

Digital TV: Beyond Sound and Vision

All proposed DTV systems use the global MPEG-2 standard for image coding. However the sound-coding and RF-modulation techniques are different. The system proposed in the US uses single-carrier, 8-VSB modulation where DVB-T and the proposed Japanese DTV standard use multi-carrier COFDM modulation.

However, there is more to digital TV than video and audio coding and modulation. Here, we discuss some of the less obvious aspects of digital TV systems which will make the difference between profit or loss to digital broadcasters.

Service Information

In a complex service environment with multiple types of service multiplexed into digital bitstreams, service-related data needs to be an integral part of the signal.

DVB is designed for a multi-programme, multi-delivery-medium environment. Such a complex environment means not only will viewers need help navigating between channels, but the equipment itself will also require data on what sort of service it must deliver.

In the DVB standard, user-definable fields in the MPEG-2 bitstream are used to deliver Service Information (SI) to the receiver. This information is used by the receiver to adjust its internal configuration dynamically to suit the received service.

SI can also be used by the broadcaster or service provider as the basis of an Electronic Programme Guide (EPG). There is no limit to the sophistication of an EPG in the DVB standards. Ultimately, it could even be one with your WWW browser.

DVB-SI is an extremely powerful tool to any broadcaster and service provider, and its range is unique to the DVB standards.

Interoperability

Programmes arriving in the home have made a number of "hops" from one medium to another. These hops must not cause delays or loss of picture quality.

Broadcasters are starting to broadcast across several media. For this they need a family of standards which allows cross-media interoperability.

DVB-SI allows programmes to jump easily from one delivery medium to another without decoding and re-coding of the MPEG-2 bitstream.

Indeed, in the US, it may happen that DVB will be used to distribute US-format HDTV via satellite for re-transmission.

This is entirely feasible. Both the US and DVB standards support MPEG-2 and distribution sites throughout the US already have the DVB-S equipment needed.

Conditional Access

Conditional Access is vital to the healthy growth of digital TV.

From the start DVB has realised that many broadcasters will want to offer encrypted digital Pay-TV services.

In fact, for some time, Pay TV operators have been in the forefront of the development of digital broadcasting technology.

Options for conditional access are an integral part of the DVB standards.

Putting it all together

The development of a digital TV systems is extremely complex. A full set of standard interfaces is required.

Besides video and audio coding, RF modulation and interoperability, there is also the question of interfacing.

Having a full set of professional and consumer interfaces is key to ensuring the smooth roll-out of digital services.

In the professional environment the need for comprehensive interfacing is clear. But the consumer will also need to be able to connect equipment together, like digital recorders and players, and even items which are still on the drawing board.

The end of TV as we know it?

As television goes digital, the question is, how long before we will not know the difference between a TV and a PC ?

DVB is already working on the standardisation of a Multimedia Home Platform for running interactive multimedia applications on digital television receivers.

Part of this is the development of an open, common API to bring the power of computer processing to broadcasting.

A sea of changes is rolling in. With the first wave, everything went digital.

With its work expanding the frontiers of broadcasting, DVB is already on the next wave.

Let it roll.

DVB

Digital Video Broadcasting

the next wave

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