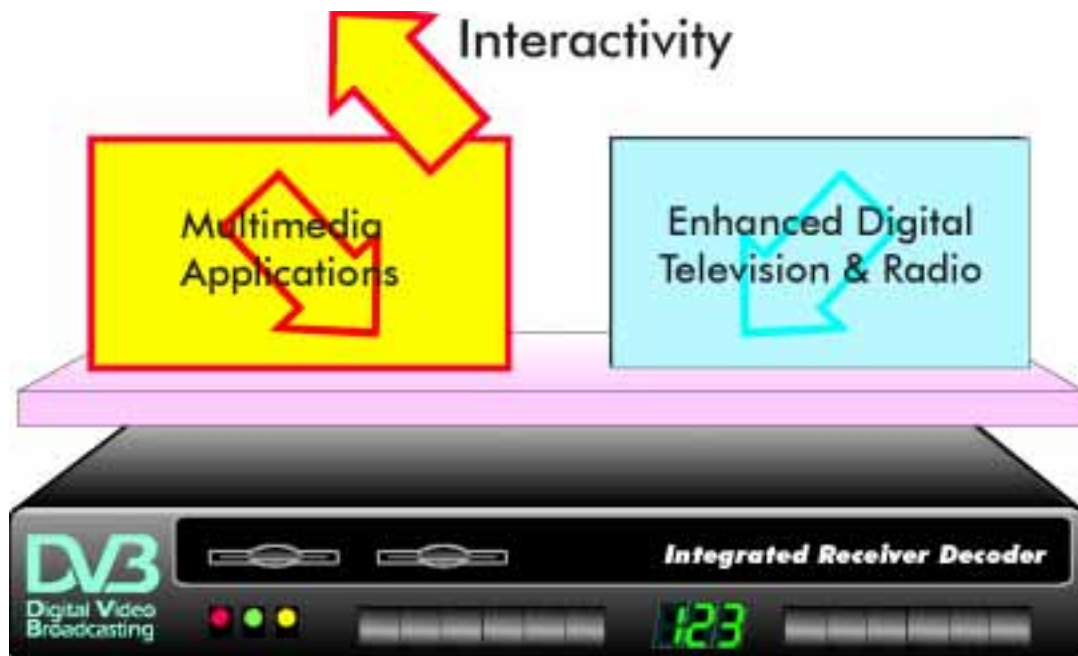


On the Critical Path to Convergence with the DVB MHP



***The DVB Multimedia Home Platform will lay the foundation for
Interactive TV***

This article by Martin Jacklin appeared in the 1997 IBC Show Daily.

What is the DVB Project?

Going boldly into the digital future, a group of broadcasters, manufacturers, network operators and regulators have committed themselves to defining an interoperable family of standards for providing digital television and other services to the home. This is the Digital Video Broadcasting Project (DVB), formed in September 1993 under the auspices of the European Launching Group for digital television.

A world-wide family of standards for digital delivery

Since its distinctly European beginnings, the DVB project has defined and published technical standards, based on MPEG-2 digital video and audio compression, for the entire range of television delivery media. This started with the now mature DVB-S satellite standard and moved on to cover Cable, Terrestrial, Microwave MDS and SMATV transmissions. Now membership of the DVB Project comprises over 200 broadcasters, manufacturers, network operators and regulators in more than 30 countries.

Owing to the high degree of interest in DVB from countries outside Europe, DVB has refined its comprehensive family of standards into a global solution for delivering digital television to the home by any delivery medium, in any operational environment.

Adoption of the DVB standards has been a phenomenal success. Services are now on the air worldwide, a vast range of equipment for professional and end user markets is now on offer from a variety of manufacturers, and the entire European continent has more or less adopted the standards. As DVB systems proliferate around the world, the DVB Project is continuing the important work of developing the framework for the existing DVB systems and those that will bring the television industry well into the 21st century. The work of DVB has reached a level of maturity, where the focus is on issues such as the Multimedia Home Platform (MHP), High Definition TV, and other extensions to the standards dealing with emerging aspects of convergence.

Multimedia Digital Convergence and the Set Top Box

At present, each DVB broadcast service comprises an entire package: programming, set-top-box and navigation tools. From its inception, DVB has investigated any element of the standard broadcast chain that can be harmonised. Thus, for Conditional Access, DVB developed its Common Scrambling Algorithm and a Common Interface specification for Conditional Access and other applications, now in widespread use. For interactivity, DVB has developed a set of cross media interactive protocols for the interactive systems of the future.

Recognising the need to address the convergence of broadcasting, computer and consumer electronics media in the home, some DVB members have begun to examine the implications the new digital transmission technologies will have in the home. The DVB Multimedia Home Platform group is the result.

The formation of the MHP group was encouraged by the European Broadcasting Union, and the UNITEL project, which started the ball rolling with its MHP Launching Group meetings in 1996. The purpose of these meetings was to define the commercial requirements for future interactive service receivers.

Following up on this the DVB CM held an informal workshop to decide the final form of the MHP interest group, and it was proposed to create an ad hoc group within DVB to gather all the interested parties.

The DVB Multimedia Home Platform ad hoc group of the DVB Commercial Module was formed in March 1997. The module is chaired by Georg Lütteke of Philips.

What is a Multimedia Home Platform?

The development of the "MHP" as it is known, is probably the most important current new technology issue in the DVB Project. But what is it? The group's terms of reference state that the MHP includes set-top boxes, integrated TV receivers, in-home digital networks, personal computers, network computers etc.

One could say that the MHP group is examining the route to the harmonisation of the digital set top box, which together with its essential peripherals, will be the core of the multimedia in-home networks of the future.

MHP activities are new in comparison to former DVB activities, which are more, related to the "physical and transport layer". MHP concerns itself with the "upper system layers" which constitute the interface with the applications and services.

The concept of a multimedia home platform encompasses the "local cluster" of in-home multimedia devices and the network itself with broadcast and on-line services. At the time of going to press, the various DVB Return Channel specifications had just been published by ETSI. These include DVB-RCC (Cable) and DVB-RCT (Telephone or ISDN). These are complemented by the DVB-NIP (Network Independent Protocols), based on the MPEG-2 DSM-CC (Digital Storage Media – Command and Control) again published by ETSI.

Thus, there is already a wide range of downstream- and return channel specifications available, as a subset of the extensive DVB toolbox. These are all taken into account in the MHP's work. However, the group's remit extends beyond this level.

Multimedia in the home means addressing interactivity

As the DVB project has progressed, interactive TV has been identified as one of the key areas ideally suited to an entirely digital transmission system. Many DVB members have developed comprehensive plans for the introduction of interactive TV and 1997 has seen a number of large-scale trials in Europe.

Interactivity however is a feature of other important entertainment and informational media such as can be seen in the wildfire growth of the World Wide Web and home computing technology. Convergence has put developments in this area into the critical path for the future of broadcasting.

Since the inception of DAVIC (Digital Audio-Visual Council), the central coordinating body for aspects of digital media convergence, DVB has understood its importance. For DVB, close collaboration between the two organisations means ensuring that technical and operational solutions produced by the DVB Project harmonise, wherever possible, with the work of DAVIC.

This work covers an extremely wide field, generally extending well outside the area of broadcasting, and DAVIC seeks to provide end-to-end interoperability for the use of digital images and sound across countries and between applications and services. DAVIC liaison officers have been appointed in DVB, to co-ordinate the efforts of both groups.

As with the other DVB work, the key has been the gathering together of these commercial requirements to drive the technical work. In the case of Interactive, these requirements were especially important to help focus the specifications, given the wide diversity of applications that can be envisaged.

The result is a set of specifications for interactive services and a series of network-specific specifications designed to suit both the needs of the DVB membership and the physical characteristics of the individual media.

Multimedia and Hypermedia applications in the DVB environment, making use of broadcast and return channels, would essentially consist of functions and calls, where the functions would be returned in an Application Programming Interface (API) language.

The MHP API - what is it, what's it going to be?



The Digital Audio Video Council (DAVIC) defines an API as "a boundary across which a software application uses facilities of programming languages to invoke software services. These facilities may include procedures of operations, shared data objects and resolution of identifiers."

This definition, however, owing to the width of DAVIC's area of interest, may be so inevitably vague as to be incomprehensible to the uninitiated.

The Open MHP API will have to address existing Interactive TV APIs

Essentially, an application program interface (API) is a built in programmer's toolkit for requesting data objects or services resident on a particular operating system. Using the API, a programmer writing an application can make requests of the operating system. In contrast with an interactive user interface or a command interface, an API is an interface to an operating system.

So far in the MHP discussions, a list of critical future applications has been defined and much discussion has taken place about the case for agreeing on a generic API. As this would compromise existing proprietary systems, developed by DVB members, the issue is obviously complex. Another option could be for manufacturers to imbed a generic API into their proprietary systems, in order to create the best market conditions.

The links need to be defined, between applications and the host platform, taking into account proprietary API's, such as Sun/Thomson's Open TV and Canal Plus' Media Highway.

At the top of the list of potential applications are "enhanced digital broadcasting" with or without an interactive return channel, and normal, on-line Internet access. Applications could include, for example, a content or event-orientated Electronic Programme Guide (EPG) and the more service-oriented navigator, both using browser-like Graphical User Interfaces.

Generic API elements already defined include the DVB-SI API, the DSM-CC (Digital Storage Media - Command and Control) API, the MHEG-5 (Multimedia & Hypermedia Experts' Group) API, the Java embedded system API, and the MPEG-2 Section Filter API, carrying private data and a subset of Java.

Another key aspect is "scalability", a well-known feature of Java, which is the concept of enabling implementations to adapt to different high-end to low-end platforms.

Mapping various existing APIs to each other to achieve maximum commonality is a very complicated process, even more so on the commercial front, as it requires the resolution of many thorny issues, which only be done with full consensus. The debate in the DVB MHP module has been correspondingly intense.

You've heard of MPEG-2 - what about MHEG-5?

One of the important formats for enhanced broadcast services is the hypermedia language MHEG (Multimedia Hypermedia Experts Group).

MHEG-1 (ISO/IEC 13522-5) specifies the coding of multimedia/hypermedia information objects for interchange as final form units within or across services and applications, by any means of interchange, including local area networks and wide area telecommunication- or broadcast networks.

MHEG-5 (ISO/IEC 13522-5) defines the MHEG object classes for interchange and for use in base-level applications running on limited resource terminals, in interactive broadband services. It defines the coded representation for program objects in an open manner, so that the program objects may encapsulate either standardised or proprietary program coding.

MHEG-5 allows program objects to be included or reference programs that may be encoded in any encoding format as defined by the application domain.

The work continues:

DAVIC is working on additional, new and complementary Java APIs and MHEG-5 APIs, for tuning or navigating a Multiplex. In the near future in DAVIC it is likely that Internet access issues will be important and mappings will have to be made between TCP/IP, HTML/SGML and MHEG-5 (and MHEG-6) and DSM-CC.

DVB, in close liaison with DAVIC, is keeping step with developments and bringing its own wealth of expertise in digital broadcasting to the overall activity of convergence.

Main contributors to the MHP module are DigiTAG (The Digital Terrestrial television Action Group), Canal Plus, Thomson, Sony, Philips and Intel. For more information, contact the DVB Project Office, Geneva.

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