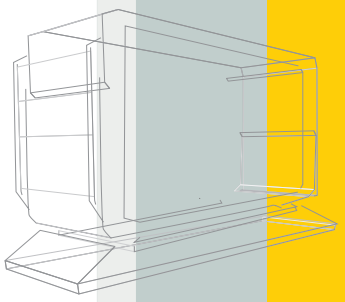
Edition No.30 **June 2009**

DVB-SCENE

Tune in to Digital Convergence

I Spy My IPTV



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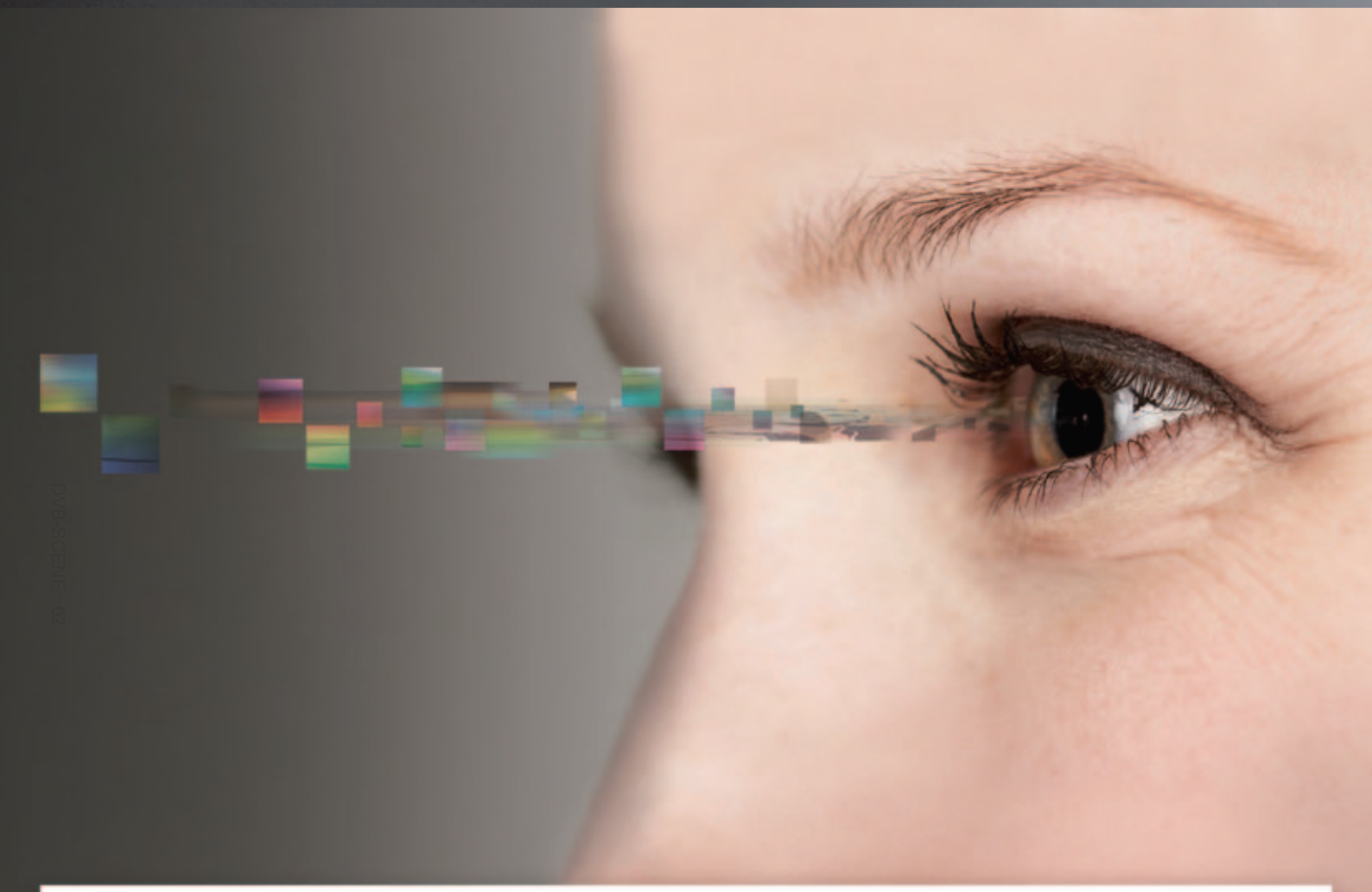
This issue's highlights

A shared vision



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PROGRESS & CHANGE

A word from the DVB Project Office

Peter Siebert, Executive Director

There is always something going on in DVB and at this time we can see evidence of both progress and change. Let's look first at some recent progress made by DVB. At the last Steering Board meeting the new DVB standard for cable transmission, DVB-C2, was presented and approved. This new standard brings a significant increase in capacity as well as flexibility for cable operators. Furthermore, it is closely aligned with DVB-T2 such that combined T2/C2 receiver modules are facilitated.
On the subject of DVB-T2, in this issue of DVB-SCENE you can read about progress in the UK, where the world's first services are scheduled to commence later this year. The DTG's Simon Gauntlett gives us an overview of the 6th edition of the group's 'D-Book', which has been updated to incorporate the T2 specification. This shows the positive acceptance and continued relevance of DVB for the UK market.
DVB's already existing standards for IPTV have been complemented by new work on signalling for interactive applications in hybrid broadcast/ broadband environments. This new specification covers distribution of interactive applications as well as the synchronising of these applications to audio and video content, delivered through either classical broadcast networks or broadband networks.
It is an important building block for new services delivered over a hybrid infrastructure. Also in this edition we take a look at the excellent progress being made in New Zealand with their DTT services, and the EBU's David Wood provides us with a view on one of the hottest topics around – 3D TV.
When it comes to the subject of change there is of course me as the new 'Peter' in the DVB Project Office, also loosely termed 'Peter 2.0'. In my various roles within Philips, SES-ASTRA and Siemens I have followed the DVB Project from its beginning and since 1995 I have participated in DVB activities. I see this as an exciting and challenging next step in my commitment to DVB and an opportunity to make a contribution at the heart of the project.
In this new role I will build on the successful foundations built by my predecessor Peter MacAvock.
And there are more changes in the DVB Project Office. I have to inform you that DVB has just said goodbye to our Marketing Communications Executive, Eoghan O'Sullivan. Eoghan will continue his professional career in Amsterdam with the European Association of Zoos and Aquaria, as Communications and Membership Manager. The Project Office and the DVB community will miss Eoghan as a colleague and friend; and we wish him all the best for his professional and private life.

NEW STANDARDS

EN 300 468 - Specification for Service Information (SI) in DVB systems (Published 13/03/2009)
TR 102 377 - Implementation guidelines for DVB handheld services (DVB-H) (Published 19/03/2009)
TS 102 470-1 - IP Datacast: Program Specific Information (PSI)/ Service Information (SI); Part 1: IP Datacast over DVB-H (Published 19/03/2009)
Draft TR 102 768 - Interaction channel for Satellite Distribution Systems; Guidelines for the use of EN 301 790 in mobile scenarios (Published 20/04/2009)
TS 102 471 - IP Datacast over DVB-H: ESG (Published 30/04/2009)

NEW MEMBERS

Radio Research & Development Institute (NIIR) - Research institute of the Ministry of Information Technologies and Communication of the Russian Federation in the field of radio, satellite and terrestrial TV and audio broadcasting. www.niir.ru
Space Engineering S.p.A. - Active in the areas of telecommunication, navigation, environmental monitoring, GIS development, tele-medicine and SAR applications. www.space.it
T-VIPS - Provides a portfolio of high performance video-over-IP gateways, an extensive range of intelligent video processing products and an intuitive video network management application. www.t-vips.com
US Patent & Trademark Office - (Observer Member) - An agency in the US Department of Commerce that issues patents to inventors and businesses for their inventions, and trademark registration for product and intellectual property identification. www.uspto.gov

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SIGNALLING SOLUTIONS

Jon Piesing, Sr. Technical Consultant, Philips
& Chairman DVB Technical Module - Middleware for Interactive Services

In March, the TM-MIS (Middleware for Interactive Services) group completed a specification on signalling for interactive services or applications in hybrid broadcast / broadband networks. This specification builds on previous DVB work and is designed for easy re-use by other organisations. It is intended to be used as a menu from which those responsible for a particular deployment can choose the parts appropriate to their market needs. It is not a toolbox since mostly it only includes one solution for one problem. The specification should be applicable to almost any technology for interactive services or applications.

Some of the more significant contents of the specification are the following:

- Signalling to announce the presence of interactive applications
- A range of application models
- Application transport
- Synchronisation of interactive applications to TV content.

Signalling for application announcement comes in two forms, an MPEG-2 table and section based encoding (to be included in-band in transport streams) and an XML encoding which extends the solution from the DVB IPTV handbook for broadband. As far as possible, the two encodings have the same behaviour and semantics although obviously different syntax (shown in the diagram). The signalling is based on the Application Information Table (AIT) used by MHP and the ETSI version of MHEG-5. A wide range of potentially useful information can be signalled including the following:

- Where the first page (or equivalent) of the application can be found
- The technology or format in which the application is distributed (e.g. a MIME type)
- The specification version and profile needed to run the application
- A human-readable name for the application
- A control code to dynamically control the starting and stopping of the application.

The signalling enables a range of application models including

- Applications bound to one or more broadcast services (in classical DVB networks) or live media broadcasts (in IP networks)
- Applications bound to a content on-demand item
- Applications which are valid associated with a particular network operator or service provider.

"...enables a wide range of possible use-cases, some quite simple and some relatively complex."

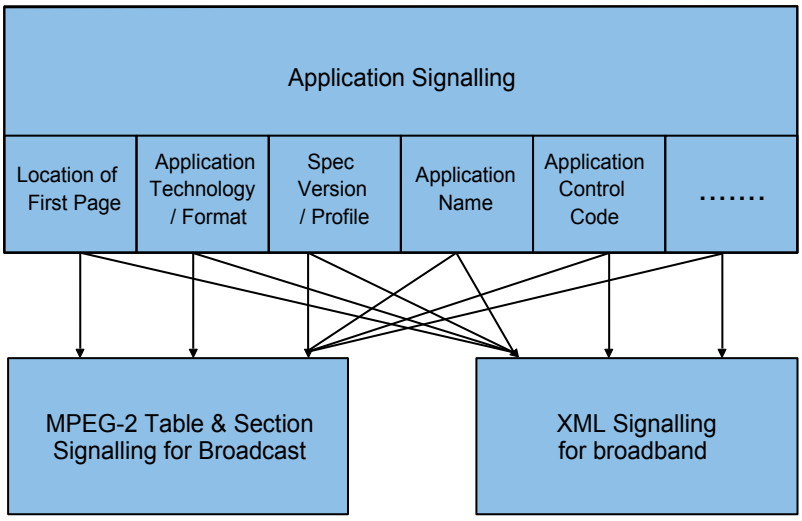
The specification includes transport of applications in both broadcast and broadband. In broadcast, DSM-CC object carousel is included – the same as used for MHEG-5 and MHP. In broadband HTTP is included. Transport of applications via multicast in broadband environments (e.g. using FLUTE) is not included but could be added in a future version of the specification. For hybrid broadcast / broadband deployments, it is possible to signal applications as being available both via broadcast and via broadband. For applications signalled in the broadcast, this allows terminals to select the broadband version of an application if they have a working broadband connection and otherwise fall back to the broadcast version.

Synchronisation of applications or services to A/V content is supported using DSM-CC stream events as used with MHEG-5 and MHP. Two variations of these are included, the simple 'do-it-now' events which have been found sufficient for real-world applications so far and a more advanced solution based on synchronising events to a timeline in the broadcast. The timeline used is from the recent DVB Synchronised Auxiliary Data specification and not the DSM-CC Normal Play Time included in the original MHP specification but not known to have been used. Particularly useful for deployments or services where the files of an application or service are distributed by broadband rather than broadcast is a new feature of this specification - that stream events can be used without needing an object carousel to be present. The information to use stream events which is normally carried in the object carousel can also be provided in an XML form.

The specification includes signalling for applications in PVR environments originally defined as part of the MHP-PVR specification. This signalling enables a wide range of possible use-cases, some quite simple and some relatively complex. Some examples of what can be signalled include the following:

- Identifying some applications or services as being useful or valid to record and others as not
- Defining what the terminal needs to record as part of recording an application, e.g., does the application rely on data which changes during a recording or would the terminal taking a single static copy of the application data be sufficient?
- Defining that some applications are usable (and tested) during trick-mode playback (anything other than forwards playback at normal speed) and others are not.

The specification is currently available from www.dvb.org as BlueBook A137. It will be sent to ETSI later this year after an opportunity for review and feedback from a wider audience.



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In My Opinion – Peter Lanigan

COMMON GROUND

Peter represents Philips in DVB-TM-IPI and DVB-CM-IPTV, where until recently, he chaired a task force on content security. He has worked in the Open IPTV Forum since its foundation and was a member of its original Steering Group.

About two and a half years ago, Philips was one of the founding members of the Open IPTV Forum (OIPF). The first steps were far from easy. There was already no shortage of IPTV standards initiatives and consortia, many of which we were actively involved in. I was surely not the only one to ask myself why we should invest effort in yet another group in this area. The initial claims sounded all too familiar – "plenty of good standards are available, but no organisation is yet addressing the complete end to end value chain", "we won't re-invent the wheel, but build on available standards to create a platform for interoperability". Clearly, a number of existing groups were already working in this space with very similar ambitions – not least, of course, DVB. It was not a simple task to start a new Forum in such a crowded landscape, and it was crucial to gather the 'right' set of partners, encompassing the total value chain, but not drowning in too many conflicting needs.

Where the Forum has, in my view, been daring and shown considerable foresight is in embracing both managed networks and Open Internet services for CE devices right from the outset. Only time will tell whether this will be actually a very short space of time compared to many standards efforts. There are still difficult steps ahead, especially in finalising what it means to comply with the OIPF specifications both in a purely Open Internet environment, and where managed network and Open Internet services are deployed together. This will require tough, astute decisions, especially in an economic environment where many companies are forced to base their product planning on the essentials of immediate value to the consumer. However, there is good reason to believe such decisions will be possible.

"...growing sentiment that both 'telco IPTV' & the rapidly developing landscape of Open Internet multimedia services will somehow have to co-exist."

rewarded by the hoped for market uptake, but the Forum was certainly the first to actually act on a growing sentiment in the industry that both 'telco IPTV' and the rapidly developing landscape of Open Internet multimedia services will somehow have to co-exist. From the user's point of view, the focus of this co-existence, or maybe even convergence, will be their living room equipment. Preparing specifications harmonising the technologies used for both models is therefore a wise choice and offers a true enabler to the market, including a clear migration path to more powerful mainstream CE equipment over time.

The Forum has been enormously successful in attracting a powerful and diverse membership, and in accomplishing the development of a comprehensive set of specifications over a period of only two years – the reference of choice for many of the technology elements adopted by the Forum, and it's probably fair to say that the Forum only turned elsewhere for areas that DVB has chosen not to address, such as a browser-based application format. Even while a more formal liaison agreement is in the making, the cooperation between DVB and the Open IPTV Forum has been excellent. Members share a good, common understanding of where DVB and the Forum each have their individual, unique strengths, and of how best to combine these strengths to arrive at the best overall set of standards. Making this common understanding more explicit and finding out whether it can translate into joint planning of work and division of tasks could give a significant further boost – especially with the much needed and growing involvement of the broadcasting community!

So far, the Forum has proven able to make difficult, but clear choices, and has been able to go much further in doing so than many other bodies, including in areas often seen as 'off limits'. Why should this be? – After all most of the members also cooperate in other, well established standards bodies that could, in principle, take on the same scope just as easily. Does it sometimes just take a fresh start? The absence of implicit taboo areas? The right combination of just the right players at the right time?

No matter what the answer might be, the Forum would certainly not have been able to get so far so quickly without years of important ground work done in other bodies. DVB specifications play a particularly strong role in the Forum's work. Whether for media formats, transport protocols, metadata – DVB has been

Following my own engagement in DVB and the Open IPTV Forum, it's very rewarding that my company has, in partnership with an impressive range of service providers, now started to deploy a brand new and exciting range of connected NetTV sets based on elements of DVB and OIPF specifications. I personally share my company's confidence that these standards will enable a broad ecosystem of IPTV and Internet TV services and products, creating something that consumers will find compelling and exciting.

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QUALITY CONTROL

Technical Requirements For Advanced Quality Of Service For Home Networks

Dave Walton, Advanced Technical Standards, Echostar Europe & DVB TM-IPI Home Network QoS Task Force Editor

The DVB TM-IPI Home Network (HN) task force identified issues with the Quality of Service (QoS) techniques currently used for delivery of services over IP transport, e.g. IPTV services. These techniques do not allow enough flexibility or capability for effective control of the potential combinations of content delivered from servers within the HN and content delivered to the home over the access networks as content sharing home networks become more common.

Since many Standards Development Organisations (SDOs) must also consider the same issues, the task force took the approach of considering what would be needed for an effective and evolutionary QoS system, as below:

- Analysing the problem, defining use cases
- Developing a functional model
- Defining technical requirements for the functional model.

The effort to develop an actual technical solution would preferably be shared with other SDOs.

The work has resulted in a DVB BlueBook A132 'High-level Technical Requirements for QoS for DVB Services in the Home Network' describing the analysis and modelling the QoS behaviour of IP services in a HN. Besides the 'optimised final solution', BlueBook A132 describes the capabilities supported in an evolutionary changeover from the current 'priority-based' QoS to advanced QoS methods.

If IPTV services are to be delivered reliably through a HN such as described by the DLNA Guidelines, we must develop QoS control methods allowing service providers and users to actively manage delivery within the HN of services such as IPTV, personal stored content, content delivered over satellite, cable or terrestrial and over the internet. Current QoS methods used by DVB and other SDOs do not allow differentiation between services of the same type within the home environment.

Assuming that there are sufficient resources to carry content across the HN at the time the service is selected, all use cases are based on changes in streaming requirements, e.g. addition of streams, network resources or bitrate changes, and the solution must allow appropriate decisions to be made to manage the existing and desired services. The decision options for an advanced QoS system to optimise the user Quality of Experience (QoE) are:

- To accept or reject a request for an additional service
- Scale an existing service up or down.

In order to do this, two semantic concepts have been introduced to enable a Flow Manager (using a defined Policy) to make the decisions about managing new and existing services.

- 'Importance' is an indication of the relative importance of services, based on the current Policy agreed by the service provider and user.
- 'Preemptability' is an indication of whether changes can be made to a service, also based on the Policy.

The overall QoS architecture is as shown in Figure 1. The functional model is made up of entities, repositories and interfaces, described in detail in DVB BlueBook A132, which are generally not directly associated with any particular logical or physical HN device. Those associations will be defined by subsequent specifications and implementations.

Applications would be local to the HN devices and specific to requirements and should use the available network data to manage the Flow Request/Responses via the Flow Manager. The model allows both remote and local policy and configuration, and identifies the need for repositories holding the dynamic configuration data and status describing the on-going traffic conditions in the network.

The entities defined are:

- Packet Processing – modifies IP packets carrying content in each network device
- Monitor – reports the network behaviour to allow the Flow Manager to enforce necessary changes
- Flow Manager – the 'engine' of the system, making decisions and enforcing changes
- Policy and Config Arbiters – determining how the repository containing the QoS policy and the Static Config are populated (local or remote).
- Applications – the method by which the HN devices can make requests.

The repositories are used to hold the relevant information on a volatile or non-volatile basis (as appropriate).

The external interfaces provide communication with the external IP access networks. The internal interfaces are defined in order to understand the operation of the QoS system. Figure 2 illustrates the system operation.

The detailed technical requirements to achieve the functionality, related to each entity, repository and interface, are developed in the DVB QoS document and are intended to contribute to the process of producing a solution suitable for the flexible HN systems we would like to see in the future, in cooperation with other SDOs.

The DVB QoS document was published as a DVB BlueBook in December 2008 and has been circulated to a number of SDOs for comment. Some organisations have now responded and there is the possibility of opening a discussion with them on cooperative work. It is currently being processed for publication as an ETSI technical standard.

> **"The model allows both remote and local policy and configuration..."**

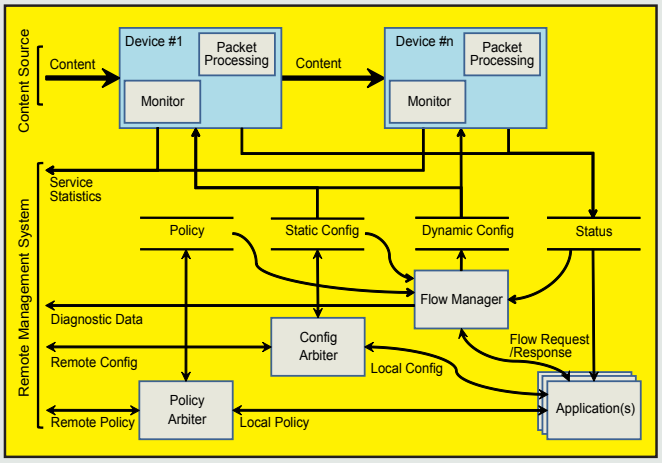


Fig. 1: Functional QoS architecture of DVB home network.

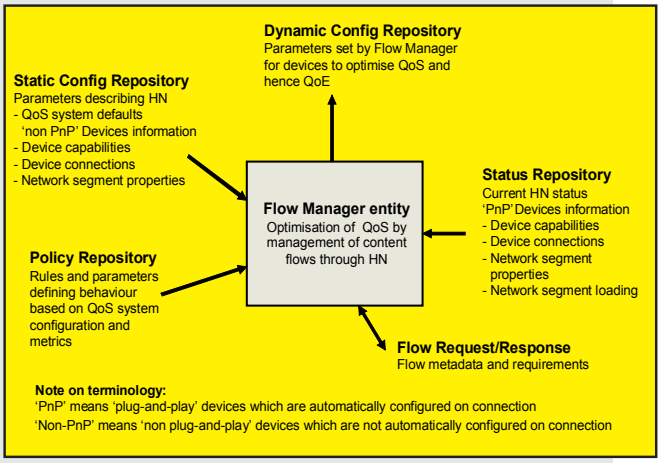


Fig. 2: Diagrammatic representation of QoS behavioural model

PUFF THE 3D DRAGON

Jackie Paper

Let's be fashionable. 3D TV is one of the hottest things around. Conference organisers' eyes are smiling. It is a subject that has arisen like a phoenix from the ashes. There is a high risk of a 'rash' (is that the correct collective noun?) of different 3D TV technical standards, making sure that no single one is able to be particularly successful. But at least they can all be accommodated by DVB broadcasting standards with some signalling additions.

The 3D cognisenti will have spotted the subtlety of the title of this article. One of the founding fathers and pioneers of modern 3D systems is Californian Lenny Lipton. For virtually his entire lifetime Lenny has developed and promoted 3D systems. Now, it seems this is an idea whose time may have come.

While in college, Lenny also co-wrote one of the best children's songs in the English language - 'Puff, the Magic Dragon'. It is a work of rare beauty that will last forever. The question for both the broadcasting and cinema worlds is, when Lenny's spirit has passed to (as the song goes) 'Honalee', will he be best remembered for the song or the 3D?

The really serious interest in 3D began in the cinema world about two years ago, when Hollywood studios began to fear that HDTV would draw cinema audiences into the home and away from the popcorn. They pulled the same rabbit out of the hat they had done in the fifties and the eighties - the 3D movie.

In fact, physicists will tell you that these offer only a rudimentary form of 3D, which provides pictures for the left and right eyes. The technical term for this is 'plano-stereoscopic'. You do see 'depth', but there were/are/always will be limitations.

There will probably be a degree of 'eyestrain' for the viewer, but when you see it (first time at least) there is a real 'wow factor' with 3D movies. The box office cash register spoke. 3D movies drew rather higher takings than 2D movies, so the bandwagon began.

It wasn't long before there was a wake-up call for the television industry as well. Several countries, including Russia, in 2008, asked the ITU to agree common standards for 3D TV before chaos occurred. This work is under way now, and a host of other organisations are studying 3D TV as well, such as the SMPTE. The DVB Project has not been still either, and David Daniels from BSkyB is leading the first investigation (if you would like to join this contact the DVB Project Office).

The work at the moment is centred on 'plano-stereoscopic television', and mostly the working assumption is that this will be based around two either full or half HDTV pictures. A special display is needed that feeds each eye with the correct picture. This can be done by one of several different ways, which each involve the viewer wearing glasses. These glasses have to be tied in with the display so they both do the right thing at the right time.

The broadcast world is not the only one looking for 3D TV systems. The Blu-ray and DVD worlds are doing so as well. Alas, pretty much, everyone is looking at different plano-stereoscopic systems today. Will the sheriff ITU be able to clean up the town? We shall see.

For many years it has also been possible to devise displays which do not need glasses ('autosteroscopic displays') and companies like Sharp and Philips have made important advances. So far such displays have been seen as super-duper for things like advertising hoardings but less useful for bread and butter home 3D TV. They do tend to have limitations on 'depth planes' and viewing angles. But maybe technology will advance further.

In fact, electronically shot and processed plano-stereoscopic TV can provide the best moving 3D the planet has seen, because digital technology allows everything to be correctly registered to the 'pixel'. They are worth investigating. But can these systems ever be a sustainable source of continuous viewing enjoyment, or will that residual eye strain limit viewing time or even make this 3D boom as short as those in the movies of the fifties and eighties?

"...electronically shot and processed plano-stereoscopic TV can provide the best moving 3D the planet has seen..."

I love the idea of 3D. I get a real thrill out of watching it and there is no doubt that there will be 3D TV broadcasting. But something inside me thinks that my grandchildren will remember Lenny's song more than this rudimentary 3D.

In the decades ahead, we will have much more advanced 3D TV systems, using what is called 'object wave' recording, and plano-stereocopic TV may seem like just so much (to quote my favourite song) 'string and sealing wax'.

(Jackie Paper is really David Wood of the EBU)

THE ADVANTAGES OF REVISION

A/V Implementation Guidelines Revised

Thomas Kernen, Consulting Engineer, Cisco, Editor of TS 101 154 v.1.9.1

Why is it that the specification for DVB services over MPEG-2 Transport Stream, which has been contributing to delivering services over different mediums since the early days of the DVB Project, continues to need updating? Considering the evolution of technology and the ability to improve ways of delivering new and existing services, this should come as no real surprise.

So what is new in the latest version of 'Audio Video Implementation Guidelines over MPEG Transport Stream (TS 101 154)'? Whilst the specification remains backward compatible with previous revisions, there are several changes to the existing capabilities combined with the introduction of new functionalities to ease the process of launching new services.

Until now HDTV services based on the H.264/AVC codec were limited to 1080i resolution and the related frame rates. This has now been extended to include support for 1080p50 and 1080p60 bitstreams.

Scalable Video Coding (H.264/AVC Annex G) is introduced into the video codec toolbox. To provide support for the different use cases, three classes have been introduced for SVC capable receivers. Class S (Spatial), Class Q (Quality) and Class M (Mixed), in combination with two distinct resolutions: Level 4.0 and Level 4.2 for support up to 1080i and 1080p resolutions. Class S provides for a maximum of two layers for spatial enhancements, Class Q for up to four layers for quality (SNR) enhancements, whilst Class M provides for a mix of S and Q. A Class M receiver can therefore support up to four layers with a maximum of two spatial enhancement layers (see diagram). Other advantages include the smaller number of Random Access Points (RAP) in the enhancement layers of the service which allow for higher coding efficiency and therefore increased bandwidth savings compared to a classical H.264/AVC based service.

Whilst aspect ratios are constrained to remain identical for all the different layers of a given service, a mixture of progressive and interlaced pictures in different layers is supported within a service.

The new Annex includes implementation guidelines to facilitate encoding and decoding processes. For further information on SVC please refer to DVB-SCENE Edition No. 28.

Personal Video Recorders may require some additional helper information to assist with the complexity of H.264/AVC services and to deliver an as good or better than MPEG-2 video functionality. This need drove the requirements for extending the existing Annex D. Minimal encoder constraints, bandwidth overhead, no additional decoder complexity and the support for scrambled streams were all taken into account whilst designing the solution.

Support for MPEG Surround (ISO/IEC 23003-1 or MPEG-D) has been introduced in section six, and can be used in combination with MPEG-1 Layer II, MPEG-4 AAC audio, MPEG-4 HE-AAC audio and MPEG-4 HE-AACv2 audio bitstreams. The multichannel audio source is downmixed to a mono or stereo stream and an ancillary data stream. This stream contains the information required for recreating the spatial image parameters for the compatible receivers, whilst legacy units will simply ignore it.

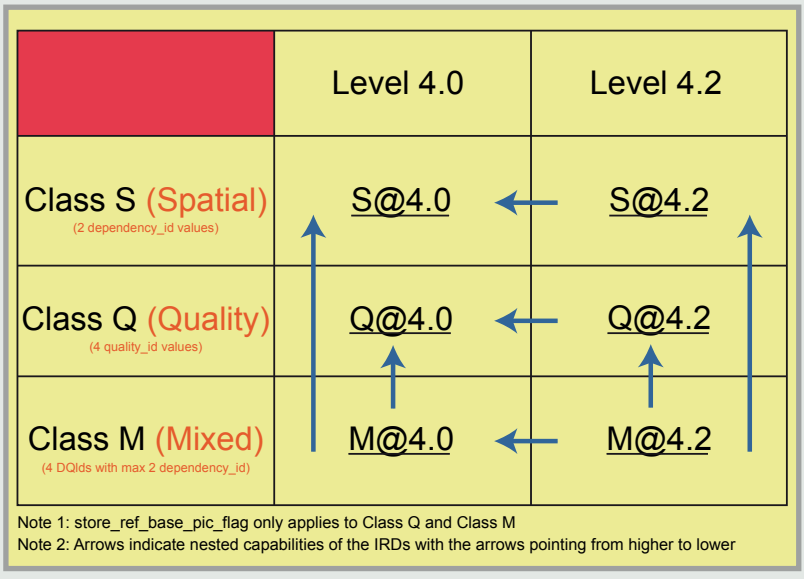
The Supplementary Audio (SA) services in Annex E have been improved with better support for hearing and/or visually impaired viewers.

Audio Description (AD), which provides audio commentary to explain the on-screen action, was expanded to support not only MPEG-1 Layer II for the audio commentary but to accept all supported audio codecs. For practical reasons the AD service must use the same audio codec as the main audio service.

Clean Audio improves the intelligibility of critical audio information by channel audio levels. The audio processor should accentuate the level of the centre channel (containing the dialogue) and attenuate the other channels, according to the values signalled in the AD_descriptor. It may also be helpful in noisy environments such as airplanes. Naturally, these audio capability enhancements do not prevent the user from selecting their preferred volume level.

This revision was approved by the DVB Steering Board in April 2009 and is available as a BlueBook prior to publication by ETSI. As the editor of this specification, I wish to thank all the experts that have contributed to the development of this latest revision.

"...a mixture of progressive and interlaced pictures in different layers is supported within a service."



Note 1: store_ref_base_pic_flag only applies to Class Q and Class M
Note 2: Arrows indicate nested capabilities of the IRDs with the arrows pointing from higher to lower

D-BOOK LAUNCH

Simon Gauntlett, Technology Director, Digital TV Group

In early March 2009 the Digital TV Group (DTG) announced the publication of the sixth edition of the 'D-Book': the detailed interoperability specification for UK Digital Terrestrial Television (DTT).

The DTG has published and maintained the D-Book for over a decade and the specification is updated annually to keep up with the rapid pace of development in UK DTT. The D-Book is compiled by a dozen DTG Working Groups comprised of leading industry experts from the DTG's staff and membership.

D-Book 6 represents a landmark in UK broadcasting – incorporating the DVB-T2 standard to enable the launch of an initial four free-to-air HD services on the UK Freeview platform by late 2009, as well as the introduction of a broadband return path which has the potential to deliver on-demand video content and allow viewers to complete transactions via their television.

The 30 – 50 percent efficiency improvements that become available on adoption of DVB-T2 provide the capacity for HD and other advanced services. Video will be encoded in MPEG-4 (H.264 / AVC) to efficiently deliver HD content. D-Book 6 includes profiles for Dolby Digital Plus and HE-AAC, ensuring that the high visual quality of HD is matched with high quality sound.

RF performance is critical to any receiver specification and needs to be tightly specified and tested against to ensure services can reach as many consumers as possible. D-Book 6 includes clarified methods for RF measurements to encompass DVB-T2 and define a new test regime for Freeview HD products.

To ease navigation as the number of channels and services increase, there is an advanced system of programme specific information and service information. Logical Channel Numbers (LCN) are a crucial piece of service information and now need to be implemented for both SD and HD services. Network change notifiers have been introduced allowing receivers to know when new services become available or services move, and possibly retune without the need for the viewer to manually intervene. Trailer selection allows consumers to book recordings of programmes when they see them advertised.

The MHEG specification for Freeview HD receivers has been enhanced considerably. Support for HD resolutions and JPEG graphics has been introduced, along with non destructive tuning, enabling receivers to smoothly navigate to other video services without dropping out of the MHEG application. An MHEG return channel has been specified to handle interaction and transactions and also to add support for streaming media.

The DTG's Engineering Channel, which enables manufacturers to upgrade receiver software via Over Air Downloads (OADs), has been critical to the success of the UK DTT platform. The OAD system in D-Book 6 has been reviewed in light of an Engineering Channel consultation conducted by the DTG in late 2008. It now includes the pan-European standard DVB-SSU (System Software Update) and enables more efficient management of the capacity for OADs.

Active format descriptor (AFD) is a small but critical part of the D-Book. If an AFD is currently implemented the viewer will see pictures the way the broadcaster intends them to be. In D-Book 6 AFD signalling has been extended to cover HDMI.

HDMI will increasingly become the primary interface consumers use to access HD Content. D-Book 6 includes detailed interoperability guidelines, and information for manufacturers on how to build best-practice implementations of HDMI with boxes, displays and switches. Like SCART, HDMI will continue to provide plug and play simplicity.

A key chapter of the D-Book is Chapter 22: Receiver Requirements. D-Book 6 is now structured around four profiles: the basic SD receiver, SD recorder, HD receiver and HD recorder, each aligning to their respective Digital UK or Freeview trademark. D-Book 6 includes requirements for manufacturers on how to implement the recording and advanced functionality that will be required in Freeview+ and Freeview+ HD products.

With the specification for HD services on Freeview finalised and published, the DTG is now fully engaged in providing the test and conformance regime for UK DVB-T2 via our test house, DTG Testing. DTG Testing was established by the industry to provide independent testing of products against D-Book standard. Test materials and test reports generated by DTG Testing already support manufacturers applying for the Digital Tick, Freeview, Freeview+, Freesat and Freeview New Zealand logos, with other territories under discussion.

Testing against D-Book 6 will mark a step change in market compliance. The DTG can now utilise eight years of test suite development as a foundation to ensure that Freeview HD receivers will meet levels of compliance achieved previously only on vertical or lower volume proprietary standard platforms. This world-first will deliver the best of both worlds: the high volumes of an open-standard, horizontal market, with the compliance levels of a vertical or lower volume platform and will ensure that the UK continues to lead the world in the deployment of advanced digital terrestrial television services.

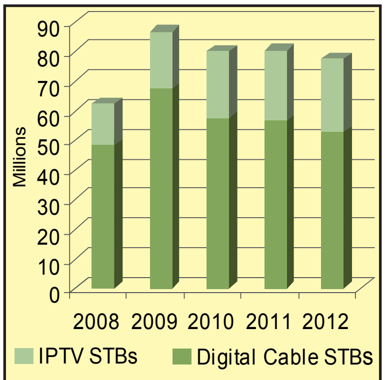
Further information on the Digital TV Group can be found at: www.dtg.org.uk.

"...improvements that become available on adoption of DVB-T2 provide the capacity for HD and other advanced services."

Moore Analysis

GOOD OUTLOOK

Worldwide digital terrestrial TV receiver set-top boxes aren't the only TV STB shipments holding up well during this deep recession as pointed out in the previous DVB-SCENE article (Edition No. 29 March 2009). IPTV and digital cable STBs are estimated to post more than 30 percent growth in 2009 propelled by new service launches mainly in Eastern Europe and China.
Now that most of the world's Tier-1 telcos have well established TV offerings (Verizon and AT&T have both surpassed the 1 million subscriber mark), Tier-2 and Tier-3 deployments are fuelling STB sales. Launches in Montenegro, Macedonia, Croatia, Lithuania, the UAE, and Morocco are adding IPTV services to new parts of the world. Hong Kong, France and Italy still house healthy IPTV services but those deployments are beginning to mature.
The digital cable STB makers have benefited greatly from the rapid uptake of digital cable services in China in 2007 and 2008, and from the recent moves in the United States to put small digital-to-analogue converters into subscribers' homes that still buy analogue TV services.
Chinese digital cable subscriptions grew substantially in 2008, propelled by the Olympics and a favourable regulatory environment for operators. According to the government, digital cable subscribers in China rose from 24 million in 2007 to 44.5 million in 2008. DTC anticipates continued subscription growth in 2009 that will help to boost year-over-year worldwide STB shipment growth to nearly 40 percent.
Not all of that growth will come from China, however. Comcast, for example,



Source: Digital Tech Consulting

placed large orders for DTA converters. Many cable operators who still deliver analogue programming want to free up bandwidth by delivering only digital programming to the home. In order to accommodate their customers who don't want to purchase the digital service, cable operators will distribute these low-cost DTA converters that allow subscribers to view the programming on analogue TVs. Millions of the devices will likely ship into the market in the near future.
In the case of DTA converter sales, there are no corresponding new subscribers from which the cable operators can derive additional service revenue, at least not directly. Converting systems to all-digital, however, frees up bandwidth that operators can use to deliver more content, such as HD and VOD, which can generate new revenue. Box sales in China, however, do represent new cable customers.
These digital cable systems mostly deliver bare-bones services and most of the STBs are basic and don't include extras such as hard disk drives. These customers don't deliver the high ARPU operators in more established digital cable markets are accustomed to, but, in this economy, getting new customers is a definite win.
Digital Tech Consulting (DTC) is a market research firm that tracks and analyses the consumer digital video marketplace. More information on the company and its latest research on TV receivers, set-top boxes, and other digital video activity is available at www.dtcreports.com.

TV & ALL THAT JAZZ

With travel budgets tightened and pressure to cut costs, the organisers of DVB World 2009 could have been forgiven for having worried in advance of the conference about registration levels. It speaks volumes for the reputation of the event that more than 200 delegates turned up in Berlin in mid-March, matching the attendance for the 2008 edition in Budapest.
The conference got off to a strong start for the more than 50 delegates that registered to attend a pre-conference masterclass with Prof. Ulrich Reimers. It was perhaps a little ambitious to ask him to cover the fundamentals of DVB technologies in two and a half hours. Such was the thirst for knowledge that attendees would happily have listened for twice that length of time.
Thirst of another kind took precedence following the opening session of the conference, as the Berliner Congress Center was transformed into a casino, complete with gaming tables, a jazz band and, of course, plenty of local beer on tap. Fortunes were neither made nor lost, but some delegates revealed a talent for knowing when to hold 'em and when to fold 'em!
The conference programme covered a lot of ground. Some of the most interesting discussions centred around the future of TV on the Internet and vice versa; the challenge of meeting the needs of the various different national profiles in CE equipment sold on a continent-wide market; and the best path to HDTV on terrestrial networks. Other highlights included the introduction of DVB-C2 and a presentation on the media habits of the 'Net Generation' from DVB World's youngest ever speaker, 18 year old Sebastian.
For a full overview of DVB World 2009 visit David Wood's DVB World Blog: http://dvbworld.wordpress.com
DVB World 2010 will take place in Lisbon from March 8 -10.

RISING TO THE CHALLENGE

Digital Terrestrial Television In New Zealand

Bill Curtis, International Manager, Kordia Limited

New Zealand has recently deployed a national DTT network. The transmission platform, deployed and operated by Kordia, embraces a number of innovative features including MPEG-4 compression, ASI Distribution using IP, and cross carriage of Service Information (EPG).

Background

New Zealand has a population of four million, being of similar geographic size to the UK but with much more difficult terrain. TV coverage has always been a challenge as there are many hills and mountains and, being an agriculture based economy, much of the country is sparsely populated. While around 75 percent of the population live in the metropolitan areas the rest are mainly in smaller towns and farming communities. The existing three channel analogue service requires some 400 sites to achieve 98 percent population coverage

The Digital Project

Initial DTT planning commenced in 1998 with New Zealand adopting DVB-T as the digital standard. Kordia commenced a digital trial, but a lack of motivation from the free to air broadcasters and the government, meant there was little progress in developing a digital platform.

However, by 2005 there was renewed interest in digital TV and the DTT project was born with most of the free-to-air broadcasters joining a consortium known as Freeview to establish the ground rules for the project.

It was determined that 75 percent of the population could be covered by DTT from 17 sites. However, to meet the obligations of near universal coverage as mandated by the government, it would be prohibitively expensive to use DTT for the remaining 25 percent of the population in more sparsely populated areas. So the answer was to use a hybrid system of digital terrestrial and direct to home satellite.

The hybrid system achieves 'the best of both worlds'. While the satellite platform can provide near universal coverage, it is costly to operate especially when HD content is involved, but more importantly it cannot economically provide regional commercial breaks nor allow standalone regional broadcasts. This facility was a requirement of the free-to-air broadcasters. On the other hand DTT provides very flexible transmission options allowing regional broadcasts and HD. It is also a more resilient platform.

> **"...DTT provides very flexible transmission options allowing regional broadcasts and HD."**

Network Design Philosophy

In order to achieve optimal efficiency and low deployment costs, the network design utilised existing sites and infrastructure wherever possible. The transmission network must meet strict availability targets of 99.9 percent for the overall network as demanded by Freeview, so significant redundancy and selected network components known for their reliability and efficiency in terms of 'whole of life costs' were used.

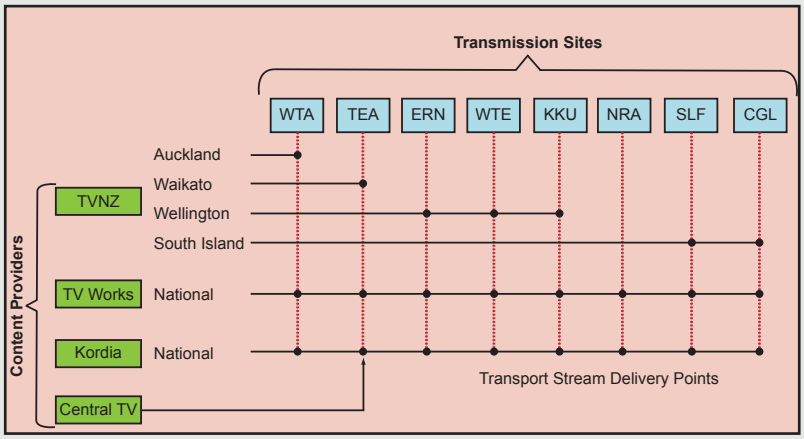
Network Topology

The network has three multiplexers, one each for TVNZ, TV Works and Kordia. The head-ends are operated by the respective content providers and the ASI passed to Kordia for distribution via network adaptors to convert to the IP transport streams.

As Kordia already operates an NGN as an overlay to the existing backbone SDH network, it was logical to use this for the transport stream distribution to the transmission sites. IP distribution of high definition content, especially where Single Frequency Networks are used, was an innovative move.

The figure below shows the general arrangement for the IP distribution network. Of particular note is the use of four transport streams by TVNZ. This is to provide regional specific commercial breaks. One transport stream is allocated to TV Works and one to Kordia. Each transport stream is around 26 Mb/s net capacity or 30 Mb/s after encapsulation and FEC.

A major advantage of using the IP network is the ease of inserting site specific or regional broadcasters. For example, in the figure it can be seen how Central TV provides content to only the TEA site. The SI (and EPG) for Central TV is only available to viewers in the coverage area of TEA.



IP Distribution Network

Digital Take Up

After about 18 months of Freeview Satellite and about 11 months of Freeview DTT (HD), some 200,000 receivers have been sold to date. This covers 5 percent of New Zealand's population. When the Sky digital subscribers are added over 50 percent of New Zealanders have access to digital television.

Experiences from New Zealand's Digital Launch

Using the shared infrastructure model to deploy DTT in New Zealand has been a wonderful success. The biggest challenge was in getting the business model to work in a country with only four million people but of similar geographic size to the UK. The broadcasters could not afford to invest hundreds of millions of dollars in digital television infrastructure. By leveraging the synergies that the shared infrastructure approach provided, the Kordia project team deployed a three multiplex network that covered 75 percent of the total population for a project cost in the order of $US15m.

MARKET WATCH

Harris Corporation's Maxiva ULX series is a range of liquid-cooled UHF TV transmitters designed for worldwide analogue and digital standards, including DVB-T/H. Maxiva ULX transmitters feature the company's PowerSmart technology and Apex M2X multimedia exciter, which allows for easy migration from analogue-to-digital or between different systems. This transmitter also features all-digital linear and non-linear precorrection and delivers digital power levels up to 18.9 kW COFDM, providing customers with maximum power density, efficiency and a small footprint.
www.broadcast.harris.com

Harris Maxiva ULX Transmitter

ROVER presents its professional receiver for satellite DVB-S2 multistream signals. It's capable of demodulating more than three streams that are transmitted in one transponder via a third party DVB-S2 multistream modulator. Based on the company's MFE-802 modular platform that can equip various functions: RX Sat, multi-program descrambler, PID filtering, ASI TS seamless switch, and re-multiplexer, offering a complete system specifically designed to fulfil broadcasters' requirements. www.roverbroadcast.com

ROVER DVB-S2 Multistream Receiver

The **Pixelmetrix** ASLF series allows operators, who need to reach the optimum Signal-to-Noise-Ratio to achieve the best power utilisation on their satellites, to monitor their transmissions before they uplink the signal at their head-end/transmission centre. A similar monitoring solution can also be used to ensure adequate quality and coverage area in the satellite transmission footprint. The series and the company's DVStation line offers accurate front-end TS analysis technology.
www. pixelmetrix.com

SIDSA Orion System

Orion System is the **SIDSA** solution for IP and TS distribution via satellite. It provides the encapsulation and multiplexing of different IP and/or transport streams into a single transport stream ready to be broadcasted. The system is completely compatible with the encapsulation of DVB-T/H multiplexes for its distribution in SFN deployments. Together with the KeyFlyCDN conditional access system it provides the encryption and the subscriber management system required by business to business distributions. www.sidsa.es

TeS LHTA

The LHTA is a Ku-Band mobile satellite antenna system for high-speed trains from **Teleinformatica e Sistemi** - a **Space Engineering Group Company**. The compact solution allows access to broadband networks for several Satcom applications including DVB-S. The unit includes a three axes stabilised pedestal incorporating a unique elevation motion of the reflector. The navigation system enables accurate and reliable satellite tracking. The antenna can be fully configured and monitored locally, using PC-based software. www.space.it

Verimatrix now offers a middleware-independent DVB-SI Server as an option within the Video Content Authority System (VCAS) for DVB. It builds and plays out DVB Service Information tables (EIT, NIT, etc) with TV schedule information for receiver electronic programme guides. The SI data is played out regularly to keep updated schedule information

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MARKET WATCH

on-air. The SI Server's XML interface facilitates data ingestion together with manual creation and editing options, and features a 64-day look-ahead range. www.verimatrix.com

Enensys Technologies launches a new Test & Monitoring range in June, for the monitoring of complete RF and MPEG-2-TS parameters. The pocket size products will give in-depth analysis of all entities working on digital TV. With the new 6.0 software for the Diviseries range, the company now offers a more flexible GUI, more analysis tables and the opportunity to analyse files directly from a PC. www.enensys.com

Enensys
DiviCatch RF -T/H w/6.0 Software

Rohde & Schwarz launches a DVB-T2 modulation option for the R&S SFU Broadcast Test System. It supports all coding parameters, IFFT modes and constellations of the DVB-T2 standard, including the rotated constellations. The test system is a high-end TV signal generator with integrated simulators for multi-path propagation, adjacent channel interferers and impulsive noise. With the new DVB-T2 option, the system is a powerful tool for development and test of DVB-T2 receivers. www.rohde-schwarz.com

R&S SFU Broadcast Test System with DVB-T2 Modulation Option

Imagination Technologies' new POWERVR VXD380 video decoder technology is a multi-standard, multi-stream HD video decoder IP core. It supports all international broadcast video standards including MPEG-2, H.264, VC-1 and AVS. It is capable of full H.264 L4.1 decoding and can decode two full HD streams simultaneously. It is also suitable for decoding up to 1080p60.
Its video cores are supported by an extensive set of hardware drivers and application middleware.
www.imgtec.com

To facilitate the upgrading of TV networks to digital, the multimode system by **DMT** is capable of transmitting both digital and analogue signals. The system's key component is its frequency agile exciter (named B10) which can deliver any of the following standards: DVB T/H, ATSC, PAL, NTSC at the touch of a finger. The unit also features, adaptive pre-correction and smart functionality, for extremely fluid SFN resynchronisation.
From 1W to 50kW, the company's transmitters are optimised for energy consumption and digital performance, with friendly interfaces (touchscreen display, web, SNMP, etc.).
www.dmtonline.com

DMT Multimode Exciter

The **NetUP** Dual DVB-S2-CI is a professional PCI-e satellite reception card designed for high-density appliances such as DVB-IP gateways, home theatres, satellite Internet systems, etc. In contrast to standard DVB-S cards NetUP's Dual DVB-S2-CI provides fourfold density – two DVB S/S2 receivers and two Common Interfaces occupy only one PCI-e slot.
www.netup.ru

NetUP Dual DVB-S2-CI PCI-e Satellite Reception Card

S3 StormTest

S3's StormTest product is a proven automatic set-top box (STB) test and analysis system supporting local and remote test execution. It increases the quality and depth of STB testing and removes the need for time consuming, expensive and error prone manual testing replacing it with a more accurate and cost effective alternative. The system allows automation of the most routine STB testing with breakeven on investment as short as 12 months.
www.s3group.com

TeamCast is introducing DEMOD4-T2, a DVB-T2 demodulator for experimentation and evaluation of the new standard. With a high level of integration, performance and reliability, the demodulator is open to implementation of all the advanced and future features of T2, thanks to the powerful and innovative Power4Cast platform on which it is based. Together with the Power4-T2 modulator introduced several months ago, it constitutes a powerful and future-proof global DVB-T2 solution for experiments and tests with the new technology in laboratory and field environments.
www.teamcast.com

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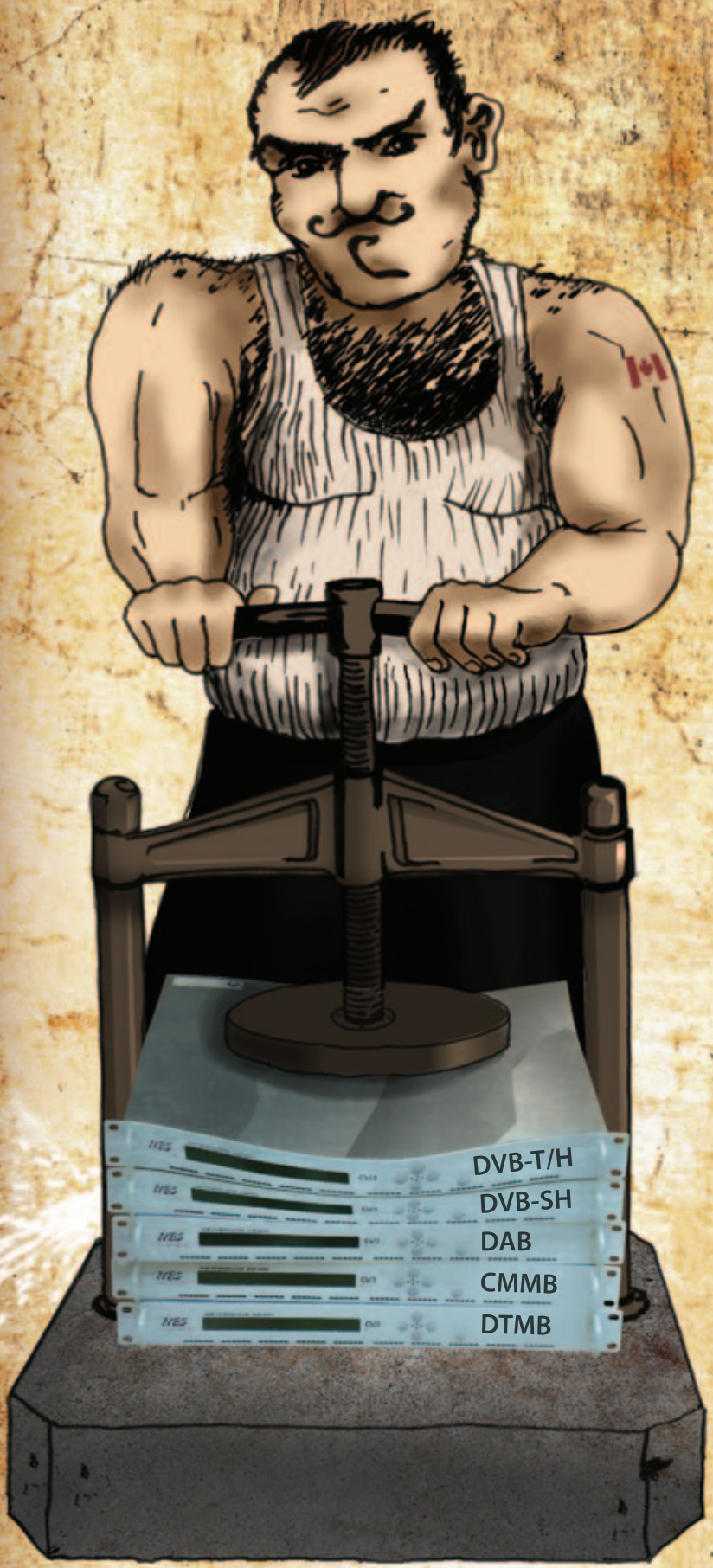

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