what he called his *“seven pillars of perfection”* which need to be in place if Mobile TV was to be a success. He cited high quality of service, excellent indoor service, for homes and offices, really long lasting batteries, pictures that can be seen properly in daylight and, for programming, the availability of big brands on the mobile services, along with mobile-exclusive content. Nolan also said the handsets would have to be available at mass-market prices.

He pointed out that in Italy, massive subsidies were required for the launch of Mobile TV, up to 600 euros for each device.



Kelly Griffiths, Project Director of WorldDAB, demonstrates a tiny “mobile TV”

HDTV and peer-to-peer distribution

HDTV was of course a major focus of IBC 2006, with some observers suggesting that soon it will become rare to find any standard-definition equipment on offer. Broadcasters and producers realize the value of producing in HD, in terms of securing co-production and sales, even if there still is limited transmission of the format in Europe. **BSkyB**’s launch of HDTV has certainly given a boost to the prospects of HDTV in Europe, and most broadcasters accept it’s no longer *if*, but *when* will HDTV be launched for the mass market here.

The IBC conference heard that the cost premium of producing HD instead of standard-definition had now fallen to only 13%, with parity reached for some camera equipment. However, sorting out the audio for HD could add cost again, since the need to produce in 5.1 surround sound significantly increased the complexity of production, was difficult to get right, and so was a real source of concern.

The **EBU** was running its comparison of different transmission formats for HDTV in the EBU Village at IBC and, along with 1080i/25 and 720p/50, the EBU this year added 1080p/50 to the demonstration. A [separate report](#) on this IBC demo is included in this edition.

“Many people don’t understand the effects of interlacing, so we’re making it very clear what our views are. We’ve shown a very compressed version of all the subjective tests we’ve done, which

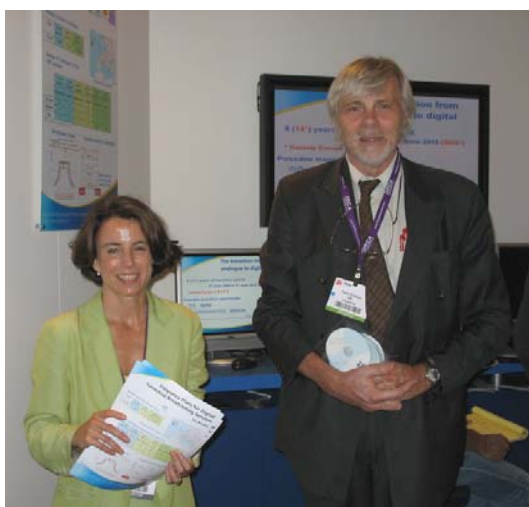


The EBU's HD formats demo at IBC 2006

shows that EBU members should avoid interlace. It worked brilliantly for years, but now, it takes up more bitrate. We're quite clear that if you use 720p/50 for the transmission of HDTV, you can transmit at lower cost" said Phil Laven, the EBU's Technical Director.

He pointed out that the demonstration showed that 1080p required more data rate to transmit in order to retain the quality of the image, and it didn't work as well as 720p/50 at lower data rates.

"We think 1080p is a very good future production standard, and that's what we'd like to see people focus on. It's not possible yet to deliver 1080p to set-top boxes, but it's a very powerful production format. HD-Ready displays will cope with 1080i and 720p, so our view is very simple – downconvert 1080p to 720p for the best route to high-quality HDTV transmission" said Laven.



Elena Puigrefagut and Terry O'Leary from the EBU's spectrum-planning section

The recent **radio spectrum conference** in Geneva saw most European broadcasters get the allocation of frequencies they wanted, helped in no small measure by the EBU software which was prepared to facilitate the frequency planning. The battle now begins for what happens to the analogue spectrum that will be freed up by the move to digital TV. 2015 is the target date for the switch to digital across Europe and the question now is whether broadcasters or mobile telephony, including TV to mobiles, or even WiMax, get hold of that re-allocated spectrum.

"If terrestrial broadcasters can't get the extra spectrum they need to provide their services in HDTV, they'll stay in standard definition, which will become a poor-quality platform compared to what else is on the market. Terrestrial TV would be seen as a second-class service, and that's not good news for broadcasters, especially

considering the success that DTT has been in the UK” said Laven.

Another display at the EBU Village featured the EBU’s experiments with the distribution of TV signals via the internet using **peer-to-peer networks**.

According to Laven, “Peer-to-peer networks have long been associated with illegal file downloading, but in fact it’s a very powerful technology”. Most EBU members are delivering services via the internet but, in the past, high demand for a particular webcast has meant high costs – the more viewers, the higher the costs to the broadcaster. Now, using peer-to-peer networks, we’ve reversed that situation. When a user receives some data on a peer-to-peer network, it is passed on so, in fact the more people that watch a service on a peer-to-peer network, the better it works” said Laven. “The load is distributed amongst the internet service providers that carry the data”.



The P2P stand in the EBU Village at IBC 2006

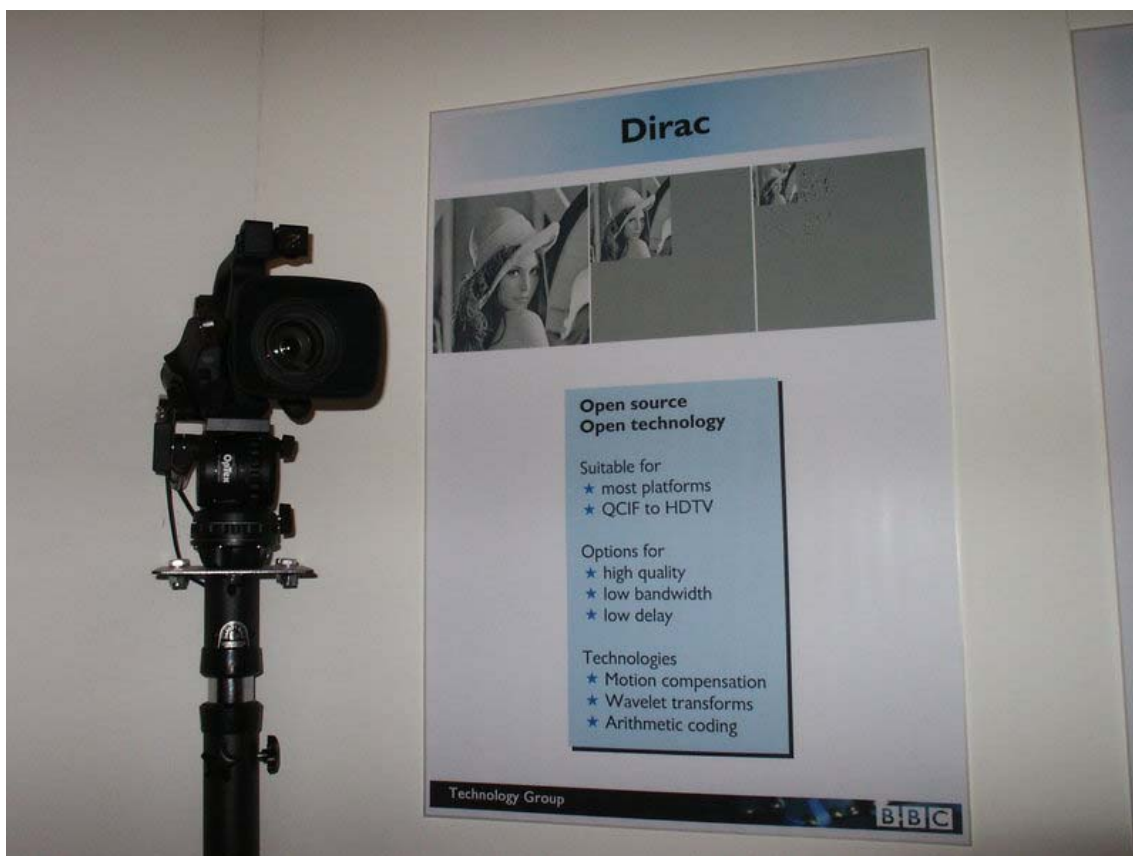
The Eurovision Song Contest this year used a peer-to-peer network to transmit 17,000 simultaneous streams, using a system provided by Octoshape.

“The costs fell enormously” said EBU senior engineer Franc Kozamernik, “Peer-to-peer can be ten to twenty times cheaper, since you benefit from the existing infrastructure, that is the user’s PCs, and you don’t have to set up a separate network – it’s all done in a secure, fully protected way. The user simply downloads the plug-in from Octoshape to join the network” he said.

According to Kozamernik, the promise of peer-to-peer networks is that they could become a very competitive option for the distribution of any radio or TV programmes over the internet. “There are proposals to take the idea beyond the internet paradigm and embed peer-to-peer plug-ins into set-top boxes and home gateways, so that any device connected on a broadband network would be able to exchange files or streams” he said.

The EBU is evaluating three commercial propositions and one open-source solution that could offer this kind of service.

Open-source software lies at the heart of the wavelet-based compression system that BBC Research was demonstrating in the EBU Village. It showed the latest progress on its **Dirac compression** initiative. This format is designed using open-source software tools, so it’s available free to those who wish to implement it.



The Dirac stand in the EBU Village at IBC 2006

BBC Research has developed a professional profile for Dirac called Dirac Pro. This supports low-delay coding and intra-frame coding for production purposes. There's also a low-complexity version of the code which can run very fast on commodity PCs that are configured as "rendering farms".

In its first hardware implementation, shown at IBC, Dirac provides a low-cost mezzanine compression system, using light 2:1 compression, purely for compressing HDTV pictures so they can be carried through conventional standard-definition broadcast infrastructures. As a result, the need for new kit and cabling is reduced. The format includes a viewable monitoring signal to check what's being carried.

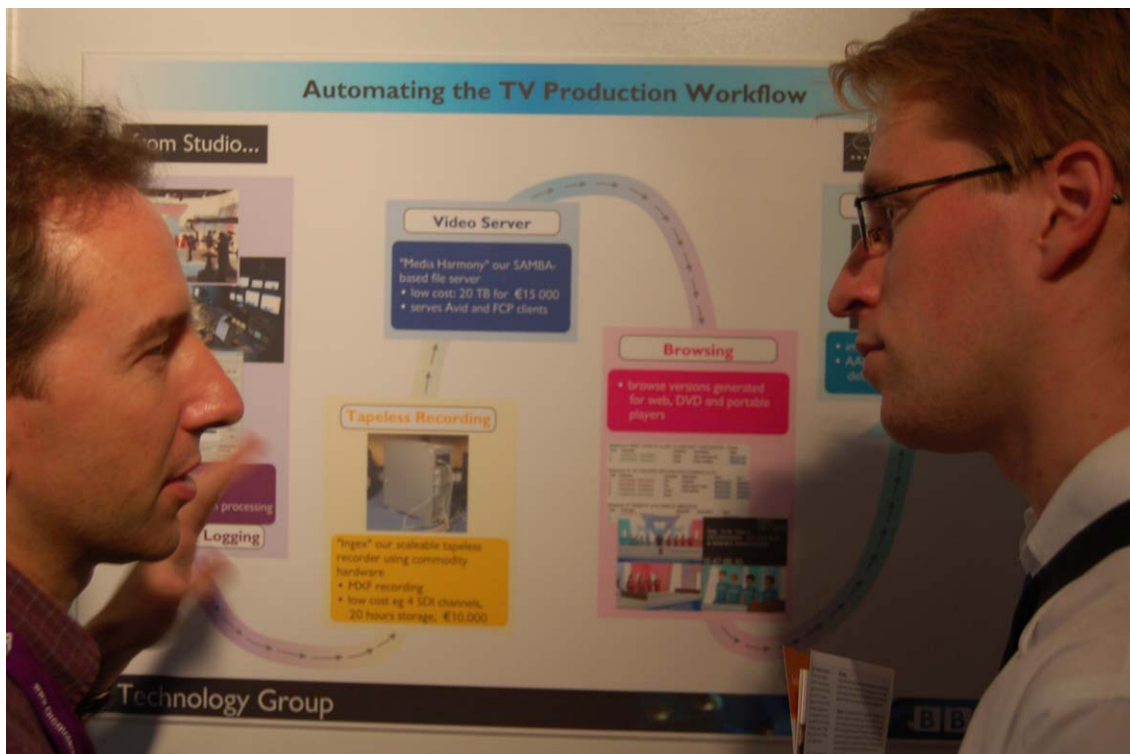
NuMedia has joined BBC R&D as a partner on the Dirac project, and showed its boxes for encoding and decoding the mezzanine compression format.

BBC Research is working on further implementations of Dirac, as it believes its wavelet compression could have significant advantages for some applications, compared to H.264 and VC-1 which use DCT compression. An application has gone into the SMPTE to standardize Dirac.

Making metadata easier

The increasing use by broadcasters of IT and file-based production requires very careful management of data, since all the video and audio circulating in an IT-based system is just data. Proper configuration and management of metadata is absolutely essential and, at IBC 2006, the SMPTE outlined its plans for making use of metadata, and for inventing metadata categories, just that little bit easier. The SMPTE's Metadata Dictionary, and its central Registration Authority that helps to standardize how metadata is used in broadcasting, has just gone online.

Those seeking to implement SMPTE formats like **MXF** (Material eXchange Format) can now search online for the metadata categories that suit specific tasks – and if new metadata categories are needed, the SMPTE's due process procedures can be initiated online.



The metadata stand in the New Technology campus at IBC 2006

This promises big savings in the time and effort needed by users to work through new metadata implementations, according to S. Merrill Weiss, chairman of the SMPTE committee on registration and identification technology.

“It allows additions to the standard without going through the whole standards-setting process – and should prove a much more rapid way of updating SMPTE standards” he said.

It’s part of the revolution in standards-making that the SMPTE initiated with its idea of “dynamic standards”, i.e. standards that could be updated in the same due-process way that the SMPTE employs for all its standards-setting activities, but with the time-consuming elements removed.

The SMPTE is also involved in the standardization of **AAF** (Advanced Authoring Format) which is set to become the file format of choice for deep metadata applications.

AAF is closely allied with the programme-exchange format MXF, now a key standard for file-based transfers, and the AAF Association reported a significant increase in implementation of AAF by broadcasters, and some notable new uses for the format.

PBS in the US has designed a new transmission facility around MXF and AAF, and BBC Research has created an on-the-fly logging utility using AAF in the studio gallery, which has already proven remarkably successful in improving production workflow.

This was an integral part of a system developed by BBC Research to automate the workflow in TV studio production, offering low-cost tapeless and paperless production, and was demonstrated at IBC in the New Technology Campus. The demo showed how the system was first used on the children’s show *Bamzooki*, deploying an experimental method of recording uncompressed video from the studio cameras direct to commodity PCs.

Using the system, a production assistant in the studio gallery, working to a list of planned items to shoot, sets the recorders running and logs information on each take. Different methods were tried to facilitate the review and editing process, including copying the source material to DVDs, with chapter headings and the PA’s metadata. A quad-split display showed all four cameras synchronized together. There was also an online version of this which was networked via the BBC’s intranet.

The production team saw substantial benefits in saving production time and claimed a better programme as a result.

“The system saves time and facilities in not having to ingest from tape, and it saves the editor time in not having to create multi-camera clips before he starts” said Phil Tudor, senior research engineer at BBC Research.

Archiving is an area where AAF might well score highly as broadcasters seek a file format that can handle many different aspects of preserving programme information, alongside the audio-visual content itself. The BBC is evaluating AAF for use in preserving its huge archive in data form, and the US Library of Congress is also considering AAF for the long-term preservation of video, audio and metadata.

Conclusions

The evidence from IBC this year was that the speed of change in broadcast technology shows no sign of slowing down. HDTV is finally a reality for some, although terrestrial HDTV still seems a long way off. However, consumer demand for HDTV through non-broadcast routes might well lead to a serious re-think about how terrestrial broadcasters could meet that demand.

Broadcasters are only now getting to grips with the transition to IT-based production and distribution of TV programmes. Yet IBC showed that they now have IPTV and TV to Mobiles to deal with as well.

One thing is certain – IBC 2007 will be just as essential to attend as IBC 2006 was, in order to stand any chance of keeping abreast of where the broadcast industry is headed.

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Nick Radlo contributes articles on broadcast technology to a variety of trade magazines, including the RTS Journal “Television”, TVB Europe, Broadcast Engineering and Broadcast Engineering News, Australia.

