

WorldDAB Global Summary

Digital radio broadcasting using the DAB family of standards

Global overview

Digital radio is making significant advances across Europe with national services now firmly established in the UK, Norway, Switzerland, Denmark, Germany, Netherlands and Italy.

Recent months have seen several important developments for DAB digital radio:

- Norway will have Digital Switchover (DSO) in 2017
- Switzerland has announced its plans for DSO between 2020 and 2024
- In Germany, the Ministry for Transport and Digital Infrastructure (BMVI) has established a Steering Board to drive forward the adoption of digital radio - participation in this Board includes the Government, media regulators, public and private broadcasters, and receiver and automotive manufacturers
- The UK has launched a major programme to build out national and local DAB coverage, and the licence for a second national commercial multiplex has been awarded, with 18 new stations on air from March 2016
- Denmark has issued a clear roadmap for digital radio, with a transition to DAB+ by 1st October 2017, a new national multiplex on air next year and a decision on DSO when 50% of listening is digital.
- In the Netherlands, following the launch of national services in Sept 2013, 2015 saw the roll-out of a new layer of regional services
- In Italy, the coverage of national services is being extended in the South of Italy, Sardinia and Sicily; the regulator AGCOM is pushing forward with the roll-out of local DAB+ with plans now in place to cover 43% of the population
- In France, DAB+ services have been on air in Paris, Nice and Marseille since 2014 – and, in December 2015, the regulator CSA published its proposed timetable for the deployment of digital radio across the whole country
- In Belgium, commercial DAB+ services were launched in Flanders in 2015; the Flemish Government has confirmed its commitment to DAB+ (with the stated aim of Digital Switchover). In Wallonia, the Walloon government has agreed to partly finance investment for DAB+ roll-out.
- In Poland, Polskie Radio has extended coverage of its DAB+ services to 55%
- In Austria, a DAB+ trial launched in May 2015 with 15 DAB+ services broadcasting across Greater Vienna
- In Romania the regulator has launched a public consultation on the allocation of digital terrestrial broadcasting multiplexes on T-DAB
- In Slovakia, a DAB+ trial started in December in Bratislava. In June the licence for the trial in Bratislava was extended and licences have been awarded for additional DAB+ trials in Košice, Banská Bystrica, Levice and Nitra.
- In Slovenia, a licence for the first regular national DAB+ multiplex has been awarded to the public broadcaster
- In the Asia Pacific region, Australia continues to lead the way – with DAB+ household penetration rising to 23.6%
- A DAB+ trial in South Africa has been extended to 12 August 2016 and covers 21.5% of the population with 18 services
- In Turkey, a DAB trial in Istanbul and Ankara broadcasts five simulcast stations
- In the UAE a major media group is on-air with 12 DAB+ services

Europe

Pan-European support for digital radio is building.

The European Broadcast Union (EBU) has called for the adoption of digital broadcast radio across Europe¹ and for the inclusion of digital capability in all new radio receivers. At the same time, Government administrations are looking to build cross-border links to develop a European consensus about radio's digital future.

Against this background, WorldDAB has started to engage with the European Commission about the potential inclusion of digital terrestrial radio in the Digital Single Market Strategy. At the WorldDAB General Assembly 2015, UK Minister of State for Culture and the Digital Economy, Ed Vaizey, and Dorothee Bär, German Parliamentary State Secretary at the Federal Ministry of Transport and Digital Infrastructure (BMVI), set out their shared vision for radio's digital future and emphasised their commitment to digital radio and the importance of working together to accelerate the growth of DAB in Europe.

Asia Pacific

In Asia Pacific, a similar pattern is emerging. Australia successfully launched DAB+ in 2009, followed by Hong Kong in 2011 and Indonesia launched permanent services in Jakarta in April



Figure 1: Digital radio in Europe

¹ Recommendation R138 <https://tech.ebu.ch/docs/r/r138.pdf>

2016. Several other markets, including Thailand, Malaysia and Vietnam are now investigating digital radio options. WorldDAB has organised workshops in each of these countries.

Digital Switch-Over

Several European markets are considering their long term plans for broadcast radio, including potential Digital Switchover scenarios. Norway is the first country to confirm a DSO date (2017); and Switzerland is planning for DSO in 2020-24. WorldDAB has established a working group focused on DSO – the aim being to coordinate activities and share best practice. Meetings are attended by representatives from Czech Republic, Denmark, Germany, the Netherlands, Norway, Poland, Sweden, Switzerland and the United Kingdom.

Automotive

WorldDAB has established an automotive taskforce, focused on persuading car manufacturers to install digital radio as standard across Europe and beyond. In the UK 77%, Switzerland 65% and Norway 63% of new cars come with DAB/DAB+ as standard. Territories with national DAB coverage account for 60% of all new car sales in Europe, so the time is right for car makers to focus on this area.

Marketing and Receiver Specifications

These DSO and automotive initiatives are being supported by closer co-operation between broadcasters and industry focused on the marketing of digital radio and receiver specifications.

An informal group has been established to encourage the sharing of ideas in the areas of branding and promotion. Digital radio is fighting for attention in a world increasingly dominated by players of global scale, e.g. Apple and Google – the aim of these “sharing” initiatives is to help strengthen DAB’s positioning as an international standard. This is particularly important when addressing vehicle manufacturers and the smartphone industry.

In parallel, a group has been established to discuss the creation of consistent receiver specifications in different countries. This is building on work already undertaken in the UK and Germany. Consistent specifications are important for receiver manufacturers. They also offer countries the opportunity to use schemes, such as the UK’s Digital Tick, as a means of demonstrating that receivers are future-ready. Current areas of focus are ensuring that devices are capable of displaying a full range of Latin based characters and are able to function properly in the range of frequency environments to be found in territories across Europe.

Europe (listed in alphabetical order by stage of development (Established, New, Markets on the move and Potential))

Established markets

Norway: population 5.1 million

Current position

- DSO is set for 2017
- DAB coverage: 99.5%, first-level road coverage: 97%
- Rapid growth of receiver sales followed launch of new digital only station (P1+) in September 2013
- The 20 most sold car models in Norway all offer DAB+ as standard or optional. 63% of new cars sold in Norway come with DAB (Source: Norwegian Electronics trade association).
- 26% of all cars in Norway have a DAB radio (TNS Gallup Digital Radio Survey Q4 2015)
- Digital listening: in Q4 2015, 57% of daily listeners were using a digital device (TNS Gallup Digital Radio Survey Q4 2015)
- Ownership of DAB; 60% of all Norwegian households own one or more DAB-radios. (TNS Gallup Digital Radio Survey Q4 2015).
- Road tunnels: Norwegian road authorities say that all relevant tunnels will have DAB by 2017.

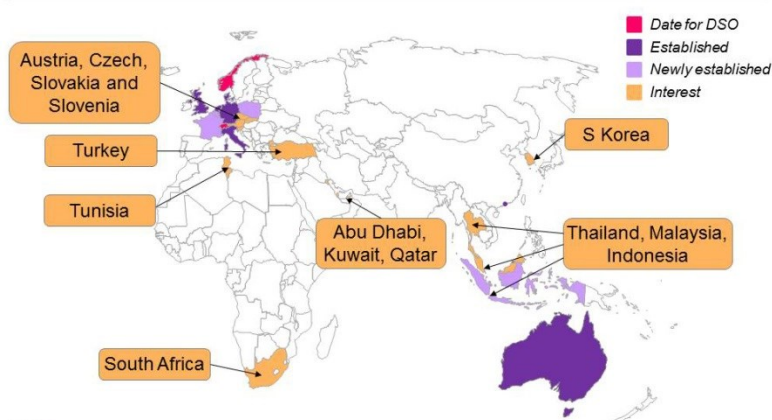
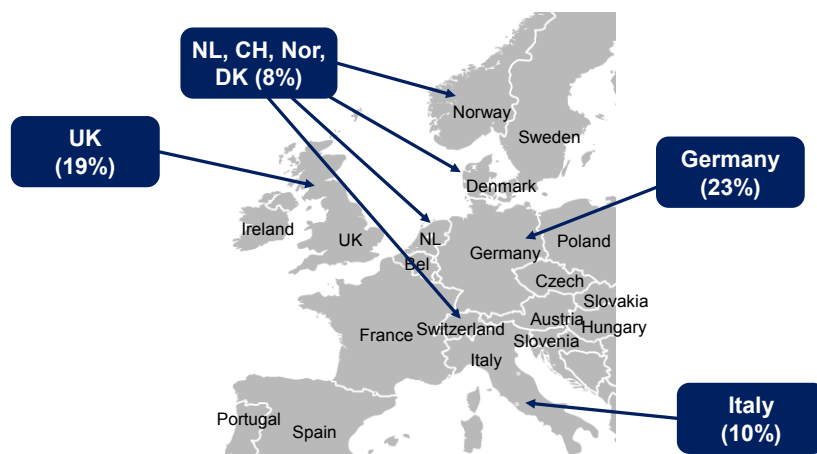


Figure 2: Digital Radio in EMEA and APAC



Source: ACEA

Figure 3: % share of European new car sales 2014 – markets with DAB / DAB+

- Local radio: Most Norwegian local radios may continue to transmit on FM for 5 years after 2017. These are outside of the urban areas. 23 local radios will not get their FM licence extended after 2017, however 22 of these are also on DAB+ today. Government support for building local DAB+ infrastructure is under study.

Switchover criteria

- Analogue radio switch off is planned for 2017 as the following switchover criteria has been met:
 1. Public broadcaster must achieve coverage of 99.5% by 2015. Commercial broadcasters on the national network #1 are required to reach 90% of the population.
 2. 50% of listeners must daily use a digital platform before 2015.
 3. There must be reasonably priced, reliable in-car adaptors on the market by 2015. Installers must be widely available.
 4. Added value for the listeners.

Switzerland: population 8.1 million

Current position

- DAB coverage: indoor 98%; outdoor 99% - all main tunnels fitted by 2016 - 2019
- Over 90 services available depending on the region – German, French and Italian
- All stations are on DAB+
- 65% of new cars come with DAB+ as standard (MCDT survey of best-selling car brands in Switzerland end 2015)
- Industry and regulator have handed over to Government a detailed switchover plan
- Over 2.35 million DAB+ digital radio receivers, including 368,000 line fit automotive sales, have been sold to date
- 49% of all radio listening in Switzerland is now digital (GfK on behalf of DigiMig, February 2016)
- Sales of digital radios in Q1 2016 were up 11.3% year on year (source: GfK) while sales of FM-only devices decrease continuously year on year.

Prospects

- Industry and the Swiss regulator have announced plans for digital switchover to take place between 2020 and 2024. This will be preceded by a four year marketing campaign to prepare audiences for the switch.
- Coverage of highway tunnels will be finished in 2018/2019
- From 15 November 2016, listeners throughout Switzerland will be able to receive more of SRG SSR's DAB+ channels. To make this possible, it is discontinuing operation of DAB.

United Kingdom: population 64.1 million

Current position

- National coverage of DAB: 96% of population (rising to 97% by March 2016)
- DAB receiver penetration: 54% of population (RAJAR Q4 2015)
- Digital listening: 41.7% share of total listening, up from 37.9% in 2014 (RAJAR Q4 2015)
- Cars: 77.2% of new car registrations have digital radio as standard (CAP/SMMT Q1 2016). Over 5.2 million cars on the road are able to receive digital radio.
- A second national commercial multiplex with 18 stations launched in March 2016

Prospects

- Government has stated "the future of radio is digital"
- The criteria to be achieved before a firm date for DSO can be set are:
 1. Digital listening to account for 50% share of all listening hours
 2. Digital coverage for national services must be comparable to FM and local DAB should cover 90% of the population as well as major roads.
- Current trends suggest the 50% digital listening target will be achieved in 2017/18
- Following commitment to build 162 new DAB transmitters for national BBC services and 182 new transmitters for local DAB services, coverage targets are expected to be achieved by the end of 2016.
- The digital radio tick mark, which indicates "future ready" devices has been set up and is managed by Digital Radio UK

Germany: population 81.6 million

Current position

- Launched DAB+ in August 2011
- Combined coverage of the ARD (regional) and the national multiplexes is 95.3% of the population. The ARD multiplexes cover 89.5% of the population. The national multiplex currently covers 79.69% of the population. The 1st level road coverage of the national Network is 10,900 km which is equal to 90.1%.
- 1.9m cars are equipped with a DAB+ receiver (source: Digitisation Report 2015 carried out by TNS Infratest)

- 13% of new cars have DAB fitted (source: Deutsche Automobiltreuhand (DAT)/Verband der Automobilindustrie (VDA) June 2015)
- 11% of households own a DAB+ receiver (source: Digitisation Report 2015 carried out by TNS Infratest)
- Sales of digital radios in Q1 2016 were up 35.2% year on year (source: GfK) while sales of FM-only devices decrease continuously year on year.

Prospects

- In November 2014, the ARD confirmed its long term commitment to DAB+ as a core element of its radio distribution strategy and highlighted the need for the co-operation of policy makers, regulators and private broadcasters to help secure this digital future.
- In April 2015 the German Ministry for Transport and Digital Infrastructure made clear its strong support for DAB+ and has proposed the establishment of a new steering group with representation from all key stakeholders. The first meeting of this group was on 17th June.
- The regional and the nationwide networks will be enlarged in 2016 by further sites to achieve uninterrupted coverage on major roads and allowing digital radio reception in 92% outdoor area coverage and 82% indoor.

Denmark: population 5.6 million

Current position

- DSO when 50% listening is digital
- Transition to DAB+ by 1st October 2017
- Free licences for spare capacity in MUX3 will be available by mid-2016
- DAB coverage: 98%
- DAB receiver penetration: more than 45% of households (Source: TNS Gallup)
- 28% of radio listening is digital and 15% of all radio listening is on DAB. (Source: DR Media Research).
- Digital radio is driving radio listening. Radio listening is growing and only on digital channels.
- Sales of digital radios in Q1 2016 were up 8.8% year on year (source: GfK) while sales of FM-only devices decrease continuously year on year.

Prospects

- A roadmap published by the Ministry of Culture (29 April 2015) says closure of the FM band should be considered when at least 50% of radio listening is on digital platforms. The roadmap was adjusted in April 2016. Key features of the roadmap are:
 1. National information campaign, financed by the state is going to take place around shift to DAB+
 2. Decision to switch off FM to be taken when 50% of listening is digital (currently at 28%)
 3. Swap of content on MUX1 and MUX2 in October 2017 which will ensure that available frequencies can be brought into use, making it possible to have a commercial network operator of MUX1
 4. "Gatekeeper Model" will be adopted for MUX 1 (currently owned by Danish Radio) which will drive the market
 5. Full transition from DAB to DAB+ by 1 Oct 2017
 6. Free new licences for spare capacity in MUX3 will be available in mid-2016. The multiplex is delayed but will be launched with 82 regional channels. Most of them will be simulcasts of FM stations.
- There is a plan to build a new regionalised multiplex for commercial radio – launching in mid-2016.
- No later than 1 October 2017, the national single-frequency DAB block now used by public service broadcaster DR will be swapped for 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 DAB+. This increases the total transmission capacity of Danish Radio enough to migrate its nine regional FM-only stations to DAB+, and allow the commercial multiplex to develop further and expand with more national channels.

Netherlands: population 16.9 million

Current position

- DAB+ launched in Sept 2013
- National coverage of DAB+: >95% population coverage
- 29 national services: 18 commercial (9 digital-only), 11 public (7 digital-only).
- The regional network (3rd layer, next to two national networks) in the Netherlands consists of five regional allotments together covering the whole country. Since spring 2015 the networks are complete and the 21 services from 13 regional public broadcasters are on air.
- On 1 September 2015 a range of local commercial services (31) were added to the regional multiplexes 6B, 7A, 8A, 9D-N, and 9D-S. In places like Amsterdam and Rotterdam listeners can receive up to 45 different services.
- Joint marketing campaign "let's get digital" launched Q2 2014 supported by public and commercial broadcasters and the Ministry of Economic Affairs.

- Public broadcaster NPO switched off AM on the 1st September 2015 and is using DAB+ instead of AM for broadcasting NPO Radio 5. The budget that will become free will be invested in DAB+. NPO switched on five new transmitters in September to improve their nationwide outdoor coverage. The next phase will be nationwide indoor coverage (20 extra transmitters) for NPO mux 11C.
- Sales of digital radios in Q1 2016 were up 78.1% year on year (source: GfK) while sales of FM-only devices decrease continuously year on year.
- Awareness of DAB+ or Digital Radio+ is reasonably high; 58% of the Dutch know Digital Radio and/or DAB+ and almost 25% of the Dutch consider buying a radio with DAB+ (Media Appreciation Panel/conducted by GfK on behalf of NPO, October 2015)
- 16% of cars are sold with DAB+ as standard (JATO Dynamics 2015)

Prospects

- Dutch Minister of Economic Affairs, Henk Kamp, will renew the licenses for analogue and digital radio for a new period (2017-2022). This is to give broadcasters more time to develop digital radio. Broadcasters have promised robust and intensive plans to improve the network on 12C (indoor coverage) and to extend their marketing efforts for digital radio.
- 2016: review on the development of digital radio.
- Important indicators: >50% of households own a digital radio and developments in other European countries.

Italy: population 59.8 million

- Three regular national (two commercial and one public) and 12 regular local multiplexes on air or planned (Trentino – on air, Alto Adige – on air, Valle D’Aosta – on air, Eastern Piemonte – on air, Umbria – planned, Eastern Tuscany – on air, L’Aquila province - planned, Eastern Sardinia – planned, Campania – planned, Lazio – planned, Basilicata – planned, Calabria – planned, Sicilia - planned). Coverage is 70% of the population including 5.000km of motorways. 200 car models in Italy come with DAB+ as standard or as an option, 23.5% of new cars.
- Regular services started December 2012 in the Trentino region and June 2013 in the Alto Adige region with Agcom Resolution n. 383/13.
- In December 2014, AGCOM published Resolution Number 602/14 which outlines the rules for three new regions to be covered by DAB+ digital radio - in the regions of Valle d’Aosta, Torino & Cuneo Province in Piedmont and Umbria. The Italian Ministry of Communication assigned on the 9th of March 2015 the frequency blocks of public, private and local operators for these regions.
- In May 2015, AGCOM announced the public consultation for the definition of the local coverage areas in Italy. AGCOM completed the consultation on 29 July 2015 and published the definition of 39 local areas covering all of Italy, and called for applications in 3 specific areas: Eastern Tuscany (Firenze, Arezzo, Pistoia, Prato, Siena), L’Aquila province, Eastern Sardinia (Cagliari, Nuoro, Ogliastra, Carbonia-Iglesias). Full details on AGCOM [website](#).
- In February 2016 AGCOM published Resolution 36/16, calling for applications in 5 new regions in the south of the country and Sicily and Regulation 35/16 which has amendments to Regulation 664/09 (the rules of DAB+ development phase) for pushing local coverage forward.
- Club DAB Italia is developing its network expansion in 2016. EuroDAB was awarded the second national commercial licence in 2014 (in Trentino).
- A heavyweight industry-funded advertising campaign to promote digital radio to consumers, retailers, car vendors, car dealers and other stakeholders has been under way for over 2 years and will continue with a new spot marketing campaign in 2016.
- Italian public broadcaster RAI is adding three new programs to its DAB+ line-up. The complete DAB+ line-up will now feature 10 stations including existing programs Radio 1, Radio 2, Radio 3, the news station GPRD, and the traffic service Isoradio.
- Sales of digital radios in Q1 2016 were up 38% year on year (source: GfK) while sales of FM-only devices decrease continuously year on year.

Markets on the move

France: population 66.0 million

- Digital radio launched in Paris, Nice and Marseille in 2014. Across the three cities over 100 services are on air.
- In January 2015 the CSA published a report outlining its support for digital radio.
- In December 2015 the CSA adopted the conclusions from a June 2015 public consultation and defined the timetable it intends to implement to continue the deployment of Digital Broadcast Radio throughout mainland France. This schedule provides for the call-up of more than 40 regional allotments in metropolitan France beyond those of Paris, Marseille and Nice, and more than a hundred local allotments. The timetable spreads from 2016 to 2023.

- The metropolitan areas of France to be covered include Lille, Lyon, Strasbourg, Nantes, Rouen, Toulouse with calls for application in 2016, Bordeaux, Besançon, Orléans and Clermont-Ferrand in 2017 then the most populated areas from 2018 onwards. These regional allotments will be doubled up by local allotments in the same areas.
- The CSA (Conseil Supérieur de l'Audiovisuel - the French regulator) completed another step before the actual call for application number 2 (Lille, Lyon and Strasbourg) with the publication of the impact study on April 19, 2016. Contributions from stakeholders are expected by May 13, 2016. Between 13 and 39 services could be authorized for each zone.
- Side note : authorisations for radio that never started in Paris, Nice or Marseille have been withdrawn.
- In order not to jeopardize the possible arrival of players who want a nationwide deployment, the CSA is reserving two national allotments. If required, more local calls for applications will be considered in the future.
- Sales of digital radios in Q1 2016 were up 30.3% year on year (source: GfK) while sales of FM-only devices decrease continuously year on year.

Belgium: population 11.2 million

- Nationwide coverage of between one and three layers is achieved by combining the coverage of the different multiplexes on air in Belgium: One regional public multiplex for the Northern, Dutch speaking, part (>95% DAB coverage of North population), one regional public multiplex for the Southern, French speaking, part (90% DAB/DAB+ outdoor coverage of South population) and one regional commercial multiplex in the Northern part in DAB+ (25% coverage of the North population).
- North (Flanders + Brussels): Regional coverage of Flanders and Brussels with a first layer by the public VRT multiplex with 9 DAB channels and one DAB+ trial channel (>95% DAB coverage of North population). Coverage with a second layer in DAB+, covering Flanders and Brussels (outdoor), with 8 commercial radio stations. The indoor coverage of the second layer will be completed in 2017. A data channel for traffic information is present (TPEG) on the public multiplex.
- South (Wallonia + Brussels): Regional coverage of Wallonia and Brussels with a first layer by the public RTBF multiplex with 7 DAB channels (five from the French speaking public broadcaster RTBF and two from the German speaking BRF) and three DAB+ trial channels (RTBF) (>95% DAB coverage of South North population). The Walloon Government has recently agreed to partly finance the investments needed for the roll out of two DAB+ regional layers (made of four provincial multiplexes) in order to ensure indoor coverage of Brussels and Wallonia for almost the whole radio industry, with the objective to have a potential massive DAB+ public launch end of 2017. A data channel for traffic information (TPEG) is present on the public multiplex.
- Sales of digital radios in Q1 2016 were up 34.8% year on year (source: GfK) while sales of FM-only devices is decreasing.

Prospects

- The Flemish government approved on 12 May 2016 the concept of the automatic renewal of the FM licenses for the major commercial broadcasters for four years until 2022, coupled with the obligation to invest in DAB+. The government also decided that FM shutdown should take place two years after the reach of 50% digital listening time, with an ultimate switch-off date to be decided by the end of 2016.
- The Walloon government decided on 13 May 2016 to finance a significant part of the investments needed for the DAB+ roll-out in French speaking Belgium.
- Therefore 2017 should see the major launch of DAB+ for the two main Communities of the federal state of Belgium.

Poland: population 38.5 million

- Regular multiplexes launched by Polskie Radio so far in Poland's 18 largest cities and surroundings. There are 17 regular regional multiplexes on air carrying 8 national programmes and 21 regional.
- Current national population coverage is 53.8%.
- Services in a further four cities are to be launched by July 2016.
- A public information campaign from Polskie Radio started in 2015. KRRiT (the National Broadcasting Council of Poland) has launched a website dedicated to digital radio broadcasting.

Potential markets

Austria: population 8.5 million

- ORS comm has received a DAB+ trial licence and began broadcasting DAB+ test transmissions on May 28th 2015. The trial has been supported by Digital Radio Austria (Verein Digitalradio Österreich). One trial multiplex is in operation in Vienna. In Vienna the digital radio pilot project currently on air has space allocated for 17 stations. There are currently 15 DAB+ services on air. Two slots are expected to remain unused for the time being. Two transmitters operate as a single frequency network, with one transmitting a 10kW signal and the other 7kW ERP. This test mode is scheduled to last a year and should be extended to a regular transmission. Digital radio is to be launched officially in the first half of 2017. Approximately 255,000 DAB+ receivers (excl. internet sales and in-car receivers), have been sold to date.

Czech Republic: population 10.5 million

- Coverage of DAB is currently 58%, with 29 DAB+ services in Band III and L-Band. 12 unique programmes are on air.
- On March 5th 2015 Czech Radio introduced a detailed seven-step plan for its transition to digital radio. The broadcaster will showcase its commitment to going digital by launching a new experimental digital radio service for Prague, reaching 17% of the national population.

Gibraltar: population 30,000

- DAB+ ensembles operate on Blocks 12B and 12C from December 2012. Four Simulcast DAB+ services from the public broadcaster are currently on air and population coverage is 90%.

Hungary: population 9.9 million

- 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. Population coverage is 30%.

Ireland: population 4.6 million

- National Public Broadcaster RTÉ operates a full-service Multiplex covering 52% of the population in the main cities.
- Commercial trials are on air in Dublin, Cork and the South-East of the country carrying a mix of simulcast and exclusive services.
- Over 400,000 devices have been sold to date and household penetration is 17%.
- 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.

Latvia: population 2.0 million

- There are ongoing consultations within the radio industry in Latvia about possible future deployment of DAB+
- Currently broadcasters in Latvia are awaiting final approval from The National Electronic Mass Media Council (NEPLP) before they can start regular DAB+ transmissions in Riga.

Malta: population 0.4 million

- Over 40 services on the two national multiplexes which include unique digital only stations, MOT, EPG and DLS applications giving 100% coverage.
- By the end of 2012, over 25% of Maltese radio listeners were tuning in via DAB+.

Monaco: population 38,000

- On 28 April 2014, Monte Carlo Radiodiffusion began a trial of 8 DAB+ services in the Principality of Monaco covering the Principality and the coastal areas of France from Menton to Cap d'Antibes. There are currently 12 DAB+ audio services on air, including 7 simulcast stations and 5 exclusive to DAB+.

Romania: population 19.9 million

- In January 2016 the Romanian regulator ANCOM launched a public consultation on the allocation of DAB multiplexes and invited views on the spectrum bands that could be available to tender, the number and type of multiplexes and the services that would be offered
- A trial DAB multiplex broadcasts four radio services from public broadcaster Radio Romania in Bucharest. Three are simulcasts and one is exclusive to DAB.

Slovakia: population 5.4 million

- In February 2016 the regulator RU issued licences for local multiplexes in Nitra and Levice upon the request by the company Avis. The provider cooperates on the project with the Research Institute for Communications. The licence for the transmitter in Nitra is valid until 31 December. The transmitter in Levice has a licence valid until 30 June 2017 for frequency 10C and until 31 December 2016 for frequency 11C.
- T-DAB+ broadcasting in Slovakia started 15 December 2015 as a trial in the capital city Bratislava. Four programme services of the public broadcaster RTVS are currently transmitted including one exclusive service, Rádio Junior.
- It is expected that in the first half of 2016 the programme offer will be increased and also trials in other towns will be put into operation.
- In 2015 the Ministry of Transport, Construction and Regional Development of the Slovak Republic developed the draft Strategy on Implementation of the Terrestrial Digital Audio Broadcasting in the Slovak Republic. In 2016 it will be submitted to the Slovak government for approval.

Slovenia: population 2.1 million

- Slovenia's public broadcaster, RTV Slovenia's DAB trial completed Nov 2013. The trial covered the capital city of Ljubljana and central Slovenia and coverage was 22.5%.
- AKOS; Agency for Communication Networks and Services of the Republic of Slovenia have published a public tender for the first national DAB+ network in Slovenia. The deadline for submitting tenders is 14.09.2015 until 14:00.

Spain: population 47.3 million

- A total of 18 regular DAB services and one DAB+ test service are on air. Population coverage is currently 20%.
- Spanish Broadcaster Radio Maria started DAB+ test transmissions in Madrid and Barcelona in December 2014.

Sweden: population 9.6 million

- On 2 October 2014 the Swedish Broadcasting Authority awarded 21 national and 4 local / regional commercial radio licences for DAB+. Licences are valid until September 2022 and broadcasting was to begin no later than October 2015. Private radio has asked for permission to delay the launch.
- In June 2015, the Ministry of Culture decided not to proceed with DAB+ for Swedish Radio at this time. The response of the broadcasters (public and private) has been surprise and disappointment. Next steps are yet to be confirmed.
- Sales of digital radios in Q1 2016 were up 12.7% year on year (source: GfK) while sales of FM-only devices decrease continuously year on year.

Asia Pacific and Rest of World - listed in alphabetical order by stage of development (Established, New, Markets on the move and Potential)

Established markets

Australia: population 23.1 million

Current position

- Launched 2009 – with services in five major cities: Sydney, Melbourne, Brisbane, Perth and Adelaide (65% of population, 94% of roads in the five metropolitan cities with DAB+ have coverage).
- DAB+ receiver penetration: 23.6% of households in the five cities. 300+ different DAB+ devices on sale. 277k vehicles with DAB+ have been sold. (Glass's Automotive Business Intelligence June 2015). Over 2.2 million devices with DAB+ have been sold including line fit automotive sales.
- DAB+ listening: nearly 25% of total listening
- Automotive line-fit as standard in 25% of new cars. 27 Vehicle Manufacturers now include DAB+. Vehicle Manufacturers are promoting DAB+ in marketing collateral and publicity as a selling tool. New vehicle aftermarket products are available starting from 119 Australian Dollars.
- Published a guide to launching a DAB+ trial.

Prospects

- Twelve on channel repeaters to address coverage gaps, continue to be rolled out across the five mainland capital cities which currently have a single high powered transmission (to address coverage gaps).
- Commercial Radio Australia (CRA) and the public broadcasters are working with the Federal Government on a timetable for regional roll out.
- CRA has developed a "best practice" automotive document which addresses some of the implementation/User Interface issues that have been evident in some of the earlier models.

Hong Kong: population 7.2 million

- Regular DAB+ services launched in August 2011. Population coverage is currently 84.1% with the inauguration of new gap-filler stations in November 2014 and August 2015. More than 350,000 devices have been sold.
 - There is one regular national multiplex with a total 17 DAB+ audio services on air, four of which are simulcast and 13 exclusive services.
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Potential markets

Brunei: population 0.4 million

- In 2007 RTB (Radio Television Brunei, the public and main broadcaster) began a DAB trial, originally to last for five years to include simulcast services. Two RTB stations currently broadcast on DAB in Brunei.
- A task force has been set up within RTB, which is working closely with AITI (Authority for Info-communications Technology Industry of Brunei) on the plans for a commercial launch.

China: population 1.3 billion

- DAB is on air in two cities (Beijing and Guangdong in Band III). Population coverage is 3%. Coverage in Beijing is 20 million people and in Guangdong tbc.
- Beijing: 17 radio services (13 of which are simulcast), four video services, and one Push Radio service, two other data services by Beijing Jolon (commercial broadcaster) on Band III. Beijing Communication Radio is broadcasting traffic information on DAB via TPEG.

Chinese Taipei: population 23.3 million

- Digital radio services have been launched in Chinese Taipei. 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. 4 DAB simulcast and 1 DMB simulcast services are on air.

Indonesia: population 249.9 million

- Public broadcaster Radio Republik Indonesia (RRI) has launched DAB+ digital radio in Jakarta.
- 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.
- Since August 2013, a DAB+ trial undertaken by the Ministry of Communication and Informatics (MCIT), public broadcaster RRI and the radio broadcasters association has been on air in Jakarta. This trial is to help prepare regulation for digital radio broadcasting (e.g. frequency planning) and broadcasting business models. The first stage of the trial is in Jakarta only – with future plans for RRI to develop its coverage and number of programmes.
- RRI and MCIT will launch DAB+ services from two RRI radio stations, one in Entikong, a small city of Kalimantan / Borneo, and the other in Batam City, an island close to border of Singapore. These services are in line with Presidential policy to serve Indonesian citizens in border areas and remote areas. The content will be local, regional and national programmes.

Kuwait: population 3.4 million

- Following a DAB trial that has been on-going in Kuwait City since March 2007 by the public broadcaster Kuwait Radio, preparations are now under way for the second phase of the trial. A decision regarding commercial roll out is expected once all the trials have been completed. Population coverage is currently 90%.

Malaysia: population 29.7 million

- A trial local multiplex is on air in Kuala Lumpur broadcasting 12 DAB+ simulcast services (7 from RTM and 5 from commercial stations).

New Zealand: population 4.5 million

- One trial local multiplex is on air and covers Auckland and central Wellington. Population coverage is 22% and content is currently broadcast in a mixture of DAB and DAB+ formats.

South Africa: population 52.9 million

- DAB was adopted as a South African standard by the South African Bureau of Standards (SABS) in 2005.
- Telecommunications & Postal Services Republic of South Africa published a 'National Integrated ICT Policy Review Report' in March 2015. In the report the panel recommends that:
 - The ICASA decision not to make a determination on the switch off of AM and/or FM signals be endorsed, and that the licensing of DRM and DAB services must be facilitated in parallel.
 - Government, together with other stakeholders, must in the meantime focus on trialling technologies, developing a licensing framework, setting aside spectrum, encouraging take-up of receivers (in motor vehicles and in houses) and actively promoting awareness of the technology.
 - ICASA must establish a standard stipulating that all imported devices should have digital radio receivers.
- ICASA has extended the South African DAB+ trial licence for 4 months from the 12th April to 12th August 2016. The National Association of Broadcasters (the NAB) and Southern African Digital Broadcasting Association (SADIBA) are currently engaged in a DAB+ Trial. 20 radio services from the Public, Commercial and Community Broadcasting sectors are participating. Phase one of the initial trial licence period focused on network verification processes and this has now been completed. The 2nd phase (the new trial licence) will focus on audio and data testing. The public broadcaster the SABC applied for this trial extension on behalf of all the other radio broadcasters. South Africa is the first country in the Southern Africa Development Community (SADC) to be carrying out DAB+ trials. The trial, originally intended to run for a period of 12 months, commenced on 3 November 2014 and Sentech is the signal distributor. The licence was applied for by the SABC on behalf of the radio broadcasting industry and the joint SADIBA/NAB Digital Radio DAB+ Trial Working Group is responsible for overseeing the trial. Services not currently available via terrestrial broadcasting are also being trialled together with a Pop Up station catering for the blind, and partially sighted members of society by providing the spoken word.

- 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.

South Korea: population 51.4 million

- To examine the digital radio technology appropriate to Korea, Electronics and Telecommunications Research Institute (ETRI), under the baton of the government, performed a field test of some major digital radio technologies DAB, DAB+, HD-Radio, and DRM+ for two years from 2009 to 2010.
- As of now, ETRI is developing a revised DAB+ technology in which the USAC audio codec is applied.
- Taking the field test results and some other factors including the above into consideration, the digital radio committee which consists of the government, broadcasters, receiver manufactures, research institutes and universities has been discussing and debating the appropriate digital radio standard for Korea, led by the government.

Thailand: population 67.0 million

- Thailand is currently developing policy. The Thai regulator, NBTC, is working on the technical aspects to determine how many licences would be made as well as how to launch the multiplexes. Thailand is studying the feasibility of frequency Band III for Thailand's digital radio. The number of digital radio licences should be enough to cover the existing radio broadcasters.
- NBTC has consulted with automotive and OEMS manufacturing vehicles in Thailand to equip digital radio receivers in automobiles sold in Thailand, radio receiver manufacturers for sourcing digital radio receivers. Most of them are ready to support trial/launching on digital radio broadcasting services once NBTC announces roadmap development plan.
- In 2014, NBTC signed an MOU on a digital radio trial with eight major broadcasters (Royal Thai Armed Forces, Royal Thai Army, Royal Thai Navy, Royal Thai Air Force, Royal Thai Police, Public Relations Department, The Secretariat of The House of Representatives and MCOT) to conduct a year-long trial of DAB+ digital radio services in Thailand.
- NBTC, together with ITU jointly organized the workshop 'NBTC/ITU Workshop on Roadmap for Introduction of Digital Terrestrial Radio Services in Thailand' in December 2014, to introduce digital radio technologies, services and a roadmap to all stakeholders.

Tunisia: population 10.9 million

- The National Office of Broadcasting (ONT) invested in a pilot DAB trial from 2008 - 2010. The trial covered the areas of Greater Tunis, the good Cap and areas close to the governorate of Bizerte.
- In March of 2013 the Arab States Broadcasting Union held a DAB+ digital radio workshop in Tunis supported by Italian Public Broadcaster RAI. Following this workshop and with the help of RAI, ONT set up a DAB+ trial using a 500W transmitter from an Italian manufacturer. The ONT DAB trial is still in operation but is no longer supported by RAI.
- The parameters of the current DAB+ trial are as follows:
 - DAB allotments have been assigned in Channels 10 and 12
 - 68dbmV/m field strength chosen for portable indoor reception

Turkey: population 78 million

- TRT, the Turkish Broadcasting Corporation, relaunched DAB test transmissions in Band III with 2 transmitters, in Istanbul and Ankara in December 2015. Current outdoor population coverage of trial is 17.78 % or 14,000,000 (calculated, combined population coverage of Istanbul and Ankara is 14,000,000).
- TRT is currently airing DAB test transmissions broadcasting five simulcast services in Band III. Radio-1, TRT-FM, Radio-3, TRT-Nağme and TRT-Türkü are being broadcast via a single transmitter simultaneously with FM Broadcasts. The technical details of the multiplex on air in Ankara are the same as Istanbul.
- In the second stage of the Project, TRT wants to start DAB+ test broadcasts to support the transition into terrestrial digital broadcasting in Turkey.
- In line with its mission to be a pioneer in broadcasting, the TRT wants to restart the DAB and DAB+ test broadcasts to support the transition into terrestrial digital broadcasting in Turkey. Thanks to the positive approach of RTÜK, an expansion of the DAB+ broadcast network tests is being planned particularly in İstanbul, Ankara, İzmir, Bursa, Kocaeli and Antalya.

United Arab Emirates: population 9.4 million

- In May 2016 Paneda provided a complete DAB+ Head-End system to a major media group in United Arab Emirates. The system has recently been turned on and is on-air with 12 DAB+ services. The system provided by Paneda includes multiplexers, audio encoders as well as content management system and RF monitoring equipment.
- 4 DAB+ channels were being broadcast across Abu Dhabi as part of the trials GatesAir ran with Abu Dhabi Media. The official start date for the DAB+ Trial in Abu Dhabi was 1st July 2015. The trial period was for 90 days to start then it was expected to be extended. As per the TRA Regulations, the trial could be a maximum of 180 days. The trial covered the entire population of Abu Dhabi, 1.8 million people.

- Two Broadcasting Operators of the United Arab Emirates, Arabian Radio Network Dubai and UAE Radio & TV Ajman successfully completed test / trials for T-DAB+ technology in cities of Dubai and Ajman during March 2014 - February 2015. The main purpose was to test the technology for coverage and reception quality. The trial results are very promising. The Telecom Regulatory Authority (TRA) UAE in consultation with all the stakeholders is currently working to prepare a roadmap for introduction of commercial digital radio services in the country in future.

Vietnam: population 89.7 million

- Public broadcaster, Voice of Vietnam trialled DAB+ in Jul 2013. The roadmap for digital broadcasting radio and TV 2020 was granted by the Prime Minister in 2009. Currently VOV is working on a comprehensive project on improving national digital radio transmission until 2020 and anticipates that the roadmap for radio will come after that of television which will be completed on 2025. Currently no services are on air.

About WorldDAB

WorldDAB is the global industry forum for DAB digital radio, facilitating dialogue on all aspects of the implementation of broadcast digital radio based on the DAB / DAB+ standards, from planning and technology right through to consumer marketing, and everything in between. WorldDAB has over 87 members from 27 countries from across all sectors of the industry - regulators, public and private broadcasters, network planners, receiver, chip, car and professional equipment manufacturers and national rollout bodies.

About DAB+ digital radio

There is growing momentum towards the rollout of DAB/DAB+ digital radio across Europe, Asia Pacific, Arab States and South Africa. Over 30 million domestic and automotive DAB/DAB+ receivers have now been sold – with annual sales almost doubling in the last four years. Digital radio has reached a tipping point in Europe with well over 90% network coverage now available in the UK, Switzerland, Norway, Denmark, the Netherlands and Germany, and 68% in Italy. The first countries have confirmed Digital Switchover dates and political commitment towards digital radio is building in many other markets. DAB+ digital radio offers significant benefits to broadcasters and listeners. The technology is tried and tested. Now is the time to embrace the opportunity.