

WORLD



Defining the future of digital radio

WorldDAB Global Update

Digital radio broadcasting using
the DAB family of standards

September 2014



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DAB

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DIGITAL RADIO EUROPE AND ASIA PACIFIC (at year end 2013)

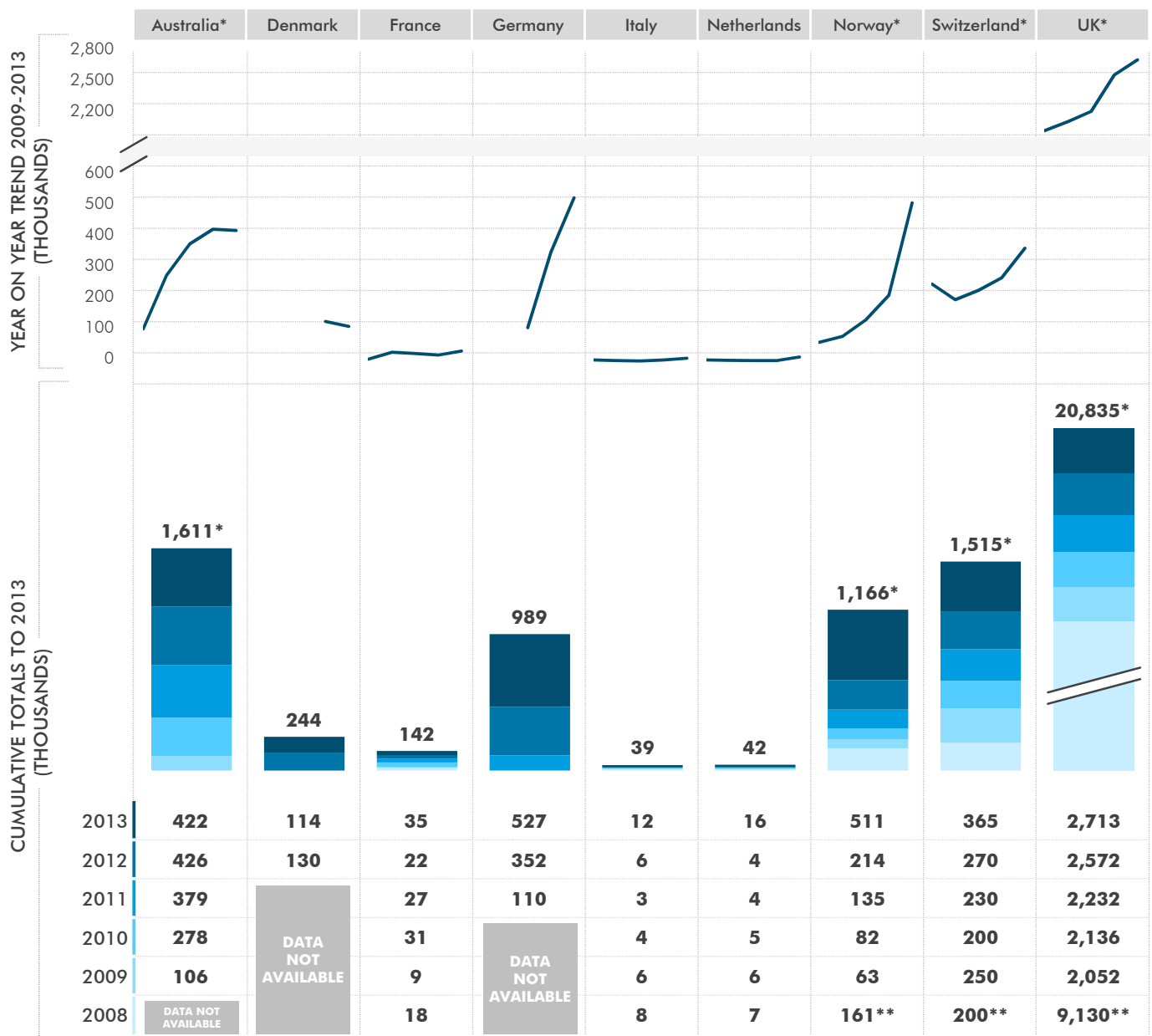
In this issue of the Global Update WorldDMB has, for the first time, collated key statistics from digital radio markets around the world. The aim is to present in an easily accessible format, the status and progress of DAB / DAB+ in nine major territories.

We hope you find this form of presentation helpful. If you have any comments or questions, please contact the Project Office at admin@worlddab.org.

We have focused on four main areas:

1. Receiver sales (annual and cumulative)
2. Network coverage
3. DAB / DAB+ set ownership ("household penetration")
4. Digital radio listening (reach and share)

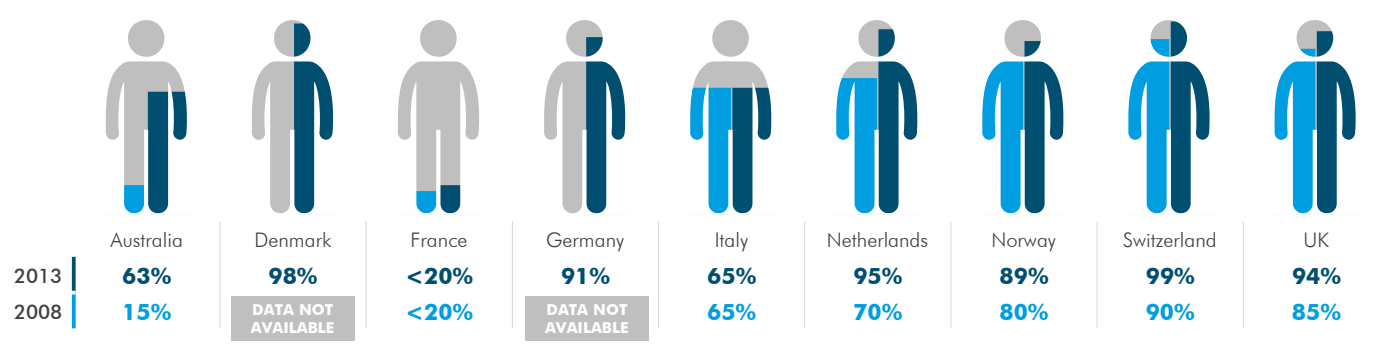
DAB/DAB+ RECEIVER SALES (INCLUDING LINE FIT AUTOMOTIVE)



* including line fit automotive **including pre 2008 sales

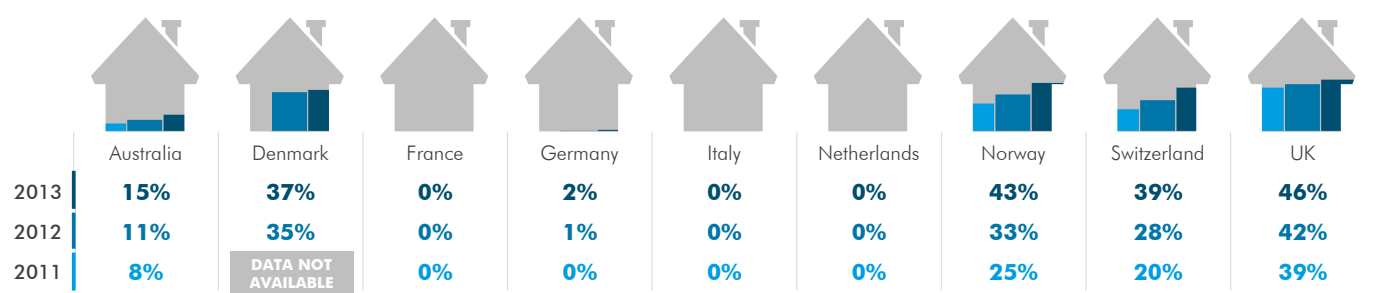
Sources: GfK (Denmark, France, Germany, Italy, Netherlands, UK), Commercial Radio Australia, Digital Radio Norway, MCDT (Switzerland), SMMT/CAP UK automotive, Glass's Automotive Business Intelligence

TOTAL DAB/DAB+ NETWORK COVERAGE (% OF POPULATION) 2008 VS 2013



Sources: Commercial Radio Australia, Teracom, TDF, WDR, WorldDMB, NPO, Digital Radio Norway, MCDT (Switzerland), DRUK

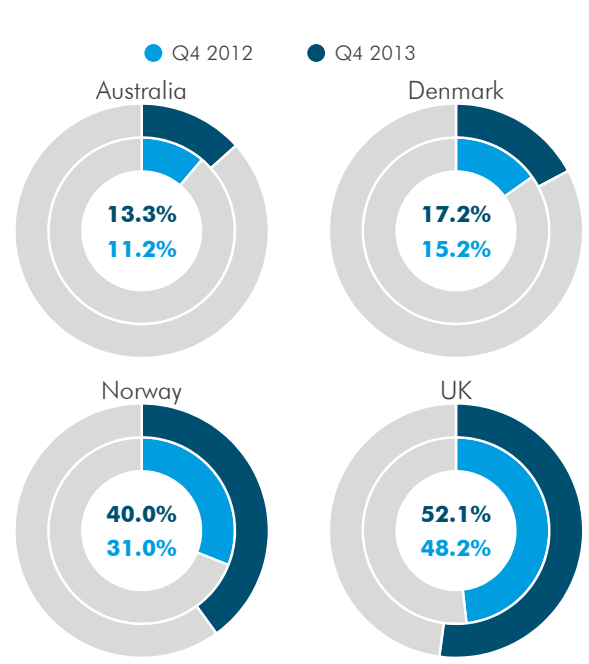
DAB/DAB+ HOUSEHOLD PENETRATION YEARS 2011 – 2013



Sources: Commercial Radio Australia, Digital Radio Norway, Danmarks Radio, WDR, MCDT (Switzerland), DRUK, RAJAR

DIGITAL RADIO REACH ALL PLATFORMS

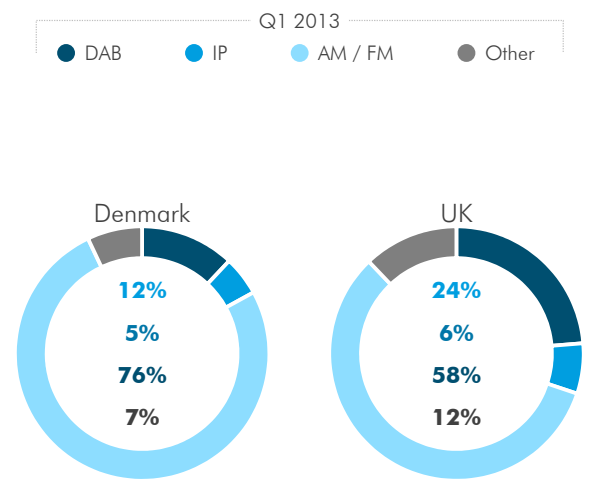
the % of people who listen to digital radio in a given time period



Sources: Nielson, Danmarks Radio, Digital Radio Norway, RAJAR

DAB/DAB+ SHARE

the % of total listening hours which are listened to via DAB/DAB+



Sources: Commercial Radio Australia, Danmarks Radio, RAJAR

Introduction to DAB+

The DAB family of standards for DAB and DAB+ 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 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 240 MHz.

Future trends in receiver technologies

Today, manufacturers can now produce receivers in a variety of designs, shapes and sizes at low and high entry points:

- Multi-functional receivers suitable for home, on the go and in-car make them accessible to all
- Clock radios and docker radios, enabled by the increase in processing capabilities
- Ultra portables and hand-held digital radios enabled by the reduction in power consumption and size

Additional Services and Visual Functionality

Digital radio has reached a point where the differentiation from analogue FM radios has become increasingly marked through additional services such as slideshow and EPG functionality offering greater listener engagement.

Broadcasters can take advantage of visual functionality to provide information on programming, now playing, promotion of broadcaster websites, competitions and registration features. Radio is now 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 using 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.

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 Wi-Fi 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 Sales and Marketing
Frontier Silicon

More information on receiver profiles can be found on the WorldDMB website.

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



Digital radio in-car

The DAB system was designed specifically for mobile use, providing the latest multimedia broadcast system for mobile use. A large percentage of radio listening remains in-car and the broadcasting industries around the world are working hard to include the automotive sector in their plans.

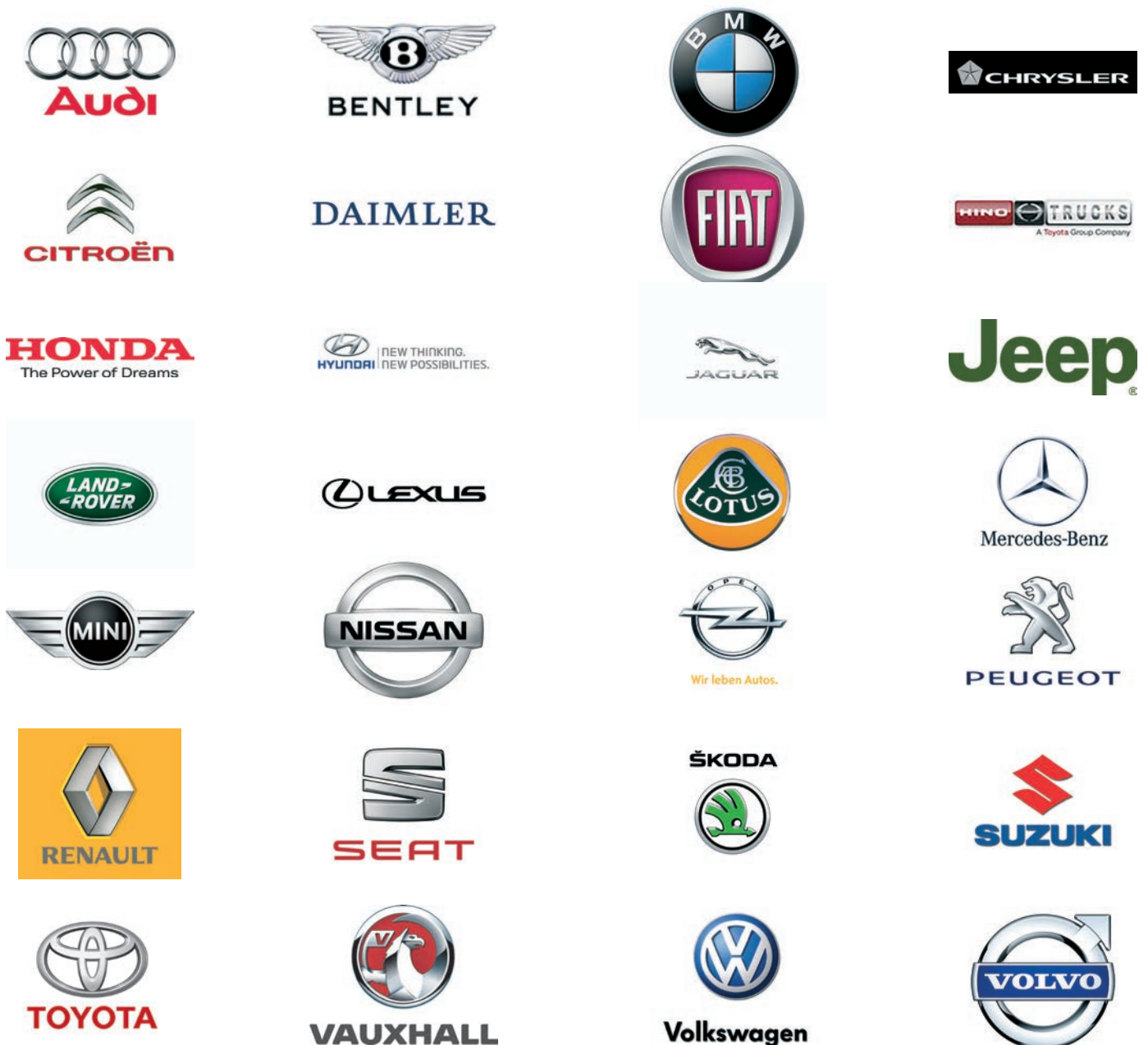
The benefits of DAB/DAB+ in-car:

- An enhanced radio experience with exciting new features and choice with familiarity of a medium which is known and loved
- Additional features and new value added services; text news, categorised slide-show, in-car screen graphics and information – album cover, song title, artists name, news and sports results
- Up-to-date traffic and travel information via TPEG – fuel prices,

weather, speed information, parking, public transport, fuel station locator and traffic flow information

- Provides drivers with safety announcements and emergency alerts alongside information on traffic incidents and flow information
- New channels and content offering a wider variety of radio services enhancing the in-car experience delivering exciting new content or the same trusted radio services loved today by in-car listeners
- New products which can energise sales of after-market radio products in dealerships
- Helps vehicles retain value in the second hand market while offering new revenue streams to dealerships

Vehicle manufacturers offering digital radio as line fit, factory or dealer option



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. With some adaptors, a professional installer may be required to fit the digital radio equipment.

"Integrated adapters" are now available which can be fitted discretely behind the dashboard and integrate with existing radio and steering wheel controls.

There are now also a wide range of digital radio head-units which can be fitted to some cars and directly replace the existing analogue radio.

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

AEG

ALPINE
Driving Mobile Media Innovation

AUTODAB
...digital radio on the move

awisio
Visual Sound Technologies

BLAUPUNKT

CALIBER THE COMPLETE RANGE OF CAR AUDIO EQUIPMENT

Clarion
moves you • connects you

CREASONO

DAEVOO
ELECTRONICS

DENSION

Dual

FIAMM

GARMIN

hama

JVC

KENWOOD
Listen to the Future

KUFATEC

LG

mp man

PASER
Our mission, your comfort

PHILIPS

Pioneer

PURE

REVO.

Roadstar

SONY

soundbarrier

ZENEC

TPEG traffic and travel data via the DAB family of standards

DAB/DAB+ allows for increased amounts of driver information data into the car including TPEG (Transport Protocol Experts Group). TPEG replaces and enhances RDS TMC and Traffic and Travel information (TTI) data services. TPEG offers drivers real time traffic and travel information which adds value to the driving experience.

Services offered include road traffic messages, public transport information, local hazard warning, traffic flow/prediction and driving assistance.



BMW: a car manufacturer's view

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.

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+.

Exploiting the digital potential

DAB/ DAB+ allows for:

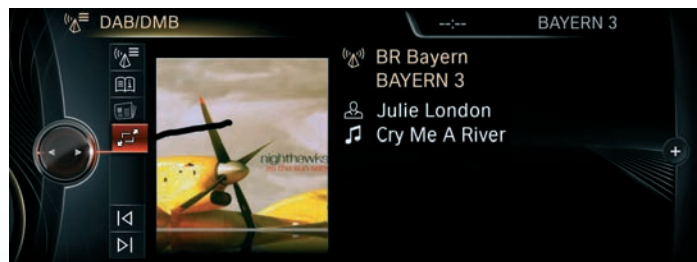
- Standardised tags and (meta-) data (DL+): Song title, Artist Name, Album Cover, Internet links, iTunes, EPG, etc.
- Visual content: Cover art, visual radio, slide shows
- Data downloads and interactive content: Journaline, BWVS, traffic jam data, maps, news
- Announcements
- Asynchronous short messages
- 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

Bertram Hock,
Section Manager Broadcast,
BMW Group

Digital radio offers considerable potential for overtaking analogue radio

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.



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

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.

WorldDMB works in close collaboration with the automotive industry, providing information on all aspects of DAB+ rollout. WorldDMB holds regular automotive events, bringing together broadcasters, manufacturers and the automotive industry to exchange knowledge and best practice on digital radio in-car and meeting driver expectations. To find out about the development of DAB/DAB+ digital radio in different markets around the world visit the Digital Radio in-car section of the WorldDMB website.

Discover the future of
TRAFFIC INFORMATION



Premium Traffic Information over DAB is now available

DAB data services keep getting bigger. Mediamobile recently launched the first Premium V-Traffic DAB-TPEG traffic information services with real-time traffic events and flow data, in **Germany** and **Norway**. Our services are also being tested in **Sweden** and **Poland**.

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.

Together with our European partners, we are working to build a **complete DAB offer in Europe**, so that when you use V-Traffic services, you will be able to travel from one country to another while enjoying the traffic services in your language* at no extra cost.

To test our TPEG traffic data on your equipment, contact us at contact@mediamobile.com

*For the terminal's lifetime and as long as the service is in operation.

Launching digital radio – a seven step guide



The successful launch of digital radio requires a clearly defined vision and strategy, backed by collaboration across the entire radio ecosystem.

This article highlights seven key steps:

1. Commitment: from policy makers, regulators and broadcasters – there needs to be a long-term vision that the future of radio is digital. Regulation, especially for the commercial sector, may need to provide incentives to gain their commitment. Public broadcasters require adequate funding.

2. Content: the digital radio content proposition needs to be clearly differentiated from (and stronger than) FM. Services which have proven particularly successful include those which offer

unique content (e.g. sports) or which are targeted at under-served niche audiences. Often, the most successful services have been spin-offs of well-known existing brands.

3. Coverage: to gain buy-in from industry, retailers and consumers, there must be good coverage of digital radio transmitters – starting with large population centres and major roads – then building across the whole country.

4. Devices: availability of a full range of digital radio receivers is essential. As the digital radio market matures on an international scale, the number of receivers already available means that new markets can quickly offer a full range of devices – including those with true mass market pricing.

5. Cars: to secure a smooth transition to a digital future, vehicles need to come with digital radio as standard. In countries, such as Norway and the UK, over 50% of all new cars are fitted with digital radio. It is also important to convert cars already on the road. Again, countries such as Norway and the UK, are taking a lead in this area.

6. Marketing: Strong and sustained consumer marketing and retail support is essential. Consumers and retailers both need to have a clear understanding of the benefits of digital radio.

7. Cross-industry co-operation: it is impossible to overestimate the importance of cross-industry collaboration. The most effective means of delivering this is to establish a cross-industry stakeholder body – ideally with its own dedicated staff.

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systems

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EDI/ETI Monitor
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SFN Monitor
RF Monitoring Receivers
EDI/ETI Gateways



contact : sales@digidia.fr phone : +33 2 99 14 63 32 fax : +33 2 99 14 58 83

How to set up a DAB+ digital radio trial

The following recommended steps provide guidance for those switching from analogue to digital radio. Post set up activities including marketing and the production of digital radio content should also be considered prior to launch.

Liaising with Government

Make contact with the major broadcasters in your country or local area and agree to jointly approach Government and the Regulator with a proposal expressing your ambition to move to DAB+ digital radio and request permission to run a DAB+ digital radio trial.

Your proposal to Government should outline the benefits of digital radio for broadcasters, listeners, manufacturers, suppliers and advertisers.

Obtain a trial licence

Contact your Regulator requesting a trial licence for a minimum of 2 years to trial DAB+ digital radio in VHF Band III spectrum.

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.

Equipment for the trial

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.

Panel Testing

Establish a small number of listener panels or focus groups of 10-20 persons. The purpose of the focus group will be to gather feedback on:

- Content - audio and data
- Coverage and reception
- Receiver performance



Listener panels could be:

- table top or kitchen receiver panel
- mobile DAB+ device panel
- car receiver panel

You will need to provide a DAB+ receiver free to each member of the listener panel for use in the trial. Receivers may be supplied to you on loan or cost price from DAB+ receiver manufactures on request.

Stakeholder input

It is important to create and maintain relationships with stakeholders throughout DAB+ set up. Retailers and the automotive sector should also be kept informed.

For full information on setting up a DAB+ trial and for equipment supplier details, visit www.worlddab.org or contact the Project Office.



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

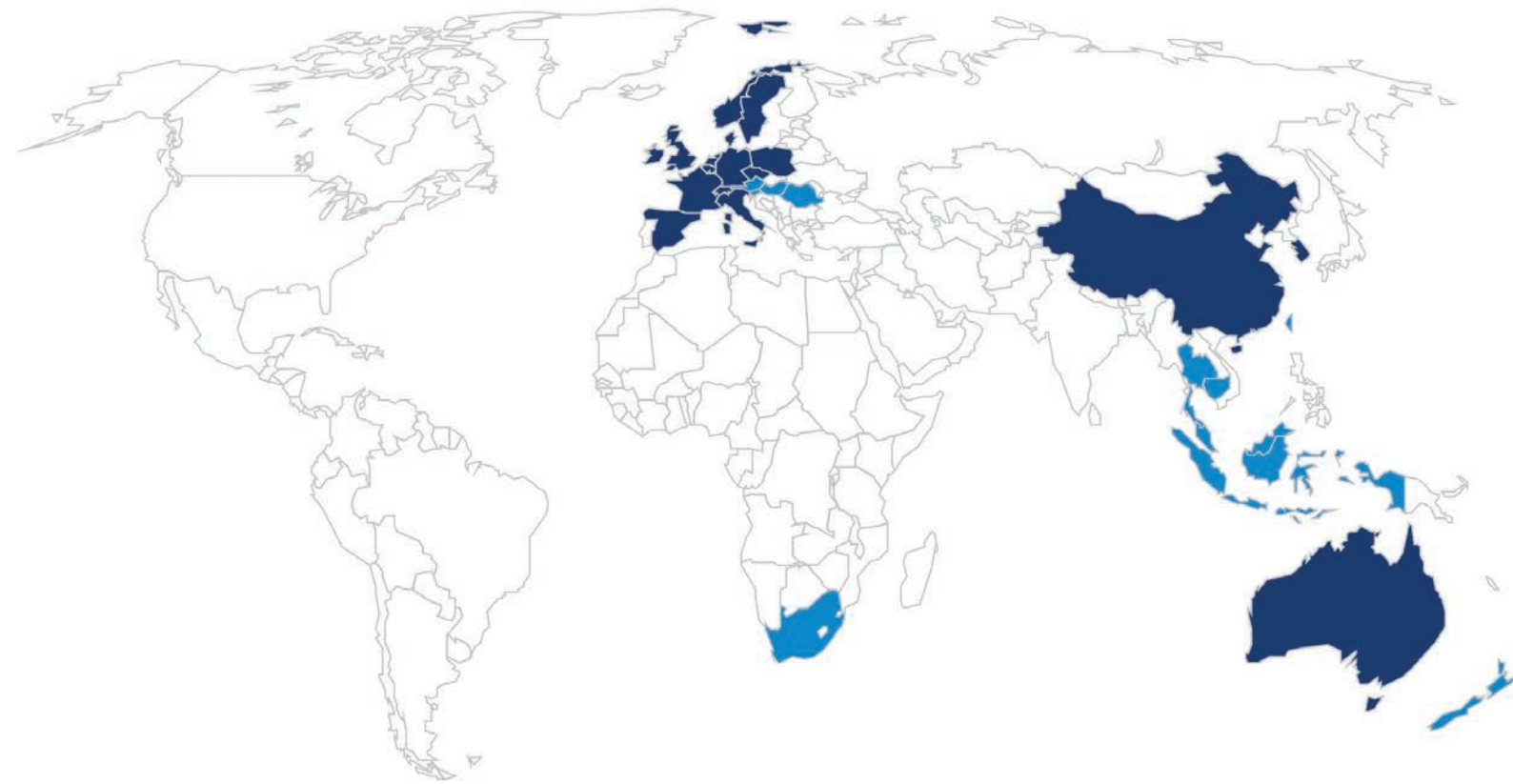
DAB+ is the digital radio standard of choice for broadcasters

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
- Offering listeners more content

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

OVERVIEW OF DIGITAL RADIO AROUND THE WORLD



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, house and for on the move.

Countries with regular services











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

Countries with trials and/or regulation

Austria
Chinese Taipei
Hungary
Indonesia
Malaysia
New Zealand
Romania
Slovenia
South Africa
Thailand

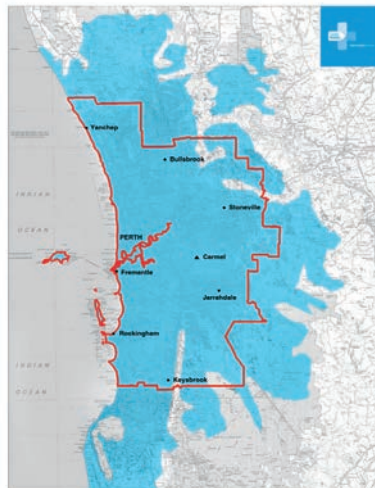
COUNTRIES WITH REGULAR SERVICES

AUSTRALIA

-  **Status:** Regular services, DAB+ launched, DAB+ trial
-  **Population:** 23,125,000
-  **Services:** 81 DAB+ simulcast, 129 DAB+ exclusive
-  **Platform Share:** 9.4% of programmes unique to DAB (not on FM): 45%
-  **Penetration by household:** 15.2%
-  **Sales (cumulative):** 1.6 million
-  **Coverage:** 64% 
-  **Digital Reach:** 13.6 %
-  **Penetration by population:** 13%

CURRENT SITUATION

DAB+ take up is tracking ahead of forecast, with major consumer brands supporting strong sales in a highly competitive retail market. Commercial Radio Australia (CRA) and the public broadcasters are working with the Federal Government on a timetable for regional roll out. The industry is developing a reforecast of costing of regional DAB+ rollout for submission in the current Australian Federal Government budgetary restraints. Australian broadcasters continue to work with phone companies and receiver manufacturers to include screen based DAB+ receivers in their devices and to promote additional functionality to encourage support for hybrid capabilities in infrastructure and receiver devices.

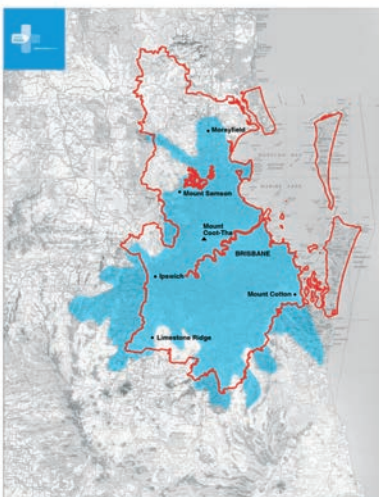


Perth DAB+ in car reception

Seven of the planned repeaters are on air in the five mainland capital cities, infilling the single high powered transmission. More repeaters are planned.

COVERAGE

There are 2 million people listening to digital radio in the five state metropolitan capitals of Sydney, Melbourne, Brisbane, Perth and Adelaide and 1.6 million digital radios have been sold (to end Jan 2013). 13% 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 double that of internet listening.



Brisbane DAB+ in car reception



Adelaide DAB+ in car reception



Melbourne DAB+ in car reception

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.

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 2 trial regional multiplexes 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.

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, 80s, 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.



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).

RECEIVER MARKET

Household penetration in Australia is at 18% and is tracking ahead of predictions. Sales figures of DAB+ devices recorded over the 2013/2014 Christmas and New Year period reached (170,167) bringing the total number of digital radios sold since launch to nearly 1.6 million (1,576,318) according to the GfK Marketscope 2013 report.

All leading consumer radio brands now offer DAB+ receivers. There are now more than 260 DAB+ devices available and the



Sydney DAB+ in car reception

average selling price continues to fall. The latest DAB+ radios include colour touch screen, slideshow and interactivity via Wi-Fi connection. CRA continues to work with chip and module makers to encourage the adoption of categorised slideshow, DL+ and other advanced features and will continue to promote radio's new digital features to retailers, manufacturers and listeners.

AUTOMOTIVE

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. Plans are underway for a five year anniversary digital radio promotion.

DAB+ digital radio in Australia is line fitted and offered as standard or optional in the following brands: Audi, BMW, Ford, Fuso, Hino, Infinity, Isuzu, Jaguar, Land Rover, Lexus, Mercedes, Nissan, Toyota.

Aftermarket solutions for DAB+ are available from Alpine, JVC, Kenwood, Orion, Pioneer, Sony and Pure.

DETAILS OF TRIALS

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. The Canberra trial is showing that broadcaster collaboration on a single shared multiplex offers a cost effective model.

REGULATION AND SPECTRUM

Key features of the current regulation for digital radio in metropolitan Australia are:

- Band III
- No cost for spectrum or licences while analogue is operating
- 128 kb per existing commercial/private analogue station
- No end date for licences
- Commercial broadcasters have their own multiplexes in each of the current five large markets
- Public service broadcasters have their 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
- 11 on-channel repeaters are licenced and rollout commenced.

SPECTRUM

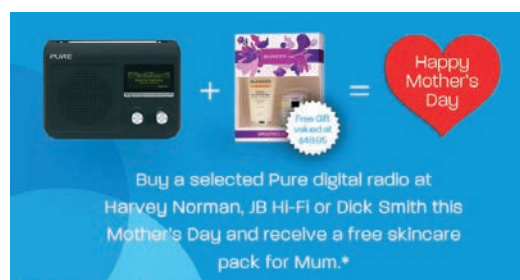
The Federal Government has allocated 14 megahertz of spectrum in the VHF Band III for the rollout of DAB+ digital radio to regional areas. The ACMA is planning to implement a restack of spectrum following the switch off of analogue television at the end of 2013. CRA is working with the regulatory body ACMA and the television industry on the restack of spectrum following the switch-off of analogue television in 2013, to enable the best and most efficient use of the available spectrum for the regional rollout of DAB+ digital radio.

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).

MARKETING

The awareness of digital radio continues to improve as a result of the brand awareness campaigns and retail promotions. A number of on-air radio, online and social media campaigns run across the 42 commercial metropolitan stations and digital only stations each year. The primary objective of these campaigns is to promote and educate listeners about the key benefits of DAB+ digital radio, including improved sound quality and greater station choice. Retail campaigns on air and online support the major retail

periods of Mother’s Day, Father’s Day and Christmas. A screen based receiver was selected by the industry to encourage other manufacturers to also support DAB+ broadcast text and graphics as all Australian digital stations broadcast these features.



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 support to their local Member of Parliament to support digital radio being rolled out to their area.

EMERGENCY BROADCASTING

Bushfires and floods are regularly experienced in Australia. 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.

BELGIUM



✦ **Status: Regular services, DAB+ launched, DAB+ trial**

👤 **Population: 11,140,000**

📡 **Services: 16 DAB+, 4 DAB+, 2 Data**

📶 **Coverage: 95%**

📍 **Digital Reach: 13.6%**

CURRENT SITUATION

French speaking Belgium (Wallonia and Brussels)

The public broadcaster for the Belgian French speaking community, Radio Télévision belge de la Communauté française de Belgique (RTBF) has operated one DAB multiplex since 1998, simulcasting its five FM radio stations and two BRF (the Belgian German speaking public broadcaster) FM radio stations, covering Brussels and Wallonia. RTBF is also testing four DAB+ audio and data channels (indifferent bit rates and with slideshows) on the same multiplex, 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).

Public and commercial broadcasters agreed in spring 2011 on a four-tier strategy for migration from analogue to digital radio: broadcast via DAB+, hybrid radio, 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 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 licenced 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 licence for another multiplex and is currently examining the possibility of a progressive deployment in 2014, with the Brussels DAB+ roll-out in the first phase.

Countrywide

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 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%).

SERVICES ON AIR

There are two regular regional multiplexes on air.

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 simulcast DAB+ audio and data programs are also currently being tested. There is also a data channel for traffic information (TPEG) on both multiplexes.

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+ simulcast FM stations with additional services such as slideshow in several bit rates, both for RTBF and for commercial or non-profit radio stations licenced by the 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 2014 are ongoing to find efficient solutions for non-profit local radio stations.

CHINA



✦ Status: Regular services, DAB launched, DMB launched, DAB trial

👤 Population: 1,400,000,000



Coverage: 4%



📡 Services: 14 DAB simulcast, 4 DAB exclusive, 4 DMB simulcast, 1 DMB exclusive, 2 data simulcast, 2 data exclusive

📺 Sales (cumulative): 100,000

CURRENT SITUATION

DAB is now on air in three cities/areas (Beijing, Guangdong and Hong Kong in Band III). China's regulatory body, State Administration of Radio, Film, and Television (SARFT), chose DAB as 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.

Beijing Jolon, the biggest broadcaster in Beijing, launched 'Push Radio' based on DAB in 2010 in Beijing. The technology, developed by Jolon, sends an audio file directly to a DAB+ digital radio receiver instead of requiring the listener to connect their iPod or mp3 player to the internet to receive programming. Beijing Jolon broadcasts 30 hours – or 25 program channels everyday through Push Radio.

COVERAGE

Beijing: 20 million people

Guangdong: 30 million people

Hong Kong: 7 million people (for more information see: Hong Kong)

SERVICES ON AIR

There is one regular regional, one trial regional and four regular local multiplexes on air, and more than 15 main transmitters in Beijing.

Beijing: 17 radio services (13 of which are simulcast), 4 video

services, and 1 Push Radio service, 2 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).

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 receive both live DAB/DAB+ broadcasting and Push Radio services.

DETAILS OF TRIALS

Guangdong Province is trialling data services using Band III in the Pearl River Delta area.

REGULATION AND SPECTRUM

Digital radio services are broadcast on Band III. SARFT manages licences and standards in China. DAB/DAB+/DMB 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.

CZECH REPUBLIC



✦ Status: Regular services, DAB launched, DAB+ launched

👤 Population: 10,546,000



Coverage: 58%



📡 Services: 7 DAB, 12 DAB+, DAB+ trial

CURRENT SITUATION

16 radio stations are being broadcast via DAB/DAB+ reaching 5 million listeners. The Czech government has set 2025 as a reference date for the transition to DAB, and the majority of commercial FM licences are valid until then.

COVERAGE

Pokrytí České republiky signálem digitálního rozhlasu T-DAB – 5,8 milionu obyvatel



DAB/DAB+ is currently available to approximately 58% of the population. Digital networks are powered by three operators which have obtained the appropriate permission for regular operation from the Czech Telecommunication Office: Teleko, RTI CZ and České Radiokomunikace.

SERVICES ON AIR

There are three multiplexes on air carrying 4 DAB stations simulcast and 3 DAB stations exclusive to digital. There are 4 DAB+ stations simulcast and 8 DAB+ stations exclusive to digital.

AUTOMOTIVE

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

DETAILS OF TRIALS

Trials have been completed in the Czech Republic and all network operators have been awarded licences. Technical trials for checking signal parameters are operated using the licenced frequencies as a part of the regular transmissions. In March 2014 Radiokomunikace launched a DAB+ trial which included 4 channels on the multiplex. In July 2014, Radiokomunikace

announced that they would be expanding the number of transmitters in the DAB+ trial to a further 16 transmitters in Prague and environs.

REGULATION AND SPECTRUM

A unilateral resolution in favour of DAB was adopted by the regulator, RRTV (Council for Radio and Television Broadcasting). Key features of regulation for digital radio in Czech Republic are:

1. L-Band was licenced however operators are now moving to Band III
2. Three network operators operate a number of regional or city multiplexes with public and commercial programs
3. L-band licences are valid for 10 years, until 2021
4. An analogue radio switch-off date of 2025 is under consideration
5. Analogue radio licences are prolonged till 2025 when commitment to switch over to digital is signed by the licence holder
6. Network operators will ask for conversion of current L-Band licences to Band III

The Czech government has stated four requirements for a successful implementation of digital radio broadcasting:

- The government should announce a schedule for the development of terrestrial digital radio broadcasting including a switchover date for the transfer from analogue to digital radio broadcasting
- Czech Radio should obtain frequencies for digital broadcasting and should be the operator of its own public service multiplex
- Creation of a national association to co-ordinate the rollout of DAB to include all stakeholders (broadcasters, government, car manufacturers, network operators, consumer electronics retailers etc)
- The government to develop incentives for private broadcasters to go digital

Commercial broadcasters that have expressed interest in broadcasting via DAB/DAB+ include Lagardère Active CR (holder of the first DAB licence) and the dance music radio station, Seelja Radio.

MARKETING

Recent marketing campaigns have included on-air promotion with free radio give-aways to listeners.

DENMARK



✦ Status: Regular services, DAB launched, DAB+ trial

👤 Population: 5,602,536

📡 Services: 15 DAB, 9 DAB+ and 1 Data

📊 Sales (cumulative): 1,700,000



Coverage: 98%



Sales penetration by household: 37%

CURRENT SITUATION

Denmark has one of the highest numbers of DAB users per capita in the world, with 37% of the population having access to a digital radio receiver, and more than 11% of all radio listening on DAB. The latest parliamentary Media Agreement 2012-2014 stipulates that FM 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 in 2015 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.

COVERAGE

Denmark has two national multiplexes, both with close to 98% indoor coverage.

SERVICES ON AIR

There are two regular national multiplexes and one local multiplex on air. 9 DAB programmes simulcast on AM/FM and 6 exclusive to digital. 6 DAB+ programmes simulcast on AM/FM and 3 exclusive to digital. One data service is also on air exclusive to digital.

A new regional DAB MUX-3 will be implemented in DAB+ format in 13 regions and be ready for use in 2015. The most listened to radio channel in Denmark, DR P4, will move to DAB-MUX2 in DAB+ format. Finally, a switch between DAB-MUX1 and DAB-MUX2, followed by an upgrade to DAB+ will take place between 2016 and 2018.

RECEIVER MARKET

Receivers are widely available to consumers through over 300 retailers with cumulative sales reaching 1.7 million and 37% of the population having one or more DAB receivers.

DETAILS OF TRIALS

A local trial in DAB+ is being conducted 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 stations broadcast on DAB MUX 2
- FM switchover to DAB+ 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 DAB+ 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.

MARKETING

An industry forum has been established with the participation of major stakeholders, as well as a website portal - www.digitalradio.dk providing information on digital radio in Denmark.

The screenshot shows the homepage of digitalradio.dk. At the top, there is a navigation menu with links for 'Nyheder', 'Hvad er digital radio?', 'Modtagere', 'Kontakt', and 'Om dette site'. Below the navigation, there is a large banner with the text 'Velkommen! Her finder du information om digital radio' and 'Her kan du finde alt, hvad der er at vide om digital radio'. To the right of the banner is a 'KANALER' section listing various radio stations like radio100, DR P4, DR P5, DR P6, DR P7, DR P8, DR P9, DR P10, DR P11, DR P12, DR P13, DR P14, DR P15, DR P16, DR P17, DR P18, DR P19, DR P20, DR P21, DR P22, DR P23, DR P24, DR P25, DR P26, DR P27, DR P28, DR P29, DR P30, DR P31, DR P32, DR P33, DR P34, DR P35, DR P36, DR P37, DR P38, DR P39, DR P40, DR P41, DR P42, DR P43, DR P44, DR P45, DR P46, DR P47, DR P48, DR P49, DR P50, DR P51, DR P52, DR P53, DR P54, DR P55, DR P56, DR P57, DR P58, DR P59, DR P60, DR P61, DR P62, DR P63, DR P64, DR P65, DR P66, DR P67, DR P68, DR P69, DR P70, DR P71, DR P72, DR P73, DR P74, DR P75, DR P76, DR P77, DR P78, DR P79, DR P80, DR P81, DR P82, DR P83, DR P84, DR P85, DR P86, DR P87, DR P88, DR P89, DR P90, DR P91, DR P92, DR P93, DR P94, DR P95, DR P96, DR P97, DR P98, DR P99, DR P100. Below the banner, there are two news articles. The first is titled 'Digital radio i alle modeller fra VV' and the second is titled 'Radio-debat på Folkemødet'. There is also a 'SPØRSMÅL OG SVAR' section with a question about digital radio and a 'Tweets' section with a tweet from Fer G Boegh.

The Minister of Culture will launch a five year information campaign about digital switchover. The campaign will receive

public funding and will be supported by the Danish radio industry. The campaign is expected to begin in 2015.

FRANCE



✱ **Status: Regular services, DAB+ launched, DMB launched, DAB trial**

👤 **Population: 63,000,000**

📡 **Services: 28 DAB+ simulcast, 41 DAB+ exclusive**



Coverage: <20%



Trial services: 10 DAB+ simulcast, 23 DAB+ exclusive

CURRENT SITUATION

Paris, Marseille and Nice have had access to digital terrestrial commercial radio (DAB+/DMB) services since June 20th 2014, as confirmed by the regulatory authority, the Conseil supérieur de l'audiovisuel (CSA). A total of 69 radio stations are currently on air in Marseille and Paris and 20th June marked the technical start date for many of the operators and stations in these cities. Broadcasters assigned to a multiplex have one month to begin broadcasting, under the rules set by the CSA.

DAB+ is now part of the multiplex allocation in France. The original CSA publication chose T-DMB as the digital radio standard allowing for each radio station 104/1000 of a multiplex. Today T-DMB is still a possible technology for Radio Numerique Terrestre (RNT) in France however with DAB+ each radio station has 76/1000 of a multiplex.

Trial services have been on air in Lyon and Nantes for several years. 13 stations are on air in Nantes, and 20 in Lyon. Lyon started broadcasting on a trial licence in April 2011. An additional trial is taking place in Rambouillet with the stated objective to test digital radio in mobility, including a TPEG service.

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 who have a remit to provide the best possible service including coverage to the widest possible audience.

TDF has broadcast a mix of DAB+/DMB services in Lyon since 2008 with 10 to 12 radio stations. VDL also has two multiplexes in Lyon covering 85% of the regional population and some of the major highways. Trial services are on air also in Nantes.

Combining the Marseille, Nice and Paris commercial services,

nearly 20% of the population have access to a digital radio service. The CSA has the responsibility to take notice when the 20% threshold is achieved; this 20% population coverage would trigger the mandatory inclusion of digital radio in all receivers sold in France after a period which varies depending on the type of receiver.

SERVICES ON AIR

There are five regular regional commercial multiplexes on air in Paris and three in Marseille. Forty-four stations are on air in Paris and 25 in Marseille as of July 18th. 27 of the 44 DAB+ stations on air in Paris and 14 of the 25 DAB+ stations on air in Marseille are available exclusively via DAB+ digital radio (not on FM).

There are two trial local multiplexes on air in Nantes, three trial local multiplex on air in Lyon and one trial local multiplex on air in Rambouillet. 16 of the 20 DAB+ stations on air in Lyon and 7 of the 13 DAB+ stations on air in Nantes are available exclusively via DAB+ digital radio (not on FM).

RECEIVER MARKET

Digital radio receivers capable of receiving DAB, DAB+ and DMB audio are available in the market through some of the major retailers (FNAC, DARTY, Boulanger, Auchan, Virgin) or online. The digital radio receiver brands Pure, REVO, Tivoli, Dual, Bose, Philips, Roberts and Sony are available to the French consumer.

AUTOMOTIVE

The automotive after sale manufacturers are also proposing a wider range of DAB+ car radio. Pioneer, Clarion, Alpine or Kenwood, among others, are all offering solutions in France.

DETAILS OF TRIALS

After the findings of the Kessler report France was running a number of trials for the DAB family of standards. Trials currently on-air include:

RNT Lyon – A 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 licence to continue broadcasting and adding new stations and content.

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

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
- Commercial services for 3 cities (Paris, Nice and Marseilles) in Band III
- Further cities tenders will use the learning of Paris, Nice and Marseille broadcast
- No analogue switch-off date

The legal framework for digital radio was introduced gradually: the Act of 30 September 1986 as amended by the Act of Law of 9 July 2004 set the main legal elements of RNT (calls for applications, digital recovery of authorized services FM: Article 29-1 of the 1986 Act). It was supplemented by the laws of March 5, 2007 and March 5, 2009.

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 selection of the candidates for the first application for Paris, Nice and Marseille were selected by the CSA on 25 September 2012. No other application dates are planned for other cities as of July 2014. However, the CSA has the responsibility to communicate a calendar of deployment.

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, digital radio demodulator will become mandatory in all devices including 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 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. Following a consultation on use of the L-Band in 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.

MARKETING

Large retailers including FNAC and DARTY are informing consumers about the benefits of digital radio through their websites. It is nevertheless expected that most of the marketing and communications activities will start during the 4th quarter of 2014. Local campaigns to promote digital radio continue to take place. For example, in June 2014, French radio station 'Radio Crooner' hosted a car rally with over 50 Rolls Royce and Bentley cars which crossed the Champs Elysees to mark the official launch of Radio Crooner which is now broadcast via DAB+ in Paris.



Radio Crooner DAB+ launch in Paris, June 2014

GERMANY



✦ Status: Regular services

👤 Population: 80,200,000

📻 Services: 120 DAB+

📊 Sales (cumulative): 2,700,000



Coverage: 91%

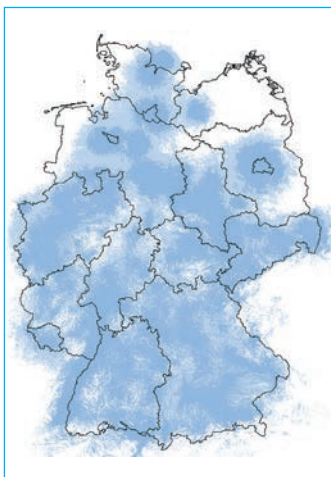


Platform Share: 4.5%

CURRENT SITUATION

Over 91% of the German population can listen to at least one digital radio ensemble. GfK receiver sales data show 50% growth year on year. By the end of 2014 more than 120 national, regional and local programmes will be broadcast in Germany. Regulation for a second national multiplex is pending.

COVERAGE



The total coverage is 83% of the area and 91% of the population. ARD multiplexes cover 75% of the area and 86% of the population. The national multiplex covers 67% of the area and 81% of the population with rollout of further transmitters planned.

Digital radio is available in all metropolitan areas. 75% of the majority of transit routes (Autobahn) are covered.

SERVICES ON AIR

In total there are over 120 radio stations which can be received digitally across the 16 German Bundesländer. The majority of radio programmes are equipped with accompanying data services including: Dynamic Label (plus), Slideshows, EPG, TPEG, Journaline, RadioDNS services, categorised slideshow.

There are 12 national programmes on air, over 60 public stations and 35 commercial regional stations.

All public ARD radio brands are broadcast with additional services accompanying the live audio service, the so called minimal set of services consisting of:

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

The national multiplex offers mainstream stations and niche content such as electronic, hard-rock and lounge music, talk and debate, knowledge and science programmes, Christian, culture radio and national league football content.

BADEN-WÜRTTEMBERG



👤 Population: 10,700,000

📻 Total coverage: 92.7 %



Two networks, one mixed multiplex for public and commercial programmes, the second with public programmes. By end of 2014, the mixed multiplex will be extended by adding nine commercial radio programmes, alongside the further network development to increase the coverage of both multiplexes.

BAYERN



👤 Population: 12,000,000

📻 Total coverage: 96%



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: 3,500,000

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: 2,500,000

Total coverage: 69.9%

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: 700,000

Total coverage: 92.3%

The Bremen area is covered by three multiplexes. The most important one provides the Radio Bremen programmes (Bremen Eins, Bremen Vier, Nordwestradio) as well as co-operated programmes such as Funkhaus Europa, WDR KiRaKa. Unique DAB-content is available on the service called Bremen Next.

HAMBURG



Population: 1,800,000

Total coverage: 100%

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

HESSEN



Population: 6,000,000

Total coverage: 93.2%

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

MECKLENBURG-VORPOMMERN



Population: 1,600,000

Total coverage: 20.3%

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

NIEDERSACHSEN



Population: 7,900,000

Total coverage: 83.5%

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: 17,800,000

Total coverage: 97.1%

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: 4,000,000****Total coverage: 89.3%**

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: 1,000,000****Total coverage: 98.2%**

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

SACHSEN**Population: 4,200,000****Total coverage: 98.4%**

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.

SACHSEN-ANHALT**Population: 2,300,000****Total coverage: 95.7%**

There is one mixed multiplex for both public and commercial radio programmes, which was already on air before the digital radio launch in 2011 and covers the majority of Saxony-Anhalt. In addition, public broadcaster MDR has established new networks in the metropolitan areas of Saxony-Anhalt.

SCHLESWIG-HOLSTEIN**Population: 2,800,000****Total coverage: 75.6%**

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

THÜRINGEN**Population: 2,200,000****Total coverage: 88.3%**

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.

RECEIVER MARKET

GfK sales figures indicate growth of the market of approximately 50% year on year. The number of devices available on the market has grown from 120 devices in 2011 to more than 320 by early 2014 with manufacturers offering products at all price points. 5% of radios in German households are digital (TNS Infratest). There are 2.7 million digital radio devices in the German market - 25% of them are in car.

Broadcasters and receiver manufacturers have collaborated to produce:

- a receiver classes definition document to help to develop a greater number of devices at reasonable price-points
- a list of services document to ensure that manufacturers had the correct functionality built into their receivers
- usage of text services and usage of visual services documents providing guidance on preparation and presentation of text and visual services

AUTOMOTIVE

The German government recommends DAB+ as the platform for delivery of safety relevant traffic data. 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. Skoda, VW, Opel and Lexus all have cars with digital radio built in as standard. Various aftermarket solutions are available to allow digital radio reception in car.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Germany are:

- DAB+ was selected to secure the future of digital radio in Germany in 2009
- Licences on the national multiplex were awarded on a beauty contest basis
- Digital radio services are broadcast on Band III (Channels 5 – 12)
- Due to the federal structure of Germany, spectrum is assigned on both regional and national basis
- There are two types of licences:
 - Telecommunication licence, awarded from the National Federal Network Agency (BnetzA) to the network operator to run the network
 - Media licence, awarded from the media authority of the Bundesländer to the broadcasters
- Media licences are assigned on state (Länder) level by the 16 media authorities (Medienanstalten)
- In terms of the national multiplex, one of these media authorities was in charge of the allocation of the licences
- There is ongoing regulatory discussion to renew FM licences only when broadcasting also via DAB+

MARKETING

The 'Digitalradio Deutschland' initiative was created to enable broadcasters and network operators to co-ordinate efforts across all media and with the radio receiver industry and there have been several major on-air marketing campaigns throughout 2013 and 2014, as well as video-clips on screens in train and underground stations and in shopping malls.

The parties involved in the initiative are the commercial broadcasters on the national multiplex (represented by DRD GmbH), the ARD group, Deutschlandradio and the network operator Media Broadcast.

B2B activities include attendance at B2B events and trade shows as well as retailer in-house training. B2C activities include on-air, online and off-air promotions and attendance at trade shows such as IFA and IAA. Further information is also provided through www.digitalradio.de.

Five working groups were created to guide all areas of digital radio development and roll out to include receiver/devices, data and traffic services, networks and marketing. The marketing strategy aims to create a consistent appearance and messaging across the industry and a marketing tool-box has been developed with this aim in mind. Many stores are now equipped with in-house coverage solutions

EMERGENCY BROADCASTING

ARD is investigating the possibility of supporting emergency warning announcements (EVWS) via DAB+ to improve the provision of safety relevant information to the listener in situations of acute danger such as industrial plant incidents or severe weather warnings, both in the home and in vehicle.

GIBRALTAR



✦ Status: Regular, DAB+ launched

👤 Population: 31,000

📡 Services: 4 DAB+

👤 Penetration by population: 70%



Coverage: 90%



Penetration by household: 70%

CURRENT SITUATION

Two 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. There are currently no plans to switch off FM radio in Gibraltar. 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.

COVERAGE

The transmission provider Arqiva was awarded a contract to design and build two DAB+ multiplexes for Gibraltar in 2012. The two multiplexes each allow for four separate services and 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 primary transmitter site covers most of Gibraltar but due to high building density, additional filler sites will be added during phase two of the network rollout once detailed coverage surveys are conducted.

SERVICES ON AIR

There are two regular regional multiplexes on air services four DAB+ programmes simulcast on AM/FM. The incumbent broadcaster GBC is transmitting the same content as on the FM network. Incumbent broadcaster BFBS has shown an interest to transmit on DAB+ but there is no timescale by when this will commence. BFBS would be providing the same content as on the FM network.

RECEIVER MARKET

Receivers are available in stores and online.

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

HONG KONG



 **Status: Regular, DAB+ launched**

 **Population: 7,155,000**

 **Services: 17 DAB+**



Coverage: 80%



Sales (cumulative): 300,000

CURRENT SITUATION

The Government issued DAB+ licences to three commercial operators – DBC HK (Digital Broadcasting Corporation Hong Kong Ltd, formerly Wave Media), Metro Broadcast Corporation Limited and Phoenix U Radio, together with the public broadcaster, RTHK. The four DAB+ stakeholders have formed a Consortium (an Industry Working Group) which together with its Technical Committee is looking after detailed network implementation.

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 17 channels are broadcasting formally. Radio Television Hong Kong (RTHK) will operate the seven hilltop sites and maintain the network on behalf of the Consortium.

In December 2013, it was announced that DBC, Metro Broadcast and Phoenix U Radio will be investing US \$77 million (HK\$594 million) into digital radio. This investment will support the build out of the DAB network and studio facilities to help create DAB programming over the next seven years.

COVERAGE

Seven hilltop sites are now transmitting DAB+ signals over all urban and suburban areas in Hong Kong and covering approximately 80% of the whole population of Hong Kong and the Kowloon peninsula.

In addition, two gap-filler stations will be implemented, further expanding the signal coverage.

At present 11 Government tunnels have installed DAB re-broadcasting systems.

SERVICES ON AIR

In Hong Kong there is one regular national multiplex with a total 17 DAB+ audio services on air, four of which are simulcast and 13 exclusive services. There are channels from DBCHK, Metro Broadcast, Phoenix U Radio and from public broadcaster RTHK.

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.

In 2014, to expand digital radio penetration, Digital Broadcasting Corporation installed free DAB+ car deck radios into more than 10,000 taxis and 5,000 public buses. Further plans have been made to install free receivers in delivery vans.

REGULATION AND SPECTRUM

Four broadcasters are now broadcasting via DAB+ on Mux 11C (220.352 MHz) in VHF Band III. The regulator in Hong Kong is the Communications and Technology Branch under the Commerce and Economic Development Bureau.

IRELAND



✦ Status: Regular services, DAB launched, DAB+ trial

👤 Population: 4,600,000

📡 Services: 24 DAB+, 11 DAB



Coverage: 56%

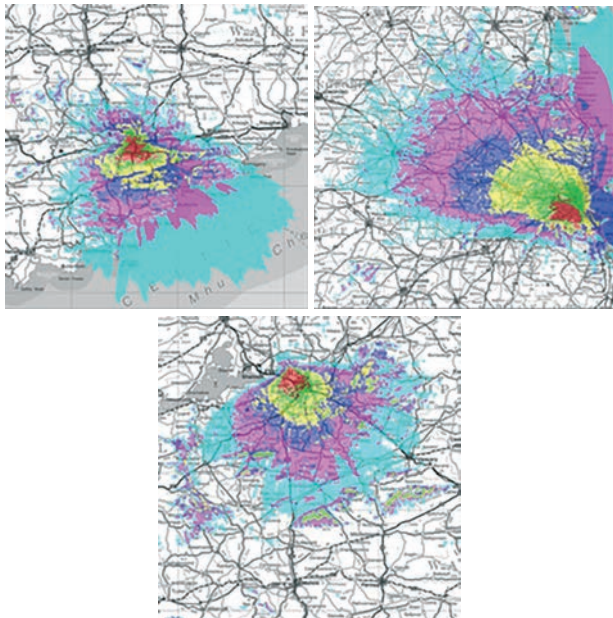


CURRENT SITUATION

National Public Broadcaster RTÉ operates a full-service Multiplex 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/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: Dublin (10kW ERP), Cork and Limerick (5 kW ERP).



Top left: Cork. Top right: Dublin. Bottom: Limerick

SERVICES ON AIR

There is one regular national multiplex and two trial regional multiplexes on air.

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
DAB Channels: All 70s, RaidioRiRa, UCB Ireland, Sunshine, Amazing Radio, Zenith Classic Rock
DAB+ Channels: All 70s+, RaidioRiRa+, UCB Ireland+, Sunshine+, Amazing Radio+, Zenith Classic Rock+
- Total Broadcast (South East Region Trial): Block 9B: 204.640 MHz
DAB Channels: Beat 102-103, KCLR96FM+, Phantom, Radio Nova, South East Radio, RTE 2XM, TippFM, Zenith Classic Rock
DAB+ Channels: All 80s, UCB Ireland, WLR FM+, RTE 1X, RaidioRiRa

dB Digital Broadcasting operates Slideshow on all DAB+ Services. Trials of EPG and BWS are planned for 2014. RTE & Total Broadcast operate basic DLS.

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. 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 (ComReg). They are operated by dB Digital Broadcasting (on frequency 12A) and Total Broadcast (on frequency 9B).

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 it 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 as well as stations exclusive to DAB/

DAB+. 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. Under RCC-06 Ireland has been allotted two frequencies for national DAB multiplexes, 12A and 12C, with other allocations for regional/local multiplexes. The RTE Multiplex is operating on

Block 12C (227.360 MHz). The Total Broadcast Multiplex is operating on Block 9B (204.64 MHz).

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.

ITALY



✦ **Status:** Regular services, DAB+ launched, DAB+ trial, DMB trial

👤 **Population:** 61,000,000



Coverage: 65%



📡 **Services:** 92 DAB+ simulcast, 15 DAB+ exclusive, 7 data exclusive

CURRENT SITUATION

Regular services were launched in December 2012 in the Trentino region following a decree by the Italian regulator, AGCOM. The decree published in May 2012 assigned 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). In 2013 regular broadcasting licences were assigned for the Alto Adige region. The Department of Communications released licences for the Trentino area to the National Operators, 12B to the public broadcaster (RAI) and 12C to private national operator Club DAB Italia. The third National Operator Block 12A was assigned July 21 to EURODAB ITALIA.

Local Radio

Five consortia of local broadcasters are currently on air. Two consortia in Trento received the rights on Band III with Channel 10B assigned to DBTAA and Channel 12D to Digiloc. The rights to Channel 10A and 10C have been assigned to RAS and Channel 10D to DABMedia in Bolzano.

A comparative selection procedure was held for the allocation of rights to use radio frequencies for terrestrial digital radio broadcasting in the Trentino-Alto Adige region, governed by the Authority's decision of 26 November 2009, n. 664/09/CONS and amended by resolution n.567/13/CONS - which involved the granting of a right to use the block of 12A frequency Band III transmissions in DAB/DMB for the Autonomous Provinces of Trento and Bolzano, through a comparative selection procedure. The process, initiated by Decree of the Ministry of Economic Development of 12 December 2013 ended July 10, 2014. The winner of the comparative selection procedure is the consortium EURODAB ITALIA S.C.a.R.L.

Club DAB Italia and the public broadcaster Rai have announced their network extension plan to be completed during 2015. EURODAB switched on 6 new transmitters in Trentino Alto Adige region. Network expansion continues and additional regions are to be licenced throughout 2014.

COVERAGE

Combined coverage of the regular and trial broadcasts is estimated to be around 65% of the Italian population (outdoor coverage).



National Multiplexes

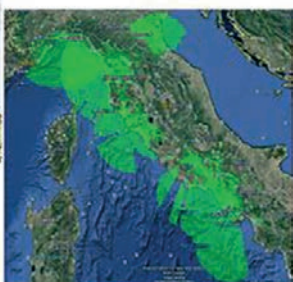
Club DAB Italia

Club DAB Italia's 18 transmission sites offer continuity of DAB signal across Northern Italy, extending as far south as Naples and covering more than 50% of the population (Mt Bands Genoa, Pisa Mt Serra, Como, Varese, Brescia, Lecco, Bologna, Pesaro - Argentario Grosseto, Frosinone and Naples). Stations

on air include Radio DeeJay, m2o, R 101, Radio 24 - Il Sole 24 Ore, Capital Radio, Radio Maria, Radical Radio, RDS Radio Dimensione Suono, KC1 test, test KC2, KC3 test Digital, RDS HD and RMALB.IA. Club DAB Italia is testing other programs to expand the selection of services further.



Club DAB Italia national coverage



Rai (public broadcaster)

RaiWay's 18 transmission sites account for coverage of 43% of the population (Rome, Aosta, Turin, Milan, Trento, Bolzano, Venice, Bologna, Naples, Oristano, and Palermo). €6m has been allocated for extension of coverage, with the activation of 60 new transmission sites by the end of 2015.

In August 2014, Rai launched three new digital programs on DAB+: Webradio Radio Rai WR6, WR7, WR8. These 3 programs were added to the 7 already on-air: RAI 1, RAI-2, RAI-3, FD4, FD5, Isoradio and GRparlamento.

EURODAB ITALIA

The EuroDab Italia multiplex covers 65% of the population with 29 transmission sites. Programmes on air include: RTL 102.5, RTL 102.5 Classic, RTL 102.5 Italian Style, RTL 102.5 Groove, Cool RTL 102.5, Rock 102.5 RTL, RTL 102.5, Radio Guardia Costiera, RTL 102.5 ViaRadio Digital, Radio Only Italian Music Italian, Italy+ Vatican Radio, Radio Padania Libera, and Radio Orbital.

Local Multiplexes

DBTAA – Trentino Alto Adige Area - Band III 10A –Programs: Radio Anaunia, Radio Digi-One, Radio Gamma, Radio Italia Anna 60, Radio NBC, Radio Primierortt La Radio, Sudtiroi 1, Radio Tirol, Trentino In Blu Radio.

Digiloc – Trentino Alto Adige Area - Band III 12D –Programs: Bella Radio, DELTARETE5, Radio Birkin, Radio Margherita, Radio Number One, Radio Pace, Radio Sound 95, Radio Studio Piu, Radio Valbelluna, Radio Viva.

Rundfunk-Anstalt Sudirol (RAS) – Trentino Alto Adige Area - Block 10B and 10D

RAS approved the installation (March 2013) of a further 13 transmitters during 2014 and 2015.

DAB Media – Trentino Alto Adige Area - the consortium of local radio stations in Bolzano won the award by the Ministry of Block 10C in Band III and may switch to DAB+ in areas already covered such as Bolzano and cover with 6 new plants the whole province: Penegal (city of Bolzano), Val Venosta, Mutta (area of Merano) Plosehütte (Brixen) Freienfeld (area of Vipiteno) and Plan de Coronas, reaching more than 80% of the population.

CR DAB – Rome Area –Band III, 13F - Programs: Radio Radio, Kiss Kiss Italia, Dimensione Suono Roma, Dimensione Suono 2 Ram Power, Radio Subasio, Radio Suby, Radio Subasio +, Tele Radio Stereo, Tele Radio Stereo 2 RMC2, Studio 93.

Vatican Radio – Rome Area – began services in July 2007 on frequency block 7B and is broadcast by Castel Gandolfo and S.M.Di Galeria Services.

SERVICES ON AIR

In Italy there are three national, six regional and 1 trial multiplex on air. In total there are 92 DAB+ programmes simulcast on FM and 15 DAB+ programmes available exclusively on DAB+ digital radio. There are 7 data services. In addition, 2 TPEG networks are on air for test purposes (Euro DAB Italia, Rai Way).

RECEIVER MARKET

The standard for digital radio receivers in Italy was developed by the Associazione per la Radiofonia Digitale in Italia (ARD), added to the characteristics of the WorldDMB receiver profile specification, FM with RDS, Band III the L-Band.

In 2010 ARD launched a website in collaboration with broadcasters, network operators and manufacturers to ensure that their receivers can function in Italy and the rest of Europe.

Pure receivers, carrying the ARD white label are currently available on consumer websites and at the main consumer electronics chain stores including Media World, Saturn, Euronics, Expert, Trony, and Unieuro. Other manufacturers represented in Italy include Sony, Philips, Revo, Pioneer, Alpine, JVC Kenwood, Tivoli, Brionvega and others.

DAB car adaptors are available through the Magneti Marelli CheckStar and Calearo networks.

AUTOMOTIVE

TPEG (Traffic and Travel) services are operated by InfoBlu, the Italian leader in traffic management. Two TPEG networks are on air for test purposes (Euro DAB Italia and Rai Way). As of March 2014, drivers can now receive DAB+ receivers fitted as standard the following vehicles: Alfa Romeo Giulietta and Mito, Fiat 500L Lounge, Ford Kuga, Honda CRV, Nuova Civic and Civic Tourer,

Jeep Grand Cherokee, Toyota Urban Cruiser, Lexus, Volkswagen Touareg and Phaeton.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Italy:

- Band III and L-Band
- DAB+/DMB licences are issued to existing FM licence holders
- National and local multiplexes must carry at least five radio stations each
- The licence 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+ network build out is focused on highways to ensure uninterrupted reception
- The idea of one network operator is being considered

In 2009 AGCOM (Italian Communications Authority) approved regulation which set out steps for the 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.

The regulation specified one national network for the public broadcaster RAI, and two national networks for commercial radio. Space was made available for local radio stations and the network operator was given additional capacity to provide data services.

AGCOM approved official regulation of DAB/DAB+, bringing the experimental phase to an end and paving the way for the creation of a successful digital radio market.

Licences were issued initially to existing FM licence holders, with remaining spectrum available for new entrants.

Each radio station has the right to use 72 CUs of a multiplex for its programmes. The licence period for content providers is 12 years and for network operators is 20 years.

MARKETING

Marketing campaigns across a variety of media platforms have been running in Italy since 2013 to promote digital radio. Radio campaigns promote DAB+ digital radio across the 10 main National Commercial FM Networks (plus several local radio stations). National broadcasters do cross-promotion of digital radio via www.digitalradio.it.



MALTA



✦ **Status:** Regular services, DAB+ launched

👤 **Population:** 452,515

📡 **Services:** 41 DAB+



Coverage: 100%



Sales penetration by population: 25%

CURRENT SITUATION

Malta was the first European country to roll out a DAB+ network and services have been on-air since 2008. There are over 40 services on the two national multiplexes which include 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 multiplex (6A – Digi B2) was launched in 2011. Malta boasts a vibrant and growing DAB+ community of services.

COVERAGE

Malta's coverage is 100% via blocks 6A/6C and 12A since 2013.

SERVICES ON AIR

There are two regular national multiplexes on air.

RECEIVER MARKET

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. The DigiB Network launched the first DAB+ in-car receiver which is currently available in retail stores or online.

DETAILS OF TRIALS

DigiB is committed to bringing increased listening choice to its digital audience and plans to continue to run test broadcasts of new services.

REGULATION AND SPECTRUM

The regulator, the Malta Broadcasting Authority, has embraced digital radio and multi-media broadcasting. DigiB Network, which operates the national multiplex, hopes to increase available services to around 60 channels, with the introduction of the third Multiplex in 2014. In 2012 DigiB Network started promoting the idea of High Definition Audio on DAB+ in co-operation with Vibe FM and Magic radio, both available nationally on FM. They are now being trialled 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.

MONACO



✳ Status: Regular services, DAB+ launched, DAB trial

👤 Population: 376,000

📡 Services: 8 DAB+



Coverage: 100%



CURRENT SITUATION

Monte Carlo of Monaco began testing via terrestrial digital radio in Monaco at the end of April 2014. The trial broadcasts, which use the DAB+ standard and will last for one month, cover both the Principality, as well as the coastal areas of France ranging from Menton to Cap d'Antibes. Stations participating in the trial include Virgin Italy, Radio Monaco, RMC 1, RMC 2, Riviera Radio, Radio Chik, Ethic and Radio Rete 105.

COVERAGE

Radio stations are broadcast in DAB+ from the Mont Agel (France, 1000 m high) and the coverage reaches the French Riviera from Menton to Cap d'Antibes (including Monaco).

SERVICES ON AIR

There are currently 8 services on air. 7 are simulcast on AM/FM, 1 is exclusive to digital.

RECEIVER MARKET

During the MEDPI show, consumer electronics receiver

manufacturer PURE conducted tests to demonstrate the efficiency both of DAB+ broadcast and the reception.

DETAILS OF TRIALS

Monte Carlo Radiodiffusion, official radio broadcaster for the Principality of Monaco, owned by TDF (51%) and the Government of Monaco (49%), began testing via terrestrial digital radio in Monaco at the end of April.

REGULATION AND SPECTRUM

Due to Monaco's status as a constitutional monarchy the Government decides media policy under royal authority. MCR is the exclusive licensor for broadcasting all radios on Monaco's frequencies. It decides by itself which radio stations can be broadcast without the necessity for governmental agreement.

MARKETING

Monte-Carlo Radiodiffusion has featured in press and online media to promote the benefits of digital radio listening.

NETHERLANDS



✱ Status: Regular services, DAB+ launched, DMB trial

👤 Population: 16,700,000



Coverage: 95%



📡 Services: 28 DAB+, 3 DMB simulcast, 1 Data

CURRENT SITUATION

The commercial radio stations (VCR) and the public radio stations (NPO) both have 95% coverage. NPO extended coverage of its existing DAB multiplex from 70% to 95% in early 2014, and migrated services to DAB+ in 2013. Commercial stations were launched from 1st September 2013 and the total number of stations increased from 9 to 21.

NPO and VCR together with the government are working together to promote Digital Radio+ in the Netherlands. A structural project team has been set up to facilitate the implementation.

COVERAGE

The public broadcaster's population coverage is currently 95%. The commercial broadcasters' reached 95% outdoor coverage on 1st September 2013. NPO extended the network with a further 14 transmitter sites in 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.

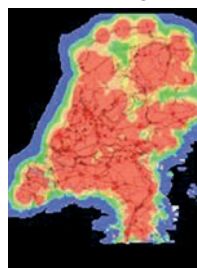
NPO coverage 2014 – 95% outdoor



NPO coverage September 2017



VCR coverage 2014 – 95% outdoor



SERVICES ON AIR

There are 15 DAB+ simulcast, 13 DAB+ exclusive, 2 DMB simulcast, 1 DMB exclusive, 1 Data exclusive programmes. There are two regular national DAB+ multiplexes and one trial local DMB multiplex on air. The NPO national DAB+ multiplex carries ten programmes from public service broadcaster NPO. Five are simulcasts of regular FM/AM radio broadcasts. Five are exclusive to DAB+ and are broadcast also online. In May 2014 Dutch public broadcaster NPO started transmitting slideshow images via DAB+ on the majority of its programming channels. Broadcast Partners operates the national commercial multiplex and carries 18 DAB+ services as well as TPEG traffic information.

AUTOMOTIVE

The automotive industry is supported through information sessions where car audio retailers and installers are kept up to date with developments in Digital Radio+ and supporting marketing campaigns promoting DAB+ digital radio listening.

REGULATION AND SPECTRUM

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

- Two national MUX, both public and commercial, using DAB+
- All of the current national FM broadcasters are now transmitting in DAB+
- All new FM and MW licences (granted in 2011) contain a condition to broadcast digitally (simulcasting)
- 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 have chosen DAB+.
- National commercial stations have now obtained a multiplex

licence 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 interested in Band III as well.

- Mobile TV Netherlands (MTVNL) owns a licence for nationwide mobile TV, radio and data broadcast in Band III and currently has an extensive test network operating in the Haaglanden, Hilversum and the Eindhoven regions.
- There is no defined FM switch off date, but FM licences are 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 developments of analogue and digital radio.
- Public broadcaster NPO will switch off AM on the 1st of September 2015

MARKETING

"Let's get Digital!" campaign



The campaign for DAB+ in The Netherlands (Digital Radio+), "Let's get Digital," officially launched in May 2014. The campaign was supported by all national radio stations and aired online and on TV.

The campaign was developed jointly by the national commercial and public radio stations, supported by the Ministry of Economic Affairs.

Retail Session

The Dutch retail and automotive sectors have been kept informed about the progress that has made since the launch of



DAB+ digital radio in September 2013.

Several journalists have written articles on the campaign and visuals from the campaign are being used in point of sales materials. Informative brochures are being distributed by retailers and radio manufacturers.

NORWAY



✦ Status: Regular services, DAB launched, DAB+ launched, DMB trial

👤 Population: 5,603,079

📡 Services: 14-44 channels

📶 Coverage: 99.5%

📊 Sales (cumulative): 1,166, 000

CURRENT SITUATION

The government has set a switch-off date for FM broadcasting in January 2017. 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. By 2017, all DAB broadcasting in Norway will most probably be in DAB+ format.

COVERAGE

In Norway, 99.4% of the population has access to DAB reception. Public broadcaster NRK has 98.8% population coverage, with 99.5% coverage by the summer of 2014. Commercial stations have 90% coverage.

DAB network build out will be complete by summer 2014, and most road coverage will be complete by October 2014. Tunnels

will have DAB-coverage before the FM-shutdown, and all tunnels that require FM-coverage today, will be equipped with DAB. Contrary to FM, where only a few channels have tunnel coverage, all channels on air outside.

At least 260 tunnels will be upgraded in total. Area coverage for DAB will be equal to or better than FM when the national DAB-networks are complete.

SERVICES ON AIR

There are 22 nation-wide channels, 8 commercial and 14 public. NRK's stations are mainly distributed through their own regionalised DAB network, though a few stations are temporarily distributed through the commercial DAB network.

There are also 3 local networks in operation in Norway. In the Oslo area 16 channels are available, in addition to the national networks.

RECEIVER MARKET

Sales of DAB receivers including in-car products, have been increasing steadily since their introduction into the market in 2009 when 63,000 were sold, compared to the 511,000 units sold in 2013.

AUTOMOTIVE

66% of new cars now come fitted with DAB radio. Norway's top selling car-brand, VW, has a DAB attachment ratio of well over 90%. Out of the top 20 selling car-models, 18 offer DAB as line fit (standard or optional).

There are approximately 3 million cars in Norway, and over 10% of these have a DAB radio. With the announcement of FM switch off in 2017, the main in-car focus is on the market for adaptors and retro-fit digital radios, to ensure these are as widely available as possible.

The proposed strategy is to install DAB radios into as many cars as possible before the FM shutdown, making adaptors available through traditional and non-traditional car accessory sales channels. A key element in the strategy is to offer DAB adaptor installation at the same time as periodic vehicle-controls.

DETAILS OF TRIALS

Norway's three leading broadcasters, NRK, TV2 and MTG, jointly run mobile TV services via DMB. MiniTV trials began in the Oslo area in 2009 with live TV channels, on demand content and other related services. Today 4 TV-channels are available on MiniTV. A software based solution for pay-tv, provided by Korean DigiCap, is also on trial on the DMB networks.

REGULATION AND SPECTRUM

Key features of regulation for digital radio in Norway are:

- Digital radio services are broadcast on Band III
- All major FM-channels are broadcast on DAB
- Broadcasting in Norway is regulated according to the

Broadcasting Act/Law which gives NRK the right to broadcast nationally. Licences for the commercial broadcasters have been issued up to 2014.

- There is one national DAB multiplex in use today, seven regional ones (with total coverage corresponding to the national multiplex) plus 3 local multiplexes. One DMB multiplex is in use in the greater Oslo area (trial).
- The regional multiplexes are operated by NRK, and together they have a total coverage of 90% (as of January 2014). 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
- Analogue radio switch-off is planned for 2017 if the following switchover criteria will be met:
 - 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
- Some conditions have to be met for an FM shutdown to take place; other conditions will merely affect the timing of a shutdown
- If the criteria are not met in 2015, the switchover date will be moved to 2019

MARKETING

The image shows a screenshot of the Radio.no website. The top navigation bar includes 'DIGITALISERING', 'AKTUELT', 'KANALER', 'DEKNING', 'APPARATER', and 'BILRADIO'. The main content area features a large image of a car's interior with a DAB radio installed. Below the image is a headline: 'SLUKKERAPPORT: GOD DEKNING MEN LYTTING OG BIL HENGER IGJEN'. The article text mentions that DAB is the largest challenge for digitalization in Norway and that the report was published on 4 March. To the right, there are sections for 'MEST LESTE ARTIKLER' and 'FRA ANDRE MEDIER'.

Information to the public is co-ordinated, and partly performed, by Digitalradio Norway which is owned by public broadcaster NRK and Norway's no. 1 commercial broadcaster, P4.

Ongoing campaigns to inform the public about the transition to broadcast digital radio have mainly used the radio as their medium. These have frequently been on air on commercial radio stations and on NRK's radio and TV-channels. Digitalradio Norway also operates www.radio.no, which includes news, DAB



coverage maps, how-to articles and videos, as well as information about the growing DAB channel selection in Norway. Digitalradio Norway also uses promoters whose role is to visit car and

electronic dealers and advise on DAB and assist on any marketing activities.

To encourage commercial companies to maximise their efforts in promoting digital radio, commercial radio broadcasters offer co-promotion opportunities, with on-air DAB-related campaigns which have proven to be very effective in increasing the awareness of DAB with consumers. The main focus in 2014 is on ensuring availability of DAB in-car adaptors and securing a network of competent installers, and this focus is reflected in marketing and information activities.

POLAND



✦ Status: Trials and/or regulation, DAB+ trial

👤 Population: 38,518,240

📡 Services: 12 DAB+



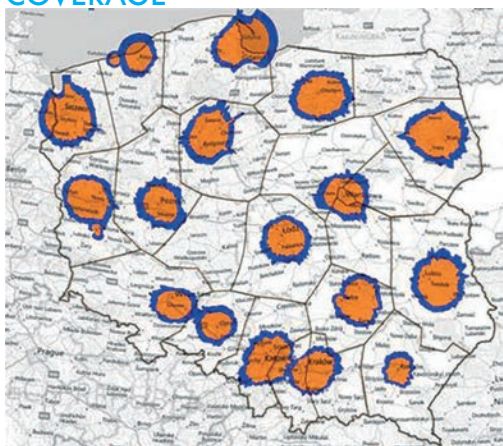
Coverage: 18.6%



CURRENT SITUATION

Two regular multiplexes were launched in Warsaw and Katowice in October 2013. There is also a trial local multiplex delivering DAB+ services in Kielce, Toruń and Szczecin.

COVERAGE



Poland DAB+ coverage after 1st April 2015

Regular services

Region	Channel number	ERP [kW]	Coverage % population (mobile)	Content
Warszawa	6B	6	7	5 national simulcast, 2 national digital only, 1 regional
Katowice	10A	10	9	5 national simulcast, 2 national digital only, 1 regional

Trial services

Region	Channel number	ERP [kW]	Coverage % population (mobile)	Content
Kielce	5D	1	1	4 national simulcast, 4 regional simulcast
Toruń	10A	3	1.5	4 national simulcast, 4 regional simulcast
Szczecin	12B	10	2	4 national simulcast, 4 regional simulcast

SERVICES ON AIR

After the switch off of analogue TV in 2013, Polskie Radio started two regular DAB+ transmissions with seven national simulcast services (Jedynka, Dwojka, Trojka, Czworka, Polish Radio External Service), two regional simulcast services (supplied by public regional radio stations, depending on region) and two new nationwide services created by Polskie Radio (Radio Rytm and PR24). There are 3 trial local multiplexes on air.

Ultimately 5 unique national and 1 unique regional DAB+ services will be broadcast. The multiplex will contain solely public radio services.

RECEIVER MARKET

Digital receivers are available through many retailers. Poland's main manufacturer of electronic devices is ELTERA (AUDIOX).

DETAILS OF TRIALS

Operated by Emitel, the trial local multiplex broadcasts four national DAB+ services, three local DAB+ services (the same in all regions) and one TPEG traffic information service.

The DAB+ implementation strategy assumes the creation of three new national services and one additional regional service broadcast in digital only. The public service multiplex will contain 10 nationwide services and two regional services available. The trial transmissions will transform into regular services according to the schedule below (Toruń-Bydgoszcz).

DAB+ implementation schedule

- 1st Oct 2014, regular DAB+ services in Poznan, Lodz and Opole
- 1st Jan 2015, regular DAB+ services in Bydgoszcz, Koszalin, Olsztyn and Zielona Gora
- 1st Apr 2015, regular DAB+ services in Bialystok, Lublin and Rzeszow
- The whole country by the end of 2020

REGULATION AND SPECTRUM

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

SOUTH KOREA



✦ **Status: Regular services, DAB launched, DMB launched**

👤 **Population: 50,000,000**

📡 **Services: 2 DAB, 19 DMB, 6 Data**

👤 **Penetration by population: 50%**

📡 **Coverage: 90%**

💰 **Sales (cumulative): 60,000,000**

CURRENT SITUATION

As the first country to commercially launch mobile TV, South Korea is the most successful DMB market in the world. More than 62 million DMB enabled devices have been sold, of which the most popular are mobile phones. 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.

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. Hybrid DMB was launched in Aug 2013 for the high quality video service.

A DAB+ trial has been on air in Seoul since December 2013.

COVERAGE

Korea's DMB broadcasts 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

There are currently 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, two audio services and six data services on air.

RECEIVER MARKET

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.

DETAILS OF TRIALS

A DAB+ trial has been on air since December 2013

1. Channel 10B is 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 approval was done by KCC of Korea government
- 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.

REGULATION AND SPECTRUM

The Ministry of Communication Committee 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. 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.

SPAIN



✦ **Status: Regular services, DAB launched**

👤 **Population: 47,200,000**

📡 **Services: 18 DAB**



Coverage: 20%



CURRENT SITUATION

A Digitalisation Plan for Terrestrial Broadcasting was announced in 2011 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

DAB services are on air in Madrid and Barcelona including their

metropolitan areas, covering 20% of the Spanish population.

SERVICES ON AIR

3 regular national multiplexes currently operate in Spain with a total of 18 services (simulcast on AM/FM). 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).

RECEIVER MARKET

DAB receivers are sold by major retailers. Car manufacturers Mercedes-Benz, BMW, Mini, Audi, Porsche, Volkswagen and Seat offer DAB/DAB+ receivers as an optional extra.

REGULATION AND SPECTRUM

The Spanish DAB Association (Asociación Foro de la Radio Digital), comprising of both national private and public broadcasters, are responsible for DAB/DAB+ regulation in Spain. National station licences are issued by the central government, while local and regional licences are the responsibility of the regional government. Licences 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 (currently 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)

SWEDEN



✦ **Status: Regular services, DAB launched**

👤 **Population: 9,142,817**

📡 **Services: 10 DAB, 16 DAB+**

👤 **Sales penetration by household: <1%**



Coverage: 35%



Sales (cumulative): 60,000

CURRENT SITUATION

DAB transmissions in Sweden started in 1995 and today coverage is 35% of the population with services from public service broadcaster Swedish Radio (SR). The licence under which SR operates is valid until 31 December 2019.

Over the years several propositions have been put forward to the Swedish Parliament suggesting a larger digital radio network roll-out for public service broadcaster SR. This is seen as the first step to a switchover from analogue FM to digital DAB/DAB+.

On 2 October 2014 the Swedish Broadcasting Authority

awarded 21 national and 4 local/regional licenses for DAB+. Licenses will be valid from 2nd October 2014 until 30th September 2022 and broadcasting is to begin no later than 1st October 2015. The Radio industry awaits the switchover plan to be put forward by the Digital Radio Industry Co-ordinator appointed by the Government (expected in November 2014).

COVERAGE

The Swedish DAB network (mux 1) is operated by Teracom AB and covers major cities Stockholm, Gothenburg, Malmö and Alvsbyn on a single frequency 12B. Coverage is currently



Digital Radio Networks Stockholm and Uppsala Network 1 Coverage



Digital Radio Networks 1 & 2 Coverage



Digital Radio Gothenburg Network 1 Coverage

at about 35% of the population (3 million). Mux 1 holds 8-10 regular and licensed services, all from Swedish Radio. All services on 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 licence and covers major cities Stockholm, Uppsala and Gävle using a multi-frequency network on frequencies 12C and 12D. Coverage reaches 22% of the population (2 million). Mux 2 currently holds around 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 broadcast via DAB+. All audio services hold DLS and SLS.



Digital Radio Lulea Network 1 Coverage

SERVICES ON AIR

In Sweden there is one national multiplex with regular services and one regional multiplex with trial services.

Mux 1: 8-10 DAB audio channels from public service broadcaster Swedish Radio, the majority of which are internet radio stations, broadcast only via DAB (not 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 trialling digital broadcasting. One or two channels are broadcast via DAB+ only and not on FM, the rest of the channels are available on FM but restricted to local areas. In addition to audio, all services carry DLS and SLS. There are plans to include EPG and a trial version of TPEG.

In total there are 10 DAB services on air, one of which is simulcast on AM/FM. There are 16 DAB+ services on air, 14 of which are simulcast on AM/FM.

RECEIVER MARKET

Sales of receivers in 2013 were 15,000 units. Cumulative sales 2006-2013 were 37,000 receivers.

27,000 of these units are dated from 2012 and onwards, i.e. capable of DAB+ decoding. In comparison the 15,000 units sold per year are almost 4% of the total sales in Home and Portable Audio segment.

Given the estimated 27,000 DAB+ units, the household penetration in Sweden today is approximately 1%.

AUTOMOTIVE

All major automotive brands offer DAB/DAB+ car tuners as an option. Volvo Cars, with a 20% total market share in Sweden have stated that in 7% of cases where a new Volvo is sold, the customer has requested the optional DAB/DAB+ car tuner.

DETAILS OF TRIALS

In 2009, pilot transmissions of DAB+ started and 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 migration to DAB+
- 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

Swedish Radio gets its licence directly from the Government. The current licence is valid until 31 December 2019 and allows Swedish Radio to broadcast digital radio using DAB/DAB+ in VHF Band III, but only to four regions in Sweden (Stockholm, Gothenburg, Malmö and Norrbotten) and with a maximum number of nine services (Stockholm and Norrbotten) or 10 (Gothenburg and Malmö).

Regulation for Commercial Radio

In October 2012, all major commercial broadcasters, representing more than 91% of all non-public service radio listening, applied for a total of 22 licences in both national and regional VHF Band III networks. Commercial licences will be valid until 2020 and MRTV 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. The commercial licence holders are obliged to co-operate 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. As of May 2014 the private radio stations are still waiting for a decision on DAB+ licences from the Radio and TV Authority (MRTV).

Spectrum for DAB/DAB+ digital radio

At the spectrum conference GE-2006 Sweden was awarded a total spectrum equivalent to 4 nationwide DAB/DAB+ multiplexers in Band III. Three of the four multiplexes are multi frequency networks (making regional insertion possible up to the maximum of 34 available frequency layers). In 2010 the Swedish Government awarded two of the four multiplexes (spectrum-wise) to public service radio and remaining two multiplexes to commercial radio.

EMERGENCY BROADCASTING

Sweden has an Emergency Warning System using FM/RDS (PTY31) to send an alert flag making it possible for receivers and

transmitters to change audio to the emergency channel, Swedish Radios channel P4. It is likely that this feature will be imposed on a digital system.

SWITZERLAND



✦ **Status: Regular Services, DAB+ launched**

👤 **Population: 8,081,482**

📡 **Services: 50 DAB+ simulcast, 28 DAB+ exclusive**

🏠 **Sales penetration by household: 33%**

🚗 **Sales – automotive line fit: 95,000**

📡 **Coverage: 96%** indoor

📡 **Coverage: 99%** outdoor

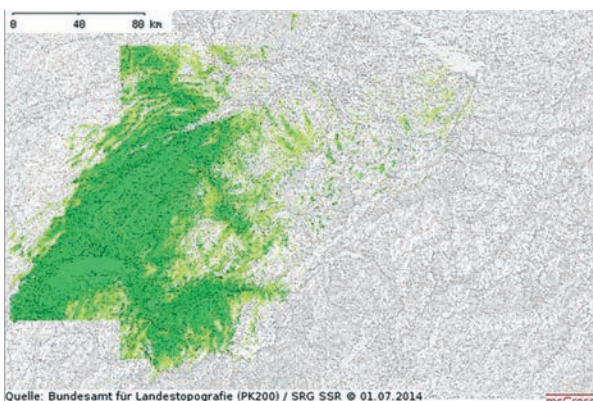
📊 **Sales (cumulative): 1,520,000**

CURRENT SITUATION

Today there is one national multiplex with four regional multiplexes for the four different languages, three regional multiplexes and one local multiplex (Geneva area), covering the German, French and Italian speaking areas of the country, with a mix of public and commercial services. One local multiplex (Zurich area) is planned to be launched still in 2014. End of 2012 the first step of the switchover of DAB to DAB+ took place.

Switzerland first launched DAB digital radio services in 1999 when the public broadcaster, SRG SSR went on air. The DAB+ services started as of 2008.

COVERAGE

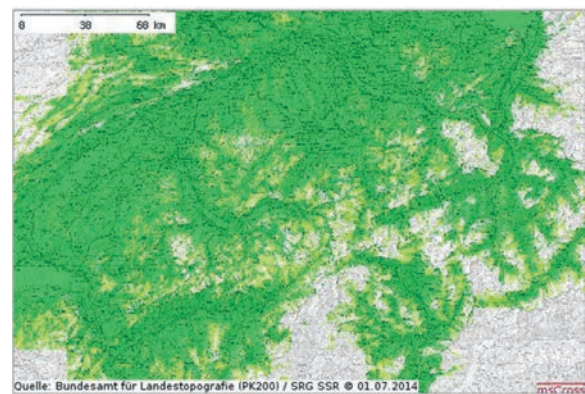


Radio SRF Musikwelle Network Coverage

Digital radio on DAB+ in Switzerland reaches over 99% of the population (outdoor 99%, indoor over 96%). Coverage of highway tunnels will be finished in 2018/2019.

SERVICES ON AIR

The original four multiplexes are run by the public



Digital Radio SRF 1 Network Coverage

broadcaster SRG SSR. The first commercial DAB+ multiplex which was launched on 13 October 2009 now broadcasts 14 commercial radio stations and three public radio stations in the German-speaking part of Switzerland. A second commercial DAB+ multiplex started in December 2012 in the German speaking part with 12 commercial and 7 public radio stations and a first regional commercial DAB+ multiplex in the French speaking part with 13 commercial and two public radio stations started at the end of 2013. A local multiplex (Geneva region) started in May 2014 with 12 commercial and non-profit radio stations.

The number of stations varies from language region to language region. There are eight regular multiplexes on air in Switzerland with 47 stations on DAB/DAB+ in the German-speaking part of Switzerland, 39 stations on DAB/DAB+ in the French speaking part of Switzerland and 11 stations on DAB/DAB+ in the Italian-speaking part of Switzerland. Until 2015 there will be three stations simulcast on DAB/DAB+.

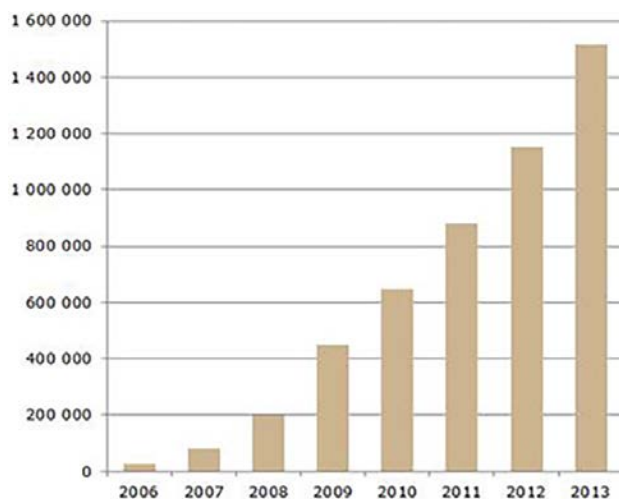
There are currently 50 DAB+ programmes simulcast on AM/FM and 28 DAB+ programmes exclusive to digital.

RECEIVER MARKET

Over one third of all households have access to a digital radio. All radio and TV retailers sell a wide range of DAB+ receivers, offering a choice of over 500 models of digital radios in a wide variety of designs and price ranges from more than 80 brands.

Sales of DAB+ digital radios continued to rise in 2013, as 365,000 sets were purchased. Demand for DAB+ car radios was particularly strong. This took the number of digital radios in use in Switzerland to over 1.5 million at the end of 2013.

Growth of digital radio in Switzerland 2006 – 2013



Source: importers/retailers/GfK (since 2009) 1/3 digital radio households.

AUTOMOTIVE

70% of the Swiss population listens to the radio in the car and Switzerland has the highest DAB outdoor coverage of 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+.

By the end of 2013, over 100,000 vehicles sold in Switzerland could receive DAB+ radio by the end of 2013. The growth in DAB+ car radios has been particularly sharp. Leading car manufacturers report that DAB+ is now fitted as standard in 30 to 50% of all new cars nationwide. DAB/DAB+ is available in almost all car brands sold in Switzerland.

New cars are also being fitted with DAB+ tuners as an option, while older cars can be retrofitted with the new technology. Over 95,000 DAB+ car radios have been sold by the end of 2013.

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).

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 digital radios 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 in Switzerland are:

- Band III
- National multiplexes
- All stations are on DAB+. Until 2015 there will be three stations simulcast on DAB.
- In 2013 stand-alone Band III ensembles were authorised by the regulator in the main conurbations, intended as a DAB+ platform for the smaller, non-commercial broadcasters
- Radio market players will present to the regulator by the end of 2014 a detailed digital switch over plan.
- In 2016, it will be decided whether all services in the future should be DAB+
- OFCOM holds the spectrum licence
- In mid-February 2012, 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, went on air in April 2014.
- 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 commercial DAB+ multiplex in German-speaking Switzerland.

MARKETING

Marketing activities to support DAB+ in Switzerland began in 2006.

The successful 'Digital radio. Better radio. With DAB+' campaign was continued in 2013. The campaign included TV ads, radio set promotions, online promotion and the use of social media. The multi-platform campaign which was a first of its kind in Switzerland, ran on television, radio, posters, digitally (website, banners and as interstitial ads on smartphones), as well as on Facebook and YouTube social media. A broad range of activities on the part of private and public radio stations alike supported the innovative campaign.

This campaign was followed by transmedia campaign 'DAB+ Jack Parker'.



MCDT, the Swiss digital radio marketing agency, works closely with manufacturers, importers, the trade and automotive manufacturers to provide technical information, run marketing campaigns and hold events to bring automotive manufacturers and dealers together to promote digital radio.

Automotive sector marketing includes a new digital radio flyer and demo ad. The flyer is offered to car dealers and retailers as information for customers. It contains a QR code which, when scanned, takes the user straight to the demo ad, where they can experience outstanding DAB+ sound quality for themselves.



EMERGENCY BROADCASTING

Switzerland is 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. FEDRO is currently drawing up guidelines with the industry for DAB+ equipment in motorway tunnels. These guidelines came into force in July 2014. After that date, tunnels will be gradually equipped with DAB+ as part of the maintenance programme. DAB+ will need to be installed in 200 of the 400 or so tunnels. The intention is that it will be possible to receive digital radio in the majority of tunnels by 2018/19.

UNITED KINGDOM



✦ **Status: Regular services, DAB launched**

👤 **Population: 63,200,000**

📡 **Services: 415 DAB**

📺 **Platform Share: 36%**

📊 **Sales (cumulative): 19,000,000**

📶 **Coverage: 94%**

🎯 **Digital Reach: 51%**

🏠 **Sales penetration by household: 47.9%**

CURRENT SITUATION

The UK radio industry is committed to a digital future for radio. Digital listening is now 36.6%, up 7% year on year from 34.4% (RAJAR Q1 2014). DAB is the most popular device for digital listening (65% of all digital hours) with 25 million adults have access to a DAB digital radio. DAB share of listening is 23.7%, up 5% year on year with 51% of the population tunes in via a digital platform each week.

The demand for DAB radios in cars continues to grow. In May 2014, it was announced that 55% of new cars came with DAB digital radio as standard.



In June 2014, the UK Government declared its full support of a long term transition to a digital future. No formal date for a final switchover to digital radio has been set.

The Government criteria for setting a date for digital radio switchover are:

- Digital listening share to reach 50% of all listening hours (currently 36.6%)

- When local commercial and national DAB coverage reaches FM equivalence

In July 2014, UK media regulator Ofcom announced that it was inviting bids to run a second national DAB digital radio multiplex, to sit alongside the existing Digital One network, and all the local digital radio platforms that currently operate. The launch of Digital Two could potentially provide capacity for a further 15 national radio stations and more stations exclusive to DAB.

COVERAGE

UK population coverage is currently:

- 94.5% for national BBC stations
- 89% for national commercial stations
- 70% local DAB coverage

A major two-year programme of DAB coverage build out is now underway which includes doubling the number of local DAB transmitters (around 200 new transmitters) to get local DAB to FM equivalence, over 162 new transmitters for the BBC national network to expand it from 94% population coverage to 97% by 2015, and more transmitters for the national commercial network, Digital One.

This build-out programme will focus also on the UK's major road network and the local DAB expansion alone will bring 6,700km of roads in to DAB coverage.

Government, BBC and commercial broadcasters have signed an agreement to fund the build-out of local DAB to FM equivalence extending coverage to 90% by the end of 2016.

SERVICES ON AIR

There are currently two regular national multiplexes (one BBC, one national commercial), five regional multiplexes and 47 regular local multiplexes on air.

415 DAB programmes are currently on air with 111 exclusive to DAB.

RECEIVER MARKET

According to GfK statistics, over 19 million digital radios have now been sold in the UK, available through a large number of high street and online retailers at varying price points of GBP20 upwards. In 2013 the UK Government published a number of minimum receiver specification reports covering radio receivers for domestic and in-vehicle use.

Uk Digital Tick Mark

At the end of 2013 the UK Government announced that the digital radio 'tick mark' would be launched for DAB radios and installers. The 'tick mark' run by Digital Radio UK, provides consumers with certainty and reassurance that the products and services that they are buying are future-ready and will enable them to receive the available DAB, DAB+ and FM radio stations. From a manufacturer's perspective, the mark will likely drive sales in the UK.

The tick mark is relevant for both the domestic (home) and in-vehicle markets. In order to be granted use of the tick mark, manufacturers and installers must meet specific criteria.



AUTOMOTIVE

In April 2014, 55% of new cars came with DAB digital radio as standard, up from 37.2% in April 2013. This includes all new BMWs, Minis, Land Rovers, Volkswagens and Volvo vehicles.

Record new car sales and the move to fitting digital radio mean that in 2014, to date over 440,000 vehicles have been registered with digital radio as standard - an increase of 62% on last year.

With over 35 million cars on the road, the challenge (and opportunity) remains in the aftermarket. Digital Radio UK is working with the industry to support the growing aftermarket with consistent media and in-store promotional campaigns.

DETAILS OF TRIALS

- The BBC is doing a technical trial for DAB+ in Scotland in 2014
- UK broadcasters set up a test route for service following in June 2014

Small-scale low cost DAB

The UK has several hundred small-scale FM and AM stations. While the existing DAB infrastructure is suitable for larger stations, the wide area coverage and relatively high costs of the existing

county-wide structure are not suited to the needs of small-scale broadcasters. Following an initial trial carried out in Brighton during 2012/13, Ofcom has been given funding by the UK Department for Culture Media and Sport to test the technical scope for small-scale low cost DAB. Ofcom will be carrying out further technical tests over the remainder of this year and hope to launch a small number of pilots with stations early next year. Ofcom are working on developing a new licensing regime, which will aim to meet the needs of small stations.

REGULATION AND SPECTRUM

Key features of regulation for digital radio regulation in the United Kingdom:

- Digital radio services are broadcast on Band III
- National criteria for analogue switch off:
 - More than 50% of listening must be via digital platforms
 - Digital coverage for national services must be comparable to FM, and local DAB to reach 90% of the population as well as covering major roads
- A Royal Charter and Agreement govern the public broadcaster, the BBC, with new stations subject to Government approval and the media and communications regulator, Ofcom.
- Ofcom regulates the commercial sector, and advertises and issues licences for digital radio services under the Broadcasting Acts of 1990 and 1996
- Ofcom awards licences for digital radio services differently depending on the type of service and the platform:
- Licences for new digital radio ensembles are subject to an open competition to the highest bidder, are awarded for twelve years and are awarded on a national, regional and local basis
- Multiplex licences are awarded on a beauty contest formula rather than auctioned, and regulation covers minimum bit-rate for music stations, mandatory 'must carry' obligations, maintenance of service providers' stations commitments and the amount of data content
- In some cases a third party operates a multiplex, however more recently multiplexes are operated by broadcasters

- Broadcasters 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
- The licence for a second national digital radio multiplex (D2) was advertised by media regulator Ofcom in July 2014 and is expected to be awarded in 2015.

MARKETING

Digital Radio UK is the organisation charged with overseeing the digital radio switchover in the UK. Recent and ongoing campaigns include:

- A 2014 digital radio summer communications campaign in two phases: the first on commercial radio and the second with BBC/commercial radio

The image shows a screenshot of a website promotion for Absolute Radio. The main headline reads "WIN A BRAND NEW PEUGEOT 308" and "Winner of the European Car of the Year 2014 award". Below this, there is a play button icon and a paragraph of text describing the car's features and the contest details. The Peugeot logo and the "digitalradio" logo are visible at the bottom of the promotion area.

- Installers and products (starting with the vehicle industry) start to carry the 'Tick Mark' certification from Q4 2014, alongside a communications campaign

COUNTRIES WITH TRIALS AND/OR REGULATION

AUSTRIA



* Status: DAB trial

👤 Population: 8,462,000

CURRENT SITUATION

Digital Radio Austria (Verein Digitalradio Österreich) will apply for a DAB+ trial licence and hopes to receive approval to begin broadcasting DAB+ test transmissions by April 2015. Two transmitters will operate as a single frequency network, with one transmitting a 10kW signal. This test mode is scheduled to last a year. 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.

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.

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. A working group was created in 2009 and its 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 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+.

CHINESE TAIPEI



* Status: Trials and/or regulation

👤 Population: 23,373,517

📡 Services: 7 DAB, 1 DMB

SERVICES ON AIR

Digital radio services have been launched in Chinese Taipei.

DETAILS OF TRIALS

A DAB single frequency network (SFN) trial is operated by SuperFM (the commercial broadcaster) and covers major cities including Taipei and New Taipei. Coverage is currently at about 21% of the population or about 5 million people.

REGULATION AND SPECTRUM

DAB is still only available on a trial basis in Taiwan. Digital terrestrial broadcasting is regulated according to the Radio and Television Act. Radio station licences are issued according to the Telecommunications Act. Each licence is valid for 3 years with renewal for the next 3 years. The DAB frequency band is allocated by law in VHF Band III on Channel 10.

HUNGARY



✦ Status: Trials and/or regulation, DAB+ trial

👤 Population: 9,000,000

📡 Services: 7 DAB+



Coverage: 30%



CURRENT SITUATION

Hungary has chosen DAB+ for its digital radio standard, and there is currently a test multiplex on air broadcasting seven DAB+ radio programs to the Budapest area.

COVERAGE

Nearly 30% of the population of Hungary is covered, to include Budapest and the surrounding area. According to the contract, coverage has to reach 94% by the end of 2014. The schedule for the development of the network is under discussion.

SERVICES ON AIR

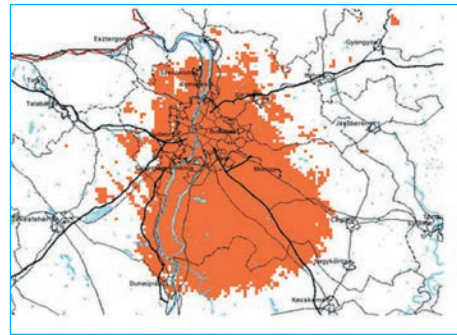
Seven radio programmes are simulcast FM and DAB+ in Budapest and the surrounding area since January 2011: Kossuth, Petőfi, Bartók Rádió, Magyar Katolikus Rádió, Klubrádió, Lánchíd Rádió and Inforádió.

RECEIVER MARKET

DAB+ enabled receivers are available throughout Hungary via retailers. Antenna Hungária expects the variety of receivers to increase in the near future in line with coverage and demand.

AUTOMOTIVE

Receiver manufacturer Denison launched a DAB+ receiver in 2014 which allows users to receive digital radio in their car via a standard USB connection. DAB/DAB+ stations appear on the device as virtual mp3 files, thereby enabling easy operation and wide compatibility.



Current coverage of DAB+ in Budapest and its surroundings

DETAILS OF TRIALS

Antenna Hungária implemented the first phase of the digital terrestrial radio network by December 2008 and started the test DAB+ transmission on three transmitters in Budapest, on channel 11D, and reaching approximately 30% of the Hungarian population.

REGULATION AND SPECTRUM

The government strategy for the implementation of digital broadcasting (both radio and television) was approved in March 2007. The switch from analogue to digital will only happen when 94% of the population is covered and 75% of the population owns a digital radio receiver. In line with the provisions of this Act, in March 2008 the National Media and Infocommunications Authority published an invitation to tender for a national multiplex. The winner was Antenna Hungária which subsequently announced its decision to broadcast via DAB+. The transmitters operate on the 11D block.

INDONESIA



✦ Status: Trials and/or regulation, DAB+ trial

👤 Population: 246,900,000

CURRENT SITUATION

A decree issued by Ministry of Communication and Informatics Republic of Indonesia (MCIT) states that Indonesia will use DAB+ as its official digital platform on Band III.

Radio Republik Indonesia (RRI), the public service broadcaster, has been operating a DAB+ trial since August 2013, powered by a 2.5 KW transmitter and antenna located at the top of the RRI headquarters in Jakarta, Indonesia, using channel 12D VHF on Band III. The first stage of the DAB+ trial will cover the Jakarta area and in the future RRI plans to develop coverage and number of programmes covered by the trial.

In September 2014, RRI with support from MCIT will do an evaluation of the trial, with the aim of optimising the trial results.

RECEIVER MARKET

The availability of affordably priced digital radio receivers is a key factor in the successful rollout of DAB+ digital radio in Indonesia and the Indonesian radio industry is working with receiver manufacturers.

REGULATION AND SPECTRUM

The Government is assessing new regulation and channel planning for the implementation of DAB+.

MALAYSIA



✦ Status: Trials and/or regulation, DAB+ trial

👤 Population: 29,240,000

📡 Services: 15 DAB, 3 data



Coverage: 10%



CURRENT SITUATION

A DAB+ workshop and trial was organised by Radio Television Malaysia (RTM), ABU (Asia Pacific Broadcasting Union) and WorldDMB in Kuala Lumpur in February 2014, a day of field measurements. Field test measuring equipment was set-up to demonstrate to participants the effects of reception in a mobile environment. Various types of DAB+ radio receivers were shown to the participants during the field trip to show the performance of a receiver and its ability to playback text and images.

A proposal and recommendation paper is now being prepared by RTM for submission to the Ministry of Communication and Multimedia for consideration of DAB+ as a Digital Sound Broadcasting system for Malaysia.

SERVICES ON AIR

There is currently one trial local multiplex on-air with 15 DAB+ simulcast services and three simulcast data services.

DETAILS OF TRIALS

Malaysia has been running a DAB+ digital radio trial in Kuala Lumpur since October 2009. The technical trial is organised by Radio Television Malaysia (RTM), Telekom Malaysia and is supported by the regulator the Malaysian Communications and Multimedia Commission (MCMC). The trial involves one transmitter on the Kuala Lumpur Tower plus five filler transmitters in Kelang, Bukit Lanjan, Bukit Sungei Besi, Kajang and Sepang. The trial is broadcast on Band III, Channel 11B and carries 15 DAB+ simulcast services and 3 simulcast data services.

NEW ZEALAND



✦ Status: DAB trial, DAB+ trial

👤 Population: 4,433,000



Coverage: 22%



📡 Services: 6 DAB, 2 DAB+, 1 Data

CURRENT SITUATION

Digital radio services have been introduced in New Zealand on a trial basis in two cities. These trials have been licenced by the Ministry of Business, Innovation and Employment (MBIE), 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 and slideshow.

REGULATION AND SPECTRUM

The introduction of digital radio services is dependent on spectrum availability, government policy and industry requirements. 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.

The government has made no decisions on the allocation of spectrum for DAB. It is anticipated that there will be more focus on this by the MBIE in 2015/2016. The current trial uses Band III.

COVERAGE

The trial of DAB/DAB+ services currently operates across Auckland and central Wellington with two transmitters operating in Band III.

SERVICES ON AIR

There are currently 6 DAB, 2 DAB+ and 1 Data service on air.

RECEIVER MARKET

There are a small range of DAB/DAB+ receivers in the market.

ROMANIA



✦ Status: DAB trial

👤 Population: 21,300,000



Services: 6 DAB

CURRENT SITUATION

A trial local DAB multiplex has been on air in Bucharest since

2004. The multiplex broadcasts six radio services from public broadcaster Radio Romania.

SLOVENIA



✦ **Status: Preparation for a tender for the first national DAB+ network**

👤 **Population: 2,058,000**

CURRENT SITUATION

A DAB trial by Slovenia's public broadcaster, RTV, ended in November 2013. The trial covered the capital city of Ljubljana and central Slovenia, offering 22.5% population coverage. The Post and Electronic Communications Agency of the Republic of Slovenia has set up 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 national coverage. This is expected to happen in the second half of 2014.

RECEIVER MARKET

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

DETAILS OF TRIALS

The latest DAB trial completed in November 2013.

REGULATION AND SPECTRUM

Licences for frequencies for DAB networks can be obtained via public tenders. All content providers must also obtain a "digital" licence to enter the multiplex via public tender.

SOUTH AFRICA



✦ **Status: DAB+ trial**

👤 **Population: 53,000,000**



Coverage: 21.5%



CURRENT SITUATION

A licence for a high powered DAB+ trial has been granted to the South African Broadcasting Corporation by the regulator ICASA (the Independent Communications Authority of South Africa). The trial will run from the 13th October 2014 for a period of 12 months, and Sentech will be the signal distributor for the duration of the trial. The licence was applied for by a joint public/commercial radio group – the SADIBA / NAB Digital Radio DAB+ Trial Working Group. The total area covered by the trial is 21,185km² and the total gross population covered is 10,705,387 (21.5% of total SA population). It is envisaged that 18 stereo radio channels allowing 40 radio services from the Public, Commercial and Community sectors will participate.

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 during 2014/2015. 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 licence new entrants where FM bandwidth is congested.

SERVICES ON AIR

The DAB+ trial will consist of 1 mux broadcasting 18 X 64 kbps stereo channels in the province of Gauteng. Most of the participants will use slide show and other PAD services. A total of 40 radio services will participate and services will be rotated to give each broadcaster a chance to trial. Participation is not limited to Gauteng based broadcasters thereby allowing broadcasters from other provinces to trial. A process of rotation will apply to enable all 40 broadcasters to get a fair chance. One third of the mux is reserved exclusively for community broadcasters. In total there will be 20 DAB+ services on air, 18 DAB+ programmes will run simulcast on AM/FM and 2 will be exclusive to digital.

RECEIVER MARKET

As South Africa is currently in trial status, DAB+ receivers are not currently available in the market place. Due to the fact that it is highly unlikely that the trial will be followed by an immediate commercial launch it was decided to provide receivers to closed listener groups to avoid raised public expectations.

AUTOMOTIVE

The Joint SADIBA/NAB Digital Radio DAB+ trial Working Group is currently meeting on a regular basis with members from the automobile manufactures to encourage their participation by providing a number of vehicles fitted with OEM DAB+ receivers.

DETAILS OF TRIALS

The South African DAB+ trial will consist of two high power transmitting stations (10kw transmitter power) 100kw ERP situated in Johannesburg and Pretoria in the province of Gauteng. The trial will operate as a SFN in VHF band III on Channel 13F on a frequency of 239.200MHz. This will happen after coverage verification at transmitter powers of 2kw, 5kw, and 10kw. The total area covered by the trial is 21 185 km² and the total gross population covered is 10 705 387 (21.5% of total SA population).

It is envisaged that 18 stereo radio channels allowing 40 radio services from the Public, Commercial and Community sectors will participate. These 40 radio services will be rotated to give each broadcaster a chance to trial. Not all the broadcasters will be from the Gauteng Province and a third of the mux is reserved for Community Broadcasters.

Mobile TV PTY has been awarded a conditional subscription based commercial licence by ICASA provided that they submit additional information to ICASA within a stipulated 3 month period. Commercial spectrum for DMB is not currently available until after the TV digital migration process has been completed.

REGULATION AND SPECTRUM

ICASA published a draft 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 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.

EMERGENCY BROADCASTING

Emergency Warning Systems will form part of the DAB+ trial parameters.

THAILAND



* Status: Trials and/or regulation

Population: 67,010,000

CURRENT SITUATION

Following the successful licence auction for commercial digital TV channels in December 2013, the National Broadcasting and Telecommunications Commission (NBTC) is looking to auction a number of business broadcasting services for digital radio in 2015. The licences would be in the nationwide, regional and local. The auction will be held on a phase-by-phase basis.

DAB+ demonstrations began in Bangkok on 1st March 2013. NBTC and The International Telecommunication Union (ITU) 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 (Mass Communication Organization of Thailand), the Thai Government Public Relations Department and the Royal Thai Army Radio and Television Station.

The first Thailand Broadcasting Master Plan (2012-2016) states strategies for digital terrestrial radio roll-out, and a roadmap and policy for digital terrestrial radio roll-out within two years after the adoption of the Master Plan.

NBTC is now in the process of developing a policy document for digital radio services that will be published in 2014. NBTC has supported the launch of services by signing a Memorandum

of Understanding on the digital radio trial with eight major broadcasters.

COVERAGE

NBTC is now developing the frequency planning policy for digital radio to determine local, regional, national service areas.

SERVICES ON AIR

NBTC will specify the digital radio service requirements for the DAB+ trial and will develop the licensing framework.

RECEIVER MARKET

NBTC has consulted with radio receiver manufacturers for sourcing digital radio receivers.

AUTOMOTIVE

NBTC is co-operating with automotive manufacturers and OEMs manufacturing vehicles in Thailand (e.g. Toyota, Honda, Mitsubishi, BMW, Nissan, Isuzu, Alpine, Panasonic, Fujitsu Ten, JVC, World Tech and Clarion). to develop digital radio receivers for the Thai market. NBTC plans to set up a campaign to support manufacturers with development through an industry forum in Thailand. The automotive manufacturers and OEMs manufacturing vehicles in Thailand are ready to support the trial/launching of the digital radio development plan in Thailand once NBTC announces the roadmap.

DETAILS OF TRIALS

In 2013 the first DAB+ transmission demonstration in Thailand

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

NBTC has signed a Memorandum of Understanding on the digital radio trial with eight state broadcasters for launching of service in Thailand. This trial will use the infrastructures of the Royal Thai Armed Forces, the Royal Thai Army, the Royal Thai Navy, the Royal Thai Air Force, the Royal Thai Police, the Public Relations Department, The Secretariat of The House of Representatives and MCOT.

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 will be able to access digital terrestrial broadcast within 5 years

EMERGENCY BROADCASTING

NBTC would consider developing an Emergency Warning Systems (EWS) policy for digital radio.

••• NOTES •••

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.

WorldDMB's global membership is made up of senior executives and technical professionals from over 85 organisations across the industry involved in the rollout of digital radio. This includes public and commercial broadcasters, network

providers, receiver, chip and car manufacturers.

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.



“ 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

Sign up for the latest industry updates and access to the industry magazine **Eureka!**
www.worlddab.org/news

JOINING WORLDDMB

BENEFITS OF MEMBERSHIP

The WorldDMB membership network of companies and organisations involved in the digital rollout from across the industry are in the best position to assist in the transition from analogue to digital radio.

Access to Global Database of Industry Contacts

- Commercial and public broadcasters
- Chip, receiver and equipment manufacturers
- Network operators
- Regulatory bodies
- Automotive manufacturers (OEMs, Tier 1s, Tier 2s)

Market Intelligence

- The latest country rollout plans
- Coverage maps
- Industry news

Industry Events

- Free registration to WorldDMB events
- Speaking opportunities
- Free or discounted exhibition opportunities
- Free or discounted admission to industry events
- Opportunity to distribute promotional material

Access to member only resources

- ETI Library
- GfK Statistics
- Past event presentations and documents

Advice and support to broadcasters on:

- Regulation
- Technical trials
- Licensing
- Marketing
- Network build out
- Best business case scenarios
- Production of digital radio content

Business Development

- Advertising opportunities in WorldDMB publications and event materials
- Sponsorship opportunities at events
- Targeted networking opportunities

Technical Information and Support

- Advice on digital radio regulation issues
- ETI files and guidance on trials and testing
- Forum to shape the development of future applications
- Automotive sector technical information



WorldDMB Committees

- Opportunity to join Committees and Task Forces and influence the industry
- Access to all Committee documents

“ 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



“ 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)

WorldDMB Member Representatives – Linking the Experts on Digital Radio

Member Representatives are the backbone of WorldDMB membership. They are key staff from member organisations – country or regional managers, sales, technical, strategic marketing and press. Member representatives receive regular industry updates, discounted or free registration to WorldDMB events and access to members only industry information and documents.



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.



WorldDMB Members



Push every boundary.™



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