



EBU Village at IBC '98

Amsterdam, 11-15 September 1998

The EBU Village at IBC '98 was nicely located along the rear wall of Exhibition Hall 10 of the RAI Conference Centre in Amsterdam. Two large pennants suspended above the stand drew attention to its presence and, at least during the build-up days, they caused consternation and comment by fluttering alarmingly in the breeze blowing through the hall.



Participating in Village life this year were *Eurovision*, the ACTS OCTALIS Project, an audio Webcasting demonstration, DigiTAG and the joint EBU/SMPTE *Task Force for Harmonized Standards for the Exchange of Programme Material as Bitstreams*.

Eurovision's big news was that it had just become a completely digital satellite service with a greatly increased capacity to do business across the length and breadth of the European Broadcasting Area. This news was well in harmony with the overriding theme of IBC '98 which could be summed up as "do it digitally or die".

On the night of 24 August 1998, and after months of careful planning and extremely hard work, analogue television was finally laid to rest on *Eurovision's* permanently-leased capacity on the Eutelsat II Flight 4 satellite at 7° E. In its place came a brand-new digital transmission system which employs MPEG-2 4:2:2 P@ML compression (yes, "PAL" was a nice acronym). The upshot of this is that *Eurovision* can now transport a total of twenty television channels in the same satellite bandwidth as it originally used to carry six analogue TV channels.

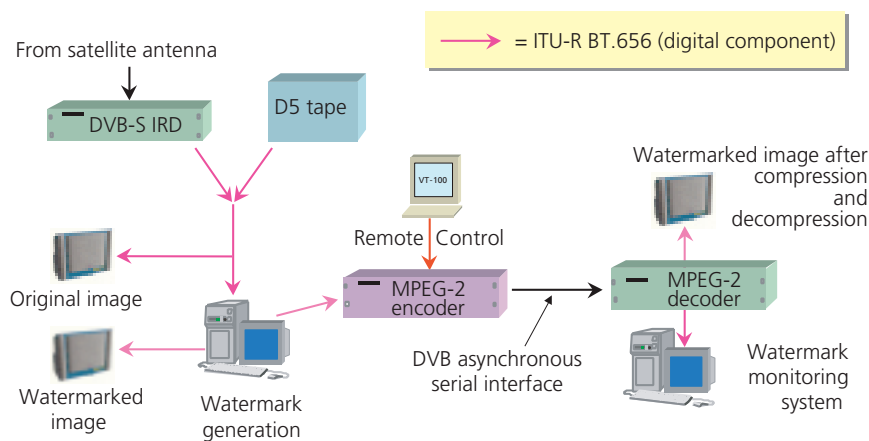
Claude Stoffel, Marketing Manager of *Eurovision Network Services*, was at hand to explain the advantages of the new satellite network to potential customers. To assist him in this, he had four live *Eurovision* feeds on the stand, and also an ISDN laptop terminal in communication with *Eurovision's* unique TPP planning and resource allocation system. This was used to demonstrate the intensive and cost-effective use that *Eurovision* makes of its transmission facilities. The *Webquery*® secure Internet protocol used to consult the TPP remotely is also unique to the EBU, and it ensures that users of the system get information pertinent to their transmissions only, respecting the privacy of other users on the Network.

The *Eurovision Operations Department* supplied five of its NDS professional integrated receiver-decoders (IRDs) to the EBU Village. Four of these were used to provide pictures to *Eurovision Network Services*, and the fifth was used by the OCTALIS Project (described below). All five IRDs were fed from a single universal LNB down-converter mounted on a 1.8 m Intrax-supplied antenna about 30 m away from the stand. The robustness of the signal from such a small antenna was such that only the worst of the torrential downpours of rain that Amsterdam experienced during the show caused the decoders some



slight pause for thought – otherwise, all five IRDs performed faultlessly and adequately above the system threshold.

The **ACTS OCTALIS** (“Offer of Content through Trusted Access **LI**nkS”) consortium has twelve participating partners, including the EBU, RTBF and the BBC. It aims at combining conditional access and watermarking technologies to protect a whole network from piracy. A demonstration of real-time watermarking was made at the EBU Village using both a local source of digital component signals and a live feed from one of the *Eurovision* channels.



The ACTS OCTALIS method of watermarking.

The whole point of watermarking is that the television signal becomes indelibly, but at the same time invisibly, marked with a uniquely identifying message that can survive subsequent signal processing and transmission, and which can be reliably identified using the appropriate equipment. The OCTALIS method certainly appears to have all the hallmarks of just such a system, and it works in real time too, so unlike most other watermarking schemes, it can be used on live television.

The system stimulated a lot of genuine industry interest, and OCTALIS considers their EBU Village outing such a success that they have already reserved their spot for IBC '99.

Webcasting is what happens when a programme provider takes to cyberspace as a transmission medium.

Gerhard Stoll of the Institut für Rundfunktechnik (IRT) in Munich is an audio coding expert involved in the EBU BMC Project Group *B/Webcasting*. He was at the EBU Village to demonstrate the applicability of various coding schemes to the transmission across the Internet of audio material of different types and at different bit-rates. What no-one suspected is that Gerhard is secretly a disk jockey, and his boundless energy, enthusiasm, and passion for music guaranteed that a steady stream of future webcasters were attracted to his demo, from which they departed some twenty minutes later, informed and inspired about the present and future potential of the medium for broadcasting.

The demonstration showed that the Internet, whilst perfectly suitable for audio file transfer, is quite a hostile environment for streaming audio applications. The Internet is a public asset typically available to the ordinary user at data-rates of between 14 kbit/s and 64 kbit/s. It is subject to frequent sudden variations in available data-rate, and it often suffers loss of transmission packets and other transmission errors. All of this conspires against its use as a viable transmission medium for “entertainment quality” audio programming. As a yardstick, it should be noted that a CD player delivers 50 times more audio data than a 28.8 kbit/s modem connection to the Internet.

So much for the bad news. The good news is that there is available a large number of extremely innovative efficient compression techniques for audio data reduction. These, coupled with judicious use of error correction and data buffer management, means that in practice webcasting is now almost a viable means of broadcasting and is only awaiting a few further refinements in codecs to assure its future.

One of the extremely interesting things to discover from Gerhard Stoll’s demonstration was that different codecs have been engineered and optimized for different programme content and so, for instance, a codec turning in an excellent performance with music might perform less well with speech, and it might even perform differently depending on whether it was male or female speech. Given this inconsistency,



a webcaster might need to code different segments of his/her programme with different coders, or at least re-parameterize a flexible coder such as the MPEG-4 tool-set. The computer/browser environment deals with this situation by invoking the appropriate “plug-in” from a library stored locally on hard disk

A representative listing of the software codecs demonstrated at the EBU Village is given in the accompanying table. Links to the download sites for a selection of decoders and a comparison of their performance for different programme material is to be found at:

<http://www.rnw.nl/ebu/ebutest.htm>

During the show, one music station, “Bayern Mobil” (actually a DAB station), was being webcast by the IRT as a 56 kbit/s stereo stream and, if the quality of reception that was being achieved at the EBU Village is anything to go by, audio webcasting may very well become a major form of entertainment delivery soon.

The Digital Terrestrial Action Group (**DigiTAG**) was set up two years ago with the primary objective of creating a framework for the harmonious and market-driven introduction of digital terrestrial services using the world-class DVB-T standard in Europe and beyond. Now with sixty-five members, it has broadcasters, manufacturers, network operators and regulators from 23 countries, all of which are actively co-operating and sharing expertise in the digital terrestrial television field, to offer products and programme services to the widest public in the narrowest time span.

Product	Company
Audioactive	Telos
AudioSoft	Eurodat
Destiny Internet Command Engine (DICE)	Destiny Software
I-Media	QDesign
Intel Streaming Media	Intel
Internet Wave	Vocaltec
InterVU	InterVU
Netscape Media	Netscape
QuickTime 3	Apple
RealAudio	Progressive Networks
ShockWave	Macromedia
Stream Works	Xing Technologies
TrueSpeech	DSP Group
ToolVox	VoxWare
VDOLive	VDOnet
Vosaic	Univ. of Illinois

Live DVB-T reception of the IBC’s Widescreen Festival could be seen in the DigiTAG part of the EBU Village: the signals were transmitted from the Dutch PTT tower about a kilometre away from the RAI convention centre.

If this does not impress the reader, it should be noted that the transmission power used was far less than would have been needed for equivalent analogue coverage, and that reception was achieved at the EBU Village, in the middle of a very congested electromagnetic environment, using an un-amplified set-top antenna. To highlight the ruggedness of the COFDM modulation used for DVB-T, mobile reception of the same signal was demonstrated in a minibus which drove through the streets of Amsterdam. Tickets for this trip were very much in demand, and all who took the ride could confirm that the mobile reception was exemplary. The DVB-T transmissions were co-ordinated by the European Union’s ACTS project *Motivate*.

The eye-catching DigiTAG stand which, incidentally, was designed by the latest member of the DigiTAG office, Karen Mazzoli, had on it four 32-inch television sets supplied by Sony. All four of these 16:9 receivers were of the FD1 type which is equipped with Sony’s new mirror-flat variable-pitch shadow-mask Triniton® tube. One of the televisions was an integrated DVB-T set which needs only a conventional terrestrial antenna connected to it for reception of both analogue PAL and DVB-T signals. This model will very shortly be launched into the European marketplace. The other three sets were PALplus-equipped analogue receivers (already available throughout Europe) which were fed with RGB signals through their SCART (Peritel) connectors from external DVB-T receivers.

The DVB-T receivers, or so-called “set-top boxes” in use on the DigiTAG stand were pre-production models supplied by Nokia and Pace. Also in use was a BBC demonstration receiver which, in common with the Nokia IRD, featured the new 2k/8k COFDM demodulator chipset by LSI Logic.

This autumn will see the start of DTT services in the UK, with Sweden starting by the turn of the year and Spain a few months later. Each country has individual and different interests in changing from analogue to digital. Germany is looking at DVB-T’s unique feature of mobile reception at high speeds (for



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use in coaches and trains, for example). Australia has selected HDTV as its primary application, while other countries are interested in multimedia content and interactive services.

The message at the DigiTAG stand was that products will be ready to service these markets, and that DigiTAG strongly supports the position that integrated television sets and set-top boxes should become a universal appliance which is manufactured and marketed without barriers to trade.

Another part of the EBU Village which did brisk business was the corner devoted to distributing the *Final Report* of the joint **EBU/SMPTE Task Force** for Harmonized Standards for the Exchange of Programme Material as Bit-streams.



This 204-page report was produced by a group of over two hundred experts from Europe, Japan, Australia and North America, meeting some seventeen times over a period of 1½ years. The document was officially released at a Technical Briefing and Press Conference held on Friday 11 September, the first day of IBC '98.

The Task Force was charged by its parent bodies with two assignments: (i) to produce a blueprint for the implementation of the new technologies, looking forward a decade or more, and (ii) to make a series of fundamental decisions that will lead to standards which will support the vision of future systems embodied in the blueprint. The first of these assignments was completed in the Task Force's *First Report – User Requirements*, published in April 1997. The *Final Report: Analyses and Results* is the Task Force's response to the second assignment.

Although the work of the Task Force is over, it is not done. Rather, it is the end of the beginning. The purpose of the Task Force all along was to point the way for successor activities to develop the standards, conduct tests, and co-ordinate the implementation strategies that will enable the realization of the future that is envisioned.

The *Final Report* was produced by the EBU as a Special Supplement to the Summer 1998 edition of the **Technical Review**, and by the SMPTE as a major part of its September edition of the SMPTE Journal. The EBU shipped 2200 copies of its Special Supplement to IBC, and all of these were distributed from the EBU Village before the end of the exhibition. A similar number of copies of the SMPTE Journal were also distributed at IBC '98, in part from the EBU Village stand and also from the SMPTE stand in Hall 3. Many requests for copies of the *Final Report* could not be fulfilled at Amsterdam – the stock was exhausted, and so the work of distributing the document continues by mail.

WorldDAB personnel were at the Village to distribute documentation and to co-ordinate meetings held at neighbouring hotels.

Finally, our colleagues from **EBU Publications** were at hand to steer customers to the appropriate EBU document, and to take subscription requests for the **Technical Review**.

All in all, a very busy and fruitful time was had by all the EBU Village people at IBC '98.

Roger Miles

