

Multimedia Home Platform



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DVB-MHP – A Snapshot – October 2001

Multimedia Home Platform - DVB-MHP (TS101-812 & TS102-812)

a. Introduction

What is the "DVB-MHP" concept?

DVB-MHP was a work item, which the DVB started in 1997. Its aim was to standardise elements of the home platform (set top box, Television etc) that would be key to the success of interactive multimedia applications in the future. At the time, it was seen as a natural progression from the pure broadcast work of DVB into the interactive TV applications that are beginning to dominate the transition from analogue to digital TV. The work covered not only the Application Programming Interface (API), but also issues such as the In-home Digital Network and the "local cluster".

What is MHP in real terms?

The Multimedia Home Platform (MHP) defines a generic interface between interactive digital applications and the terminals on which those applications execute. This interface decouples different provider's applications from the specific hardware and software details of different MHP terminal implementations. It enables digital content providers to address all types of terminals ranging from low-end to high-end set top boxes, integrated digital TV sets and multimedia PCs. The MHP extends the existing, successful DVB open standards for broadcast in all transmission networks including satellite, cable, terrestrial and microwave systems.

The MHP supports many kinds of applications including the following typical examples:

- electronic program guides (EPG),
- information services ("super teletext", news tickers, stock tickers),
- applications synchronised to TV content - scorecards, local play-along games,
- e-commerce and secure transactions.



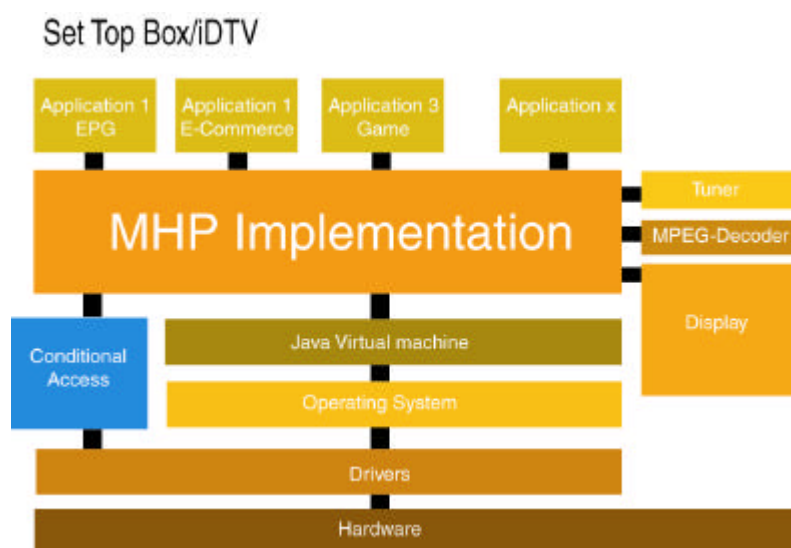
An idea of what an MHP TV Screen could offer – courtesy of RTL Germany

MHP Architecture

The architecture of an MHP Set Top Box can be considered in terms of three layers:

1. Resources
2. System software,
3. Applications.

Typical MHP resources are MPEG processing, I/O devices, CPU, memory and a graphics system. The system software uses the available resources in order to provide an abstract view of the platform to the applications. Implementations include an application manager (also known as a "navigator") to control the MHP and the applications running on it.



b. DVB Specification

What do the 'MHP Profiles' mean with respect to the hardware?

DVB's Multimedia Home Platform is based on Java technology and, for the purposes of implementation and specification development, was divided into three application areas. These application areas correspond roughly to what was considered at the time to be three rising levels of platform and application complexity. They were:

1. **Enhanced Broadcasting:** (Profile 1)

Requiring limited interactivity (telephone/cable modem return channel), but a more sophisticated STB than existed in 2000 and early 2001.

2. **Interactive TV:** (Profile 2)

This Profile uses a similar return channel path to the above scenario, but with greater activity along this path. Thus requiring greater support in the software platform for interactive applications.

3. **Internet Profile:** (Profile 3)

The most complex Profile targets a wide band interactive and return channel consistent with say, cable modems or other larger bandwidth return channel technologies. In addition, these platforms will have to support Internet type content downloaded directly from the Internet. As time moved on, it became clear that only two specifications would be required to cover the three profiles. Profiles 1 and 2 are technically very similar and have been embodied in MHP 1.0 (TS 101 812 V1.1.1 published in June 2000). Profile 3 is specified in MHP 1.1 (draft TS 102 812 V1.1.1, due to be published in about Nov. 2001).

MHP 1.0 – Enhanced & Interactive profiles

DVB-MHP 1.0 was issued when work had been finalised on the first 2 profiles – Enhanced Profile & Interactive Profile. It was sent to ETSI in February of 2000.

MHP 1.1 – Enhanced, Interactive & Internet Access profiles

Includes Profiles 1 and 2 and the additional Profile 3 the ‘Internet Access Profile’. This was recently completed and approved by the DVB SB on the 5th of June. The specification is now a DVB Blue Book and is presently with ETSI for standardisation.

MHP 1.0 (TS 101 812 V1.1.1) has been corrected and slightly revised and is due to become MHP 1.0.1 (TS 101 812 V1.1.2) in about October 2001.

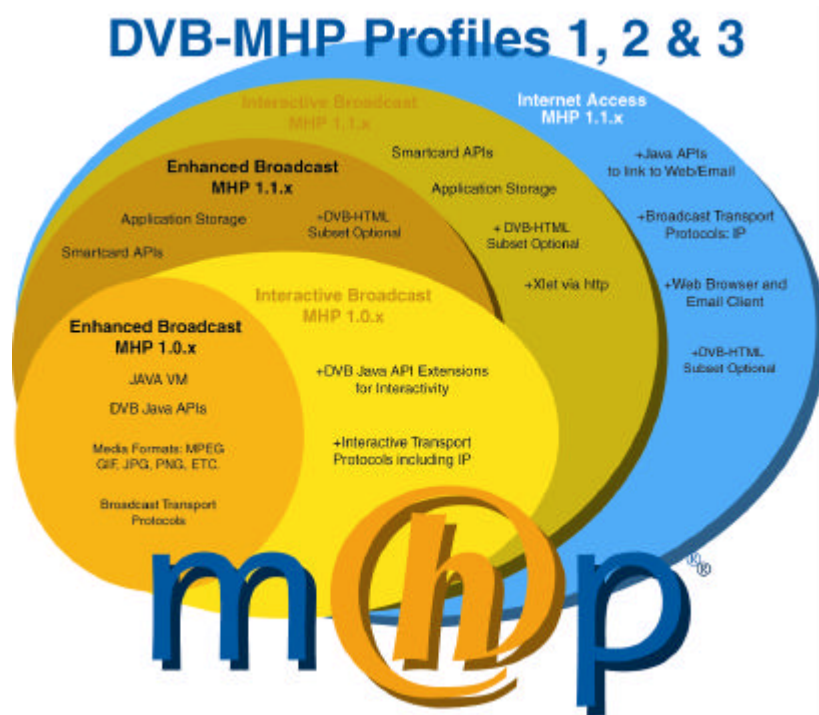


Fig. 1 – DVB-MHP Profile showing APIs and extensions

Summary of differences between DVB-MHP 1.0 & 1.1

The two DVB-MHP documents (1.0 & 1.1) exceed 1000 pages. In fact the 3rd profile increased the document to some 1400 pages. This brief overview was presented at the Steering Board on the 5th of June 2001 and is reprinted courtesy of Jon Piesing & Professor Reimers.

- **Benefits mostly for network operators**
 - Application download over return channel/internet
 - Changing application download between broadcast & return channels over time
 - Plug Ins

- **Benefits for DVB-J applications**
 - Access to smart card readers
 - Better Internationalisation
- **General benefits**
 - Networks without enough bandwidth can put MHP applications on their WWW servers
 - Enhanced caching of applications makes it easier for MHP terminals to automatically cache broadcast applications for faster start-up.
 - Detailed Plug-in support and execution – aiding migration
 - T/E Commerce capability, currency symbols, number formatting & date order etc. with Smart Card capabilities
 - Full Internet capabilities/DVB video in HTML, Bookmarking, WWW page access from within DVB-J applications, Browsing etc.

Physical Footprint required for an MHP Implementation

Set Top Box manufacturers around the world have been continually developing and upgrading boxes (iDTVs as well) in line with the new generations of processor, chipset and ROM/RAM. Economies of scale have seen a vast price reduction in this commodity.

Some of these important changes such as adding processors and memory have led the industry to develop more sophisticated television (enhanced/interactive). As more manufacturers build set-top boxes, prices continue to decrease and we now see that a well-equipped set top box capable of running interactive TV is in the region of purchase price - \$300-\$600 USD.

However in DVB the physical footprint of the Set-Top-Box or IDTV (ROM, RAM & CPU) is not defined in the MHP specification.

It is felt however that the following are requirements for the future development of MHP hardware:

a. Profile 1&2 - MHP

CPU	FLASH/ROM	RAM	Hard Disk
P1) 80-130MHz*	4MB	4-8MB	Optional
P2) 80-130MHz*	8MB	8-16MB	Optional

b. All Profiles - MHP

CPU	FLASH/ROM	RAM	Hard Disk
P3) 150-200MHz	16-32MB	16MB	20-40GBytes
P3) 200MHz+**	128MB	16-32MB	20-40GBytes

* Signifies that this does not include optional elements, such as DVB-HTML. Use of this option essentially brings the requirements up to the same as the P3) Internet Access profile, as the DVB-HTML option is an extensive specification covering XHTML, style sheets, ECMAScript and more.

** Signifies possible configuration of a 'top-of-the-range' box

Other suggestions from industry are as follows:

1. Basic MHP STB - 50-120MHz, 32MB RAM, 16MB Flash
2. Mid-Range MHP STB - 150-200MHz, 32MB RAM, 16MB Flash
3. High End MHP STB - 300 + MHz, 64-128MB RAM, 16-32MB Flash

c. *MHP Status October 2001*

MHP Middleware Vendors

Middleware is connectivity software lying over the operating system that consists of a set of enabling services that allow multiple processes to run in a device. In this instance MHP Middleware is the software stack that is incorporated into the Set-Top-Box. To date the main DVB members seen in this market are: Alticast, Canal+ Technologies, Convergence, IRT, Panasonic, Philips Softworks, OpenTV & Sony.

MHP Reference Implementation

This is a subject that has stirred some emotion in the MHP community, as this is in fact a commodity that has commercial implications for many of the companies in this domain. This is a subject that rests outside the domain of DVB but is worth mentioning as these products have already appeared. It must be stated that these 'Reference Models' have not been subjected to the conformance testing and therefore cannot be officially acknowledged by DVB. However this all has to start somewhere and these companies are leading DVB-MHP players who wish to see the success of the MHP standard:

- IRT Reference Implementation Model (document on www.mhp.org)
- Philips (verbal confirmation only)
- Canal+ Technologies (verbal confirmation only)
- Sony (verbal confirmation only)
- Panasonic (under development)

MHP Market Launch – Commitment/Or On Air Services

- **Australia** – MHP selected as de facto API solution for Australia. IFA report to the DBA members: <http://www.dba.org.au/templates/files/IFARReport.pdf>
- **Finland** – Finnish DTV with MHP launched on the 27th August 2001.
- **Germany** - MHP over DVB-T is being transmitted in the Munich DVB-T pilot trial (3 transmitters). Recently the members of the Technical Assembly of the European Broadcasting Union met at the premises of the Bayerische Rundfunk in the center of Munich where they had the opportunity to visit demonstrations of MHP terrestrial live reception during meeting breaks in an exhibition area. Demonstrations of the ticker applications from IRT and - with kind permission of Telenor - their 'Mastermind' application took place.

DVB-S MHP broadcasted by RTL World, ARD Digital and ZDF.vision. Incl. Test applications via BetaDigital and ASTRA (SCIP, GMD, IRT and Top 5 Media).
- **Korea** - Korean Digital Satellite broadcasting which is a consortium of over 100 companies has announced that it plans to roll out an MHP based commercial satellite broadcasting system. Operations are being put into place for May 2002 launch.
- **Singapore** – Announcement that MHP has been selected as the standard API for the country.
- **USA** – CableLabs is in close liaison with DVB for the inclusion of MHP as the standard API over cable in America. This has yet to be concluded.
- **China** – China has seriously considered DVB-MHP since its concept. With the recent signing of an MOU between Alticast and the DTVIA (a DVB Member) for use of their middleware is a good pointer that we will see MHP in China in the near future.

Legacy Systems

It is envisaged that a migration scenario will take place where there are legacy systems. A recent announcement from the KirchGruppe in collaboration with ARD, RTL, ZDF and the Regulatory Authorities in Germany to change direction and embrace MHP for its future shows the impact that the standard has to date.

Some legacy systems in the market who are on the move or not:

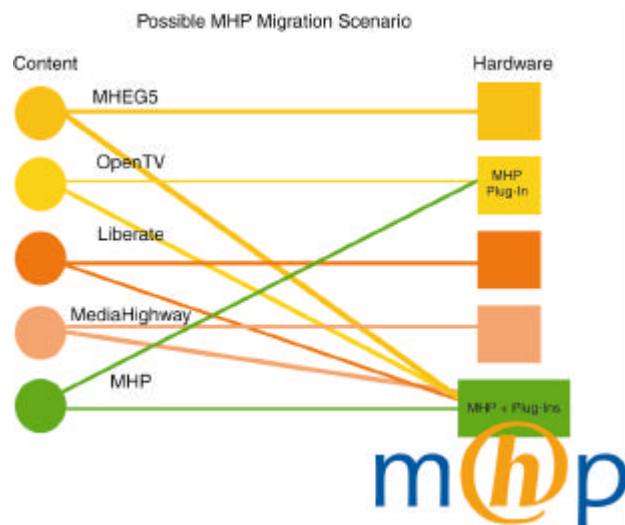
- OpenTV (MHP intention and migration plans are now defined)
- Liberate (Announced move towards MHP at Broadcast Asia01)
- MicrosoftTV (Have shown an HTML EPG to the DVB-SB)
- PowerTV (No information available)
- MediaHighway (Canal+ Technologies announced MHP path at IFA)

OpenTV @Milia 2001



MHP Migration

- DigiTAG (Digital Terrestrial television Action group) www.digitag.org has recently completed a very comprehensive API Migration Report, which is available upon request from DigiTAG or DVB.



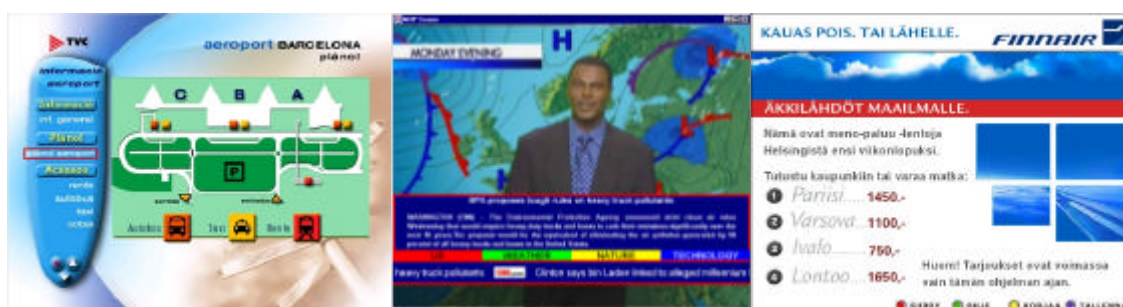
By 2010 more than 73% of the world's digital TV homes will be using personalised TV services (Source – Forrester Research)

Application Development (Authoring/Development Tools)

It is difficult to know how many Application Developers there are actually for MHP, as it costs practically nothing to get started; a Java development tool on a PC is sufficient to get you going. Some tools that have emerged albeit some are difficult to obtain a demonstration – even at the trade shows where they have been presented.

- Alticast- AltiComposer (Public Demo IBC00/01, NAB01, Broadcast Asia01)
- Canal+Technologies - Studio+/ VisualCafe (Limited Demo at Milia01)
- NPTV - Bando (Publicised at Milia01 – no demo available)
- ACTV (Not seen)
- Philips Softworks (Demo at Broadcast Asia01)
- S&T with Snap2 – MHP Express (Demo at IBC01)

Some actual DVB-MHP Screen Shots: Spain, German and Finland



Developer Communities

- The MHP Forum of www.mhp.org has grown to 500 members in 6 months and is a moderated forum, predominantly for implementation question on the DVB-MHP Specification.

The Next Step – Let's Put MHP in the Market

The next step for MHP is the completion of the 'Conformance & Interoperability Testing' that will allow companies to physically mark DVB-MHP capable devices with the MHP logo. Additional Certification & Authentication of MHP Applications is required. The DVB Blue Book A66 was approved by the 35th meeting of the DVB Steering Board - this is a complete catalogue of all the legal documentation and agreements required for MHP Compliance procedures. (Distribution is imminent).

DVB-MHP 'Test-Suite'

Test Suites are required in order to verify the MHP-ness of the solutions that are coming to market. Conformance testing & Interoperability testing are crucial elements to the success of DVB-MHP. Consequently a small consortium was put together in order to attain this objective.

The Test Suite Consortium of Philips, Nokia, Panasonic & Canal + Technologies, Sony, Alticast & IRT have created the first input to the 'test suite' outside of the contribution from Sun. A company called Unisoft has been engaged to write tests. Other companies such as IRT and Sony have also contributed. The initial Test Suite for MHP 1.0 is due in November 2001. Presently 7000 individual tests have been delivered.

Over the page is the process for the Hardware Compliance (This can also be seen at the website www.dvb-mhp.org - MHP Compliance):

Identifying MHP Equipment – The Method

1. Company wants to make an MHP enabled device
2. Requests Test Suite¹ from Custodian², pays 1000 Euro administration fee
3. Custodian issues 'Test Suite'
4. Company tests device and lodges 'Test Certificate'³ with Custodian
5. Custodian informs DVB of Completion of Tests
6. Company pays 5,000 Euros maintenance fee to DVB for logo
7. DVB issues DVB MHP Logo to company and registers product in the database
8. Company 'badges' product

The DVB Logo for equipment facia is subject to the aforementioned rules. There is a design guide associated with this and it will be delivered along with the logo:



DVB-MHP Application Certification & Authentication

Certification of MHP applications is a work item that was discussed at the DVB Steering Board and given to the Chairman of the Commercial Module – Graham Mills - to handle. In short, the setting up of a regime of an authentication authority is presently taking place within DVB.

Anomalies to the System

There is discussion at present in order to clarify the need for MHP certification across the whole value chain and in particular to head-end equipment. Some companies believe that there are certain products that will not require the stringent MHP compliance tests and that whilst they will conform to other standards (e.g. Object Carousel delivering MHP services is outside the scope of DVB-MHP but conforms to DSM-CC) should not be considered similar to the criteria for set top boxes and iDTVs.

MHP Scalability

Initially some DVB members looked at scalability as a pure MHP HTML version. After accepting input papers from all the concerned parties this option was unequivocally rejected. However, an adapted MHP or extended MHP API family covering non-traditional digital broadcasts e.g. Services to mobiles (DVB/UMTS) is under consideration.

¹ Test Suites are used to check that the implementation complies with the MHP specification.

² Keeper and issuer of the Test Suite – Receiver of the completed 'Test Certificate'

³ Certificate declaring that all test suites have been passed

MHP and Patents

DVB has called for a voluntary, agreed upon, joint licensing arrangement for a portfolio of patent rights. This will be therefore a 'one-stop-shop" facility for those requiring licenses as per the MPEGLA DVB-T arrangement – on a fair, reasonable and non-discriminatory basis. Furthermore a call has been made for those wishing to serve as the DVB Patent Pool co-ordinator (4th Sept 2001). The call for MHP Patents is for declarations of intellectual patent rights essential to the DVB specifications adopted since May 1997.

MHP Training Courses

Presently we are aware that Philips Softworks have announced training courses – the information can be found at: www.mhp.or (Events & Seminars) and www.mhp.philips.com

d. Other Related Organisations

➤ DVB and Non-DVB

- <http://www.mhp.org>

This includes an Implementers Discussion Forum open to the MHP Community for the discussion of issues relating to the Implementation of MHP and other MHP related issues.

- <http://www.dvb-mhp.org>

This is the MHP Action Group – MoU signatories for the promotion, advancement and Implementation Plans (MHP Roadmap) of all signatories.

MHP MarCom – Germany

<http://www.mhp-forum.de> This non-DVB German led group comes under the auspices of the 'Deutsche TV Platform'. It was created to initiate and create a market for the introduction of MHP. Their work has seen them become involved in Singapore and Australia. One of the main tasks during 2001 was to organise events at CeBIT/IFA as well as creating a guide type document for MHP demonstrations at IBC2001.

Members include:

ARD.Digital, Astra , BetaResearch, Deutsche Telekom AG, Deutsche TV-Plattform , GMD - German National, Grundig, Research Center for Information Technology, Institut für Rundfunktechnik/IRT, Loewe, Nokia, Open TV, Panasonic, Philips, RTL New Media, Scientific Atlanta



Panasonic showing off their MHP at CeBit

MHP Implementers Group

Another initiative led by Professor Ulrich Reimers (DVB Technical Module Chairman) from the University of Braunschweig – grouping together those companies interested in completing development of MHP implementations, looking at the test suite scenario and other implementation aspects relating to the forthcoming markets.

Members

Adherent	QuBiz
Aircode Co. Ltd.	RAI
Alticast	RTL New Media AD
Beko Elektronik	Sharp
Bertelsmann Broadband Group AD	S & T
BetaResearch	Samsung
Canal-Plus AD	SES/Astra
Convergence	Scientific Atlanta
Deutsche Telekom	Scip AD
EBU	Singapore Broadcasting Authority
Fantastic	Sofia Digital AD
Fresh Interactive Technologies AD	Softel
FUN	Sogecable
FHG (formerly GMD) AD	Sony
Grundig	Starzone TV AD
ID Media	Strongsat
Institut für Nachrichtentechnik, TU-BS	Sun
Institut für Rundfunktechnik AD	Swelcom Oy
KarstadtQuelle New Media AG	Tality
Landesanstalt für Rundfunk	Taste GmbH
LOEWE	Technidata
Lysis	Telenor
Mediagate	Televisió de Catalunya AD
Network Ten Pty Ltd	Television Corporation of Singapore
Nine Network Australia	Teracom
NOB	Thales (formerly Thomcast)
Nokia	Top5 Media AD
NTL	UID User Interface Design
OpenTV	VW
Ordina Media	WDR/ARD
ORF	YLE AD
Ortikon Interactive Oy	ZDF
Panasonic	
Philips	
Picotent	
Pioneer	
PowerTV	

Another excellent aspect of the Implementers Group was to organise Interoperability Workshops. These 'plug-fests' were well attended with many members of the group bring hardware and applications for interoperability testing. This was done on the premises of IRT in Munich.



MHP Test Consortium

Please see DVB Test Suite (Page 8)

MHP Experts Group

This group is a DVB group led by Dr. Rainer Schafer of IRT. Responsibilities are to check the various tests for relevance, validity etc. that are coming into and out of the Test Consortium.

MHP Action Group – www.dvb-mhp.org

A non DVB group responsible to show the European Commission and European Parliament that there are sufficient players in the MHP market (by signing an MOU committing to MHP) and therefore mandating of MHP in Europe is not required.

The website will layout MHP 'road maps' for each of the members of this group.

ETSI

European Telecommunications Standards Institute www.etsi.org - Following approval by the Steering Board, DVB specifications are offered for standardisation to the relevant international standards body (ETSI or CENELEC etc...), through the EBU/ETSI/CENELEC JTC (Joint Technical Committee), the ITU-R, ITU-T and DAVIC - ETSI is the DVB-MHP Custodian.

YLE (Finish Broadcaster) at IBC2001 – MHP Demos at IBC200 – Al ticast at NAB2000



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