

WORLD



Digital Multimedia Broadcasting

Radio • Mobile TV • Multimedia • Traffic Data

The WorldDAB Forum

presents

‘Maximising Radio & Mobile TV in the Digital Age’

8 April 2008

Renaissance Brussels Hotel



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8th April 2008

09.00 Registration with Welcome Coffee

09.30 Welcome & Introduction

Quentin Howard, President, WorldDMB

09.50 Panel Discussion – Technology Challenge: Implications of spectrum policy and standards

What spectrum is currently available for digital radio and mobile TV and what will be the implications if this is lost to other platforms? This session looks into the impact of radio and provides delegates an overview of the current spectrum policy throughout Europe.

Moderator:

Matteo Maggiore, European Affairs Chairman, WorldDMB

Michael Shotter, Cabinet, European Commission

Pal Belenyési, Member of President's Cabinet, Senior Adviser at the National Communications Authority of Hungary

Peter Davies, Director, Radio Policy and Broadcast Licensing, OFCOM

Philip Laven, Former Technical Director, European Broadcasting Union

10.35 --- Coffee Break --- Demonstrations

11.00 Panel Discussion – Future of Digital Radio and its prospects for Mobile Multimedia?

The transition to digital radio does not mean pure audio services. This session will look into how broadcasters can use multimedia to create new content as well as enhance the user listening experience. Panellists will explain various multimedia applications and debate on the future of digital radio across Europe.

Moderator:

Alain Masse, Deputy Director to the President, Radio France / Vice President of Radio Committee and Chairman of New Radio Group, EBU

Charles-Emmanuel Bon, Director of Development, RTL Group

Helga Truepel, MEP, European Parliament

Helwin Lesch, General Manager, Bayerischer Rundfunk

John Ousby, Head of Distribution Technologies, Radio & Music Interactive, BBC

Nick Piggott, Head of Creative Technology, GCap Media plc

11.45 Panel Discussion – State of play: Lessons learned from Mobile Services

Commercial mobile TV services have been launched in a few countries throughout Europe, however there has been limited feedback regarding the success of such services. During this discussion panellists will have the opportunity to share experiences and ideas regarding consumer response to such services as well as ways in which other countries can better prepare for their commercial launches.

Moderator:

Quentin Howard, President, WorldDMB

Bernd Langeheine, Director Information Society, European Commission

Ignasi Guardans, MEP, European Parliament

Martin Liss, Content Director, Mobiles Fernsehen Deutschland

Simon Mason, Head of Mobile Media Solutions, Arqiva

12:30 --- Lunch --- Demonstrations

Demonstrations By

Demonstrations to include DAB/DAB+/Traffic and Travel information/DMB

Fraunhofer / Audi

Somerdata

Iriver

Pure Digital

Maximizing Radio and Mobile TV

In the Digital Age

Venue: Renaissance Brussels Hotel
Hosted By: The WorldDMB Forum



Quentin Howard, President, WorldDMB

Quentin Howard is acknowledged as the creator of Britain's world-leading position in digital radio broadcasting. In 2005 he was elected President of the WorldDMB Forum, the lobbying and promotional body for DAB and DMB. He served as a member of the WorldDMB Steering Board for nine years and is on the Board of the UK's Digital Radio Development Bureau (DRDB). He was also a founder director of Frontier Silicon, one of the world's leading DAB and DMB silicon chip makers.

Howard created Digital One which was awarded the UK's first DAB National Multiplex licence and began transmission in November 1999. The company operates the largest DAB network in the world reaching 88% of the population. Digital One broadcasts eight national digital radio services and five mobile TV services.

An electrical and electronics graduate, Quentin Howard has worked in UK commercial radio since the mid 1970's. With GWR from 1982 he was Director of Engineering and pioneered many technological "firsts" in radio including satellite distribution, computer playout systems and audio processing. Howard was seconded to design and build Classic FM and its national network of transmitters. The famous "birdsong" which accompanied Classic FM's launch was his brainchild. GWR became GCap Media plc in 2005 and remains Digital One's majority shareholder

Howard also held the position of Programme Director at GWR and is a multi Sony Award winning radio presenter. Whilst presenting for Classic FM, Howard developed the world's first regular broadcasting from home by ISDN.



Matteo Maggiore, Chairman, WorldDMB European Affairs Committee / Head of the BBC's Head of EU and International Policy

Matteo Maggiore is the BBC's Head of EU and International Policy since January 2006. Matteo established the BBC's European Affairs office in Brussels in 1992. He subsequently worked as reporter and producer for BBC News in Belfast (1993), then returned to Brussels as European Affairs Manager. In 1996 he moved to London as Head of European Affairs. Between 1998 and 2000 he worked at the EBU in Geneva as Deputy Director of Television, and between 2000 and 2001 he was Director of Media and Telecommunications with the Grayling consultancy. He rejoined the BBC in 2001 as Head of European Policy.

Before 1992 Matteo worked as an international relations lecturer and researcher in Rome (1983 – 1984), as a journalist and documentary producer in Berlin (1984 – 1988), in the European Commission MEDIA Programme (1988 – 89) and in the European Parliament (1989 – 1992), working on EU media policy and external relations.



Michael Shotter, Cabinet, European Commission

Michael Shotter is a Member of the Cabinet of the Commissioner (Information Society and Media).



Pál Belényesi, Member of President's Cabinet, Senior Adviser at the National Communications Authority of Hungary

Pál Belényesi is a Member of the President's Cabinet as a senior adviser at the National Communications Authority of Hungary. He is responsible for I/ERG, RSPG matters and communication.

In the past he worked both in the private and public sectors. Prior to joining the President's Cabinet, he worked in the European Commission's Directorate General responsible for Competition, and in the European Parliament. He was also part of the Ministry of Justice's Department responsible for the representation of Hungary before the ECJ. He started his career at the National Competition Authority's Info-communications Sector. He also advised several companies on competition matters. He is a guest lecturer at the University of Verona. He is a lawyer by qualification, with a post-graduate degree from the European University Institute in Florence in economic competition/regulation in network industries.



Peter Davies, Director, Radio Policy and Broadcast Licensing, OFCOM

Peter is Director, Radio Policy & Broadcast Licensing at Ofcom the UK's regulator for the radio, television and telecoms industries. He oversees Ofcom's activities in the radio sector including the licensing of new commercial radio stations, community radio stations and digital radio, and the regulation of radio content. He is also responsible for the licensing of all television stations on analogue and digital platforms including the implementation of the AVMS Directive as it affects the UK.

Peter recently led Ofcom's review into the Future of Radio, which included a look at the regulation of both analogue and digital radio, consideration of the transition from analogue to digital and a review of community radio. He is currently also leading Ofcom's input into the Digital Radio Working Group, set up by the Department for Culture, media and Sport looking at the steps that would need to be taken before digital radio can become the predominant means of listening to radio.

Peter joined Ofcom in 2003 as Head of Market Intelligence, managing the team which gathers data and research from the communications sector to inform Ofcom's decision making process. The team produces Ofcom's Communications Market report which aims to provide an authoritative source of data across the radio, television and telecommunications industries.

Prior to Ofcom, Peter spent nine years at the BBC, culminating in the role of Controller, Corporate Strategy. In addition to a large number of strategic projects, in 2002 he was one of the main architects of Freeview. His previous roles within the BBC included three years as Head of Strategy for Nations and Regions, where he was responsible for helping to formulate the BBC's digital radio strategy.



Philip Laven, Former Technical Director, European Broadcasting Union

Philip Laven has recently retired as Director of the Technical Department of the European Broadcasting Union. He joined the EBU in May 1997, having previously worked for the BBC where most of his work was associated with R&D. As Controller of Engineering Policy from 1993 to 1997 he played a leading role in the development of the BBC's policy on many technical developments such as the introduction of digital audio broadcasting and digital television.

He is also active in various standardisation initiatives, including chairing the ETSI/EBU/CENELEC joint technical committee, responsible for setting European standards for broadcasting systems.



Alain Massé, Deputy Director to the President, Radio France / Vice President of Radio Committee and Chairman of New Radio Group, EBU

Alain Massé is deputy director to the President in Strategic Watch and International Affairs at Radio France. He has worked for the company since September 2001. He is also the Vice-President of the Radio Committee and Chairman of the New Radio Group at the European Broadcasting Union.

Alain has over 21 years experience in the area of broadcasting and has delivered lectures and articles about the convergence of media and telecommunications. Before joining Radio France, he worked for the French Embassy in Canada, where most of his work was associated with Franco-Canadian relations in the field of convergence.



Charles-Emmanuel Bon, Director of Development, RTL

Charles-Emmanuel Bon is 35 years old. He joined RTL RADIO France in September 2005 to look after all development policy aspects, including digital activities. As of February 2006, he is also the managing director of RTLNet, the internet subsidiary of RTL RADIO FRANCE. Before joining RTL RADIO FRANCE, he was working for RTL Group in Luxembourg, where he was in charge of the group strategy in France and the United Kingdom. Before joining RTL he was an associate of Booz Allen Hamilton's media practice.

Charles-Emmanuel Bon holds degrees in Economics and International Business and graduated from the Institut d'Etudes Politiques in Paris.



Dr Helga Trüpel, MEP, European Parliament

Dr Helga Trüpel is a member of the European Parliament. She is Vice-Chairwoman of the Committee on Culture and Education. Dr Trüpel is also a member of the Committee on Budgets and the Delegation for relations with the People's Republic of China; she is a substitute for the Committee on Budgetary Control.

Dr Trüpel has an extensive background with the Bremen Regional Assembly, from 1987 – 1991 and 1995 – 2004 she served as a member to this assembly. From 1991 – 1995 Dr Trüpel was Senator for Culture and Integration, City of Bremen.



Helwin Lesch, General Manager, Bayerische Rundfunk

Helwin Lesch is head of the programme distribution department at Bayerischer Runfunk in Munich. He has worked for the company since October 2002. Mr Lesch is a member of the board of the Forschungsgemeinschaft Funk as well as member of the special advisory council for both Bayerische Medien Technik and Bayern Digital Radio.

Before joining Bayerischer Runfunk, he worked as the Managing Director of Bayern Digital Radio, where most of his work was associated with expanding network coverage across the country. Mr Lesch has a vast background in the field of digital broadcasting for not only radio but also TV.



John Ousby, Head of Distribution Technologies, Radio & Music Interactive, BBC

John Ousby is Head of Distribution Technologies for BBC Radio and Music Interactive. The BBC stream all radio programs on demand over the internet for 7 days after transmission and delivered the first podcast from a broadcaster in the UK.

John is responsible for developing services and applications across new and emerging platforms and devices. Specific responsibilities include developing cross platform text and data services including DLS, EPG and TPEG; producing 24/7 and enhanced TV services for Radio & Music (e.g. Glastonbury interactive) and the world's first browsable 24/7 application for radio on DTV in 2005; Mobile and wireless activity and digital radio opportunities on mobile TV across all relevant standards as well as responsibility for internet streaming, metadata guidelines, cross platform publishing infrastructure and the business development function.

Prior to the BBC John consulted in radio, entertainment and new media after a long spell with Virgin Entertainment Group companies, including Virgin Communications and Virgin Publishing, joining Virgin Radio as Finance Controller a month before launch in 1993. He was Head of New Media from late 1995, bringing Virgin Radio to the web in early 1996 – the first continually streaming radio station in Europe – and founded Ginger Online with the arrival of Chris Evans and his TV production units.

John was a founder member of the International Webcasting Association in the US and the UK and last year was voted one of the top 100 UK individuals for his input and influence on the development and growth of e-commerce and the internet in the UK over the last 10yrs. John holds a BSc in Psychology from Newcastle University.



Nick Piggott, Head of Creative Technology, GCap Media plc

Nick Piggott has worked on DAB Digital Radio projects since 1995 - the first trials of DAB by commercial radio in the UK. He led GCap Media's DAB project in various roles and has been an active participant in WorldDAB/WorldDMB since 1998. Nick is currently the Head of Creative Technology for GCap Media, looking at how to use new technologies such as DAB Digital Radio to create new radio experiences. He has previously chaired a Task Force for the WorldDMB Technical Committee, and contributed to the Marketing Committee.

Nick believes passionately that DAB Digital Radio must play a leading role in the migration of radio from analogue to digital, and in the evolution of the radio experience.

In addition to Nick's passionate commitment to DAB Digital Radio, he also still enjoys getting involved with "real" radio production, catching up with radio colleagues all over the world, and messing about with new technology.



Bernd Langeheine, Director Information Society, European Commission

Bernd Langeheine has been the Director for e-Communications Policy at the European Commission's Information Society and Media DG since 1 July 2002.

Before that he headed the General Policy unit in the European Commission's DG Competition for three years. From January 1996 to June 1999, he was in charge of the Trade Section in the Washington Delegation of the European Commission. From 1990-1996, Mr Langeheine was a Member of the Commission's Legal Service and before that, he spent three years as law clerk (référénaire) at the European Court of Justice. From 1983 to 1987, he worked in the Trade Policy Division of the Commission's DG for External Relations.

Mr Langeheine spent the academic year 1993/94 as an EU Fellow at the Business School of the University of Washington in Seattle, Wash. He studied law and political science at the Universities of Hamburg and Berlin and holds a Ph. D. in law.



Ignasi Guardans, MEP, European Parliament

Since June 2004 he is Member of the European Parliament for the catalan "Convergència i Unió", integrated in the Group of the Alliance of Liberals and Democrats for Europe (ALDE). He is currently the Vice-Chairman of the Committee on International Trade, and a Member of the Committees on Culture and Education as well as on Civil Liberties, Justice and Home Affairs. He is also an active Member of the European Parliament Delegations for the United States and for South Eastern Europe.

As part of his activities within the Committee on Culture, he has focused much of his work in the audiovisual field while he participates in the Parliamentary Intergroup on cinema and audiovisual policy. He was shadow rapporteur of the report on the new audiovisual services directive, which was adopted a few months ago, and he is now draftsman for Culture of the future report to strengthen the internal market for mobile television.

He began his political activity in 1995, when he was elected member of the Catalan Parliament, from where he resigned to move to the Spanish Parliament less than a year later. In 1996 he was elected to the Spanish Parliament, and he stayed there for two terms until 2004. His latest responsibilities in the Parliament were acting as Spokesman for the Catalan Parliamentary Group in such areas as foreign and European affairs, justice, and culture and education. From 1999 to 2004 he was also a Member of the Parliamentary Assembly of the Council of Europe (Legal Affairs Human Rights Committee) and of the W.E.U. Assembly.

He graduated in law at the University of Navarra in 1987. In 1992 he obtained his Ph.D. Between 1989 and 1995 he taught Private International Law at the Universities of Navarra and Barcelona, and at the University-College Abat Oliva (also in Barcelona), first as Lecturer and afterwards as Full Professor. In 1992 he started his activity as a practitioner lawyer, always within different international business law firms.

He has published a book and has written several chapters for collective works in legal matters. He takes part on a regular basis in the activities of several European and American think tanks, in areas related to foreign policy, culture and human rights. He is an active member of several cultural, economic and law associations. He publishes regularly contributions to several newspapers, and takes part on a regular basis in several radio and TV talk shows on political and social subjects.



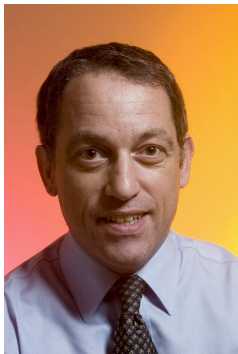
Martin Liss, Content Director, Mobiles Fernsehen Deutschland

Martin Liss is Content Director for MFD, Germany's first licensed nationwide broadcasting platform which provides mobile TV and radio to one of the biggest media markets in the world. He is responsible for the programme bouquet available on MFD's channels, and for the platform's cooperation with content providers like TV and radio stations, independent production companies etc.

Before joining MFD, Martin Liss worked for almost six years as Creative Director and Vice Program Director at bigFM, Germany' largest commercial CHR radio network. He then had already been on the air for several years, as a radio journalist, sports personality, prime-time dj and news anchor. At Hit-Radio Antenne Niedersachsen (Lower Saxony), he had later started taking responsibility for strategic matters, as Head of On Air Promotions. He joined the team of bigFM in 2000, shortly after it went on the air, and has helped to grow that product into what now is the largest network of its kind in Germany.

Along the way, Martin Liss won several prizes for sales promotions, marketing campaigns and for starting the innovation "visual radio", a UMTS based mobile streaming service that links the audio programme with pictures, information and commercial download options, all on the user's mobile phone.

Martin Liss was born in 1968, studied English and German philology at Freiburg University, from where he received an M.A. in linguistics after completing a master thesis on the role of short-term memory in the process of human speech production and recognition. He is married to PR consultant Gesa Liss, and calls sailing, travelling and music his hobbies.

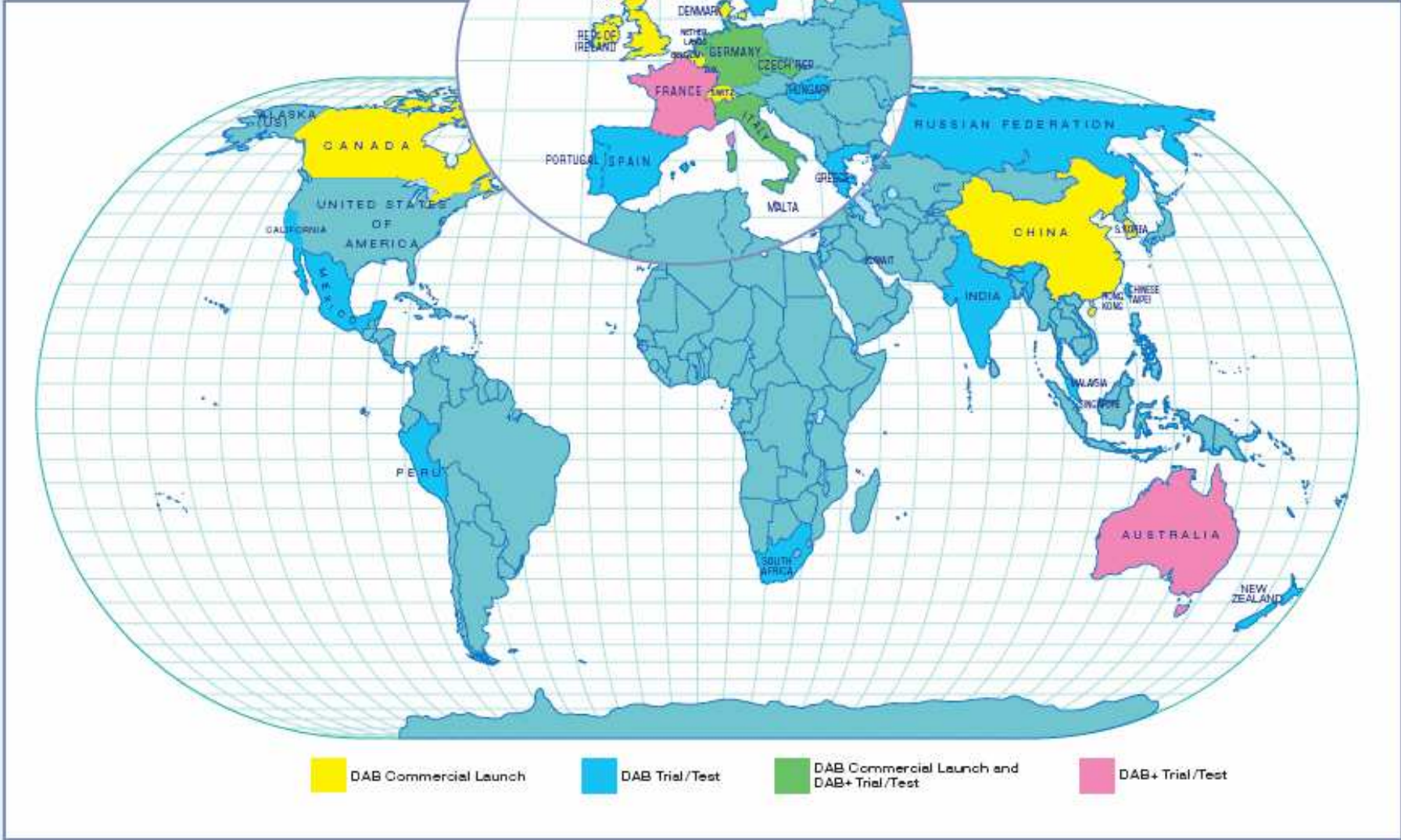


Simon Mason, Head of Mobile Media Solutions, Arqiva

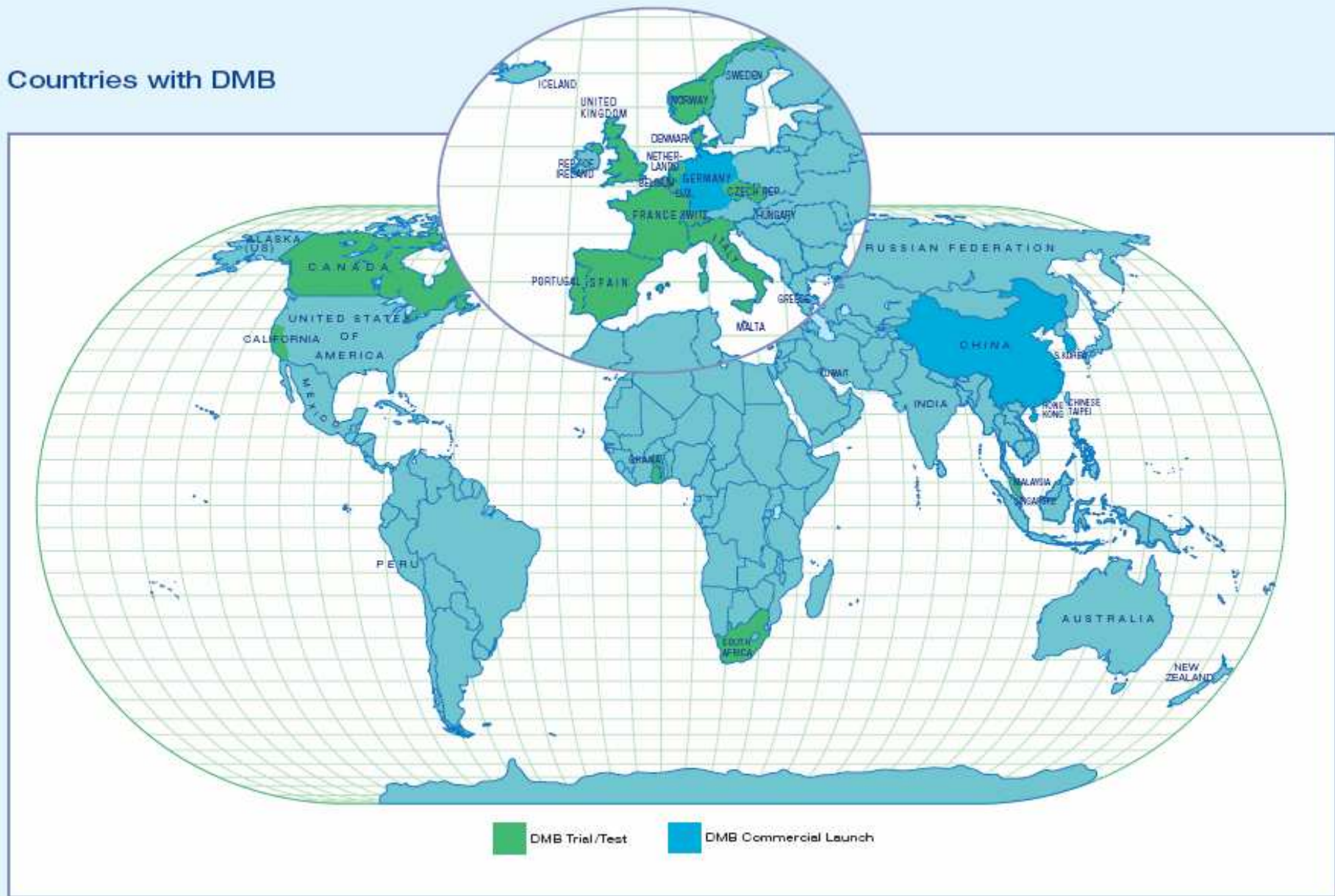
Simon Mason has worked in broadcasting for over 20 years both with public service broadcasters and the commercial sector. Simon was trained by the BBC and worked both in studios and radio frequency transmission. He worked in the BBC's research department on the development of digital transmission systems. Simon now heads up the new product development team at Arqiva who provide services and facilities to broadcasters and telecommunication companies in the UK. Simon's key skills are in RF propagation and modulation and their application to practical deployment of large-scale wireless networks.

DAB/DAB+/DMB Coverage Maps And Country Updates

Countries with DAB and DAB+



Countries with DMB



Latest Country Updates for DAB/DAB+/DMB

April/May 2008

Australia: The Australian government has passed legislation for a digital radio policy and has set a launch date of 1 January 2009. Commercial services will be licensed on a market basis (with 109 licence areas across the continent). The commercial broadcasters have announced that they will use the DAB+ standard for digital radio in Australia. The public broadcasters will be licensed for national coverage. The Australian radio industry plans to invest \$400 million over the coming years to roll out digital radio across the country. A phased introduction is planned, beginning with 11 key cities including Sydney, Melbourne, Brisbane, Perth, Adelaide and Canberra. The first DAB+ test was launched in July 2007. In recent months PURE Digital has established Australasian operations and announced three DAB+ upgradeable receivers. In December 2007 the Australian Communications and Media Authority (ACMA) called for expression of interest in digital multiplex licenses.

Brunei: Radio Television Brunei (RTB) is the public broadcaster. In 2000 RTB began a DAB trial, which has been ongoing and includes simulcast services. A task force has been set up within RTB, which is working closely with AITI. RTB has also joined the ABU DAB+ task force to follow the industrial developments.

China: The Chinese regulator, SARFT, announced in May 2006 that DAB was chosen for the industrial standard this means that to date DAB is the only European digital broadcasting standard that has been approved for commercial use in China. DMB on air in five cities across the country including: Beijing, Shanghai, Guangzhou, Dalian and Henan. Guangzhou launched commercial services in 2007. Chinese DMB manufacturers include: Lenovo Mobile, Aigo, Longcheer, BBEF and SIM. DMB PMP receivers are already available in Beijing for affordable prices around RMB2500 (250 Euro). To date over 180,000 such devices have already been sold in Beijing alone. Beijing Jolon and GTM have been the key industrial driver for the quick roll out of DAB/DMB in China as it prepares for broadcasting the Olympic Games. In November 2006, ten digital audio programs and two mobile video programs were launched. The services have since been increased to 16 DAB digital radio services and 6 DMB services using a free-to-air business model.

Czech Republic: The TELEKO Company, in cooperation with the public broadcaster Zesky Rozhlas, started a DAB (3 programmes) and DAB+ (2 programmes) trial in the Pribram region on August 2nd 2007. The service covers almost 130,000 people using channels 12D and LI. The transmission is provided from the same site in order to compare both bands and their coverage. Further trials are planned at the end of 2007 and early 2008.

Denmark: Denmark has broken through the 1 million receivers sold mark. More than 1 million Danes older than 12 years have access to a DAB digital radio in their homes. This is three times as many as only one year ago. The marketing continues and public broadcaster DR has just aired a TV, radio and net campaign to support the DAB Digital Radio platform. Ten new transmitters were put on air in 2007. The outdoor coverage in Denmark has now reached over 90%. The start of the new transmissions was supported by massive local promotion and marketing campaign including a 12-city road show.

France: The French government has recently announced that the Eureka 147 family of standards was chosen for its digital radio standard. On 26th March 2008, the Conseil supérieur de l'audiovisuel (CSA) adopted the final text for the call for tenders for terrestrial digital radio which will be roll out in Band III and L-Band. The first step in the roll out of terrestrial digital radio will cover 30% of the population with in door coverage and over 50% coverage of the population with out door coverage. Candidates have until the 16th June 2008 to present their proposals to the Conseil. The selected radios will be allowed to broadcast before the end of 2008. A second call for tenders will be launched before the end of 2008, which will deal with between 12 and 14 new urban areas (around 10% of the French population) and the main motorways.

Germany: The DAB in Germany in Germany covers nearly 85% of the country with over 180 different radio stations available. Regular DMB services are available in 16 main cities like Berlin, Munich, Hamburg, Düsseldorf, Frankfurt, Nuremberg, Regensburg, Stuttgart and Leipzig. In 2009 a powerful Digital Radio re-launch is intended. Recently the KEF, a financial commission, issued its recommendations for the funding of public broadcasters for digital radio. German public broadcasters will receive 97 Million € for the roll out of digital radio and mobile broadcasting. Both Commercial and Public broadcasters have also released statements of their support for a re-launch of digital radio in Germany based on the Eureka 147 Family of Standards. Broadcasters are currently working together to draft a proposal for how this funding will be used.

Ghana: In the Summer of 2007 Ghana Telecom in collaboration with Blackstar TV began the first mobile TV test transmission the OneTouch network in Ghana. The test is being held in the city of Accra and there is currently one channel available. The operators plan to broadcast six video, four audio and two data channels when the service commercially launches. The commercial roll out with cover Accra and Ashanti followed by a nationwide roll out.

Hungary: An official tender began at the end of 2008 for a DAB multiplex in the VHF Band. The winners will most likely be announced in early 2008. DAB has been on air in Budapest for many years and it is currently possible to transmit eight programmes within the multiplex. The Hungarian government is currently performing a survey on which technology they should use for mobile TV.

Ireland: A DAB trial began in Ireland in March 2007 with 11 stations, six existing national stations and five Dublin stations. This trial covered Greater Dublin and the North East area with coverage of approximately 36% of Ireland's population. This development was led by RTÉ in co-operation with digitalRadio.ie a new industry group set up to explore the development and promotion of digital radio in Ireland. There are now 18 station on-air including six new digital only Irish stations, with a further two stations launch later this autumn.

Indonesia: The regulator and MNC (PT Media Nusantara Citra) launched DMB trials in Jakarta in 2006. In mid 2007 the PST Indonesian electronics company, PT Agis, IPTV systems integrator, Broadband Network Systems and Toshiba joined together to build a nationwide DMB service in Indonesia. A full commercial launch of the service is planned for the first quarter of 2008. DMB and DVB-H commercial services will both operate in the country. DMB is seen as good option for nation wide affordable coverage.

Italy: Following a successful DMB trial, RAIWAY, the public broadcaster, has indicated that the operator in Italy wants to use DMB for mobile TV instead of using DVB-H. This is due to the significantly lower network costs and the lack of frequency for DVB-H. The recent emergence of DAB+ has also helped paved the way for DAB based services in the country. It is expected that DAB+ will be rolled out throughout Italy by the end 2008. On July 25th 2007 Club DAB Italia launched the first DAB+ trials in Italy, broadcasting five audio channels. Vatican Radio has also recently announced the start of a DAB trial in the Pope's State from 1st June 2007.

Kuwait: A DAB trial has been on going in Kuwait City since March 2007. Eight audio programs are broadcast from Liberation Tower on Band III, covering almost the whole country. This test led by Kuwait Radio could evolve into DMB and DAB+ trials in the coming months. A decision may be taken on a commercial roll out.

Malaysia: A DMB trial was launched in January 2008 and lasted for approximately three months. DAB+ has been submitted to the Malaysian regulator as an attachment to the previous DAB/DMB standard application, which is now under public scrutiny. The Government has created a Mobile TV task force to look into the advantages of the various systems available.

Malta: In early 2006, the Malta Communications Authority awarded the country's four terrestrial DAB frequencies. Coverage is expected to reach 95% of the Maltese Islands, and the licence runs for eight years, subject to review after six. The operator, DIGI B, expects to roll out DAB+ for audio services in May 2008. There will be over 25 services on the multiplex and will include MOT, EPG and DLS applications.

Netherlands: There is currently 70% DAB population coverage, which is expected to rise to 90% in 2008. The Dutch Government has approved the licensing of radio spectrum in December 2007. DAB licenses will be handed out via an auction within the next months. Two national coverage licenses in Band III and one nation-wide coverage license in L-Band will be issued. Each individual allotment must contain a minimum of six radio programmes. The remaining capacity can be used for other multimedia broadcasting services. MTVNL, Mobiele Televisie Nederland, together with T-Systems and MFD, launched a six-month DMB trial on the 11th July 2007. The trial covers the area of Den Haag using L-Band. There are currently four video channels being broadcast during the trial. MTVNL are now in the planning stages for the auction. The National Public Broadcaster, NOS, currently broadcasts on DAB multiplex in the Netherlands.

New Zealand: Kordia have been operating a DAB pilot service in Auckland and Wellington since October 2006. Currently nine audio programmes are being simulcast. It is expected that DAB based coverage will be increased in the coming months. Kordia is looking to implement DAB+ in order to demonstrate more value added services as part of their ongoing engineering and consumer trials.

Norway: There are currently two national DAB multiplexes, one of which is split into seven regions. The coverage is now more than 80% with a household penetration of 13.4%. At the end of 2007 DAB coverage expanded in Norway to offer more than twice the number of FM programmes to many rural areas. The networks carry 14 radio channels and EPG. Eight channels are DAB-exclusive, and DAB is already established in more than 20 road tunnels. The media authorities are about to call for applicants to fill additional capacity with new offerings. There are also plans to continue DMB tests, which were performed with earlier success.

Singapore: There is currently 99% area coverage. MediaCorp Radio, the national radio broadcaster, has purchased a new DAB multiplexer to upgrade their existing infrastructure, which was acquired for the launch of its DAB services in 1999. The new system allows for enhanced transmission reliability and increased sound quality. There is currently an on-going T-DMB multimedia data service trial showing the local traffic road condition and a trial Traffic News DAB channel based on automated text-to-speech conversion. Various operators in Singapore have announced their plans for commercial mobile TV services, which could be rolled-out in mid 2008.

South Korea: As the first country to commercially launch mobile TV, South Korea has also seen surprising growth in the number of DMB receivers which is now well over 8.5 million. This number is expected to rise even more with an increase in coverage; services already cover over 75% of the country. These numbers make South Korea the world's most successful mobile TV market in the world! New data applications based on BIFS, have been recently introduced and broadcasters are anticipating an increase in revenue, as these are subscription only.

Sweden: In addition to the 5 unique digital radio audio services there are also a few data services available which include: SR Plus, a BWS service which contains a condensed version of the SR web and SR EPG, a trial version for testing electronic programme guides and SR TPEG, which is a test service for future TPEG streams. There have also recently been test broadcasts of eight Danish digital radio programmes across the Stockholm area.

Switzerland: There is 85% national DAB coverage in Switzerland at the beginning of 2008. New transmitters are being put up all over the country almost every week. Two new DAB channels were launched at the beginning of November 2007 bringing the number of DAB services on air to 33 (19 different brands on 3 multiplexes). There is over 80% listener awareness on the DAB-only channels and DAB penetration on these channels has reached 20%, up from 12% at the same time last year. The launch of the 1st commercial DAB+ multiplex is planned for late 2008 and will be run by SwissMediaCast AG.

UK: The latest audience results confirm DAB as by far the most popular digital radio platform in the UK. On a like-for-like comparison, DAB achieved 12 times more radio listening than either Internet Radio or radio over Digital television. During December consumers bought 25,000 DAB digital radios a day, and a major London department store sold more DAB radios per minute than iPods. Ofcom, the government regulator, has also recently announced the award of the second DAB national radio multiplex to the 4 Digital Group Limited. This multiplex license will allow the 4 Digital Group to broadcast radio and multimedia services. There are also plans to provide a selection of pod casts using DAB+. Slideshow trials are currently on going in the London area.

Overview of the DAB Family of Standards

Digital Broadcasting

Around the world, consumers are experiencing media convergence which is having profound consequences on their lives and across the entire media and communications industry. One of the outcomes is *device convergence*, where a multitude of different media technologies are included in multipurpose, portable electronic devices. However, personal portable devices are not the totality of the market – there are many other types of devices used to consume media, such as fixed receivers, music centres, table radios, all requiring mains power or permanent wired connection. In fact there has never been a more divergent market for consumer products, or such a vast array of standards and technologies. Media content now has to be delivered to these many different types of consumer devices and often by several different methods. This greater technological availability, coupled with the busier lifestyles lead consumers to become increasingly demanding of both the content and the devices on which they consume it. The broadcasting industry is faced with the challenge of meeting these ever-increasing user expectations whilst trying to remain competitive and successful.

Already, in many countries across Europe, the process of moving broadcasting into the digital age is well underway, with new television and radio networks being introduced. However, digitisation is not happening in unison and neither is radio and television digitising at the same pace within each country. In fact, radio is taking much longer to digitise than television and in some EU states digital radio has yet to move beyond the trial stage. Of course, there are various reasons for this, perhaps a key one being the relative economic scale of radio compared to richer platforms such as TV, mobile telephony and the Internet.

Digital Radio

Yet radio remains one of the most enduring and widely used of all media. In a world of ever increasing demand, radio still remains central in the lives of citizen-consumers across the EU with very high levels and long hours of use. All across Europe over 90% of citizens listen to the radio for an average of between 20 and 25 hours per week, or around 3 hours per day. This figure may represent more time than is spent watching TV, is more than is spent listening to iPods, and more than average daily Internet usage. But from a business perspective radio does not have as much revenue as that enjoyed by mobile phones or subscription TV services.

Such is radio's importance, however, that member states across the EU recognise the market itself will not fully meet all of the needs of citizen consumers and therefore have intervened and created particular funding methods for public service broadcasters. At an EU level the Commission and decision makers need to consider the parallel arguments for spectrum, platform and technology issues.

Meanwhile, radio broadcasters know that as the market moves into a multimedia age, they have to respond by enhancing radio's traditional sound-only content proposition.

Right now, DAB digital radio is the only digital technology particularly suited to the current and future needs of radio in a digital age. There are other technologies but none which service the needs of radio specifically or which have the technical flexibility needed to enable radio to develop over the next 15-20 years.

There is a risk that if radio is just regarded as something on the margin of a series of other technologies (WiFi, the Internet, DTT, DVB-H) then over time it may be pushed off to the side. In the UK, for example, there is a sense that this could be happening with DTT with demands on TV multiplex capacity such that radio capacity on DTT cannot be guaranteed. In any event, radio as a sub-feature of DTT, satellite or the Internet means it can never compete satisfactorily.

The DAB Family of Standards

The DAB family of standards is the most global of all digital radio systems, delivering more choice, ease of use and with more consumer products available. It is the system of choice for most EU member States and is the only European technology standard to be authorised for digital broadcasting in China and was selected as the basis of Korea's successful mobile broadcasting system. DAB's development is firmly rooted in Europe with hundreds of millions of Euros and thousands of jobs currently invested in the technology. In the UK alone, DAB is already worth over €200m per year to the economy and with a steady growth year on year.

With the recent addition of DAB+, which uses state-of-the-art MPEG 4 audio, broadcasters can benefit from reduced costs while consumers gain an increase in station choice and quality. DMB is an extension of DAB and offers multimedia content including video and mobile TV. All of these systems work together to provide broadcasters with a flexible, scalable and future-proof digital multimedia platform.

Benefits of DAB and DAB+

DAB stands for Digital Audio Broadcasting and is a method for the terrestrial digital transmission of radio signals. DAB enables a more efficient use of frequency spectrum than analogue radio. Instead of just one service per transmitter and block of spectrum (as is the case on FM), DAB broadcasts around nine radio services whilst DAB+ offers up to 27 services, all within the same multiplex frequency.

In addition to spectrum efficiency, distortion-free reception and mobility, DAB/DAB+ offers many advantages over other systems because they were designed from the outset for the mobility in a multimedia age. DAB/DAB+ can carry not only audio, but also advanced text, EPG, static and animated pictures, data such as traffic information, and streaming video – all on one multimedia radio system!

Consumers with DAB/DAB+ can not only listen to their favourite music programmes, they can sing along with their idols since the lyrics can be shown on the radio display. Others may contemplate the handsome face of a movie star whilst listening to an interview on the current box-office hit. Or a DAB radio listener might also read the news headlines, see weather and financial reports or advertising information on their DAB digital radio display, all whilst listening to the top 40 or to an in depth interview with a European statesman. The listener can be guided through the radio programmes using the EPG, or command his DAB radio to record and store programmes for later listening. These new features are already having an effect on how listeners use and interact with radio in the digital age, yet DAB/DAB+ receivers remain simple and easy to use. There are now over 900 different DAB based receivers in the market, covering the full range of device types with prices starting as low as €25.

Benefits of DMB

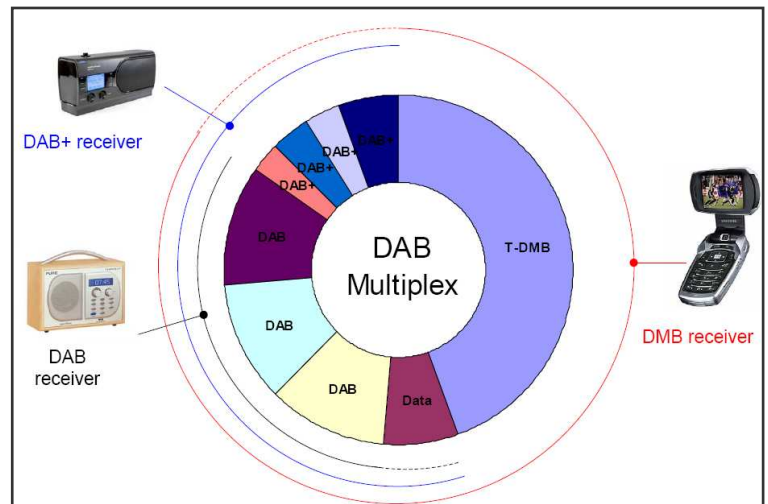
DMB is specifically designed for broadcasting streamed and multimedia audio-visual content to mobile handsets and portable devices. Not only does it facilitate mobile TV but it also enables sophisticated and synchronised interactive data to be broadcast. DMB is an extension of DAB and shares the same transport standard, allowing both DAB/DAB+ and DMB to share the same multiplex, spectrum, infrastructure and receiver chipsets. This means that all current DAB radio broadcasting infrastructures can readily be converted to carry DMB services alongside the DAB content by the simple addition of a video encoder. Consequently, DMB services can be brought to market with incredible speed using already invested broadcast networks in a new, yet cost-effective, manner. This is particularly important for broadcasters, whose preference is to remain true to a free to air business model whilst maintaining control over their content and its distribution.

Additionally, by harnessing a technology that was, from the outset, designed for mobile reception on broadcast frequencies, DMB has two further advantages: Firstly, DMB provides robust reception to consumers on the move with the lowest infrastructure costs of any mobile TV system. Secondly, unlike some telecoms-based networks, the broadcast nature of DMB enables multimedia content to be delivered to an almost-limitless number of users without any risk of network congestion.

Facts about DAB/DAB+/DMB

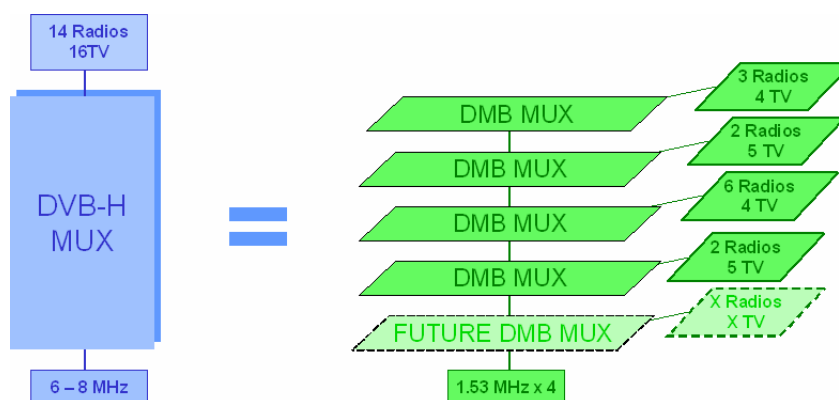
DMB and DAB/DAB+ services can run in parallel

Because these technologies share a common transport stream, multiplexes can carry a mix of DAB/DAB+ and DMB services in any proportion. This offers an efficient use of spectrum, but also provides flexibility for broadcasters who can simply upgrade their existing DAB networks to add multimedia capabilities. Furthermore, DMB receivers can decode DAB signals, giving consumers a choice of radio or mobile television from a single device, with the ability to enjoy a combination of services depending on the receiving device's capabilities.



DMB demands less spectrum commitment

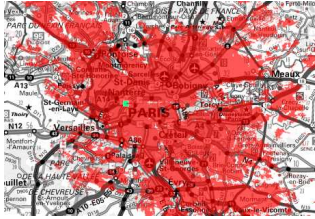
Other mobile TV technologies can only be operated in a large chunk of bandwidth, typically 6-8MHz. In contrast, DAB/DMB can offer both TV and radio services within a just 1.5MHz of spectrum for per multiplex, enabling regulators and broadcasters to devise scalable business strategies. The overall spectrum efficiency of DAB/DMB (compared to, say DVB-H) is virtually identical but whilst 20 or more viable TV services are needed to fill a wideband system multiplex, only 7 DMB TV services, or more likely a mix of, say, 4 or 5 DMB TV and between 2 and 6 DAB radio services (many more with DAB+) which are required to fill one DAB/DMB multiplex. Additional DAB/DMB multiplexes can be added as and when the business justifies it with considerable savings to infrastructure investment and overall risk. This modular approach can result in the same number of channels as a single DVB-H multiplex at a similar (or even lower) overall cost, but without all the upfront risk.



DAB/DAB+/DMB offers more efficient coverage

The technology of DVB-H is best suited to UHF Bands IV or V. Transmitter powers and large bandwidth requirement result in really challenging infrastructure and coverage. Coverage area from a single transmitter is typically relatively small. DAB/DAB+/DMB has the benefit of being broadcast in Band III or L-Band, where a combination of high power frequency planning in Band III gives rise to broader and more comprehensive coverage. Furthermore, the GE06 spectrum plan secured access to L-Band and Band III frequencies for DAB/DMB, both of which is available for immediate use across Europe, whereas DVB-H is still awaiting harmonised UHF IV or V and for parts of the band to be vacated by television broadcasters which may not happen until 2012 or later. L-Band had already been harmonised in Europe for DAB/DMB under the MA02 frequency plan and is particularly suited to metropolitan areas where additional and localised services can complement the wider coverage available from Band III services. Dual frequency DAB/DMB receivers are commonplace already.

DMB coverage
1x Band III transmitter



DVB-H coverage
4 x UHF transmitters



Latest in the Receiver Market

The Latest DAB/DAB+/DMB Receivers

DAB Receivers



The Latest DAB/DAB+/DMB Receivers

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Pure, Highway, In-car

To view over 900 receivers please visit the WorldDMB website www.worlddmb.net

About WorldDMB



About WorldDMB

WorldDMB is an international, non-governmental organisation whose role is to promote the awareness, adoption and implementation of DAB/DAB+/DMB technologies worldwide. The organisation's name refers to 'digital multimedia broadcasting' including radio, mobile TV and broadcast new media services. Its members include public and commercial broadcasters, receiver manufacturers, companies and bodies committed to the promotion of services and equipment based on the Eureka 147 family of standards.

European Origins of DAB/DAB+/DMB

The origins of DAB/DAB+ and DMB lie in the Eureka 147 project, which was European funded with contributions from various European industries. Many broadcasters throughout Europe have invested in the roll out of DAB digital radio networks and services. To date DAB based technology is in over 23 European countries and over 40 countries worldwide.

The European standard DMB, a derivative of the successful European digital radio standard DAB, has been tested or trialled in 14 European countries, including France, Italy, the Netherlands, Norway, Switzerland, the UK, Luxembourg, Sweden, Denmark, Spain, Malta, the Czech Republic and Portugal. Germany launched commercial services using the T-DMB technology in time for the 2006 FIFA World Cup.

WorldDMB Cooperates with European Commission on MODIBEC

WorldDMB is currently involved in the European funded MODIBEC project which brings together key players from Europe and China, including government, trade bodies and the private sector, to promote and support development projects in the area of digital broadcasting. Key to the MODIBEC project is the convergence of mobile digital broadcast solutions between the EU and China. Currently, DAB and its family of standards is the only European multimedia broadcasting standard accepted for digital broadcasting by SARFT, China's state broadcasting regulator. Many of the major broadcasters and manufacturers in China consider DAB/DMB to be the most suitable technology for Digital Radio and Mobile TV because of its proven technology, variety of receiver devices already in the market. WorldDMB was selected as an EU Commission Partner in the MODIBEC project to promote European digital broadcasting standards in China. Other MODIBEC partners working with WorldDMB include blue chip names such as Motorola, Thomson and Siemens plus major Beijing and Shanghai broadcasters, Chinese manufacturing organisations, China Satcom, Blaupunkt and PTV.

DAB licences have already been approved in four Chinese districts to broadcast both audio and multimedia mobile TV services using DMB. DMB services are already on-air in Beijing, Shanghai, Dalian Guangdong and Hennan with combined populations in excess of 50 million people. WorldDMB expects that the European DMB mobile TV technology will become one of the two licensed standards available in China for the Beijing Olympic Games in 2008 (the other being China's own CMMB standard).

European Investment in DAB/DAB+/DMB

Companies throughout Europe, including broadcasters, manufacturers, network operators and governments have invested in the technology. Thousands of European citizens rely on the jobs created in Europe as a direct result of DAB and DMB, and the industry generates hundreds of millions of Euros in the economy across EU member states. In the UK alone, the DAB economy is worth over €200m annually and rising. Moreover, DAB has revitalised the European receiver industry with EU companies designing and manufacturing DAB and DMB silicon chipsets, consumer receiver products and exporting European IP and technology to Asia and other markets.

WorldDMB members and well known European companies actively involved in DAB and DMB include: Arqiva, Audi, Alpine Electronics, Atmel, Bayerische Landeszentrale für neue Medien, Bayern Digital Radio, British Broadcasting Corporation, BMW, Blaupunkt, Bose, British Telecom, Broadcast Service Denmark, Channel 4, Club DAB Italia, Denmarks Radio, Deutschlandradio, Digidia, Digital One, Digital Radio Sudwest, Dolby, Dualit, Factum Electronics, Fraunhofer, Frontier Silicon, GCap Media, Goodmans, Harman Becker, Institut für Rundfunktechnik, Irdeto, JVC Technology, Kenwood Electronics, KPN Broadcast Services, Logitrade, Morphy Richards, National Grid Wireless, NRK, Panasonic Europe, Phillips, Pure Digital, P-4 Radio, Radioscape, Radio France, Radio Romania, Revo, Robert Bosch, RTL 102.5, Siemens, Somerdata, Sony International Europe, SRG SSR, ST Microelectronics, Sudwestrundfunk, Sveriges Radio, Swisscom, Teleko, Teracom, Thompson, TomTom, TDF, T-Systems Media Broadcast, VDL, VRT, Yleisradio