

The Sector Analyses Digital Radio

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Introduction

Discussions about digital radio seem to include a unanimous basis on the potential of the digital revolution in the sector. However, there are also many question marks about formats and implementation schedules.

For example, if there have been digital broadcasts with practically complete coverage across Catalonia for the past seven years, why have only a few hundred receivers been sold? Are they not economically accessible because there aren't enough listeners or vice versa? Will interactivity be the killer application to woo consumers and promote digital radio consumption? Why have Spanish forums been in a catatonic state for more than the past two years?

To answer these and other questions, and as digital radio is the issue tackled in this edition of *Quaderns del CAC*, the Catalonia Broadcasting Council asked people who work in the sector and members of the Forum de la Radio Digital about the state of play with regards DAB. I would like to acknowledge the participation and comments of Jordi Rueda i Giné, director of Catalunya Ràdio SRG SA; Eugeni Sallent Garriga, president of the Catalan Radio Association and managing director of Radiocat (RAC1 and RAC105); Isaac Moreno Peral, technical director of Radio Popular and a telecommunications engineer by trade, and AETIC (the Association of Electronic, IT and Telecommunications Companies of Spain), the association that arose from the merger of ANIEL and SEDISI.

The Forum de la Radio Digital was established in January 1998 with the aim of promoting the development of the

medium in Spain and is composed of public and private broadcasters, network operators and transmitter and receiver manufacturers. The government also participates, although it is not an active member.

With regard to the Catalan sphere, the DAB Forum in Catalonia was established at the initiative of the Generalitat on 14 October 2003, with representatives from private and public organisations. The government representatives included the Office of the Communication Secretary, the Office of the Telecommunications and Information Society Secretary, CIDEM and the Catalonia Broadcasting Council. The members of the Forum discussed matters including the schedule for getting receivers onto the market, content development and differentiated services and the promotional and communication plan for the new technology.

What is the Situation surrounding DAB?

The general opinion of people who work in the radio sector is that the infrastructures for developing DAB technology are in place but the conditions are still not right to start it up. The sector is aware of the need for all the parties involved to work together on promoting its introduction. These parties include the Administration, manufacturers, distributors, broadcasters and signal providers.

The first digital broadcasts began at the end of the 1990s. However, equipment manufacturers have been investing in developing receivers since 1995. Ultimately, the sector did not realise the market release it was aiming for because the implementation process for DAB technology slowed down and is still waiting for the push it needs to gain a foothold on the market.

Everybody agrees that the main advantages of digital radio are increased sound quality, interference-free reception and

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the existence of value-added services. Another of the main reasons for moving to the digital system is the saturation of the FM spectrum and an interest in obtaining new audiences.

Below are the considerations of the sector experts who took part in preparing this article. They include the views of public and private broadcasters and manufacturers and look at the prospects and possibilities of digital radio as a new technology for media consumption.

The Future of DAB

Jordi Rueda i Giné, director of Catalunya Ràdio SRG SA, says the development of any technology requires time and that it is particularly important for the right conditions to prevail. Although today we are used to using CDs as a form of recording, we should remember that it took a few years from when the technology reached the market through to when its use become standard. A similar example, which is easier for us to remember because it was not so long ago, is the time it took for reasonably priced DVD players to come on to the market along with a good range of DVD videos. In both the above examples, the turning point for the new technology was when the ideal conditions were in place, i.e., there was enough information among consumers, players had dropped to a good price, previous works were published in the new format, new titles exclusive to the new technology were released and major promotions were done about the new formats.

Digital radio is no exception, Rueda says. It is true that DAB technology has been available for many years. Catalunya Ràdio has been running DAB broadcasts since 1997 and there are receivers available to the public, even though they have been aimed at a minority consumer. However, it is clear that the right circumstances have yet to be reached to constitute a turning point.

When it comes to explaining the stagnation in DAB development, people often mention the classic vicious circle: few consumers, which leads to expensive receivers, which leads to few DAB programmes, which leads to few consumers. There is no doubt this mechanism exists. However, we need to look more closely into the matter if we want to discover the factors that can help promote or stop this stagnation from continuing.

The appearance of DAB obviously represents a substantial transformation of the radio sector. Because of its technological peculiarities, the European project on digital radio makes it necessary to extend the spectrum in a new frequency band. This is an essential feature of the European system and it should be no surprise that it contains the key to the future. The criteria applied when it comes to managing the assignation of new digital stations among the existing broadcasters and the new ones, i.e., the new radio model, will determine whether the European project succeeds or fails.

Broadly speaking, the current DAB spectrum makes it possible to include a similar number of broadcasters as there are on FM. This means doubling the current capacity. Independently of whether new broadcasters join and the proportion to which they may do so, a 100% rise in broadcast capacity represents a very profound transformation of the sector, which could even lead to an unsustainable situation.

Jordi Rueda is of the opinion that the new radio model should avoid such an abrupt transformation and take into account and conciliate the different expectations and interests of the current broadcasters and those who seek to enter the radio sector for the first time. It should also satisfactorily meet the needs of local stations.

The current broadcasters see DAB as an excellent opportunity to improve their geographical coverage. They are also aware that it is very likely to be the future format and are therefore keen to be involved. On the other hand, they also know that the funding ability of the private radio sector is limited and will be unable to meet the rise in production and transmission costs that the incorporation of new stations with differentiated programming will involve. For their part, the new broadcasters believe DAB is the chance they were waiting for to enter a sector with a completely saturated market.

Finding a way for all these interests to be met is vital to DAB's development, as it mostly depends on broadcaster attitude, given there are no other factors that could lead to this progress beginning by itself. It would be very different, for example, if DAB offered a sound quality vastly superior to FM (as FM did in the 1970s over MW) or if its potential for transmitting data and images was well known to the public and had generated expectations among consumers. If either

of these encouraging circumstances had occurred, it would have been enough to ensure the development of DAB without further ado.

Rueda says that the very existence of a clear, consistent and future-looking radio model could create the conditions for DAB to be correctly developed. Firstly, if we want to consider DAB as the radio of the future, it will be necessary to anticipate and ensure the long-term presence of the current broadcasters on the new digital dial with at least the same number of stations as currently available. Initially they could simulcast their analogue programming until such time as DAB was fully implemented, at which point they would exit the FM band. Secondly, the new broadcasters should join the new dial, progressively if appropriate, in line with the integration of the radio sector, without endangering its stability. Finally, local broadcasters could initially stay on the FM dial, which would be gradually freed up as State and autonomous-community broadcasters migrated to DAB. FM is currently better suited to local broadcasters than the more expensive and complex DAB, which requires, for example, signals to be transported from different local stations to a joint multiplexer. In a more distant future, when technology allows, local stations could also migrate to DAB on the L-band and definitively abandon FM. It is hoped that, when this point comes, analogue radio will be a completely obsolete technology compared to DAB, which supposedly will have been promoted and have exploited the advantages and potential of digital systems. There could be a situation similar to that of vinyl compared to CDs, or DVDs with respect to VHS. By their natural evolution, new technologies can end up replacing previous ones without their disappearance having to be planned.

A question on many people's minds is what interest would there be in offering DAB if the current broadcasters simulcast. The answer lies with the new stations and particularly the public ones, which will play a key role in the consolidation of what could be the radio system of the next few decades. Activity must be aimed at promoting the advantages of the new format, offering new content and services and ensuring a sufficiently extensive geographical coverage for the new DAB broadcasts. However, working together is not enough. As has been shown in the United Kingdom, the country that has made the most progress in digital radio in Europe, the firm and active support of the

administrations and policymakers involved is essential to an effective strengthening of DAB as the digital radio system of the future.

With regard to the American IBOC system, some people believe it has advantages over DAB. The IBOC system, which has been christened HD Radio and covers the transformation of FM and AM to the new digital environment, does indeed have a number of strong points. The first is that it does not change the radio landscape the way the European system does. It simply improves quality and offers new features to current broadcasters on the same point on the dial. A second advantage is that the migration can be done at the rate that each station considers appropriate without being conditioned by joint actions. A third advantage is the possibility that a broadcaster can transmit simultaneously on the same station in analogue and digital formats. It is obvious that a lot of care was taken in designing the American system to facilitate the analogue-to-digital migration. Looking at these advantages, it is easy to ask whether this system could be applied to Europe. The answer lies in the technological content. The IBOC system would not work well on a spectrum as dense as Europe's. Furthermore, as has been mentioned before, it is precisely the need to free up the FM dial that led Europe to seek a solution that includes broadening the spectrum.

The worrying situation of FM spectrum saturation and the needs of an increasingly diversified society require the incorporation of new technologies to resolve current limitations. This solution in Europe is DAB, and its correct development requires the visualisation of a clear and coherent radio model for the future that inspires confidence amongst broadcasters, equipment manufacturers and consumers. Public broadcasters are called on to play a key role in this process of the promotion and standardisation of the new digital format and the administrations and organisations involved in DAB should offer their help and support. These reflections, although the result of an analysis of our local environment, must be established at the European level, even though the responses may not be the same for everybody. The price of major-brand receivers, a definitive and indicative factor in the level of implementation of the digital format, can only come down significantly when there is progress at the European level. That is when we will be able to talk about the success of DAB, Rueda says.

The Digital Transition: A Long Way to Go

Isaac Moreno Peral, technical director of Radio Popular and a telecommunications engineer by trade, says there is no doubt that the future of radio, in technological terms, is digital. For more than three years 18 State programmes have been running, covering over half the Spanish population. Autonomous communities such as Catalonia have been broadcasting DAB programmes for years and have been awarded digital licences. Despite this, the real question is the speed with which the establishment of a significant number of receivers is being carried out, an indispensable element in the provision of the digital radio service. The number of digital receivers today is practically non-existent in Spain, where the price of receivers is a major obstacle to introducing DAB that partly explains the lack of repercussion on the State market. This is just the tip of the iceberg, because the causes, some of which are detailed below, are varied and profound:

a) The development of digital radio in the European Union is not coordinated or homogenous. There are no common frequency bands nor procedures to award standardised licences in Europe. It is important to remember that the spectacular success Europe has enjoyed in the field of mobile telephony is mainly due to the establishment of a European directive that freed up the frequency band for the exclusive and compulsory use of digital mobile telephony, a common regulation to implement it (GSM) and a resolution on the coordinated introduction of the service, which was born with a pan-European vocation. Without a coordinated development it would not be easy to achieve a market volume of receivers able to break with the analogue hegemony.

b) The model chosen to introduce digital radio fosters slow transitions. Unlike digital television, DAB was born with an additional modality over analogue methods based on different frequency bands, without establishing a defined and specific schedule for the disappearance of analogue stations. Digital radio will thus have to fight an unequal battle in which analogue will have the best weapons, such as better-priced receivers, more stock, evolution and different content. We should not forget that MW and FM coexisted side by side for decades.

c) Today's radio is mainly based on the existence of State (or national) stations with local breakouts. Even though a

significant part of the licences awarded enables a programme to make territorial breakouts, the sphere of the territory allowed for these breakouts (covering areas that stretch beyond an autonomous community) means there is no interest in exploiting them commercially in line with current market patterns.

d) Analogue broadcasting, which has to share a mature advertising market with the new digital operators, is forced to double its distribution costs for digital signals with ambitious and demanding coverage terms. Under these conditions, it is really hard to support the production of new programmes for the exclusive use of digital radio (with new added costs) that could stimulate the purchase of receivers. This leads to a vicious circle that makes the development of this new type of radio necessarily slow.

Despite all the above, Moreno says there are reasons for hope. The quality of digital radio and the possibilities offered by broadcasting additional data, which could eventually lead to the possibility of developing new funding methods other than advertising, are two strong arguments in its favour.

Furthermore, with the Act that accompanied the state budgets for 2004 the Spanish government opened the door to a new way that will allow MW and FM to be digitalised under certain conditions. Even if these technologies have still to prove themselves and stabilise, their philosophy (based on the use of the same analogue frequencies as authorised for broadcasters and which, in particular conditions, makes it possible to transmit simultaneously using the same structure) would enable a calm digital transition for the current analogue broadcasters.

In short, we know that the move towards digital radio has begun, the transition will be lengthy, no technology can be clearly seen to be better than the rest and that at the moment the ground has been laid for Spain to have an effective competition between digital radio technologies. Clearly, the State market is not big enough to make a decisive decision about this competition. The future of radio is still to be decided and will depend on the steps that the countries involved take.

Advantages of DAB

Moreno emphasises that the main advantage of digital radio is reception quality, even when the receiver is moving. This quality is comparable to that of compact discs. In short, the introduction of digital radio will make it possible to recover the quality ground lost with respect to the other audio media that have been on the market for some time. This quality will be maintained even within cities and when driving, something that does not happen with analogue radio.

As well as quality, digital radio offers other advantages:

- a) The possibility of dynamically transmitting other data signals, whether coded or not, and making the most of the agile transmission rates of information. These added services include the transmission of a fixed image along with the spoken story; the transmission of detailed and high-resolution weather maps; traffic-information systems with recommendations on alternative routes; pay and transmission systems for data in closed groups of users, e.g., information on credit cards, the weather, distance education, etc.
- b) Greater spectrum efficiency, which could lead to more, and more varied, programmes.
- c) Possibility of organising broad territorial coverage through the use of a single frequency.

The Regulatory Environment of Digital Radio

The basic regulatory framework that makes the introduction of digital radio possible has been in place since late 1997. This framework establishes that the introduction of digital radio will be based on terrestrial infrastructures, according to the Technical Plan approved by the Government, and allows State, autonomous community and local areas to directly or indirectly manage them via government-awarded licences.

The Technical Plan and the Service Provision Regulations that have been prepared include awarding licences according to the DAB standard developed in Europe within the Eureka 147 programme. Moreno says the publication of these guidelines has revealed the government's attempt to prevent the replacement of technologies.

The DAB Situation in Catalonia

Eugeni Sallent Garriga, president of the Catalan Radio Association and managing director of Radiocat (RAC1 and RAC105), says that the starting point in Catalonia will come soon, when there will be 42-48 digital radio stations on offer, according to the area you tune in from. Some of these new programmes (i.e., those involving Catalan digital pilot tests and State grants) have already been on the air for the past four years. Others include the recent winners of licences awarded by the Generalitat and which are on the point of beginning their broadcasts.

There is thus a situation, from the point of view of listeners' choice, that has never been available in Catalonia before: new offers, many with value-added services, thanks to the potential of data channels.

Despite the advantages of the new technology, DAB has still not taken off in the rest of Spain. 12 commercial digital-radio licences plus six public ones have been up and running since the year 2000, but DAB has no public presence. This is not the case in the United Kingdom, where 500,000 digital receivers had been sold by February this year and the one-millionth is expected to be bought before the end of the Christmas campaign.

Sallent says this is a good time to question why digital radio is doing well in the UK but not here, and to question the differences between the English model of digital development and the model (if there is one) that has been promoted in Spain.

Firstly, it should be said that everyone agrees that the future of radio is digital (or it won't have any future) and that in the face of the promotion of new audio broadcast technologies, the DAB standard meets enough conditions to guarantee this transition from the radio sector alone. However, everybody also immediately goes on to involve other parties, i.e., Administrations, equipment manufacturers, wholesale distributors, broadcasters and signal providers. And the listener has begun to respond to this effort.

The preliminary requirements for success are technical coverage, availability of differentiated programming combined with the most successful analogue programmes, and availability at a good price of a range and variety of receivers. All of these factors must be produced now.

The Case of the United Kingdom

Sallent reviewed the contribution that each of the above players made to the development of the British market:

- **The Administration:** applied real policies of promotion, beginning with the regulatory process, and favoured access to existing analogue broadcasters (even prolonging the period of analogue licences to help support investment in digital deployment), provided access to new radio operators and involved the public sector, which devoted specific resources to the production of up to five new radio stations broadcasting exclusively on DAB.

- **The Network Operator** (the block licence winner): today guarantees coverage of 85% of the territory and has a proactive attitude that supports popularising DAB. The operator acts as the financial muscle in the process, investing in R,D&I together with receiver manufacturers for cheaper chips and promoting initiatives with real implementation effects.

- **Broadcasters:** all the radio stations participate as a way of supporting growth and guaranteeing the future. They offer new content along with the most successful analogue programmes but with improved sound and associated information. The BBC has had a major role in producing content of a higher cost and greater acceptance, offered exclusively by the digital stations, and private stations have broken new ground in news/talk and music programming.

- **Local Manufacturers:** the engineering and small-parts companies have ended up leading the production of receivers in this first phase because they saw a business opportunity in it and, together with the sector, developed mass-production strategies. They reached agreements that made them project partners, making it possible to bring down the price of receivers. For their part, the multinationals have taken up different positions on the issue and it is expected that after 2004 Sony and Sharp will join the other big firms, such as Phillips, Kenwood, Pioneer, Hitachi, Samsung and Grundig, already on the market.

- **Wholesale Distributors:** DAB is in department store lines and even in convenience stores. An accessible price was the indispensable condition for entering mass distribution channels and in terms of line profitability DAB now offers a fairly good rotation for wholesalers.

Once the licence bases had been set and consensus reached on the participation of each group, this climate of agreement gave rise to the creation of an instrument that has been extraordinarily effective in promoting DAB: the Digital Radio Development Bureau (DRDB). Promoted by the BBC and Digital One (the licence carrier of one of the blocks and the driving force in the private sphere in terms of financing), it has been in charge of promoting digital radio since 2001. It aims to popularise DAB through communication, promotional and advertising campaigns and by supporting wholesalers who promote DAB at the points of sale.

The DRDB has been the meeting point where the interests of all the parties involved have converged. Very demand-focused from the point of view of listeners and with the complicity of all the parties (each contributing their own know-how), it has been able to generate initiatives that popularised DAB across the UK.

Sallent says that the UK has broken the circle of inactivity, i.e., not enough accessible receivers means no DAB listeners; no DAB listeners means radio companies cannot support the production of differentiated content; no content means lack of listener interest; lack of listener interest means nobody prepared to pay a high price for a receiver. Manufacturers need a big demand for equipment to bring down the unit price of production. This is the description of what is happening with digital radio in Spain and there does not seem to be a solution in the near future.

Strategies to Develop DAB in Catalonia

Eugeni Sallent is of the opinion that the only possible strategy is to get all the parties involved to work in the same direction.

In Catalonia, there is now the opportunity of providing the definitive push for digital radio:

- The whole radio sector is interested: nearly all the analogue radio-licence holders also have digital programmes and the CCRTV has shown a particular sensitivity toward the development of DAB from the beginning. In fact, both the public and private sectors in Catalonia have taken part in the digital pilot tests for years.

- Catalonia has traditionally led innovation in radio content.

- It has the support of the network operator.
- The consumer electronics industry and SEAT are headquartered in Catalonia.
- There is a well-structured wholesale distribution network.
- Finally, and no less importantly, the Government has shown it is happy to promote the digital transition.

Of course we are talking about increasingly less local markets, but we should not forget that Catalonia has a potential audience of nearly four million people aged over 14 (1st trimester of the 2004 Catalan Radio General Media Survey) and is one of the areas in Spain with the greatest radio penetration. With regard to the potential receiver market, Catalans have a long history of snapping up new technology products.

We can therefore say there is now a unique opportunity to develop DAB because the factors that promoted it in the UK are converging here, by and large. The newly formed Catalan DAB Forum could be the platform to promote digital radio. It has a meeting point and has assessed a successful model. Now it has to move from the drawing board to management, Sallent concludes.

DAB As Seen by Manufacturers

AETIC (the Association of Electronic, IT and Telecommunications Companies of Spain) has reviewed the role of electronic-components manufacturers in the process of developing digital radio.

In 1995, industry presented the first specifications for digital radio equipment, i.e., transmitters and receivers, in the European sphere. Spanish industry participated very actively in this process, as it was seen as a good bet for the future.

The first equipment was manufactured three years later, in 1998. This effort was carried out in the expectation of meeting the demand the new service would raise. In July 1999, the government published the National Digital Broadcasting Technical Plan and the specifications for the public tender of 10 digital radio licences on a single frequency. In November 2000, the government awarded the licences, distributed on two State networks (MF-I and MF-II) with the ability for local breakouts, and two further licences

without the possibility of breakouts.

From that point on, the traditional broadcasters (with a long history of analogue transmissions) began to take up a very different position to that of the new media entering the market.

By late 2000, industry began to see that if the promotion of DAB broadcasts did not begin to focus on the innovative features that set it apart from analogue (basically, better sound quality and the possibility of receiving audiovisual content and applications) the chance could be lost, as indeed it went on to be. The terms have not changed since then and there has been no significant progress in developing the service.

Today, paradoxically, there are DAB broadcasts that reach over 80% of the Spanish population, but the public still does not know how to receive these high quality, value-added transmissions.

AETIC found the following factors were to blame for the current situation, which could be described as a 'stoppage' of the service: the lack of a promotional campaign that would have been basically launched by the licence-holding broadcasters, a lack of interest on the part of the public and not enough concrete information on the analogue switch-off, which would allow the coexistence of digital and analogue transmissions.

In terms of receivers, there is no manufactured stock at present - not because digital receivers have not been sold, but because most of the ones in the warehouses have suffered from flaws in recent years.

Industry, which made a big effort in getting the service under way with the design and manufacturing of equipment, has been unable to write off its investments because it has been unable to find a market for the receivers, and there are still no schedules in place for reinitiating this activity unless there are clear signs of the service being relaunched. As soon as the favourable conditions are in place, industry is ready to service the demand and put a large number of receivers on the market quickly.

Initiatives of the World DAB Forum

Now that I have given you the opinions of sector representatives, I would like to mention some of the conclusions

and most interesting information that arose from the congress entitled "DAB Christmas 2004 - Marketing DAB Digital Radio", which the WorldDAB Forum organised on 10 May in Berlin. The two aims of the congress were to publicise the situation of DAB on the different markets and to provide incentives for distributors to get involved with the DAB products that already exist on the market in time for the Christmas 2004 campaign.

Digital Radio in Germany

The congress analysed the development of DAB in Germany. Of the 150 stations broadcasting in Germany today, 25 do so exclusively on DAB, and the trend is for the number to rise as the date for the analogue switch-off, scheduled for the year 2015, draws near. With regard to receivers, the stock in the stores comes to 70,000 units, but the figure is expected to rise to 200,000 in time for the Christmas 2004 campaign. However, the general impression is that the country has yet to reach a 'mass' introduction of receivers as has occurred in the UK.

Initiative Marketing Digital Radio (IMDR), an association that brings together 22 public and private members (broadcasters and manufacturers), has been working for some time on merchandising initiatives to promote digital radio in Germany. Its website offers very detailed information aimed at listeners (receivers, coverage, points of sale, etc.): www.digitalradio.de

With regard to the development of new value-added services, the content most likely to capture the public's imagination is traffic information, track titles and artist names, webcam images, stock-market values and weather forecasts. Blaupunkt currently offers these services through the Woodstock DAB 54 model and a PDA using a bluetooth connection.

DAB from a Distributor's Point of View (COMET, United Kingdom)

COMET is the second-biggest distributor of home appliances and electronic consumer goods in the United Kingdom, with 255 points of sale across the country. The

sale of digital receivers was promoted as a response to a market stuck in conventional radio. After October 2003, DAB sales began to overtake those of FM and today DAB receivers represent 40% of sales volume (in units sold) and 73% of sales value (in pounds sterling).

Radio is a very popular medium in the United Kingdom and the main reasons for buying a digital receiver were the supply of new radio broadcasts and the advantages of the digital system. Furthermore, the awareness campaigns organised by the BBC, the DRDB and the commercial stations have been very effective.

From the sales point of view, they have placed a great number of prominent product displays with information on DAB, and used programming guides, prizes for the best salesperson, a distribution website with product information, organised travelling campaigns, above-the-line advertising, promotions during sporting events, etc.

The United Kingdom, the DAB Pioneer

The WorldDAB Forum once again highlighted the successful initiatives taken in the UK with regard to digital radio. There are currently a total of 385 digital radio broadcasters (national, regional and local) and receiver sales are expected to hit one million units by the end of the year. The kitchen-receiver market grew 50% in the past year and there are cars in the UK that offer a DAB receiver as an optional extra. One of the features that people like most is the fact they are easy to use and studies have found that 43% of the British population now know about digital radio, up from 16% in 2001.