



## The latest developments in the world's most successful DTT standard

*With more than ten years developing standards for digital broadcasting, and with DVB-T up and running around the world, the DVB Project is now firmly focussed on those areas where its technologies converge with those of mobile telephony and fixed IP networks. This paper introduces DVB's flagship terrestrial standard along with some exciting developments in related areas.*

### The Secret of our Success

Since its conception in 1993, the DVB Project has established beyond doubt the value and viability of pre-competitive cooperation in the development of open digital television standards. DVB's open standards guarantee fair, reasonable and non-discriminatory terms and conditions with regard to Intellectual Property Rights, allowing them to be freely adopted and utilised worldwide. At present a membership of more than 260 companies and organisations contributes to on-going work in the various modules, refining and improving the existing standards and developing new ones that address the needs of an ever-changing broadcasting landscape.

### A Standard that Works

DVB-T is the youngest of the three core DVB systems - DVB-C for cable and DVB-S for satellite being the other two - and the most sophisticated. Based on COFDM (Coded Orthogonal Frequency Divisional Multiplexing) and QPSK, 16 QAM and 64 QAM modulation, it is the most sophisticated and flexible digital terrestrial transmission system available today. DVB-T allows service providers to match, and even improve on, analogue coverage - at a fraction of the power. It extends the scope of digital terrestrial television into the mobile field, which was simply not possible before, or with other digital systems. As such, it is future proof.

### Diversity and Mobile Reception

As one might expect, a great amount of work has been done to improve the performance of the DVB-T system. Whilst not originally designed to target mobile receivers, DVB-T performance was such that mobile reception is not only possible, but forms the basis of commercial services. A better understanding of how DVB-T works in real-world environments has led to the deployment of a variety of techniques to further boost performance - especially to indoor portable and mobile receivers.

For example, the use of a diversity receiver with two antennas gives a typical improvement of 5 dB in the home and a 50% reduction in errors is expected in a car. Such diversity antenna systems are not new, but the specific characteristics of DVB-T lend themselves to significant improvements.

### Adding Value - DVB-H and IP Datacast

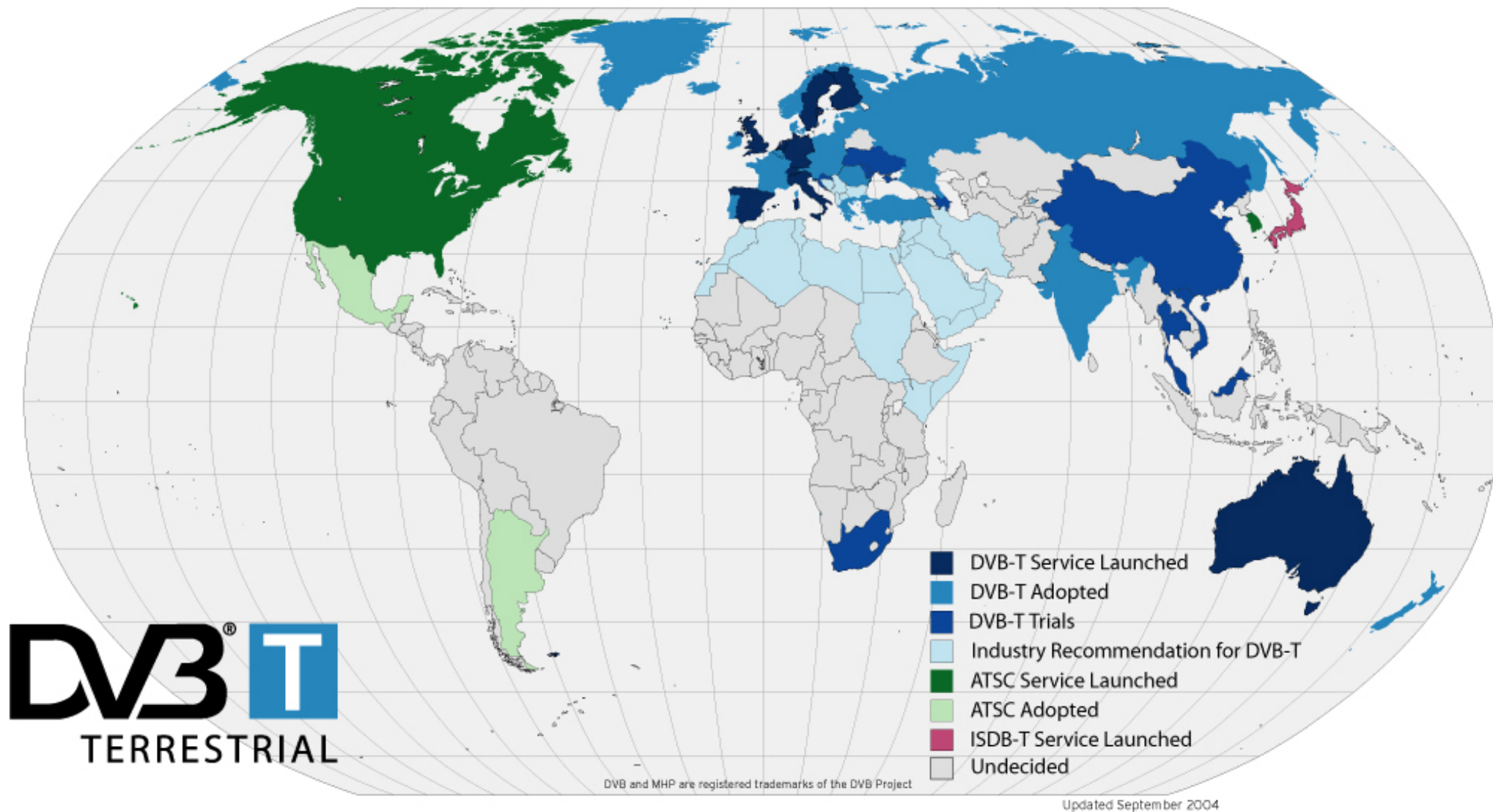
It's clear that DVB-T delivers excellent mobile reception - take a bus ride in Singapore or Shanghai for proof! But to take full advantage of this capability, and make broadcasting to handheld receivers a possibility, DVB had to address a number of important issues. The main problem relates to power consumption - handheld battery powered receivers do not have enough power to receive a normal DVB-T signal for a reasonable length of time.

The new DVB-H standard addresses this and other particular requirements of broadcasting to handhelds. A time-slicing mechanism allows receivers to switch off for inactive periods, leading to power savings of some 90%. The introduction of a 4K-mode and multiplexer level forward error correction (MPE-FEC) allows for the reception of 15Mbit/s in an 8MHz channel in a wide area SFN (single frequency network) at high speed.

Another key work area for DVB, closely following work on DVB-H, is the development of provisions for IP-Datacasting. These will facilitate the interoperability of telecomm-unications and broadcasting networks, a complex topic involving detailed work on interface at different service levels.

### Worldwide Adoption

DVB-T is the most popular digital terrestrial television system in the world, adopted in more countries than any other. It has been successfully deployed in the UK, Germany, Sweden, Finland, Spain, Italy, the Netherlands, Switzerland, Singapore and Australia. DVB-T trials are on-going in China, Malaysia, Thailand, Vietnam, Ukraine, Azerbaijan, Croatia, South Africa and others. DVB-H is at the trial stage in Germany, Finland and the United States, soon to be joined by the UK and Australia. More and more countries are finding that DVB standards offer the best solution for making the transition to digital terrestrial television.



Status of Terrestrial Digital Television Standards Around the World

More information: [www.dvb.org](http://www.dvb.org)