

# Ocean Blue Software

## White Paper

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### DVB-H: Television on your mobile

#### *What is DVB-H?*

DVB-H is an open standard terrestrial multimedia broadcasting system designed especially for portable and mobile usage, which basically means you can watch TV from your mobile phone or other handheld device. (For further information on the standard see [www.etsi.org](http://www.etsi.org) ).

#### *The Benefits of DVB-H*

There are a many benefits to DVB-H (Digital Video Broadcasting Handheld) and many would argue it is the best mobile broadcast delivery system currently available, for a number of reasons;

- An approved standard with a high adoption rate worldwide
- It benefits from the existing technology DVB-T, the terrestrial service which delivers digital signals - thus reducing initial investments
- It provides the best user experience in the mobile environment, with an energy-saving handset that is only “on” 10-25% of the time, program guide, soft loss-free handover and in-building coverage
- It offers an excellent-quality picture and audio quality when desired
- Time-slicing technology (meaning the DVB-H receiver is in “sleep mode” mostly and “wakes up” to receive the data) saves up to 90% of power compared to non-time sliced technologies
- Efficient use of bandwidth enables up to 55 mobile channels plus scalability
- In 2006 it is estimated there will be 300 million DVB-H mobile users

However it’s important to remember mobile TV is not about replicating the home TV experience, it’s about giving consumers the chance to discover content for themselves, with the ability to package it, so they can watch what they want, when they want to. Allowing customers to trial services before they have to decide about a subscription is the key in attracting and keeping those customers as a revenue stream. Early research shows that customers want trusted branded TV content and access to real time information. This means the opportunities for broadcasters, networks and content providers are huge.

## *Portable Video Recorders ( PVRs)*

Another use of DVB-H is in mobile devices such as portable video recorders (PVRs). These are effectively portable set top boxes. Within the next 3 years more manufacturers will be making these types of devices than are currently making mobile phones!

Most consist for example of a hard disk, DVD reader, CPU, computer memory, 6 inch LCD screen and with the ability to download and record digital TV broadcasts, MP3 music, films, photos; play it all back as and when required whilst on the move.

Example of a portable PVR;



## *Trials and Tribulations*

Based on trials in Europe, 41% of consumers were prepared to pay for mobile TV services and 50% thought that £7 per month was reasonable figure. However that will ultimately depend on the content.

The more lucrative areas of content include things such as reality TV, quizzes and World Cup football. With DVB-H a football fan can watch an international match from anywhere on the move, and have the goals streamed to his mobile via the 3G network.



Interest is likely to raise as people's awareness and knowledge of the available services increases, but this awareness, as with all new technology, is currently limited.

O2 and Nokia have recently trialled the broadcast of 16 channels onto the Nokia 7710 including BBC1, 2, ITV1, 2, CNN and MTV - designed to test how people use mobile TV and what they are willing to pay. It opens up a new market for TV delivery which complements the existing one and allows the major players to look at consumer usage patterns and calculate revenue streams.

## *DVB-H Technical Summary*

The Ocean Blue version of DVB-H is branded Azure. The software is an extension to the already deployed, pan-European Sunrise DVB-T software that has been running and shipped in various products since 2002.

The Ocean Blue Sunrise software is hardware and operating system agnostic with a well defined and mature API for both hardware and user interface. The user interface (look and feel) of the Azure stack is easily integrated into the native interface of the target hand set.

The Azure DVB-H software product uses the additional Service Information (SI) data provided in the transport stream to locate and extract the encapsulated data held within the transport stream.

The software manages the burst transmission nature of the DVB-H data; ensuring extracted information is buffered and stored in the correct sequence ready for an embedded media player or data handler to use.

The Personal Video Recorder (PVR) extensions of the Azure DVB-H software allow the possibility of the user to download and store data for future playback and access. The PVR extension opens the possibility of downloading and storing data via other medium such as USB.

If the broadcaster supplies suitable Electronic Service Guide information, the Ocean Blue Azure DVB-H software has functionality that permits the user to pre-select data for download. The Azure DVB-H software manages the download and storage of data at the pre-selected time / broadcast.

## *Support for DRM, CA, and Common Interface (CI)*

The software has been developed, integrated and supports various Conditional Access (CA) / Digital Right Management (DRM) libraries. DRM ensures the content provider's data remains secure both during broadcast and whilst stored on the hand held device.

## *Azure DVB-H Feature List Summary*

- Extension to a mature and deployed DVB-T software stack
- Portable between Operating Systems and hardware
- DVB-H Service Information (SI) decode
- Multi Protocol Encapsulation handler
- Highly optimised IPDC data extraction and caching
- Conditional Access (CA) support
- Electronic Service Guide (ESG) handler
- PVR extensions for hand held / mobile recorders
- USB support
- Memory Management Unit
- Fully optimised to a hardware platform
- Longer battery life

## *Industry Forums*

A group of leading players including Intel, Nokia, Motorola, Texas Instruments and Modeo have formed the mobile DTV alliance to promote the growth and development of the DVB-H standard. For further information visit [www.dvb-h-online.org](http://www.dvb-h-online.org)

## *BT makes a move*

BT has made an interesting move with their mobile TV offering "Movio", which is set to launch this year. Initially it will be available on Virgin mobile and broadcast across the DAB system- this means Nokia handset users will not be able to access the service as they are backing the DVB-H platform. BT's rationale is that DAB is already licensed in the UK and has the infrastructure in place, whereas DVB-H is not likely to be available in the UK for another 5 years. However many European countries are switching off the DAB system eg: Sweden, Finland and 5 of France's largest broadcasters, stating that the system is now 15 years old and has been surpassed by newer digital broadcasting systems.

DAB (see [www.worlddab.org](http://www.worlddab.org)) was really originally designed for audio, and consequently the bandwidth is much less than DVB-H, making it inefficient in terms of transmission costs. If more European countries turn their back on DAB then it could well be that the UK is left in the minority of DAB supporters.

## *Competitive Technology to DVB-H*

Currently there are three competing technologies for mobile broadcast: DVB-H, DAB and MediaFLO. Microsoft is also developing a software solution.

DVB-H is supported (in general) by GSM carriers such as Cingular and T-Mobile as well as tower companies, such as Crown Castle in the US with technology provided by companies like TI and Freescale Semiconductor and handsets by Nokia and Samsung.

The MediaFLO service in the US is generally supported by CDMA wireless network operators such as Verizon Wireless and Sprint-Nextel in the US with technology provided by Qualcomm. Qualcomm and Verizon Wireless will work together to develop content for the different MediaFLO channels but it will basically operate just like cable TV with a number of different channels with a published schedule of what's being broadcast.

Services using DVB standards are available on every continent with more than 110 million DVB receivers deployed. A number of DVB-H services will likely launch throughout Europe in 2007 with a broad deployment in 2008.

Although DVB-H and FLO have gain the most popularity in the press, Korea's Tu Media has been commercially operating its Digital Multimedia Broadcast (DMB) mobile broadcast service since early 2005. DMB is a proprietary Korean technology that is based on the global Digital Audio Broadcast (DAB) standard and is popular in the Far East.

## *Summary and Conclusions*

In terms of consumer choice in the UK, DAB is currently the only option for mobile TV services. The picture quality and speed of service of service experienced on DAB is lower than that seen in DVB-H trials. The crux of the matter is whether or not consumers are prepared to pay for this service and the evidence so far suggests they are, but ultimately it will be the content and the way it is delivered to consumers, rather than the platform that will be the determining factor as to whether mobile TV lives up to it's potential.

The market for mobile content and entertainment is estimated to be worth 32 billion Euros in Western Europe by 2012. Nokia are planning to launch the first commercially available mobile TV device in mid 2006 the N92 - then the market could really start to see some growth.

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