tech-i

INSIGHT FROM EBU TECHNICAL

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Contents

The Hybrid Issue

EBU TECHNICAL
EBU·UER MEDIA TECHNOLOGY & INNOVATION

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Who Is in control of standards?

Everyone agrees that common open standards for media technology are in the public interest. They help to create a more open market for products and services, and encourage competition among manufacturers.

Everyone also agrees that, as time goes on, it becomes more and more difficult to agree common standards. There are more and more 'players' to get around the table. The standards bodies seem to have diminishing capacities in absolute terms, and there are more and more 'pre-standardisation' bodies. In the past, there were a small number of international standards bodies who were able to act as focal points for agreement on standards. At the worldwide level, there was the ITU-T and ITU-R and the ISO and IEC, which includes the IEC/ISO JTC MPEG and JPEG groups. At the European level, there is CENELEC (with about the same area of competence as the ISO and IEC), and ETSI (with about the same competence area as the ITU-T and ITU-R). Feeding into these standards bodies were the pre-standardisation groups such as the DVB Project. The DVB Project has been probably the world's most successful pre-standardisation body, and we are delighted that it is hosted by EBU Technical in Geneva.

Today, we also find consortiums of companies, such as the HDMI Consortium, and others, specifying standards. There is nothing wrong with this, provided these consortia are the only ones doing so in their area, and provided what emerges is available on fair, reasonable, and non-discriminatory terms. If not, they complicate rather than simplify the landscape.

Sometimes, those 'outside' the consortia can be unhappy that they are not part of the process. Indeed whole countries can feel unhappy, if the dominant inputs come from organisations in only one or two countries.

Though the DVB Project continues to be successful, in the borderland between broadcast and mobiles, and the systems that connect the two areas, we see uncertainty about where standards should be developed, and where they should be submitted.

Is there a way forward that is in the public interest?

If there is a route forward, it must lie in cooperation between the different standards and pre-standardisation bodies. Each body often specialises in a particular segment of the 'value chain'. We need to exploit this, and to see the whole as pieces of a jigsaw, which fit together well.

Today, we could take 3DTV as a concrete example. Here we find the SMPTE, the DVB Project, the ITU-R, and the ISO/IEC JTC MPEG groups, and the HDMI Consortium, all working on 3DTV. It seems clear that we need a mechanism for coordination between all of them, and agreement among them about the areas with which they will concern themselves. In this case, it could be rather simple. The SMPTE is dealing with 3DTV production standards. The DVB Project is dealing with delivery standards. The ISO/IEC JTC is dealing with compression standards. HDMI is dealing with equipment interconnections. Let's put these three pieces together, with help from the ITU-R, and we have all the elements of the 3D broadcasting value chain. To do that, we need a coordination mechanism, and I am happy to report that my colleague David Wood has started that process.

We could call this general issue the 'management of standardisation activities'. Let us hope that 3DTV sets a good example here, which can be repeated in other areas in the future.

Loudness Update (tech-*i* Issue 3) - The EBU PLOUD Group has reached another milestone. The target level and gating are now fixed at -23 LUFS, with gating method -8 LU relative. This is in line with the Group's subjective evaluations and tests performed by NHK (Japan).

The use of the abbreviation LUFS (Loudness Units in reference to Full Scale) instead of LKFS (Loudness K-weighted in reference to Full Scale) for absolute measurements is in line with the ISO 80000-8 naming convention. At its next meeting the Group intends to finish the Practical Guidelines.

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HBB
The Road to Change

Along with 3DTV, HBB innovation, with its new devices and services, is one of the most talked about trends this year. Peter MacAvock looks at HBB and EBU Technical's aim to demystify this domain, and to harmonise the various solutions to facilitate its success and benefit the consumer.

Hybrid – will it really change everything about broadcasting? Well, yes.

But it would be a shame to just say so without justifying such a short and simple answer. In fact, the road to this change is going to be a long one, and quite exactly what will change, when and how remains to be seen. But let's see what it is first. Hybrid is a catch-all phrase used to describe a device which has both a broadcast tuner and a broadband connection. But such devices vary greatly: a set-top box, a television set, a radio set, a games console, or a PC or other device with a PC-like architecture. Indeed, unlike other transitions in broadcasting, nobody really has an idea what the killer HBB device is: will it just do catch-up TV, YouTube? I doubt it.

In this article, I'd like to cover both radio and TV and the impact I think that HBB will have on them. The dynamics are different in each market, but some elements are the same. Radio is probably a little simpler and the ways of exploiting the power of hybrid are slightly different.

The stakeholders? Answer: everyone with a vague interest in the notion of a radio or TV service, and this presents many a problem since hybrid means different things to different stakeholders. For the purposes of the broadcast community, we like to think of a dual "tuner" device, services that exploit both interfaces and, most importantly, a means of signalling which links the two.

In the radio domain, hybrid is used for two major areas: enhancing network coverage and over-the-top services. With the advent of digital radio, the notion of ensuring universal coverage is important. Indeed, it is can be relatively expensive to guarantee deep indoor coverage for digital radio. As operators would like to replicate their FM coverage with digital, a means of linking their online streamed services, which may be available over a domestic (or indeed public) WiFi network and their digital radio is useful. Thus, as you move from the domestic to the outdoor environment, you are able to track services. Naturally, it shouldn't stop with the linkage between digital radio and online services, why not

provide the same linkage between analogue radio services and their online equivalents? There are bodies working in this space that EBU tracks closely, most notably RadioDNS.

The more classic HBB usage in the radio domain is "over-the-top", providing ancillary services to the mainstream broadcasting service. In this scenario, elements such as slideshows, album covers, etc., are pulled down from the internet to displace in conjunction with the audio from the main digital radio broadcast services. The digital radio standardisation bodies provide for such linkage in their digital radio receiver profiles, and devices such as the Pure Sensio provide for such functionality – although admittedly at the top end of the receiver market.

The television case is more complex. Good quality video content is a significant attractor whether you are making a CE device, offering online services or simply the mainstream classic television broadcasts. As the costs of programme production and the means of exploiting that content grow, so do the threats from piracy. So, discussions on hybrid inevitably turn to the struggle against piracy. For many content producers, the internet represents more of a threat than an opportunity, and devices that combine an internet and a broadcast receiver are open to be exploited for piracy. So a technical discussion of hybrid has often to be framed to address issues raised by our legal colleagues.

The second legal issue that arises is one of "content integrity": what is allowed to appear alongside (superimposed, adjacent to, etc.) broadcast content? For this read – "what widgets should be allowed to appear alongside broadcast content". But back to the stakeholders for a moment, and let's look at their motivations.
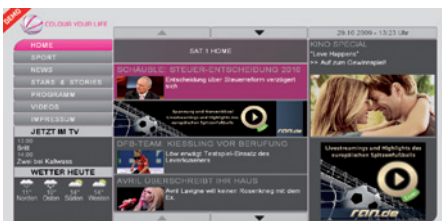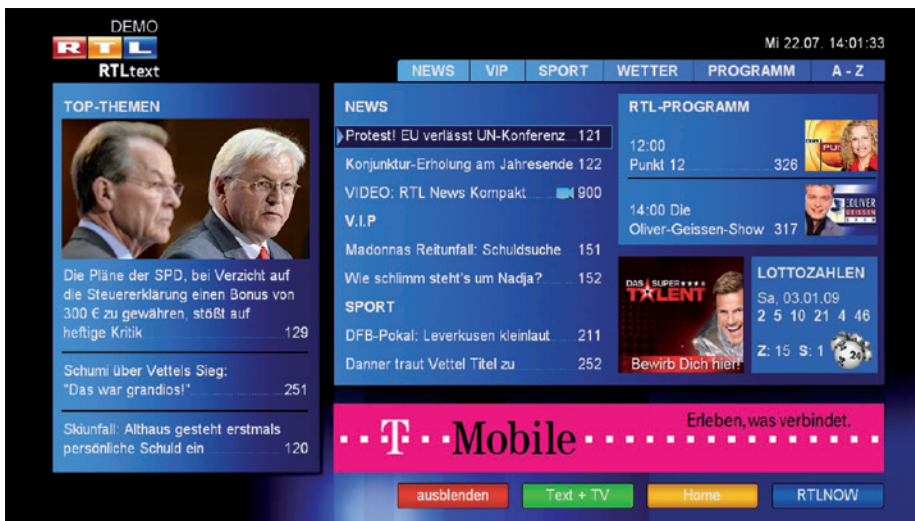
As the margins for CE products are squeezed, and the devices themselves become capable of more sophisticated functionality, there is significant interest in the CE vendors using the broadband connection on their hybrid devices to generate new revenue. Further, a large CE vendor will be selling potentially millions of internet connected units worldwide and over time, these represent very significant "networks" of devices that transcend national boundaries. If you do a global deal with a single vendor, you could be touching millions of units.

For the network operators, the advent of online services from broadcasters has been an interesting experience. The BBC will say that they predicted it, but many observers have been taken by surprise by the popularity of the catch-up TV services such as BBC's iPlayer. This popularity is worrying, because the figures suggest that with a relatively small percentage of the overall broadcast audience using iPlayer, it already accounts for 10-15% of all internet traffic in the UK. This is worrying for network operators and in some countries the manner in which the internet is managed is designed to accommodate such traffic generated by a single application. Thus, initiatives in the hybrid space are starting to include the network operators (ISPs) as key stakeholders, since the impact on their customers and infrastructure could be very significant.

And the broadcasters? Well, their drivers appear quite simple. With the switch-off of analogue services in countries that don't already have MHEG-5 or MHP, there is concern about finding an alternative to analogue teletext in the digital space. Hybrid devices represent an opportunity to push for a digital text platform that provides for other over-the-top hybrid services like catch-up TV. There's an initiative called HbbTV (http:www.hbbtv.org) which is proving popular in France and Germany. In MHP and MHEG-5 countries, solutions for

analogue teletext are already there, but hybrid is a great opportunity to combine the power and popularity of online services with the mainstream broadcasting services. In these markets, the technology platform situation is more complex: MHEG-5 and MHP can be made to operate in a hybrid mode. Indeed, the Freeview HD set-top boxes in the UK combine MHEG-5 with an IP return path, and will offer a version of iPlayer in combination with the power of the DVB-T2 HD services. But initiatives such as BBC-led Project CANVAS seek to unlock some of the powerful features in modern set-top box architectures which remain dormant with the limited scope of existing middleware solutions.

So what are the technical issues in television HBB. Well, remember that hybrid (in this case) is not the same as the excellent work being done in the managed IPTV network domain. Whilst being relatively new, many of the technical issues are familiar. The first is the existence of multiple platforms – CANVAS, HbbTV, MHEG-5, MHP. The second is the existence of multiple specifications for the signalling in the broadcast channel. The third element

is that related to formats for audio video and wrapping in the streamed (internet) environment, and ensuring that there's a reliable way of delivering this AV content over the open internet.

I have carefully avoided the thorny (and critically important) digital rights management (DRM) issue. Looking at the chain, it seems that we'll probably all agree on the formats we'll use for the distribution of content on the internet. There are likely to be a small number of broadcast signalling mechanisms, and DVB's application signalling will probably be most popular. This level of harmonisation is significant and sometimes ignored because the major issue of differentiation, and critical to interoperability, is that of the platforms. There are going to be differences between the different markets in the short to medium term.

So hybrid broadcast concerns radio and television, involves network operators, content providers, CE vendors and broadcasters, working in markets at different stages of development and with different regulatory environments. It's no wonder that it's complex. Our hope is that EBU's work can demystify this domain, work towards harmonising different solutions to the benefit of the consumer.

> unlock some of the powerful features in modern set-top box architectures which remain dormant with the limited scope of existing middleware solutions

Over the Net

France Télévisions' New Services Technical Director, Bernard Fontaine, shares the broadcaster's first HbbTV production experience, on the eve of the standard being published by ETSI.

One year on from the Franco-German HbbTV initiative to harmonise production techniques for yybrid television, it is interesting to see how, within the space of a few days, teams from France Télévisions were able to develop an operational service model for this European project.

The situation in April 2009 was simple. After two months, the French and German teams had decided to join forces to develop an open and standardised solution for providing hybrid equipment for TV reception. To do this, France Télévisions decided to take advantage of an upcoming major sporting event to test the HbbTV service model. The French Open, Roland Garros, was chosen for the project.

As HbbTV is based on internet technology (HTML, JavaScript, CSS, etc.) we had the advantage of being able to quickly develop a pilot service using the skills of our internal web development teams.

Having made the decision to use our internal web development teams, it took only one meeting to define the nature of the service with the simple objective being:

- Create a model that demonstrates the potential of this future standard
- Fast and inexpensive development
- Demonstrate that it is simple for any broadcaster to develop and deploy these types of future services

Several days before the start of Roland Garros, France Télévisions decided to link up with a number of partners: TDF and Trilogic for DVB-T broadcasting; Altran for co-developing the service; and Pleyo (now taken over by the founder MStar) for the supply of a HbbTV compatible DVB-T set-top box.

A 'red button' service, embedded in the DVB-T signal, was created to allow viewers to access additional information linked to this sporting event, from any of its five digital terrestrial television channels.

An initial editorial decision was made not to superimpose HbbTV service content over the video programme. This was a significant factor that was linked to basic rules for complying with image-related rights. It also avoided interfering with Widgets that were required for TV programmes on the first Connected TVs in the market. This approach was at the hub of our HbbTV project to give broadcasters complete editorial autonomy with Hybrid TVs, either in off-line (DTT only) or in internet-connected mode.

The services, available via buttons on the remote control, included:

- Latest news from Roland Garros
- Day's programme highlights
- Live results from seven tennis courts
- Player profiles
- Videos
- Photo gallery
- Official online shop of the French Tennis Federation

Implementing the project

France Télévisions' Arthur Mayrand, assisted by Huong Vothu of Altran, carried out the weeklong preparation of the project. Their work sought to define the presentation rules, draw up the storyboard for the application and implement the data flow systems (some in real-time) required to feed the service, all from the France Télévisions' web platform.

From a technical aspect, the project was developed on a HbbTV base, around XHTML, CSS, JavaScript and DVB DSM-CC Carousel technology.

For the demonstration, we had a STB with a built-in browser developed by Pleyo. With this being a 'first', the browser was still in the development phase and we had to wait several days for them to provide us with a stable version of their navigator.

The entire first part of the development phase (up to one week) was therefore carried out without a decoder. The development operation began on a PC using a standard internet navigator (Mozilla Firefox) for testing and debugging, as at that time there was still no HbbTV compatible emulator.

One week later, we received the eagerly awaited HbbTV compatible DVB-T decoder and were then able to test the application under real conditions.

The tests highlighted the differences in the interpretation of the HTML/CSS/JS code between our PC environment and the STB environment. These differences could then be corrected, either directly in the application or in the STB firmware, in close collaboration with the developers at Pleyo. Moreover, the performance levels of the

Bernard Fontaine

four year old STB fitted with an ST7100 chipset, into which HbbTV had been incorporated, were lower than that of the PC and it was necessary to adapt certain animation effects specified in the application in order to maintain optimum navigation fluidity.

In the end, only several minor adaptations were required, and three days after receiving the decoder, the application was operating correctly.

With hindsight, the most complicated part, which must in no way be ignored, in the design of an interactive TV application, is the ergonomics of the navigation process. In our initial design, we had already identified this factor and considered the various solutions offered.

However, after the two week Roland Garros trial, and with tests by numerous inexperienced users in our studios, there was no denying that navigational ergonomics of a service using only a TV remote control system was a crucial element on which the success of a service would be directly dependent.

Conclusion

Almost one year on from the trial, the HbbTV project has taken off significantly with the collaboration of diverse groups of entities comprised of major international television manufacturers and broadcasters. Each month sees the arrival of new supporters, with a shared vision for complete transparency in the development of the technology. There is a joint desire to find a realistic solution to enable broadcasters not to have to pay IPR for delivering our content through HbbTV technology.

The EBU believed in this project from the outset by supporting it. As a result, within months, it was possible to submit the
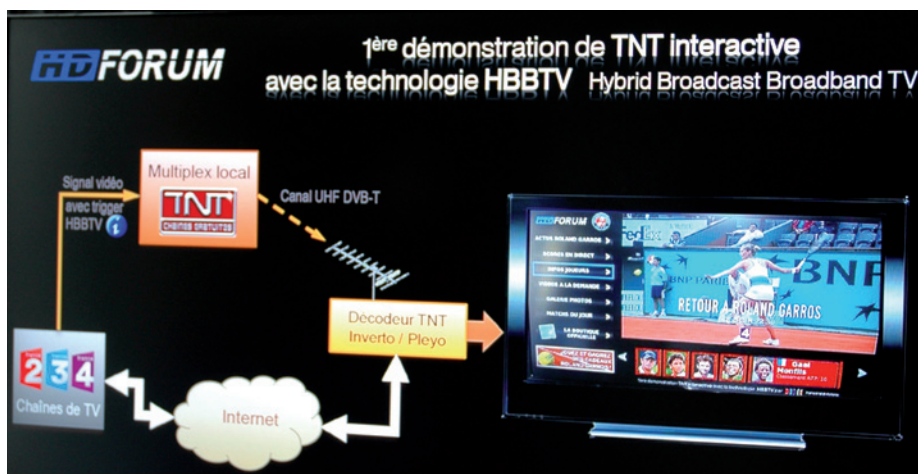
specification to ETSI to request the required standardisation.

With the HbbTV European Consortium's articles of association now completed, it is hoped that the standard will be widely taken up and HbbTV services implemented. We genuinely hope that this can bring about further European collaboration utilising

HBB technology in the greater interest of broadcasters.

Several development proposals have already been submitted and now it is up to all of us to develop version 2 of HbbTV together. This is why the Consortium has been created.

Just one
CLICK

Dr. Klaus Illgner, Managing Director of the Institut für Rundfunktechnik (IRT), argues for broadcasters not to miss the window of opportunity that exists for the introduction of a standardised hybrid TV receiver.

The HbbTV initiative for developing a standard for hybrid TV receivers has come a long way in a short period of time. The draft specification is with ETSI for review. The first services and products are already in the marketplace and there is remarkable interest in HbbTV throughout all stakeholders, even in the US and Asia. Many, including large global companies have signed up to support HbbTV. What is it that makes HbbTV so interesting? There are two key elements to it. First of at all, it enables broadcasters to create a seamless user experience across their linear and nonlinear service offerings. The user is not forced to leave the linear service and click through various pages to find the respective complementary service. It is now right at the finger tips with one click. The linear service experience is augmented by attractive and competitive services that can be included, compared to the PC environment. The second element is that HbbTV builds on existing and mature internet technology and has a very slim and light design. Therefore, it can easily be implemented in connected devices. The design, which is based around minimum requirements, enables all market participants to take advantage of it and differentiate their HbbTV offerings. More importantly, application development, which is based on HTML, is very simple because existing online content can be leveraged to run as HbbTV applications directly from an existing online CMS.
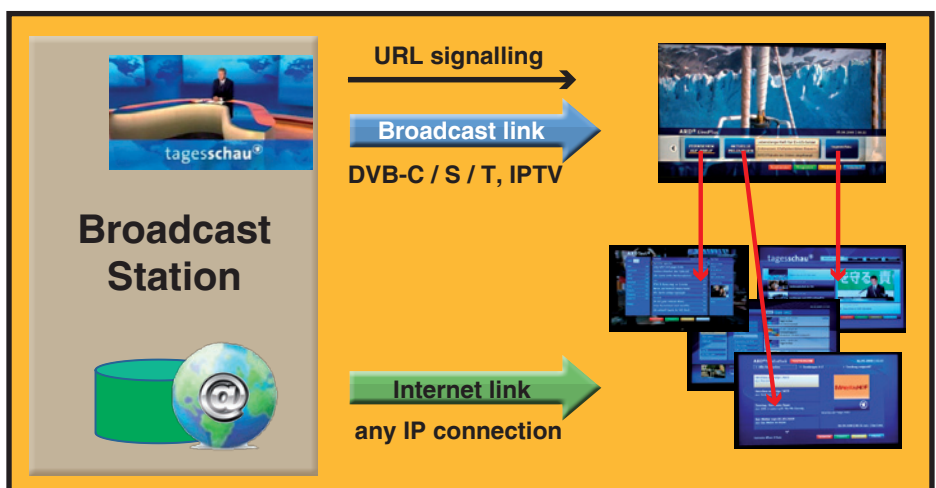
Given all the advantages of the concept, what are the critical issues? First of all the TV market in Europe is highly fragmented. Even within nations, different solutions exist in parallel, such as MHEG, MHP, NDS, Open TV. The internet, however, is global. Although HbbTV provides the most relevant functionalities needed in a middleware, it does not necessarily replace existing middleware solutions for interactive TV. Nevertheless, it is considered a thread. HbbTV can be plugged into various solutions. With the introduction of Connected TVs more 'middleware' solutions are entering the market as each CE manufacturer has its own solution. Samsung's Yahoo Widgets are sitting next to Panasonic's Veriacast or Philips' NetTV, not to mention Apple and Google TV. And, DVB has just launched a new standardisation activity. CE manufacturers are critical to market success. So what drives the industry to support HbbTV? It can only be the prospect of high consumer demand in a sufficiently large market. So, let's have a look at the service side, which is actually what steers consumer demand. Media, in particular video, has become a major element of internet services. And it is the professional content that consumers seek out. Now there is the opportunity to bring this content back to the TV screen, for which it was created and emotionalises best. Consumers understand that message immediately. On-demand video and catch-up TV are real drivers. This is underlined by connection rates of 50 percent of TV sets with that feature. However, for broadcasters the streaming costs get critical, particularly when it comes to HD content. The challenge of 'over-the-top' delivery is to ensure a QoS that meets the quality expectations on a TV screen. High on-demand usage challenges the IP networks. With modern flat panel TVs, there is also a high interest in a modern video text service, which is used by millions of consumers daily. Combining an attractive design with internet features, such as links to additional material also offers new business opportunities. The message to consumers is simple, and they really look for these services. The challenge is to get a broad commitment for HbbTV from broadcasters, at least across Europe. There is now a window of opportunity for a standardised hybrid TV receiver. But the window is closing quickly as, with the introduction of HD and 3D, millions of new receivers are coming onto the market as Connected TVs. If we wait and delay the process, broadcasters will most likely lose the last opportunity to provide a seamless user experience of linear and nonlinear services while maintaining control of their branding of nonlinear services to the consumer.

> ❝
> With the introduction of Connected TVs more 'middleware' solutions are entering the market as each CE manufacturer has its own solution.
> ❞

URL signalling

Broadcast link

DVB-C / S / T, IPTV

Broadcast Station

Internet link

any IP connection

Project CANVAS
Connecting Televsions

BBC's Richard Halton, Project Canvas Director, outlines the current position on the UK partnership to deliver services and applications to the television set via broadband.

INNOVATION PARTNERS

Project Canvas is a UK partnership initiated by the BBC and now involving Arqiva, BT, Channel 4, Five, ITV and Talk Talk Group in an equal relationship to establish a subscription free, open environment for content, services and applications delivered to the television set via broadband alongside existing linear channels and services delivered over DTT or DSat.

The rationale for Project Canvas builds on the model established in the UK by Freeview (a joint venture involving the BBC, Arqiva, Channel 4 and ITV): promoting access to a range of services offered by third parties via a device available for a one off fee. Building on the open aspects of this model, Canvas devices will connect via any ISP connection and take advantage of the distribution capabilities of broadband to offer a theoretically unlimited range of services to the consumer.

Making this a reality has a substantial reliance on technology innovation. The partners are investing in research and development relating to the enabling technology for connected television. They are engaged in industry standardisation activities, primarily with the Digital Television Group (DTG) in the UK but also with similar initiatives such as HbbTV and global bodies such as the OIPF. The aim is to maximise the commonality of the technology specifications underpinning a range of platforms, including Project Canvas. Identifying and specifying the technology standards that will enable the delivery of online video and services to CE devices is a fundamental aspect of the project. But Project Canvas is about much more than this.

Firstly, the partners are working to define an overarching model for an ecosystem that will balance the needs of all participants in the connected television space. The project partners include some of the UK's leading online content providers, who represent a broad range of funding models, and two of the UK's leading ISPs, who understand the challenges relating to the provision of a scalable, sustainable broadband delivery infrastructure. The BBC and its partners are also engaged with leading technology providers: CE manufacturers, such as Cisco, Technicolor and Humax; SoC vendors, such as Broadcom, Intel and ST; software component suppliers; IP delivery infrastructure providers.

The ecosystem design reflects Project Canvas's principle of openness. This model allows content providers to maintain control of how and where content is hosted and distributed and operate the business model of their choice (including pay models such as subscription and pay per view). Critically this means that while Canvas will facilitate access to content, the relationship with the end consumer will be managed by the content or service provider, not a third party intermediary as is the case with most existing TV platforms.

Secondly, the partners plan to offer consumers an engaging, intuitive user experience that makes it is easy for them to find the content they want. To achieve this it is intended that there will be a common, top-level user experience. The metadata that powers this can then be published in a highly-optimal form, reducing the processing required on the consumer device. The partners have also been working to ensure that the underlying graphics rendering capability of consumer device hardware can be fully exploited, again delivering benefits. Together these will enable the kind of highly responsive user experience increasingly demanded by the audience. It is also intended that the top-level user experience will be upgradable, allowing it to evolve to meet audience needs. ▶13

Richard Halton

MHP in HBB scenarios

Gino Alberico of Rai's R & D discusses how the addition of a broadband connection to digital interactive receivers will give broadcasters new opportunities for a range of innovative services.

The addition of a broadband connection to digital interactive receivers, leading to a new family of devices called hybrid set-top boxes or IDTVs, will give broadcasters new opportunities for a range of innovative services, such as Video-on-Demand, catch-up TV and virtual linear channels. Those services, where provided over broadband IP lines, that is best-effort internet connections offered by ISPs, are also defined as Over-The-Top TV (OTTV) services. In other words, OTTV services, as opposed to IPTV services, do not strictly require a connection to the managed network of a specific IPTV service provider. In Italy, OTTV services are going to be launched thanks to the support offered by the latest MHP interactive receivers recommended by the DGTVi. The choice of MHP is the logical continuation of the open and interoperable interactive platform that has been running over DTT broadcast channels for many years and is currently deployed in the market with about nine million receivers.

DGTVi is the association of national and local broadcasters which aims to support and harmonise Italian DTT development through close collaboration with regulatory bodies and the CE industry. The DGTVi compiles and publishes baseline technical specifications for compatible DTT receivers based on openness, interoperability and technology neutrality. In addition, it provides industry manufacturers with test suites, technical tests facilities, bandwidth for over-the-air (OTA) software upgrades for devices. It also guarantees receiver functionality to the retail market and offers end-users a 'labelling certification programme' and communications campaigns to help consumers make an informed choice.

Back in 2004, the DGTVi defined the first specifications for standard definition DTT receivers for the Italian market (D-Book), and the labelling certification programme

associated with IDTVs and STBs having specific features, namely pay-TV (White Label), and interactivity based on MHP 1.0.3 (Blue Label). Later on, in cooperation with HD Forum Italy, the DGTVi released the specification for HD terrestrial receivers (HD-Book DTT 1.0) adopting MHP release 1.1.3 as middleware for interactivity.

In order to extend the HD-Book in the area of media delivery over (IP) broadband connections, a Broadband Addendum (BB Addendum) was introduced supporting different services such as Streamed Contents on Demand (CoD) and, optionally, Download CoD. The specification HD-Book DTT 1.0, in conjunction with the Broadband Addendum, is applicable to both STBs and IDTVs and the relevant certification programme is associated with the latest Gold Label.

The DGTVi BB Addendum fills in the MHP 1.1 gap in managing broadband content, by offering the possibility to deliver best-effort A/V content streaming and xlets/applications downloading via IP channel. In brief, the most important features included in the Broadband Addendum, mainly based on Release 1 Specs from Open IPTV Forum, are the following:

Audio/Video formats:
- All the broadcast formats of HD-Book (MPEG-2 and H.264/AVC) plus MP3 and AAC

Containers:
- MPEG-2 TS (SPTS)
- MP4 File Format

Protocols:
- HTTP 1.1 with Range Header support

Application Environment:
- Procedural: MHP-based
- Declarative: optional (for further study)

The DGTVi and DVB are working together in order to have the Broadband Addendum extensions integrated into the DVB-MHP/GEM specification by 3Q 2010.

Currently, the DGTVi is improving the Italian MHP profile with the forthcoming Broadband Addendum 2.0, tentatively planned for a 2Q 2010 release. The new specification will deal with, amongst other features, MHP-enabled adaptive streaming and harmonised DRM, which is an approach that could also enable a horizontal market for the protection of content delivered through the broadband channel.

Since 4Q 2009, Gold Label IP connected HD receivers, compliant with HD-Book DTT 1.0 specification and with the BB Addendum, have been available on the Italian market (8 STB and 46 IDTV models) and it is expected that by the end of 2010, more than 500,000 (GfK forecast) devices will be deployed (both STB and IDTV) supporting a broad range of new MHP based OTTV services.

Various catch-up TV, Video-on-Demand services and OTT versions of existing catch-up TV services for PCs from Rai (www.rai.tv), Mediaset (www.video.mediaset.it) and LA7 (www.la7.tv) are being developed and have been demonstrated, as well as fully interactive applications, for both FTA and pay-TV content.

Thanks to the support offered by MHP, the potential for a seamless experience between broadcast only services and broadcast/broadband services appears very clear. Therefore, DGTVi Italian broadcasters intend to enhance the traditional viewer experience by offering new compelling OTTV services to reinforce and promote an innovative broadcast-centric approach.

01

02

01. ADB i-Can 3810T HD Gold Label STB
02. Telesystem 7900HD Gold Label STB

3DTV – GO DEEPER

3DTV has generated an enormous amount of interest in the industry following the latest success in the movie theatres combined with the screening of a number of prestigious sports events to cinemas. Now, more and more viewers want that same experience in the comfort of their living rooms. Some analysts predict that close to 80 million 3D TV sets are due to be sold by 2015 – remarkable given that they were launched only at the beginning of this year.

Ericsson are at the fore-front of the technological innovation that is enabling many broadcasters to deliver differentiated services. Our solution for the C&D element of the 3DTV broadcast chain is based around our new contribution and distribution codecs designed to deliver the best picture quality possible essential for next-generation contribution networks.

While support for advanced features such as 10 bit precision and 1080p50/60 will ensure best video quality, the delivery of contribution quality 3DTV demands critical synchronization of the left and right hand channels. Ericsson's solution features the new Contribution Encoder platform, delivering exact synchronization and time-stamping of the compressed frames in addition to the generation of a fully packaged 3D simulcast. Our latest Professional Contribution Receiver features "Simulsynch 3D" technology to ensure the exact temporal and spatial relationship between left and right channels is maintained to deliver best quality 3DTV.

To learn more about Ericsson's 3DTV contribution and distribution solutions please contact us at the address below.

Connected TV in the UK

Simon Gauntlett, Technology Director, Digital TV Group explains how its UK industry partners are working to meet the challenges of making the 'connected' home a reality for the consumer.

The Digital TV Group (DTG), the industry association for digital TV in the UK, publish and maintain the D-Book – the detailed technical specification for UK digital terrestrial television (Freeview) and run the UK's only ISO/IEC17025 compliant test centre. DTG Testing provides the benchmark test and conformance services for the UK's Digital Tick certification mark, the UK's DTT platform - Freeview, the free-to-air satellite platform - Freesat, and international platforms.

When the DTG published D-Book 6 in March 2009 it contained the specification, not only for HD services on the Freeview platform but for a broadband return channel – enabled by an internet connection mandated on all receivers - paving the way for richer interaction and for content to be streamed to Freeview HD receivers. Freesat became the first non-subscription service to launch catch-up TV when it made iPlayer available in beta through Freesat HD in January 2010. The introduction of iPlayer on Freeview is inevitable and with all Freeview HD devices containing an Ethernet port the options for internet-type services for UK consumers are endless. Connected TV is the next step for hybrid internet television. A European initiative, HbbTV, has been created based on existing standards and web technologies including OIPF (Open IPTV Forum), CEA, DVB and W3C. This provides some European countries with an interactive standard for the first time but is not significantly more than the UK's MHEG standard and interaction channel. The DTG is working towards creating a standard profile for Connected TV devices and services utilising the latest technologies.

D-Book 7 will contain the UK interoperability profile for Connected TV products and services, providing an industry agreed baseline implementation that Canvas (the proposed UK HBB joint venture partnership between BBC, ITV, Channel 4, Five, BT, Arqiva and Talk Talk), Sky and others can build on for trademark requirements to support their services. This enables the horizontal market to deliver products with access to services and options to support further services such as catch-up TV and social networking if they wish.

The DTG has set itself the ambitious but achievable target of the publication of D-Book 7 by December 2010. To meet this target we are currently working with the teams behind services such as Canvas, the UK Video-on-Demand service SeeSaw, Sky Player and ITV Player, as well as our wider membership of broadcasters, network operators, manufacturers and ISPs to define the specification for Connected TV. The DTG has set up eight Connected TV working groups drawing upon different areas of the specification: architecture, device, delivery, presentation, metadata, security and measurement, and consisting of key industry experts in the field to drive the rapid deployment of universal Connected TV receivers.

An updated version of the current D-Book - D-Book 6.2 was published in March and introduces two new features that will help to move the Freeview HD platform towards Connected TV. The first is support of MHEG xPlayer - the ability to deliver catch-up TV to Freeview HD receivers through the network connection built into the set-top box. Content is delivered using industry standard protocols H.264/HE-AAC in MPEG-2 SPTS over an HTTP progressive download connection. The content can be optionally encrypted using AES-128, using the same algorithm as specified by the Open IPTV Forum. Reusing existing standards this way enables content providers to distribute one format to a number of platforms, including Connected TV devices in the future.

The D-Book provides the tools required for an MHEG based catch-up service to identify a viewer's geographical location by broadcast region, enabling regional targeted advertising through stream playlists as well as personal preference-driven promotion. The second new feature is the delivery of record lists. This uses technology similar to series linking to give the viewer the ability to subscribe to broadcaster defined groups of content such as 'Best of Comedy'. It also provides a mechanism for broadcasters to use off-schedule capacity to deliver extra content such as more HD programming. Services are driven by broadcast metadata based on the schema developed for TV Anytime.

The increasing prevalence of hybrid devices will undoubtedly drive demand for catch-up and VoD services on living room TVs. The DTG recently conducted a survey with YouGov that found 80% of viewers who can't already do so would like to be able to watch on-demand programmes on their home TV.

The UK digital television industry is constantly evolving – the DTG is committed to working with our members and industry to meet the challenges these new technologies bring and to make the connected home a reality for UK consumers.

Simon Gauntlett

Hybrid FM

The radio futurologist and Secretary of RadioDNS James Cridland travels to Tokyo as part of his quest to uncover radio's future.

I'm in Tokyo, in a small meeting area flanked by studios, drinking a fruit juice. Daisuke Fuji, the webmaster for Japan's TOKYO FM, has just breathed on his mobile phone, rubbed it on his shirt to clean it, and he's now passing it over to me. Why am I in Tokyo? After working for BBC Radio for a while, I left in September with a need to see something different. I felt there was a lot that UK radio could learn from other countries. This was the excuse I needed to go on a round the world trip: to visit radio stations, drink beer, and otherwise have a bit of a rest: a rest that my accountant assured me would probably be tax-deductible, if only I'd keep the receipts. The mobile phone that Daisuke has just handed me is the typical 'keitai denwa' favoured by the millions of busy Japanese in Tokyo. It's a flip phone, with access both to live television and to radio. But there's something interesting on the screen.

It turns out that radio reception of TOKYO FM, which happens on the FM chip inside the phone, is augmented by additional content that reaches the mobile phone using the cellular data network. There's now-playing information, schedule information, and, occasionally, bright colourful advertising.

It's a way of using the best of both worlds using hybrid receivers: FM radio to deliver reliable, high quality audio, in tandem with cellular networks to deliver the additional metadata. Press a button and you can buy the song, or request more information from advertisers, or read the news story being discussed on-air. It's a proprietary solution by the mobile phone operator, but a similar, more open, piece of technology exists elsewhere: the EBU is playing its part in a not-for-profit called RadioDNS.org, which is already used by over seventy radio stations in the UK to add visuals to their broadcasts. Adding IP-delivered content to augment a radio listening experience opens interesting possibilities. Broadcast radio is broadcast to tens of thousands of people at the same time; but internet connections are one-to-one. This means that while you listen to the national weather forecast over broadcast, you could get more local information via IP; a regional commercial for a supermarket could be accompanied by walking directions to your local store.

Tests in the UK appear to show that on a mobile phone, radio is far more popular than television while on the move. Yet radio can, so often, be a dull experience on a device that's capable of so much more than simply showing '87.5'. Hybrid broadcast techniques that connect broadcast radio with the internet have the capability of transforming the radio medium on such devices in a way that can assure radio's future in this multiplatform world. Daisuke grabs his mobile phone back, snaps it shut, and replaces it in his pocket. It occurs to me that, just like many other areas of everyday Japanese life, I think I've seen a tiny glimpse of the future.

For more on his trip, visit:
http://bit.ly/allmyarticles

01

02
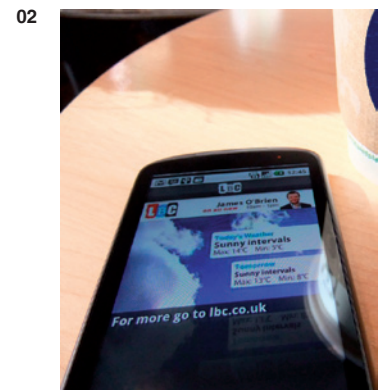
01. TOKYO FM, with additional information, on a mobile phone
02. Additional visual information to accompany the radio and a coffee

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INNOVATION PARTNERS

9▶ None of this reduces the creative opportunity available to content providers as they will have control over their own portals and services.

Thirdly, the partners want to make it really easy for content providers to use Canvas as a way to get their content and services in front of the audience. This could be as an evolution of existing services offered by mainstream content providers (including the BBC and its partners) or new services from web application developers already creating content for devices like the iPhone. The combination of an open platform and the potential for a direct relationship between content provider and consumer has already excited interest from a wide range of groups, including commercial video on demand providers, national arts and cultural organisations and government service providers.

Lastly, the partners will award a trademark licence to devices that are functionally compliant and offer the Canvas branded user experience. They will then promote Canvas branded devices to consumers as part of a wider retail engagement strategy. These activities will be funded via an independent joint venture set up by the partners on a cost recovery basis.

In addition to the consumer benefits, the proposals are designed to help deliver wider objectives shared by the partners, the BBC Trust and the UK government including promoting broadband take-up. The proposal to develop a consistent software platform is also fundamental to delivering a highly accessible user experience. Over a quarter of adults in the UK require some type of accessibility feature to get the best from their TV experience and the Project Canvas partners have set out an ambitious roadmap for the platform to meet these needs.

The proposals remain subject to BBC Trust approval and a final decision is expected later in 2010.

The information contained in this article was accurate on its date of submission to EBU on May 14. For the latest news on Project Canvas please visit the news section at www.projectcanvas.info.

Camera Action

DSLRs are getting more popular. Most people can't tell the difference when shots made with DSLR are mixed with those of traditional high-end HD cameras or even film. Tom Poederbach, veteran cameraman/editor and technical writer has been following the developments for over a year now.

"Your measure's not found in how much time you have on this earth, but what you do with the time that you have. Echo Company is going to change history starting early tomorrow morning".

These words by the battalion's commander were recorded on video by Danfung Dennis, an embedded photojournalist with the marines in Afghanistan in July 2009. The camera used was a Canon EOS Mark II DSLR photo camera with full HD (1920x1080) video function.

The popularity of this camera has been triggered by New York photographer Vincent Laforet. He got the opportunity to test a preproduction model of the Canon EOS Mark II over a weekend. His test clip,"Reverie", was posted on the web on 10 October 2008. A week later there were over a million hits. What made the clip so special? Why was it that people started to want this camera? The video clip was shot at night time and had the look of an expensive fully lit Hollywood production. The truth was, the clip was shot using only available light. The result was an utterly important clip of superb quality at a very affordable price point.

The big difference between camcorders and DSLR's is sensor size. Large sensors allow for better low-light capture and to shoot with a narrow depth of field for a creative effect (also known as the Hollywood effect). Camcorders have 2/3 inch or even 1/3 inch sensors. To isolate a subject from the background you need a special adaptor or a camera with a large sensor like a DSLR. The largest can be found in the Mark II with a 36x24mm CMOS sensor, which produces a QuickTime MOV file (H.264). The data transfers to a compact flashcard 35Mbps. Up until a couple of months ago, most DSLR's lacked a lot of what traditional video cameras offer. Simple things like timecode, colour bars, zebra indication (overexposed areas), audio level indication, good ergonomics for shooting video. Also, it was not easy to correct framing with a zoom, the list could go on. Canon upgraded the software twice for the 5D mark to bring in extra functionality. These upgrades also allow for manual control over the audio input with audio meters and the audio sampling

frequency upgraded to 48 KHz with the 5D Mark II.

The video frames that come out of these cameras don't lie - they look stunning especially in low light. Recently, a group of professional DoPs, colourists, gathered for a 'DSRL Shootout'. They lined up the Mark II, Canon 7D, 1D Mark IV and 550D, with the Panasonic GH1 and Nikon D3 and compared them to the highest standard - film. Kodak and Fuji stock, and the DSLRs were used for the same scenes. The results were evaluated at the American Film Institute and at the George Lucas Skywalker Ranch, with projections on a very large screen. The results were pretty astonishing. The days of bulky tripod and shoulder mounted cameras are finished, if we believe Shane Hurlbut (ASC). "You can put a DSLR anywhere. To make a shot, place it where a traditional video camera doesn't fit or can't be hidden. Complicated action scenes can now be done in one take. With relatively cheap and small DSLR's it is not a problem. Put up as many cameras as you like. We can throw out the playbook and go back to school. We have to relearn, think outside the box", Shane is saying. So, will we see more interesting shots because of the use of DSRL's?

On the audio side, there are plenty of solutions. The best way is to bring a sound professional along for booming and mixing. However, if going alone, there are a couple of different solutions, such as juicedLink or Sound Device's MixPre, to connect to the

Audio In of the camera, e.g., the 5D Mark II, because the automatic gain control (AGC) can be switched off . The juicedLink can spoof the AGC of the camera, and is less expensive, so it goes well with the 7D and 550D and the others.

DSLRs require a different approach, a different eye for camera angles, more skills in focus pulling and knowhow of the use of available light. DSLR's are not a magic bullet. They are not RED killers. They are not sharper than your average HD video camera. However, keep all that in perspective and use them for what they are good for and they can do astonishingly good things at an unprecedented low price point.

01. Cameraman Dave Schwarz with Zacuto HD-DSLR Shooter Rig
02. Photo capture of light / dark combination using Canon EOS 5D Mark II DSLR

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02

EBU at ASBU - Tunis

There has been a long history of cooperation and information sharing between the EBU and its seven sister broadcasting unions around the world. One of the recent activities of this kind took place in March 2010 with the Arab State Broadcasting Union (ASBU) whose members cover the Middle East and North Africa. This second edition of the so-called 'EBU Week of Technology' coordinated by EBU Training, took place at the ASBU Headquarters building in Tunis. Two senior engineers from EBU Technical, Walid Sami and Ed Wilson worked a marathon relay to provide a total of nine hours of lectures and four hours of workshops to 30 members of the technical management staff from 15 ASBU member organisations from 11 countries.

The first edition of the EBU Week of Technology, which took place in February 2008 in Damascus, Syria, had largely tackled the fundamentals of digital TV and radio. Lectures and tutorials on the DVB and DAB standards and systems, and on some basic spectrum planning for TV and radio networks were the key topics. At this year's event, however, the agenda focussed much more on the options for services, and the question of potential interference from mobile telecoms services which may result from the plans in several countries in Europe to auction off the 'Digital Dividend'. Whilst clearly very interested in rolling out DVB-T and digital radio, many of the participants were also keen to hear some of the latest news from the more established digital markets, and presentations were given on HDTV, Hybrid Broadcast/Broadband TV, DAB / DAB+ / T-DMB, and the hot topic of the moment, 3DTV.

An innovation this year was to invite the participants to prepare their own short presentations to share knowledge with each other and the EBU Technical staff on the digital progress in their home countries. It was encouraging to note that our ASBU colleagues are generally making steady progress in the introduction of digital terrestrial television transmissions, implementing in compliance with the so-called 'Geneva 06 Plan'. The GE-06 plan is an international ITU treaty at the United Nations, and constrains all EBU and ASBU countries to similar timescales under which their analogue TV broadcasts will no longer be protected against interference. We learned that many of the ASBU countries have started the digitalisation plans of their terrestrial networks, or are about to take their decisions on this subject.

The feedback from the participants was very positive and the cooperation between the EBU and ASBU will no doubt continue.

DIARY 2010
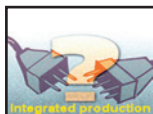
Expert Community Integrated Production
2 Jun / Geneva (CH) / Members only / No fee. This Expert Community is about interoperable ways to create and manage media in Radio / TV facilities. It works on reference architectures and standardisation, based on generic storage and network infrastructures. System integration ('glueing' components together) is a key focus.

MXF Masterclass 2010
8 - 9 Jun / Geneva (CH) / Fee. Acquire expert knowledge in MXF technology to better understand how to migrate to a file-based workflow system.

Technical Assembly 2010
9 - 12 June / Turin (IT) / Members only. The Technical Assembly analyses current technology, future prospects for production, broadcast and broadband delivery, and spectrum management.

Metadata Webinar
17 Jun / Online - 14:00 (CEST) / No fee. Learn about metadata for the media industry. Join this Webinar for an update on recent metadata developments by EBU's metadata expert, Jean-Pierre Evain.

Expert Community on "Networks & Infrastructures"
21 Jun / Geneva (CH) / No fee. The Expert Community - Networks and Infrastructures (ECN) is dealing with production, contribution and primary distribution technologies of interest to EBU Members.

Networks 2010
22 - 23 Jun / Geneva (CH) / Fee. The Networks seminar is the yearly event for all broadcasters, manufacturers or operators involved in Networks and Infrastructure for programme exchange.

Digital Switchover Webinar
14 Jul / Online - 14:00 (CEST) / Members only / No fee. Join Elena Puigrefagut (EBU) for an update on the Digital Switchover taking place in the EBU Members' broadcasting area.
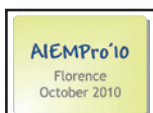
AIEMPro 2010
25 - 29 Oct / Florence (IT) The third international workshop on Automated Information Extraction in Media Production (AIEMPro) is organised in conjunction with ACM Multimedia 2010.

Further information can be found at http://tech.ebu.ch/events