

IBC2002

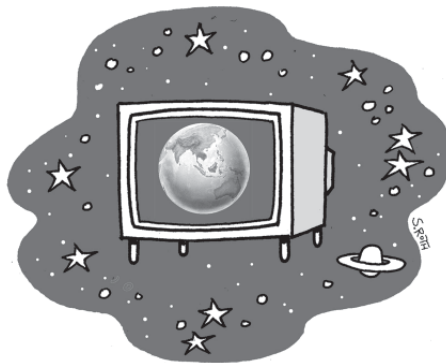
The broadband challenge to broadcasting in association with BWA

In this presentation Steven Lowe, of the Broadband Wireless Association UK, stated that the world of fixed wireless has moved on since 2001 with consolidation of standards, harmonisation of regulation and growing synergy between the user and operator needs and the equipment manufacturer offerings. Mr Lowe stated that the average household will need about 15 to 25 Mbps (to make use of the growing number of digital services available). By the end of 2001, 8.4 per cent of the world's population (513 million) were online. The North American figures for the same period were 57.1 per cent (180 million). There are a number of platforms and technologies that can deliver digital services such as cable modems, xDSL, GEO, DTTB, broadband cable, LEOs and HEOs.* However, interference concerns now exist for WLAN (Radio LAN 802.11b) cards in the licence-free ISM 2.4 and 5.2 GHz due to growing popularity.

In synergy with the issue of broadband, the keynote address by Will Poole, Corporate Vice President, New Media Platforms Division, Microsoft Corporation, USA, introduced Microsoft's new Windows Media Audio and Video 9 Series data compression technology. This delivers, 'unmatched audio and video quality at any bit rate, with features designed to provide superior quality at dial-up rates

**See glossary, page 21 for an explanation of these and other acronyms and terms used in this article*

and home-theatre-like experiences over broadband connections or for download-and-play'. Windows Media 9 Series is claimed to deliver (in a given channel) twice the bit rate of MPEG-4 and three times that of MPEG-2. About 300 to 700 kbps will achieve VHS video quality,



whilst 5 to 8 Mbps will achieve high definition. It was also stated that chipsets for set top boxes were being manufactured by Equator, ST Microsystems and Texas Instruments.

The interactive consumer

On the interactivity front this session, chaired by Martin Hayward from the Henley Centre UK, introduced the concept that interactivity on free-to-air is more about enhancing existing television programs and that generally, through television programs, broadcasters can introduce a topic or a product and then refer to the internet for more detailed

This year's IBC2002 conference themes can broadly be classified into broadband, interactivity, system design and propagation, content issues and management and digital radio.



Jonquil Ritter, ABA Director Planning and Licensing, and Fred Gengaroli, Director Engineering and Technology, attended the conference in Amsterdam from 12-17 September.



Here is their outline of some of the highlights of the conference.

information. He also suggested that the viewers' mode of obtaining information through the television medium will need to change from 'push to pull' as there is increasingly more information available but less time to absorb it.

Interactive enablers

From the technical viewpoint, this session, chaired by Richard Cooper from the BBC, highlighted the problem for interactive television (ITV) development tools whereby several middleware systems are used in each country. Ideally there would need to be one common authoring language across the various middleware systems.

Recent Improvements in DVB-T front-to-end systems

This session, by Philips Semiconductors UK, introduced a number of improvements in DVB-T demodulation which unfortunately cannot be experienced by most UK viewers. The cause of this problem is attributable to a combination of set top box legacy problems in the UK and poor immunity of early-generation set top boxes to impulse noise). The presentation highlighted the major digital terrestrial transmission receiver (set top box) improvements that are now possible largely due to enhancements in demodulator IC design. These include improvements in:

- rejection of adjacent channel interference (ACI) as a result of improvements in modern semiconductor filters



- pre-echo performance¹
- diversity, as applied to digital terrestrial transmission² and
- significant improvements in set top box immunity to impulsive interference.³

In the UK the coverage of digital terrestrial transmission has not reached an acceptable level across the six multiplexers that would allow the switch-off of the analog system. Some multiplexers are only receivable by 60 per cent of the population and there is no further spectrum available to augment the coverage.⁴

Satire: Transponder technology for digital terrestrial television networks

This session by Crown Castle introduced translators capable of performing either frequency translation or amplification of a signal whilst retaining its original frequency (in-band repeater). These transponders are cryogenically cooled to a temperature of 80K (similar to low noise

amplifiers (LNA) used for satellite signal reception) so that the noise figure is kept at a very low 0.5 dB, enabling the transponder to amplify low field strength input signals without introducing additional (thermal) noise. It was stated that the use of these transponders will help facilitate the extension of the UK digital terrestrial transmission coverage.

DVB-RCT: The missing link for DVB-T
Presented by Gerard Faria from Harris Broadcast Europe, this session highlighted



that DVB endorsed the DVB-RCT specification in April 2001, the ETSI (European Telecom Standard Institute) ratified and published it in March 2002 as the EN 301 958 v1.1.1 (2002-03) and the International Telecommunications Union (ITU-R) recommended the DVB-RCT system as 'the preferred wireless return path' for the DVB-T digital terrestrial television. The presentation also reported on the major results obtained in the field by the DVB-RCT European Community-funded WITNESS project, as well as informing the broadcaster community on the near reality of DVB-RCT systems and Regulating bodies that the emerging DVB-RCT will soon require spectrum licences in the VHF/UHF bands.⁵

⁵ Gerard Faria will be a speaker at the ABA 2003 Conference, 6-7 May.

Personal digital recorders – making viewing schedule independent

Presented by Paul Bristow of Philips, this session introduced some of the major facilities that could be made available to viewers through personal digital recorders if the appropriate information (called metadata) is included in the programs being received. The personal digital recorder is capable of greatly simplifying the recording of programs provided the programs carry sufficient information about them. If this condition were met, viewers would then be able to simply instruct the personal digital recorder to record a particular genre of programs (sport, music, lifestyle) or all programs with a particular actor and so on. The personal digital recorder would even be capable of following program time-changes to ensure recordings take place at the actual time of transmission, which in many cases differs from the scheduled time.

Some broadcasters appear to have some concern that the transmission of the required metadata could also be used by viewers to control the personal digital recorder in such a way as to skip the recording of advertisements. Paul Bristow stated that this is not the case and that broadcasters through the metadata would in fact have control of the personal digital recorder's recording behaviour to the point of ensuring that the advertisements immediately preceding and following a program, as well as all the ones within the program, would be recorded. Of course viewers would ultimately have the choice to fast-forward the advertisements (as can be done now with VCRs) and couldn't be forced to watch them!⁶

⁶ The use of metadata in Australia could be a very important factor in the take-up of digital television. The recording facilities provided by PDRs in conjunction with the transmission of program metadata may provide a big incentive for the public in the adoption of digital television technology.

¹ If there is a lot of attenuation in the direct signal path an echo may be stronger and look like the 'main' signal. If the demodulator in the STB always locks to the strongest signal this may undermine the guard interval principle and system performance will rapidly deteriorate.

² Dual antennas and dual tuners in the STB. Selection of the best signal is then made and the best available signal forwarded for processing to the audio and video decoding stages.

³ Generated by electrical noise, switches, motor vehicle ignition systems and results in temporary loss of signal and picture freeze.

⁴ On 20 September 2002 the ITC announced that broadcasters in the UK were allowed to transmit digital television using the 16QAM DVB-T mode instead of the 64QAM mode (as used in Australia). This will allow greater coverage due to the more robust transmission mode, at the expense of data throughput loss of about 25 percent, from 24 to 18 Mbps.

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Here come the DAB receivers – see them, touch them, feel them

At recent IBC conferences, particularly in the past two years, most of the interest and the hype was directed to (or attracted by) digital television. At this year's IBC there was a definite increase in interest and activity on the digital radio front. The discussion on digital radio technology has largely shifted to availability and cost of receivers and to applications, including convergence of applications.

At this session, Blaupunkt showcased its Woodstock DAB 52 and 53 receivers. One feature of digital radio is the ability to record the received material which allows the user to re-listen to the required information. This is generally referred to as 'Rewind Radio'. The recommended retail price for the Woodstock receivers is expected to be approximately \approx 529 without the recording capability and \approx 579 with it. It is hoped that in the order of hundred of thousands will be sold in Europe next year.

Panasonic talked about the role of GSM in future digital audio broadcasting value-added receivers. The radio section of the phone would be constantly gathering information for the user (using UMTS), making broadcasting plus cellular wireless the ultimate combination. The navigation/telematics area of services will provide maps (already downloaded) icons (used for easy identification of entities) and information on the latest local traffic.⁷

⁷Simply defined, Telematics is in-vehicle communications. More specifically, Telematics is the vehicle's capability to communicate with the outside world. It combines wireless voice and data services with Global Positioning System (GPS) technology to provide specific location services like vehicle navigation, tracking, and emergency services.

GLOSSARY OF COMMONLY USED TERMS

80K	80 Kelvin (corresponding to approx. -193 degrees Celsius)
ADSL	asymmetric digital subscriber line
AM	amplitude modulation
API	application programming interface
COFDM	coded orthogonal frequency division multiplex
DAB	digital audio broadcasting
dB	decibel
DigiTAG	Digital Terrestrial Television Action Group
DTT	digital terrestrial transmission
DTTB	digital terrestrial television broadcasting
DTV	digital television
DVB-MHP	digital video broadcasting – multimedia home platform
DVB-RCT	digital video broadcasting – return channel terrestrial
DVB-T	digital video broadcasting – terrestrial
EPG	electronic program guide
GEO	geosynchronous earth orbit
GHz	giga hertz (1000 MHz)
GPRS	GSM packet radio service (internet protocol capability on GSM)
GSM	global system for mobile communications
HAVi	home audio/video interoperability
HDTV	high definition television
HEO	high elliptical orbit
ISDB	integrated services digital broadcasting
ISM	industrial scientific and medical
kbit/s	kilo bits per second (aka kbps)
kHz	kilo hertz (1000 Hz)
LNA	low noise amplifiers
LEO	low earth orbit
MB	mega byte
MCP	multimedia car platform
MHEG	Multimedia and Hypermedia Information Coding Experts Group
MHz	mega hertz (1000 KHz)
MPEG	Motion Picture Experts Group
PDR	personal digital recorder
SFN	single frequency network
STB	set top box
UHF	ultra high frequency (300-3000 MHz)
UMTS	universal mobile telecommunications system
VCR	video cassette recorder
VHF	very high frequency (30-300 MHz)
WLAN	wireless local area network

