Edition No.17 **March 2006**

DVB-SCENE

Tune in to Digital Convergence

17

Touchdown For DVB-H In USA

DVB

The Standard for the Digital World

This issue's highlights

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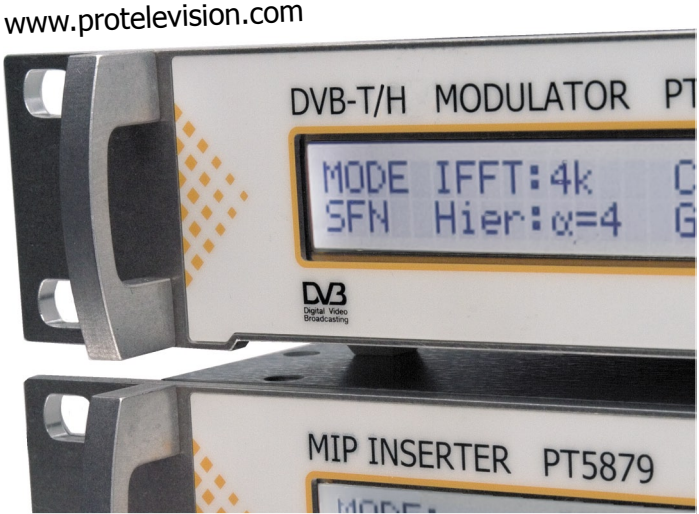

Pro Television
TECHNOLOGIES

NAB 2006, DVB Pavilion C836, Central Hall

BROADCASTING & TELECOMS SUITONOMICS

A word from the DVB Project Office

Peter MacAvock, Executive Director

The early part of the year sees significant trade show activity and the differences between the telecommunications and broadcasting sectors are much in evidence. Not least of these is the prevalence of dark suits at telecoms trade shows! Indeed, the DVB Project Office representatives seemed the only ones in non-standard telecoms garb at the 3GSM World Congress in Barcelona. DVB World in Dublin brought a welcome return to the 'more varied' broadcasting fashions. Anyone for Suitonomics?

Mobile TV and DVB-H were the talk of the 3GSM show; taking centre stage ahead of HSDPA and other telecoms innovations. There were three high powered DVB-H transmissions in Barcelona and many more local transmissions in the halls. The Project Office's 'Guide to DVB-H @ 3GSM' listed some forty companies and proved a useful tool for those wishing to find their way around.

The start of the year also brings the carnival season, especially in Brazil. And Brazil's carnival is like no other – just like their debate on digital terrestrial television standards, now entering its tenth year. Mrs. Vivienne Reding (European Commissioner for the Information Society), accompanied by senior representatives from DVB and DVB member companies, made a trip to Argentina and Brazil to explain some of the technical and economic benefits of adopting DVB standards.

DVB remains a popular choice amongst the broadcasting, telecommunications, research and government sectors, but the debate rumbles on and with elections coming towards the end of the year the window of opportunity to make a decision is small.

Cover photo courtesy of Fraunhofer-Institut fuer Nachrichtentechnik Heinrich-Hertz-Institut

DVB, Abertis Telecom and the Government of Catalonia hosted 'DVB-H: Mobile TV Update' at this year's 3GSM World Conference in Barcelona. DVB-H was live on air during the conference with more than 40 services being delivered via 3 multiplexes covering the city.

NEW MEMBERS

RRD Reti Radiotelevisive Digitali Spa • ANT Software Ltd.
SysMedia Ltd. • Embeddia • Silicon Integrated Systems Corp. (SIS)
BenQ Mobile GmbH & Co. OHG • Huawei Technologies Co. Ltd.

NEW STANDARDS:

TS 102 441 V1.1.1 'DVB-S2 Adaptive Coding and Modulation for Broadband Hybrid Satellite Dialup Applications' (10/05)

TS 102 323 V1.2.1 'Carriage and signalling of TV-Anytime information in DVB transport streams' (11/05)

TS 102 823 V1.1.1 'Carriage of synchronised auxiliary data in DVB transport streams' (11/05)

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MADE FOR MOBILE

Peter Cowley, MD Digital Media, Endemol UK

The market for the creation of mobile video and TV content could be as big as the broadcast TV market by the beginning of the next decade, meaning TV producers like Endemol need to quickly adapt to this new medium. Endemol has been producing video for mobiles since early 2003 by editing Big Brother video news clips for the first wave of mobile phones that had video playback capability. In those early days Endemol employed dedicated teams to edit and encode clips for the mobile operators. At this stage, the production costs were much higher than the mobile revenues, but we learnt valuable production techniques that would help us create a profitable business in future years.

Since 2004 and the rise of the 3G networks in countries such as Italy, Australia and the UK, Mobile TV and video creation and production has become part of our standard production process on big reality shows like Big Brother and The Farm. In the UK, whilst producing Big Brother, we employ a team of new media producers who work in shifts 24 hours a day, creating web news stories, editing pictures for the web and MMS as well as editing video for broadband and Mobile TV. These producers have all been trained to make the most of each platform – for example, editing video for mobiles needs to focus on 'close ups' shots as well as being mindful of how users access content on these devices – irregular, short viewing seems to be the norm. This focus on new media production has reaped rewards financially. Endemol has sold over six million minutes of streaming video from Big Brother 2005 in the UK, Italy and Australia. In addition, hundreds of thousands of Big Brother video clips have been downloaded and saved onto mobile phones.

"... editing video for mobiles needs to focus on 'close ups' shots..."

For big reality programmes, mobile video production has become part of our everyday production process. With the success of taking reality programmes onto mobile, Endemol wanted to create content that was exclusively made for mobile. In autumn 2005, Endemol was commissioned by the UK broadcaster Channel 4 to extend its teenage drama 'Totally Frank' onto mobile phones by creating original made for mobile video episodes. These two minute episodes were written and produced by the TV show's crew and featured the original actors. The excitement created around this project convinced Endemol that there was a future in 'made for mobile' content. In October 2005, Endemol launched Endemol Mobile, a production company focused on creating made for mobile content. Since launch, Endemol Mobile has been focused on creating a number of video pilots and original mobile video formats that could be sold to mobile operators and aggregators. Pilots include: two looped mobile channels focused on the young male user: Guerilla Comedy Channel and Extreme Reality Channel and Ten-4-Ten, a quiz show created solely for the mobile phone. Original format development has been focused on ideas within the music, comedy and game show genres.

Totally Frank on Mobile TV

Looking further ahead in time and with the development of technologies to enable broadcast to mobile phones, Endemol has been working with operators and device manufacturers to try and understand how the mobile user of the future will use their phone. The first example of this R&D was the development of a video prototype showing what Big Brother might look like using the interactive capabilities of a Nokia DVB-H handset.
Experience so far in the creation of mobile video content points towards users wanting a mixture of video, interactivity and user generated content packaged around a well known TV or talent brand. Maybe this mixture will create the 'killer' mobile content of the future.

Orange Playlist, an Endemol UK Initial production centres on a celebrity's all-time playlist, the programme includes music from their past, present, and future as well as a dedication track and finally – their all time favourite tune. The show is supported and enhanced with a range of web, mobile phone and interactive content. (Pictured - Yoko Ono and host Jayne Middlemiss)

Peter Cowley

Endemol is an international entertainment company, traditionally focused on the creation of TV formats, their production and exploitation. Endemol is owned by Telefonica.
As managing director of digital media for Endemol UK, Peter Cowley's role is to develop and implement Endemol's interactive and new media media strategy in the UK. The role is a UK board level position, demonstrating the importance Endemol gives to the exploitation of interactive media.
Peter is also CEO of Victoria Real, a well known digital production company, wholly owned by Endemol UK. Victoria Real produces the majority of Endemol UK's interactive services and also focuses on the digital marketing sector and the development of gaming/gambling applications. Endemol Mobile is a subsidiary of Victoria Real.

FACING THE FACTS

Helmut Stein of ISDM (International Strategies for Digital Media) & Chairman of the DVB Promotions & Communications Module, talks to DVB-SCENE about the facts and misinformation surrounding DVB-H.

It has been claimed that DVB-H is based on old technology (DVB-T). How do you respond to that?
The delivery of television to mobile telephones and other battery powered/ portable devices lends itself to 'old', but very reliable, broadcasting. And DVB-T is the most reliable and 'proven' broadcasting technology deployed today. DVB-H is an adaptation of DVB-T technology designed to reduce the power consumed by receivers and further build on DVB-T's track record in the mobile environment. DVB-H also introduces more efficient and standardised AV coding schemes to increase the number of video streams in a given frequency range. At the same time all the best parts from the family of different DVB broadcast standards have been kept.

Recently a few parties have brought into question the viability of DVB-H as a Mobile TV platform owing to the fact that they witnessed demonstrations in which there was a 10-15 second delay in channel changing. This would seriously affect channel surfing by the user. Is this a real flaw in the technology?
Channel change time is an important part of the user experience, but it is only one element. The key factors in determining the consumer experience with Mobile TV is the design of the terminals, including chipsets, components, operating systems, middleware applications, and the user interface software. DVB-H's channel switching time is influenced by the set-up between the number of streams per multiplex (MUX), the time slicing power saving features and how the MPEG streams are lined in those time slices. In addition, the configuration of handsets by the service providers will determine performance and functionality far more than the underlying network technology.
The current channel change time varies according to the different implementations. It is now approaching the 1-2 second mark acceptable to the user.

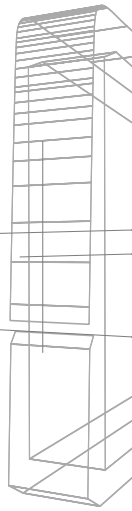
It has been claimed that DVB-H will only allow users to view up to 10 channels and that DVB-H will require transmitters to be densely seeded throughout a metropolitan area making DVB-H cost twice as much in operating and capital costs as MediaFLO. Qualcomm claims that MediaFLO will require only two to three transmitters to cover a whole city. Are these claims accurate?
The number of channels offered in one DVB-H MUX depends of course on the bandwidth of the chosen channel. Europe's 8MHz channels can hold up to 40 MPEG-4 Part 10 video streams using statistical multiplexing. The network topology is also determined by the frequency band being used – VHF, UHF or L-Band. There are examples of successful DVB-H trials using single frequency networks (SFN) of multiple transmitters, or using SFNs with a small number of higher power transmitters.
Real data from Qualcomm's MediaFlo is not yet available, so there is no positive proof and the claims must be based on the theoretical best case scenario for the coverage of a metropolitan area. There is, however, cost analysis data comparing T-DMB and DVB-H showing that DVB-H can offer four times the capacity with the same investment. An assessment of the network costs for DVB-H can be found on http://www.dvb-h.org, as can many examples of field trials of DVB-H.

To date we have not seen the concept of any service purchase and protection capability for competing Mobile TV platforms. Can you tell us why DVB has specified it for DVB-H?
The RF performance of a system is important, but it is only half the story. DVB has been working for some time on producing the content delivery protocols (CDP), service purchase and protection (SPP) and electronic service guide (ESG) standards (collectively called IPDC (IP datacasting)) necessary to ensure a complete Mobile TV end-to-end system. Such standards are vital to ensure viable parental control for example. We understand that other systems offer proprietary solutions in this area, or even none at all.
It is also important to remember that by using IPDC technology DVB-H offers an implementation baseline with widely used mobile technologies (2G/3G, WLAN etc.) and solutions.

The MSTV (Association for the Maximum Service for Television) in the US recently criticised Qualcomm on its presentation to the FCC (Federal Communication Commission) stating that it 'drastically underestimates' the interference 700MHz entrants, such as its own MediaFLO service, would cause to free, over-the-air television. Does DVB-H have a similar problem?
Qualcomm's MediaFlo operated just outside the UHF television bands in the US. Both it and DVB-H are based on DVB-T's COFDM modulation scheme. Indeed, DVB-H is a backwards-compatible extension of DVB-T.
MSTV's claims regarding submissions Qualcomm has made to the FCC centre on objections to the increase in interference which Qualcomm is requesting from its 700MHz band MediaFlo service, and the impact that these increases would have on MSTV viewers. Further, there are objections to the methodology used in the evaluations of the impact and their validity in the 700MHz band.
The US DVB-H services currently planned will operate in L-Band well away from the current VHF and UHF television bands in the US.

What benefits for DVB-H do you see in the announcement, at this year's NATPE conference, of the formation of The Mobile DTV Alliance by a group of companies including Intel Corporation, Modeo, Motorola, Nokia and Texas Instruments whose aim is to promote the growth and evolution of DVB-H in North America?
This is an extremely positive message from the US to support global deployment of DVB-H technology. This task force will promote DVB-H in the US and be a platform to accelerate commercial implementations and discussions between the different market players. I believe the Alliance will focus on promoting best practices and open standards, like DVB-H, to deliver premium quality broadcast television to mobile devices as the Modeo network rolls out in 2006 in 30 metropolitan areas across the USA.

Why do you believe in the success of DVB-H?
DVB-H is here, now.
The biggest advantage of DVB-H is the fact that full, end-to-end solutions including handsets already exist. Proprietary technologies being explored today have yet to deploy in trials and no handsets are available. Normally one would expect the proprietary technologies to lead the standardised ones – DVB-H turns this premise on its head.
DVB-H services will go on air shortly in the US and Italy. The recent 3GSM World Congress (February, Barcelona) saw three high powered DVB-H multiplexes on air around the show. The www.dvb-h.org site lists more than 20 countries with DVB-H trials on air.
According to the analyst group Informa, DVB-H will be the leading mobile video technology by 2010, reaching more than 70 million subscribers worldwide – more than three times that of any rival mobile video technology.
Open standards drive global market growth, proprietary standards hinder it.



ALL LOVED UP

Delivering a combination of live and podcast video and audio content to a broad range of mobile devices, Modeo's anticipated DVB-H service will allow viewers to enjoy compelling TV and music programming in major markets across the US.

Modeo, a subsidiary of Crown Castle International Corp. (NYSE:CCI), has nationwide unencumbered spectrum rights and unique expertise across the wireless network, broadcast and content platform operations necessary to bring this innovative media service to market. After evaluating several potential competing technologies, DVB-H emerged as Modeo's technology of choice due to its spectrum efficiency, RF performance, and low power delivery to mobile devices. In addition, DVB-H is an open standard technology which fosters competition, innovation and low cost through global economies of scale.

As the global standard for proven, best-in-class multicast mobile networks, DVB-H technology has recently gained more support and exposure in the U.S. through the formation of the Mobile DTV Alliance. Announced in January, the Mobile DTV Alliance seeks to promote the best practices and open standards that deliver premium-quality digital broadcast television to mobile devices and accelerate DVB-H development and deployment in North America. The founding members – including Modeo, Intel, Motorola, Nokia, Texas Instruments and more recently Microsoft – believe that the proven, open framework of DVB-H means unique vendor opportunities, global economies of scale and easy service integration for operators and partners and a wider range of affordable devices and services for consumers.

Modeo's additional relationships and collaborations with industry-leading content providers, software developers, hardware manufacturers and technology suppliers are enabling Modeo to optimise its design and deployment efforts to deliver an optimal user experience.

While the network and underlying technology are important components of the planned DVB-H service, Modeo's 'For the Love of TV' campaign emphasises perhaps the most important element – providing a fun and easy-to-use consumer experience. Popular news, sports, music, lifestyle and entertainment content is expected to be broadcast to DVB-H-enabled cell phones, laptops, portable media players, PDAs and more in digital TV quality at QVGA resolution at up to 30 frames per second – significantly exceeding the quality offered by first-generation mobile video products currently available. Modeo also plans to provide access to hundreds of downloadable audio and video podcasts each week. And, with an intuitive electronic service guide featuring a format and functionality similar to today's digital cable, users can utilise a virtual set-top box right in the palm of their hand.

Modeo has successfully piloted its end-to-end DVB-H mobile broadcast network in Pittsburgh and plans to launch commercial services in select major markets, including New York City by the end of 2006. Networks for the top 30 U.S. markets are targeted for completion by the end of 2007. So whether you prefer Donald Trump or Martha Stewart, March Madness or the X Games, Good Morning America or the Nightly News – Modeo plans to bring you the opportunity to catch your favourites on the device you use the most, wherever you may be.

VIDEO SCALABILITY

In today's communication and multimedia worlds there is a large variety of services, user requirements, terminals, and transmission media. This results in the necessity to prepare video content for special applications and devices and to store it in different spatial and temporal resolutions or to transcode it before transmission. Scalable video coding allows the extraction of partial streams from a single video stream which is generated by a scalable video encoder. These partial streams, representing e.g. different video resolutions can be decoded independently. By using this approach, a video stored in TV resolution can also be decoded by a mobile video. Such a scalable video coding method has been developed by the Fraunhofer Gesellschaft / Heinrich-Hertz-Institut and the proposed method has been adopted by the international standardisation groups ISO/IEC MPEG and ITU-T VCEG as basis for the H.264/MPEG-4 SVC standard.

In My Opinion – Myra Moore

SMALL WILL BE BIG IN THE U.S.

Myra Moore is chief analyst for Digital Tech Consulting (DTC), a market research firm providing information and analysis to help companies succeed in the digital consumer marketplace. More information on the company's available research on mobile video services and the business of DRM can be found at www.dtcreports.com.

It's not difficult to conclude that many U.S. consumers will find mobile video appealing despite sceptics' declarations that small screens are ill suited for watching television and other entertainment programming. Commonsense examples from around the world reinforce this conclusion: millions of portable video game devices sold; the mushrooming popularity of Apple's video iPod and corresponding iTunes video programming, MobiTV's announced 500,000 subscribers, and emerging adoption of 3G and Digital Multimedia Broadcasting (DMB) video services in Japan, Korea and Europe.

The examples of 3G and DMB services are instructional. The U.S. mobile telephone market has historically been one step behind Europe and Japan. The North American adoption of mobile video technology will likely follow the same path of text messaging first popularised in those regions. It will be big.

It will be big, that is, as long as the burgeoning industry effectively addresses some key business and technology issues – standards adoption, digital rights management (DRM) and the willingness to adopt alternative business models.

As digital video content proliferates across more technology platforms, the ability to view content on multiple devices becomes critical. As time shifting becomes second nature to consumers, so will device shifting. Therefore, the ability to port content on to multiple devices will greatly rely on the industry use of standards – whether they are deliberately designed or are defacto standards. The inability to view a Windows Media Video encoded file because a device will only play back MPEG-4/H.264 files, is just one example of how the lack of interoperability could retard this nascent market.

Standards adoption is equally important in the realm of DRM. Purveyors of high value content won't make that content portable unless they feel it is secure. Today's mobile video services and the devices that play back their programming don't necessarily require DRM or content protection, but that won't last long. There isn't a digital consumer video platform – from digital camcorders to DTH satellite set-top boxes – that doesn't have, or will soon have, storage capacity. Mobile phones and TVs will be no different. This, among other factors, will require DRM implementation.

Again, the use of a technology standard – whether it is ultimately a proprietary defacto standard (read: Windows Media DRM) or the open OMA DRM standard – will go a long way to promoting interoperability among media and devices.

And it is not yet apparent that a single transmission technology will deliver all mobile video services in the United States. Qualcomm's MediaFlo technology, designed for 3G cellular networks, is the primary proprietary solution, while DVB-H, designed for digital terrestrial television transmission, is an open-standards solution. Given that it is a reasonable option, markets almost always choose the open standard when adopting new technology. But because these options operate over two distinct infrastructures, there will be other factors considered, such as infrastructure costs and spectrum availability, when service operators choose a transmission technology. DVB-H with its advanced technology trials, backing from Nokia and adoption by Crown Castle's Modeo for U.S. services, appears to have a head start. Experimentation with business models will also be key to jumpstarting the market. The traditional 'additional fee for a premium subscription package' business model employed by cellular network providers might induce the dreaded 'consumer sticker shock' response. Non-traditional business models, such as advertising supported services or 'pay-per-view or download' fees, might be a primary key to the success of this new market.

"... markets almost always choose the open standard when adopting new technology."

Rai presents live HDTV & Mobile TV at the Torino 2006 XX Winter Olympic Games

HD OLYMPICS

Alberto Morello, Director, Research & Technical Innovation Centre, RAI

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The number of countries and territories broadcasting the Olympic Winter Games in February 2006 rose to 200, from 160 in 2002, and new media initiatives offered sports fans a greater choice of viewing experience. The event offered the most technologically advanced coverage of any previous Olympic Games and the first to be shot entirely in HDTV. The Torino Olympic Broadcasting Organisation (TOBO) used 400 HD cameras for the event.
Rai launched experimental transmissions of HDTV and Mobile TV, covering the Torino area and some of the Olympic mountain sites. The scope of the initiative, organised by the Research Centre at Rai, provided a significant contribution to this new viewing experience and the promotion of the excellence of Torino in the field of advanced television technologies.
Some of the most recent DVB/MPEG technologies were deployed to provide viewers with the most exciting broadcast experience possible: MPEG-4/ H.264 coding and Dolby Surround audio, Hierarchical DVB-T / DVB-H terrestrial broadcasting, DVB-S or S2 satellite links, DVB-H Mobile TV platform.
The HDTV signals were shot live at the Olympic sites and collected via optical fibre at the International Broadcast

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Centre in Torino. Several events, including the opening and closing ceremonies, were produced in HD video (1080i format) with multichannel audio; other events were captured in 16:9 SDTV and upconverted.
After video and multichannel audio production, with contributions from Rai-Sport / Rai-2 TV, the Rai HDTV signal was MPEG-4/ H.264 encoded at 12-16 Mbit/s and routed via optical fibre to the Research Centre at Rai, in Torino, for CA encryption. At the centre, the Mobile TV multiplex was encoded on a DVB-H platform. The DVB-H bouquet included seven TV and six radio programmes produced by Rai. Both signals were sent to the

Eremo transmitter, for hierarchical modulation (QPSK ½ in 64QAM 2/3) and for broadcasting over the Torino area in UHF channel 29. To improve the indoor Mobile TV coverage, the 4 kW ERP from the Eremo transmitter was complemented by the 75 meter high Cernaia transmitter, operating as an urban gap filler in SFN.
The Olympic mountain sites were covered by a mixed satellite and terrestrial network. The encrypted satellite link was provided by Eutelsat, whose signal was received and rebroadcast by the Rai Way terrestrial network. The central Fraiteve transmitter performed DVB-T hierarchical modulation feeding four SFN repeaters operating on UHF channel 22.
For HDTV reception, specific receiving equipment (decoders, 40" to 50" HDTV plasma displays) were installed in about fifteen vision points in Torino, such as some Rai premises, the main railway station, tourist offices, some hotels, and about ten other tourist offices in the Olympic mountain sites. Viewers experienced the full excitement of the most spectacular sport events, including figure and speed skating, ice hockey, ski jumping, freestyle skiing, like if they were sitting in the front row. The result was a taste of the future of digital television: large screen displays and surround sound placed viewers at the centre of the sporting action, while Mobile TV brought the Olympics to them, anywhere and anytime!
In Summary widescreens, HDTV, Mobile TV and great sporting events are a great combination for conveying pure emotion to viewers. The Rai project at the Torino Olympics demonstrates that a cocktail of the latest DVB technologies can provide the best highway from the competition fields into the home.
These important achievements have been possible thanks to the contribution of a number of very committed and high profile technology partners: ADB for the HDTV set-top boxes, CVE for HDTV studio and FO equipment, Eutelsat for the satellite link, Panasonic for the HD Ready Plasma Display Panels, ST Microelectronics for the decoding chipset, Tandberg for the HDTV encoders.

The ADB 6800STX digital set-top box incorporating DVB-T and DVB-S2 tuners and MGEG-4/H.264 decoding for the reception of high bandwidth HDTV services. Equipped with a ST Microelectronics powerful STi7100 chipset.

HERE, THERE, & EVERYWHERE

Eoghan O'Sullivan, DVB Project Office

What do the following cities have in common: Sydney, Berlin, Madrid, Pittsburgh, Paris? The answer is that, with a suitably equipped mobile phone, PDA or laptop PC, you could watch broadcast television anytime, anywhere in each of these places as 2006 began. Given that the DVB-H standard was formally published by ETSI only in November 2004, it's really remarkable that not much more than a year later we anticipate the full launch of commercial services, this year in the USA and Italy and in 2007 in Germany.

One of the reasons we have reached this point so quickly is the multitude of trials and pilots that have been taking place. To the five cities mentioned above, you can add almost twenty more where DVB-H trials are either completed, ongoing or planned. Many of these will move quickly to full service launches over the next two to three years.

Amongst these trials around the world, it's worth drawing attention to a few in particular. The Finnish Mobile TV trial ran in Helsinki from March to June last year with 500 users each paying €5 a month to access 16 TV channels and three radio stations. Many also opted to pay a premium for extra channels or for pay-per-view events. The results were very positive for DVB-H. 58 percent of users felt that Mobile TV will become a popular service and 41 percent would be prepared to pay for the service. Half of the users that took part felt that €10 per month would be a reasonable price to pay for the service.

The interim results of the Oxford trial were released in January, and they seem to confirm what was learned in Helsinki: people like and are willing to pay for Mobile TV. Of the 375 trial users in Oxford, 83 percent were satisfied with a service that brought them 16 well known TV channels; 76 percent indicated that they would take up the service within 12 months.

The two trials mentioned above are primarily commercial trials, trying to find out how users interact with the service, what content is successful, and what people are willing to pay. Other trials have had more of a technical focus, such as the DVB-H Implementation Field Trial which took place in Lisbon in June/July 2005 and the ongoing Experimental Platform in Metz, France, the latter providing the location for the essential work of the DVB-H Validation Task Force in 2005.

In general, however, most of the trials have mixed objectives that aim both to evaluate the technical aspects of DVB-H, as well as to investigate how potential consumers might actually use the service. Such is the case in Sydney, Graz, Paris, Pittsburgh, Berlin, Erlangen, Turin, The Hague, Barcelona, Madrid, Bern and Taipei. All of this activity points to DVB-H becoming a truly global standard for Mobile TV in the coming years.

Information about all of the trials mentioned in this article can be found at www.dvb-h-online.org.

ON THE **BORDER**

Laurent Jabiol, Deputy General Secretary and co-founder of NEOTION

In December 2004, France became the first European country to officially mandate MPEG-4 SD for DTT Pay TV. This pioneering decision was made by the French authorities with the prime objective of saving as much bandwidth as possible, so that along with foreseen compression enhancements it would then be possible to get a digital dividend prior to the analogue switch-off, thus paving the way towards additional services, typically HDTV and DVB-H.

To date, digital TV has been a tremendous success in France and as a result further strengthened the trend towards digital switchover. But how do you implement digital television in border areas where there are very few frequencies available and have to be shared sometimes with up to four countries?

Finding spectrum availability is by its nature a complex issue in such shared areas (13 percent of the French population reside in such areas). A recent report, co-signed by the French Prime Minister, who has authority over the Media Development Department (MDD) which is responsible for the development of all forms of media, and the national regulator the Conseil Supérieur de l'Audiovisuel (CSA), emphasises that the original MPEG-4 solution is probably the most compelling solution when such bandwidth problems occur.

This border problem is actually echoing internationally through the RRC-06 spectrum planning negotiations that are currently taking place in Geneva. The current frequency plan was signed in 1961 in Stockholm by a pool of 38 European countries. Today, the RRC-06 involves 118 countries from Europe, Africa and parts of Asia. It is expected to be concluded in June 2006, and aims at governing the frequency plan for an all digital broadcast environment.

As the requirements of the 118 national administrations are far greater than the total frequency channels available, there is no doubt that the borders will continue to suffer a lack of bandwidth compared to the rest of the country.

In the previously mentioned MDD / CSA common report, the idea of using MPEG-4 SD, both for free-to-air and Pay TV services, is clearly identified as a solution to overcome the lack of frequencies in border areas. Indeed, if that is confirmed, the iDTV manufacturers - who are at the forefront of the digital switchover effort – would have to play a leading role in addressing this area-based differentiating distribution by bundling, when necessary, small size, low cost MPEG-4 adapters.

Naturally, France is not the only country facing frequency issues at borders. Recently the UK's Sunday Telegraph newspaper reported that millions of British TV viewers in the south of England could have their 2012 switchover to digital TV delayed, or even prevented altogether, because transmitting high powered signals on the south coast and the Channel Islands could interfere with French or Dutch TV reception.

MPEG-4 SD is an appropriate solution for border specific issues when implementing efficient nationwide analogue switch-off plans.

...”there is no doubt that the borders will continue to suffer a lack of bandwidth compared to the rest of the country.”

Special thanks to Nicolas Dory for the kind permission for the use of his photograph. Other examples of his work can be found on: www.nicolasdory.com

ALL TOGETHER NOW

Ralf Schaefer - Chair CM-IPTV, Broadband Electronic Content Distribution Program Manager, Corporate Research - Technology Division - Thomson

Over the last few years, IPTV was thrust upon the market for various reasons:

• Technology driven, by the feasibility of having multi-megabit broadband pipes to the home able to support the real-time delivery of high value commercial audiovisual content.

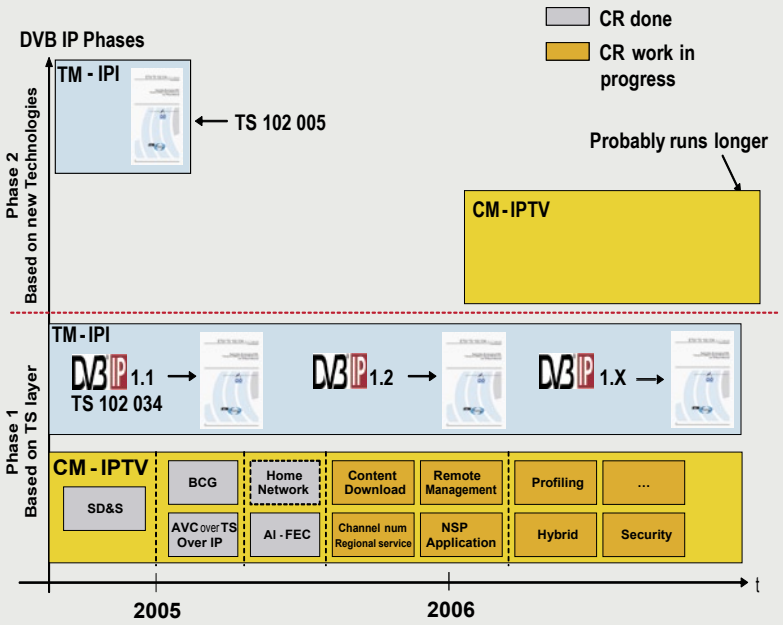
• Business driven, by the fact that telco fixed network voice revenues are changing, and that integrated triple play services are the logical step forward. The reaction of cable operators is immediate – accelerating the success of IPTV.

As previous articles in DVB-SCENE have stated, the market growth of IPTV is predicted to be exponential – assuming that certain conditions will be met. One very important condition is the right degree of standardisation which is the focus of the work in DVB.

Back in 2001, DVB anticipated the need for standardisation of IPTV and launched a related ad hoc group. In parallel, the first trials and deployments based on proprietary solutions were launched in a context marked by fierce competition between incumbent and alternative operators who would not wait for a standard to be completed. This led to the creation of 'ecosystems' of partners, with varying degrees of customised extensions to existing IP standards to ensure interoperability. At the time, the need for standardisation of IPTV was not well understood: Some thought that IPTV would always use the open Internet and that it would have nothing to do with 'quality TV', while others assumed that it would 'work somehow' and that the IP protocols themselves would provide sufficient interoperability.

Today there is a rising call for worldwide standardisation for IPTV, led by such organisations as DVB, ATIS-IIF, ISMA, DSL-Forum, to name but a few. Even operators who deployed systems based on proprietary solutions are now trying to evolve their architectures to reach higher levels of flexibility with regard to choosing the various components. DVB will play a central role in this standardisation process, as it started early and most players within the IPTV value chain are already DVB members (e.g. content providers, cable/telco network operators and CE manufacturers). Furthermore, DVB's leading role in broadcast TV and the activities in the Mobile TV area strengthen this position. Establishing liaisons with the right partners has enabled the reuse of existing specifications where appropriate, avoiding duplication of effort and creating further synergies with DVB broadcast equipment.

As shown in the diagram, a first version



of the DVB-IP standard (TS 102 034) was released by ETSI last year and describes mainly how to carry out Live Media Broadcast and Content-on-Demand services in MPEG-2 environments. At the beginning of this year, DVB approved extensions to the existing specification including advanced A/V codecs and a TV-Anytime based Broadband Content Guide.

Today many IPTV stakeholders from the complete IPTV value chain contribute to the work of the CM-IPTV group and related technical groups. The mandate of the CM-IPTV group is to prepare the commercial requirements for coming releases of the DVB-IP standard and shape its roadmap. The group is organised into different task forces, each having a leader to ensure progress mainly via phone conferences between CM-IPTV plenary meetings. The diagram gives an overview of the structure currently in place, including where the most advanced activities are:

• **Content Downloading System:** This task force deals with non real-time downloading of audiovisual content over broadband IP networks to local storage devices in the home using 'best effort' bandwidth. This can enable video services for customers with insufficient bandwidth for real-time streaming services in parallel to other services.

• **Network Service Provider Applications:** This task force deals with the way Network Service Providers utilise applications in IPTV environments. Such applications rely heavily on servers in the network which is a change from the broadcast paradigm.

• **Remote Management System:** IPTV systems are much more complex but also more 'powerful' than pure broadcast systems, as there is a direct link from the operator to each customer, thus allowing on-demand services. There is also an 'always on' return channel for data collection and interactivity. To fully leverage this architectural advantage, one requires efficient device configuration, device management and firmware update mechanisms.

• **Profiling:** This task force is identifying profiles for the DVB-IP specification which best fit the needs of the IPTV stake holders. Varying business interests (e.g. telco/cable) and also 'plug-ins' for legacy systems will be taken into account.

These requirements and others identified in the diagram as Phase 1 are all primarily aimed at the near term market where operators are using MPEG-2 transport streams carried over IP for deploying their IPTV services. But efforts will be made in future to ensure that IPTV services can also be carried directly over IP, which will be one of the elements that are termed Phase 2 in the diagram. The aim of Phase 2 is also to align more closely with Internet practice and this work is likely to continue beyond the end of the work on Phase 1. The right level of standardisation will fuel the successful deployment of IPTV worldwide. For this, DVB must continue to attract the right stakeholders and liaise/partner with other actors (standardisation bodies, forums, etc.) to complete these standards in harmony with other global IP video systems. DVB also needs to validate the growing industry consensus that these technologies appropriately fit the business goals of service providers and fully leverage the potential of these new networks.

EVOLUTIONARY MATTERS

Craig Smithpeters, Manager, Advanced Technology, Cox Communications

OCAP (OpenCable Applications Platform) is on its way to the North American consumer. Activity is well underway that will lead to the first OCAP deployments this year with deployment across the entire North American cable footprint over the next few years. The joint public announcement at CES of the largest US cable operators and partner CE companies was an important public commitment, of both, to begin deployment in 2006. Activity to support the launch of OCAP in the US has been accelerating rapidly over the last two years.

A key to the OCAP deployment plans has been the commitment of leading CE vendors to build interactive digital cable ready products (iDCRs) by becoming signatories of CHILA (Cable Host Interface Licensing Agreement). CE signatories of CHILA include Samsung, LG, Panasonic, and Thomson. An iDCR meets the requirements of the OpenCable Host 2.0, OCAP 1.0, and other SCTE standards and is certified by CableLabs. The first iDCR passed CableLabs certification in August 2005. Several others are expected to be certified during 2006-7.

US cable operators have much work to complete to enable iDCR operation

"DVB is continuing to play an important role in the development of OCAP and related standards."

on their networks. These work items include upgrading our digital headends to support OCAP signalling and transport, making changes to our billing and provisioning back office systems, working with our conditional access vendors to deploy multi-stream interactive CableCARDs (separable security card with a PCMCIA form factor), deploying support for DOCSIS Set Top Gateway (DSG), and porting existing applications, including EPG, VOD, and other interactive applications, to OCAP's Java environment.

The DVB has been and is continuing to play an important role in the development of OCAP and related standards. CableLabs like ARIB and the Blu-Ray Disc Association, has chosen to base its interactive television standard on the DVB's GEM standard. That decision has been critical to the growing success of OCAP. The DVB and CableLabs are continuing to work together on new standards such as a 'common core' DVR API extension for use by MHP and OCAP. The two organisations will be evolving MHP and OCAP together via GEM 1.1, which is expected to be published later this year.

OCAP will benefit the US cable customer in many ways. Most importantly, OCAP will enable the proliferation of interactive television and services on US cable systems. The lack of a common application environment has been the key reason for the limited deployment of applications beyond EPGs, VOD, and DVR. An example would be interactive, multi-player games. The customer will also benefit by the ability to purchase an iDCR at retail stores that will be portable to any cable operators' network. Finally, the cable customer will benefit by the closer cooperation between the cable operator and consumer electronics provider, which will result in innovative new products and services.

Cox Communications is at the front of the effort to deploy OCAP. One example of our commitment was the formation of the TVWorks joint venture with Comcast. TVWorks purchased the North American assets of Liberate and MetaTV in 2005. One of the primary purposes for TVWorks is to create and modify the infrastructure and systems necessary for the deployment of OCAP. Our efforts are on track for trial deployments to begin later this year.

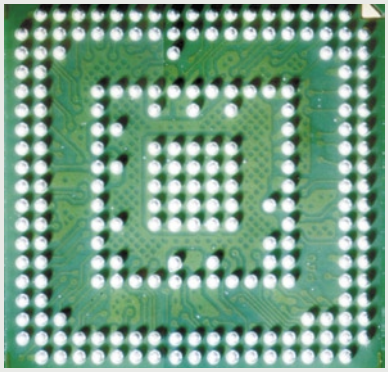
MARKET WATCH

Neotion Pocket DTV

Neotion has launched the credit card size Pocket DTV MPEG-4 digital TV receiver. It simply slots into the digital industry standard interface of all new generation TV sets.The receiver can be carried anywhere to enjoy the breakthrough image quality enabled by MPEG-4 and benefit from the most advanced Home Networking digital technologies.
Fully powered by a Neotion in-house designed processor, the Neotion Pocket DTV comes with built in conditional access and advanced security modes that are tailored to meet the most stringent security requests of Pay TV operators.

Nokia's Mobile Broadcast Solution release 3.0 (MBS) is the world's first open standards based commercial service management solution for DVB-H services. Based on IP datacasting over DVB-H, MBS 3.0 consists of three integrated elements: the Broadcast Service Manager, which provides end-to-end stream protection and generates the electronic service guide; the Broadcast Encapsulator, which delivers IP content over DVB-H and encrypts paid services; and the Broadcast Account Manager, which lets users purchase protected content and produces transaction data for billing. Key features include streaming control, electronic service guide and service protection and purchase. MBS 3.0 supports products from multiple vendors, using the Open Air Interface specification 1.0.

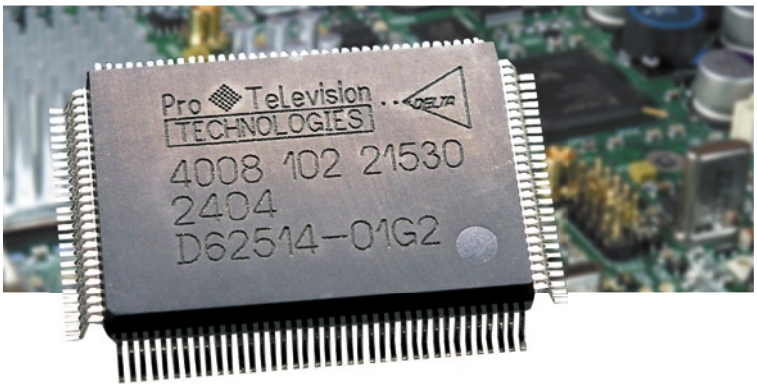
SIDSA has launched its LOREN-IC demodulator chip for Mobile TV that it claims can receive all DVB-H based services. The chip is said to implement DVB-T and DVB-H standards and to support all leading interfaces, as well as both the European and U.S. frequency bands being used or proposed by DVB-H operators. In addition to selling the chip, SIDSA provides the IP and protocol stack developed for the Loren-IC and other digital TV devices.

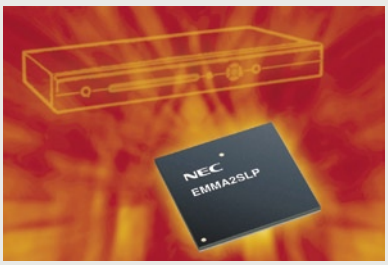


SIDSA LOREN-IC Demodulator Chip

Latens IP Condition Access System

Latens IP CAS has been specifically tailored for the unique demands of IP network operators and provides an operator with superior levels of security. Latens claims that it is the only advanced software CA system that has proven scalability, following extensive trials at IBM's labs, where Latens successfully provided security for over four million STB's. Latens IP CAS is commercially available and now protects content and revenues throughout the world.





NEC uPD6121x series STB chip

NEC Electronics is sampling a new, low cost, secure STB chip that addresses the dramatic rise in requests for hardware security features for entry level STBs.
The uPD6121x series, also known as EMMA2SLP, follows on the recent success of NEC Electronics uPD6111x MPEG decoders. Boasting increased CPU performance and additional system level integration to further reduce Bill of Material costs, the EMMA2SLP is suitable for use in any environment, satellite, terrestrial, IP or cable, where enhanced security features are required to protect content. The security functions can also be used by STB makers to protect their own intellectual property in markets where STBs have been cloned.

TechniSat DigiCorder & HD-Vision 32

TechniSat has introduced the DigiCorder S2 digital satellite twin tuner receiver with hard drive that allows the recording of one programme while viewing another at same time. In addition, it includes Picture in Picture function and is equipped with two CI slots for use with CI decoding modules. It also has comprehensive cutting and editing functions, Time Shift, informative VF display and many more useful features.
The company is also offering the HD-Vision 32 with integrated multi-tuner for DVB-S, DVB-T, DVB-C, analogue cable television, analogue terrestrial television and FM radio reception. In addition, it features two HDMI connections, a USB 2.0 interface, a CI slot and a card reader.

Kreatel 1900 series STBs

Kreatel has introduced its high end, IP based 1900 series of set-top boxes. The Kreatel IP-STB 1920 model combines IPTV with DVB-S, DVB-C or DVB-T broadcasts through an additional receiver. As it supports advanced video codecs such as H.264 and VC-1 it is suitable for ADSL networks and solutions that combine DVB with interactive services over IP (video on demand, games, Internet access etc.) The Kreatel IP-STB 1970 model has the same features as the 1920 model, but has in addition a built in hard disk drive for PVR functionality.

Tektronix is introducing an IPTV video quality measurement (VQM) package with the Spectra2|VQM monitoring solution for the diagnosis and analysis of streaming video transmitted over IP. It helps users identify the causes of poor digital image quality, such as packet loss, delay or data corruption in the IP transport network. The portable monitoring solution supports multiple level Quality of Service scores and video industry standard, non-proprietary Forward Error Correction analysis that carriers and cable networks can use in the emerging video over IP opportunity. The Windows based software package is part of the Tektronix Internet Protocol Diagnostics (IPD) product portfolio.

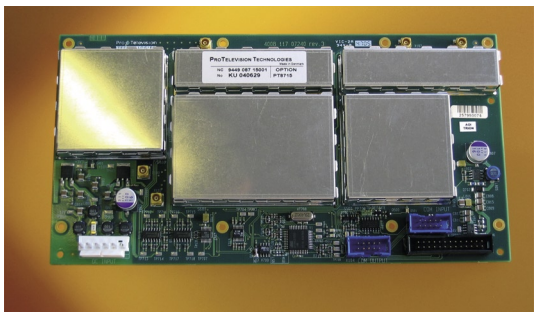
The new **Pixelmetrix** ConsolidatorPlus, a comprehensive network management system for its DVStation preventive monitoring platform. ConsolidatorPlus enables complete visibility of network status from a straight forward Windows client. The user interface can be fully customised – including a geographical map showing the location and status of each device. When a fault occurs, the corresponding monitoring point is highlighted, enabling the operator to drill down and determine the nature of the fault. ConsolidatorPlus can be used to manage a mixed network of monitors, displaying the appropriate level of information for each device, fault, and/or location.

Pixelmetrix ConsolidatorPlus

Strategy & Technology has launched a new low cost product for applications developers. The self contained unit has a built-in QAM or COFDM modulator and can support up to four users developing applications independently, playing out a complete transport stream containing a/v content, signalling and OCAP / DVB carousels.

Humax HDCI2000

Humax has launched its first HD digital satellite set-top box. The HDCI2000 is ideal for TV enthusiasts eager for the launch of HD services as it can receive and decrypt both MPEG-4 and MPEG-2 free-to-air HD satellite broadcasts, which can be viewed on any HD Ready TV. Other features include: optical output for Dolby Digital sound; two scarts to connect additional home cinema devices; a data port for software updates; HDMI video output; and two common interface slots, so viewers can add more channels via Pay TV services. The HDCI2000 can also receive standard definition free-to-air satellite signals.



ProTelevision PT8715 RF Converter

ProTelevision has launched its high performance PT8715 OEM RF Converter that covers the entire frequency range from 30 MHz to 1 GHz in steps of just 1 Hz. The user can freely set the polarity of the spectrum to inverted or non-inverted as required. Control of the OEM RF Converter module (output frequency, IF Gain, etc.) is handled through a serial remote interface (RS232 with TTL level). The command protocol is based on simple and easy to use high level commands.

Envivio 4Caster B3

The 4Caster B3 is the fourth generation real time compression encoder in the **Envivio** broadcast series. The system delivers the complete implementation of MPEG-4/H.264 compression techniques for standard definition broadcast contribution, distribution and IPTV applications. The B3 delivers high quality, full resolution and frame rate video at less than 2 Mbps. An all new hardware platform combined with superior encoding algorithms offers greater processing power for advanced compression capabilities and noise reduction for bandwidth constrained applications.

APS ASTRA Platform Services has developed Blucom, a new interactive iTV tool based on Bluetooth technology for wireless transfer of broadcast data over short distances. The Blucom service combines television and mobile technologies and acts as a return path device.

APS ASTRA Blucom

ADB : Defining Digital

CABLE IPTV SATELLITE TERRESTRIAL

ADB provides a diverse range of high-quality set-top boxes integrating the worlds' leading conditional access and middleware solutions. Whatever the technology platform, ADB maintains its position in not just leading the industry, but defining it.

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