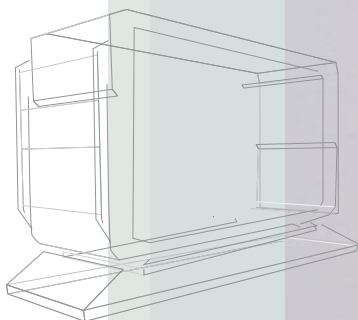


Tune in to Digital Convergence

# DVB - SCENE



11



# Looking at the future

## DVB®

The Standard for the Digital World

### This issue's highlights

- > ABroadband Takeover ?
- > Back to the future with HDTV
- > Frequency Planning
- > BMCO
- > Update: Italy & Spain
- > IP Datacasting Trial
- > Content Protection

# i-CAN™



ADVANCED DIGITAL BROADCAST



## i-CAN Set Top Boxes: the Global Benchmark for Interactive TV.

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- i-CAN OCAP: The new big buzz in North America.
- i-CAN Flexibility: Terrestrial, Cable, Satellite and IPTV, dual medium (IP/DVB-T), DVR, iDTV
- i-CAN by Advanced Digital Broadcast: design excellence with proven performance in millions of TV homes around the world.

w w w . a d b g l o b a l . c o m

# SUMMERTIME...

Summer may be upon us in Europe, but the digital television world has not gone on vacation. In fact, if this issue of DVB-SCENE is anything to go by, the livin' is far from easy! These are busy times in the DVB world.

HDTV is coming full circle in Europe. You might call the latest DVB offerings 'next generation HDTV', following on from the MPEG-2 based services in Australia, USA, Japan, and from Euro1080 in Europe. The next generation of HDTV will be encoded using powerful new codecs like MPEG-4 Part 10 and Windows Media 9, be modulated using sophisticated and highly efficient modulation schemes such as DVB-S2, and be received on a range of set-top boxes probably boasting PVR functionality as well. This year's IBC will see a demonstration HDTV broadcast of H.264 and Windows Media 9 over DVB-S2. This quantum leap in the technology offering appears to have spurred Europe's digital TV community into planning HDTV launches - and it could come faster than you think!!

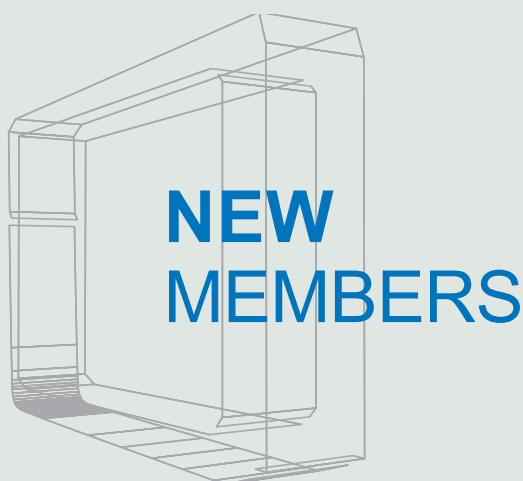
As the hype surrounding DVB's Handheld standard continues, and manufacturers and operators get down to business, we see a number of new product offerings. At the same time, the Berlin BMCO project is yielding valuable first experiences of how such systems might operate. With a number of demonstrations of DVB-H products and services expected at IBC '04, DVB-SCENE provides an insight into one of the key digital TV technologies in Europe today.

Let's not forget interactive television - and MHP. MHP is seen as a key enabler for one of the major selling points of digital television: enhanced services. This concept has been embraced in a very innovative manner in Italy where digital terrestrial television consumer equipment is being subsidised to promote the extensive roll-out of MHP receivers. Time will tell to what extent the Italian viewing public will embrace the benefits of digital interactive television, but iTV advocates have an ideal platform there.

Finally, one of the major topics of discussion in DVB is the impact of broadband on the traditional broadcast television services. As broadband becomes a consumer commodity, the way is left open for many operators to exploit this new delivery mechanism. Facilitating this in DVB is a key requirement as we look forward, and one of the significant challenges will be to impress upon operators the benefits of standardisation, especially in a market where proprietary systems are the norm.



Peter MacAvock, Executive Director



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# A BROADBAND TAKEOVER?



Ian Childs, BBC

Over the past five years, within Europe, there has been a very significant growth in the penetration of broadband services to the home. At the beginning of 2004, some 17 million homes in Europe were connected to broadband networks, representing approximately 12% of all households. This figure is expected to approximately double over the next twelve months. The main uses of these networks at present are for high-speed internet access, gambling and online games. However, as broadband speeds increase, observers are increasingly speculating that internet delivered video and audio services, such as home movies and on-demand programmes, will begin to erode the dominance of conventional broadcast systems (television and radio).

The BBC's own experience provides some evidence to back up this viewpoint. For many years it has operated a comprehensive website for news, information and general interactive entertainment. Currently it is the most popular content site (as distinguished from portal sites such as Yahoo or Google) in Europe, and possibly the world, with in the region of one million pages of information and 500 million information requests each day. In

addition to the standard web pages, a number of video and audio streaming services are available. One recent such service is the 'Radio player', which offers audiences the chance to access programmes that have been broadcast within the previous seven days. This has proved to be an extremely popular service, giving members of the audience the chance to listen to programmes that they have missed, or that have been recommended to them by their friends. Partly as a result of these attractive services, the main capacity requirements for the BBC site are now set by streaming (approx. 2 terabyte/day), rather than conventional interactive pages (approx. 1 terabyte/day). Can conventional broadcasting respond to this challenge? The past five years have also seen a significant growth in broadcasting channels, fuelled by the launch of new digital networks. Within

on an old debate – that between network centric and storage centric computing systems. Those subscribing to the network centric view would take the line that they don't need significant amounts of video storage at home (PVR's or video recorders, for example) because they can always download the programming that they need via their high bandwidth network. And those subscribing to the storage centric view would say that they don't need a high bandwidth download connection because they can store all the programming they want on their home network. The author predicts that this debate will be one that will run and run. But are we really entering a time where broadband and broadcasting will become intense competitors, or will the true outcome be one where they actually complement each other to deliver an enhanced service to

“...will the true outcome be one where they actually complement each other to deliver an enhanced service...”

the UK, for example, just over 50% of households now have access to one or other of the main digital TV 'platforms' (satellite, terrestrial or cable). This potentially expands the number of services that are available in these households from the four or five analogue TV channels to at least thirty (for the digital terrestrial 'Freeview' system) and up to several hundred for digital satellite. At the same time as this explosion in channel choice, the new generation of personal video recorders (PVRs) is allowing easier and seamless time-shifting. To paraphrase the advertising slogan used by one provider of PVR services (BSkyB), “there is always something worth watching on the box”. And other new services waiting in the wings include better interactivity, easier recording via open standards such as TVAnytime and even new HDTV broadcasts (see DVB-SCENE Issue 10).

This competition between broadband and broadcasting is actually a new slant

audiences? Under this scenario, broadcast networks would be used for 'one-to-many' programmes (live sports events, premium drama, popular entertainment shows, etc.), with broadband being used to deliver more individually tailored material. Examples might be programmes that have not been broadcast recently (the 'deep archive') or programmes that have been broadcast but in a different region (e.g., to expatriates).

A key technology item that will be needed to underpin this new utopia, however, will be the provision of the necessary rights management framework that allows audiences everywhere to access the programming they want, when they want it, at a cost that is acceptable to them. The work currently being undertaken in the DVB study group on copy protection represents a worthwhile start to the development of this infrastructure, and it is to be hoped that it will lead on to a number of other such initiatives.

**Ian Childs is Chief Scientist at the BBC Research and Development Department at Kingswood Warren, and a Vice Chairman of the DVB Technical Module. He is also a visiting Professor at the University of Essex.**



# HDTV

## BACK TO THE FUTURE



The European HDTV renaissance is well into its first phase. Euro 1080 is already transmitting HD and much larger players such as BskyB and TPS have announced their intention to launch HD pay services over the next year or two. On the free-to-air side, French market players are discussing the possibility of digital terrestrial HD services. The BBC is already building its HD programming library. The EBU and the DVB have both been working away on more esoteric aspects like subjective picture assessment and new compression systems.

Meanwhile in Brussels, HDTV is achieving higher visibility too. The European Commission's 2003 Switchover Communication argued that there should be digital service diversity in order to maximise the market appeal. This means offering multichannel, interactive TV and high picture and audio quality in parallel, given that the different services are likely to appeal to different market segments. Better quality is not a benefit in itself, but it enhances the realism and impact of the programming.

A follow-up Commission Staff Working Paper highlights rapid take up of DVD and Home Cinema equipment.<sup>1</sup> The public is investing in increased impact and realism. New screen formats like widescreen and high definition can help differentiate digital quality from analogue. DVD has exploited widescreen for this purpose, as have a few European broadcasters. HD plays a similar differentiating role in US digital broadcasting. The Working Paper also showcased an interesting piece of economic research, arguing that new screen formats like widescreen and HD are harder to introduce. They require more intense coordination between broadcasters over a longer period of time in order to achieve a critical mass of services and receivers in homes. Without good

coordination, there is a higher risk of market failure. The document also called for cooperation across member states to overcome market fragmentation.

One possible source of fragmentation is the number of alternative technical parameters: 1080/720 lines, 50/60Hz, progressive/interlace, multiple compression systems. Almost all HD technical parameters are standardised so proprietary technologies are unlikely to cause the interoperability concerns expressed in interactive television. But if different parts of Europe introduce HD at different times, there will be differing implementations and a risk of market fragmentation. Given broad political concerns about interoperability, industry should provide an interoperability roadmap that would specify a route through all the options, in the light of players' different objectives. The Commission services plan to launch the roadmap exercise after the summer holidays.

HD is the ultimate in video and audio quality – and the ultimate differentiator from analogue TV. This time the winds are blowing fair for the successful introduction of HDTV in Europe, complementing the widescreen services already on offer. Major

players are on side. Big, flat displays are here. Consumers are ready to invest. HD programme production is a happening thing. Public policy can play a supportive role to address any well defined problems; but the market will lead. Europeans can look forward to the successful rollout of HD over the coming years.

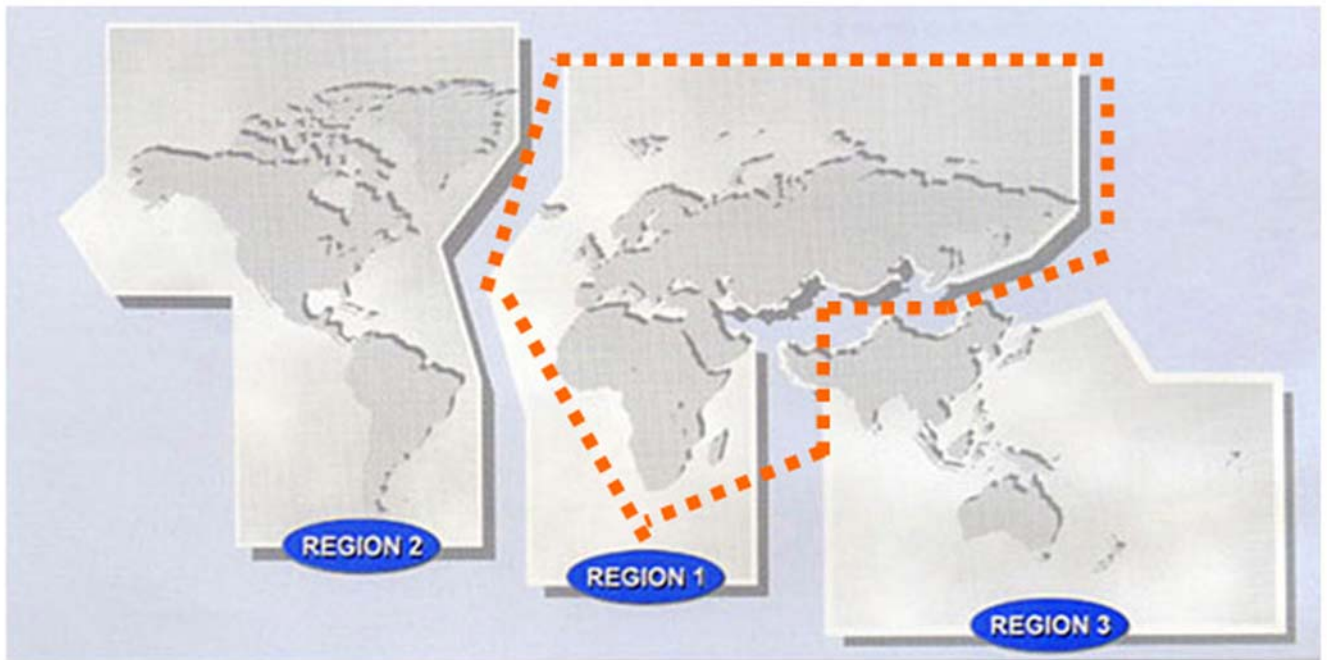


**Adam Watson Brown is Head of Sector for Media in the European Commission's Information Society department. A veteran of the EU's legendary HD-MAC strategy Adam has worked on media issues for nearly 15 years at the European Commission. He is responsible for infrastructure aspects of digital TV regulatory policy, including interoperability and switchover.**

1. Commission Staff Working Paper, The contribution of widescreen and HD to the global rollout of digital television, SEC (2004) 46 [http://europa.eu.int/information\\_society/topics/comm/shortcuts/digital\\_broadcasting/wide\\_screen\\_high\\_def/index\\_en.htm](http://europa.eu.int/information_society/topics/comm/shortcuts/digital_broadcasting/wide_screen_high_def/index_en.htm)



HD on Euro 1080



# PREPARING THE FUTURE: FREQUENCY PLANNING

Daniel Sauvet-Goichon, President of DigiTAG & DVB-TM special rapporteur on frequency planning



In Europe, more than 80,000 TV transmitters share a limited number of 49 channels in UHF frequency bands. Therefore, one must apply frequency planning rules when choosing each transmitter frequency in order to avoid interference. For example, two transmitters on the same channel must be separated by a minimal distance if they want to use the same frequency.

As interferences cross borders, such frequency planning rules must be elaborated internationally during 'Radio Conferences' held under the auspices of the ITU (International Telecommunication Union), a specialised UNO agency, located in Geneva. Those rules form the 'Final Acts' of a conference and have to be ratified by governments, being considered as international treaties. Final Acts usually contain two main parts: a plan giving frequency and other characteristics of

each transmission and modification procedures to enable the continuous update of the Plan.

In 1961, an ITU Conference (ST61) was held in Stockholm to establish a Frequency Plan for FM and TV broadcasting in Europe. ST61 procedures gave much flexibility, thus allowing important steps such as colour introduction, stereo sound and the first digital stations. But they no longer offer enough facility for the preparation of the all digital situation following switchover.

A new ITU Regional Radio Communication Conference has started, split into two sessions, May 2004 and May - June 2006. The first session ('RRC 04') has established technical basis, planning principles and frequency planning methods. The second will finalise the all digital Frequency Plan, corresponding to the digital requirements that countries will have formulated over the two sessions.

The planning area covers 120 countries in Europe, Africa and Middle East, including Iran and Russia. 800 people from 91 countries participated in the first session which achieved complete and successful results despite diverging interests amongst the regions. Indeed, European countries want to build efficient ways to manage a rather quick switchover while countries from Africa or the Middle East want to keep open the possibilities to evolve later whilst protecting their analogue situation.

The second session will last no more than five weeks but it is practically impossible to build a Frequency Plan for such a wide area within such a short time period. Therefore, a working programme for intersession work was approved with a very tight schedule. It covers three phases:

- From May 04 to February 05, ITU, with the help of EBU, will implement the necessary frequency planning software based on the EBU's long experience in planning;
- On 28 February 05, all administrations will send their requirements (coverage areas, number of channels, type of service, fixed, mobile, portable...) to the ITU. Then, in July 05, the ITU will produce a Frequency Plan based on those requirements. This Plan will be considered as a kind of training exercise as almost all administrations will probably have exceeded the capacity of the bands;
- On 31 October 05, administrations will submit their corrected and improved set of requirements. Then, in February 06, the ITU will produce the Draft Plan and administrations will have until the second session to study the results and coordinate improvements with their neighbouring countries.

The second session is intended to make the final tuning of the Plan and to approve the associated procedures which will permit a smooth evolution of TV broadcasting for the next 40 years!

# SPANISH STEPS

This summer the Maresme region of Spain's Catalonia was at the forefront of the deployment of DTTV, with the launch of the 'Maresme Digital' project. This is the first real step in the changeover from analogue to digital broadcasting with the expansion of the DTT signal to the entire area. 170,000 Maresme area homes now receive Televisió de Catalunya's four digital channels (TV3, C33/K3, 3/24 and a pilot channel plus an interactive data service).

Maresme was chosen as a pilot territory because it historically suffered poor TVI reception due mainly to the territory's complex topography. The implementation of DTT will not only improve the quality of TV picture and sound; it will permanently resolve lagging reception problems. With 'Maresme Digital' the inhabitants of Maresme will lead the change from today's analogue to the future digital system, a conversion that all Spanish homes must make before 2012, when the analogue system will no longer be operative.

'Maresme Digital' was created at the behest of the Secretary for Telecommunications and the Information Society (STSI) as a



Televisió de Catalunya's MHP Demo

decisive, practical way for the Catalan Government to promote DTTV in Catalonia. The project, supported by various departments and agencies of the Catalan Autonomous Government, involves a wide array of participants, such as TRADIA – the company in charge of broadcasting the television

signal, telecommunication installation companies, DTT receiver manufacturers, distributors and points of sale, and the Regional Board of Local Councils, which collaborates in implementation, dissemination, training and information efforts for the new digital system.

## HI-TECH TOUR DE FRANCE



Photos courtesy of ASO, photography B Bade.

During this year's Tour de France, GlobeCast deployed nine SNG trucks on location to secure live transmissions, including world feed delivery for the Tour de France organizer A.S.O. (Amaury Sport Organisation), EBU (the European Broadcasting Union), France Télévisions and Intelsat on behalf of OLN (Outdoor Life Network). GlobeCast's SNG teams mobilised at each stage of the Tour de France, providing both satellite and microwave trucks to transmit world feed footage from location to mobile studio facilities located at the finish line in Paris. Additionally, GlobeCast managed 24/7 booking and global satellite distribution to supply rights holders throughout Asia, America and Australia.

Also during the Tour de France, Satlynx, a provider of two-way satellite broadband communication services, helped make it possible for journalists to have access to broadband internet communication at every location during the race - from Liege via L'Alpe d'Huez up to the Champs - Elysées. Satlynx is a joint venture between SES GLOBAL, Gilat Satellite Networks Limited and Alcatel Space.

# BMCO

**Prof. Dr. Claus Sattler,  
Project Manager bmco**

Launched in August 2003, the Berlin based Broadcast Mobile Convergence (BMCO) project, is a joint activity of Nokia, Philips, Universal Studios Networks Germany and Vodafone. It aims to understand the technical feasibility of and business potential offered by the convergence of digital terrestrial television (DVB-T/H) and mobile communications technologies to provide interactive and TV-like services on the go and at home.

Whilst the broadcast network offers attractive media content and cost efficient transmission with high capacity for a large audience simultaneously, the mobile network provides a secure interaction channel, authorisation and billing, as well as the options for personalisation and localisation.

The BMCO project is not only a technical test bed, its tasks also include evaluation of the business perspectives and regulatory framework as well as the operation of user trials in Berlin – the world's first region to switch off analogue terrestrial TV transmissions.

Key elements in BMCO's business perspective development are the formation of the value chain for the



new broadcast mobile services and the analysis of applicable business and market models which include all potential players, e.g., broadcasters, DVB network operators, mobile operators and the content industry. Therefore, the appropriate content formats and applications most suitable for mobile reception must be confirmed, since mobile terminal characteristics and user behavior may differ significantly from that of today's stationary TV reception and associated consumer expectation.

An important part of BMCO is support for the DVB-H and IPDC

**Philips prototype portable/mobile TV/convergence device**



standardisation activities. In May 2004, in Berlin, we successfully transmitted and received the very first DVB-H streams over a public broadcast DVB-T multiplex. Together with the local broadcast operator, T-Systems, we proved that the DVB-H stream does not adversely impact the DVB-T streams in the same multiplex. Further activities target availability of multiplexes with mobile indoor coverage everywhere in Berlin.

In Germany, as well as in other countries, one of the most important challenges is to solve the question concerning availability of frequencies for setting up commercial DVB-H driven multiplexes with sufficient coverage. Presently, regulation gives priority to TV programmes over interactive IP Datacast services. The awareness of politicians and regulatory authorities, that broadcast mobile services can create a very new and vibrant market and new opportunities for the whole industry, has therefore to be increased.

The final task of the BMCO project is the operation of a user trial in Berlin, mainly for first time testing end-to-end technology and services. The trial will start in July and last about 12 weeks. For this purpose a hybrid network services platform will be used.

One terminal used in the pilot is the Nokia 7700 Media Device with a special prototype DVB-H receiver supplement. Philips is providing the second prototype terminal, this being a portable consumer device capable of receiving both the conventional DVB-T based TV programmes as well as the new DVB-H based services.

Trial participants will be able to receive a number of Mobile TV channels, e.g., an action and suspense channel (13th Street of Universal), news (N24), sports

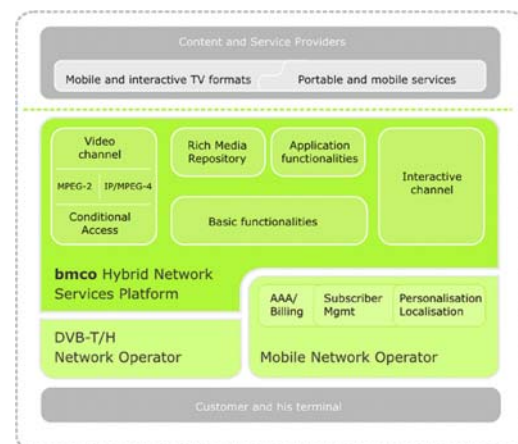
(Eurosport) and home shopping (RTL). The 'Get the clip' programme of VIVAplus is realised as an example of an interactive format, where the user will be able to set up interactions directly from the programme, e.g., by voting for the next clip.

These more TV-like services will be supplemented by attractive interactive services, for example an interactive quiz game and a Berlin city and life style guide, both implemented in cooperation with partners from Berlin.

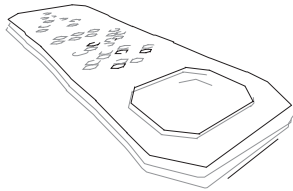
The BMCO project is funded by the Senate of Berlin and the local media regulator, MABB.

So far, the BMCO project has shown us the huge potential of broadcast mobile convergence. At the same time we have been able to identify a number of challenges still to be solved before a mass market can be created. With this new knowledge base we continue working with our partners from politics and industry.

**Prof. Dr. Claus Sattler studied Computer Sciences in Moscow. He worked 17 years in a scientific institute developing OSI network software. Since May 2003 he has worked as the 'bmco – Broadcast Mobile Convergence' project manager in Berlin.**







# THE ITALIAN JOB

Marco Pellegrinato



Digital terrestrial television (DTTV) in Italy was officially launched in December 2003 and was capable of reaching 50% (about 30 million viewers) of the country's population. Within a few short months coverage rose to 80%.

From the outset Italian free-to-air broadcasters started to evaluate the offerings of interactive services. DVB-MHP standard was considered as the natural candidate in a free to air horizontal market scenario. A selection of MHP interactive services was specifically developed by the operators for the launch DTTV. Most of these interactive services included branded portals and TV navigators, interactive advertising, voting and content related to existing TV programmes and news bulletins, sports, game shows as well as non-content related services such as super Teletext or traffic reports.

The Italian DTTV market is a complex one with many companies participating in delivering digital offerings. In January 2004, RAI, Mediaset, TV Internazionale (Telecom Italia) and Fondazione Ugo Bordoni (a research arm of the Communication Ministry) set up the Italian Digital Terrestrial Television Group (DGTVi) to promote

the rollout of DTTV services across Italy. DGTVi initiatives to date include making the digital terrestrial platform more competitive, appealing and successful in relation to other digital delivery systems: satellite, cable and broadband. The group also works to extend the functionality of set-tops to enable viewers to easily navigate the new digital services.

The digital terrestrial experience in Italy is running fast and this is partly due to the subsidy that consumers receive from the government when they purchase an interactive DTTV receiver. To date 325 thousand set-top boxes have been sold.

Italy's operators are also fully committed to speed up the increase of their networks' coverage with a switchover target of the end of 2006. Broadcasters are preparing new channels and programmes specifically for digital terrestrial delivery.

Service providers are presently evaluating appealing new interactive services. Producers are looking at extending content related interactive services to boost the user experience by offering opportunities for viewers to play along with TV programmes such as 'Interactive Millionaire' and 'I want to be a Millionaire' launched on the Mediaset DTTV channel last June.

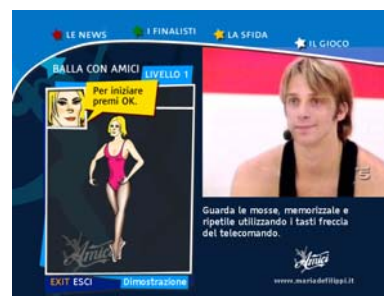
The most recent and relevant news in the DTT scenario is the Mediaset announcement of the launch of pay-per-view (PPV) services in February 2005. Plans for the PPV services include offering viewers the opportunity to watch major Italian



football championship matches. The offerings will include a subscription to all matches of the viewers choice of football teams or alternatively Impulse PPV where viewers can pay to watch a single event.

The introduction of PPV services on digital terrestrial represent a meaningful breakthrough towards the creation of an effective convergence model for vertical and horizontal content delivery systems, enhancing the competition between terrestrial, satellite and cable operators and enriching the premium content offerings at a lower price.

**Marco Pellegrinato is Deputy Director of Research & Engineering at Videotime, the TV facilities company of the Mediaset Group.**



Adriana Mattei, Business Development Manager, NTL's Broadcast division.



# IP DATACASTING GETS PERSONAL



NTL's long-term datacasting trial in and around Cambridge (UK) uses a variety of converging technologies to achieve multimedia delivery of IP-based video, audio, data and interactive applications.

Traditionally, analogue television and radio services have utilised terrestrial broadcast transmissions to deliver TV and radio content to consumers. The digitisation of these services now provides the means through which new and innovative IP-based services could be delivered to future audiences. In addition, the advent of high efficiency video encoding systems and the adoption of IP as a standard means of transporting information have given rise to a wealth of potential future multimedia services which could be provided to consumers over a host of delivery mechanisms.

The Cambridge trial, in conjunction with Microsoft, started with this vision over a year ago. It includes the participation of the TV, Radio and IT industry and acts as a showcase for many aspects of the IP-based services that are emerging as the IT, broadcast and telecommunications worlds converge. The trial system comprises a dedicated head-end to repurpose multimedia content, targeting different networks to deliver content to a range of different receiving devices. Windows Media Version 9 (WM9) is used to provide efficient compression of the video and audio content. WM9's Digital Rights Management system is used to provide an efficient and cost effective way to secure the content across all devices.

In the trial, DVB-T is used as the broadcast transmission medium to

deliver content to a fixed domestic set-top box (STB) or media enabled PC. Mobile and portable devices which have larger battery capacity (such as vehicle receivers and laptop PCs) can also receive directly from this source. The content in this case is encoded at either standard resolution (around 2 Mbps) or high resolution (at 8 Mbps). Content encoded at low resolution (120 kbps) is transmitted via DAB. Due to its lower bit rates, DAB consumes less power than DVB-T and hence is suitable for reception by battery powered handheld devices such as Personal Digital Assistants (PDAs). DVB-H could also be utilised for this purpose, but the specification was not sufficiently advanced when the trial began.

GPRS mobile phone technology provides a return channel for interactive applications and a means of getting personalised content to the mobile or portable receiving device. WiFi is used to share the content between different types of devices within the household, e.g., from the STB to the PDA or the car. The use of these varied technologies in cooperative hybrid networks allows a greater degree of personalisation and interactivity than is possible today with the more traditional broadcast services, enabling consumption of content on the move, as well as at home.

With the emergence of WLAN and Piconet technologies, broadcast has a big part to play in the 'push' of content onto these networks. Trials such as this show that the technology itself is not the issue; it is more a question of creating sustainable product propositions leveraging off commercial partnerships, and addressing regulatory matters.



In My Opinion - Junko Yoshida

# WANTED: AMERICAN INGENUITY



**Junko Yoshida is European Bureau Chief for Electronic Engineering Times ([www.eet.com](http://www.eet.com)), a New York-based weekly newspaper (circulation: 165,000). Prior to moving to Paris, she was West Coast Bureau Chief of E.E.Times for nine years. She also worked in the Tokyo Bureau of E.E.Times before transferring to Silicon Valley. She covers technology and business issues on consumer electronics and communications.**

Paris – Mobile phones with a camera. Mobile phones with a radio. Mobile phones with a TV. The Swiss Army knife approach to portable electronic gadgets is seemingly irresistible to many consumers, especially in Asia and Europe. Americans, however – perhaps because too many heavily marketed add-ons are difficult to access – are understandably wary of the feature intensive mobile phone.

This makes 'TV on a mobile handset' a tough sell in the USA. Right now, American skepticism – among industry analysts, media and consumers – is overwhelming. Every time when I broach the subject, the inevitable question is: "Why would anyone want to watch a TV on his cell phone?"

Maybe it's the Vietnam syndrome. Why would anyone want to fight a land war in Asia?

Seriously though, mobile TV doubters are not just questioning the practicality of TV on a cell phone, but also implying that the lowbrow fare available on television is a waste of time, money and precious battery life.

Having lived in the United States for almost ten years before moving to Europe, I'm familiar with the 'TV snob' syndrome. Although they're a little ashamed of themselves, Americans spend more time watching TV than any other nation. But they do it at home, behind closed doors. Doing it in public, on a mobile phone, would expose their naughty little secret. If the Beatles released 'Why Don't We Do It in the Road?' today, it might be a song about watching soap operas during a traffic jam.

Nevertheless, the argument that will eventually win Americans over to mobile TV is one word: News.

Take 9/11. The invasion of Iraq. The Columbine killings. The Oklahoma City bombing. The O.J. Simpson trial. The siege at Waco, Texas. Ronald Reagan's week-long funeral.

All of these extraordinary events glued Americans to the TV. If they had had TV on their mobile phones, Americans would've been glued to their mobiles, or someone else's mobile. And they would have been grateful for the technology.

Considering screen size and battery life, it's unlikely that people will seriously consider watching a movie, or even a soap, on the phone. But breaking news, touchdown replays, court verdicts, or even a peek at the annual Victoria's Secret fashion show – all these uses are a perfect marriage of TV and mobile phone technology.

In sum, the market is there. The technology, however, is here, in Europe, in the form of DVB-H. During a speech at the DVB World 2004 conference in

Dublin this year, explaining the motivation behind DVB-H development, Jukka Henriksson, chairman of the DVB-H project, put it simply: "TV is the biggest medium, and the last one missing from mobile phones."

In Europe, DVB-H is gravitating inexorably into mobile phones. In

**"...mobile TV doubters are not just questioning the practicality of TV on a cell phone, but also implying that the lowbrow fare available on television is a waste of time, money and precious battery life."**

America, right now, there is no mobile spec equivalent to DVB-H.

Technically speaking, because of the flexible network infrastructure designs allowed in DVB-H, it's possible to multiplex DVB-H services in an existing terrestrial digital TV network based on DVB-T. Or launch DVB-H services, even in the United States, on a newly dedicated DVB-H network, independent of a terrestrial digital TV network.

Chris Carter, marketing manager of satellite and terrestrial business in the set-top division at STMicroelectronics, has said, "Nothing stops US operators from embracing DVB-H."

Nothing, perhaps, but a lack of imagination in a country known the world over for 'good old American ingenuity'.

# MORE CONTENT PROTECTION

Chris Hibbert, Chair DVB Copy Protection Tehnologies Group.

Giles Godart-Brown, Chairman DVB Copy Protection Commercial Group

This is the second in a series of articles on the work in DVB towards a specification for Content Protection and Copy Management. This article addresses the issues related to compliance and interoperability currently under consideration.

The secure implementation of DVB-CPCM will be dependant on the establishment of a robust compliance and interoperability regime.

A typical set of compliance rules for DVB CPCM would address the following:

- Definition of 'defined terms'. These are terms that have a particular meaning in the document.
- Usage rules compliance. This covers behavior of devices in accordance with Usage State Instructions.
- Authorised Domain security management. Here the obligations on the handling and use of device keys, content keys and digital certificates will be laid out.
- Revocation. Ensuring the integrity of the system can be maintained by revoking access to identified content or services.

**"...outside of the realm of access control mechanisms the situation becomes complicated."**

- Permitted interfaces with 'other' accordant content protection systems. This is a section that will be updated as new technologies and trust authorities emerge. This is vital if interoperability is to be achieved.
- Intra and inter-Authorised Domain content flow. Products in a consumer's home might require different rules for content flow within the local environment than for mobile or remotely located products.

Accompanying the compliance rules will be the robustness rules that address how resistant a device or system should be to circumvention. Elements of the robustness rules address construction, protecting secret and confidential



information such as keys, protection of internal data paths since manufacturers cannot rely on sealed boxes, and anti-circumvention requirements that prevent features such as secret menus that disable protection.

Most of the currently available (proprietary) content protection regimes rely on the use of encryption and keys for additional security over and above the rules of compliance associated with the attendant usage signals. The encryption keys and associated technology are licensed from the technology owner to the content owner for application to the content. Also manufacturers of

intellectual property above and beyond the keys themselves. Second, the 'hook-IP' provides an important means of enforcement against unlicensed third parties that may seek to access the encrypted content without authorisation.

Public Service broadcasting in Europe is typically transmitted in the clear. As a result, no authorisation (either technical or legal, other than, in some cases, the payment of a licence fee) is required in order to receive the signal. Because the broadcast signal is received in the clear (e.g., by digital television sets), there is no authorisation 'hook' for imposing conditions on such devices as to how they must handle or protect the content

consumer products (whether CE or IT) that wish their products to access the encrypted content must obtain a license to the decryption keys in order to legitimately descramble the content.

Enforcement against unauthorised decryption of the content by unlicensed third parties is often secured as follows:

- First, to the extent that such unauthorised access infringes upon patent rights owned by the technology owner/licensor, a patent infringement action may be brought against such unlicensed third party. Such patent rights are often referred to as 'hook-IP'.
- Second, in some cases, actions may be brought under the relevant anti-circumvention provisions of the Copyright Directive in the EU and the Digital Millennium Copyright Act in the US.

The central role that 'hook-IP' plays in these content protection structures and licensing regimes is two-fold. First, it forms the basis on which to build the licensing structure. A contractual license enjoys a stronger foundation if it involves some form of proprietary

contained in the signal. Once we move outside of the realm of access control mechanisms the situation becomes complicated.

Free-to-air broadcasters, who have no access control, are now facing some of the same threats as operators who can rely on access control. For example, mass redistribution of content outside of the broadcast footprint.

The challenge facing DVB is to adopt a mechanism of compliance that can be applied to these cases without the keystone of the licenses associated with the access control mechanism. In completing its study of the necessary administration of DVB-CPCM, CM-CP and IPRM need to address these issues that are to a certain extent new in the DVB experience. CPCM adoption will require compliance and administration to ensure interoperability and faithful implementation of the specification, including in particular compliance to the protection requirements.

Note: This is an abridged version of the full article that is available on the [dvb.org](http://dvb.org) website



Spider-man 2, © Sony Pictures

# MARKET WATCH

## Advantech AMT 70



The satellite and terrestrial wireless communication equipment manufacturer **Advantech AMT**, has announced the launch of its DVB-S2 compliant products, which will be available from Q4 2004. According to the company these products provide the most efficient satellite communication solutions available for commercial use, which will set the pace for many years to come, reducing costs and improving resilience to reception errors.

Advantech AMT has extended its successful AMT-70 satellite modem range, which already supports the DVB-S and DVB-DSNG standards, to include DVB-S2 compliance, launching the AMT-75 modem, SBM-75 modulator and SBR-75 receiver.

**JVC** is offering the latest in its D-ILA projector product family with the DLA HD2KE. The DLA HD2KE HD Projection System, uses totally new HD D-ILA chips, for achieving the look, feel and resolution of film. The two part system comprises a projector head containing three native 1920 x 1080, true HD resolution chips and a digital video processor and up-converter. Ideal for critical viewing venues and applications, such as post production units for screening rooms and for colour grading of 'digital intermediates', high-end home cinema, life size CAD design and 3-D graphics and walk-throughs.

## JVC DLA HD2KE HD Projection System



## Scopus Integrated Receiver Decoder

To enable broadcasters to exploit the new available satellite bandwidth provided by DVB-S2, **Scopus Network Technologies** has introduced a line of DVB-S2 compliant professional Integrated Receiver Decoders. The new IRDs offer backward compatibility and interoperate with other technologies. The decoders offer broadcasters increased programming capacity and enhanced geographical coverage.

## Scientific-Atlanta D9050



**Scientific-Atlanta** is now offering in Europe its D9050 HD encoder for contribution and distribution, which supports advanced video encoding technologies including its PreSightPlus dual pass technology for both HD/HD statistical multiplexing as well as HD and SD combined.

The new iLynx gigabit ethernet module optimises use of precious backbone capacity for transporting high amounts of video between servers as well as offering a CMTS backhaul solution.

The ROSA Element Manager offers broadcasters and network operators cost efficient monitoring of remote sites enabling the execution of multi-vendor strategies for transmitters, modulators, processing and monitoring equipment without the need of multiple management systems.

**EchoStar** has now launched its free-to-air T-222 FTA Plus set-top box in continental Europe. The T-222 FTA Plus enhances current TV viewing with a Multilingual User Interface (5 Languages), 14 Day EPG, 6 Timers, a Sleep Timer, an Embedded Teletext Decoder and Easy Installation menus. EchoStar also offer the T-232 FTA for connecting more than one TV set or connecting the receiver to a HiFi amplifier for better sound. The unit comes with a 12/24 V power connection and 230 V AC mains adapter.

EchoStar has also announced the arrival of its new EchoNAV Xpress software that gives its receivers an even more modern look, powerful hardware design, intuitive user interface, stylish remote control unit and all the connections needed for television viewing.



## EchoStar T-222 FTA Plus

**Fraunhofer IIS** is offering a free MPEG-4 AV evaluation software download. The demo software includes tools for encoding, decoding, and ISMA 2.0 compliant streaming of MPEG-4 AVC and MPEG-4 HE-AAC content.

In addition the company has introduced 'DSL-TV' - an integrated combination of MPEG-4 AVC with an revolutionary surround enhancement to MPEG-4 HE-AAC (HE-AAC Surround) which enables high quality 5.1 channel sound down to 48 kb/s. This allows real-time video-on-demand services with surround sound at 500 kb/s total. Over and above the HE-AAC Surround codec enables multichannel audio for almost any kind of radio broadcasting system while maintaining fully backward compatibility to stereo environments.

## Fraunhofer IIS DSL-TV





### Tandberg ICE

**Tandberg Television** has launched a High Definition version of its Intelligent Compression Engine (ICE) for MPEG-4 part-10/AVC and Windows Media 9 Series. ICE is a powerful and sophisticated video and audio compression platform that provides a flexible and upgradeable solution for high quality implementations of Windows Media 9 Series Advanced Profile and MPEG-4 part 10 (H.264/AVC) technologies.



### Harmonic DiviCom Ion

**Harmonic** has introduced the single rack unit DiviCom Ion multichannel MPEG-2 encoder. Ion's modular architecture can be configured with up to four high quality constant bit-rate (CBR) encoders and ten stereo audio pairs. Ion accepts both analogue and digital inputs and offers IP and ASI outputs, allowing the system to fit seamlessly into virtually any operating environment. Ion's native IP architecture brings key benefits – including greater scalability and reduced costs – which are essential for the next generation of IP-based video services.

**Harris Corporation** has introduced its latest DVB-T transmitter, the new Atlas DTV660L. The Atlas DTV660L DVB-T transmitter combines reliable, liquid-cooled amplifier technology with Harris' flexible exciter that features an optional integrated, uninterruptible power supply; Ethernet-based, remote control interface; and full DVB-T hierarchical modulation functionality. The DTV660L has a wide range of redundancy solutions including a dual drive, 1+1 and N+1, as well as a power range stretching from UHF 1.7kw to 3.4kw in one rack. Additional benefits include its easy remote control and management system using WebRemote technology, which enables full control and supervision of a transmitter using just a standard web browser with no extra costs for further software.

### Harris Corporation Atlas DVB-T Transmitter



**TeamCast** is now offering its Modulcast family of modulators, professional receivers, up-converters and synthesizers.

The new UPC-1000 is a high performance UHF / VHF up-converter and when coupled with the MOD-1000 DVB-T / DVB-H modulator it provides a high-performance RF modulator that fulfils all the requirements of a DTTV transmission system, including the constrained frequency stability needed for SFN operation and the digital pre-corrections frequently needed to comply with the spectrum masks. UPC-1000 benefits from an integrated tracking filter and a high quality synthesizer to implement a broadband frequency transposition, producing an accurate analogue signal ready for amplification. SYN-1000 is a general purpose high performance UHF / VHF synthesizer offering low phase noise figures with a one hertz resolution and high stability for piloting a high quality analogue TV



### Teamcast DVB-T/DVB-H Modulator

transmitter as well as a DTV transmitter. The SYN-1000 can be easily customised to fulfil specific requirements.

RXT-1000 is a compact, low cost DVB-T professional receiver designed to operate in difficult reception environments. RXT-1000 benefits from the spatial diversity provided by its two demodulators coupled with two independent antennas, to provide reliable reception even in the worst RF situations experienced at transmission sites, ENG vehicles or mobile applications.

MOD-1000 is a low cost, high performance DVB-T / DVB-H modulator with all the technical features and performance of a high-end product, encompassing hierarchical modulation, high MER value, DVB-H compatibility and digital pre-correction.

**Espial Group** has released a new application suite for DTV, Espial Evo. Evo is a complete set of DTV applications including On-Screen Display, EPG and a Viewer for

### Espial Evo



CableCard content. Notably different is Evo applications' skin-ability, providing customisation of the application UI using HTML Web design tools all achieved with a small memory footprint (125K). Evo's architecture allows for the easy addition of new applications, unmatched scalability and portability across consumer electronics devices.

**Latens** has introduced its next generation Conditional Access content security that uses new IT security techniques, which protect revenues and services using Secure Software Modules that are monitored and updated through the network. The chief benefits of Latens' solutions include huge cost-savings, increased business flexibility and enhanced security. The company is also offering an innovative content protection systems for advanced IPTV delivery.

### Philips HD STB

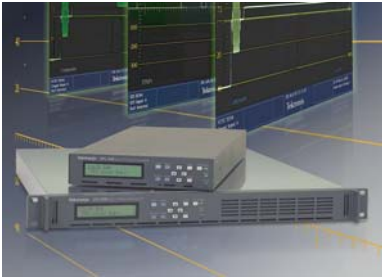


**Philips** has released a DVB-T High Definition set-top box in Australia. Features of the HD-STB include: a universal remote that controls both the STB and most major brands of TVs. As well as native HD formats, the Philips HD-STB also includes 1250 line outputs of 1152i and 1080i(1250). When the STB is set to 1250 line mode, it re-samples 720p@50Hz transmissions to 1152i@50Hz and 1080i@50Hz transmissions are letterboxed within 1250 lines commonly called 1080i(1250).

**Thales Broadcast & Multimedia** is now offering the Affinity low power UHF DVB-T Digital TV transmitter and OPAL IP encapsulator now available in a version dedicated to DVB-H networks.

### Thales Affinity Transmitter

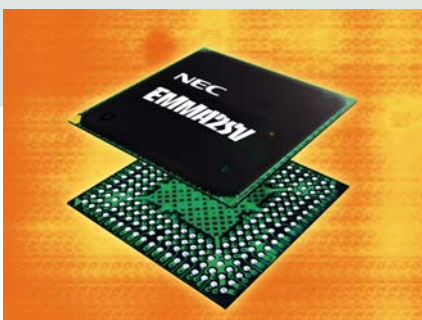




### Tektronix Sync Pulse Generators

**Tektronix** has introduced the SPG600 and SPG300 Sync Pulse Generators for providing synchronisation and test signals for both traditional analogue and mixed digital and analogue facilities, in both NTSC/525 and PAL/625 environments. These compact products are ideal as a stable master sync signal, which is critical in digital broadcast environments. When the SPG600/SPG300 is configured for Stay GenLock mode, a momentary loss of synchronisation at the genlock reference input will not cause a disturbance in the units test signal and black outputs. When the genlock signal is reapplied the SPG system will gradually reacquire lock, causing little disruption in the outputs of the device, and will not cause any noticeable glitches in the outputs of the SPG.

**NEC Electronics** is expanding its range of back-end processors, with a range of devices already in deployment across the digital TV spectrum. Its EMMA2SV processes both digital and digitised analogue signals allowing the development of low cost unified TV chassis. It also boasts over 300MIPS processing power allowing presentation engines like MHEG & MHP to run faster and more smoothly. To support UK DTT standards, EMMA2SV can decode and output dual MPEG audio streams allowing on-chip support for Audio Descriptor. The processor has built-in support for flat panel displays.



### NEC Electronics EMMA2SV Processor

**Rohde & Schwarz** has expanded its DVM family with a favourably priced solution for monitoring and analysing MPEG-2 transport streams. The DVM50 is designed for monitoring one or two transport streams and provides the full functionality of the higher capacity DVM100, offering cost conscious users a viable alternative.

The new Vector Network Analyzer ZVB from Rohde & Schwarz has been designed for universal measurements on multiports and balanced DUTs. Featuring comprehensive measurement functions, outstanding specifications, high measurement and data transfer speed plus various remote control



### R & S DVM50

capabilities. The compact instrument weighs less than 20 kg and is 44 cm x 23 cm x 35 cm in size.

The new high end model FSU50 complements its Spectrum Analyzer Family. The FSU50 has a frequency range from 20 Hz to 50 GHz and is suited for a wide range of applications such as microwave, space travel and military applications. The FSU50 exhibits a low displayed average noise level of -118 dBm at 10 Hz bandwidth, and thus features the widest dynamic range currently available. It offers an extensive scope of filter types with resolution bandwidths of up to 50 MHz and comprehensive measurement functions for precise power measurements even of wideband signals.



### Pace HD STB

**Pace Micro Technology** has unveiled its range of HDTV cable and satellite boxes that will enable operators to differentiate their service offerings from competing platforms and generate revenues from premium HDTV channels. The Pace DC550 HD digital set-top box has powerful scaling ability allowing both Standard Definition and High Definition programme content to be automatically scaled and scan rates changed to ensure the user sees a picture the way they want to watch it, avoiding bars around the picture. The Pace DC550 HD digital set-top box also scales video to the upper right corner of the programme guide for both SD and HD video content. The Pace DC550 HD is an ENERGY STAR compliant HD set-top box.

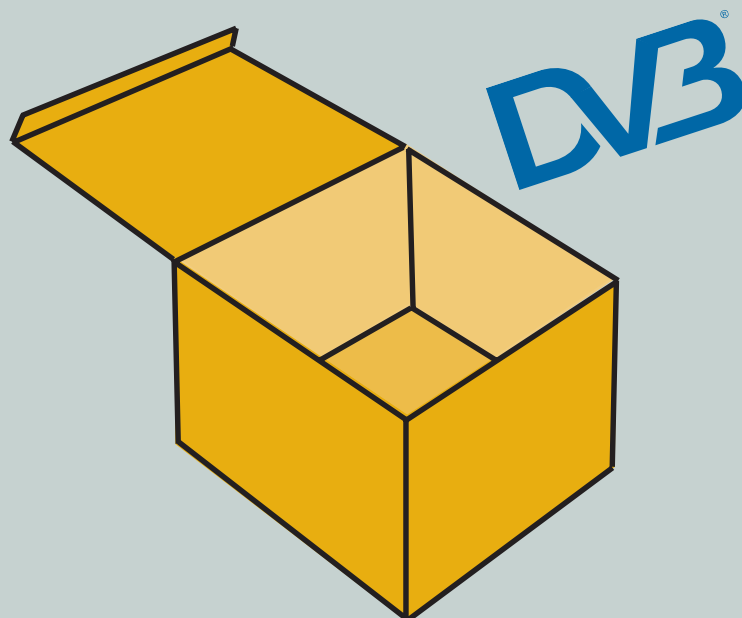
**Pro Television** has introduced the MIP Inserter PT 5879, a purpose built device for inserting MIP information into a transport stream in accordance with the TS 101 191 standard. The PT 5879 is a central building block in the implementation of a SFN network for DVB-T transmission. The information inserted into the transport stream by the PT 5879 MIP Inserter can also be used to control the transmitter sites in Multi Frequency Networks (MFN) – thereby making the PT 5879 MIP Inserter an ideal device for controlling the transmitter sites in both SFN/MFN networks (mode control by MIP in MFN mode requires that the modulator supports this function).



### Pro Television MIP Inserter

# DVB WORLD 2005

## ‘Thinking Outside The Box’



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For further information visit the DVB & IAB  
websites: [www.dvb.org](http://www.dvb.org) – [www.iab.ch](http://www.iab.ch)

