WORLD DAB

Defining the future of digital radio

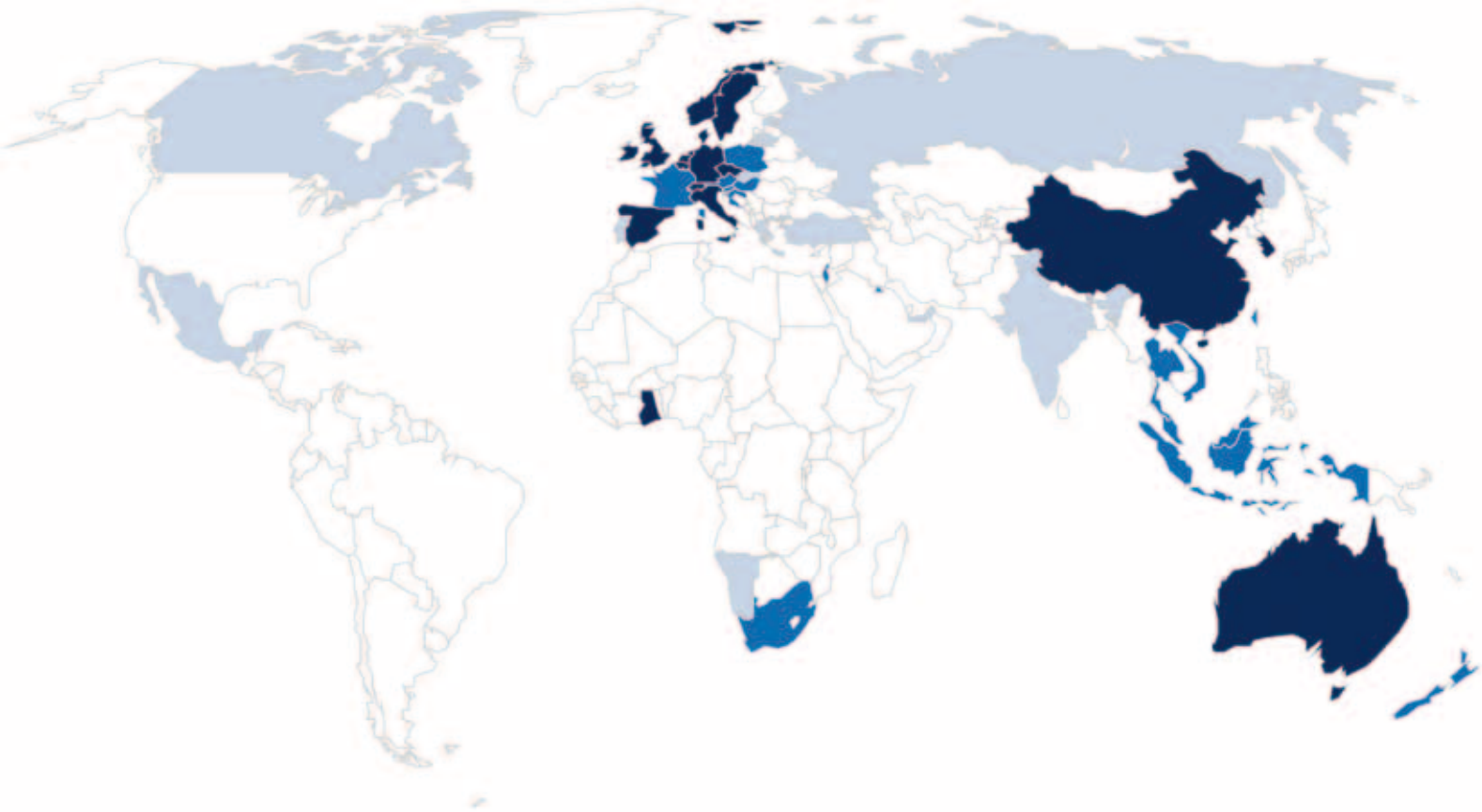
WorldDMB Global Update

Digital radio broadcasting using the DAB family of standards

September 2013

Future Trends in Receiver Technology
Additional Services • Digital Radio In-car
Hybrid Radio • Country Updates
Regulation and Spectrum • Coverage Maps
Receiver Market • Services on Air • Details of Trials

OVERVIEW OF DIGITAL RADIO AROUND THE WORLD



Countries with regular services

Australia
Belgium
China
Czech Republic
Denmark
Germany
Ghana
Gibraltar
Hong Kong
Ireland
Italy
Malta
Monaco
Netherlands
Norway
South Korea
Spain
Sweden
Switzerland
United Kingdom

Countries with trials and/or regulation

Austria
Brunei Darussalam
Chinese Taipei
Croatia
France
Hungary
Indonesia
Kuwait
Malaysia
New Zealand
Poland
Slovenia
South Africa
Thailand
Vietnam

Countries with interest

Canada
Estonia
Greece
India
Israel
Lithuania
Mexico
Namibia
Portugal
Russian Federation
Singapore
Slovakia
Turkey
United Arab Emirates

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ABOUT WORLDDMB

WorldDMB is the global industry forum for digital radio, facilitating the adoption and implementation of digital broadcast radio based on DAB, DAB+ and DMB. Its global membership includes public and commercial broadcasters, network providers, receiver, professional equipment, chip and car manufacturers.

WorldDMB's global membership is made up of senior executives and technical professionals from across the industry involved in the rollout of digital radio. Headquartered in Geneva, Switzerland, WorldDMB has an operational office in London providing on-the-ground support to its global network of digital radio stakeholders.

WorldDMB delivers tailored solutions and advice on all aspects of the switch from analogue to digital radio including regulation, licensing, technical trials, network build out, marketing and production of new digital radio content. Solutions are delivered through leading-edge industry events, car manufacturers' workshops, tailored workshops and seminars, and via the WorldDMB website and members-only information portal. DAB/DAB+/DMB have emerged as the digital standards of choice for broadcasters. Over 500 million people worldwide are within range of a DAB/DAB+/DMB digital radio transmitter and there are well over 1,000 services on air and several thousand receiver models available for in-car, in home and for on the move.

www.worlddab.org

Introduction to DAB, DAB+ and DMB

The DAB family of standards includes DAB and DAB+ for digital radio and DMB for mobile TV. They are flexible, global and open standards and are a means for transmission of terrestrial digital radio signals.

When the original DAB (Digital Audio Broadcasting) was first developed in the late 1980s, it was based on MPEG Audio Layer II coding, which is still commonly used in broadcasting today.

Since then, MPEG Audio Layer III, better known as MP3 has conquered the market of digital music players. Even though still the most successful technology on the market, MP3 has been overtaken in efficiency and performance by MPEG-4 (AAC). This integration of AAC into DAB allowed higher efficiency, meaning the same audio quality at lower bitrates - hence the birth of DAB+.

Another important innovation was the addition of video/multimedia capabilities to Digital Audio Broadcasting, allowing DAB to become a digital mobile television platform DMB (Digital Multimedia Broadcasting) as well as a multimedia digital radio platform.

Both for DMB and DAB+ the technical basis remains DAB. In other words, the physical layer is still the same, just new applications, new transport protocols and a second error control coding layer was added. All three technologies can therefore be used alongside each other on one multiplex and basically use the same infrastructure, so there is a whole range of possible multiplex scenarios.

The most important spectrum for digital radio is Band III, which consists of the frequencies from 174 to 230 MHz.

Future trends in receiver technologies

When DAB radios were first introduced to the mass market the available technology at the time placed limitations on the receivers available, resulting in bulky, energy hungry and expensive devices, which significantly reduced their perceived benefits over existing FM radios .

Variety of shapes and sizes

In the last five years advances in technology have resulted in vast improvements. Today, DAB/DAB+/DMB devices come in a variety of shapes and sizes:

- Low-cost entry-price products enabled by the cost reduction achieved through increased silicon integration
- Clock radios and docker radios, enabled by the increase in processing capabilities
- Ultra portables and handheld digital radios enabled by the reduction in power consumption and size

Additional Services and Visual Functionality

With the increased pace of technical innovation, digital radio has reached a point where the differentiation from analogue FM radios has become increasingly marked especially through additional services such as slideshow and EPG functionality offering greater listener engagement .

Broadcasters are making increased use of visual functionality to provide information on programming, now playing, promotion of broadcaster websites, competitions and registration features. For the first time, radio is able to compete with TV to offer visuals which can be used for advertising and promotional purposes. Advertisers can use colour screens to display special offers, product photos, advertiser's logos, store locations, opening hours – all of this new content can be delivered efficiently and effectively via the broadcast medium.

Functionality which is now familiar to consumers from digital TV, smart phones and tablets is also available on digital radio devices. Pause, rewind, record, and Electronic Program Guides (EPG), on radios with colour touch screens and enhanced user interfaces implemented on an App running on a smartphone or tablet is becoming increasingly mainstream.

Connectivity

Radio is taking advantage of the connectivity that surrounds us all through a network connection, often wirelessly. This connectivity provides increased offerings in terms of content to the listener and also provides the potential for interactivity which opens up a broad range of possibilities for exciting new services such as real time voting to be available via the radio.

Factors driving the development of radio receivers for the future:

- Increased content format offerings from broadcasters
- Increased broadcast of data content
- The availability of interactive services
- Innovation in semiconductors allowing for increased number of devices at lower costs
- Consumer behaviour changes, especially in younger demographics

Radio will continue to integrate with the rest of the digital world and it will become a standard feature within products as the cost of internet connectivity reduces. Today, with connectivity standards such as Bluetooth and WiFi available in smart devices, standalone radios will cleverly integrate themselves with these devices using Apps, resulting in an immersive user experience of the smart device with the benefits of an enhanced user experience of radio.

Prem Rajalingham
VP Worldwide Sales and Support
Frontier Silicon

The Sony XDR-S60 DAB+/DAB/FM Digital Radio provides compact and retro style digital radio with clear sound quality.

The Pure Sensia 200D Connect comes available in a range of colours. Listen to worldwide internet radio, digital radio and FM, as well as hundreds of thousands of on-demand programmes and podcasts.

Today there are thousands of DAB/ DAB+ and DMB compatible devices on the high street and online with prices as low as 20 Euro or 26 USD. This is expected to fall to 15 Euro or 19 USD by 2015.

The following manufacturers offer DAB family of standards compatible products for in the home and for on the move:

AEG
A & R Cambridge Limited
A-Max Technology Co., Ltd.
Albrecht
Arge Techo Trend / Technisat
Armour Group plc
Audio Partnership plc
AudioXperts, Inc.
August
Aves
Bang & Olufsen Audiovisual A/S
Blaupunkt
Bose Corporation
Clarity
COWON
Creative Technology Ltd
Cyrus Audio Limited
D&M Holdings Inc
Dantax Radio A/S
Denver
Diasonic Technology Co., Ltd.
Disruptive Limited
Dual
Dualit Limited
Enspert
E-Ten Information Systems Co. Ltd.
Fine Drive
Geneva Lab
GMYLE
Goodmans
Grundig
HDigit Technology Limited
iCube
IFI Hong Kong (HK) Ltd.
iLuv
Imperial
Intempo Digital
International Receiver Company
Iriver Limited
JVC
Kenwin Industrial (H.K.) Limited
Lenco
LG
Magic Box Products Limited
Marantz
Meritech
Morphy Richards Limited
Nokia
OXX Digital
Panasonic
Philips
Plus Radio
PURE
Revo Technologies Limited
Roberts
Roth Audio
Ruark
Sagemcom
Samsung
Sandstrom
Sangean Electronics Inc
Sanyo Electric Co., Ltd
Sharp Corporation
Soniqu
Sonoro
Sony
Steepletone
TDK Life
Teac
Telefunken
TerraTec
Thinkware
Tivizen
Tivoli Audio
TT Micro AS
Tucan Tectronic GmbH
Tunbow Electronics Limited
View Quest
Winsonic Electric Limited
Yamaha

Additional services offered by the DAB family of standards

Not just radio

Business to business and machine to machine communication is exploding, and the mobile internet is neither cost efficient nor stable enough for the task. The DAB family of standards offers reduced power consumption, improved coverage and a robust signal but it also offers a lot of possibilities beyond the method of distributing broadcast radio. Much more:

Emergency and disaster communication

Broadcasting reaches everyone instantly without capacity constraints. Via DAB, rescue teams can override every radio station with information to the public, or even switch the receiver on if it is off. Graphical and textual information may also be transmitted, i.e. a life-saving map in order to guide people out of a road tunnel where there is a fire. In other words, a DAB radio can act as a disaster alarm and provide rescue instruction and additional public service information all in one.

Traffic information

Update drivers on the traffic situation and automatically re-route them to avoid slow moving traffic or an accident. Maps of a navigation unit may also be updated. All such information reaches everyone at the same time, and is much less costly than using a telecom network.

Public transport updates

You just missed the bus?
At bus stops in the Netherlands, you will see screens telling you when the next one arrives. That is admittedly not very unique, but the information is distributed via DAB. The low power consumption of DAB receivers means that those run on solar power, so no electricity needs to be installed to each and every bus stop. The distribution of the information is also much cheaper than via 3G or 4G.

Educational purposes

Most WorldDMB Global Update readers live in industrialised countries. A lot of people elsewhere do not, and are even without internet connections. There are plans for distributing electronic text books and updated news via DAB to rural schools in some African and Asian countries. To help more children get a better education might be one of the very best way to use DAB.

Control street lights

Do you know how many street lights there are in your country? Hundreds of thousands or even millions, depending on where you live. To be able to control those efficiently will save huge amounts on electricity bills. To do it via DAB is flexible and cheap.

Control railway switches

Critical infrastructure such as switches on railways where high speed trains travel should not be dependent on one distribution technology alone. DAB is being considered as one of the distribution methods to manage the switches in at least one European country.

But can we not do all of this via mobile internet?

No, we cannot. First of all, it falls down when disaster strikes and when everyone tries to communicate or get access to information at once, when you need it most. Secondly, it requires a subscription. Thirdly, the coverage area is much smaller than for DAB. Telenor, the biggest mobile network operator (MNO) in Norway in August announced that Norway will never be completely covered by mobile telephony. And much less so by mobile broadband. Finally, power consumption is much higher, both on the transmitter and the receiver sides.

Gunnar Garfors
President of IDAG, Advisor at NRK

Find out what comes next and what you missed

Electronic program guides are also broadcast, so you can find out what airs next or what you missed out on. The latter can be accessed via internet links available through the EPG. All names of available radio stations are of course also viewable and they can easily be navigated between, without knowing the frequencies.

Mobile television

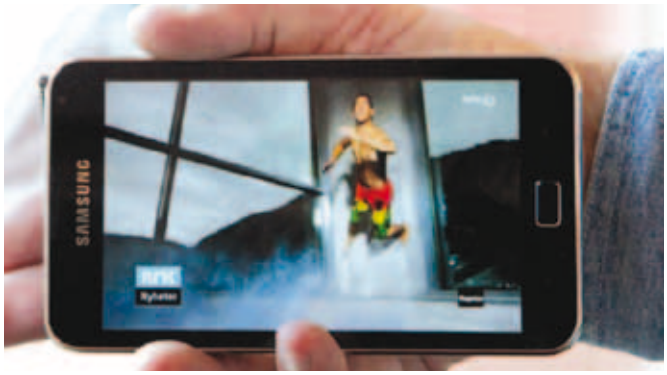
DAB even opens up for mobile TV. It is usually referred to as DMB but could also be referred to as DAB-TV. Both radio stations and mobile TV channels can reside on the same multiplex.

Trigger interactivity

Whether you are listening to the radio or watching mobile TV on a mobile phone or a tablet, you can use the screen to interact with services provided by the broadcaster or a third party company. Calls for interactivity, whether it is a vote, a discussion via social media, tagging of a song, distribution of an internet link or touch screen shopping, can be done via DAB.

Get more from the radio programs

DAB enables extra information to be broadcast together with the audio of a radio station. See photographs from the studio, find out who sings the songs and what they are called, study weather forecast maps or read news stories.



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Digital radio in-car

The DAB family of standards was originally designed to work within a mobile environment such as cars. The following vehicle manufacturers offer digital radio either as line fit, factory or dealer option:

BMW: a car manufacturer's view on digital radio in car

Radio has been the most important entertainment source in the vehicle for many years. It offers linear, moderated programmes and via terrestrial broadcast it enables information to be disseminated economically to many listeners at the same time.

Digital radio offers considerable potential for overtaking analogue radio

The advantages of digitisation of radio in car

Digital radio is well suited for mobile use. The technology is robust, SFN-ready, energy-saving and more importantly allows for additional and value-added services.

The DAB+ offering from BMW Group

DAB+ is available in all BMW Group markets and models. In Autumn 2010, the BMW Group switched its digital radio offering completely to DAB+.

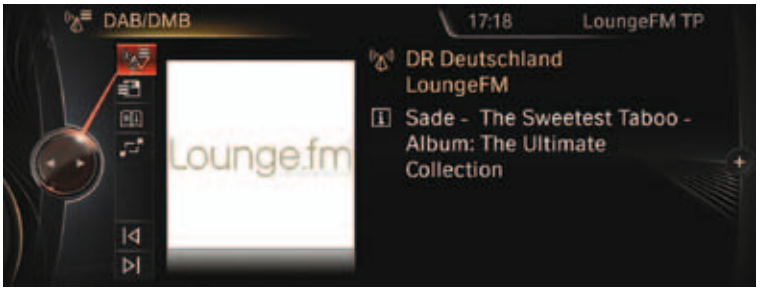
Digital radio is the right technology for vehicles. From the viewpoint of BMW Group the car industry is very well-equipped to exploit the multimedia potential across regions - preferably in the whole DAB coverage area.

Web radio or OnDemand services are useful as an add-on, but should not be seen as a replacement for conventional terrestrial broadcast radio.

Exploiting the digital potential

DAB/ DAB+ allows for:

- Standardised tags and (meta-) data (DL+): Song title, Artist Name, Album Cover, Internet links, iTunes, EPG, etc.
- Visual content: Cover art, visual radio, slide shows
- Data downloads and interactive content: Journaline, BWS, traffic jam data, maps, news
- Announcements
- Asynchronous short messages
- Traffic announcements
- TPEG; including high-resolution traffic data
- Control data for service following and platform-switching
- Support of handover between multicast services: FM DAB WEB



All that counts is what reaches the listener – and this is clear, easily accessible and user friendly information both visually and in audio.

Bertram Hock, Section Manager Broadcast, BMW Group

Service Following

Service following is the term applied to maintaining the same audio or data content that the user has selected in spite of the varying reception conditions that occur, for example when travelling by car or train. Many broadcast network topologies are possible, and the tuned service may be carried on an ensemble with multiple tuning frequencies, on more than one ensemble and may carry common programming with other DAB services, and for audio services, also be carried on FM-RDS or another bearer.

The best service following experience for the listener is achieved when the broadcaster minimises the timing differences between different bearers, taking into consideration the different coding and decoding delays of the different systems. Reliable service following also requires that all the identifiers used are properly allocated in such a way as to make them unique within their respective scope. In the future broadcasters will be bringing their service following signalling into line with the new standard. Receiver manufacturers will be bringing their service following functionality into line too and WorldDMB will be considering where further standardisation of service information functionality can help.

WorldDMB has produced the standard for Service Following through its Technical Committee. If you are a broadcaster you can download this document from the WorldDMB website.

TPEG traffic and travel data via the DAB family of standards

DAB/DAB+ represents a major industry advancement for real time traffic and travel information as it allows for large amounts of traffic and travel information to be broadcast free to air. It allows for more accurate, detailed information that can be relayed and updated faster.

TPEG replaces and enhances RDS TMC using the DAB family of standards as the ideal platform for traffic and travel information. Traffic and Travel Information (TTI) data services require less than 1.4% of the total data capacity to provide feature rich, language independent services for drivers. Next generation TPEG offers real added value to drivers and is of interest to the car industry.

Services offered include:

- Road Traffic Messages
- Public Transport Information
- Local hazard warning
- Traffic flow / prediction
- Weather updates
- Parking Information
- Driver assistance
- Displaying traffic incidents on a map graphic
- Displaying public transport status information on a cell phone screen

TPEG is available in many countries around the globe. The TPEG standard is part of TISA. For further details visit www.tisa.org/technologies/tpeg

In-car digital radio adaptors

While all the major automotive manufacturers are fitting digital radio as standard there are many options for adapting existing analogue radios, such as small adapter units which can be fitted to the dashboard and connected directly to the existing radio.

- There are "integrated adapters" now available which can be fitted discretely behind the dashboard and integrate with existing radio and steering wheel controls.
- There is now a wide range of digital radio head-units which can be fitted to some cars and directly replace the existing analogue radio.

Please note: a professional installer may be required to fit the digital radio equipment.

Manufacturers of in car digital radio – aftermarket products and solutions:

ACV
AEG
Alpine
Auvisio
Axion
Blaupunkt
Caliber
Clarion
Clarity
Connects2
Creasono
Daewoo
Dension
Dual
Fiamm
Garmin
Hama
Imperial
In Phase
JVC
Kenwood
Kufatec
LG
Mpman
Panasonic
Paser
Philips
Pioneer
Pure
Roadstar
Sailor
Sonichi
Sony
Soundbarrier
United
Zenec

How to Set Up a DAB+ Digital Radio Trial

WorldDMB provides support to those switching from analogue radio digital radio by providing information on all aspects of rollout including:

- regulation
- licensing
- technical trials
- network build out
- marketing
- production of new digital radio content

The following recommendations are for guidance purposes for those seeking to make the switch to digital DAB+ digital radio.

Make contact with the government

- Speak to the major broadcasters in your country or local area and agree to jointly approach Government and the regulator to seek permission to run a DAB+ digital radio trial.
- Write on behalf of the group of major broadcaster, to the Minister, with a copy to the Prime Minister or President, to make them aware of the mainstream radio industry's wish to move to DAB+ digital radio.
- In your letter outline the benefits of digital radio for listeners, more choice of content provided by current radio operators; robust reception; interference free clear digital quality; easy tuning, new text and graphic functions to make radio competitive in a digital age. Advertisers will also love these new multimedia features.
- Explain also the benefits for the country are more efficient use of spectrum, more energy efficiency, and the benefits for broadcasters are significantly lower set up costs and lower transmission costs compared to analogue.
- You should ask for, and then attend, a meeting with the Minister and or Regulator to explain the reasons for your wish to establish DAB+ digital radio broadcasts which would include information on the superiority of DAB+ over other digital radio technologies, DAB+ benefits for listeners and for regulators in best use of spectrum and a broad proposed timetable for migration. The first step is a trial.
- Indicate to the Minister and your Regulator that the major radio broadcasters are requesting access to VHF Band III spectrum otherwise known as Band III spectrum (174-240MHz) for DAB/DAB+ transmissions from one or more sites.
- There are benefits of the radio industry working together to mount a trial as ultimately multiplexers will be shared by broadcasters.
- A major broadcasters, (or even an industry wide), approach also makes it easier for Government and regulators to support you, rather than asking them to approve a trial for one or two operators which may cause a competitive issue with broadcasters who are not involved.

Obtain a trial licence

- Meet, or write to, your Regulator requesting a trial licence for a minimum of 2 years to trial DAB+ digital radio in VHF Band III spectrum.
- If you know the specific channel that you wish to use, specify the particular channel or channels in VHF Band III.
- A single DAB+ Ensemble requires 1.712 MHz of spectrum (including guard bands). Up to four DAB+ ensembles can fit inside a single 7MHz Band III TV channel.
- You should also specify the power level you may wish to use.
- In order to be confident of how much power you need it is a good idea to carry out coverage predictions first. Based on practical experience of the recent rollout, Commercial Radio Australia (CRA) recommends a target field strength of 63 dBuV/m at 1.5m metres for indoor reception in urban areas.
- It is important to plan for in-building coverage not just vehicular coverage - to achieve good in-building coverage you should aim for the highest possible power practicably achievable. In Australia a main site at 50 kW ERP is typically used with low powered infill repeaters to cover a single large city such as Sydney or Melbourne.
- You should send a copy (cc) any letters you write to the regulator also to the Minister so that the Minister is aware of progress.

Equipment for the trial

To trial DAB+ digital radio you will need:

1. Transmission site or sites: You may need one high power site or a number of low power sites. A single high power site may be cheaper, and may cause less interference into existing Band III television services if these exist, particularly if the DAB+ transmission is co-sited with television transmissions. Multiple sites may give you better coverage – particularly in hilly areas or areas with tall buildings.

2. Transmitter and Filter: There is no difference between DAB, DAB+ or DMB transmitters, these are all interchangeable. While the transmission power of trials in Australia ranges from 3.1kW to 12.5kW ERP, it is recommended to operate your trial at the highest power possible. For an ERP of 10kW you will typically require a transmitter capable of between 1 and 2kW depending on the antenna system gain. You will need a filter on the output of the transmitter to prevent the radiation of out-of-band RF power.

3. Antenna: All DAB+ transmissions should be vertically polarised. For a trial the cheapest antenna may be a vertical array of dipoles mounted on a single pole. Be aware that such an antenna will not be completely omni-directional and will have reduced gain in the direction of the tower it is mounted on.

Beam tilt can be used if required. This may be necessary for roof top sites in the middle of large cities to ensure coverage near the transmission site. For high tower sites beam tilt may be required to limit the interference caused to other broadcasts.

4. Encoders and Multiplexers: Encoders take an audio input and convert it into the correct format for DAB+ transmission. Multiplexers take a number of such services and combine them into a single Ensemble which is then relayed to the transmitter

site or sites. The encoders may be located at a radio studio centre, or at a central multiplexing site, depending on the equipment used and existing infrastructure.

There are strong benefits if the broadcasters retain ownership and control of the encoders and multiplexers – as this allows the broadcasters greatest flexibility to experiment with audio and data bit rates

5. Data Services: All your audio services should have an allowance for data, typically between 8 and 16kbps. This will allow you to transmit text and images alongside the audio. Even for a trial service it is very cheap and easy to set up a carousel of images to enhance your audio services.

6. Data Circuits: The lowest cost is obtained if all the activities are at the antenna / transmitter site. Alternatively you can locate the transmitter and multiplexer equipment at the antenna site and the encoder equipment at the studio sites although additional equipment and IP capable data circuits will be required.

- To obtain equipment for a trial you should contact the WorldDMB Project Office at projectoffice@worlddab.org.
- For a trial you should seek a loan of equipment or a very low cost lease or purchase.
- Suppliers should see helping you with your trial as an opportunity to trial their equipment and to build a relationship with broadcasters and regulators.

Working with consumers and receiver manufacturers

- You should contact receiver manufacturers and request that they supply you with DAB+ receivers for consumer panel testing during the trial on loan or for cost price to help develop the market.
- Establish a small number of listener panels or focus groups of 10-20 persons. You would need to provide a DAB+ receiver free to each member of the listener panel for use in the trial.

You can use the listener panels or focus groups to get feedback on:

1. content - audio and data
2. coverage and reception
3. receiver performance

You may manage this yourself or use a third party research firm to set up and manage the panels/groups. In Australia during the trial the following panels of were set up:

1. table top or kitchen radio panel
2. mobile DAB+ device panel
3. car radio panel

You could also choose to have panels organised by age or by location.

Stakeholder input

- You may find it helpful to set up an Advisory Group for the trial comprised of manufacturers, equipment suppliers and broadcasters to look at progress and all consumer data.
- You should talk to retailers and the automotive sector and keep them updated on your plans to trial or launch digital radio services.
- It is important to create detailed contact lists for all these stakeholders so you can contact them frequently and easily keep them updated.

COMMERCIAL RADIO AUSTRALIA

WORLD DAB

Defining the future of digital radio

Solutions to help in the switch to DAB+ Digital Radio

WorldDMB offers solutions to broadcasters, regulators and government in the switch to digital radio.

Through workshops, on-air demonstrations and on the ground technical support we provide you with expertise to assist you with:

- regulation
- licensing
- technical trials
- network build out
- production of new digital radio content
- marketing

radio ● multimedia ● traffic data

DAB+ is the digital radio standard of choice for broadcasters across the Asia Pacific

The move from analogue to digital radio is important for:

- Building brands
- Long term transmission and network savings
- New revenue opportunities
- Secure valuable spectrum for radio broadcasters
- Future proof radio in a digital world
- More for your listeners

To find out how WorldDMB can assist in the switch to digital radio contact projectoffice@worlddab.org

About WorldDMB

WorldDMB is *the* global industry forum for digital radio, facilitating the implementation of digital broadcast radio based on DAB+ and DMB. Its global membership includes stakeholders from across the industry and from around the world and includes public and commercial broadcasters, network providers, car, receiver, chip and equipment manufacturers.

www.worlddab.org

AUSTRALIA

Status: Country with regular services, DAB+ launched

Population: : 23,138,398

Coverage: 64%

Services: 209 DAB+

Sales (accumulated): 1,325,000

Penetration by household: 15.2%

Penetration by population: 13.3%

CURRENT SITUATION

Having held automotive workshops and activities with the mainstream automotive sector, the Australian broadcasting industry's activity in 2014 will include providing assistance to countries planning DAB+ services, and technical assistance to the aftermarket sector. Sixteen on channel repeaters will be rolled out across the five mainland capital cities which currently have a single high powered transmission.

Australian broadcasters will continue to work with phone companies and receiver manufacturers to include screen based DAB+ receivers in their devices and will support the work of the hybrid task force to ensure standardisation of hybrid devices.

Currently, DAB+ take up is tracking ahead of forecast, with major consumer brands supporting strong sales in a highly competitive retail market. The industry continues to cross promote the DAB+ platform on its analogue services, especially focusing on the better audio quality and more choice. Retail campaigns on air and online support the major retail periods of Mother's Day, Father's Day and Christmas.

Commercial Radio Australia (CRA) and the public broadcasters are working with the Federal Government on a timetable for regional roll out. The radio industry has put a detailed proposal to the Federal Government.

For information on the following, please visit the WorldDMB website;

DAB+ Fact Sheets

- Digital Radio Industry Report
- Broadcasting Act 1992
- Radiocommunications Act 1992
- Australian DAB+ Transmission Standard
- Influence Of Digital Radio On The Advertising Market The Rationale To Invest In Digital Radio, The Potential Impact On Future Revenue And Viability

COVERAGE

There are 1.6 million people listening to digital radio in the five state metropolitan capitals of Sydney, Melbourne, Brisbane, Perth and Adelaide and 1,318,596 digital radios have been sold (to end Q2 2013). 12.6% of listening to radio is now via a DAB+ digital radio device in the five state metropolitan capitals with Time Spent Listening (TSL) to radio via a DAB+ digital radio at more than 12 hours per week. TSL to digital radios is once again double TSL via internet stream. Each of the capital city markets boast up to 22 new, digital only stations on air, plus simulcasts of all mainstream AM and FM stations. All services have text and slideshow data included in the broadcasts, with many stations having track now playing, news and weather information, as well as advertisements in their slideshow broadcasts. At least one ensemble in each city is broadcasting an Electronic Programme Guide (EPG). DAB+ regional low power trials which commenced in 2010 in Canberra and Darwin continue, this includes a retransmission of the Canberra services inside Parliament House.

Commercial Radio Australia (CRA) and the public broadcasters are working with the Federal Government on a timetable for regional roll out and are hoping to announce the first digital radio services in regional Australia in 2014.

Coverage maps for Sydney, Adelaide, Brisbane, Melbourne and Perth are available on the WorldDMB website.

Coverage maps will be updated as new on channel repeaters commence service.

Click on the coverage tab at www.digitalradioplus.com.au

SERVICES ON AIR

CRA reports 81 stations are broadcasting on DAB+ in Australia, with up to 22 DAB+ only stations in each mainland state capital city. There are currently 13 metropolitan multiplexes and two trial regional muxes on air broadcasting nearly 210 services between them, with most multiplex delivering 18 or more services. Almost all stations in Australia are using slideshow and all are delivering dynamic scrolling text.

Services are listed here: www.digitalradioplus.com.au

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB+ programmes	81	129	210

There is no format restriction for Australian DAB+ services so stations can develop new formats and test the audience's interest in these digital only services.

Stations include dance, hip hop, chill, 80's, 90s, classic, jazz, indie and world music as well as sport and talk. Pop up stations have been used for cultural celebrations, anniversaries of major events, floods and emergencies. Revenue is being made on branded radio stations for retail clients and advertisers.

DETAILS OF TRIALS

The first DAB+ trials started in Australia on 1 July 2007. Prior to this, Australian broadcasters had conducted DAB trials in Sydney on L-Band since 1998 and on VHF Band III since 2003. Adelaide, Brisbane, Melbourne, Perth and Sydney launched high powered permanent commercial and public broadcast services in August 2009. Low powered regional trials are currently on air in Canberra and Darwin and have been extended to continue for another year.

The trials in Canberra and Darwin demonstrate the industry's commitment to regional roll out and provide ongoing research which will inform the cost modelling and coverage planning for regional centres. Further work is being done on FEC code rates, On Channel Repeaters and receiver sensitivity. The Canberra trial is showing that broadcaster collaboration on a single shared multiplex offers a cost effective model and working closely with the regulator on these trials allows a common understanding of the issues and impacts of the research findings on all aspects of planning.

RECEIVER MARKET

Sales of digital radios continue to increase. Official data released for Q2 2013 show sales of 68,417, according to the GfK Marketscope report, bringing the total number of DAB+ digital radios sold since August 2009 to 1,318,596.

Many mobile phones include FM radio and radio stations have created apps to enable listeners to listen to AM, FM and DAB+ stations via mobile stream. CRA is working internationally with other broadcasters, telcos, handset manufacturers and organisations to ensure that, just as for FM, a DAB+ chip will become standard in mobile phones to enable listeners to access all stations via DAB+ free to air broadcast. Increasingly hybrid radio will offer broadcasters greater opportunities to connect with their listeners and clients in real time.

All leading consumer brands now offer DAB+ receivers. There are now more than 140 DAB+ devices available and the average selling price continues to fall. The latest DAB+ radios include colour touch screen, slideshow and interactivity via Wi-Fi connection. CRA will continue to work with chip and module makers to encourage the adoption of categorised slideshow, DL+ and other advanced features and will continue promote radio's new digital features to retailers, manufacturers and listeners.

AUTOMOTIVE

Australia continues to focus on automotive as one of the key drivers for success in digital radio. The radio industry is working alongside the automotive industry to provide both technical support and marketing of DAB+ products within automotive brands. CRA has provided technical information to the automotive industry and aftermarket manufacturers, installers and retailers on areas such as antenna placement, road coverage map and hosting dedicated automotive workshops to bring this information to the manufacturers and suppliers. An advertising campaign and a five state simultaneous outside broadcast event by commercial and public broadcasters was held to celebrate the third year of DAB+ being on-air with a promotional competition to win Toyota models which have DAB+ as standard.

In 2013 CRA broadened its focusing to include the aftermarket sector and ran an Automotive Aftermarket Installers Technical Briefing in February to provide the sector with the most up-to-date information on products available, driving tests and antenna positioning. CRA has also written to the head office of all leading brands to note their support for DAB+ for the European market and ask for an update on their plans to offer DAB+ as line fit or options in Australia.

- DAB+ digital radio is available as standard in selected Toyota and Lexus vehicles, the Ford Kuga SUV and in Hino 300, 500 and 700 series trucks and Isuzu Trucks also offer DAB+ as standard.
- Ten manufacturers now include DAB+ digital radio as standard or an option in selected vehicles: Audi, BMW, Ford, Hino, Isuzu Trucks, Jaguar Land Rover, Lexus, Mercedes and Toyota.
- Throughout 2012, 34% of radio listening in Australia was in the vehicle and this continues to rise year on year.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Australia are:

- Band III
- No cost for spectrum or licences while analogue is operating
- 128 kb per existing commercial/private analog station
- No end date for licences
- Commercial broadcasters have their own multiplexes in each of the current five large markets
- Public service broadcasters have own multiplex
- First option for broadcasters – not a third party – to own the licence for the multiplex
- No new DAB+ only operators for six years from date of switch on in each market
- No format restrictions for existing operators or limits on new DAB+ only stations on what they can offer
- No restriction on amount of data allowed
- No analogue switch off date agreed as yet

In smaller regions it may be that public service and commercial broadcasters share a multiplex to keep costs down.

The ACMA is the regulatory and licensing authority. Currently regulations on coverage are that broadcasters cover their licence area but will not overspill widely into adjacent markets. There is a quota for Australian music on analogue but not currently on DAB+ and video services on radio are prohibited. Other key points of the digital radio legislation in Australia are that there is no cost for the spectrum for incumbent commercial broadcasters and no new entrants are allowed for six years from the start date.

First of right of refusal is given to commercial radio broadcaster consortiums to operate multiplexes. There is an entitlement to a minimum of 128kbit/s (1/9 multiplex) and a maximum of 256kbit/s (1/5 multiplex). The legislation covering digital radio requires a review to consider issues such as the availability and price of receivers, the coverage characteristics of various digital radio technologies and whether any adjustment to the regulatory framework is necessary, including the specification of subsequent start dates for digital radio in further markets. The Government has reserved spectrum for DAB+ digital radio regionally after analogue television switch-off by 2013.

Each incumbent broadcaster in the five state metropolitan capitals with permanent DAB+ services has an entitlement to a minimum of 128kbit/s (1/9 multiplex) and a maximum of 256kbit/s (1/5 multiplex). The Federal Government has allocated 14 megahertz of spectrum in the VHF Band III for the rollout of DAB+ digital radio to regional areas. The ACMA is planning to implement a restack of spectrum following the switch off of analogue television at the end of 2013. CRA is working with the ACMA and the television industry on the restack to enable the best and most efficient use of the available spectrum for the regional rollout of DAB+ digital radio.

While the Federal Government and the ACMA continue planning, CRA's Regional Digital Working Party and Digital Technical Advisory Committee (DTAC) have done detailed digital radio channel planning for commercial DAB+ rollout into regional areas. The top line coverage modelling has allowed CRA and regional commercial broadcasters to estimate the cost of capital and operational cost over the first 10 years for regional centres over 5000 population. The industry has presented a Funding Submission to the Federal Government and has continued discussions with the Federal Government and regional politicians and broadcasters throughout 2013.

To raise awareness with regional audiences, CRA developed a regional campaign "wewantdigitalradio", which has been aired on regional stations and encourages listeners to send a message of to their local member of Parliament to support digital radio being rolled out to their area.

EXAMPLE OF SERVICES ON AIR

'Event' or 'pop up' digital radio stations

Australian broadcasters have innovated with the use of event or pop up stations which are digital stations that exist for a short period of time to allow for flexible niche programming that can highlight an event, a festival or artist. They can be used for generating additional revenue, broadcasting emergency service warnings during fire or the recent Queensland floods and also for broadcasting sports or music events. For example Elf Radio plays Christmas songs throughout the festive season and the Chemist Warehouse station was established specifically for an advertising client and that station has been so successful for the broadcaster and client that it will continue on air.

EMERGENCY BROADCASTING

Radio broadcasts are considered essential during times of emergency as they cope well with large audiences listening at the same time and do not suffer congestion as online services do. Battery operated radios are often relied on to get communities through cyclones in Australia's north and bushfires and floods which are regularly experienced throughout the country. A pop up station, 4TAB FLOOD was put on air to offer information and advice to the people of Queensland during serious flooding which affected large populations. CRA and the trial broadcasters in Canberra and Darwin have been working closely to aggregate feeds from the Emergency Management agencies and the Bureau of Meteorology to source and appropriately escalate information for broadcast over text and slideshow.

CONSUMER MARKETING

Commercial Radio Australia (CRA) has released three new radio ads promoting digital radio as the ideal Father's Day gift.

Produced by radio specialist agency Eardrum, the series of three 30 second ads feature some not so subtle hints from dad on what he wants for Father's Day.

The radio campaign will play for three weeks, across 42 commercial radio stations in the five digital radio metropolitan markets of Sydney, Melbourne, Brisbane, Adelaide and Perth, and features a bonus offer Sony Headphones valued at $69.95 with every purchase of any Sony DAB+ product at all participating retailers.

To listen to the new digital radio ads click here http://www.digitalradioplus.com.au/index.cfm?page_id=1053

USEFUL LINKS

http://www.digitalradioplus.com.au - Information about the rollout of digital radio services in Australia (Digital Radio Plus)
http://www.wewantdigitalradio.com.au - The We Want Digital Radio site is a way for all Australians, particularly those living in regional areas with no current access to digital radio, to ask all political parties in the Federal Parliament to support the roll out of digital radio outside of the big cities as soon as possible.
http://www.abu.org.my/ - Asia Pacific Broadcasting Union

AUSTRIA

Status: Country with trials and/or regulation

Population: : 8,424,000

CURRENT SITUATION

Digital Radio Austria (Verein Digitalradio Österreich) will apply for a DAB+ trial license and hopes to receive approval to begin broadcasting DAB+ test transmissions before Christmas 2013. Two transmitters will operate as a single frequency network, with one transmitting a 10kW signal. This test mode is scheduled to last a year, with the possibility of an extension in to 2015. The twelve radio stations which will take part in the trial are currently being selected.

Unlike earlier trials, consumers will receive more information on this new way of radio consumption and there will be a large volume of digital radios available in consumer electronic shops.

Austria is committed to a digital radio future and a report by the regulators, the Austrian Communications Authority (KommAustria) and RTR-GmbH recommended DAB+ in Band III as the way forward. As planned, KommAustria completed a call for interest regarding DAB+ in August 2012. KommAustria intended to launch DAB+ by an open call for tender regarding the DAB+ network if enough parties showed believable and sustainable interest. A minimum limit of 12 possible programs (to fill one MUX coverage) was set. Unfortunately this limit was not reached as too few parties showed interest or failed to meet the criteria of the call for interest. Most remarkably, the public broadcaster ORF and the bigger players in the Austrian market did not show interest but strongly voiced their opposition against the launch of DAB+ in Austria. However there is a group of broadcasters who are very outspoken in favour of DAB+, but the majority of radio stations remain unsure. The public broadcaster ORF has recently renewed its objection to any DAB+

plans. In the upcoming "Digitalisation Concept" which marks the authority's official strategy and schedule for the digitalisation of broadcasting, KommAustria plans to elaborate on the technical details of a possible DAB+ network. There will be no further calls for interest but the possibility for a call for tender upon request. Nevertheless a working group that was created in 2009 to consider the countries digital future is still at work. It´s members are stakeholders from the Austrian radio market who represent opponents and proponents of digital radio. It consists of the regulatory authority, the public broadcaster ORF, the commercial and non-commercial broadcasters associations, the electronic industry and consumer associations. The group is constantly watching and evaluating the progress of digital radio in other European countries. The success of digital radio in Germany will have an impact on whether Austria decides to implement DAB+.

New club aims to establish digital radio in Austria

The Austrian Association of the Electrical and Electronic Industry (FEEI), and Austrian radio stations such as Radio Arabella and LoungeFM have founded the digital radio club, Digital Radio Austria. The aim of the new organisation is the promotion and development of digital radio in Austria, developing the media category "Radio" in the digital media world, the establishment of radio on new platforms and to promote the provision of information and support for education and training in the field of electronic and new media.

COVERAGE

The application for a test phase will foresee one year, with the possibility of an additional second year. After this test phase, a rollout from east to west of Austria is intended to start.

SERVICES ON AIR

Currently there are no services on air. The Austrian regulator has authorised test transmissions to the network operator ORS GmbH on Block 6A from the Pfänder. This would be a site that would cover the three-country border areas of Austria, Germany and Switzerland. The licence is valid for 12 months, beginning from October 2012.

DETAILS OF TRIALS

Two DAB trials ended in 2008. One had started in 1999 in the capital Vienna and covered up to 1.73 million people. The other one started in 2000 in the federal state of Tyrol (two sites near the capital of Innsbruck) and covered round about 295,000 people, approximately 40% of the Tyrolian population. The two trials were run by the public broadcaster ORF, with only ORF programs transmitted. About 19% of Austria's population was covered by a T-DAB signal.

In 2011 the network operator ORS GmbH, a 60% subsidiary of the ORF, made plans to launch a DAB+ trial in 2012 but stopped the project in autumn 2011.

The trial that ended in 2008 included three transmitters in Vienna on Channel 12B. The multiplex featured classical music, Radio Wien (local station), pop music and FM4 pop music (all by ORF). The Austrian public broadcaster ORF was also awarded a DAB digital radio trial licence for the Federal State of Tyrol. ORF set up two DAB digital radio transmitters in Tyrol, covering the Inn Valley between Kufstein and the Brenner Mountain (Channel 12C). Ö1, Ö3, FM4 and the regional station Radio Tyrol, were available on the multiplex. This meant that there was continuous DAB coverage between South Germany and Northern Italy.

REGULATION AND SPECTRUM

The market is regulated by the Austrian Communications Authority (KommAustria) and by the Regulatory Authority for Broadcasting and Telecommunications (Rundfunk und Telekom Regulierungs-GmbH, RTR) that provides operational support for KommAustria.

USEFUL LINKS

http://www.rtr.at/en/rtr/RTRGmbH - Regulatory Authority for Broadcasting and Telecommunications (Rundfunk und Telekom Regulierungs-GmbH, RTR)
https://www.rtr.at/en/m/InstitKommAustria - Austrian Communications Authority (KommAustria)
https://www.rtr.at/en/tk/TKK - Telekom-Control-Commission (TKK)
http://www.digitalradio-oesterreich.com/ - Verein Digitalradio Österreich (Digital Radio Austria)

BELGIUM

Status: Country with regular services, DAB launched and DAB+ trial

Population: : 11,000,000

Coverage: 95%

Services: 16 DAB

CURRENT SITUATION

French speaking Belgium (Wallonia and Brussels)

The Radio Télévision belge de la Communauté française de Belgique (RTBF) is the public broadcaster for the Belgian French speaking community. Since 1998, RTBF has operated one DAB multiplex simulcasting its five FM radio stations and two BRF (the Belgian German speaking public broadcaster) FM radio stations, covering of Brussels and Wallonia. On this multiplex, RTBF is also testing four DAB+ audio and data channels (indifferent bit rates and with slideshows) for itself and also for the private radio stations. The aim is to plan a roadmap for DAB+ in French speaking Belgium together with the private broadcasters, subject to approval from the French Community Government and the regulator, the Conseil Supérieur de l'Audiovisuel (CSA). In Spring 2011 a common vision of the main broadcasters, both private and public, was defined with a four-tier strategy for migration from analogue to digital radio (DAB+ broadcast; hybrid radio; single online radio player and radio on TV). In summer 2011 the Parliament of the French speaking Community adopted unanimously a resolution asking the French-speaking Government to support the migration to digital radio from 2011 onwards.

The CSA (regulator) launched a public consultation about digital radio in autumn 2011 which provided positive feedback. In spring 2012, the CSA recommended to the Government a DAB+ rollout based mainly on two layers in Band III. In June 2012 the Government authorized RTBF to proceed with DAB+ trials for commercial and non-profit radio stations licensed by the CSA.

The next step is to achieve a public funding agreement to finance the investments needed for the technical DAB+ rollout, upgrade of the RTBF DAB network to DAB+ to ensure deep indoor coverage of Brussels and Wallonia, for a potential public launch in 2015 (to mark the 101st anniversary of the first radio broadcasting in Belgium). RTBF is testing Radio DNS interactive slideshows on its DAB+ channels.

Flemish speaking Belgium (Flanders and Brussels)

"De Vlaamse Radio – en Televisie omroep" (VRT), is the public broadcaster for the Belgian Flemish Community. VRT has one DAB multiplex in operation with nine radio stations including four DAB only brand extensions. The stations on air include Nieuws+ (news), Sporza (sport), Klara Continuo (classic music) and MNM Hits (Top 40). Norkring, which operates VRT's multiplex, also has a license for another multiplex and is currently examining the possibility of a DAB+ roll out. In February 2013 Norkring launched a "call for interest" for a DAB+ roll-out in the Northern part of Belgium. Based on the results of this call, Norkring has now launched a second call to include a progressive deployment, with the Brussels DAB+ roll-out in the first phase. Norkring is waiting for the answers of this second call, planned in Autumn 2013.

Country wide

As VRT and RTBF's multiplex covers the whole country's main road networks, since 2012 they have been broadcasting data traffic information (via TPEG) on behalf of Be Mobile, a company specialised in the provision of traffic and mobility content. Their first client so far is Toyota Belgium.

COVERAGE

In the three Belgian regions (Flanders, Wallonia and Brussels), DAB coverage reaches more than 95% of the population. All motorways and main roads are covered (therefore mobile coverage is about 99%).

RECEIVER MARKET

The availability of DAB and DAB+ receivers in Belgium continues to grow with a range of devices now on the market, including kitchen radios, handheld and tuners. As more DAB, DAB+ services launch, with marketing campaigns to support them, sales are expected to grow significantly.

DETAILS OF TRIALS

RTBF is currently testing four DAB+ channels (audio and data programmes with slide show) in several bit rates for itself and for commercial or non-profit radio stations licenced by the regulator CSA.

REGULATION AND SPECTRUM

Broadcasting legislation in Belgium differs between the Flemish, French and German speaking communities. Licences will be granted to programme providers in the French and German communities. Licences in the Flemish community are granted to the multiplex operator and may have restrictions. Simulcasting is allowed for the public services within the three French and Flemish communities and there are no specific rules or conditions governing this. There is no specific legislation governing advertising, sponsorship and marketing on DAB digital radio broadcasting.

In French speaking Belgium, DAB, DAB+ rollout is currently considered only to be broadcast in VHF Band III. As for DAB, even L-Band could also be considered. Currently there is only one layer in operation in Band III (made of two regional multiplexes – for the Flemish and the French speaking parts of the country). There are plans to roll out a second layer, which would also be regional in the Flemish part of the country (Flanders and Brussels), and which would be a local layer (made of four multi provincial multiplexes) in the French speaking part of the country (Wallonia and Brussels). Tests for ultra-local DAB broadcasting throughout 2013 are on-going to find efficient solutions for non-profit local radio stations.

SERVICES ON AIR

In this country there are two regular national multiplexes on air.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	12	4	16

In the Flemish-speaking part of the country there are nine DAB audio programs (four of which are exclusive to DAB) broadcast by Norkring for the public broadcaster VRT.

In the French-speaking part of the country there are five DAB audio programs (simulcast) by the public broadcaster RTBF and two DAB audio programs (simulcast) by the German speaking public broadcaster BRF. Four DAB+ audio and data programs are also currently being tested. There is also a data channel for traffic information (TPEG) on both multiplexes.

EXAMPLE OF SERVICES ON AIR

Classic 21+ is RTBF's trial in DAB+ for its rock'n pop music station called Classic 21 (created in 2004). The trials are made in different audio bit rates (from 64 to 96 kbps, always with 16 kbps data included). The data is used for slide slows and they show illustrations related to the on air programme (e.g. music track name and artwork, presenter pictures, programme name and visuals and other content information) as well as traffic information, weather conditions and forecasts, hot news, listener's tweets, self-promotion for other programmes, station events and much more. 'PureFM+' is RTBF's trial in DAB+ for its young trendy 'PureFM' station (created in 2004).

USEFUL LINKS

www.norkring.be - Norkring is the network operator of the VRT Multiplex

http://www.vrt.be/ - VRT is the public broadcaster in the Flemish region of Belgium

http://www.rtbf.be/ - Radio Télévision Belge Francophone (RTBF) is the public broadcasting organization of the French Community of Belgium

BRUNEI DARUSSALAM

Status: Country with trials and/or regulation, DAB trial

Population: 408,786

Services: 5 DAB

CURRENT SITUATION

In 2007 RTB (Radio Television Brunei, the public and main broadcaster) began a DAB trial, originally to last for five years to include simulcast services. Five RTB stations currently broadcast on DAB in Brunei.

A task force has been set up within RTB, which is working closely with AITI (Authority for Info-communications Technology Industry of Brunei) on the plans for a commercial launch.

SERVICES ON AIR

In this country there is one Trial national multiplex on air.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	5	0	5

CANADA

Status: Country with interest

Population: 35,141,542

CURRENT SITUATION

DAB services were on air in Canada's major cities - Toronto, Montreal, Vancouver, Ontario and Ottawa for around 10 years with coverage reaching about 35% of the population. While the rest of the world has embraced DAB or DAB+ using Band III, Canada's digital output was restricted to L-Band. This has resulted in a lack of receivers in the market, high prices and slow consumer uptake. Combined with the fact that the US, Canada's powerful neighbour to the south, has opted for a different system of broadcast, this has led to a complete re-think by the regulator, CRTC, and broadcasters on the future direction of digital broadcasting in Canada. The situation is complicated by the need for spectrum, currently occupied by dormant DAB transmitters, for new digital TV and broadband roll out. The CRTC has discarded its 1996 plan for DAB replacement of all AM and FM radio. Instead it proposes keeping these stations on analogue and using L-Band for new digital multi-media services. However, stakeholders are considering how L-Band is used in other countries before deciding how to reallocate the spectrum. As a result, while existing DAB multiplexes are slowly being dismantled, there is no firm plan for replacing them and delivering digital radio services to Canada's population of 32 million potential listeners. Canada's broadcasters are expected to lobby for a portion of the L-Band spectrum to be retained for broadcasting services.

DETAILS OF TRIALS

Radio-Canada (CBC) and Communications Research Centre Canada carried out demonstrations of DMB in Montreal, Toronto and in Ottawa to raise the awareness of these DAB-based technologies among broadcasters, regulators and Telecom (Mobile) industry. Also, there were seven DAB stations (four commercial and three public) field-testing in Halifax, Nova Scotia. A service was also on-air in Windsor in 2000 however this has now ceased.

REGULATION AND SPECTRUM

In its 1995 transitional policy, the CRTC allowed a maximum of five programmes per multiplex, which prevented broadcasters from offering an attractive choice of programmes on DAB. In 2006 in response to requests from broadcasters the Canadian Radio-television and Telecommunications Commission (CRTC) agreed to change Canada's 1995 transitional policy to allow more freedom to provide DAB only programmes to attract more consumer interest (i.e. more services per multiplex, use of L-Band, multimedia, subscription). There is no news on the future of regulation in this market.

CHINA

Status: Country with regular services, DAB and DMB launched

Population: 1.3 billion

Coverage: 8%

Services: 2 Data, 4 DMB, 21 DAB

CURRENT SITUATION

China's State Administration of Radio, Film, and Television (SARFT), chose DAB for the standard for digital audio services in May 2006, and tested DMB services in the following years. Beijing Jolon, GTM in Guangzhou and other broadcasters provided DMB services during the Olympic Games in 2008. DAB is now on air in three cities (Beijing and HongKong in Band III and Shanghai in L-Band).

Some of them provide several DMB services among audio services. Beijing Jolon, the biggest local broadcaster in Beijing, has launched 'Push Radio' based on DAB in 2010 in Beijing. Beijing Jolon broadcasts 30 hours – or 25 program channels everyday through Push Radio. 16 Audio programs are broadcast 15 times per day and downloaded onto receivers. Value added services such as news, data and slideshow have been provided through Push Radio services. Cooperating with Commercial Radio Australia (CRA), Beijing Jolon has upgraded their latest generation receivers to support DAB+ and is trialling Push Radio in Australia.

COVERAGE

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB prgrammes	17	4	21
DMB programmes	4	0	4
Data services	0	2	2
Total	21	6	27

Coverage is currently available in the following cities:
Beijing (approximate coverage: 20 million people)
Shanghai (expected coverage: 10 million people)
Hong Kong (approximate coverage: 7 million people)

SERVICES

There are four regular regional multiplexes in Beijing, one local multiplex in Shanghai and one local multiplex in Hong Kong on air. Beijing: 20 radio services (16 of which are simulcast), four video services, and one Push Radio service, two other data services by Beijing Jolon (commercial broadcaster) on Band III. Beijing Communication Radio is broadcasting traffic information on DAB via TPEG.

Four multiplexes are broadcasting in VHF Band III (CN11A, 208.720 MHz; CN 11B, 210.432 MHz; CN11C, 212.144 MHz; CN 11D, 213.856 MHz), audio broadcasting 17 services, video broadcasting four services, slide/data broadcasting one service and Push Radio one service. There are more than 15 main transmitters in Beijing now.

RECEIVER MARKET

There are several digital radio receiver retailers in Beijing and Shanghai. To date over 80,000 devices have been sold in Beijing alone. Beijing Jolon developed a Push Radio receiver named "SoundCube", which can both receive live DAB/DAB+ broadcasting and Push Radio services and are planning to market 100,000 pieces. Lenevo was the first Chinese manufacturer to develop a DMB mobile phone for the Chinese market. Macostar has produced the first DAB+ mobile phone (MA11) with image/slide display which supports Chinese characters.

DETAILS OF TRIALS

Guangdong Province has completed a Band III trial in the Pearl River Delta area. Shanghai has had L-Band trials of DAB based services with four video, four radio and three data services since 2005.

Trials of DAB/DMB based services are expected to begin shortly in other locations across China.

REGULATION

SARFT manages licences and standards in China and it was recently announced that no trials of digital broadcasting were permitted without a licence. Currently, Eureka 147 based services are the only European digital broadcasting technology that has been granted licences in China. In 2007 four operators were granted trial licences following SARFT approval.

USEFUL LINKS

http://www.abs.ac.cn/en/ Academy of Broadcasting Science (ABS)
http://www.sarft.gov.cn/ The State Administration of Radio, Film, and Television (SARFT)

CHINESE TAIPEI

Status: Country with trials and/or regulation, DAB Trial

Population: 24 million

Coverage: 8%

Services: 7 DAB, 1 DMB

CURRENT SITUATION

The Broadcasting Corporation of China (BCC), a private network with nationwide coverage, operates three FM and three AM channels as well as a digital audio broadcasting system. In July 2010, the Government of Chinese Taipei announced plans for digital convergence by 2015. During the first stage of the program, from 2010 through 2012, a number of bills being formulated and sent to the legislature for review, including a radio and TV broadcast law.

Chinese Taipei has been a supporter of DAB and DAB+ broadcasting and planned for a full implementation of digital broadcasting (both TV and radio) by 2010. Lack of marketing, promotion and consumer awareness has slowed this digital expansion. The new laws currently being developed should set a firm timeline in place for digital conversion of all media and telecoms. Currently DAB in Chinese Taipei is solely operated by SuperFM on a trial basis. There are seven trial services available including one DMB. SuperFM broadcasts multiple foreign language programmes, for example in Vietnamese, Thai and Filipino aimed at foreign nationals living in Chinese Taipei but who are unable to listen to their home nation's radio programmes via analogue radio.

COVERAGE

Previous trials undertaken by BCC (formerly the public broadcaster, now the commercial broadcaster) saw a network of transmitters that covered 90% of the population, whilst the commercial operators mainly concentrated on Taipei.

SERVICES ON AIR

In this country there is one trial national multiplex on air. Seven trial services are available including one DMB service.

USEFUL LINKS

http://www.idab.com.tw - IDAB also known as Taiwan New Sound DAB Preparatory Office
http://www.bcc.com.tw/ Commercial broadcaster (Broadcasting Corporation of China (BCC))

CROATIA

Status: Country with trials and/or regulation

Population: 4.403 million

CURRENT SITUATION

Trials using DAB were launched by Croatian Radio Television (HRT), the biggest Croatian public broadcaster, in 1997. Centred around Zagreb, the HRT multiplex broadcasted simulcasts of its three national radio services.
This trial has now been completed.

COVERAGE

DAB coverage existed in northern Croatia around the capital city of Zagreb and its suburbs. The network could potentially reach 1.2 million people, or around 20% of the Croatian population.

CZECH REPUBLIC

Status: Country with regular services, DAB and DAB+ launched

Population: 10,546,000

Coverage: 53%

Services: 6 DAB, 13 DAB+

CURRENT SITUATION

Network operator TELEKO operates one regular local DAB/DAB+ multiplex using Band III and L- Band, which reaches five million inhabitants of the Czech Republic. The signal broadcasts in Prague and the surrounding area, in Příbram, Brno and the surrounding region, the Moravia-Silesian region, the Usti nad Labem region and Hradec Kralove region. 15 radio stations are being broadcast on the TELEKO multiplex.

Network operator RTI CZ operates 52 radio transmitters in the FM band, predominantly in Western Bohemia. In 2011 RTI CZ obtained a license for Digital Radio DAB (L-Band) in the Pilsenregion, Carlsbad region, South Bohemian region and in Prague. RTI cz operates the DAB multiplex in West and South Bohemia.

From 1 March 2013, the selection of digital audio broadcasting (DAB) was expanded to include new projects from the public broadcaster, Czech Radio. Owners of digital audio devices are now able to listen to three new stations, two of which have been up until now limited to online broadcasting: Czech Radio's 'Radio Junior', 'Czech Radio Jazz' and 'Czech Radio Plus'.

The digital audio signal is currently available to approximately 53% of Czech inhabitants. Digital networks are powered by three operators which have obtained the appropriate permission from the Czech Telecommunication Office. Up to 18 stations are available to audiences in many Czech regions.

The Czech Parliament published four key requirements for successful implementation of digital broadcasting:
The government should announce a schedule for the development of terrestrial digital radio broadcasting including a specific deadline for the completion of the transfer from analogue to digital broadcasting
Czech Radio should permanently obtain frequencies for digital broadcasting and should become, like Czech Television, the operator of its own public service multiplex
Digital TV broadcasting has proven that it would be appropriate to use a national body which would be able to efficiently coordinate the steps taken by all individual entities. Following this example, the parties involved should establish the National Association for

Digital Audio Broadcasting (NA DAB) comprising - in addition to the representatives of Czech Radio - ministries and governmental offices, licence holders, automotive manufacturers, operators, electronic appliance dealers and other stakeholders.
The state has to motivate private operators. An amendment to the law on broadcasting could, for example, loosen the rules regarding the ownership of digital stations

In addition to Czech Radio, other commercial entities have expressed their support of digital broadcasting such as Lagardére Active CR (holder of the first historical digital licence) and the dance music radio station, SeeJay Radio. A unilateral resolution in favour of DAB was also adopted by the Council for Radio and Television Broadcasting.

COVERAGE

Coverage of the Czech Republic by T-DAB is about 5.3 millions of inhabitants, 53% of the population.

SERVICES ON AIR

Digital Audio Broadcasting (NA DAB) comprising - in addition to the representatives of Czech Radio - ministries and governmental offices, licence holders, automotive manufacturers, operators, electronic appliance dealers and other stakeholders.
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In this country there are three regular local multiplexes on air.

1. TELEKO

TELEKO transmitters

Transmitter	Channel, Ensemble ID	Power emitted [kW] and polarization	Coverage	Date of switch on
Praha - Strahov	LA, 2001	2,5 V	Prague and surroundings	01.04.2011
Příbram - hvězdárna	11A, 2001	1 V	Příbram and surroundings	15.02.2013
Brno - Barvičová	LE, 2001	2 V	Brno and surroundings	01.08.2011
Frýdek-Místek - Lysá hora	LP, 2001	5 V	Moravskoslezský region	01.09.2011
Trutnov - Černá hora	5D, 2001	0.6 V	Královohradecký region	13.07.2013
Liberec – Proseč	LL, 2001	1 V	Liberec, Jablonec n./N. and surroundings	19.12.2012
Velemín - Milešovka	LG, 2001	2 V	Ústecký region	31.01.2013

Content of TELEKO multiplex

Name	bitrate	DAB standard	
ČRo Radiožurnál	72 kbits/s	DAB+	(MPEG4)
ČRo Dvojka	128 kbits/s	DAB	(MPEG2)
ČRo Plus	48 kbits/s	DAB+	(MPEG4)
ČRo Wave	128 kbits/s	DAB	(MPEG2)
ČRo Jazz HD	120 kbits/s	DAB+	(MPEG4)
ČRo D-dur	64 kbits/s	DAB+	(MPEG4)
Radio Junior	64 kbits/s	DAB	(MPEG2)
GAMA RADIO	64 kbits/s	DAB+	(MPEG4)
RADIO PROGLAS	64 kbits/s	DAB+	(MPEG4)
SeeJay Radio	64 kbits/s	DAB+	(MPEG4)
Radio Vaticana	56 kbits/s	DAB+	(MPEG4)
RTL 102.5	72 kbits/s	DAB+	(MPEG4)
RTL Classic	64 kbits/s	DAB+	(MPEG4)
RTL Groove	64 kbits/s	DAB+	(MPEG4)
RTL ItalianStyle	64 kbits/s	DAB+	(MPEG4)

2. RTI cz

Plzeňský region Block: LM, 1473.504 MHz, transmitter Plzeň: 2kW ERP, coverage 246 000 inhabitants
Jihočeský region Block: LD, 1458.096 MHz, transmitter České Budějovice: 2kW ERP, coverage 145 000 inhabitants
Karlovarský region Block: LJ, 1468.368 MHz, transmitter Klínovec: 4kW ERP, coverage 209,000 inhabitants

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	4	3	7
DAB+ programmes	4	8	12
Total	8	11	19

Content of RTI cz multiplex

Rádio Proglas	72 kbit/s	DAB+ (MPEG4)
SeeJay Radio	72 kbit/s	DAB+ (MPEG4)
ČRo Radiožurnál	72 kbit/s	DAB+ (MPEG4)
ČRo Plzeň	72 kbit/s	DAB+ (MPEG4)
Gama Rádio	72 kbit/s	DAB+ (MPEG4)

3. České Radiokomunikace

Prague and surroundings, block LI, 1466,656 MHz, transmitter Prague – Žizkov, 1 kW ERP, polarization V,

Pilot transmission: DAB+, program Radio Impuls and Frekvence 1, started on 28 February 2013. Although this multiplex is sometimes referred to as a pilot transmission, the frequency is licensed.

EXAMPLE OF SERVICES ON AIR

Gama Radio was originally the local analogue station in the city of most Northern Bohemia. They had limited options for how to increase coverage. The station management started to collaborate with the network operators TELEKO and RTI cz and the program coverage area was expanded. Gama Radio now covers 5 million inhabitants. Benefits could be found on both sides. The station now covers more listeners without dramatically increasing the costs, because no transmitters were built by the station itself and there were no licenses needed for the frequencies. The content licenses for digital radio were issued without any obstacles. For the network operator it enabled new attractive content for listeners and set a precedent for discussion with other stations.

SeeJay Radio is a dance radio station which was previously only available on the internet. The station now benefits from a larger audience due to free to air broadcasting via DAB+ on the RTI cz and TELEKO multiplexes. The station is promoting DAB distribution in its content.

RECEIVER MARKET

DAB radio is using L-band and Band III in the Czech Republic and it is important to check if the receiver is ready for use in both bands.

A wide range of receivers are available to buy online (e.g. www.pureradio.cz, www.omko.cz/digitalni-radia/) or in the Czech Radio shop in Prague (www.radioservis-as.cz/repre_info.htm). Sales figures are not yet available.

AUTOMOTIVE

DAB receivers are available as an option in major car brands such as Škoda, VW, Audi, Seat, Mini, BMW, Ford, Jaguar, Land Rover, Lexus, Toyota, Volvo and Opel.

DETAILS OF TRIALS

In August 2007 a trial was launched by TELEKO in cooperation with the public broadcaster Český Rozhlas with three DAB programmes and two DAB+ programmes. This trial used both Band III and L-Band and covered almost 130,000 people. A further trial began in June 2008, again as a joint project between the TELEKO company in cooperation with the public broadcaster Czech Radio. A 2.5Kw transmitter provided coverage of the capital city, Prague, to a population of around 1.3 million. The goal of this non-commercial trial was the promotion of digital radio to the Czech public and Government administrators. In early 2009 a further trial was launched in the second largest city Brno covering approximately 0.5 million people.

Trials have been completed in the Czech Republic and all network operators have been awarded with licenses. Technical trials e.g. for checking signal parameters are operated using the licensed frequencies as a part of the regular transmission implementation. For example, the company Ceske Radiokomunikace is using its L-band licensed frequency for such a test with two programs using the Prague-Zizkov transmitter since early 2013.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Czech Republic are:

- L-Band used
- Three network operators operate a number of regional or city multiplexes with public and commercial programs
- Licenses valid for 10 years (till 2022/2023), but all interested in Band III when free
- No analogue radio switch-off date
- Analogue radio licenses are prolonged till 2025 when commitment to switch over to digital is signed by the license holder
- Current network operators will ask for transformation of L-band licenses to the Band III

Spectrum and content regulation is divided between the Council for Radio and Television Broadcasting (content) and the Czech Telecommunication Office (spectrum). In April 2006 the Czech Parliament adopted a media law focused on digital broadcasting. Each analogue radio license holder which signed the commitment to switch over to digital broadcasting received prolonged analogue license till 2025. Consequently 2025 could be understood as the analogue radio switch off date. There are no obstacles from the content regulator to start digital broadcasting and it has already started.

Spectrum regulator the Czech Telecommunications Office (CTU) has declared that their office will be technology neutral with regard to the DAB audio codec (DAB or DAB+). Licensing was focused on the L-Band which was free and implementation in Band III was waiting for the end of analogue TV transmission in the band (June 2012).

The main document for electronic communication regulation is the Act. No. 127/2005 Coll. On Electronic Communications. This document explains spectrum regulation in the Czech Republic and is the National Table of Frequency Allocation (NTFA) which allocates the frequency bands to particular radio communication services and describes the general conditions for frequency use. The Frequency Band Allocation Plan (National Table of Frequency Allocation) was prepared by the Ministry of Industry and Trade and has been published as Government Decree No. 105/2010 Coll.

The regulatory body the Czech Telecommunication Office (CTU) issues the Radio Spectrum Utilisation Plan (RSUP) which is the detailed description of particular bands and sets the detailed regulation for use of the frequencies. This utilisation plan describes if a license is needed for the use of the frequencies and the selection procedure. Transmitters can be brought into use if the operator is awarded Individual Authorisation, some bands can be used by defined devices based on General Authorisation (e.g. wireless microphones).

L-Band was free and implementation of regular digital radio started here at the end of 2009 when the tender for the nationwide network started. Two applications were submitted by the companies Ceske Radiokomunikace and TELEKO. Both applications were rejected for not fulfilling the tender requirements and no winner was selected.

In 2010 Ceske Radiokomunikace won a tender for 13 regional networks in Prague and Central Bohemia, TELEKO in five regions and RTI cz in three regions. Licenses were awarded in February - March 2011 which are valid for 10 years.

Band III: According to NTFA Band III is allocated to broadcasting as a primary service and to land mobile as a secondary service. Wireless microphones are used in land mobile service only. The switch over to digital TV was finished end of June 2012 and Band III is ready for digital broadcasting, and is planned for T-DAB and DVB-T in accordance with Geneva 2006 Agreement.

Regular broadcasting begun in the Band III on frequencies coordinated by the Geneva 2006 allotments. Individual Authorisations were granted for TELEKO transmitters in Pribram (February 2013, block 11A) and Trutnov - Cerna Hora (July 2013, block 5D).

On 8 August, 2013 the CTU announced the revision of the RSUP together with the draft basic principles of digital radio Band III tenders. Discussion on both documents will end 20 September 2013.

The selection procedure for digital radio networks is anticipated in 2014. Two allotments, 12C in Bohemia and 12D in Moravia, are reserved for the public broadcaster multiplex. CTU expect that this multiplex will be set by the law, which is currently in preparation, not by the tender.

Eight tenders will be for one nationwide and seven regional networks. The technology to be used will be DAB+. The coverage obligation will be 80% of inhabitants and main transport infrastructure (e.g. railways, highways). The tender for a nationwide network will take place first and the winner will not be able to take part in the regional tenders. The method will be one round envelope auction price offer. The minimal price offer is anticipated as CZK 10,000 (around EUR 380) per 10,000 inhabitants. Licenses will be valid for 15 years.

Development related to Band III is connected to the State policy "Digital Czech". The second revision of it was prepared by the Ministry of Industry and Trade in early 2013 and it includes a section on digital radio. It is expected that the Government will support the gradual process of switch over from analogue to digital radio. Digital Czech emphasizes necessary collaboration of the state authorities with the broadcasters, transmitter operators, receiver manufacturers and the automotive industry.

EMERGENCY BROADCASTING

DAB radio is used for emergency warning distribution by distributing programs of the public broadcaster.

For example, during the floods in June 2013 the actual emergency information was included in the DAB radiotext transmission of two public broadcaster programs.

CONSUMER MARKETING

The "chicken / egg" problem was solved by the initiative of the first network operator TELEKO, which offered to include the content from the public broadcaster in the trials and other stations later free of charge. As compensation advertising spots were included in the content.

Other examples of the mutual cooperation were the interviews given with the TELEKO founder in the Czech Radio programme aimed at the popularisation of digital radio with the public. On the programme information was given that receivers are available on the internet or in the public broadcaster's own shop in Prague. This way, digital radio was introduced and listeners were made aware that digital radio is already on air.

USEFUL LINKS

http://www.ctu.cz - Regulator of spectrum, The Czech Telecommunication Office
http://www.rrtv.cz - Regulator of content, The Council for Radio and Television Broadcasting of the Czech Republic
www.gamaradio.cz - Commercial radio station, Gama Radio
www.seejay.cz/dab.html - Commercial radio station, SeeJay Radio
http://www.radio.cz/en - Public broadcaster, Český rozhlas
http://www.radiokomunikace.cz/ - Network operator
http://www.tdab.cz/ - TELEKO, Ltd, Network operator
https://www.rticz.com - Network operator

DENMARK

Status: Country with regular services, DAB launched, DAB+ trial

Population: 5,602,536

Coverage: 95%

Services: 15 DAB, 9 DAB+

Sales (accumulated): 1,700,000

Penetration by household: 41%

Penetration by population: 42%

CURRENT SITUATION

Denmark has one of the highest numbers of DAB users per capita in the world, with 32% of the population having access to a digital radio set. Public service broadcaster DR (Danish Radio) began regular services in 2002 and more than 10% of all radio listening is now on DAB, with an additional 4% on the digital internet platform. Cumulative set sales in 2012 were approximately 1.7 million, of which 0.6 million were DAB+ sets. Since 1 November 2011, DR broadcasts exclusively on DAB multiplex 1 except for a news loop, and multiplex 2 is reserved for commercial broadcasters. A third multiplex is planned for regional and local stations. The latest parliamentary Media Agreement 2012-2014 stipulates that the FM band will close in 2019 if at least 50% of radio listening is on digital platforms by that time. As part of the agreement, the national single-frequency DAB block now used by public service broadcaster DR may be swapped for the two DAB regional frequency blocks presently employed for a single commercial multiplex. The proposed frequency swap will also mark the switch-over of all Danish DAB transmissions to the more efficient DAB+ standard. This increases the total transmission capacity of DR enough to migrate its nine regional FM-only stations to DAB, and allow the commercial multiplex to develop further.

The Ministry of Culture is expected to finish their report and recommendations for the transition from FM by early October 2013 and politically, it is desired that decisions are taken before Christmas. The situation has changed in that the commercial market has shown interest in itself to fund the regional mux, and there is broad agreement on a transition to DAB+. Of particular interest is that a number of new players have shown interest in investing in the Danish radio market and act as a gatekeeper, a new regional DAB+ MUX3.

COVERAGE

Multiplex 2's coverage was improved during 2012 and both multiplexes now have close to 98% indoor coverage.

RECEIVER MARKET

Cumulative sales of DAB receivers have reached 1.7million, with 42% of the population having one or more DAB receivers. Approximately 300 specialised electrical retail stores currently sell DAB radios. Supermarket and food chains are also significant players with frequent product offerings.

DETAILS OF TRIALS

A local trial is conducted in DAB+ by grass roots station Kanal Plus based on off-the-shelf hardware and encoder/modulator software. The multiplex comprises local radio stations from the area north-northwest of Copenhagen.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Denmark are;

- Band III
- DAB MUX 2 the second national multiplex is owned by Danish Radio, however in principle only commercial radio stations broadcast on DAB MUX 2
- Switchover criteria - by the end of 2019, if by that time half of all radio listening has migrated to digital platforms

DAB regulation is set by three different bodies in Denmark: The Ministry of Culture legislates for media policy and licences, the Ministry of Science sets the political framework for frequency applications, and the Danish Business Authority maintains technical management of the frequency spectrum.

The latest parliamentary Media Agreement 2012-2014 stipulates that the FM band will close in 2019 if at least 50% of radio listening is on digital platforms by that time. DAB+ has not yet been introduced on the national and regional level, but a local multiplex is on air. Spectrum frequency block allotments are in accordance with the RRC-06 plan, but only the national and two regional multiplexes have been implemented. The regional/local third multiplexes covering 13 allotments are still pending.

SERVICES ON AIR

In this country there are two regular national multiplexes and 1 regular local multiplex on air.
In this country there are two regular national multiplexes and one trial local DAB+ multiplex on air. There are presently nine public services (plus a news loop) and six commercial radio services on air, all of which are broadcast nationwide on DAB.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	9	6	15
DAB+ programmes	6	3	9
Total	15	8	24

Multiplex 1: DR's DAB regular services on multiplex 1 include: DR P1, DR P2 Klassisk, DR P3 (simulcast), DR P5 , DR P6 Beat, DR P7 MIX, DR P8 Jazz, DR Mama and DR Ramasjang/Ultra Radio (2 channels sharing one program).

Multiplex 2: DR's DAB regular services on multiplex 2 include: The Voice (SBS channal), Nova FM (SBS channal), POP FM (SBS channal), Radio100 (SBS channal), Radio24Syv (Public Service), and DR Nyheder (DR channal)

A local DAB+ trial multiplex carries up to nine services including; Retro Radio (simulcast), Rockkanalen, Interviewkanalen, US Radio (simulcast), Radio Humleborg/ Radio Nord Fredensborg (simulcast),Radio 10FM (simulcast), Radio HLR (simulcast), Radio Halsnæs (simuicast) and GlobalFM.

USEFUL LINKS

http://www.kanalplus.fm/site/index.php?side=dab.php - Kanal Plus
http://fivu.dk/en/ - The Ministry of Science Denmark
http://kum.dk/english - The Ministry of Culture Denmark
http://www.dr.dk/radio/kanaler - Public Broadcaster (Danish Radio)

ESTONIA

Status: Country with interest

Population: 1,286,000

CURRENT SITUATION

Estonia has been carrying out experimental DAB broadcasts since 2000. There were four DAB programmes available on the multiplex of the Eesti Rahvusringhääling (ERR) the Estonian Public Broadcaster though no information is currently available on whether these services remain on air.

USEFUL LINKS

http://www.err.ee Estonian Public Broadcaster (Eesti Rahvusringhääling (ERR))

FRANCE

Status: Country with trials and/or regulation, DAB+ trials, DMB Audio

Population: 63,000,000

CURRENT SITUATION

In January 2012 it was reported by the French newspaper 'Les Echos' that the CSA had requested the Ministry of Industry to include DAB+ in the technical standard for France. The consultation for this closed in May 2012 and the technical decree was released 16 August 2013, including DAB+ to the list of permitted standards. At the end of 2007, France's Government announced that the official standard for digital radio in France would be DMB-A, to be marketed as Radio Numérique Terrestre (RNT).

At the end of 2013, the French Parliament will examine an update of the 1986 law about radio and television. Then the CSA should publish a timetable for a call for applications for tenders for digital terrestrial licenses for France's next 20 biggest cities which will add up to 62% coverage. An additional tender will also allow to add DAB+ services to the 14 multiplexes in Paris, Marseille and Nice, as well as five more multiplexes in these towns.

In April 2012 the CSA re-launched a call of tender for three cities (Paris for seven multiplexes, Marseille and Nice for six multiplexes each). The four main commercial radio groups decided do not bid and the government did not allow the public service (Radio France) to pre-empt frequencies. At the beginning of October 2012 the CSA published the candidates selected for the three cities. At the beginning of 2014, six multiplexes will be on air in Paris, four in Marseille and four in Nice.

Roll out of terrestrial digital radio was scheduled to start in December 2009 but was postponed amid opposition from several sources, including private radio operators. The Prime Minister commissioned a further report by David Kessler, former chief executive France Culture, which was published in mid-2011 and suggested that the conditions had not been met for the full scale deployment of digital radio in France. The report suggested a moratorium of two to three years during which time the French market would look at the deployment of digital radio in the rest of Europe. The report also stated that the government approved the CSA's decision to allow further trials to continue.

The CSA is responsible for taking the findings of the Kessler report forward and in order to do this set up an 'Observatory' which includes all of the industry players. The publication of the Kessler report meant the market could move forward after a period of stagnation and to this end various trials were put on-air (Paris, Nantes, Marseille and Lyon).

COVERAGE

The network operator (TDF) produced comprehensive coverage plans in 2009 ready for the start of national and regional services. One of the benefits of digital radio to French listeners, as pointed out by the CSA, is that it will allow greater coverage and more stations in many areas. This is important to the CSA and to Radio France who have a remit to provide the best possible service including coverage to the widest possible audience.

In Lyon TDF has broadcast a mix DAB+/DMB multiplex since 2008 with 10 to 12 radio stations. VDL also has two multiplexes covering 85% of the regional population and some of the major highways. Details of coverage and coverage maps can be obtained from the project leaders, VDL and TDF.

Trial services are also on-air in Nantes expanding the coverage to such a level that if these services were to be granted full licenses it would mean the French law relating to mandatory inclusion of digital radio in all products once coverage reaches 20% of the population would be triggered.

SERVICES ON AIR

In France there are four trial regional multiplexes on air.
Receiver Market

Although the market has not yet launched, French consumers have already shown that there is a demand for new radio receiver products. Digital radio receivers capable of receiving DAB, DAB+ and DMB audio are available in the market and are selling in some of the major retailers (FNAC, DARTY, Boulanger, Auchan, Virgin). Pure, REVO, Tivoli, Dual, Philips, Roberts and Sony digital radio receivers are available to the French consumer.

DETAILS OF TRIALS

After the findings of the Kessler report France is now running further trials of the DAB family of standards. Trials currently on-air include:

RNT Lyon – A nine month consumer trial is being held in the Lyon area with 15 commercial broadcasters on three multiplexes covering 85% of the regional population. Two multiplexes are operated by VDL and one is operated by TDF. This trial started in April 2011 and has been granted a license to continue broadcasting and adding new stations and content. As this trial focuses on consumers, French network operator VDL, is raising awareness of digital radio through press conferences, a consumer website (www.rntlyon.fr <http://www.rntlyon.fr>), in-store promotions, public events, social networking and on-air marketing and promotional campaigns.

RNT Nantes – A trial is currently being held in the Nantes area of France in cooperation with GRAM, a group of local radio broadcasters. A promotional campaign was launched to promote digital radio to listeners in Nantes and Saint Nazaire.

There is also a field test currently being conducted in Marseille, with no radio content, just audio files.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in France are;

- DAB+ was added to the French standards in August 2013
- Band III
- Tenders for 3 cities (Paris, Nice and Marseilles) in Band III
- Further 20 cities by the end of the year
- No analogue switch-off date

Digital radio licences will be issued in France with a duration of 10 to 15 years and any broadcasters going digital will get a five year extension of their analogue licences. Simulcasting, associated data and audio-visual communication services will be permitted. Analogue and digital licences are both issued free of charge. There is a quota for French music and new artists and the current analogue rules which govern advertising and sponsorship will also apply to digital radio.

The French Law on digital radio released in March 2009 has been revised so that when 20% of the French population is covered by

a digital radio signal, DMB will become mandatory in all devices which includes radios. Similar to the first draft of the law there is a 12 month grace period after which all products containing radio must be digital with the exception of cars. The car industry has an 18 month grace period after 20% coverage is reached. These changes were made to the law by the French Senate on 17 May 2011.

Currently in France there is a lack of FM spectrum which means the French radio market has no opportunity to expand. The French market in line with GE-06 has allocated Band III for digital radio. There has been some discussion of using the L-Band for coverage of motorways although this has not been confirmed.

Following a consultation on use of the L-Band last March (2011) by the CSA, a call for tenders has been sent out to use the upper part of L-Band for satellite services which closed on 27 Feb 2012.
This is possible as the upper part of the L-Band is reserved for digital radio hybrid services with satellite and terrestrial broadcasting mainly based on SDR.

The tender launched by CSA is not for radio broadcasters but mainly for distributors. It is for a national network with 67 allotments based in the upper part of the L-Band. Coverage objectives are 20% within three years, 40% within five years and minimum 60% within seven years. The tender requires compatibility with MA02revCO07 which will preserve the L-Band for broadcasting. However, it allows for DMB in the terrestrial part and also it opens up the lower part of the band for other technologies. Onde Numerique has been selected by the regulation authority to launch a hybrid terrestrial/satellite network using L-Band. Pay services should start by the end of 2014 using the ESDR norm.

USEFUL LINKS

http://legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000020352071
http://www.csa.fr - Regulator (The Conseil supérieur de l'audiovisuel (CSA))
http://www.radio-numerique.fr/ - Radio Numérique
http://www.rntlyon.fr - RNT Lyon Trial
http://www.rntnantes.fr/ - RNT Nantes Trial
http://www.youtube.com/watch?v=Ao1HVtX6KEk - RNT promotional video

GERMANY

Status: Country with regular services, DAB launched, DAB+ launched

Population: 82 million

Coverage: 90.1%

Services: 120 DAB+

Sales (accumulated): 600,000

CURRENT SITUATION

Digital radio – the future of radio – made another jump ahead as more and more people are listening to radio digitally. By the end of 2013 more than 120 national, regional and local programmes will be broadcast in Germany. Also more than 90% of the German population can listen to at least one digital radio ensemble. This is considered to be a respectable success two years after the launch.

Despite some changes in the national multiplex, the prospect for both commercial and public broadcasters is very positive as receiver sales are increasing. Furthermore a stable ecosystem of private digital radio stations could be established in metropolitan areas such as Frankfurt, Berlin and Munich.

The current focus of broadcasters and network operators is to continue their marketing efforts in all media. For this reason the initiative 'Digitalradio Deutschland' was founded by the commercial broadcasters on the national multiplex (represented by DRD GmbH), the

ARD group, Deutschlandradio and the network operator Media Broadcast. The goal is to coordinate the b2b and b2c marketing initiatives of all stakeholders to foster the evolution of digital radio in Germany by obtaining a reasonable market penetration by end of 2014.

Coordination with the device industry is carried out via the initiative 'Digitalradio Deutschland', organised by the German Federal Ministry of Economics and Technology (BMWi). Five working groups were created to guide all areas of digital radio development and roll out, such as receiver/devices, data and traffic services, networks or advertisements.

The initiative hired consumer electronics market professionals which significantly improved the communication with the retailers. Many stores are now equipped with in-house-coverage solutions. The German car manufacturers offer DAB+ receivers for nearly all models either as an option or line fit. Two commercial telematics service providers use data capacity on the national mux to transmit TPEG based traffic information via DAB. The impressive coverage of Germany's highways over the last two years was secured through market collaboration and support for the technology.

COVERAGE

By mid-2013, the total network coverage of digital radio reached 81.8 % of the area or 90% of the population. The national as well as the regional networks were extended further in 2013, filling existing white spots in particular. Digital radio is currently available in all metropolitan areas, alongside 75% of the majority of transit routes (Autobahn) and also in many rural areas. Detailed information on the network coverage can be found on www.digitalradio.de/empfang.

SERVICES ON AIR

A huge variety of programmes are available: Besides the 13 national programmes, more than 60 public and more than 35 commercial regional programmes are available. Also more than 20 local radio programmes can be received digitally. In total more than 120 radio stations can be received digitally across the 16 German Bundesländer.

The vast majority of radio programmes are equipped with accompanying data services such as Dynamic Label (plus), Slideshows, EPG and TPEG. Journaline and RadioDNS services are broadcast also. ARD broadcasters are implementing Categorised Slideshow, which will be broadcast as a regular service by September 2013.

NATIONAL MULTIPLEX

Ten commercial radio programmes as well as three radio programmes from the national public broadcaster Deutschlandradio are broadcast on the national multiplex, which is operated by Media Broadcast. Pop, rock, electronic and classical music are available as well as spoken word content, debates and Christian radio. This combines an attractive selection of both mainstream and niche content.

NATIONAL

Population: 81.6

Total coverage: 78.7%

The coverage of the national multiplex is extended in 2013 with four new transmitters, allowing digital radio reception of 65% of the German area and alongside 75% of the German Autobahn.

REGIONAL MULTIPLEXES

More than 60 radio programmes from nine ARD-broadcasters are available. The majority of those are ARD's well-known FM-brands as well as various new digital only stations such as NDR Blue, WDR KiRaKa or BR PULS. All ARD programmes are equipped with an ARD-wide identical (and mandatory) set of data services to accompany the live audio. The network coverage was increased in 2013, allowing reception of the ARD-muxes for fairly 84 % of the German population.

Besides the public broadcasters, various commercial broadcasters launched their programmes in 2012 either together with ARD-broadcasters in mixed multiplexes or in separate commercial only multiplexes operated by Media Broadcast. During 2013 more commercial programmes were added to the existing ensembles.

BADEN-WÜRTTEMBERG

Population: 10.7 million

Total coverage: 91.6 %

Two networks, one mixed multiplex for public and commercial programmes, the second with public programmes only to fill the white spots. The goal is to increase the network coverage to separate the two multiplexes into a commercial and a public-only multiplex by end of 2014.

BAYERN

Population: 12.0 million

Total coverage: 96.0%

Two networks, one for public programmes, the second for commercial programmes. Additional local networks are available in the major Bavarian cities such as Munich, Nürnberg, Ingolstadt and Augsburg. Together with the national multiplex up to 45 radio programmes are available in some regions.

BERLIN

Population: 3.5 **million**

Total coverage: 100%

There are two networks, one for public programmes, the second for both public and commercial programmes, are fully covering Berlin and the surrounding area.

BRANDENBURG

Population: 2.5 million

Total coverage: 67.8%

Brandenburg is currently just covered by the multiplexes which are being broadcasted in Berlin. The majority of Brandenburgian people are living in the wider area around Berlin. The network expansion in the rural areas of Brandenburg is under consideration.

BREMEN

Population: 0.7 million

Total coverage: 92.3%

Radio Bremen launched its digital radio multiplex in February 2013. Alongside the three Radio Bremen programmes (Bremen Eins, Bremen Vier, Nordwestradio) the following programmes are broadcasted: Funkhaus Europa, WDR KiRaKa, Bremen Next. This provides 100% more choice to the Bremen population.

HAMBURG

Population: 1.8 million

Total coverage: 100%

There is one multiplex for public programmes, operated by NDR, which fully covers the area around Hamburg since August 2011.

HESSEN

Population: 6.1 million

Total coverage: 91.1%

There are two networks, one for public radio programmes, the second for commercial programmes are covering the metropolitan area around Frankfurt and Wiesbaden. The public hr mux also covers the rural areas as well as the important transit routes in northern Hesse.

MECKLENBURG-VORPOMMERN

Population: 1.6 million

Total coverage: 19.8%

There is one multiplex for public programmes, operated by NDR, which covers the metropolitan area around the capital Schwerin.

NIEDERSACHSEN

Population: 7.9 million

Total coverage: 82.4%

One multiplex for public programmes, operated by NDR, which covers the main transit routes as well as high-populated and rural areas.

NORDRHEIN-WESTFALEN

Population: 17.8 million

Total coverage: 96.5%

One mixed multiplex for public and commercial programmes, operated by WDR, which covers the most populated federal state in Germany, including the so called Ruhr region.

RHEINLAND-PFALZ

Population: 4.0 million

Total coverage: 89.0%

One mixed multiplex for public and commercial programmes covers the metropolitan area in the Rhein-Main region as well as rural areas and the important transit routes.

SAARLAND

Population: 1.0 million

Total coverage: 98.2%

One mixed multiplex for public and commercial programmes reaches nearly full coverage of Germany's smallest area state.

SACHSEN

Population: 4.2 million

Total coverage: 96.1%

There is one mixed multiplex for public and commercial programmes, which has been on air before the DAB+ digital radio launch in 2011. This mixed multiplex covers the majority of Saxony. In addition, public broadcaster MDR has established new networks in the metropolitan areas of Saxony which include ARD's mandatory minimal set of digital radio services.

SACHSEN-ANHALT

Population: 2.3 million

Total coverage: 93.8%

There is one mixed multiplex for public and commercial programmes, which has already been on air before the digital radio launch in 2011, covers the majority of Saxony-Anhalt. In addition, public broadcaster MDR has established new networks in the metropolitan areas of Saxony-Anhalt which include ARD's mandatory minimal set of digital radio services.

SCHLESWIG-HOLSTEIN

Population: 2.8 million

Total coverage: 75.0 %

There is one multiplex for public programmes, operated by NDR, covers the main transit routes as well as the capital Kiel.

THÜRINGEN

Population: 2.2 million

Total coverage: 80.4%

There is one mixed multiplex for public and commercial programmes, which has already been on air before the DAB+ digital radio launch in 2011 and covers the majority of Thuringia. In addition public broadcaster MDR has established new networks in the metropolitan areas of Thuringia which include ARD's mandatory minimal set of digital radio services.

FEATURE OF TWO SERVICES ON AIR

All public ARD radio brands come equipped with many additional services, accompanying the live audio service. This is due to the heavy media research, undertaken prior to the digital radio launch and – as it is consistent for all of ARD's brands – offers a mould-breaking experience for all listeners across Germany. The so called minimal set of services consists of:

- Now-next information (DLS/DL+)
- Programme previews (EPG)
- Weather and traffic charts, news headlines, track/title-cover (Slideshow/cat. Slideshow)
- Future mobility service (TPEG)
- Hybrid EPGs and Slideshows (RadioVIS and RadioEPG)

The radio stations on the national multiplex offer a superior programme variety hence more choice for its listeners. Choice is not only limited to mainstream stations but also covers niche content such as electronic, hard-rock and lounge music, talk and debate as well as knowledge and science programmes, Christian and culture radio. Also specific football content is available on the national multiplex every match day of the 1st and 2nd Bundesliga. The right holder for Bundesliga football (Sport1) has an agreement with the radio station NRJ which broadcasts the conference on match days on the national multiplex.

RECEIVER MARKET

Alongside the evolving network coverage, the receiver market is also constantly growing. Since August 2011, 120 devices were available on the market. This number has grown to 160 in 2012 and to 250 in mid-2013.

Receiver manufacturers are offering products at all price points. In addition the available receiver functionality is growing also. By end of 2013 the first receivers with Categorised Slideshow – an enhancement of the regular MOT slideshow – are expected to be available at retail.

All German car-manufacturers provide DAB+ dealer fit solutions and they are working on the integration of additional data services for in-car usage such as TPEG in particular. Also various aftermarket solutions are available to allow digital radio reception in car.

In 2013, broadcasters and receiver manufacturers which are participating in the device working group at BMWi, set up a draft document for the re-arrangement of receiver profiles to foster the development of the receiver market. For example the receiver classes definition document determines the minimum requirements per feature, which could help to develop a greater number of adequate devices at reasonable price-points.

The number of receiver manufacturers present in the German market is still growing. The number of different available devices in the market is impressive and is securing an attractive selection for the consumer. A comprehensive list of DAB+ receivers available in Germany can be found at: www.digitalradio.de/geraete[RK(1] . The GfK sales figures indicate a continuous growth of the market by roughly 40% p.a.

In March 2011, broadcasters participating in the device working group at BMWi published a service proposal of their intended digital radio broadcasts, which ensured that manufacturers had the correct functionality built into their receivers. The 'Proposed List of Services' is still subject to change according to the on-going discussions between both the industry and broadcasters, and is now available in its 3rd edition at: www.digitalradio.de/proposals[RK(2] .

Two further documents underpin the 'Proposed list of Services'. These bring together the points of view from both broadcasters and receiver manufacturers for digital radio services and digital radio products destined for the German market. These documents are: the 'Proposed usage of text services' and the 'Proposed usage of visual services' for DAB and DAB+ receivers. Both are guidance documents for the preparation as well as the presentation of text and visual services to the listeners.

AUTOMOTIVE

All German car manufacturers provide DAB+ dealer fit solutions and they are working on the integration of additional data services for in-car usage such as Slideshow or EPG for in-car and TPEG in particular. Also various aftermarket solutions are available to allow digital radio reception in car.

The following models are available with digital radio built-in as standard:

- Skoda Octavia Elegance
- VW Jetta Hybrid
- Opel Ampera ePioneer Edition
- All Lexus models with hard drive navigation-system

Prices for the dealer fit solutions vary between €200 for simple car radios and up to €1,000 for full-featured navitainer solutions.

TPEG

The most important data service for drivers on-air is TPEG and all car-manufacturers are currently observing the development of TPEG transmissions in Germany. Since early 2013 (Mediamobile) and mid 2013 (Garmin) two commercial traffic service providers have been broadcasting the TPEG standard on-air via the national DAB+ multiplex. Also since 2011 the public ARD-TPEG-service, which is available on several regional ARD-multiplexes, can also be received. This service will fulfil the commitment laid out by the EC directive (ITS directive) for each country in Europe to provide free safety related traffic information. TPEG – the future mobility service – will surely be one of the major success metrics for the evolution of the in-car receiver market.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Germany are;

- Band III
- Spectrum licenses held on national level by the Federal Network Agency (BNetzA)
- Media licences are assigned on Länder level by the 16 media authorities (Medienanstalten)
- In terms to the national multiplex one of these media authorities was in charge for the allocation of the licences
- Regulations to renew FM licences only when engagement in dab+ is given are in discussion

Band III (channels 5 – 12), the band reserved in GE-06, is the frequency on which digital radio services are on air across Germany. After extensive media research, the DAB family of standards was selected as the standard for the digital terrestrial component of the German hybrid future radio strategy.

Due to the federal structure, spectrum is assigned on both regional and national basis. There are two types of licenses:

a. Telecommunication license – awarded from the National Federal Network Agency (BnetzA) to the network operator to run the network
b. Media license – awarded from the media authority of the Bundesländer to the broadcasters

EMERGENCY BROADCASTING

The public ARD broadcasters are currently investigating the possibility of improving their emergency broadcasts. For the time being traffic announcements are supported by all ARD broadcasters to inform their in-car listeners about traffic jams and to provide road safety information. But this functionality is currently limited to in-car radios only and can be disabled by the listener.

Therefore the ARD is currently investigating the possibility of supporting emergency warning announcements (EWS) to improve the provision of safety relevant information for its whole listenership. Safety relevant information in this case would relate to acute situations of danger for in-car listeners such as fire incidents in the local industrial plant or warnings of severe weather.

Refining the announcement provision will help to emphasise the benefits of digital radio compared with analogue radio.

CONSUMER MARKETING

The marketing initiative "Digitalradio Deutschland" has been formed as a cooperation of ARD, Deutschlandradio, Digitalradio Deutschland GmbH and Media Broadcast, to foster the evolution of digital radio in Germany. Its major goal is to coordinate and link all marketing activities of its partners to achieve the maximum impact of these activities.
The initiative is focussing on both b2b and b2c marketing. B2B activities are e.g. the planning and accomplishment of b2b events, retailer in-house trainings and the representation on b2b trade-shows. B2C events are e.g. the handling, coordination and realisation of b2c campaigns such as on-air, online or off-air promotions, the maintenance and development of the central info portal www.digitalradio.de as well as the representation on b2c trade-shows such as IFA or IAA.

The underlying marketing strategy attempts to create consistent appearance and messaging to the whole market. A marketing tool-box has been developed and is completely free of charge for use by all partners.

Examples of successful marketing and communications campaigns in 2013:

MDR digital radio week (April 8th – 14th, 2013)

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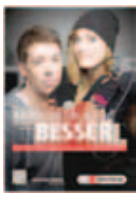


An on-air campaign with editorial coverage, which ran alongside off-air billposting and a device lottery took place. The climax of the week was on April 11th: 'digital radio day' in all MDR media.

NDR digital radio week (May 27th – July 2nd)

An on-air campaign with editorial coverage, including a device lottery took place. The focus was on the new digital radio programme NDR Blue.

Neue Berliner Luft (July 1st – 7th and July 15th-21st)



An off-air campaign consisting of city-light boards located along the major traffic routes in Berlin (4m contacts per week) took place. This was flanked by retailer training in retail shops in wider Berlin.

ARD IFA-Radio and IFA-Blog (September 6th – 11th)

IFA Radio

There was a live digital radio transmission from the IFA fairground, the world's largest consumer electronics trade show. ARD's IFA-Radio was available across the venue and DLS and Categorised Slideshow services were displayed. IFA-Radio was created to educate consumers of the additional benefits offered by DAB+ digital radio. There was also heavy marketing in the local press in the run up to and after IFA.


Online Banner Campaign

All ARD-broadcasters feature banners on their programme and internal digital radio websites. Banners may be downloaded free-of-charge at www.digitalradio.de/banner. Examples can be seen at the following webpages;
http://www.br.de/digitalradio
http://www.n-joy.de/
http://www.swr3.de/

Digital radio demonstrator



The digital radio demonstrator will be launched at IFA. The demonstrator (working title) shows how digital radio can look like in specific areas in Germany. Demonstrators are available on regional level. [RK(5]

USEFUL LINKS

http://www.digitalradio.de - Digitalradio Deutschland (Digital Radio Germany)

GHANA

Status: Country with regular services, DMB launched

Population: 24,233,431

Coverage: 20%

Services: 3 DMB

CURRENT SITUATION

On 14 May 2008 FonTV, Africa's first mobile phone enabled television content service, was launched via DMB. The network is operated by Black Star TV in collaboration with OneTouch and VDL. This launch followed on from a successful trial that ran in Accra during 2007.

FonTV is a subscription based service costing around 2Euros a month. Black Star TV currently operates three mobile TV services, including the BBC World News and ultimately hopes to provide up to six TV channels and four digital radio services. While coverage is currently limited to the areas around Accra and Kumasi, the operator has plans to roll out FonTV across the country.

COVERAGE

At the moment coverage is limited to the two cities of Accra and Kumasi, but this will be extended in due course.

SERVICES ON AIR

In this country there is 1 regular local multiplex on air. There are three video services on air: Two local TV channels called FonTV 1 and FonTV 2, and BBC World News.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DMB programmes	3	0	3
Total			3

GIBRALTAR

Status: Country with regular services, DAB+ launched

Population: 31,000

Services: 4 DAB+

Penetration by population: 70%

Coverage: 90%

Penetration by household: 70%

CURRENT SITUATION

The transmission provider Arqiva announced in May 2012 that it had been awarded a contract to design and build two DAB+ multiplexes for Gibraltar. The two multiplexes will each allow for four separate services. The transmitters are located at a single site on the Upper Rock, minimising the environmental impact of the antenna support structure which replace two television transmission sites. The DAB+ ensembles operate on Blocks 12B and 12C and the new radio networks went on-air on 31 December 2012, allowing Gibraltar to switch off analogue television. Test transmissions started in November 2012. There are currently no plans to switch off FM radio in Gibraltar. The network launched on 18 December 2012 and currently the incumbent national broadcaster is transmitting four radio stations which are re-transmissions of the same content that is currently being transmitted on the FM network.

SERVICES ON AIR

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB+ programmes	4	0	4
Total			4

In this country there are two Regular regional multiplexes on air.

The incumbent broadcaster GBC is testing transmissions with the same content as on the FM network. Incumbent broadcaster BFBS will begin testing transmissions shortly with the same content as on the FM network.

RECEIVER MARKET

Retailers have been informed that they should make DAB+ sets available and some have begun stocking them.

REGULATION AND SPECTRUM

The Gibraltar Regulatory Authority (GRA) is the regulatory and licensing authority. The Broadcasting Division is responsible for;

- the granting and enforcement of licences to broadcasters,
- dealing with all regulatory matters especially on broadcasting standards,
- issuing codes of practice
- encouraging the promotion of media literacy
- publishing information and advice to consumers, retailers and other users of broadcasting services in Gibraltar

GREECE

Status: Country with interest

Population: 11,200,000

CURRENT SITUATION

There is currently interest in the DAB family of standards in Greece and, although no services are on air, DAB radios are available in many shops.

Frequency planning has allocated a national multiplex and one for each of Greece's nine regions. It is likely that when Greece does progress with its digital radio roll out it will use DAB+.

DETAILS OF TRIALS

There are reports of occasional DAB tests in the Athens and Thessaloniki areas.

HONG KONG

Status: Country with regular services, DAB+ launched

Population: 7,061,200

Coverage: 70%

Services: 15 DAB+

Sales (accumulated): over 100,000 DAB+ receivers

CURRENT SITUATION

The first stage of broadcasting seven channels in DAB+ on a 24 hour basis in Hong Kong started in August 2011. After the completion of the network construction of seven hilltop sites on 19 June 2012, 15 out of the 18 channels are broadcasting formally.

The Government issued DAB+ licences to three commercial operators – DBC HK (Digital Broadcasting Corporation HongKong Ltd, formerly Wave Media), Metro Broadcast and Phoenix U Radio, together with the public broadcaster, RTHK. Four broadcasters are now broadcasting via DAB+ on Mux 11C(220.352 MHz) in VHF Band III.

The four DAB+ stakeholders have formed a Consortium (an Industry Working Group) which together with its Technical Committee is looking after detailed network implementation. A Marketing Committee is planning marketing and promotional activities. RTHK will operate and maintain the network on behalf of the Consortium and the seven hilltop sites.

COVERAGE

Seven hilltop sites are now transmitting DAB+ signals over all urban and suburban areas in Hong Kong and covering approximately 70% of the island and the Kowloon peninsula. In addition, four gap-filler stations will be implemented by 2013, further expanding the signal coverage.

DAB+ repeaters for the four major tunnels in Hong Kong are working now and repeaters for another seven tunnels will be installed before 2014.

SERVICES ON AIR

In this country there is one regular national multiplex on air. In Hong Kong there is one regular national multiplex with a total 15 DAB+ audio services on air, four of which are simulcast and 11 exclusive services. There are channels from DBCHK, Metro Broadcast, Phoenix U Radio and from public broadcaster RTHK.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB+ programmes	4	11	15
Total			15

RECEIVER MARKET

Over 300,000 DAB+ receivers have been sold. HKDRD (Hong Kong Digital Radio Development Association) an industry organisation has been formed for the promotion and development of DAB in Hong Kong. Digital Broadcasting Corporation Hong Kong Limited (DBC) is starting to install free DAB+ car deck radios for taxis and mini-buses in Hong Kong. DBC Hong Kong plan to install 20,000 sets by the end of December 2013.

REGULATION AND SPECTRUM

Currently the regulator in Hong Kong is the Communications and Technology Branch under the Commerce and Economic Development Bureau.

USEFUL LINKS

http://www3.dbc.hk/default.html - Digital Broadcasting Corporation Hong Kong Limited
http://www.cedb.gov.hk/ctb/eng/about/ - Communications and Technology Branch under the Commerce and Economic Development Bureau

HUNGARY

Status: Country with trials and/or regulation, DAB+ trial

Population: 9,944,000

Coverage: 30%

Services: 7 DAB+

CURRENT SITUATION

Hungary has chosen DAB+ for its digital radio standard, and there is currently a test multiplex on air broadcasting seven radio programs to the Budapest area. The multiplex is operated by Antenna Hungaria, which also runs DVB-T multiplexes, national TV and radio stations in Hungary.

COVERAGE

Coverage is nearly 30% of the population in Budapest and the surrounding area, but this is expected to reach 94% by the end of 2014 as Antenna Hungaria rolls out more transmitters and services. Timing of the development of the network is under discussion. You can find the coverage of the operating DAB+ network on the following link: http://ahrt.hu/en/contents/dab-in-hungary

SERVICES ON AIR

In this country there is 1 trial national multiplex on air. Antenna Hungaria has operated the multiplex since December 2008. There are currently seven test programmes on air. The name of the test programs are Kossuth, Petőfi, Bartók, Magyar Katolikus Rádió, Klubrádió, Lánchíd Rádió and Inforádió.
Info: http://ahrt.hu/en/contents/dab-in-hungary

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB+ programmes	7	0	7
Total			7

RECEIVER MARKET

DAB+ receivers are available in special audio visual and online stores. With a full commercial launch, the number and type of available receivers will increase and a marketing campaign will support the sector.

DETAILS OF TRIALS

The first DAB trial was launched in 1995 by Antenna Hungária and Hungarian Radio. It ran until 2008 and covered almost 30% of the population. The trial was centred on the Budapest area. In the past Antenna Hungaria has also carried out DMB trials and mixed multiplex trials enabling direct comparison of DAB, DAB+ and DMB.

REGULATION AND SPECTRUM

The government strategy for the implementation of digital broadcasting (both radio and television) was approved in March 2007. The legislation on the rules of broadcasting and digital switchover was published in June 2007. It gives the legal background on the introduction of digital radio services, but specifies that more detailed regulation will be needed on local digital radio and issues regarding switchover. The switch from analogue to digital will only happen if, by then 94% of the population has coverage and 75% of the population owns a digital radio receiver. In line with the provisions of this Act, in March 2008 the National Communications Authority (NCAH) published an invitation to tender for a national multiplex. The winner was Antenna Hungaria which subsequently announced its decision to broadcast via DAB+. The transmitters operate on the 11D block.

USEFUL LINKS

http://www.ahrt.hu
http://www.mtva.hu/hu/magyar-radio-zrt
http://www.english.nmhh.hu

INDIA

Status: Country with interest

Population: 1.2 billion

CURRENT SITUATION

The vast country of India with its population of over one billion people, has considered several variations of digital radio over the past decade. All India Radio (AIR), the public broadcaster, started trial DAB broadcasts in New Delhi in late 1997, and have also tested mobile TV broadcasts using T-DMB and S-DMB but was unable to progress to permanent broadcasts due to regulatory issues.
The challenge for India is to ensure that any new digital technologies have receiver prices at a realistic level for the price-sensitive Indian consumer.

INDONESIA

Status: Country with trials and/or regulation

Population: 242.3 million

CURRENT SITUATION

The Indonesian government has announced an official decree that Indonesia has chosen the DAB family of standards as the national standard for digital radio. Indonesia is the largest country in south-east Asia with a population of around 240 million. DMB trials have been running in the capital, Jakarta, since 2006. There are currently four services on air. The trial is operated by the regulator and MNC, the largest media company in Indonesia.

SERVICES ON AIR

In this country there is 1 trial regional multiplex on air.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DMB programmes	4	0	4
Total			4

IRELAND

Status: Country with regular services, DAB launched, DAB and DAB+ trial

Population: 6,399,115

Coverage: 56%

Services: 16 DAB, 6 DAB+

Sales (accumulated): 300,000

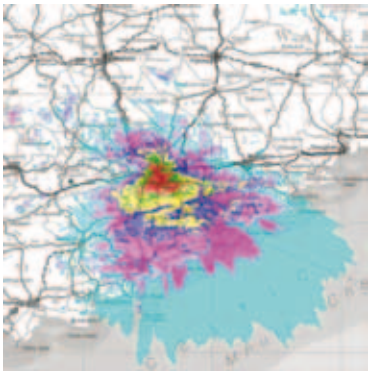
CURRENT SITUATION

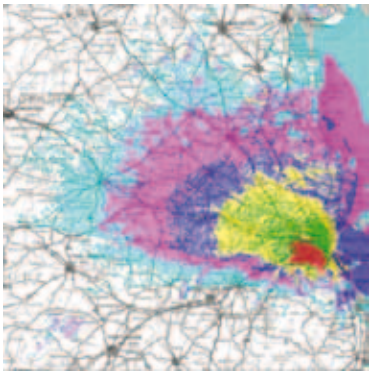
National Public Broadcaster RTÉ operates a full-service Mux across a five transmitter network covering 52% of the population in the main cities. Two commercial trials are operating in Dublin, Cork and the South-East of the country carrying a mix of FM simulcasts and DAB exclusive stations operated by independent companies dB Digital Broadcasting Ltd and Total Broadcasting Ltd. Legislation has been in place since 2009 to enable commercial broadcasters to engage with DAB but the broadcasting regulator has not addressed the issue of establishing a regulatory framework to date. It is expected that Ireland will adopt the DAB+ standard.

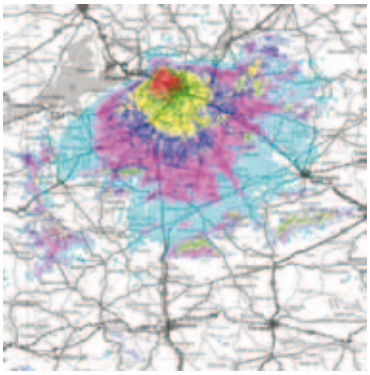
COVERAGE

Coverage is focused on the main metropolitan areas. Transmitters on Three Rock Mountain cover the capital Dublin and Clermont Cairn provides coverage to Dundalk and Drogheda. Woodcock Hill provides coverage to Limerick while the Spur Hill transmitter covers the city of Cork. The Three Rock Mountain Dublin transmitter outputs 10kW ERP with the remainder at 5kW ERP and an additional site at the Kippure site in County Wicklow runs at 10kW ERP.

Coverage maps for Cork, Dublin and Limerick;







SERVICES ON AIR

In this country there is one regular national multiplex and 2 trial regional multiplexes on air.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	5	11	16
DAB+ programmes	1	5	6
Total	6	16	22

National Multiplex

RTE: Block 12C: 227.360MHz Allotment IRL DAB NATIONAL 1

Simulcast stations: RTE Radio One, RTE 2FM, RTE Lyric, RTE RnaG

Exclusive stations: RTE Radio One Extra, RTE Junior, RTE Chill, RTE Pulse, RTE Gold, RTE 2XM

Regional Multiplexes

dB Digital Broadcasting (Dublin & Cork - Trial): Block 12A 223.936 MHz Allotment IRL DAB NATIONAL 2 (Mix of DAB & DAB+)

DAB Channels: All 70s, All 80s, RaidioRiRa, UCB Ireland, Sunshine, Amazing Radio

DAB+ Channels: All 70s+, All 80s+, RaidioRiRa+, UCB Ireland+, Sunshine+, Amazing Radio +

Total Broadcast (South East Region Trial): Block 9B: 204.640 MHz

DAB Channels: 4FM, All 80s, Beat 102-103, Phantom, Radio Nova, RaidioRiRa, RTE 2XM, Tipp FM

DAB+ Channels: KCLR 96FM+, SouthEast Radio+, UBC Ireland+, WLR FM+

Applications Broadcast:

dB Digital Broadcasting operate Slideshow on all DAB+ Services. Trials of EPG and BWS are planned for 2013. RTE & Total Broadcast operate basic DLS.

USEFUL LINKS

http://www.dbdb.ie
http://www.digitalradio.ie
http://www.rte.ie/digitalradio/
http://www.totalbroadcast.net

RECEIVER MARKET

With close proximity to the UK market DAB receivers are readily available in most electrical retailers.

AUTOMOTIVE

As DAB is in trial stage no manufacturer fits DAB as standard or optional. Again, due to close proximity to the UK market, DAB+ head units are readily available for purchase.

DETAILS OF TRIALS

Two trials are operating under annual trial licence from the Commission for Communications Regulation. They are operated by dB Digital Broadcasting and Total Broadcast.

dB Digital Broadcasting's trial offers six stations in both DAB and DAB+ and currently broadcasts to Ireland's two main cities, Dublin and Cork. Each service displays dynamically updated DLS on DAB and full dynamically updated Slideshow service on DAB+. The trial also carries the UK based station Amazing Radio, making them the first UK radio service to broadcast terrestrially in Ireland.

Total Broadcast's trial offers a mix of DAB and DAB+ simulcasts from Irish based FM stations. They operate a SFN across the South-East covering the city of Waterford.

REGULATION AND SPECTRUM

The Broadcasting Act 2009 makes provision for the licensing of sound broadcasting multiplexes to RTÉ and the commercial sector.

RTÉ have secured and are operating a full multiplex licence on the first of Ireland's two allotted national frequencies (12C).

The Broadcasting Act also makes provision for existing commercial broadcasters in multiplex broadcasting areas to migrate to DAB, which includes an extension to their licence of up to six years. However, the Broadcasting Authority of Ireland has not yet addressed the issue of establishing a regulatory framework.

In the meantime, two trial services operate on a year to year basis with dB Digital Broadcasting's trial using Ireland's second allotted frequency (12A) and Total Broadcast using 9B.

Under RCC-06 Ireland has been allotted two frequencies for national DAB multiplexes, 12A and 12C, with other allocations for regional/local multiplexes.

ISRAEL

Status: Country with interest

Population: 7,167,000

CURRENT SITUATION

DAB+ has been adopted as the official digital radio standard in Israel. The Israeli Ministry of Communication offered a permanent DAB+ country-wide licence for tender in 2008. The licence is for a period of 14 years and the winning bidder is expected to make provision for 36 channels and achieve a coverage area of 80%, rising to between 90% and 98%, depending on location. There has been no response to the Ministry's initial call for bids, and it may be that a multiplatform landscape, including DAB+, would better suit the country's needs.

COVERAGE

The trial period infrastructure (using DAB) was able to reach about 85% of the population. However, this infrastructure is no longer in use.

SERVICES ON AIR

BEZEQ, Israel's largest telecom company, ran a trial DAB multiplex between 1996 and 2008 broadcasting seven services to 80% of the country via six transmission sites. In 2008, these transmissions ceased as the Ministry of Communication put out to tender a national DAB+ multiplex licence.

USEFUL LINKS

http://www.godigital.co.il/

ITALY

Status: Country with regular services, DAB+ launched, DAB+ and DMB trial

Population: 59,685,227

Coverage: 75%

Services: 24 DAB+, 1 DMB, 1 Data

CURRENT SITUATION

Regular services in Italy started in December 2012 in the Trentino region following a decree by AGCOM. The decree was published in May 2012 assigning one block for national public radio and two blocks for national commercial (12A, 12B and 12C) and additional blocks for local services (12D, 10A, 10B 10C and 10D).

The Department of Communications released the licenses for the Trentino area to the private national operator Club DAB Italia and to local consortia DTTAA and Digiloc.

COVERAGE

Coverage of the trial broadcasts is estimated to be around 75% of the Italian population (i .e. people in reach of DAB/DMB transmissions for outdoor coverage).
More coverage maps are available at: http://www.worlddab.org/public_document/file/531/2013_07_08_Copertura_Radio_Digitale_Italy.pdf

SERVICES ON AIR

In this country there are three trial national multiplexes and three regular and six trial regional multiplexes on air broadcasting a total of 20 DAB+ simulcast services, four DAB+ exclusive services, one DMB exclusive service and one exclusive Data service.

Feature service on air

RTL 102.5 has invested in DAB and has one of the largest coverages (60% of population) and simulcasts stations to 6 million listeners on 5 DAB only programs, RTL Cool, Classic, Groove, ItalianStyle and ViaRadio on the EuroDAB consortium network provider multiplex.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB+ programmes	20	4	24
DMB programmes		1	1
Data services		1	1
Total	20	6	26

RECEIVER MARKET

The standard adopted for digital radio receivers in Italy, developed by the Associazione per la Radiofonia Digitale in Italia (ARD) includes WorldDMB Profile 1, FM with RDS, Band III and L-Band.

The receiver certification website http://www.arditalia.it/joomla/ was launched in 2010 and has been developed in collaboration with broadcasters, network operators and receiver manufacturers. It provides guidance so that receivers certified in Italy work everywhere in Europe.

Pure receivers, carrying ARD white label, are currently available on consumer websites and at the main consumer electronics chain stores such as Fnac, Mondadori and Unieuro. DAB car adaptors are available through the Magneti Marelli CheckStar network.

DETAILS OF TRIALS

December 2012: Club DAB Italia launches regular service in the Trentino Region, followed by DBTAA and Rai. Currently three multiplexes with 26 services are available int the Trentino region.

Trials in Italy have included:
April 2010 – the trial "Rai Way & Aeranti-Corallo" ceased
June 2008 – Multiplex named "Aeranti-Corallo2", C block of Channel 12 VHF Equal 4A, by Rai Way Colle Barbiano BO guest 19 programs (16th DAB+, 1 DMB VR)
May 2008 – Multiplex named "AerantiCorallo1" B block Channel 12 VHF Equal 3A protection, by RaiWay Campalto VE guest 17 programs (16th DAB+, 1 DMB VR)
July 2007 - Club DAB Italia launched the first DAB+ trials in Italy and Europe, broadcasting six audio channels
June 2007 - Vatican Radio carried out a DAB trial in the Pope's State
2007 - A DMB trial by public broadcaster RAIway
2005 - RTL 102.5 became the first European radio station to broadcast using DMB technology

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Italy are;

- Band III possibly some L-Band
- DAB+/DMB licenses are issued to existing FM license holders
- National and local multiplexes must carry at least five radio stations each
- The license period for content providers is 12 years and 20 for network operators
- City state Vatican in Rome is transmitting in both Band III and L-Band
- DAB+ building is focused on highways for uninterrupted reception
- Idea of one network operator is considered

Late in 2009, the Council for the Authority of Communications approved regulation setting out steps for the future roll out of digital radio across Italy. Broadcasters can opt for DAB, DAB+ or DMB and the regulation allows for the migration of services from analogue to digital. It provides clear regulation on coverage, networks for national services, spectrum allocation for services, local coverage and rules on simulcasting and new content.

There will be one national network for the public broadcaster, RAI, and two national networks for commercial radio. Space will be available for local radio stations and the network operator will be given additional capacity to provide data services.
The Italian Media Authority has approved official regulations for DAB/DAB+, bringing an experimental phase to an end and paving the way for the creation of a successful digital radio market.

Licences and authorisations will be issued initially to existing FM licence holders, with remaining spectrum available for new entrants. Each radio station has the right of using 72 CUs of a multiplex for its programs. The licence period for content providers is 12 years and for network operators 20 years. In Italy channels 10 and 12 of Band III, channel 13 and the L-Band will be used for regular digital radio service.

USEFUL LINKS

http://www.dab.it
http://www.dbtaa.it
http://www.eurodabitalia.it
http://www.ras.bz.it/de/tv_radio/dab.htm

KUWAIT

Status: Country with trials and/or regulation, DAB trial

Population: 2,818,042

Coverage: 90%

Services: 8 DAB

CURRENT SITUATION

Following a DAB trial that has been on-going in Kuwait City since March 2007, preparations are now under way for the second phase of the trial. This may include either DAB+ or DMB. The current trial is led by Kuwait Radio and broadcasts eight audio programmes from Liberation Tower on Band III, covering almost the whole country. A decision regarding commercial roll out is expected once all the trials have been completed.

COVERAGE

DAB trials cover about 90% of the population.

SERVICES ON AIR

In this country there is one trial national multiplex on air.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	8	0	8
Total			8

LITHUANIA

Status: Country with interest

Population: 2,955,986

CURRENT SITUATION

In June 2001, SC LRTC (SC Lithuania Radio and Television Centre) started DAB test transmissions with two public radio programmes. In 2003 four commercial services were added to the multiplex. About 20% of the population in the Vilnius area are covered with DAB services. There is currently no information on whether these services remain on-air.

COVERAGE

A 500W transmitter is installed in Vilnius and covers an area of approximately 30km (about 20% of the population).

MALAYSIA

Status: Country with interest

Population: 28,860,000

CURRENT SITUATION

Since the launch of its first pilot DAB+ trials in late 2009 in the capital city of Kuala Lumpur, there is no decision yet on the time line for the implementation of digital radio and broadcasting services in Malaysia. Currently, the sole DAB+ equipment (from head-end to transmitter) are owned and operated by the public broadcaster, Radio TV Malaysia (RTM).

In February 2013, RTM invited local agencies such as the Malaysian Communications and Multimedia Commission (MCMC), various members of the local radio industry and Telecoms Malaysia to a joint field trial study. Some elements of the field trials included identifying minimum reception figures for in building reception loss, minimum figures for acceptable mobile reception and speed tests.

Considering the conservative power of the trial DAB+ transmitter of 1 kW, the results of the field trial looks promising and are in line with figures already established by the ITU and in broadcasting agencies in Australia.

Currently 15 FM radio programs are made available on the DAB+ platform, nine from RTM and six from the commercial radio stations.

Efforts are now underway to study/familiarise staff with other aspects of the DAB+ system such as adding Slideshow (SLS) and text (DL) in order to maximize the full potential of DAB+. Therefore, Malaysia is still currently at a stage of gaining familiarity, experience and confidence with DAB+ technology.

MALTA

Status: Country with regular services, DAB+ launched

Population: 409,836

Coverage: 100%

Services: 41 DAB+

CURRENT SITUATION

Malta was the first European country to roll out a DAB+ network and services were on-air in October 2008. There are nearly 40 services on the two national multiplexes which include unique digital only stations, MOT, EPG and DLS applications. The multiplexes are operated by Digi B Network and cover 100% of the population. By the end of 2012, over 25% of Maltese radio listeners were tuning in via DAB+. A second national mux (6A – Digi B2) was launched in 2011. The use of the digital radio platform has increased by 4.12% to 13% over the same period last year (January-March 2012) and the use of FM has dropped by 7%. Malta boasts a vibrant and growing DAB+ community of services.

SERVICES ON AIR

In this country there are 2 regular national multiplexes on air broadcasting over 30 DAB+ services.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	41	0	41
Total			41

USEFUL LINKS

http://www.ba-malta.org/home
http://www.digibnetwork.com/

COVERAGE

Malta's coverage will be 100% via blocks 6A/6C and 12A by the end of 2013.

RECEIVER MARKET

The awareness and interest in DAB+ is growing substantially. A range of DAB+ radios from manufacturers such as Pure, Revo, Roberts Radio and Digi B Network are available in Malta. In Malta the Digi B Network launched the first DAB+ in-car receiver which is currently available in Malta or online. The availability of low cost receivers is imperative for the continuing growth, together with flexible solutions for cars already in the market.

REGULATION AND SPECTRUM

The regulator, the Malta Broadcasting Authority, has embraced digital radio and multi-media broadcasting. Digi B Network, which operates the national mux, hopes to increase available services to around 60 channels, with the introduction of the third Multiplex later on in 2013. Late in 2012 Digi B Network started promoting the idea of High Definition Audio on DAB+ in cooperation with Vibe FM and Magic radio, both available nationally on FM. They are now being trialed on the DAB+ platform at 160Kbit and 128Kbit, allowing listeners to compare the difference between DAB+ and FM. There is plenty of choice among local stations with genres such as opera, pop, classical, news, religion, sport and jazz.

In early 2006, the Malta Communications Authority awarded the country's four terrestrial DAB frequencies. The licence runs for eight years, subject to review after six. The Broadcasting Authority in 2008 approved the rebroadcasting of 36 foreign digital radio stations, the simulcasting of 12 nationwide analogue radio stations and of one community radio station.

MEXICO

Status: Country with interest

Population: 114,975,406

CURRENT SITUATION

In recent years, Mexico has tested several digital radio platforms. While there is support for digital radio via the DAB family of standards among some Mexican broadcasters, a Cofetel official says "The primary problem in Mexico is that here the L-Band is used for maritime transmissions and space communications."

In 2010, the country's broadcast regulator, Cofetel, decided on IBOC as Mexico's primary digital radio platform, in line with its neighbour to the north, the USA.

MONACO

Status: Country with regular services, DAB launched, DMB radio

Population: 409,836

Coverage: 100%

Services: 2 DMB

CURRENT SITUATION

A T-DMB test was carried out in VHF Band III on Channel 6A between July 2009 and September 2009. Monaco and the area around it has a transmitter, but due to some on-going technical issues, at present digital radio in Monaco is on hold. Prior to this, the principality of Monaco broadcasted DAB digital radio services to 100% of its population of 32,000 people since 2005. Stations on air have included MFM, Radio Classique, Radio Monaco, Riviera Radio and RMC. All were simulcasts of existing FM services.

SERVICES ON AIR

	Simulcast on AM / FM	Exclusive on digital	Total of services
DMB programmes	2	0	2
Total			2

There is one regular national multiplex on air. Two DMB radio stations are available on the multiplex which is operated by Radio Monte Carlo.

REGULATION AND SPECTRUM

Due to Monaco's status as a constitutional monarchy the Government decides media policy under royal authority.

USEFUL LINKS

http://www.mfm.fr/
http://www.radio-monaco.com/
http://www.rivieraradio.mc/home.asp

NAMIBIA

Status: Country with interest

Population: 2,165,828

CURRENT SITUATION

The Namibia Broadcasting Corporation (NBC) held a conference in early March 2002 to look into digital broadcasting for radio and television. As a result of the conference, greater and on-going co-operation between SABA (Southern Africa Broadcasting Association) and SADIBA (Southern African Digital Broadcasting Association) has been planned. While the immediate emphasis has been on Digital Terrestrial Television (DTT), which was launched in Namibia in February 2005, broadcasters are equally interested in DAB+ digital radio. A number of digital radio test broadcasts have been conducted in South Africa.

USEFUL LINKS

http://www.sadiba.co.za/

NETHERLANDS

Status: Country with regular services, DAB, DAB+ launched, DMB launched

Population: 16,730,632

Coverage: 70%

Services: 21 DAB/DAB+

Sales (accumulated): 40,500

CURRENT SITUATION

NPO will extend coverage of its existing DAB mux from 70% to 95% early 2014. NPO plan to gradually migrate services to DAB+ by the second half of 2013. From 1st September 2013 commercial stations (VCR) will start to be introduced and the total of stations will increase from 9 to 21. NPO plans a part switchover from DAB to DAB+, starting in the 2nd half 2013.
NPO will extend the network with a further 14 transmitter sites by early 2014. By 2015, the network will be further extended with an additional 24 transmitter sites, enabling good indoor reception across virtually all of the Netherlands.

COVERAGE

Public broadcaster coverage plans

There is currently 70% population coverage with sites including Arnhem, Den Haag, Amsterdam, Hilversum, Haarlem, Lelystad, Loon op Zand, Lopik, Alkmaar, Rotterdam.

Current coverage

early 2014 – 95% outdoor coverage

September 2015

Commercial broadcasters coverage plans

Commercial parties will reach 95% outdoor coverage by 1st September 2013.

SERVICES ON AIR

In this country there is 1 trial national multiplex and 1 regular local multiplex on air.

The national multiplex carries nine programmes from public service broadcaster NPO. Five are simulcasts of regular FM/AM radio broadcasts. Four are exclusive to DAB and are also broadcast online.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	5	4	9
DAB+ programmes	12	0	12
Data services		1	13
Total			22

RECEIVER MARKET

The total accumulated sales of DAB receivers from 2008 until September 2012 is about 40,500. About 2300 were sold in 2012 (Jan-Sept). NPO expects a sharp rise in sales in 2013 as both commercial and public broadcasters team up to offer DAB+ services and will jointly start a promotional campaign.

DETAILS OF TRIALS

MTVNL is currently testing DMB transmissions in The Hague area. A test of DAB+ in L-Band by CallMax was conducted in the Eindhoven area in 2010 but it has been terminated and the license has expired.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in the Netherlands are;

- Two national MUX, one public using DAB, one commercial using DAB+
- All of the current national FM commercial broadcasters are now transmitting in DAB+
- All new FM licenses contain a condition to broadcast on DAB+
- In June 2013 the public broadcaster NPO, announced that it will accelerated build-out and increase the number of transmitters from 10 to 24 to achieve nationwide coverage by end 2013

The Dutch government issues DAB licences and determines the terms and conditions that apply to the use of DAB in the Netherlands. It was announced that Band III and L-Band should be used for DAB based services. Broadcasters may choose to use DAB, DAB+ or DMB. The majority of interested parties are likely to choose DAB+.

National commercial stations have now obtained a multiplex license for a minimum of 16 DAB stations. Regional stations (both public and commercial) had until 10 June 2011 to inform the minister if they would use a commercial regional mux, or piggy back on an already issued mux (operated by MTVNL). Local radio is assigned L-Band frequencies.

Licenses have been issued in Band III to Mobile TV Netherlands (MTVNL) and in L-Band to CallMax which plans testing in the Eindhoven area. MTVNL owns the license for nationwide mobile TV, radio and data broadcast and currently has an extensive test network operating in the Haaglanden, Hilversum and the Eindhoven region. A full nationwide commercial launch began in 2012.

There is no defined FM switch off date, but FM licences will be extended for six years until the end of 2017. Planned switch-off date by the government is 2023. The formal policy is that ultimately one to two years before the end of the FM licences, there will be a full review regarding FM switch off.

CONSUMER MARKETING

Commercials, websites and promotions on the radio, in newspapers and online will commence in the run up to the official launch of DAB+, which will officially be on the 1st of September 2013 by the VCR and early 2014 by NPO.

USEFUL LINKS

http://www.npo.nl/ - Public broadcaster (NPO)
http://www.mtvnl.nl/ - Mobile TV Netherlands (MTVNL)
http://www.government.nl/ - Dutch Government
http://www.digitalradio.nl

NEW ZEALAND

Status: Country with trials and/or regulation, DAB+ trial

Population: 4,472,113

Coverage: 22%

Services: 6 DAB, 2 DAB+, 1 Data

CURRENT SITUATION

Digital radio services have not been introduced into New Zealand at this stage, other than on a trial basis in two cities. These trials have been licenced by the Ministry of Business, Innovation and Employment, but as yet there has been no requirement to develop wider policies concerning digital radio services.

New Zealand's government owned broadcast and telecoms company, Kordia, has been operating a DAB test service in Auckland and Wellington since October 2006 with two transmitters operating in Band III. The multiplex currently delivers a mix of DAB and DAB+ services, including eight audio channels, slideshow and EPG. No DAB+ rollout is planned.

COVERAGE

New Zealand continues the trial of DAB/DAB+ services across Auckland and central Wellington with two transmitters operating in Band III.

RECEIVER MARKET

Feedback from consumers who have DAB/DAB+ receivers and a number of listeners from overseas, who have brought their DAB radios with them when they emigrated, has been positive. There is a small range of DAB/DAB+ receivers in the market. There are no retailers actively marketing DAB products as there is no commercial network.

DETAILS OF TRIALS

Kordia's test transmissions in Auckland and Wellington are on-going using a mix of DAB and DAB+ broadcasts.

REGULATION AND SPECTRUM

The introduction of digital radio services is dependent on spectrum availability, government policy and industry requirements. Spectrum in VHF Band III will become unused when analogue television services are switched off in late 2013 and Government will address potential uses of this spectrum some time thereafter. Analogue FM spectrum is mainly utilised in major cities, but the extent of further demand for broadcasting services and industry views on technology and timing of any widespread digital radio services are unclear.

SERVICES ON AIR

In this country there is one trial local multiplex on air. Broadcasting and telecommunications service provider Kordia owns and operates the DAB transmission equipment and has worked with a wide range of public and private content providers. Content is currently broadcast in a mixture of DAB and DAB+ formats.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	7	0	7
DAB+ programmes	0	2	2
Data services	0	1	1
Total	7	3	10

USEFUL LINKS

http://kordiasolutions.com/node/1022

NORWAY

Status: Country with regular services, DAB launched, DAB+ launched, DMB trial

Population: 5,063,709

Coverage: 84%

Services: 9

Sales (accumulated): 700,000

Penetration by household: 29%

Penetration by population: 14%

CURRENT SITUATION

The government has set a switch-off date for FM broadcasting in January 2017, provided certain conditions have been met. If the criteria are not met in 2015, the switchover date will be postponed. It will, however, take place no later than 2019, provided that the coverage-conditions are met. After 2017, small local stations may continue to broadcast on FM. The criteria for exactly which stations will have this opportunity will be specified by 2015. The report leaves it to the broadcasters to choose between DAB or DAB+ transmissions.

COVERAGE

National and regional multiplexes cover about 84% of the population. 90% will be reached by late Autumn 2013. Coverage will get to 99.5% by autumn 2014 (NRK only will exceed 90%) but as the plan for this stage is not yet completed no map is yet available. Reaching up to 90% population coverage will greatly improve road and general outdoor coverage.

This illustration shows Norway with 80% coverage (left) and 90% (right).

SERVICES ON AIR

In this country there is one regular national multiplex and seven regular regional multiplexes on air.

On a national level, the DAB networks offer 19 channels with six commercial and 13 public. There are also six additional channels available in central Oslo only (DAB+). All major FM radio channels in Norway are also available via DAB.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	13	6	19
DAB+ programmes	6	0	6
DMB programmes	0	6	6
Data services	0	1	1
Total	0	0	32

Feature of service on air

Increased Audiences

In Norway, The Voice has turned from a regional station on FM to a national station on DAB+ with the potential to significantly improve and has grown its audience figures and revenue.

RECEIVER MARKET

DAB receivers are available in Norway from a range of manufacturers, and almost all shops now carry a selection of DAB radios. The total sales in 2011 were up 65% vs 2010. Reports from individual brands and shops suggest another year of significant sales increase for DAB radios. 70% of Norway's top 20 selling car models now have DAB as optional or standard feature. The selection of in-car DAB adaptors is also increasing rapidly, and prices start at approximately NOK 800 (Euro 115). More advanced adaptors, for hideaway installation and with good integration to the existing car infotainment system are also available.

DETAILS OF TRIALS

Norway's three leading broadcasters, NRK, TV2 and MTG, jointly set up a new company, IDAG, to launch mobile TV services via DMB. MiniTV trials began in the Oslo area in 2009 with six live TV channels, on demand content and other related services. These trials, which reach 30% of the Norwegian population, may continue until July 2014 under a trial license. A request for regular transmissions has also been made and is awaiting a response from the authorities. A software based solution for pay-tv, provided by Korean DigiCap, is also on trial on the DMB networks.

AUTOMOTIVE

The announcement of FM switch off in 2017 means that the radio industry in Norway is looking towards the market for adaptors and retro-fit digital radios, to ensure these are as widely available as possible, focusing on importers in consumer electronics trade and consumer electronic shops to start selling in-car adaptors. Norway is participating in work which focuses on service following, tunnel re-broadcasts and emergency announcements for the driver.

- 75% of the 20 most popular car models in Norway offer DAB as standard or optional
- VW has reported that 93% of their car-sales (for private use) in 2012 included a line-fit DAB radio. This is expected to grow further. All VW models, except the 'Up', now include DAB+ as standard equipment from factory
- Opel will make DAB+ a standard feature for all 2014-models in Norway
- Volvo are now selling DAB+ in over 90% of their new cars in Norway
- Fiat recently introduced their first model offering DAB+ in Norway, the 500
- Peugeot have introduced their first model with DAB+ in Norway, the 208

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Norway are;

- Band III
- All major FM-channels in Norway on DAB
- Public broadcaster NRK has own MUX in air, second MUX is mix public/commercial
- Analogue radio switch-off date planned for 2017 if conditions will be met
- Switchover criteria:
  - NRK must achieve coverage of 99.5% by 2015. Commercial broadcasters on the national network #1 are required to reach 90% of the population
  - 50% of listeners must daily use a digital platform in 2015. This does not specify market share of listening, but only reach
  - Digital platforms also include listening via the Internet and digital TV
  - There must be reasonably priced, reliable in-car adaptors on the market by 2015
  - Added value for the listeners
  - If the criteria are not met in 2015, the switchover date will be moved to 2019

Broadcasting in Norway is regulated according to the Broadcasting Act/Law. According to this Act, NRK has the right to broadcast nationally. Licences for the commercial broadcasters have been issued up to 2014.

In Norway, there is one national DAB multiplex in use today, seven regional ones (with total coverage corresponding to the national multiplex) plus one local in the Oslo area. Two DMB multiplexes are in use in the greater Oslo area (trial).
The regional multiplexes are operated by NRK, and together they have a total coverage of 84%. This coverage is similar to the coverage of the national multiplex.

The commercial multiplex uses 12D for the entire country.

There are also other multiplexes regulated for use in Norway, including an additional commercial national mux, using 11A and 12A.

USEFUL LINKS

http://www.radio.no - Digital Radio Norway (Digitalradio Norge AS)

POLAND

Status: Country with trials and/or regulation, DAB+ trial

Population: 38,518,240

Coverage: 8%

Services: 7 DAB+

Penetration by household: 10%

CURRENT SITUATION

There is currently one trial multiplex delivering DAB+ services running in three locations in Poland: Warsaw, Kielce, Szczecin. Operated by Emitel, four national DAB+ services, three local DAB+ services (the same in all regions) and one TPEG service is broadcast.

This year, after the switch off of analogue TV, in Warsaw and Katowice, Polskie Radio is planning to start regular DAB+ transmission with 12 services - five national (Jedynka, Dwojka, Trojka, Czworka, Polish Radio External Service), two regional services (supplied by public regional radio stations, depending on region) and five new nationwide services created by Polskie Radio. The multiplex will contain solely public radio services.

- From end of 2013, regular DAB+ services in Warsaw and Katowice will commence
- From 1st May 2014, regular DAB+ services in Gdansk, Kielce, Krakow, Wroclaw and Szczecin will commence
- From 1st October 2014, regular DAB+ services in Poznan, Lodz and Opole will commence
- From 1st January 2015, regular DAB+ services in Bydgoszcz, Koszalin, Olsztyn and Zielona Gora will commence
- From 1st April 2015, regular DAB+ services in Bialystok, Lublin and Rzeszow will commence

RECEIVER MARKET

There are some online Polish stores where digital radio receivers are available.

COVERAGE

The trial in Warsaw covers the city and suburban areas and reaches 2.5-3 million people. The trial in Kielce covers the city and suburban areas and reaches 250,000 people. The trial in Szczecin covers the city and suburban areas and reaches 600,000 people.

SERVICES ON AIR

In this country there are three trial local multiplexes on air. DAB transmitters operate in Warsaw on block 7B and in Kielce on block 5B and in Szczecin on block 12B, together they broadcast seven programmes: four national public radio services: Program One "Jedynka" (general programme), Program Two "Dwojka" (serious music, drama), Programme Three "Trojka" (youth channel), Czworka (education, sciences) and two by the local public radio broadcasters "Radio Dla Ciebie" ("Radio for You"), "Radio Kielce" and "Radio Szczecin", DLS, SLS, TMC / TPEG services also are being transmitted.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB+ programmes	7	0	7
Data services	0	1	1
Total	0	0	8

DETAILS OF TRIALS

In April 1996, public broadcaster Polskie Radio started their first trial DAB multiplex in Warsaw in VHF Band II - 105,008MHz. Transmitter 250 W was located on "PKiN and the multiplex contained four of Polskie Radio's programmes.

In October 2001 and May 2005, public broadcaster Polskie Radio started a trial DAB multiplex in Warsaw in VHF Band III – block 10B. Transmitter 400 W was located on "PKiN and the multiplex contained five of Polskie Radio's programmes.

In May 2009, the public broadcaster Radio Wroclaw and infrastructure provider Emitel launched a DAB+ and DMB trial multiplex in Wroclaw, the biggest city in south west Poland with a population of around 640,000. Eight audio channels, both public and commercial stations in DAB+ and one mobile TV channel in DMB were broadcast in this region.

In 2012, Polskie Radio planned to launch permanent DAB+ services with 12 regular audio services and up to 15 DAB+ services during UEFA Euro 2012, but plans weren't t successful due to financial reasons. In September 2012 the public regional broadcasters "Radio Kielce", "Radio Dla Ciebie" and infrastructure provider Emitel launched DAB+ transmitters operated in Warsaw and Kielce, with six programmes on air: four public radio national services: "Jedynka", "Dwojka", "Trojka","Czworka" and two programmes from the local public radio broadcasters "Radio Dla Ciebie" ("Radio for You") and "Radio Kielce".

In January 2013 Polskie Radio and infrastructure provider INFO-TV-OPERATOR launched a DAB+ and DMB trial multiplex in Warsaw, broadcasting Polskie Radio programmes - four audio channels using DAB+ and one video service using DMB.

In May 2013 the public regional broadcasters "Radio Szczecin" and infrastructure provider Emitel launched DAB+ transmitters in Szczecin, with seven programmes on air: four public radio national services: "Jedynka", "Dwojka", "Trojka","Czworka" and two programmes from the local public radio broadcasters "Radio Dla Ciebie" ("Radio for You") , "Radio Kielce" and "Radio Szczecin".

REGULATION AND SPECTRUM

There are two regulators for broadcasting media in Poland. The National Broadcasting Council manages and issues licences, while the Office of Electronic Communications governs the frequency spectrum. The two bodies work closely together.

Polish frequency plans for T-DAB contain three multiplexes located in the VHF Band III and will be started after the switch off of analogue TV is completed on 31 July 2013.

USEFUL LINKS

http://www.krrit.gov.pl/en/krrit/) - The National Broadcasting Council
http://www.en.uke.gov.pl - Office of Electronic Communications

PORTUGAL

Status: Country with interest

Population: 10,487,289

CURRENT SITUATION

Expansion of the DAB network awaits a decision by the Portuguese government. It is likely that future rollout will use DAB+ or DMB. A trial operated by RDP ran from 1999 until 2011.

DETAILS OF TRIALS

During the trial, 42 transmitters were in use, 27 in the mainland, nine in Azores and six in Madeira, covering more than 75% of the population.

RUSSIAN FEDERATION

Status: Country with interest

Population: 143,400,000

CURRENT SITUATION

A decision on the DAB family of standards in Russia has not yet been made due to an issue with frequency availability. However some western manufacturers of DAB+ equipment have become interested in entering the Russian market and are willing to finance the deployment of an experimental broadcasting zone on trial.

SINGAPORE

Status: Country with interest

Population: 5,312,400

CURRENT SITUATION

MediaCorp launched the DAB service in Singapore in November 1999 and was the first broadcaster in Asia to offer DAB digital radio service. On 1 November 2011, MediaCorp announced its DAB service would cease with effect from 1 December 2011. Listeners could continue to receive MediaCorp radio through online streaming as well as mobile phone apps alongside the FM services in Singapore. Rediffusion Singapore launched its DAB service in July 2006. It was the first country in the world to introduce subscription based DAB+ digital radio service for the mass market. In April 2012, Rediffusion Singapore announced its service was under receivership and went off-air from 1 May 2012. It's branding and assets were brought over by Eduplus Holdings in June 2012. There are currently no plans to turn on the DAB network in Singapore. Services are currently running via FM and online streaming.

SLOVAKIA

Status: Country with interest

Population: 5,410,836

CURRENT SITUATION

Slovakia currently has no digital radio broadcasts of any kind, nor are any trials known to be on air.

In 2002 a report entitled "Strategy and Technical Criteria for Implementation of Terrestrial Digital Audio Broadcating in T-DAB System" was submitted to the government for approval.

The original intention was to start regular DAB transmissions in L-Band in the western part of Slovakia in 2006, and to later start DAB transmissions in Band III. There has been no recent update from Slovakia and therefore details of the latest situation are unknown.

SLOVENIA

Status: Country with trials and/or regulation, DAB trial

Population: 2,055,496

Coverage: 22%

Services: 4 DAB

CURRENT SITUATION

Slovenia's public broadcaster, RTV Slovenia, broadcasts four DAB services on a trial multiplex covering the capital city of Ljubljana and central Slovenia. About half a million people, or 22.5% of the population, are potentially able to receive DAB transmissions.

COVERAGE

Coverage is available in the capital city of Ljubljana and central Slovenia.

SERVICES ON AIR

In this country there is one trial national multiplex on air.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	4	0	4
Total	0	0	4

RECEIVER MARKET

Receivers are available in some stores and as an option in some car brands.

DETAILS OF TRIALS

The current DAB trial will cease in November 2013.

REGULATION AND SPECTRUM

The Post and Electronic Communications Agency of the Republic of Slovenia has setup a public debate regarding the future of digital radio.

According to the announced roadmap the national agency will publish a public tender for a digital radio network in DAB+ with a minimum of 1.1 Mbit/s bandwidth with national coverage.

Once the first multiplex is filled with radio content, tenders for additional multiplexes will be published.

SOUTH AFRICA

Status: Country with trials and/or regulation

Population: 52,981,991

CURRENT SITUATION

In July 2013 over 200 radio industry representatives came together at the South African Broadcasting Corporation's (SABC) facility in Johannesburg to attend a landmark workshop on the rollout of DAB+ digital radio and to discuss plans for a high-powered DAB+ trial transmission extending from Pretoria to Johannesburg by end 2013. The Independent Communications Authority of South Africa (ICASA), indicated that it stands ready to support broadcasting innovation in South Africa, which will be the first country to exploit opportunities for delivery of educational services via DAB+, as well as services for those with disabilities. Broadcasting radio via DAB+ will also allow ICASA to license new entrants where FM bandwidth is congested.

MobileTV PTY performed technical tests of DMB (Digital Multimedia Broadcasting) and DAB+ in Gauteng from August 2011 until the end of July 2013 and plans to expand trials in South Africa. The prospective broadcaster will launch trials of DMB technology in the Free State and the Western Cape before the end of the 2013. In July 2012 they applied for a commercial license and expect to get an answer during 2013. ICASA has granted test licences for Cape and Bloemfontein, while assessing new applications for Port Eliazbeth, East London and Mpumalanga. MobileTV PTY aims to switch on the trials in Cape Town and Bloemfontein on 1 October and 1 November respectively. Their two transmitters will be relocated from Pretoria and Johannesburg Autumn 2013.

MobileTV PTY ran two TV channels and one radio station on a test license. If a license is granted they would then cover 15-20 million of the 45 million people in South Africa and expand coverage in parallel to sales of devices and uptake of services. MobileTV PTY has teamed up with SABC, the public service broadcaster in South Africa. SABC reaches 76% of the population daily and is by far the biggest broadcaster and is partially financed by a TV license and partially by advertisements. MobileTV PTY is in dialogue with the Department of Education to evaluate whether the technology can be used for educational purposes, such as to reach rural schools and colleges in a cost effective manner. The Department is primarily interested in the abilities of data transfer but an educational TV channel has not been ruled out. SABC will offer their 18 radio channels. MobileTV PTY wishes to also offer distribution for private radio stations following the launch.

Currently no programmes are on air. Mobile TV PTY is awaiting a commercial license from the government. If licences are granted they will within the first year cover up to 50% of the population of South Africa, although they aim to increase this to between 80 and 90% within 2-3 years. Their plan is to broadcast 6-10 mobile TV channels and two radio stations. Additional services that combine broadcasting and the internet on the same device will be an essential part of their business model. Such services include traffic information, gambling, integration with social media and touch-screen shopping.

COVERAGE

The signals for the transmissions by SABC will cover more than 50% of the population of 50 million by the end of the first year in operation. Coverage will thereafter be increased.

SERVICES ON AIR

There are currently no services on air.

DETAILS OF TRIALS

Harris Broadcast provided an on-air demonstration of DAB+ at the workshop held at the SABC headquarters in Johannesburg 16 July 2013.

Mobile TV PTY plans to expand trials in South Africa. The prospective broadcaster will launch high powered trials of DMB technology in the Free State and the Western Cape before the end of the 2013. In July 2012 they applied for a commercial license and expect to get an answer during 2013.

By late 1997, test transmissions started in both Band III and L-Band covering Johannesburg with a DAB signal. In November 1999 the demonstration audio services were replaced with seven live audio programme simulcasts of licensed FM and AM services currently on air in Gauteng. Included were commercial and public service broadcasters providing a mix of talk radio, pop, kwaito and classical music. Experimental PAD slide-show and dynamic label services were included on one audio service in May 2000. A two-transmitter Band III Single Frequency Network established in 2001 provided DAB coverage to approximately 18% of the South African population, these test transmissions ended in 2006.

Mobile TV Pty ran three DMB services and one DAB service on a test license. SABC provided their two main TV channels as well as a sport channel and a news channel, both made in cooperation with MobileTV PTY. A horse racing company added one channel and the official South African lottery company had one gambling channel. A number of digital radio stations from national and international broadcasters were also added. MobileTV PTY has secured a number of sports rights in order to add to those owned by SABC. The government of South Africa is looking at its media strategy, and has indicated a need to launch its own TV channel. This would be broadcast via MobileTV PTYs network.

REGULATION AND SPECTRUM

The Independent Communications Authority has released a draft of its Terrestrial Broadcasting Frequency Plan 2013. In this document's Annexure D "DAB Frequency Allotments," the regulatory authority lays out plans to make room in the broadcast spectrum for digital audio broadcasting (DAB). It appears to have allotted 18 slots for DAB in Band III as the country begins the transition.

The regulatory framework for digital radio in South Africa has yet to be established. The Digital Broadcasting Advisory Body (DBAB) established by the Minister of Communications completed its research into digital radio and digital terrestrial television. The recommendations made to the Minister are available via the website of SADIBA, the Southern African Digital Broadcasting Association that actively supported the above processes, lobbied stakeholders and shared information on systems and standards implemented world-wide.

In 2005 the Minister of Communications, (http://www.doc.gov.za/) established a Digital Broadcasting Migration Working Group, comprising representatives from the broadcasting industry, Independent Communications Authority of South Africa (ICASA), government, civil society, and organised labour and consumer groups. Its aim was to develop recommendations and contribute towards the development of a national strategy for migrating from analogue to digital broadcasting.

The regulator is the Independent Communications Authority of South Africa https://www.icasa.org.za/ ICASA.

USEFUL LINKS

http://www.nab.org.za/broadcast.asp - The National Association of Broadcasters of South Africa
http://www.sadiba.org/ - Southern African Digital Broadcasting Association
https://www.icasa.org.za/ - Independent Communications Authority of South Africa
http://www.sentech.co.za/ - State-owned network operator in South Africa

SOUTH KOREA

Status: Country with regular services, DAB launched, DMB launched

Population: 49,779,000

Coverage: 80%

Services: 2 DAB, 19 DMB, 6 Data

Sales (accumulated): 60,000,000

Penetration by population: 50%

CURRENT SITUATION

As the first country to commercially launch mobile TV, South Korea is the most successful DMB market in the world. More than 60 million DMB enabled devices have been sold, of which the most popular are mobile phones. This number is expected to rise even more with an increase in coverage; services already cover over 80% of the country. Hundreds of DMB devices are available in this market and usage of mobile TV increases year on year. Interactive services are also growing in popularity adding value to broadcasting services.

The Korean government has set up a digital audio project to recommend a digital audio broadcasting standard for Korea. Following ETRI's investigation of various digital radio platforms, a major decision is expected regarding the adoption of a digital radio technology for South Korean broadcasters.

Korea's latest innovation is an interactive mobile TV service, or Smart DMB, launched in May 2011 with six terrestrial-DMB operators (T-DMB). With Smart DMB, mobile TV viewers are able to search the internet, receive EPG information updates, and even enjoy 'TV Screen Capture and Share Service' through SNS while watching television. Moreover, hybrid DMB was launched in Aug 2013 for the high quality video service.

COVERAGE

Korea's DMB broadcasts currently cover 80% of the country (almost all residential areas) with all commercial and national broadcasting stations and their associated multi-channels. Coverage is currently at 90% of the population. Planning is based on achieving robust indoor and outdoor coverage using VHF Band III spectrum.

SERVICES ON AIR

In this country there are three regular national multiplexes on air. There are six major broadcasters providing a variety of services to the South Korean market including mobile TV services. TPEG services are available giving the consumer traffic and travel information. There are 19 video services, five audio services and eight data services on air, five of them public and 22 commercial.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	5	0	5
DMB programmes	15	4	19
Data services	0	4	8
Total	0	6	32

Feature of service on air

For DMB application for smart phones, Smart DMB Lite application was released in May 2011. To date 800,000 people have downloaded and used the application (including EPG, BBS service). Smart DMB pro (including VOD, SNS service) was released in January 2013, which is the improved version of Smart DMB Lite.

A nationwide TPEG service was started by four broadcasters in July 2007. The cumulative sales of the GPS navigator to date are about 10 million and 80% of those devices feature TPEG.

RECEIVER MARKET

There are a large number of retailers in Korea selling DMB devices, and there are over 100 different models by over 30 different manufacturers on the market. The most popular are DMB mobile phones and GPS devices. Many mobile phones include DMB, and especially smart phones support Smart DMB applications including interactivity via internet, EPG and BBS service. The Smart DMB applications are continuously evolving.

DETAILS OF TRIALS

From 2009 to 2010, the South Korean government performed laboratory and field tests for various digital radio broadcasting technologies such as DAB, DAB+, T-DMB Audio, HD Radio and DRM+ to decide which digital radio broadcasting standard is appropriate for the Korean broadcasting situation. The tests are performed by Electronics and Telecommunication Research Institute (ETRI), and the process and results of the test are governed by digital radio committee which has members from government, broadcasters, receiver manufactures, research institutes, and universities.

A DAB+ trial is planned for July - December 2013

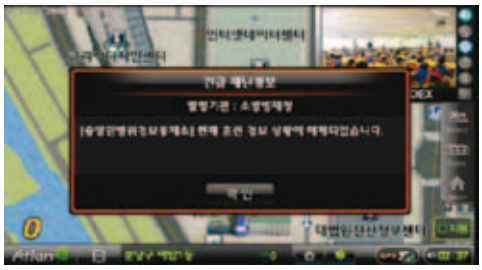
1. Channel 10B to be used at Buk-gam-Ak Tx site, 1.536Mhz in the north west suburban area of Seoul, the capital city
2. DAB+ several channels (4~8 channels, TBD later) at 2Kw power
3. Trial period: July ~ December of 2013 is 'planned' at the moment. Starting month may change but it will start in 2013
4. Trial approval was done by KCC of Korea government

REGULATION AND SPECTRUM

The Ministry of Communication Committee (KCC) (http://www.kcc.go.kr/) governs broadcasting. The KCC is responsible for the development of broadcasting technology, spectrum management, and the licensing of stations. The KCC is also responsible for regulation of content and advertising, as well as authorising and recommending licences. Only one licence is awarded to the multiplex operator, who can then either provide their own programmes or can lease capacity to other programme providers. The government divided the country into six regional broadcasting areas and 13 new nationwide broadcast licences have been granted for DMB services.

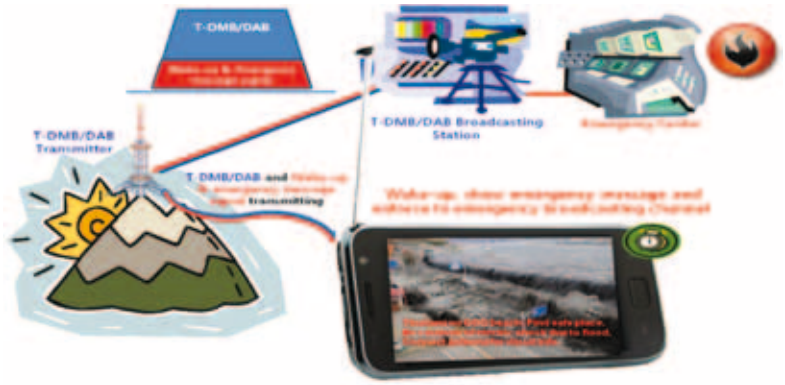
EMERGENCY BROADCASTING

The Korean government provides Emergency Warning services via the T-DMB network. Some Navigation systems with T-DMB function can show emergency messages when people are watching or receiving T-PEG service. Now KBS transmit emergency warning signals in FIDC channel, and MBC, SBS, YTN will transmit the signal shortly.



Example of Emergency warning service in Navigation receiver with T-DMB function

ETRI is under development of an emergency wake-up alter technology for T-DMB/DAB. As emergency situations occur, the T-DMB/DAB transmitters or repeaters transmit a wake-up signal and emergency message using the T-DMB/DAB signal. A T-DMB/DAB receiver would then 'wake-up', show the emergency messages and broadcast the emergency broadcasting channel.



Configuration of emergency wake-up alter technology for T-DMB/DAB

USEFUL LINKS

http://www.dmb-alliance.org/

SPAIN

Status: Country with regular services, DAB launched

Population: 47,190,493

Coverage: 20%

Services: 18 DAB

CURRENT SITUATION

The Spanish DAB Association (Asociación Foro de la Radio Digital, http://www.radiodigitaldab.com/index.htm), comprising both national private and public broadcasters, is responsible for DAB/DAB+ in Spain.

Spain first began broadcasting terrestrial digital radio in April 1998 covering Madrid, Barcelona and Valencia. From 2002 to June 2011, 23 transmitters covered the 52% of the Spanish population through three national multiplexes (1 SFN and 2 MFN). In addition, in some Comunidades Autónomas, DAB services were launched on additional regional multiplexes, but they are currently switched off.

The Council of Ministers reached an agreement on Digital Radio in June 2011 and approved a Digitalisation Plan for Terrestrial Broadcasting with the following measures:

- Reduction of DAB coverage from 52% to 20%, in order to facilitate a migration to DAB+
- Flexibility for the broadcasters, in order to allow for migration to DAB+
- Study of a possible reassignment of the multiplexes
- Promotional activities through the Spanish DAB Forum
- DAB+ trials
- A study of the necessary conditions to determine the date of a possible analogue switch off

COVERAGE

Due to the enforcement of the Digitalization Plan for Terrestrial Broadcasting, DAB services are on air only in Madrid and Barcelona including their metropolitan areas, covering 20% of the Spanish population.

SERVICES ON AIR

In this country there are 3 regular national multiplexes on air. A total of 18 DAB audio services are on air, but enhanced features as text, images or programme guides are not available.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	18	0	18
Total	0	0	18

RECEIVER MARKET

Although some consumer electronics and car manufacturers took the decision of commercialising DAB/DAB+ receivers, DAB+ trials have not yet been implemented and sales are low.

AUTOMOTIVE

Some manufacturers (mainly premium) offer DAB/DAB+ receivers as an OEM extra.

Manufacturer	Model	Type	Price (euros)
Mercedes-Benz	E Class	DAB/DAB+/DMB receiver	521.86
BMW	5 Series	DAB receiver	469
Mini	All	DAB receiver	201
Audi	A6	DAB receiver	475
Porsche	911	DAB receiver	543
Volkswagen	Passat	DAB/DAB+ receiver	220
Seat	León	DAB receiver	197

DETAILS OF TRIALS

Although it was expected that technical trials for DAB+ would be carried out in 2012, they have not yet been implemented.

USEFUL LINKS

http://www.minetur.gob.es/telecomunicaciones/Espectro/RadioTV/RD/Paginas/RD.aspx
http://www.radiodigitaldab.com

REGULATION AND SPECTRUM

National station licenses are issued by the central government, while local and regional licenses are the responsibility of the regional government. Licenses are valid for 10 years with an automatic renewal for a further 10 years and operators must commit to the promotion of DAB digital radio. Advertising and sponsorship are permitted under the same rules which exist for analogue radio, and data is permitted on up to 20% of multiplex capacity.

Digital terrestrial broadcasting is allowed by law both in Band III and in L-Band (not used).
There are three layers of services set out by law:

- National, with 1 SFN multiplex and 2 MFN multiplexes
- Regional (Comunidad Autónoma basis), with 1/3 SFN multiplex (nowadays without transmissions) and 2/3 MFN multiplex (not implemented)
- Local, with 237 areas covered by different frequency blocks in Band III and L-Band (not implemented)

Nowadays, due to the entry into force of the Digitalization Plan for Terrestrial Broadcasting, DAB services are on air only in Madrid and Barcelona including their metropolitan areas. The DAB services have a bit rate of 160 kbps, with the exception of Radio Nacional (192 kbps), Radio 3 (192 kbps), Radio 5 (192 kbps) and Radio Clasica (224 kbps).

SWEDEN

Status: Country with regular services, DAB launched, DAB+ launched

Population: 9,142,817

Coverage: 35%

Services: 8 DAB, 11 DAB+

Sales (accumulated): 48,000

CURRENT SITUATION

In 2013, the Government put forward a Bill that proposed that Swedish Radio shall expand their current DAB network to 95% of the population including a migration to DAB+ and a switch-over from FM to DAB+ in 2022. The Government has appointed a Digital radio Industry Coordinator to put forward a Switchover plan (in 2014) after consultation with the public service broadcaster Swedish Radio and the private radio broadcasters. The Bill will be up for decisions in the Parliament before 2013 is over and could be effective in the coming licensing period for Swedish Radio that starts on 1 January 2014 and runs for six years.

DAB transmissions in Sweden started 1995 and today the coverage is 35% of the population with services from public service broadcaster Swedish Radio (SR). The license under which SR operates is valid until 31 December 2013. There is a proposition that SR shall expand their coverage to 95% during next licensing period 2014 - 2020.
In 2011, the license process for commercial digital radio started and it is expected to run until the end of 2013-2014. The commercial digital radio licenses will be valid until 31 December 2020. This process is expected to pave the way for launch of commercial radio in DAB+. In August 2013, the process continues but still no licenses have been issued.

In 2010, the Radio and TV Act came into effect which, for the first time, allowed commercial radio companies to apply for digital licenses. This paved the way for a radio industry united behind DAB+, something for which both public and commercial services have been lobbying for.

In 2009, pilot transmissions of DAB+ started and the coverage quickly reached 22% of the population with 16 services from public service radio, commercial radio and community local radio.

COVERAGE

The Swedish DAB network (mux 1) is operated by Teracom AB and covers major cities Stockholm, Gothenburg, Malmo and Alvsbyn on a single frequency 12B. Coverage is currently at about 35% of the population or about 3 million people.

Mux 1 holds 8-10 regular and licensed services, all from Swedish Radio. All services in mux 1 are currently broadcast in DAB. All audio services hold DLS.

The Swedish DAB+ network (mux 2) is operated by Teracom AB under a specific test license and covers major cities Stockholm, Uppsala and Gavle using a multi-frequency network on frequencies 12C and 12D. Coverage reaches 22% of the population or about 2 million people. Mux 2 currently holds about 14-16 pilot services from several major broadcasters (SR, MTG radio and SBS radio), as well as some local community radios. All services in mux 2 are broadcasted in DAB+. All audio services hold DLS and SLS.

Please visit http://www.teracom.se/Sandarinformation/Tackningskartor/Tackningskarta-digitalradio/ for coverage maps.

SERVICES ON AIR

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	1	7	8
DAB+ programmes	11	0	11
Total	12	7	19

In this country there is 1 regular national multiplex and 1 trial regional multiplex on air.

Mux1: 8-10 DAB audio channels from public service broadcaster Swedish Radio. Most of them are web channels only broadcasted in DAB and not on FM. All audio channels in mux 1 carry DLS. In addition, a trial version of EPG is being broadcast. There are plans to include an updated version of EPG and a trial version of TPEG.

Mux 2: 10-16 DAB+ audio channels from commercial radio trialing digital broadcasting. One or two channels are only broadcast in DAB+ and not on FM, the rest of the channels are available on FM but restricted to local areas. In addition to the audio, all services carry DLS and SLS. There are plans to include EPG and a trial version of TPEG.

Feature of service on air

"P4 Bjällerklang" is a pop-up station playing "the most beloved and popular Christmas songs" in both familiar and unexpected versions, around the clock on digital radio (DAB) and on the web. The channel exists in December and January and is now broadcasting for the fifth year in a row. This is a good example of a pop-up station that uses the flexibility of the DAB/DAB+ standard to meet occasional listener demands.

"Knattekanalen" is a children's station playing "new music mixed with familiar songs and children's pop from all times". The channel broadcast in DAB and on the web each day from six o'clock in the morning till eight at night. Children and their parents know that when they want to listen to children's programs, there is always something on.

RECEIVER MARKET

General

Digital radio marketing activities in Sweden are today awaiting the regulatory process. This means that there are no official DAB/DAB+ sales records to date. Below are some estimates.

Home and portable audio

Sales in 2012 was roughly 12,000 units (and in Aug YTD 2013 5,000 units) which means that the total number of receivers on the market now is about 48,000 units. Given this estimate, the household penetration is less than 1%.

Mobile Phones

There are no phones on sale today with in-built DAB/DAB+ tuner.

AUTOMOTIVE

There is no official data on the sales of DAB/DAB+ car tuners in Sweden. However, all major brands such as Volvo, Volkswagen, Toyota, Audi, BMW, Mini, Mitsubishi, Skoda, Land Rover, Mercedes and Honda offers DAB/DAB+ car tuners as an option.

Volvo Cars, which have a 20% market share in Sweden, have stated that in 5% of the cases where a new Volvo is sold, the customer has requested the optional DAB/DAB+ tuner. This means that in Sweden, roughly 3,000 Volvo cars were sold in 2012 with optional DAB/DAB+ car tuner.

DETAILS OF TRIALS

DAB transmissions in Sweden started 1995 and today the coverage is 35% of the population with regular services from public service broadcaster Swedish Radio (SR). In 2009, pilot transmissions of DAB+ started and the coverage quickly reached 22% of the population with 16 trial services from public service radio, commercial radio and community local radio.

Regulation and Spectrum

Key features of regulation for digital radio regulation in Sweden are;

- Band III
- One MUX in big cities only
- Switch-off date is to be set for analogue radio
- migrate to DAB+ expected to take nine years
- Cost of parallel transmission on analogue and digital to be supported by the Government
- Industry co-ordinator is to be appointed by the government to assure a transition by 2022

REGULATION AND SPECTRUM

Regulation for public service radio

The government proposes and the Parliament decides on the national Broadcasting Act in which license conditions and terms are set for the public service broadcaster, Swedish Radio (SR). The license period is six years. The current license is valid until 31 December 2013 and allows Swedish Radio to broadcast digital radio using DAB/DAB+ in VHF Band III, to four regions in Sweden (Stockholm, Gothenburg, Malmo and Norrbotten) with a maximum number of nine services (Stockholm and Norrbotten) or 10 (Gothenburg and Malmo). In 2011, the Government commissioned an inquiry to broadly review the license terms for radio and television public service under the new licensing period starting 2014. The assignment was reported on the 11 September 2012 when the Commission proposed that SR should expand their DAB network coverage to 95% and get financial means to do so. A bill is expected to be presented to parliament in 2013 for the new license terms to take effect from 1 January 2014.

Public service radio currently, in January 2013, has some limitations in their digital broadcast license; they are only allowed to broadcast in four regions in Sweden (Stockholm, Gothenburg, Malmo and Norrbotten) and only with a maximum number of 9-10 services. There are no constraints on bitrates or choice of technology DAB or DAB+. The public service radio licenses are awarded to Swedish Radio by the Government on a six year basis and the next start period is from 1 January 2014.

Regulation for commercial radio

In 2012, the national authority for Radio and Television issued the application process for commercial digital radio licenses. The licenses will be decided by the Authority for Radio and TV in the form of a beauty contest. On 1st October 2012, seven commercial broadcasters applied for a total of 22 licenses in both national and regional VHF Band III networks. Major commercial broadcasters MTG radio and SBS radio, representing more than 91% of all non-public service radio listening, have applied for commercial digital licenses and are awaiting a decision by the Authority. The commercial licenses will be valid from 2013 until 2020.

At the spectrum conference GE-2006 Sweden was awarded a total spectrum equivalent to of 4 nationwide DAB/DAB+ multiplexers in band III. Three of the four multiplexes are MFNs (making regional insertion possible up to the maximum of 34 available frequency layers).

In 2010 the Swedish Government awarded two of the four multiplexers (spectrumwise) to public service radio and remaining two multiplexers to commercial radio.

Commercial radio is in the process of being awarded digital licenses. So far the Authorities have stated that there will be no requirements on bit rate per service. However, the maximum number of services per commercial multiplex will be 16. Also, the commercial license holders are obliged to cooperate in technical matters including choice of network operator. Coverage requirements may be imposed to ensure that the digital broadcasts reach a certain proportion of the population within the broadcasting area.

A bill is has been presented to parliament (June 2013) for the new license terms to take effect from 1 January 2014. Parliament will make a decision before the end of 2013.

An Industry coordinator will start working in September 2013 to prepare a plan for introduction of DAB+. In October 2014 a proposal will be presented to the government.

As of August 2013 the private radio stations were still waiting for a decision on DAB+ licenses from the Radio and TV Authority.

USEFUL LINKS

http://www.digitalradio.nu/

SWITZERLAND

Status: Country with regular services, DAB launched, DAB+ launched

Population: 8,014,000

Coverage: 94%

Services: 90 DAB+

Sales (accumulated): 1,200,000

Penetration by household: 33%

Penetration by population: 20%

CURRENT SITUATION

The Federal Office of Communications awarded a radio licence to the Digris AG company for the operation of DAB+ islands throughout Switzerland.

Today there is one national (with four regional multiplexes for the four different languages) two regional and one local multiplexes, covering the German, French and Italian speaking areas of the country, with a mix of public and commercial services. In the middle of October 2012 the standard DAB was switched to the standard DAB+. Two to three programs per region will remain on simulcast service DAB/DAB+ until 2015.

The original four multiplexes are run by the public broadcaster SRG SSR, the first commercial DAB+ multiplex which was launched on 13 October 2009 now broadcasts 14 commercial radio stations in the German-speaking part of Switzerland. A second local commercial DAB+ multiplex started in December 2012 in the German speaking part with six commercial radio- and three public radio stations and a first regional commercial DAB+ multiplex in the French speaking part will start at the end of 2013.

Switzerland first launched DAB digital radio services in 1999 when the public broadcaster, SRG SSR went on air. Marketing activities started in 2006.

COVERAGE

Digital radio on DAB+ in Switzerland reaches over 99% of the population (outdoor 99%, indoor over 94%).

See here for more information - http://www.broadcast.ch/map.aspx

SERVICES ON AIR

In this country there are six regular regional multiplexes on air with 42 stations on DAB/DAB+ in the German-speaking part of Switzerland, 14 stations on DAB/DAB+ in the French speaking part of Switzerland, 15 stations on DAB/DAB+ in the Italian-speaking part of Switzerland and 19 stations on DAB+ in the Romantsch-speaking part of Switzerland.

RECEIVER MARKET

1,200,000 receivers had been sold by the summer of 2013. Retailers report that more than a quarter of a million DAB+ radios were sold in 2011 alone. The range of radios on sale is also expanding all the time. Consumers in Switzerland already have a choice of 420 models of digital radios in a wide variety of designs and price ranges. 1.4 million people nationwide listen to digital radio every day (survey AUG 2012). Currently, over one third of all households have access to a digital radio. All radio and TV retailers as well as the major chains sell DAB+ receivers in Switzerland with a wide range of different receivers. More than 50 brands and over 420 different models are currently available.

Portable digital radios recorded marked growth in sales in 2012. Digital radio alarm clocks are also gaining in popularity, with the number of devices sold up by 20%, and sales revenues by 15%. Digital radios are thus bucking the generally negative trend. Indeed, the Swiss market for portable audio devices is shrinking all the time, with year-on-year sales revenues falling – sometimes significantly – since 2007.

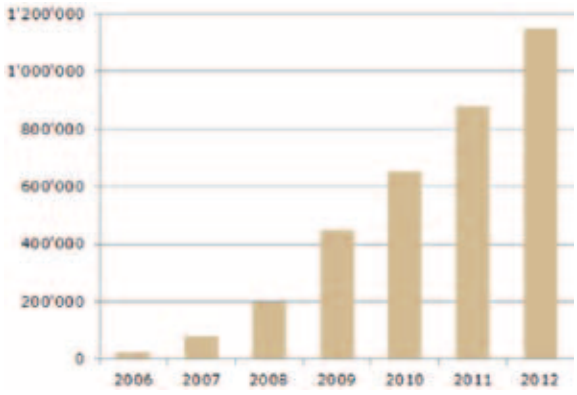


Image:
Digital radio: Growth of digital radio in Switzerland 2006 – 2012 Sales 1,150,000 devices on the market, Source: MCDT
1/3 digital radio households

AUTOMOTIVE

Switzerland has the highest DAB outdoor coverage for any country. 99% of its population is covered and it has a clear migration strategy for the move from FM to DAB and from DAB to DAB+. For a seamless in-car user experience Service Following is seen as key in Switzerland, and the public broadcaster SRG SSR has pioneered this issue. SRG SSR has also defined two regions for test drives, working in close collaboration with the car manufacturer industry (Audi, VW, Skoda, JVC, Kenwood and Clarion).

- Up to 10,000 DAB car radios have been sold
- DAB/DAB+ is available in the following brands in Switzerland: Audi, BMW, Mercedes, VW, Skoda, Fiat, Toyota, Opel, Volvo, Mini, Jaguar and Range Rover

Automobile Workshops

In the summer 2013 saw the meeting in Zurich of around 80 representatives of the Swiss automotive industry, the Federal Office of Communications OFCOM, the Federal Roads Office FEDRO, SRG SSR, SwissMediaCast, Romandie Médias, the German Fraunhofer-Institut research organisation, and ARD. Participants were unanimous in their support for DAB+ car radio, and plan to join forces to support its continued growth.

DETAILS OF TRIALS

In June 2012 Swiss importers of Audi, BMW and Mini fitted with DAB+ car radios participated in digital radio tunnel tests. The trials, which serve to benefit Switzerland as well as its neighbours, tested the capacity of the latest digital radio gear as well as the capability to interrupt broadcasts with emergency travel information. The Swiss public broadcaster SRG SSR carried out the experiments in collaboration with the Federal Office of Communications (OFCOM), the Federal Roads Office (FEDRO), SwissMediaCast and various manufacturers.

REGULATION AND SPECTRUM

Key features of regulation for digital radio regulation in Switzerland are;

- Band III
- National multiplexes
- Change from DAB to DAB+ underway, coverage of highway tunnels will be finished in 2013
- In 2013 stand-alone Band III ensembles authorised by the regulator in the main conurbations, intended as a DAB+ platform for the smaller, non-commercial broadcasters
- No analogue switch-off date
- Federal Office of Communications (OFCOM) holds the spectrum licence

In mid-February 2012, the Federal Office of Communications (OFCOM) awarded a broadcast licence to Romandie Médias SA to operate a further DAB+ network in French-speaking Switzerland. The new platform, which has a capacity of up to 18 DAB+ stations, should be on air by the end of 2013. Romandie Médias SA must broadcast three private stations which have already been given licences, as well as two RTS stations. It is free to choose the other services it offers.

The SRG licence includes the operation of a DAB multiplex and transmission network in Band III. The transmitter sites are operated by Swisscom Broadcast, but SRG is responsible for the planning of the network, signal generating and multiplexing.

Commercial radio and media companies in the German part of Switzerland were granted 8 licences in summer 2007. SwissMediaCast AG was granted a licence to broadcast on Channel 7D and 9A by Swiss Ofcom (the regulator). SMC AG running the first tow commercial DAB+ multiplex in German-speaking Switzerland.

EMERGENCY BROADCASTING

Switzerland is also a pioneer in DAB/DAB+ tunnel rebroadcast systems. There are currently eight tunnels equipped and the plan is to cover up to 200 tunnels using 100 head ends and 1,000 transmitting sites. Emergency voice break-in, signal levels, system design and interfaces are also going to be specified. MCDT, the Swiss digital radio marketing agency, is working closely with automotive manufacturers to provide technical information, run marketing campaigns and hold events to bring automotive manufacturers and dealers together to promote digital radio.

USEFUL LINKS

http://www.digitalradio.ch
http://www.mcdt.ch MCDT – Marketing and Consulting for Digital Broadcasting Technologies
http://www.mcdt.ch/en/news/newsletter-august-2013/ - MCDT August 2013 Newsletter
http://www.mcdt.ch/newsletter/display.php?M=148&C=51b80fd609aad39fc45910dc56ebe745&S=38&L=2&N=13 - MCDT April 2013 Newsletterhttp://www.mcdt.ch/flipbook/annualreport_2012/ MCDT Annual Report 2012
http://www.radiodigitale.ch
http://www.radionumerique.ch
http://www.swissmediacast.ch - Swiss Mediacast

THAILAND

Status: Country with trials and/or regulation

Population: 66,720,153

CURRENT SITUATION

The first Thailand Broadcasting Master Plan (2012-2016) states strategies for digital terrestrial radio roll-out, roadmap and policy for digital terrestrial radio roll-out within two years, after the adoption of the Master Plan.
DAB+ demonstrations started in Bangkok on 1st March 2013. The International Telecommunication Union (ITU) and the National Broadcasting and Telecommunications Commission (NBTC), jointly organised the "NBTC/ITU Workshop on Digital Radio Technologies" held in Bangkok, Thailand, 1-3 March 2013. The Workshop was supported by WorldDMB, MCOT Public Co., LTd., the Government Public Relations Department, and the Royal Thai Army Radio and Television Station.

NBTC is in the process of developing a policy document for digital radio services that will be published in 2014.

DETAILS OF TRIALS

The DAB+ transmission demonstration was conducted at MCOT's broadcasting facility and enabled broadcasters in Bangkok to get first-hand experience and better understanding of the digital radio technology. The demonstration in Bangkok used frequency on VHF Band III (12D – 229.072MHz) with a low power (about 50W) and provided services for four programs.

USEFUL LINKS

http://www.nbtc.go.th/wps/portal/Eng - National Broadcasting and Telecommunications Commission (NBTC), Thailand. The NBTC is the regulator of telecommunications and broadcasting in Thailand.

REGULATION AND SPECTRUM

The Thailand Broadcasting Master Plan (2012-2016) states strategies for terrestrial digital radio roll-out with key objectives: Roadmap and policy for digital terrestrial radio roll-out within 2 years, after the adoption of the Master Plan.

Broadcasting spectrum management policy and plan, as well as spectrum licensing framework for digital radio broadcasting within 3 years.

At least 80% of households in major cities shall be able to access to digital terrestrial broadcast within 5 years.

TURKEY

Status: Country with interest

Population: 75,627,384

CURRENT SITUATION

TRT, the Turkish Broadcasting Corporation, has aired DAB test transmissions broadcasting four simulcast services in Band III and covering the capital, Ankara. A second transmitter was also planned for Istanbul. In 2010, neither transmitter was broadcasting thus it is assumed these trials are now complete.

DETAILS OF TRIALS

As well as the trials mentioned above, TRT had plans to broadcast MPEG-4 video over DAB.

UNITED ARAB EMIRATES

Status: Country with interest

Population: 8,264,070

CURRENT SITUATION

There are reports from the Telecommunications Regulatory Authority of interest in DAB+ trials.

UNITED KINGDOM

Status: Country with regular services, DAB launched

Population: 49,779,000

Services: 417

Penetration by household: 46%

Coverage: 94%

Sales (accumulated): 17,000,000

CURRENT SITUATION

Digital Radio Switchover

The UK radio industry is committed to a digital future for radio and is working towards a Digital Radio Switchover. Before a date can be set for Digital Radio Switchover, two criteria need to be met:

1. 50% of listening must be to digital platforms (currently this is 36.8%)
2. Digital coverage for national services must be comparable to FM; and local DAB must reach 90% of the population and major roads.

The Government has committed to making a decision in principle on switchover in Q4 2013.

A Memorandum of Understanding signed by the Government the BBC and commercial operators in 2012 establishes an agreement in principle to fund the build-out of local DAB to FM equivalences over the next five years, with a commitment to consider further funding if necessary. It confirms also the Government's commitment to a decision on radio switchover in 2013.

The BBC has committed to build-out its national networks to 97% and at least five new local multiplexes will launch in the next year. Significant signal boosts in London, Manchester, Leeds have improved coverage for thousands of households and there are more to come during 2013/14.

The DCMS Digital Radio Action Plan can be found here: https://www.gov.uk/government/publications/digital-radio-action-plan

COVERAGE

Current UK population coverage is:

- 94.5% for national BBC stations. The BBC has announced its commitment to build out national DAB coverage up to 97% by a target date of 2015 and have committed to provide good in-vehicle coverage for motorways and major roads.
- 85% for national commercial stations. It has been confirmed that all the national commercial stations have been launched across Northern Ireland for the first time this summer.
- 70% local DAB coverage. Local digital services will be launched in 8 new areas in 2013. Government, BBC and commercial broadcasters have signed an agreement in principle to fund the build-out of local DAB to FM equivalence.

The Memorandum of Understanding on Local DAB funding established a 2 phase plan for the launch of 13 new local DAB multiplexes.These new local multiplexes will bring 7.5 million people into local DAB coverage for the first time. The first phase involves the launch of seven new local multiplexes by the end of 2013 while the second phase covers the later launch of six further new local multiplexes in accordance with the switchover implementation plan.

SERVICES ON AIR

In this country there are two regular national multiplexes (one BBC and one national commercial), four regular regional multiplexes and 46 Regular local multiplexes on air.

	Simulcast on AM / FM	Exclusive on digital	Total of services
DAB programmes	294	123	417
Total			417

Feature of service on air

In the UK, Absolute Radio has launched a set of additional radio stations on DAB - using brand extensions to earn more revenue - launching more radio stations to broaden its output and increase its audience. It has seen significant increases in listening hours, audience and in revenues as a result.

Smooth Radio has also launched Smooth Radio 70s, a national digital-only station.

RECEIVER MARKET

Over 17 million digital radios have now been sold in the UK. According to GfK Q2 2013, digital radio device sales are up 12% year on year compared to a decrease of 18% for analogue devices. There are hundreds of digital radio products on the market in the UK being sold through a large number of high street and online retailers as well as most of the big electrical chains. The lowest cost receivers are sold at under GBP20, with well-known brands from GBP 25. A variety of digital radios can be viewed at www.getdigitalradio.com/digital-radios

AUTOMOTIVE

Minimum Specification for in-vehicle digital radio receivers

A Minimum Specification for in-vehicle digital radio receivers has been published by Government. These criteria will sit behind a consumer facing mark (due for launch in Q4 2013), providing consumers with guidance and confidence in the digital radio products they are buying. See the specifications here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/136355/In_Vehicle_Min_Spec.pdf.

The UK minimum receiver specifications for in-vehicle digital radios have been published and the Switchover Certification Mark for in-vehicle receivers is due to launch in Q4 2013. This will provide consumers with confidence in the in-vehicle products they are purchasing.

Installation Scheme

UK industry has launched a training and accreditation scheme for digital radio installers, which will mark out quality installers to consumers and help the smooth transition to digital radio. In order to be granted use of the Installers Digital Radio Accreditation Mark (due for launch in Q4 2013), installers must meet specific criteria. For further information please email sam.bonham@digitalradiouk.com.

Service following and traffic announcements technical trial report

Alongside the minimum receiver specifications, a digital radio service following trial, using the new DAB/DAB+ service following specification produced by the WorldDMB Technical Committee, has been carried out in the UK as a direct result of the Digital Radio Action Plan. This trial allowed automotive manufacturers to test service following on their receivers. The Service following and traffic announcements technical trial report outlines work in the Technology & Equipment Group (TEG) on the UK Minimum Receiver Specifications. The paper was written by Digital Radio UK and Arqiva.
http://www.worlddab.org/news/document/3353/Service_following_and_traffic_announcements_technical_trial_report_FINAL_May_2013.pdf

New cars

More and more new cars now come with digital radio as standard, or as an optional extra. Several high profile vehicle manufacturer brands now offer digital radio as standard across their range, including BMW, Audi, Landrover and Jaguar. And several other vehicle manufacturers have announced that they will offer digital radio as standard across the range by the end of 2013, including VW and Vauxhall.

As of July 2013 the proportion of new cars with DAB as standard registered in a month rose to 40.1%; up from 39.4% the previous month (CAP/SMMT July 2013). The year-on-year growth for the proportion of new cars with DAB as standard is now 61.7%, rising from a base of 24.8% in July 2012.

The following car manufacturers offer DAB as an option or standard; Audi, BMW, Citoen, Fiat, Ford, Honda, Jaguar, Land Rover, Lexus, Lotus, Mercedes, Mini, Peugeot, Seat, Skoda, Toyota, Vauxhall, Volkswagen, Volvo.

Aftermarket

There is now an aftermarket product available to fit every vehicle on the UK road and Digital Radio UK is working with the industry to support the growing aftermarket. The marketing of in-car digital radio has increased, with the UK's industry campaign continuing across commercial radio, BBC TV and radio. This campaign is also translated in-store with consistent digital radio point-of-sale and in in-vehicle aftermarket retailers.

REGULATION AND SPECTRUM

Key features of regulation for digital radio regulation in the United Kingdom are;

- Band III
- Third party in some cases operate multiplex
- More recently, operated by broadcasters
- National criteria for switch off of analogue:
  - > 50% of listening must be via digital platforms.
  - > Digital coverage for national services must be comparable to FM, and local DAB reach 90% of the population as well as major roads.

A Royal Charter and Agreement govern the public broadcaster; the BBC, with new stations subject to Government approval and the Office of Communications (Ofcom) regulate the commercial sector. Multiplex licences are currently awarded on a beauty contest formula rather than auctioned. Regulation controls such things as minimum bit-rate for music stations, mandatory 'must carry' obligations, maintenance of service providers' stations commitments and the amount of data content.

In the United Kingdom media and communications regulator Ofcom advertise and provide the licenses for digital radio services in the United Kingdom, under the Broadcasting Acts of 1990 and 1996. Ofcom awards licenses for digital radio services differently depending on the type of service and the platform. Ofcom advertises the licences of new digital radio ensembles and are subject to an open competition to the highest bidder. Ensemble licence awards are awarded for twelve years. Licences are awarded on a national, regional and local basis.

Broadcasters also need to contact the ensemble or multiplex operator of a local or national DAB ensemble or digital terrestrial multiplex to broadcast within a region, subject to a fee payable to the ensemble operator.

UK's digital radio minimum receiver specification reports
February 2013 government published the UK's digital radio minimum receiver specification reports – domestic and in-vehicle. You can find both the domestic and in-vehicle papers below:
Domestic Receiver Minimum Specification https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/136353/Domestic_Min__Spec.pdf
In-vehicle Receiver Minimum Specification https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/136355/In_Vehicle_Min_Spec.pdf

All of the Digital Radio Action Plan papers can be found here: https://www.gov.uk/government/publications/digital-radio-action-plan-reports-2013. These receiver specifications are a clear signal of the government's intention and enables manufacturers to plan future product development.

The government is scheduled to make a decision on digital radio switchover in Q4 2013. Following a positive decision on switchover, government plans to introduce a digital radio switchover certification ("tick") mark for use on digital receivers. These minimum receiver specifications define the technical criteria that DAB receivers must comply with to use a certification mark.

CONSUMER MARKETING

Summer Digital Radio Campaign

The next phase of the industry communications campaign started at the end of July and will run until 31 August. The heavyweight campaign featuring the digital radio evangelist, D Love will run on BBC TV and radio, commercial radio stations and online using the strapline 'if you love radio, go digital.' The aim of the campaign is to harness digital radio advocates and encourage listeners to 'share the love' for digital radio. This will be brought to life by commercial radio stations who will be asking listeners to share their love for digital radio and 'nominate a mate' to win a digital radio.

Listen to the ads at http://www.getdigitalradio.com/digital-radios/dlove

USEFUL LINKS

http://www.culture.gov.uk/publications/7876.aspx - Digital Radio Action Plan
http://www.getdigitalradio.com - Digital radio UK
http://www.getdigitalradio.com/digital-radios/dlove - D Love and Digital Radio Videos

VIETNAM

Status: Country with trials and/or regulation

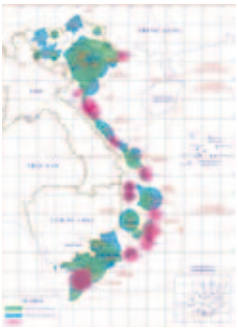
Population: 90 million

CURRENT SITUATION

The public broadcaster in Thailand, VOV (the Voice of Viet Nam), trialled the DRM standard in 2005, HD-Radio in 2009 and DAB+ on July, 2013. The roadmap for digital broadcasting radio and television 2020 has been granted by the Prime Minister of Vietnam since 2009. The Ministry of Communication and Information got together with other broadcasters in Vietnam: VTV, VOV, VTC and TTNVN to implement the digital broadcasting scheme by 2020.

COVERAGE

Analogue services cover 98% of Vietnam.



Coverage map of AM/FM in Vietnam

SERVICES ON AIR

Currently there are no services on air. VTV launched two TV channels and one DAB radio service in Hanoi at the beginning of 2010 and by the end of 2010, VTV had increased their services to six TV channels and one radio. There are currently three multiplexers in Hanoi which are not in use.

REGULATION AND SPECTRUM

The Prime Minister's decision 22/2009 dated 16 Feb 2009 on the master plan of transmission and broadcasting of radio and television to 2020 is:

- Separation of transmission and broadcasting of radio and TV with content production
- By 2020: Digital technology in the transmission and broadcasting of radio should be applied widely
- Infrastructure: Establishing up to five regional and up to three nation-wide companies to provide transmission and broadcasting of TV services

DETAILS OF TRIALS

The latest DAB+ trial was conducted on 26, 27 and 29 July, 2013 at 58 Quan Su str. with four services on air including VOV1, VOV3, VOV5 and VOV GT-HN.

ETRI performed a T-DMB Total Solution integration test with VTV, Broadtech SC from 1 October to 7 October 2008 in Hanoi. VTV launched two TV channels and one DAB Radio service in Hanoi at the beginning of 2010 and by the end of 2010, VTV had increased their services to six TV channels and one radio.

USEFUL LINKS

www.vov.vn - The Voice of Vietnam (VOV)
www.vtv.vn - Vietnam Television (VTV) national television broadcaster of Vietnam
www.radiovietnam.vn - Radio Vietnam
http://vovgiaothong.vn/
www.vovworld.vn Radio - The Voice of Vietnam Overseas Service

WorldDMB is responsible for defining the digital radio standards DAB and DAB+ for digital radio and DMB for radio and mobile TV.

Our goal is to promote the standard around the world. We work with sound and data broadcasters, network providers, car, receiver, chip and equipment manufacturers, governments and official bodies to encourage international co-operation and a smooth, coordinated roll-out of services.

Through our network of more than 85 companies and organisations from across the industry and from over 25 countries, WorldDMB is in the best position to assist the transition from analogue to digital radio.

MEMBER BENEFITS

Global contact database
- commercial and public broadcasters
- chip, receiver and equipment manufacturers
- network operators
- regulatory bodies
- automotive manufacturers (OEMs, Tier 1s, Tier 2s)

Market Intelligence
- country rollout plans
- coverage maps
- industry news
- Eureka! member newsletter

Industry Events
- free registration to WorldDMB events
- speaking opportunities
- free or discounted exhibition opportunities
- discounted admission to industry events
- opportunity to distribute promotional material

Support to Broadcasters
Advice on switching from analogue to digital radio
- regulation
- technical trials
- licensing
- marketing
- network build out
- best business case scenarios
- production of new digital radio content

Business Development
- advertise products in WorldDMB publications and at industry events
- sponsorship opportunities
- targeted networking opportunities

Technical Information and Support
- advice on regulatory and spectrum issues
- ETI files and guidance on trials and testing
- opportunity to shape the development of future applications
- automotive sector specific technical information

WorldDMB Committees
- attendance at Committee meetings
- access to all Committee documents
- opportunity to join Task Forces and influence the industry

Resources
- ETI Library
- GfK Statistics – quarterly/ market growth
- presentation and document library
- exclusive member document sharepoint

// At WorldDMB we join the community that is shaping the experience of digital radio for the next decades. We understand digitisation is not just a change of technology, it will deeply affect the way listeners use radio and what they expect from it. As a manufacturer in the automotive industry, maintaining a strong hold on radio is of vital interest to us and WorldDMB is our key to the technology. //

Andreas Goršak, JVC Kenwood Corporation, Germany
(automotive audio manufacturer)

// Broadcasters are facing unprecedented competition for their spectrum and their audiences. Working through WorldDMB with chip and receiver manufacturers, spectrum planners and broadcasters throughout the world ensures innovation and best practice is developed and shared. WorldDMB members can be assured that free to air radio has an exciting digital future. //
Joan Warner, Commercial Radio Australia

WorldDMB Committees – Involving Members

Only WorldDMB members can join and attend WorldDMB Committee meetings and access all current and past committee documents. The committees provide opportunities for international networking, sharing information and skills and making valuable professional business contacts. They are core vehicles for issue-based interaction on technical, regulatory and spectrum issues. The committees are member-led and self-managed, each with its own programme of meetings, task forces and internal communications.

WorldDMB Technical Committee

- oversees the standardisation of the DAB family of standards
- ensures that receiver equipment and broadcast technologies are compatible
- upgrades and advances the standard in line with technical developments
- looks to the future-proofing of receiver and broadcast equipment

WorldDMB Regulatory and Spectrum Committee

- lobbies to ensure the availability of sufficient frequencies for digital radio
- identifies problems related to frequency availability and works to resolve them
- provides guidance on what works best in the regulatory framework

// The principal benefit of being a member of WorldDMB is networking, you meet people here who have done what you're thinking of doing already, you want to learn from their experiences, avoid their mistakes and build on their successes. //
Phil Laven, European Broadcasting Union, Switzerland

WorldDMB Member Representatives – Linking the Experts on Digital Radio

Member Representatives are the backbone of WorldDMB membership. They are **key staff** from **member** organisations involved in digital radio – country or regional managers, sales, technical, strategic, marketing, press- who are connected to the WorldDMB network. Member representatives receive regular industry updates, discounted or free registration to WorldDMB events and access to valuable members only information via the WorldDMB website.

WorldDMB Asia Pacific Committee

- supports the implementation of digital radio in the Asia Pacific region
- advises on regulation, licensing, technical trials, network build out, marketing and production of new digital radio content
- offers information on business case scenarios, retailers & manufacturers, affordable receivers, marketing & PR strategies

WorldDMB Events

Facilitating exchange on best practice for rollout of digital radio

Every year WorldDMB organises over 20 events, conferences, tailored workshops and seminars bringing together industry stakeholders for information exchange and valuable networking opportunities. These include the WorldDMB General Assembly, our automotive workshops in Europe and Asia Pacific and several digital radio workshops that are a part of the industry's major global events and exhibitions (IFA, GSMA, IBC, Telematics Munich, Broadcast Asia). Through these events WorldDMB offers members the opportunity to share best practise, sponsor and promote their products and services.

WORLD DMB

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v-traffic

V-Traffic Premium DAB-TPEG broadcast services now available

Earlier this year Mediamobile launched the first **Premium DAB-TPEG traffic information services** with real-time traffic events and flow data, in Germany and Norway. Other countries will be available soon.
A leap forward in technology, the V-Traffic DAB-TPEG services set a new definition for high quality, precise real time traffic information, combined with the broadcast advantages of a lifetime service* with nationwide coverage.

To deliver what today's drivers desire, ensure your navigation system takes the best route with V-Traffic Premium DAB service.

Meet us at:
Telematics Valley International Conference in Gothenburg, Sweden – September 9-10
IAA International Car Show in Frankfurt, Germany – September 12-22
Telematics Japan 2013 – Hilton Tokyo, October 8-10

Contact us to test our TPEG traffic data on your equipment: contact@mediamobile.com
*For the terminal's lifetime and as long as the service is in operation.

V-Traffic – mobility solutions from Mediamobile

Mediamobile

Get ready for the sound of efficiency.

VHF transmitters for digital audio broadcasting.

R&S®THV9 – liquid-cooled high-power VHF transmitter
R&S®TMV9 – air-cooled medium-power VHF transmitter

- Outstanding efficiency of up to 46 % thanks to Doherty technology
- Support for DAB, DAB+ and T-DMB
- Smallest footprint – up to 15 kW per rack
- Unique flexibility – single or multiple transmitters in one rack

Reduce your operating costs significantly with the new VHF transmitters from Rohde&Schwarz.

Find your optimal solution.
www.rohde-schwarz.com/ad/dab

Efficiency to the Power of Five® E5 by Rohde&Schwarz

E5 – Efficiency to the power of five.

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