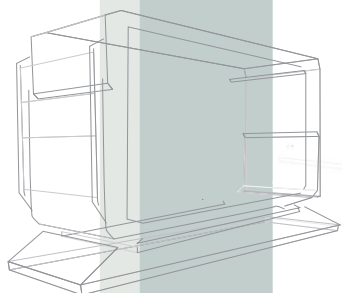


Tune in to Digital Convergence

DVB-SCENE



21



DVB[®]

The Standard for the Digital World

This issue's highlights

- > Convergence Utopia
- > IPTV Analysis & Update
- > HDTV Update
- > Future Focus on DVB-T
- > DVB-H Interoperability
- > Introducing DVB-SH
- > A Look at Latin America
- > Market Watch

I want
my
IPTV

Unique Broadband Systems Ltd. is the world's leading designer and manufacturer of complete DVB-T/H system solutions for Mobile Media Operators and Broadcasters



■ DVB-H IP Encapsulator

DVE 6000

What makes DVE 6000 the best product on the market today?

- Dynamic Time Slicing™ Technique delivering unprecedented bandwidth utilization and network efficiency (Statistical Multiplexing)
- Internal SI/PSI table editor, parser, compiler and generator (UBS SI/PSI TDL)
- Internal SFN Adapter
- Internal stream recorder and player
- Single compact unit



DVE 6000 NetManager Application

■ DVB-T/H Modulator

DVM 5000

- Fully DVB-H Compliant
- 30 MHz to 1 GHz RF Output (L-band version available)
- Web Browser & SNMP Remote Control
- Available with +10 dBm amplifier for lab tests
- Available in portable version



■ DVB-T/H Exciter

DVX 5500

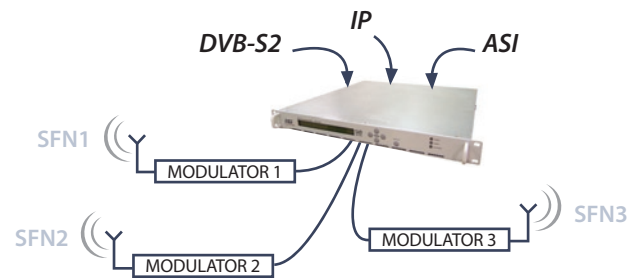
- Fully DVB-H Compliant
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- Built-in NOC communication modem



■ DVB-T/H Gateway

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The DVE 7000 DVB-H Satellite Gateway is the core of highly optimized, efficient and cost effective mobile DVB-H architecture. A single DVE 7000 device processes, distributes and manages global and local content grouped in packages to multiple remote SFN & MFN networks through a satellite link and drastically improves satellite link efficiency. The DVE-R 7000 satellite receiver demultiplexes the content specific to it's location.



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- Compact outdoor self-contained 200 W terrestrial repeater platform
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- Electronic antenna steering and null elimination technology
- Available in DVB-T, DVB-H, DAB, DMB and STiMi standards as well as proprietary waveforms such as XM and Sirius



CONVERGENCE UTOPIA

In My Opinion – Ian Childs



Ian Childs stepped down as Vice-Chairman of the DVB Technical Module last June, following his retirement from the BBC where he was Chief Scientist at their Research and Development Department. His career with the BBC spanned nearly 35 years, during which time he worked on many important broadcasting developments which included digital television, DAB and high definition television. He continues to take an active role in digital television developments, however, and is Chairman of Technical Council for the UK's Digital Television Group. He is an Honorary Fellow of the DVB Project and a Visiting Professor at Essex University.

Ten years ago, it was not uncommon to read articles in the technical press predicting and analysing 'convergence' between the areas of broadcasting, telecommunications and computing. In the year during which analogue television starts to be turned off in the UK – the market with which I am personally most familiar – it is interesting to examine where we are in the convergence process. One very significant engine driving convergence has been the standards developed by DVB. They are used by the vast majority of the digital broadcasting services in operation around the globe – whether transmitted via satellite, cable or terrestrially. Such digital broadcasts have increased the number of programme offerings to the consumer, as well as increasing the picture and sound quality. And new interactive services have become

digital television platform now exceeds 60 percent - take-up being relatively equally spread between satellite, cable and terrestrial (Freeview) platforms. One resulting development, perhaps spurred by this competition between distribution methods, has been that service providers have started to offer new enhancements to the basic services. High definition channels have been launched on satellite and cable, and PVR set-top boxes are becoming increasingly available (e.g. Sky+ and/or Freeview Playback). Increasingly, with the exception of live events, viewers no longer care how the programmes reach their screen or when they arrive at their set-top box - the only important factor is that they are available by the time they wish to watch. As this migration towards PVR viewing gathers momentum, it will have an interesting effect on the use of

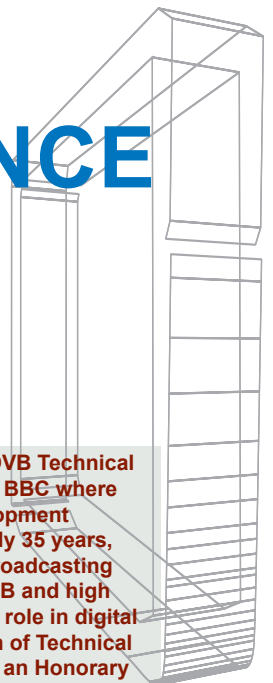
the same path as online booksellers such as Amazon, we can predict the availability of a 'long tail' of programmes – each of which attracts only a small audience but, when aggregated together, becomes a worthwhile commercial proposition. Taking all of these factors together, we can make an educated guess as to what the future broadcasting landscape might look like. There will be a smaller number of overall digital channels than today, but the majority will be broadcast at an HD quality level. After the first showing of a given programme, there will be one repeat two or three days later for viewers who did not capture the first showing – perhaps because they did not realise the programme was worth watching until they heard their friends and colleagues discussing it at work or in the pub. After that, the programme will be available on an on-

“...we can make an educated guess as to what the future broadcasting landscape might look like.”

possible – modernising and updating what was previously available on teletext beyond all recognition. Viewed in the broader context, therefore, we can say with some degree of confidence that the convergence between broadcasting and computing is well under way. Nor is the convergence between broadcast and telecommunications lagging far behind. With the growing use of the internet to deliver IPTV services, and the augmentation of conventional GSM and 3G mobile networks with new broadcasts delivered via DVB-H, the boundaries between one-to-one and one-to-many services are rapidly eroding. However the more we travel down the convergence road, the more it is clear that we still have some distance further to go. For example, returning to the UK, the number of homes with at least one

spectrum for broadcasting. Currently it is not uncommon to find the more popular programmes being transmitted in five or six different 'slots' on different digital channels during the week. Such repetition is used to allow 'time shifting' to suit the convenience of different viewers, and hence increase the total audience. However, if there were a PVR in every household, many of these repeats would become unnecessary, and the impact on the frequency spectrum would be reduced. Indeed such a move is probably essential to offset the increased demands made on spectrum by the move towards high definition. And, of course, the growing number of 'view again' IPTV services available to broadband-connected viewers will further erode the need for broadcasters to offer repeat showings of the same programme. If broadcasting follows

demand basis from any of a number of suitable view-again websites, together with a wide range of other, more specialised, programmes. The only obstacle to such a Utopian future is that currently it is difficult for broadcasters to decide how best to split the total number of programmes between one-to-many broadcast channels using the scarce frequency spectrum and one-to-one internet distribution. Perhaps the development of suitable tools to ease the automation of this decision process is something in which DVB can assist. Either way, it is clear that DVB will continue to have a worthwhile role in the future until the convergence process is finally complete.



FUTURE FOCUS

**Ed Wilson, European Broadcasting Union,
Project Manager of DigITAG and Secretary to the Commercial Module**

Last June, the DVB Commercial Module (CM) met in joint session with the Technical Module where the technical experts presented the results of their Study Mission into the potential improvements they foresee for a second generation terrestrial technology. There was a real sense of excitement as the engineers unveiled a whole range of great ideas and offerings for the future enhancement of DVB-T, and the Commercial Module members decided to start a new work item on Advanced Modulation for Terrestrial.

But if we encourage the designers to do what they do best, and research, invent, improve, adjust and optimise

has been the technology of first choice. Many other countries have been building experience of DVB-T through field tests and service trials, and government regulators are keen to go all-digital in the next few years. Some are under pressure from the European Union which has set 2012 as the target for the 27 Member States to switch off all their analogue TV services. Clearly a country cannot switch off analogue until the coverage of digital services and the penetration into consumers homes asymptotes towards 100 percent.

But why even contemplate changing a winning system? Well, with close to ten years of practical experience and

upgrading of the existing specification. Where are we today? As I write, the CM has endorsed the view that the prime target for second generation terrestrial specification is for the fixed, roof-top antenna market. The demand for capacity for new programme services continues to be high, and in several countries, programme services have been rapidly filling up the available frequency channels. Although more sophisticated statistical multiplexing and in some cases more efficient audio and video codecs (MPEG-4 AVC) can help to relieve the crush, the goal of achieving a significant increase in capacity for the same levels of coverage and

“...getting a great offer of HDTV programming to existing terrestrial antenna and the widening installed base of HD-Ready displays by around 2009.”

or even replace the contents of the building blocks which make up the DVB-T system, is there not a risk of confusing the emerging markets? After all there are many countries which have launched digital terrestrial TV services and have established DVB-T as the preferred technology. Whether branded as Freeview (UK), Das UberallFernsehen (Germany), TNT (France), TDT (Italy and Spain) their great success in the mass market has been the offer of an attractive variety of programme services in combination with inexpensive, high performance consumer products. The toolkit approach that was inherent in DVB-T means that for diverse applications from HDTV in Australia, to robust portable services in Germany, DVB-T

many very successful applications of DVB-T worldwide, DVB members think that it's time to consider refreshing the system. We did this with DVB-S2 in 2004 after ten years of success with DVB-S, and the result has been very much welcomed by the market. So, against this background the Commercial Module has set about capturing an appropriate set of commercial requirements for a new generation DVB terrestrial specification. The CM's working group is taking a very pragmatic approach. They are demanding that the new terrestrial specification should not simply be a 'gilding of the DVB-T lily', but should exceed a significant threshold for the performance improvement in order to justify an

robustness, from the same transmitter power is a very tempting idea. Interest in HDTV is growing with the runaway success of flat screen HD ready TV displays, and in the longer term, the Geneva 06 Agreement will make more spectrums available when analogue TV is turned off.

So the present focus is on getting a great offer of HDTV programming to existing terrestrial antenna and the widening installed base of HD ready displays by around 2009. Later requirements may well tackle the tough reception environment of 'deep indoor' use of portable TVs, of course, as always, making the maximum use of the DVB building blocks so that we can exploit our industry-wide knowledge base to minimise time to market.

Country	DTT launch	ASO date	Estimated ASO
Netherlands	2004	2006	2006 - 2008
Germany	2004	2010	
Finland	2002	2007	
Sweden	1999	2008	
Denmark	2006	2009	2009 - 2012
Norway	2007	2009	
Switzerland	2005	2009	
Belgium	2004	2012	
Austria	2006	2010	2012 - 2015
France	2005	2011	
UK	1998	2012	
Spain	2000	2010	
Italy	2004	2012	

NXP Sysol 3G/DVB-H Reference Receiver



DVB-H mass market adoption and the emergence of multiple commercial profiles

THE QUESTION OF INTEROPERABILITY

Steve Turner, Business Development Manager, Mobile Broadcast Solutions, Business Unit Mobile and Personal, NXP Semiconductors

The birth of any child can be a stressful time, ask any parent. Those of you present at the birth of DVB-IPDC will therefore understand the great amount of concern, stress and sleepless nights the parents (CM & TM) went through! I understand it was a particularly difficult birth that produced a pair of troublesome twins! Now let's fast forward into present day and we find the twins, let's just call them IPDC twin 'a' and IPDC twin 'b' alive and well in rude health and just as troublesome as ever! Not so much Tweedle Dee and Tweedle Dum as maybe Romulus and Remus! Seriously, the brief tongue-in-cheek history lesson aside, today we are faced with a DVB-IPDC service specification fast segmenting into a series of commercial DVB-H IPDC solution profiles supported and promoted globally. This commercial IPDC profile segmentation now poses a couple of significant questions,

1. Why is the DVB-H IPDC specification segmenting into significantly different commercial profiles?

2. Is this IPDC commercial profile segmentation of major concern to the mobile broadcast industry at large?

1: In hindsight the segmentation of the IPDC specification into several commercial profiles based around either of the two service purchase protection profiles was somewhat inevitable given the make up of the industry forces thrown together by market globalisation and industry convergence. Fundamental business model differences and legacy market perspectives conspired to produce two fundamentally different technical service and content protection approaches each supported by companies with significantly differing business perspectives. It's therefore little wonder the marketplace is now faced with a DVB-H IPDC service layer specification and system segmentation choice with several industry consortia keen to deploy their respective commercial implementation profiles. Then again who ever said choice was a particularly bad thing?

Little surprise either that these DVB-H and IPDC specifications are in fact finding favour with a number of early adopter companies and countries keen to establish their particular commercial profiles in the first two or three early markets. These commercially deployed networks and services can be described today as country and/or network specific implementations with little or no requirement to be interoperable with each other at least from the network standpoint.

2: Today however things are changing with a number of mobile broadcast services-focussed industry consortia busy reviewing the first generation specifications and commercial implementations, their aim, the production of real commercial implementation guideline and interoperability (IOP) documents in support of its membership. Members now require DVB-H, IPDC systems and network profiles that are clearly interoperable with each other at any number of levels. These levels include for example RF receiver, bearer layer, component, module, sub-system, terminal, network, service etc. Two such industry consortia already

experienced in these types of activities both in the cellular and digital television fields.

Given the consortia's support and promotion of these DVB-H and IPDC specifications it's no great surprise that the technology is increasing its global market popularity whilst at the same time the commercial profiles, implementation guidelines and IOP (interoperability) documents ensure that the necessary levels of technical, component and service interoperability are promoted wherever possible. With additional success comes potential for further segmentation with several additional industry consortia now positioning themselves to endorse and

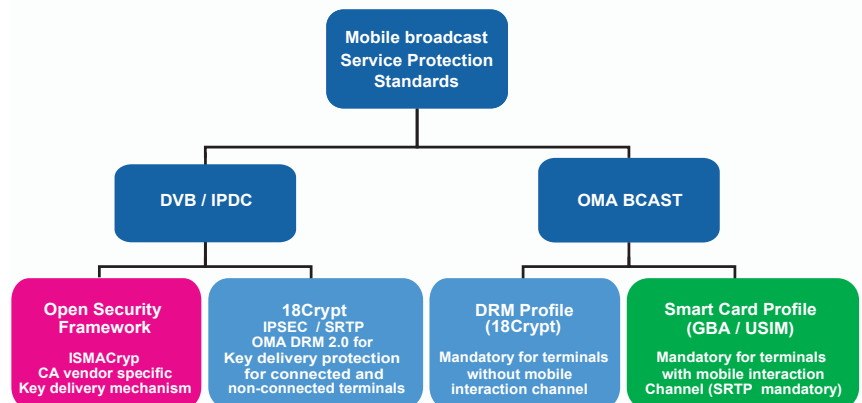
"...the industry itself will ultimately determine the level of interoperability necessary..."

tackling DVB-H, IPDC system and commercial profile interoperability are the Mobile DTV Alliance and the bmcoforum. The Mobile DTV Alliance (mdtvalliance.org) is an open industry consortium that focuses on promoting the best practices and open standards to deliver premium quality broadcast television to mobile devices in North America. The Broadcast Mobile Convergence Forum (www.bmcoforum.org) is an international organisation of companies targeting to shape an open market environment for mobile broadcast services.

Both these mobile broadcast focussed consortia have already established interoperability work groups and are in the process of generating DVB-H, IPDC Implementation Guideline documents to establish a large measure of interoperability within their respective markets and commercial profiles. These working groups are also considering test and conformance regimes and are busy communicating their intentions to like minded test consortia already

exploit the DVB-H specification. Within the bmcoforum for example members of OMA BCAST have requested support for two additional commercial IOP (interoperability) work items. This suggests further commercial DVB-H implementation profiles emerging in 2007, 2008 timeframe. Given these additional market demands it remains to be seen how truly interoperable these multiple commercial implementation profiles will be. Much may well depend upon the level of sophistication of both the network(s) and terminal(s) the industry considers necessary. It is for this reason that NXP Semiconductors is readying its ICs, modules and complete System Solutions by fully supporting the interoperability and commercial profile activities of the likes of the Mobile DTV Alliance and bmcoforum in partnership with its customer base. After all it is the industry itself that will ultimately determine the level of interoperability necessary for the emergence of a truly global market success story.

DVB-H Service Purchase Protection Systems



DVB-SCENE : 08

LATIN AMERICAN STAGE

Julián Seseña & Roberto Lauro



Julián Seseña (left) holds a PhD in Radio communications. He has worked for: the Spanish Ministry of Science and Technology Administration as Head of R&D, Director of Telecommunications at Hispasat and Executive Director at Teledesic. Since 2003 he has worked as an independent consultant at ROSE Vision. He represents Sidsa in the DVB-TM and supports DVB on Latin American affairs.

Roberto Lauro is an Electronic Engineer from the National Technological University, Argentina. He was Technical Director for DTV at Argentina's Canal 9 and Telecapri in Italy from 1990 to 2006. He has represented the DVB Project in Latin America since 2006.

The promotion of DVB specifications in the world, and in Latin America in particular, has been intense since the early days of the DVB Project. The use of the DVB-S and DVB-C standards for satellite and cable broadcasting has led to the growth of successful commercial businesses throughout the whole American continent, including the USA. The choice of a digital terrestrial television (DTT) system is now at a critical stage for a number of Latin American countries including, amongst others, Argentina and Chile. Recent months have seen a significant increase in activities through which the DVB community aims to present the DVB-T system as the right option for DTT in Spanish-speaking Latin America.

DVB coalitions have been formed in Argentina and Chile and are in the process of being formed in other countries. As far as DVB-T is concerned, significant contributions are being made on a voluntary basis by a variety of entities around Europe and Latin America. The Spanish Ministry of Industry has been to the forefront of these efforts, aggregating the many contributions and offers of support and ensuring that the efforts of multiple associations, consortiums, broadcasters, administrations and equipment manufacturers are efficiently targeted.

In this context, workshops and specialised sessions have been held in Bogota, Santiago and Buenos Aires. Others are planned for Lima, Montevideo, Cartagena. In these workshops, a united DVB community has presented the main features and advantages of the DVB-T solution, in friendly, open and transparent

ways. The DVB community approach emphasises the importance of sharing experiences with regulators, broadcasters and manufacturers from Europe and elsewhere, in order to assist Latin American partners on the best and most efficient ways to implement DVB-T. This approach has been appreciated by Latin American partners and a close spirit of cooperation is maintained. Many diverse activities have been carried out, especially in Argentina and Chile. In Argentina, a DVB coalition of Siemens, Telefónica Argentina, Telecom Italia, Nokia, and others with the support from the European Commission, has been working to successfully satisfy the specific requirements of the Argentinean situation. A concentrated effort was made during the CAPER trade show in Buenos Aires last November with a view to demonstrating DVB-T as the optimum standard for Argentina. In Chile, specific trials were launched in late October 2006 with equipment provided by the companies Soluziona

and SIDA, and with the contribution of many others. The trials broadcast HD and SD programmes to the city of Santiago de Chile and are presented in a showroom of the Chilean broadcaster Canal13. The Chilean authorities and stakeholders have the ability to test the signals and to monitor the performance of the system. The key message is that the DVB concept of a toolbox of specifications, capable of working with different channelisations (including 6 MHz) is ideally suited to the Chilean broadcast market.

In both countries the support and assistance provided by Abertis Telecom, RTVE, AETIC, CDTI, Universidad Politecnica de Madrid, AEQ, Mier Comunicaciones and Integrated Digital Consortium is notable.

Additional efforts, workshops and seminars are planned in Lima, Cartagena, Montevideo, San José, etc. The whole DVB community is invited to join this promotion effort and contribute through the DVB coalitions being formed in each country. Some of these activities are also supported by the ETSI@lis programme. The European Commission is intensively supporting DVB-T, organising sustainable cooperation links with science and technology broadcasting departments around the Latin American continent, by using the tools available in the new Research and Development Framework Programme.

In all these promotional activities, the synergies between DVB-T and DVB-H show DVB as a futureproof technology and, uniquely, the DTT standard capable of offering a range of new opportunities to broadcasters in Latin America.

We would like, on behalf of DVB, to express our profound gratitude to all those experts from the cooperating entities that are facilitating these activities. Special thanks are due to the Ministry of Industry of Spain for its key role in the promotion of DVB-T in Latin America.



GROUND BREAKING DEMOS

Eoghan O'Sullivan, DVB Project Office

Last year was the eleventh in a row that the DVB Project had a booth at NAB in Las Vegas. The very first booth, in 1996, featured a DVB-S interoperability demonstration. It's very possible that those who were there might have felt that the work of the DVB Project would be over by now. Well, here we are in 2007 and not only is the Project alive and well – with membership and meetings on the increase – but NAB remains an important fixture in our annual event calendar. Some of the names and faces involved have changed over the years, but each time we return to Las Vegas we find a real thirst for knowledge about what's on the horizon for DVB.

At NAB 2007 the focus is on three key DVB technologies: DVB-T, DVB-H and DVB-IPTV. This year sees a demonstration of the state of the art in digital terrestrial television, with a presentation of HDTV and DVB-H mobile TV incorporated into one DVB-T multiplex in a 6MHz channel. This is an important demonstration on two fronts. On one hand, North America is likely to be one of the most important markets for mobile TV, and on the other hand, for the many NAB visitors from Latin America, it will be a chance to see first hand a key technology under consideration in their DTT standards selection processes. There will also be a presentation of the latest implementation of DVB standards for the delivery of MPEG services over IP networks. Visit us at booth C2239!



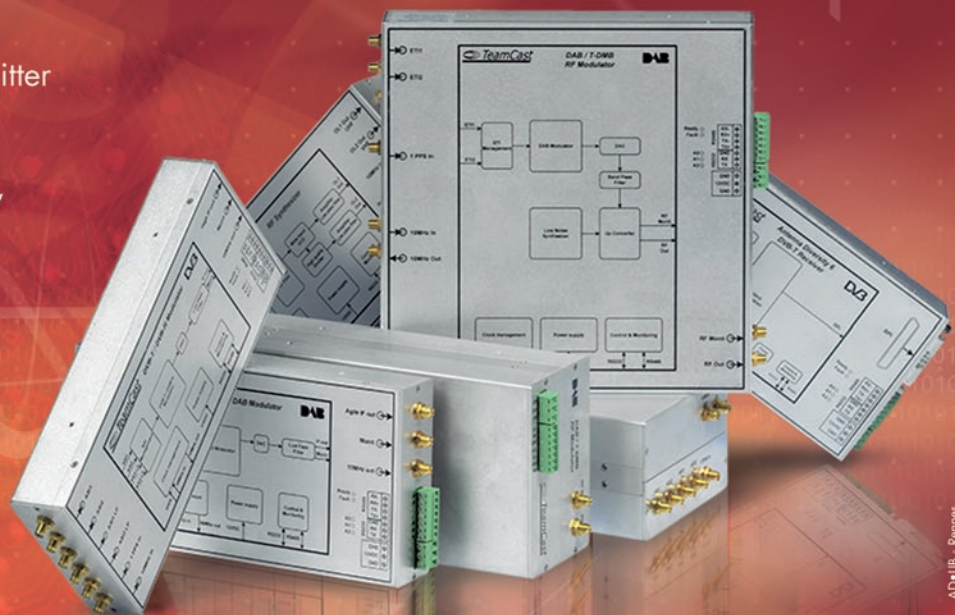
DVB-SCENE : 12

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Moore Analysis

IPTV BUSINESS

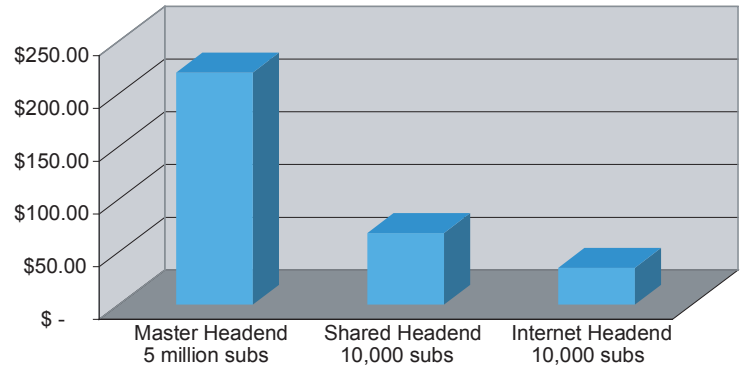
Sometimes emerging technologies become overachievers. Digital video compression was first slated as a more efficient way to deliver better quality pictures to over-the-air TV receivers. But it earned its blockbuster status as a way to put better quality video onto a new optical disc format – the DVD. What was intended as an improvement on an existing delivery system ended up revolutionising the packaged media business. The use of IP to deliver TV programming is destined to go through a similar transformation. Today, IPTV, to most industry players, means traditional pay TV services delivered over telco infrastructure. This seems radical because it introduces new competitors into a well established industry, but it's likely that the existence of telco TV services will ultimately be viewed as a pedestrian occurrence in the life of IPTV. Far more radical is the potential of IP delivered video to TV devices to smash video business models,

threaten incumbent service providers, give content owners direct access to their customers, and allow consumers a more democratic way to choose their TV programming. In DTC's latest IPTV report, we analyse three business models for this new delivery platform. Of these three, it is the 'Internet Headend' model that is most likely to enable dramatic changes in the business of delivering TV programming. This model allows direct marketing of content to TV viewers with Internet access, thus bypassing traditional distribution channels. NeuLion, for example, allows content providers, such as the Chinese language KyLin TV, to upload their content to a central server for a fee, where users with a corresponding set-top box can then access it. The STB is marketed by the content provider, either as part of the monthly content package, or as an upfront consumer purchase. It is easy to see how players from ISPs and consumer electronics

retailers, to media companies can assemble a package of content and/or VOD offerings and market them directly to consumers. Using this model for service, DTC estimates upfront deployment costs per subscriber of just \$35 for the "Internet Headend" model, compared to \$220 and \$68 for the 'Master Headend' and 'Shared Headend' models that mirror current pay TV business models. As IPTV standards solidify and STB suppliers create more hybrid receivers (i.e., DTT/IPTV receivers), the opportunities for new service and content providers multiplies. The low cost for entry just elevates IPTV's status as a disruptive overachiever.

Myra Moore is chief analyst for Digital Tech Consulting (DTC), a market research firm that tracks and analyses the consumer digital video marketplace. More information on the company and its research can be found at www.dtcreports.com.

Upfront Deployment Costs/Sub



DVB - SCENE - 13

ON AIR

Mobile Video RF Network Emulator

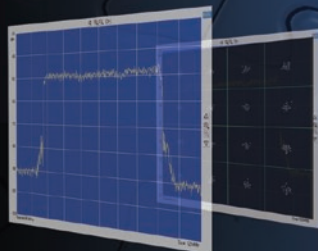
DVB-H DVB-T T-DMB/DAB

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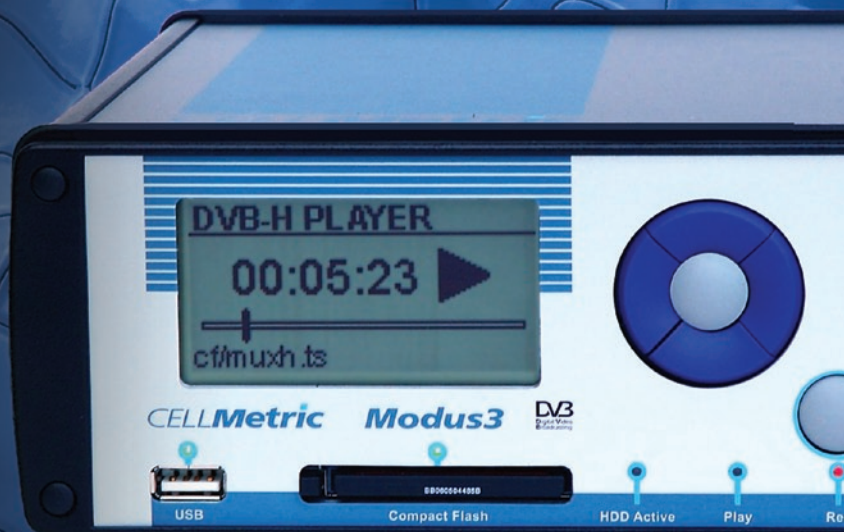
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DVB-S2 Coming Soon



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MARKET WATCH

TeamCast is introducing the RXH-1000 multi mode receiver module able to provide spatial diversity reception, full hierarchical demodulation, double channel demodulation, or secured reception for applications such as monitoring and retransmission of DVB-T/H signals. It comes with two separate inputs and two demodulation circuits. Also new, the DVB-H POD is a professional portable receiver module for connecting to a computer via a USB port. Delivered with simple control software or a development kit, it provides monitoring functions for mobile TV field trials or application development. www.teamcast.com



TeamCast DVB-H POD

Kathrein-Werke has recently launched a new series of DVB-T and DVB-H antennas for low and medium power applications. The lightweight, low windload, vertical polarised UHF omni antennas are available with 3 dBd up to 7 dBd gain. www.kathrein.de



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The **Elti ECOS 3000** is a complete solution for central monitoring and managing of all devices connected to it. It is a result of the integration of the company's Central Operating and Change Over systems. Access to all devices connected to ECOS 3000 is managed by a simplified GUI. The system allows for local and remote control of log files, SNMP tags over supported protocols TCP/IP, HTTP, SNMP and GSM messaging. www.elti.com

Fraunhofer IIS is introducing DVB-H in 5.1 MPEG Surround sound for the transmission of true multichannel sound and features realistic playback of surround sound over headphones. The software supports MPEG-4 and HE-AAC with MPEG Surround decoding. The binaural rendering for output of surround sound over headphones happens in real-time in the player. It enables broadcasters, IC vendors and receiver manufacturers to introduce or enrich mobile TV services with high quality picture and surround audio. www.iis.fraunhofer.de

The **ProTelevision MIP Carousel** function which becomes available when option PT8727 is mounted in PT5879 provides a user friendly method for sending optional MIP data. The optional MIP data is easily inserted and managed using the WebLink GUI provided by PT8727. The unique 'anytag' feature offered by PT8727 allows immediate support of any new function tag that might be added in the future to the list of tags currently defined in paragraph 6.1 of the TS 101 191 standard. www.protelevision.com



ProTV PT5879

Tiernan has released its IP enabled video encoders and decoders. The 10/100/Gig-E Pro-MPEG CoP3 compliant IP option is now available on Tiernan's popular line of MPEG-2 and MPEG-4 video encoders. Existing owners of Tiernan's HE4000, SE4000 and AVC-MPEG4 encoders and associated decoders can be upgraded to add this capability. Pro-MPEG CoP3 allows video to be transported over Ethernet while protecting against: packet loss, packet jitter, duplicate packets and lost packets. www.tiernan.com

ADB. Defining Digital

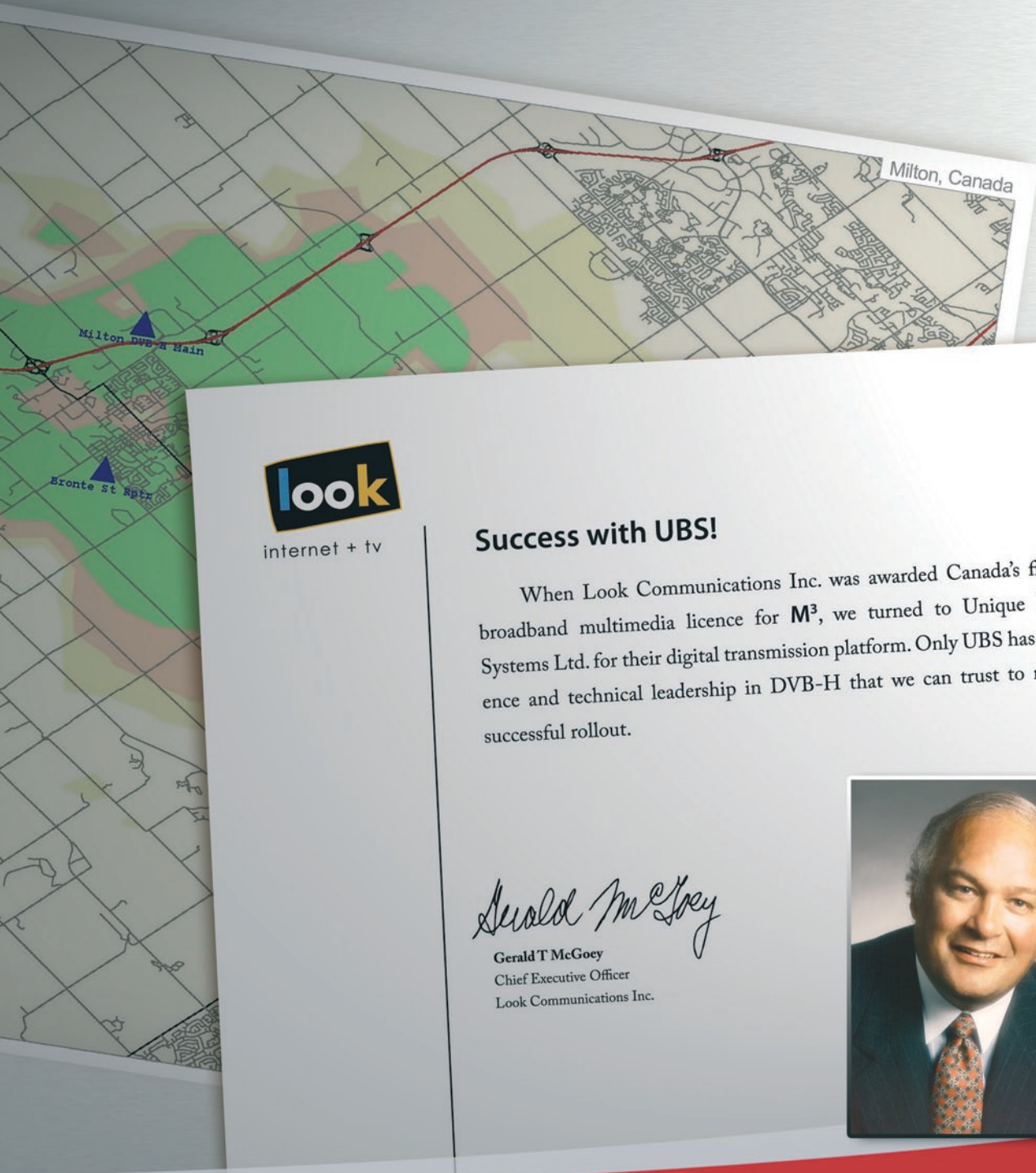
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Chief Executive Officer
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another successful rollout



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