PTS

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# The future of radio broadcasting in Europe

## Replies to questionnaires

**Working Group RSPG10-316 Future of Radio Broadcasting**

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# Introduction

At its meeting on the 11th February 2010 the Radio Spectrum Policy Group (RSPG) decided that there was a need to study in more detail the future of radio broadcasting in Europe with a view to understand possible spectrum implications. A working group was formed to undertake the work, chaired by Sweden.

Two questionnaires were sent out by the group to both member states and industry – asking for the view on strategic challenges and opportunities of the radio broadcasting sector today.

The questionnaire to member states was comprised of four parts – public policy objectives, market issues, European initiatives and usage of spectrum. In the case of the industry the questionnaire was comprised of four questions covering both market and technical aspects. However, not all replies covered all questions.

The conclusions by the Working Group based on these replies can be found in a separate report presented to RSPG in November 2010. In this document the replies from member states are presented as is – the replies from industry have been sorted in the order of reasoning that the fore mentioned report has been put together.

There is however a great value just in having all the replies being put together as in this document – for everyone to take part of and gain knowledge of the status of Radio Broadcasting in Europe today.

The chair would thus like to thank all contributing member states and industry organizations for making this possible.

Magnus Falk
Rapporteur RSPG10-316

# Contents

# 1 Replies from Member States

## 1.1 Austria

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>Last year a national working group for digital terrestrial radio prepared a strategy regarding the possible introduction of digital terrestrial radio in Austria. Three subgroups worked on the subjects: legal prerequisites, usable standards for delivering digital terrestrial radio and new services and added values.<br><br>The report with the results was finished at the end of 2009 and describes the policy and strategy regarding digital terrestrial radio in Austria. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| In the above mentioned report it is clearly stated that it is essential for various reasons to introduce digital terrestrial radio in Austria in the future. However at the moment no date is given, when the introduction should be conducted. All necessary steps, which are prerequisites for the introduction, will be accomplished beforehand.<br><br>It was recognized that for a successful introduction of digital terrestrial radio an international consistent modus of operandi is necessary. Therefore the situation in Europe regarding digital terrestrial will be regularly and carefully observed and when an adequate development towards digital terrestrial radio can be seen in Europe then also Austria will enforce efforts for a successful introduction of digital radio.<br><br>**Main objectives listed in the strategy:**<br><br>• The existing legal Act for radio broadcasting which regulates up to now only analogue radio broadcasting has to be extended to make the introduction of digital terrestrial radio |

possible.

- Digital terrestrial radio has to offer more programme diversity and diversity of opinion and also might offer additional improved services for example traffic announcements and others.
- DAB/DAB+ is identified as the favoured system to be used. However DAB/DAB+ is optimized for large coverage areas and a quite large number of programmes transmitted in the same multiplex, which is not suitable for local and regional radio broadcasters. For these broadcasters DRM+ seems to be an adequate System in particular the possible future extensions of the standard in Band III would offer available frequencies for the introduction of such a system as frequencies in Band II are not yet available because of the extensive usage for FM radio.
- The benefits of cost reduction in delivering programmes will be available after the simulcast phase, when analogue radio is switched of.
- The introduction of digital terrestrial radio and the accompanied additional costs during the simulcast have to be alleviated by additional subsidizes from the public. The existing digitization funds could be the appropriate mean.
- No date for the ATO of FM radio at the moment eligible

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| The question of standards and the availability of cheap and/or attractive receivers supporting the digital and analogue standards in the different frequency Bands is essential for a move forward. Commitments on standards to be used and profiles for the receiver functionalities would allow reaching economies of scale in a single market for whole Europe and would mean certainty for the consumers and facilitate to invest in digital receivers. A common agreed EU strategy would be very helpful. Timetables for the introduction phase should be coordinated among the Member States as much as possible. A transparent and updated overview of the process in the different countries would also be beneficial for the introduction of digital terrestrial radio. Increased number of programmes and services are needed to make digital terrestrial radio attractive to the people. The existing market for FM radio has to be taken into account; otherwise the broadcasters will not support the digitization process. A great distortion has to be avoided. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| In Austria terrestrial (analogue) radio broadcasting is very widely used, especially with portable receivers at home and with mobile receivers in cars. The other forms of delivery are used at the moment by a very few amount of listeners and can be seen as a complementary form of usage. DAB/DAB+ is suitable for densely populated areas and for large coverage like nationwide programmes; the rural areas could be covered by an additional system like DRM+. At the moment only Band III offers spectrum for the introduction of digital terrestrial radio, later after the simulcast phase Band II might also be used. |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| A common course of action in Europe is essential. There is no business case visible which could drive the digitisation process. There are additional costs for the broadcasters and listeners but there is no visible possible new income to compensate for the additional costs for the broadcasters whereas listeners could benefit from new added radio programmes and services. Economical scale is very essential to provide cheap and attractive receivers on the market. Easy access to information, entertainment and added values are most beneficial for the audience. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | Analogue TV | | Probably no usage for Broadcasting; not |

| | | | | |
|---|---|---|---|---|
| | | additional use:<br>Radio Amateur<br><br>Non-civil radio applications | | yet decided |
| Band II | 87,5 – 108 MHz | FM Sound Broadcasting Analogue | additional use:<br><br>Short Range Devices<br><br>(low power FM transmitters) | Probably Sound Broadcasting Digital; not yet decided |
| Band III | 174 – 230 MHz | T-DAB/T-DAB+;<br><br>DVB-T<br><br>additional use:<br>PMSE<br><br>Hearing Aids | | Digital Broadcasting;<br><br>Division of Band between Radio and TV not yet decided |
| L-band | 1452-1479,5 MHz | T-DAB/T-DAB+<br><br>additional planned use: PMSE | | Probably no usage for Broadcasting; not yet decided |

## 1.2 Sweden

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>There is no official policy in Sweden. Our main objective related to digital terrestrial radio is that the frequencies in general should be used efficiently and that the interest of consumers should always be kept in the focus of our work. Having in mind that there are different possibilities for digitalisation of terrestrial radio we carefully follow the digital radio techniques development in order to be able to meet the future spectrum requirements. According to the latest statements on digital radio coming from the Swedish Department of Culture the market itself (programme makers, broadcasters, operators, and listeners) should initiate the digitalisation of analogue terrestrial radio. State should not play an active role in choosing a technique. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| Public broadcasters together with the commercial radio actors have expressed the need for digitalisation of terrestrial radio, because the existing FM band is overcrowded, making their need for coverage expansion and programme diversity very difficult to accomplish. |

## Part 2 – Market issues

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| This issue can not be addressed on a European level. The following text is for information. The main obstacle recognised by the broadcaster and operators in Sweden is of financial nature. The public broadcaster wishes to get a financial support primarily in the area of program production but also in providing infrastructure for digital radio. The commercial radio broadcasters want to get the existing analogue concessions at lower price to be able to finance the introduction of digital radio. At the same time none of them can see that the "value added services" could be the potential incitement to solve their financial problem. We as administration believe that the "value added services" as a part of digital radio programme content will play very important role once the broadcasters decide to go on air digital. We also believe that a massive transition to digital radio on European level would certainly be a strong stimulation for such transition in Sweden. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| Digital terrestrial radio should replace the analogue terrestrial radio. It should offer more services, more programmes, and more quality on multi-receivers for affordable price. If this is achieved than all the other forms of digital radio such as internet radio can only be a complement, particularly when it comes to natural disasters. DAB/DAB+, DRM/DRM+, HD Radio, FMExtra, RAVIS are different digital radio techniques that can be applied both on regional and on the national level. Some of them are applicable on local level as well. Digitalisation of analogue radio will most probably result in a combined application of some of these techniques, depending on the needs of market. As regards the spectrum requirements it is known that LF/MF band, L band and bands I, II, III are potentially interesting for digital terrestrial radio. At the moment there is a lot of capacity in all of these bands, with the exception of band II. |

## Part 3 – European initiatives

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| The initiative "Uniques Digital Radio" is very welcome. If possible that initiative should be widen, by including other digital terrestrial radio techniques. Average European listener is probably not concerned on what frequency band or in what technique the favourite program is aired– the listener is interested in content of the programme. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | Broadcasting - TV | Amateur radio 50-52 MHz, 200 W | No plans. |
| Band II | 87,5 – 108 MHz | Analogue FM | Wireless audio, ERP < 50 nW | No plans. |
| Band III | 174 – 230 MHz | T-DAB | None | T-DAB and DVB-T2 |
| L-band | 1452-1479,5 MHz | T-DAB | None | No plans |

## 1.3 Cyprus

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>The relevant entities of the Republic of Cyprus (i.e. the Department of Electronic Communications, Ministry of Communications and Works (DEC), the Office of the Commissioner for the Electronic Communication and Postal Regulation (OCECPR) and the Cyprus Radio and Television Authority (CRTA)) would need to consult in order to formulate proposals for the successful introduction of terrestrial digital radio in Cyprus. Their proposals (i.e. in a form of a draft policy document) will go under a public consultation where all interest stakeholders can express their views on the issue. Among other issues the relevant entities will formulate proposals related to the introduction of new technology, new electronic communication services (innovative and/or value added) existing usage of spectrum, authorisation procedure.<br><br>NB: So far the DEC did not receive any application/ interest for the operation of terrestrial digital radio networks by the Cyprus market. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| - |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| One of the main obstacles that Cyprus will face relating to the implementation of any future strategy, concerns the international coordination of radiofrequencies with non-CEPT and non EU neighbouring countries.<br><br>The T-DAB Wiesbaden 1995 Special Arrangement, as revised and the T-DAB Maastricht 2002 Special Arrangement, as revised do not foresee coordination with non-CEPT and non EU countries in Band I and L-band.<br><br>For Band II no plan exists for the terrestrial digital radio and therefore EU should take the lead for the establishment of a peripheral agreement similar to the ITU GE06 Plan. However, we don't anticipate that FM analogue transmissions in Band II will be switched off in the near future, like the analogue TV transmissions as in plan GE06.<br><br>On the contrary, GEO6 Plan anticipates all relevant procedures that should be followed to implement terrestrial digital radio in Band III. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| The digital terrestrial radio networks can be complementary to other radio networks. In Cyprus the vast majority of the population uses the analogue terrestrial radio in the band 87,5 - 108,0 MHz. Every member state should have the flexibility to use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| An initiative to highlight the advantages of digital radio. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | T-DAB (61.168 –62.704 MHz)<br><br>NB: So far DEC did not receive any application/ interest for the operation of terrestrial digital radio networks by the Cyprus market. | | |
| Band II | 87,5 – 108 MHz | FM Sound Broadcasting, Geneva Agreement 1984 | | |
| Band III | 174 – 230 MHz | T-DAB Wiesbaden Special Arrangement 1995 revised Maastricht 2002.<br><br>NB: So far DEC did not receive any application/ interest for the operation of terrestrial digital radio networks by the Cyprus market. | | T-DAB Wiesbaden 1995 Special Arrangement, as revised in Constanta, 2007<br><br>GE06 Plan |

| | | | | |
|---|---|---|---|---|
| L-band | 1452-1479,5 MHz | T-DAB Maastricht 2002 Special Arrangement<br><br>NB: So far DEC did not receive any application/ interest for the operation of terrestrial digital radio networks by the Cyprus market. | | T-DAB Maastricht 2002 Special Arrangement<br><br>as revised in Constanta 2007 |

## 1.4 Denmark

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>In Denmark media policy is laid out in the context of the Ministry of Culture. A political agreement among a majority of parties in the Danish parliament includes a decision to increase the development of DAB and a decision to develop a long term strategy for digital radio. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| DAB mux 1 is allocated to public service. Free resources in DAB MUX 2 are to be auctioned soon. A network for the regional DAB mux 3 has not yet been developed, but DAB mux 3 is to be auctioned mainly for the use of local and regional radio stations. The long term strategy for digital radio is in the process of being developed in consultation with the industry and other interested parties. It should include a plan for transition from DAB to DAB+. |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| It is of key importance for the future of digital radio that a common European strategy is developed as far as possible. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| The national policy does not include any specific strategy in the relations mentioned. |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| It is of key importance for the future of digital radio that a common European strategy is developed as far as possible.<br><br>Bands below 80 MHz: WGFM agreed during their meeting in May 2010 to send a report on "Managing the transition to digital sound broadcasting in the frequency bands below 80 MHz" to public consultation. Since analogue VHF tv in band I ceased operation in 2009, this band is not currently used. We do not have specific plans for the use of the band, but it offers a possibility to test different digital tv and radio systems.<br><br>87.5-108 MHz: A CEPT report 141 on "Future possibilities for the digitalisation of band II), has just been agreed to be published. The report describes different digital technologies to replace FM broadcasting. In our opinion the cessation of FM is a long term goal and need revision of the ITU Geneva Agreement 1984. |

174-240 MHz: Band III (174 - 240 MHz) is covered by the GE06 Agreement and Wiesbaden (230-240 MHz) DVB-T and DAB/DAB+ is foreseen in most CEPT countries. This use will continue.

1452-1479.5 MHz: This band is covered by the Maastricht Agreement (Revised in Constanza). The revision of the Agreement in Constanza introduced flexibility in the use of this band. The band is also a candidate for PMSE use.

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | No plans | | No plans |
| Band II | 87,5 – 108 MHz | Used for FM radio | | No new plans |
| Band III | 174 – 230 MHz<br><br>+ 230-240 MHz | Is allocated for radio and tv purposes | | GE06 VHF-MUX is to be used for radio or tv<br><br>DAB allocations will be used for DAB as described above |
| L-band | 1452-1479,5 MHz | Not in use | | A political decision is made to allocate the L-band for mobile tv or similar purposes, however no specific plans |

| | | | | |
|---|---|---|---|---|
| | | | | yet |

## 1.5 Czech Republic

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial <u>digital</u> radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>No special terrestrial digital radio policy; however, general strategy called "Digital Czech State" is under preparation. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial <u>digital</u> radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
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**Part 2 – Market issues**

| Q1: Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? Q2: In addressing these – what could be the ways forward? Q3: Is there any essential prerequisite for the success of <u>digital</u> radio – such as the issue of "value added services"? |
|---|
| Q1 + Q2: No significant obstacles regarding Digital Radio identified or expected.<br><br>Q3: Success of digital radio can not be expected without added value of digital radio e.g. content - greater variety of BC programs, better sound quality in specific conditions; new services (additional information, multimedia). Additionally digital radio could contribute to solution of the FM band congestion. |

| |
|---|
| Q1: How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? Q2: What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Q3: Specific requirements concerning frequencies? |
| Q1: The key of terrestrial radio usage is its mobility and ability to provide timely and area specific information.<br><br>Q2: Recent experience have not showed that there is a significant demand for wide areas coverage by satellite.<br><br>Q3: N.A. |

**Part 3 – European initiatives**

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|---|
| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
| The activities supporting Europe's digital future are welcomed. However, some issues have to be taken into account, e.g. that today's demand on recent radio services is still vice versa covered by the existing FM transmission. Implementation of its successor, it means T-DAB (and its derivates), is therefore slow. |

**Part 4 – Usage of spectrum**

| Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz? | | | | |
|---|---|---|---|---|
| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |

| | | | | |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | A few low-power analogue TV transmitters are operated in the band. | Low-power radio stations operated on predetermined frequencies (voice and data transmission) | Analogue broadcasting switch-off (S-O) is planned no later than 2012. After S-O, implementation of mobile service operation expected. |
| Band II | 87,5 – 108 MHz | Analogue FM transmitters are operated in this band. | | For the time being, there are no plans on analogue FM broadcasting S-O. |
| Band III | 174 – 230 MHz | A few analog TV transmitters are operated in this band.<br><br>Temporary use: Professional wireless microphones. | Wireless microphones. | Analogue S-O until 2012.<br><br>Multimedia applications (conformity either with DVB-T or with T-DAB channel mask). |
| L-band | 1452-1479,5 MHz | The band is ready for granting licences according T-DAB plans basis. | | Tender for allocation of spectrum rights is under way. |

## 1.6 Estonia

### Part 1 – Public policy objectives

| Does your administration have an official policy regarding terrestrial <u>digital</u> radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are | |

formulated, and what criteria that would require to be fulfilled before a policy was to be considered.

Currently we have no plans for terrestrial radio digitalization or to switch off analogue radio. The reason is low interest and no much examples on the international level.

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
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**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| The number of aspects shall be taken into account:<br><br>1. Economical aspects;<br>2. The real demand for broadcasters and consumers;<br>3. Volume of additional spectrum;<br>4. Additional services;<br>5. Compatibility with other services;<br>6. Criteria for coordination of frequencies;<br>7. Technologies. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| At the moment we have digital radio in other (multimedia) services like IPTV. But it is rather |

value added service.

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| In the future we see Band II (87,5 – 108 MHz) as a main candidate band for digital terrestrial radio broadcasting. Digitalization in Band II should be smooth and a long term process. Introduction of digital terrestrial broadcasting can be achieved on the basis of sharing the spectrum with existing analogue FM services only, We support CEPT FM45 activities to find appropriate sharing criteria for that and elaboration of corresponding reports. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | According to the Estonian Frequency Allocation Plan this frequency band is allocated for TV-channels.<br><br>Partly this band is used also by land mobile, radio amateur services. | Partly for short range communication. | Analogue television broadcasting transmission will be finished by 1st of July 2010 at the latest. |
| Band II | 87,5 – 108 MHz | According to the Estonian | Partly for short range | No specific future |

| | | | | |
|---|---|---|---|---|
| | | Frequency Allocation Plan this frequency band is allocated for FM broadcasting. | communication. | plan. |
| Band III | 174 – 230 MHz | According to the Estonian Frequency Allocation Plan this frequency band is allocated for TV and T-DAB broadcasting. | Partly for short range communication such as hearing aid and radio microphones.<br><br>Actual usage are:<br><br>169 – 174,770 MHz for hearing aid<br><br>174 – 216 MHz for radio microphone | Analogue television broadcasting transmission will be finished by 1st of July 2010 at the latest. |
| L-band | 1452-1479,5 MHz | According to the Estonian Frequency Allocation Plan this frequency band is allocated for T-DAB systems. | | No specific future plan. |

## 1.7 Finland

### Part 1 – Public policy objectives

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered. | |

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|---|
| At the moment Finland has no plans to introduce policy objectives for digital terrestrial radio. |

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| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
| - |

**Part 2 – Market issues**

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|---|
| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
| Radio is listened to mainly in cars, homes and offices. Therefore the receiver availability i.e. in cars plays a major role in choosing broadcasting systems for the future. The migration from analogue to digital radio requires receivers for cars, homes, mobile phones etc. with reasonable prices. Thus common decisions in Europe would be needed to create larger markets in the manufacturer point of view, lowering the cost for and improving receiver availability. The most important feature of a radio system is its quality of sound. Another is the number of services (in practice, the capacity of the system). We do not see that any value added services would – at least alone – have a major role in the breakthrough of digital radio. At the moment, in Finland we have quite a choice of high-sound-quality programmes broadcasted in FM networks. The cost for both the receivers and transmitter systems are relatively low. This does make the situation quite challenging for introducing a new radio system. |

| |
|---|
| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
| Digital radio system must be suitable both for mobile reception and for high-quality fixed reception. At least for a small radio stations it is not feasible to use several different delivery platforms. Both local and nationwide coverage are needed. It is essential that a digital radio |

system would be suitable as well for nationwide networks as for small-area local radios having no – or only a few – other radios sharing the mux capacity. Analogue FM is widely used; it is easy to use from the listeners' point of view and it is commercially viable as far as the broadcasters are concerned. At the moment it is very difficult to predict what it the form the digital radio is going to break through.

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| A common action plan might be beneficial in both regulatory and manufacturers point of view. A wider market base would increase the availability of receivers/equipment with lower cost. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | No broadcasting services | No broadcasting services | Band is under review |
| Band II | 87,5 – 108 MHz | FM-radio | No broadcasting services | FM radio at least for the next 7 years, plans after that open |
| Band III | 174 – 230 MHz | HDTV (2 muxes/ TV channels 5-12) | No broadcasting services | HDTV / possibilities for DAB (under review) |

| | | | | |
|---|---|---|---|---|
| L-band | 1452-1479,5 MHz | No broadcasting services | No broadcasting services | Under consideration |

## 1.8 France

**Part 1 – Public policy objectives**

| Do you have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |

If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.

The digital radio legal frame is defined by the Freedom of communication Act (*Loi n° 86-1067 du 30 septembre 1986 relative à la liberté de communication*) since 2004[1], completed in 2007[2] and 2009[3].

This global legal frame defines :

- a technologically neutral licensing procedure, including possibility for the audiovisual regulator (Conseil Supérieur de l'Audiovisuel, CSA) to deliver licenses to either radios or commercial distributors, after calls for tender ;
- a 10 years licenses period, with the possibility to renew twice for 5 years ;
- a priority to on-air analogue radio services in the area ;
- VHF band dedicated to the digital radio ; possibility to also use L band ;

[1] Electronic communications and audiovisual communication Act, 2004,9th of july.

- labelling for digital radio receivers (*"ready for digital radio")* ;
- a gradual integration of digital reception ability of the receivers.

A Decree specifying the relevant standards for broadcasting radio in different frequency bands was issued on the 3rd January of 2008. **It specifies that T-DMB is to be used in band III and band L** and DRM standard under 30 MHz **for terrestrial radio services**. This choice has been made after a wide consultation at national level. The Ministry of Culture and Communication received more than one hundred responses, mainly from the radio broadcasters. A wide majority of radios, which represent more than 95% of the audience, asked for DMB standard in UHF & L bands, laying the emphasis on innovation and interactivity provided by this standard. At European level, this regulation has been notified to the Commission and member states in accordance with directive 1998/34.

Furthermore, the Prime Minister's order « *Arrêté du 22 décembre 2008 approuvant le schéma national de réutilisation des fréquences libérées par l'arrêt de la diffusion analogique*[4] » indicates that the frequencies in Band III previously assigned to analogue TV Canal+ will be assigned to digital radio. This order could be planned to be reviewed to address the future use of Band I which is currently partly assigned to analogue TV Canal+. The *Conseil Supérieur de l'Audiovisuel* (CSA) launched a first call for tender in March 2008 for the area of Paris, Marseille and Nice-Cannes. More than 350 application files were received and 136 radio services have been eventually selected[5]. This call for tender was open to radio stations. Licences are not been released for the moment due to economical reasons. Studies are to be undertaken in the following weeks to analyse the conditions of success for the digital radio deployment.

If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example more programs, competition, local and regional, innovation etc)

The implementation of digital radio aims to :

- enable each local, regional or national analogue radio service to go digital ;
- offer more and new free programs and services (automated tuning, textual information associated to programs (e.g. song titles), graphics associated to programs (e.g. music album cover), other data associated to programs (e.g. music type, ID3 tags), geo-localized

[2] Audiovisual broadcasting modernisation & TV of future Act, 2007, 5th of march.
[3] Audiovisual communication and new TV public service Act, 2009, 5th of march.
[4] Decree of the 22nd of december of 2008 approving national scheme of reuse of frequencies released by the analogue TV switch-off.
[5] Digital radio license are granted for 10 years and could be extended for 10 more years.

interactive services in addition to programs (e.g. news, local news, weather updates), data services in addition to programs (e.g. electronic programme guide, traffic information), audio non-linearized applications;
- offer a better coverage of the population;
- enhance consumer experience of radio with multimedia content

See also:

http://www.csa.fr/actualite/decisions/decisions_detail.php?id=126173
http://www.csa.fr/upload/decision/consultation_rnt_16_juin_2009.pdf
http://www.csa.fr/actualite/dossiers/dossiers_detail.php?id=130956
http://www.csa.fr/upload/dossier/synthese_consultation_30_5.pdf

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what would be the ways forward? |
|---|
| Several problems concerning the introduction of digital radio networks in France have been identified, and we believe that some of them could be reduced or overcome at European level. In particular, we think that an EU-wide coordinated approach is needed to provide all stakeholders with the necessary market scale to launch mass Digital Radio services across the EU. An EU-wide coordination would also benefit to consumers, who should be able to access Digital Radio services anywhere across Europe.<br><br>1) More certainty about digital radio technologies is needed<br><br>The lack of a mass market for radio receivers (including in-car receivers) and the limited integration of the digital radio function in multifunction receivers remain essential obstacles when assessing the current status of Digital Radio services in Europe. We believe that Europe-wide recommendations concerning Digital Radio services technologies would help defining pan-European receivers by setting some common rules described in the following.<br><br>Currently, several standards are used (or are to be used) to broadcast Digital Radio services in Europe in Band III (T-DAB, DAB+ and T-DMB). Even though these standards belong to the same family, such a technological heterogeneity is a difficulty compared, for example, to the universality of the FM signal and can explain some reluctance to adopt and migrate to digital multimedia services. In order to facilitate the growth of a single European mass market for digital radio receivers[6] and avoid wariness about choice of standard, a clear European endorsement in favour of the three Eureka-147 technologies would be beneficial, especially T-DMB and DAB+ |

[6] Initiated by the WorldDMB and supported by EBU and DIGITALEUROPE

standards for future digital radio services broadcast. Additionally, a European support for multi-standard receivers would be needed in order to minimize market fragmentation and create confidence in a common compatibility. Last but not least, a transparent intellectual property rights regime, based on fair, reasonable and non-discriminatory terms and allowing low price of devices, may be key to the success of Digital Radio services. At the European level, the cost of patents or licences (including Software radio) should be monitored.

2) Strengthening radio spectrum harmonisation would also facilitate the take-off of Digital Radio services in Europe.

The switching of the radio medium from analogue to digital broadcasting requires at least the complete reproduction of the FM radio landscape. In France, the richness of the numerous local radio stations is so high that the available frequencies in Band III might not be sufficient in some areas. L-band is harmonized at the CEPT level (Maastricht Agreement) as a supplemental frequency band for Eureka 147 standards. As a consequence, L-band frequencies could be the only way to complete the migration of all radio stations to digital broadcasting. However, the capability of radio receivers to handle L-band signals need to be guaranteed from the initial launch of Digital Radio in order make use of this complementary spectrum resource when required. Only a strong European support in favour of bi-band receivers (band III and L) would enable the exploitation of the L band for Digital Radio services.

3) The adoption of EU-coordinated label(s) for Digital Radio receivers could help consumers "going digital"

All in all, the chicken and egg problem of digital radio could be solved by proposing innovative and attractive services to auditors who will then expect competitive receivers to enjoy their favourite programs. As for now, a user interested in buying a digital radio receiver might not have a clear understanding on the effective capabilities of devices on sale. The definition of European labels guarantying multi-standard capabilities, bi-band reception and also some level of richness for associated data, as initiated by the WorldDMB Forum, would help speeding up the launch of Digital Radio in the whole Europe.

4) An EU-wide coordinated approach with regards to the transition period may be desirable

The planning of the digital migration of the radio medium, which tends to progress slowly, might be due to a situation where existing radio editors are reluctant to take the risk of a supplemental broadcasting cost for many years with a limited vision over the short-term penetration of digital radio receivers and over the duration of their analogue and digital simulcast. A deep understanding of the different digital radio market and transition period in Europe would help in making enlighten decisions. We suggest that RSPG asks the EC to undertake studies on these topics. Such investigations should in particular address the possible ways to define a Europe-wide

target date for analogue switch-off that would leverage migration efforts.

5) Additional European studies would be useful to address the technical challenges with regards to the delivery of local Digital Radio content / services

Finally, the multiplex structure of Eureka-147 technology raises some difficulties concerning local radio content in areas where an entire multiplex cannot be created. In that case, the costs of the simplex structure of FM show the limitations of DAB-based standards. An option that could be studied is the use of DRM+, using narrow channels in Band III. However, such an option should be clarified as soon as possible in order to define pan-European receiver profiles.

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? Specific requirements concerning frequencies? |
|---|
| The radio services are now ubiquitous services with geographical continuity: indoor, outdoor and in car with a great choice of programs and combination of reception types: dedicated personal receiver; PC receiver (USB digital receiver and internet), car receiver, integrated hand held mobile telephone, PDA, or dedicated multi receiver types (TV, radio, MP3-MP4). Satellite, cable and internet radios are complementary to Terrestrial radio. The last example is the de-linearization of radio programs.<br><br>From a user point of view, analogue terrestrial radio is still the main access to radio programmes: in 2009, only 1 listener out of 4 has been listening radio (live or catch-up) over broadband network or mobile internet. Systematic podcast audience measuring has started in 2009. According to Médiamétrie (a company which measures radio audience), only 4% of live radio cumulative audience is made by using computers, MP3/MP4 players, mobile phones and TV sets). Listening radio in a car is very widespread (this is the second place for radio listening behind home and even the first place for working people): only digital terrestrial radio or radio over mobile internet may replace analogue terrestrial radio for this use.<br>Satellite cable operators offers include radio programmes but it is far from being a driver of their market (pay TV, free TV –and, for cable operators, internet service providing and VoIP– are the drivers) exists in France but there is strong evidence that their use for listening radio at home is not widespread (e.g. according to Médiamétrie, only 0.6% of radio cumulative audience is due to TV sets radio capabilities).<br><br>The radio offer in analogue terrestrial radio is quite different from the radio offer by cable, satellite or internet as many associative radio stations are broadcasted this way and not by cable, satellite or internet which allows listening to the main commercial national radio stations only. The French Broadcasting Act and the French regulation do not set any "must carry associative |

radio stations" obligation to satellite and cable operators.

Hence, the stake of digitizing radio station broadcast in France is to convert the analogue audience in car or at home into a digital audience and to maintain the radio stations diversity at a local, regional and national scale. That such a diversity would be as easily maintained by internet radio over broadband fixed or mobile internet as by digital terrestrial radio is still an open question.

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? |
|---|
| Any initiative that brings an opportunity to develop an economy of scale for infrastructure builders, program editors and for listeners or users would help developing digital radio. France has decided to launch digital radio services on its overall territory in order to stimulate this economy. A European initiative is welcome.<br><br>1. A specific initiative regarding terrestrial digital radio supporting the ongoing harmonization of digital radio technologies among the Eureka-147 standard family would bring some more confidence to the market. In particular, the addition of DAB+ and T-DMB standards to the EU list of standards and/or specifications decided by the Commission would consolidate the current deployments.<br>2. Strengthening radio spectrum harmonisation would also facilitate the take-off of Digital Radio services in Europe. The purpose of a specific European initiative would be to harmonise the technical conditions for the availability and efficient use of both Band III and L-Band for Digital Radio systems in the Community.<br>3. The promotion of receiver profiles based on a multi-standard support, bi-band reception (Band III and L-Band) and clarified levels of functionality for the end user are the optimal conditions to quickly reach the mass market required to start competing analogue-only radio receivers on prices. Such pan-European receivers would also contribute to reassure customers about product compatibility and their actual capabilities to receive digital radio across Europe. This European initiative would give a positive indication to receiver manufacturers and also to car industry that are involved in the initialisation of the primary market of digital receivers.<br>4. An EU-wide coordinated approach with regards to the transition period may be desirable. The actual reasons of the difficulties raises by the migration of the radio medium from analogue to digital are numerous but it is still difficult to clearly point the key factors of success and failure based on the specific configuration of each European country. A European initiative to study this work item would be very useful to put an end to some |

hesitations. In particular, such investigations could address the possible ways to define a Europe-wide target date for analogue switch-off that would speed-up the take-off of digital radio.

5. Additional European studies would be useful to address the technical challenges with regards to the delivery of local Digital Radio content / services (for example, DRM+, using narrow channels in Band III).

**Part 4 – Usage of spectrum**

Could you please provide us with information regarding current and future use of the bands VHF (47-68 MHz, 87.5 – 108MHz and 174 – 230MHz) and the frequency range 1452-1479.5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | Analogue TV (to be switched-off by December 2010)<br><br>Mobile service (SAP/SAB)<br><br>Defence systems<br><br>Wind profiling networks (secondary service)<br><br>Amateur radio | White space devices (ground train video, robotic) | Some studies are on going concerning the use of DRM+ (some trials have been made in 2009) |
| Band II | 87,5 – 108 MHz | FM and additional in band services (RDS) | SRD (REC TR 70-03) | Several new FM calls for tender will be launched in 2011 for more than 600 frequencies (licences are granted for 5 years and can be renewed twice).<br><br>DRM+ may also be used after analogue switch-off or in simulcast of analogue services in very few non dense area (some trials have been made in 2010) |
| Band III | 174 – 230 | Analogue TV (to be switched-off by December | Radio | Digital radio services |

| | | | | |
|---|---|---|---|---|
| | MHz | 2010)<br><br>Eureka-147 Digital Radio trials (T-DMB and DAB+) | microphones | (T-DMB and/or T-DAB+)<br><br>A first T-DMB call for tender has been launched in 2008 for the cities of Paris, Marseille and Nice-Cannes. 136 radio services have been selected. |
| Band L | 1452-1479,5 MHz | | | Digital radio services (T-DMB and/or T-DAB+)<br><br>Digital radio microphones |

## 1.9 Germany

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>In Germany with regard to Band III the further usage of the spectrum will depend on the assigned coverage requirements for digital broadcasting within the jurisdiction of the federal states.<br><br>In case a digital narrow band successor for the analogue FM system is required, making use of band II would be a viable option when considering that in principle such a conversion could be implemented on a step-by-step basis in the same frequency range (and possibly raster).<br><br>Furthermore, in the medium term the possibility of using one broadcasting standard (i.e. DVB-T2) for the transmission of both terrestrial audio and television could be an option in order to achieve a more efficient approach compared with the present situation. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
| --- |
| As listed above, in order to give effectual incentives, objectives such as providing a greater number of programmes, considering also the existing environment for the supply of audio broadcasting (national and regional concepts), taking advantage of innovations, etc. should be taken into account. |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| In principle, no obstacles would be expected when following the approach pursued in Germany. The successful introduction of DVB-T has clearly shown that "valued added services" are a key for accelerating the analogue to digital switch-over. It is essential that new services and/or innovative enhancements have to be made available to the users. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| • digital terrestrial audio bc – digital satellite audio bc: In Germany the transmission of digital broadcast via satellite has a comparatively low share of the market (with very low percentage). As opposite to digital terrestrial radio, it is estimated to be complementary. The stationary type of reception doesn't point out the satellite way of distribution as the most comfortable one for a use always and everywhere.<br><br>• digital terrestrial audio bc – digital cable audio bc: As opposite to digital terrestrial radio, it is estimated to be complementary. The stationary type of reception raises the same problem as for satellite reception.<br><br>• digital terrestrial audio bc – digital internet audio bc over broadband: The transmission of digital audio broadcasting via Internet increases in importance. However, currently it is still on a very low level. Due to increasing demand of bandwidth which may lead to higher distribution costs it is assumed that digital internet audio will not achieve a mass market level in the short and medium-term. As opposed to digital terrestrial audio broadcasting, for certain applications it is complementary, for others it is partially substitutional. For the latter ones, the use via mobile broadband access systems could be the key for an always-and-everywhere-use.<br><br>This kind of categorisation mainly doesn't depend on the extension of coverage areas per programme (i. e. local or nationwide use). |

## Part 3 – European initiatives

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| With regards to the introduction of digital audio broadcasting standards the following aspects have to be taken into account:<br><br>• Regulatory aspects: For the regulatory imbedding, the individual legal conditions for each of the MS have to be considered and needs to be set in the context with the embodiment of the current EU Treaty. Therefore a fundamental standardisation may not be suitable for a common European Union approach.<br><br>• Technical aspects: For several reasons it would be desirable to implement a harmonised digital audio standard throughout Europe. However, it may be doubted whether such determinations should be managed by the EU, since the concept of technology neutrality is one of the key concepts of the European Union. For instance, bad experience was made in this regard with DVB-H.<br><br>• Market aspect of introduction: Considering the DVB-T example, it is evident that the process of implementation of the new standard was affected significantly by the individual circumstances of the individual MS. Therefore, individual strategies adjusted to the differing requirements may be needed in order to take advantage of eos eventually. |

## Part 4 – Usage of spectrum

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | • assigned to Ministry of Defence | | No change is foreseen in the near future. |

| | | | | |
|---|---|---|---|---|
| | | • wind–profiling networks (secondary service)<br><br>• 50,08 – 51 MHz amateur radio, (secondary service) | | |
| Band II | 87,5 – 108 MHz | analogue audio broadcasting | | No change is foreseen in the near future. |
| Band III | 174 – 230 MHz<br><br>+ 230-240 MHz | • digital broadcasting<br><br>• PMSE (secondary service) | | No change is foreseen in the near future. |
| L-band | 1452-1479,5 MHz | digital broadcasting | | digital broadcasting to be terminated<br><br>PMSE (secondary service) |

## 1.10 Hungary

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial <u>digital</u> radio? | |
|---|---|
| ☒ Yes (partly) | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered. | |

The government strategy for the implementation of digital broadcasting (both radio and television) was approved in March 2007. The Act on the rules of broadcasting and digital switchover (Act LXXIV/2007) gives the legal background for the introduction of one national digital radio network, but specifies that more detailed regulation will be needed on local digital radio and issues regarding switchover.

This act also contains that the switch off of analogue services should begin in 2014, but only conditional if 94% of the population coverage is achieved and 75% of people have a digital radio receiver.

In line with the provisions of Act LXXIV/2007, in March 2008 the National Communications Authority (NCAH) published an invitation to tender for a national digital radio multiplex in Band III using DAB+ standard. The first phase of implementation started in the capital area, the extension of the network is under consideration.

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| The FM band is overcrowded as in most of the European countries and it is difficult to fulfil the new requests for FM stations (local and small community requests as well as larger regional requests). It is assumed that on medium or longer term the implementation of the digital radio systems could give solution for the introduction of new radio stations and new services. |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| The regulatory bases for the introduction of one national digital radio broadcasting was created in Hungary and a successful tender for one national digital radio multiplex took place in 2008. A 12 year license to operate one national network was awarded, however the commercial launch of the DAB+ system has not started yet and the system still operates as a trial. The receivers are expensive, there is no significant value added at present compared to FM broadcasting, the market players prefer to remain in a "waiting position" and see what happens on international |

level.

A clear strategy or action plan on European level regarding the future of radio could be relevant in order to overstep present difficulties.

How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies?

It is considered that the different radio platforms are complementary. The terrestrial digital radio offers mobility and is a basic platform for car radios. The different digital terrestrial systems could also be used in parallel as complementary systems for specific needs, however it would be important to have a common strategy on European level.

**Part 3 – European initiatives**

What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope.

Most of the countries (including regulators and market players as well) are "cautious" in making firm decisions on the future of terrestrial radio broadcasting. As there are more technical standards available for terrestrial digital radio it would be important to have some common guidelines regarding the planning of the frequency bands for radio broadcasting, the use of technologies for specific services (e.g. local coverage, national coverage), possibility of developing multistandard receivers etc.

It is important that the regulators and market players have clear guidelines regarding the possibilities for the future of radio broadcasting in Europe. A common European action plan could help the member states to define their strategies for the commercial launch of digital radio services and in longer term to decide on the analogue-digital switchover process.

**Part 4 – Usage of spectrum**

| Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz? | | | | |
|---|---|---|---|---|
| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
| Band I | 47 – 68 MHz | – | – | – |
| Band II | 87,5 – 108 MHz | BROADCASTING (analogue FM radio) | – | – |
| Band III | 174 – 230 MHz | BROADCASTING (digital radio / (T-DAB+)) | – | BROADCASTING (Digital radio) |
| L-band | 1452-1479,5 MHz | BROADCASTING (T-DAB) | - | – |

## 1.11 Ireland

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>No specific digital radio policy. There is no policy to switch off analogue radio broadcasting. However legislation, the Broadcasting Act 2009, is in place for digital broadcasting including | |

digital sound broadcasting.

http://www.irishstatutebook.ie/2009/en/act/pub/0018/sec0136.html

http://www.irishstatutebook.ie/2009/en/act/pub/0018/sec0134.html

Section 134 of this Act is intended to encourage digital sound broadcasting. Under this Act existing sound broadcasting services may be granted an extension of up to 6 years on their analogue sound broadcasting contract ("licence"), however no subsidies will be provided by the state and sound broadcasting service providers (contractors) will be required to make payments to digital sound multiplex operators.

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| - |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| No requirements are foreseen which require action at European level.<br><br>Current technology and infrastructure costs combined with sparse population in Ireland hamper the viability of the provision of digital radio services at present. The current economic environment may make an increase in the number of commercial sound broadcasting services over any media unviable given the population. Technological developments may result in reduced technology costs for digital radio transmission/reception in a number of years. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| Radio services may be provided over DTT. Ireland does not foresee a need for more frequencies at present for digital radio services. |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| There is no urgent requirement to progress the deployment of digital radio. There is no equivalent of a "digital dividend" in relation to spectrum used by analogue radio. The spectrum in question is not as attractive to other users. The costs associated with deployment of new sound broadcasting technologies outweigh any benefit in such deployment. Costs would arise for both consumers and broadcasters. There is no policy to switch off analogue radio in Ireland. There is no need for any European common action. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| Band | Frequencies | Licence based services | Non-licence based services | Future use (planned) |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | Broadcasting is allocated on a primary basis in Band I, however, there are no longer any licenced broadcast transmissions operating in this band in Ireland. | **Short Range Devices** (49.82 - 49.98MHz) are allocated on a secondary basis for "non specific" use as per ComReg Doc 02/71R4.<br><br>**Radio Amateurs** (50– 52 MHz) are allocated on a secondary basis, details of the number of | There are no specific plans for the future use of this band within Ireland at this time. |

| | | | | |
|---|---|---|---|---|
| | | | current users in this frequency block is not tracked at this time due to its secondary nature.<br><br>**Radiolocation,** specifically wind profiler radars as per ITU Resolution 217, is allocated for use in Ireland on a secondary basis in the frequency band 46 – 68 MHz, however currently there are no wind profiler radars operating in Ireland in this band. | |
| Band II | 87,5 – 108 MHz | Under broadcasting legislation in Ireland, ComReg (The Irish Administration) may issue broadcasting licences to either RTÉ (Radio Telefís Éireann) the public sector broadcaster or the BAI (Broadcasting Authority of Ireland) for the independent/commercial sector. There are 65 licenced services operating in the band as follows:<br><br>5 National (4 PSB, 1 Commercial)<br>1 Quasi-National<br>1 Multi City<br>4 Regional<br>28 Local<br>20 Community<br>6 Institutional<br>In addition to the above, the BAI issues occasional short term sound-broadcasting contracts (up to 30 day duration) to provide coverage of special events. | **Short Range Devices** (87.5 – 108.0MHz) are allocated on a secondary basis for "Wireless Audio Applications" use as per ComReg Doc 02/71R4. | Ireland is keeping an open mind at present regarding any future digitisation of Band II, in light of the ever increasing development of radio services in this band. |
| Band III | 174 – 230 MHz | Currently Analogue Terrestrial TV operates in this band; Two Public Service TV services are broadcast.<br><br>RTE holds a DAB licence and a service is being provided in the north east of the country and in two other | **Short Range Devices** (173.7 – 175.1 MHz) are allocated on a secondary basis for "Radio Microphones and assistive hearing Devices" use as per ComReg Doc 02/71R4. | Future uses will be considered in line with Ireland's allocation under the Geneva 2006 Agreement. |

| | | | | |
|---|---|---|---|---|
| | | main cities. | | |
| L-band | 1452-1479,5 MHz | No services | No services | Future uses will be considered in line with Ireland's allocations under the relevant agreements e.g. The Maastricht 2002 Special arrangement as revised in Constanta 2007 (MA02revCO07) |

## 1.12 Italy

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |

If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.

AGCOM (The Italian Regulator) has issued a Decision (Delibera n. 664/09/CONS published in December 2009 on the AGCOM Web site) on terrestrial digital radio in order to regulate the start-up of digital radio in Italy. The main points which make part of such Decision are the followings:

- Authorization conditions for content providers (for both National, regional or local usage) in terms of duration, procedure, simulcast, etc.;
- Authorization conditions for service providers;
- Norms and conditions related to the Public Service provider, In particular, the Public service provider is guaranteed a block in the VHF band, and the PBS can utilize, on request, other frequencies in the UHF-L in order to integrate such VHF block;. ;
- Norms related to the Network Operators (on the basis of the formation of "ad hoc" consortia) and the frequency right of use (identifications of the frequency bands, procedures and criteria to assign frequencies, Network planning, coverage obligations, block capacity, etc.).

It is important to outline that the rights of use for frequencies shall be released by the Italian Ministry for economical development only to consortia. This choice was made in light of the extremely high number of Italian National and local (more than 1.000) operators which would have made impossible to find enough frequency space for all operators willing to operate also in the digital radio.

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| The digital radio operators are actually forming consortia in order to own the requisites to obtain the rights of use. The right of use requests are addressed from the operators to the Italian Ministry which will release the right of uses titles. More programs will be granted by the adoption of the new digital terrestrial radio technologies (DAB+, DAB-IP, DMB). Such aspect regards clearly also the innovation process into the digitalization.<br><br>Local and regional issues have been defined in the AGCOM Decision n. 664/09/CONS in terms of:<br><br>- definition of the conditions associated to the rights of use for local operators;<br>- capacity blocks assignment to local network operators;<br>- conditions for local operators.<br><br>The local operators will be the recipient of up to 11 frequency blocks (maximum foreseen ) in order to satisfy the request of local content providers. |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| Essential pre-requisites should be the digital radio terminal pricing, the involvement and formation of the operator consortia which structure and rules have been defined in the AGCOM Decision. Furthermore, another issue to be considered is the VAS usage amongst the operators. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| Digital terrestrial radio can be see as the technological prolongation of the existing analogue FM terrestrial radio so it will own some of the peculiarities of the existing FM radios. The AGCOM Decision explicitly foresee local radio usage, and the relevant terms and conditions. As above explained AGCOM Decision n. 664/09/CONS defines several rules in terms of local usage as the definition of the conditions associated to the rights of use for local, capacity blocks assignment to local network operators; and conditions for local operators.<br><br>The AGCOM Decision contains also specific rules concerning frequencies (multiplex) both for the Public service Broadcaster, National broadcasters, and local broadcasters. In particular the AGCOM Decision defines the criteria concerning frequencies:<br><br>• the rights of use for frequencies shall be released by the Italian Ministry for economical development only to consortia;<br>• the Public service provider is guaranteed a block in the VHF band, and the PBS can utilize, on request, other frequencies in the UHF-L in order to integrate such VHF block;<br>• The private National operators will be reserved two block in the VHF band (and on request, other frequencies in the UHF-L in order to integrate such VHF block);<br>• SFN should be utilized by National digital terrestrial radio operators;<br>• The local operators will be the recipient of up to 11 frequency blocks (maximum) in order to satisfy the request of local content providers |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| Digital radio was object of discussions in some EC WG (as the CBISS - Communication Committee Broadcasting Issues Subgroup). Yes, European initiatives as common action plan would be welcomed in order to favour market harmonization and impulse to digital terrestrial radio. |

**Part 4 – Usage of spectrum**

| Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz? | | | | |
|---|---|---|---|---|
| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
| Band I | 47 – 68 MHz | | | |
| Band II | 87,5 – 108 MHz | such band is used for analogue FM sound broadcasting | | |
| Band III | 174 – 230 MHz | In accordance to AGCOM Decision n. 664/09/CONS Part of such band will be used for digital sound broadcasting | | |
| L-band | 1452-1479,5 MHz | In accordance to AGCOM Decision n. 664/09/CONS such band could be used as an integration to VHF Band III | | |

## 1.13 Lithuania

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |

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| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>The Policy for Assignment of Radio Frequencies for Broadcasting of Radio and Television Programmes, approved by Communications Regulatory Authority under the Government of the Republic of Lithuania and Lithuanian Radio and Television Commission, inter alia describes the policy regarding terrestrial digital radio: digital radio networks shall be developed using 13A channel (230.784 MHz); the frequency band 1452–1479.5 MHz is reserved for broadcasting of digital radio programs as well. |

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| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
| The implementation of terrestrial digital radio is related to a bigger number of programs and competition issues |

**Part 2 – Market issues**

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|---|
| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
| The obstacles can be related to a reluctance of service providers to change/update transmitter systems and with inability of population to change the receiver equipment. |

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| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
| The usage of digital satellite or cable radio is very low. Internet radio over broadband often has the case to double terrestrial (FM) broadcasting or in some cases is used where usage of radio |

frequencies is impossible. Consequently, the digital terrestrial radio broadcasting would be a dominant radio broadcasting system for local or national wide coverage in Lithuania.

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| European common action plan could be welcome for successful transit from analogue to digital radio. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | 1 radio station | no | Radio broadcasting |
| Band II | 87,5 – 108 MHz | 239 radio stations transmitting 52 radio programs (national, regional, and local) | SRD - cordless audio transmission systems (50 nW) | The term of licences of up to 10 years is currently in practice. |
| Band III | 174 – 230 MHz | 1 T-DAB station (currently suspended)<br><br>174–216 MHz | no | 1. There are planned allotments of national coverage of 3 T-DAB frequency blocks and some regional coverage of 4 blocks under the Regional Agreement Geneva 2006 |

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|---|---|---|---|---|
| | | radio frequency band - for professional radio microphones, and for auxiliary program preparation and broadcasting systems | | and associated planes.<br><br>2. 174–216 MHz radio frequency band for professional radio microphones, and for auxiliary program preparation and broadcasting systems. |
| L-band | 1452-1479,5 MHz | no | no | There are planned allotments of national coverage of 2 T-DAB frequency blocks under the Special Arrangement Constanta 2007 |

## 1.14 Malta

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>The current terrestrial digital radio policy is available via the following link: http://www.mca.org.mt/filesystem/pushfile.asp?id=689&source=3&pin= (31st August 2005) | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| Refer to: |

| |
|---|
| http://www.mca.org.mt/filesystem/pushfile.asp?id=689&source=3&pin=<br><br>http://www.mca.org.mt/infocentre/openarticle.asp?id=866&pref=12<br><br>http://www.mca.org.mt/infocentre/openarticle.asp?id=1152&pref=12 |

**Part 2 – Market issues**

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| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
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| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
| - |

**Part 3 – European initiatives**

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|---|
| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
| We see no overriding scope for driving terrestrial digital radio. This should be a market driven approach. |

**Part 4 – Usage of spectrum**

| |
|---|
| Please provide us with information regarding the current and future use for radio broadcasting |

| of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz? | | | | |
|---|---|---|---|---|
| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
| Band I | 47 – 68 MHz | No broadcasting services allocated in this band | | |
| Band II | 87,5 – 108 MHz | FM radio (Licensed by Malta Broadcasting Authority | Low power devices – wireless audio | |
| Band III | 174 – 230 MHz | Currently licensed analogue TV (National Station) planned to be switched off with Digital switch over<br><br>Licensed T-DAB | | Frequency allocated for Digital TV |
| L-band | 1452-1479,5 MHz | Licensed T-DAB | | |

## 1.15 Netherlands

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>In the Netherlands the aim of government is to stimulate digital radio through | |

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| the TDAB-platform. Since 2004 the national public broadcasting company is providing it's radioprograms also through TDAB. Recently (mid 2009) plans have been announced by government also to gain the transition to digital radio by facilitating also the commercial radio broadcasting companies. The aim is to extend their existing FM- (and also AM-)licenses for a period for 6 years, under the obligation to invest and roll-out digital radio through TDAB. |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| For achieving the aimed transition to digital radio, the following conditions are to be incorporated:<br><br>• Commercial radio broadcasting companies whose existing licenses will be extended under the digitalisation conditions, will be accounted for.<br>• The commercial radio broadcasting companies need to simulcast their FM (or AM-) programs also through the TDAB-platform.<br>• The TDAB-network should be rolled-out at a sufficient geographical level, f.i.. at least 80%.<br>• Evaluation on a regular basis will take place regarding the progress on digital radio for the forthcoming period. |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| First of all it is important that the platform for digital on-air radio may evolve to a broadly accepted standard by the European market and consumers. In that case, the question will arise if analogue radio continues to be available parallel to digital radio or a full transition from analogue to digital radio will take place (switch-off scenario). |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| It is noted that digital radio through other platforms are developing as well. However the TDAB-platform is considered as the most potential platform for providing digital on-air radio. That is the reason for the plans stimulating digital radio through TDAB as explained in previous section. The progress on coverage and consumer use of digital radio in the Netherlands needs to be monitored on a regular basis. |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| It is important to give maximum way to each individual member state for further developing digital radio. For the moment an European coordinating role on monitoring the situation in individual member states will be very helpful. |

## Part 4 – Usage of spectrum

| Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz? | | | | |
|---|---|---|---|---|
| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
| Band I | 47 – 68 MHz | 61 – 68 MHz (analog) television broadcasting (not in use) | | Plans to allocate to Defense landmobile systems, taking into account that for future usage this band also can be allocated to programme making and special event (PMSE) services. . |
| Band II | 87,5 – 108 MHz | FM (analog) radio<br><br>Broadcasting services | | FM radio broadcasting services |
| Band III | 174 – 230 MHz | Digital broadcasting<br><br>services and digital radio broadcasting services. | | Digital broadcasting<br><br>services and digital radio broadcasting services. |
| L-band | 1452-1479,5 MHz | Digital broadcasting<br><br>services and digital radio broadcasting services. | | Digital broadcasting<br><br>services and digital radio broadcasting services. |

## 1.16 Slovak Republic

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered. | |
| The official policy regarding the digital radio is under study and should be submitted for approval by the Slovak Government till end of the year 2010.<br><br>The basic line for the next period of digitalization in Slovak republic contains the document "National Policy for Electronic Communications for 2009 – 2013" approved by the Slovak Government. The document focuses on following activities in the area of digital radio broadcasting:<br><br>• To consider the options for successful transition from analogue to digital radio broadcasting in accordance with the European interests. To facilitate the selection of appropriate digital terrestrial radio systems to ensure the effective usage of the frequency spectrum.<br><br>• To elaborate the official strategy of implementation of digital terrestrial radio broadcasting and submit the strategy to the Slovak Government.<br><br>• To support conditions to start the pilot and then regularly digital terrestrial radio broadcasting.<br><br>• To provide tests of the selected digital terrestrial radio broadcasting systems till end of the year 2013.<br><br>The adoption of the *Act No. 220/2007 Coll. on Digital Broadcasting of Programme Services and the Provision of other Content Services by means of Digital Transmission* was the most important step to start the digitalization process in the Slovak Republic, including radio broadcasting. The act entered into effect on 31. May 2007. Very fruitful were renewed activities of the Working Group for Digital Broadcasting. This group was created by the *Ministry of Transport, Post and Telecommunications*. *Act No. 220/2007 Coll. on Digital Broadcasting* regulates the conditions governing digital broadcasting of programme services and the provision of other content services by means of a digital transmission within the territory of the Slovak Republic, the rights and obligations of natural persons and legal entities in connection with digital broadcasting of programme services | |

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|---|
| and the provision of other content services broadcasted by means of digital transmission, and the scope of action and competences of the public administration bodies on the regulation of the digital broadcasting of programme services and other content services provided by means of a digital transmission. The Act comprehensively regulates the process and the conditions governing the installation of digital transmissions in the Slovak Republic and the operation of supplemental content services. |

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|---|
| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
| As the main benefits of the digitalization the effective utilisation of the frequency spectrum is expected. This will achieve an objective to satisfy the growing requirements of broadcasters for new frequencies and ensure the appropriate coverage of the Slovak territory. It will open the space for local and regional broadcasters. The digitalization brings more programs. Due the competition the quality of programs will increase. |

**Part 2 – Market issues**

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|---|
| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
| The progress in digital broadcasting in countries like Germany, France, United Kingdom has a great influence to stimulate the process of digitalization in others countries. Common measures and approach in EU members would have a strategic relevance and will be the driving force of the digitalization in Europe and in the Slovak Republic.<br><br>The success of digital radio depends on the coverage of the territory and the quality of receivers. The suitability of the implementation of various standards differs from the frequency bands.<br><br>The lack of quality receivers and also lack of additional value services can be obstacle to introduce of the digital radio. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| The satellite, cable and first of all internet radio are very popular, but it is expected, that terrestrial radio will stay the most spread form of audio broadcasting. We suppose that high program capacity radio digital systems (e.g. T-DAB+) will be suitable for nation wide coverage. The systems with lower capacity (e.g. DRM+) are well suitable for local coverage. Nevertheless, the local FM broadcasting will stay in operation for a long time period.<br><br>The usage of hybrid analogue – digital systems (HD Radio, FMeXtra) will not be useful in the Slovak Republic based on the results of the Slovak national study carried out in 2009. The implementation of hybrid analogue – digital systems would require the re-organisation of the frequency planning. The usage of the DRM+ system is possible after switching-off a particular analogue service. There are no technical obstacles in usage of DRM technology. There are sufficient numbers of free frequencies to implement this technology. |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| As it was mentioned above a common European plan would be needed to establish digital radio broadcasting in Europe. The DVB-T implementation could be used as example to this process. We expect that a transition to digital radio broadcasting will be more complicated because it deals with various digital systems in different frequency bands (taking into account not only VHF and L bands). |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | 48-48,5 MHz: MOBILE;<br><br>48,5-66 MHz: BROADCASTING (TV analogue - terrestrial);<br><br>66-67 MHz: MOBILE | 47-48 MHz: MOBILE (mil.);<br>48,5-66 MHz: Mobile (mil);<br>50-52 MHz: Amateur;<br>56,5-58 MHz: Mobile (Telemetry);<br>57,2125-57,3125 MHz: Non-specified SRD;<br>66-67 MHz: Mobile (mil.);<br>67-68 MHz. MOBILE (mil.) | 48,5-66 MHz: BROADCASTING (digital terrestrial) – under consideration;<br><br>Other bands: no change |
| Band II | 87,5 – 108 MHz | BROADCASTING (FM sound analogue) | Wireless audio-applications | BROADCASTING (FM sound analogue + sound digital);<br><br>Wireless audio-applications |
| Band III | 174 – 230 MHz | BROADCASTING (TV analogue – terrestrial + DVB-T + T-DAB) | 174-223 MHz: Radio microphones | BROADCASTING (DVB-T + T-DAB)<br><br>174-223 MHz: Radio microphones |
| L-band | 1452-1479,5 MHz | BROADCASTING (T-DAB) | | BROADCASTING (T-DAB) |

NOTE – The national table of frequency allocation provides the usage of frequency spectrum in the Slovak Republic. Service in CAPITAL letters correspond to primary services. Services in small letters correspond to secondary services.

## 1.17 Switzerland

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered. | |

The Swiss Federal Council has the authority for the policy making in the field of broadcasting. The key elements of the policy are:

- DAB+ is used for the distribution of nationwide and regional radio programmes (Switzerland consists of four different language regions that have to be served separately).
- Optionally regional and local radio programmes may be digitized in the FM band. This "digital option" is limited to the following conditions:
  - There is no right and no guarantee to obtain additional spectrum for the digital transmission
  - The digital transmission shall not interfere with existing analogue transmissions.
  - The digital coverage "is as it is". The enhancement of an eventually poor digital coverage should not result in additional frequency planning and new coordination activities.
- No switch-off date for analogue FM broadcasting has been fixed
- For analogue broadcasting in the FM-band no major capital investments and no extensive planning activities shall be made anymore in the coming years.

For further information please consult OFCOM's website:

http://www.bakom.admin.ch/org/grundlagen/00563/01138/01482/index.html?lang=en

http://www.bakom.ch/dokumentation/medieninformationen/00471/index.html?lang=de&msg-id=29890

Under certain conditions the introduction of digital radio programmes is financially supported by the Swiss Government. OFCOM undertakes the necessary activities to maximize the possibilities for new programmes and services for any market player. OFCOM periodically evaluates the potential influence of new technologies on sound broadcasting. If appropriate those are considered for the future strategy.

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| The main objective is to offer for the listeners an increased number of programmes. It is expected, that DAB+ will lead to innovation in more attractive and fancy programmes in the field of information, entertainment and reference to a language region (remark: There are 4 different language regions in Switzerland to cover). Nevertheless, it was observed that the switch-off of a well established analogue programme and the migration to DAB aroused more interest in DAB than the adoption of new programmes. |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| The Swiss marketplace is too small to go its own way alone. On the European level there is a lack of a co-ordinated strategy in the view of technologies and objectives. This results in uncertainty for manufacturers, broadcasters and consumers. The quality of FM broadcast is still too good even if a lot of broadcasters and consumers complain about poor quality and harmful interference: Therefore, broadcasters using FM frequencies have little interest to migrate to a digital platform, where they expect higher distribution costs per listener (at start-up time), more competitors and a potentially smaller market share.<br><br>Broadcasters fear that the development of the digital marketplace will lead to new economical structures in the whole broadcasting market. From the consumers point of view, value added services are not a key issue. Most of them will continue in receiving traditional radio programs, even if value added services and enriched content would become more attractive. A harmonised |

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| and groundbreaking directive on the European level (including a harmonised switch-off date for FM, and the designation of one specified new technology) could be a way out. But this would imply a turning away from "technology neutrality". Furthermore, a forced switch-off date of analogue FM would only be reasonable if there would be a strong demand for the use of this frequency band (for example a digital dividend in Band II). |

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|---|
| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
| All mentioned technologies and distribution forms will be applicable in Switzerland. Consumers expect the seamless availability of their favourite radio programs. They should not have to care in detail about the distribution path of these programmes. |

**Part 3 – European initiatives**

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|---|
| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
| A co-ordination of activities on a European level might help to reduce the uncertainty of manufacturers, broadcasters and consumers. As mentioned above, this would imply a new philosophy regarding technology neutrality. Broadcasting as such is part of the "national cultural authority" and can be hardly overruled by central directives. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | No | No | Defence |
| Band II | 87,5 – 108 MHz | FM/ ENG/OB | LPD | Broadcast services (no specific changes planned) |
| Band III | 174 – 230 MHz | DAB/DAB+<br><br>Wireless Microphones | Telemetry, LPD | Broadcast services |
| L-band | 1452-1479,5 MHz | None | None | Non broadcasting (Wireless Microphones under evaluation) |

## 1.18 United Kingdom

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered. | |
| The UK's policy regarding digital radio are enshrined in the Broadcasting Act 1996 and Digital Economy Act 2010. Copies of these can be found at:<br>http://www.opsi.gov.uk/acts/acts1996/ukpga_19960055_en_5#pt2<br><br>http://www.opsi.gov.uk/acts/acts2010/ukpga_20100024_en_5#pb6<br><br>The present policy, as defined in the Digital Britain report, is that: when 50% of listening is to digital; and when national DAB coverage is comparable to FM coverage, and local DAB reaches 90% of the population and all major roads Government would instigate a migration programme of, probably, two years. At which point all national, regional and larger local services would move to DAB exclusively leaving Band II available for the expansion and enhancement of small scale local and community radio services. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| The UK's public policy objectives for the implementation of digital radio (DAB) are to increase the number and variety of services available to listeners as well as to allow the implementation of other, innovative, types of services.<br><br>Due to congestion of Band II it is not possible to implement any new FM services of significant size, especially in and around the urban areas of the country. |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| Due, especially, to its mobile nature it is difficult for a single administration to implement a digital radio technology successfully on its own. DAB has been relatively successful in the UK providing new services to many people along with some innovative services. However, it has never quite reached a tipping point leading to the replacement of existing analogue services. Some of the reasons for this are:<br><br>• lack of factory fitted receivers by vehicle manufacturers<br>• the UK wide market has reduced receiver prices to around £30 (€35), however, we would expect a larger market to drop prices further<br>• the high cost of implementing DAB transmitter networks, in terms of transmission and telecoms distribution costs, have lead to poorer coverage than analogue equivalents<br>• a 'killer' application has not yet been identified<br>• the arrival of newer standards, most notably DAB+ and DMB have lead to uncertainty for both manufacturers and consumers<br>• difficulty filling the capacity on some local multiplexes in some (generally more rural) areas<br>• large area coverage is not appropriate for smaller scale local services, so DAB might not provide all services with a digital migration path<br>• a large base of existing analogue receivers that continue to operate<br><br>Technology advances very quickly and those used for radio broadcasting are no different. When |

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| it was first implemented in the UK, in 1995, DAB was the best technology available. Since then new, alternative and complementary, technologies have become available such as DAB+, DMB, DRM, DRM+ as well as internet radio. Unlike DSO for television DAB uses a different band of frequencies so analogue receivers continue to work. Furthermore there does not appear to be a digital dividend for radio as other services are not queuing up to occupy vacated Band II spectrum. |

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| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
| Within the UK terrestrial transmission is the only practical method of delivering broadcast coverage to vehicles, rural areas and the majority of outdoor locations. Whilst other delivery platforms are available indoors (e.g. DTT and Internet) most need the receiver to be physically attached to a fixed rooftop antenna, satellite dish, or cable of some form or to have wifi connectivity.<br><br>Additionally most of these devices (e.g. televisions or home computers) consume more energy than their terrestrial radio equivalents and lack portability. |

**Part 3 – European initiatives**

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|---|
| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
| An action plan could be useful for a number of reasons; to promote a common standard or set of standards; to offer a long term stable market for receiver and car manufacturers; to inform and raise awareness of industry and consumers alike. The radio profiles defined by WorldDMB might provide an example of such a common standard. Consideration and development of software defined radio might provide some of the issues of evolving standards. |

**Part 4 – Usage of spectrum**

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|---|
| Please provide us with information regarding the current and future use for radio broadcasting |

| of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz? | | | | |
|---|---|---|---|---|
| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
| Band I | 47 – 68 MHz | No allocation to Broadcasting<br><br>47 – 68 MHz<br><br>Primary allocation to Land Mobile<br><br>50.0-51MHz<br><br>Primary allocation to Amateur<br><br>51-52MHz<br><br>Secondary allocation to Amateur<br><br>Secondary allocation in the band 47 – 68 MHz to PMSE.<br><br>46-68MHz wind profile radars and short term Ocean Surface Current Radars. | | The band 55-68 MHz has been identified for possible future award by Ofcom. |
| Band II | 87,5 – 108 MHz | Within the United Kingdom the whole of Band II is currently used exclusively for FM radio broadcasting. There are around 2500 UK FM radio stations in Band II. These range from the National coverage networks through to small coverage community and temporary (28 day) radio services. The | | Continued use for FM Radio services.<br><br>It is planned that national and large scale services will migrate to DAB at some point in the future. This will |

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|---|---|---|---|---|
| | | planning of the band is segmented into varying types of service. The original BBC national networks are in the lower part of the band and the newer services, both national and local radio, tend to be in the middle and higher end of the band.<br>The planning is partly constrained by the in band local oscillator issue, plus image problems with aeronautical services in the spectrum immediately above. | | leave Band II available for smaller scale local commercial and community radio services. |
| Band III | 174 – 230 MHz | 174 – 209 MHz allocated to Private Mobile Radio.<br>PMSE allocations in some parts of the band<br>209 – 230 MHz allocated to T-DAB services. | | PMR services will release their spectrum above 193 MHz at the end of 2012. |
| L-band | 1452-1479,5 MHz | Licenced to Qualcomm via auction in 2008 on a technology neutral basis,<br>initially licenced for 15 years | | This is a tradable licence and could be sold by Qualcomm. |

## 1.19 Luxembourg

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial <u>digital</u> radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be | |

| considered. |
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| Luxembourg has no official policy as it is our opinion that the market will decide when, what technology and on which platform digital radio will be introduced in the future. Radio is traditionally financed by advertising and it will be the broadcaster/service provider who decides on the distribution platform.<br><br>In Luxembourg, digital transmission started in the MW as well in the SW bands since 2003 applying the digital standard DRM. With regard to the VHF Band, it is the cost and the expected long duration of simulcast as well as the necessity to share multiplexes which has up to now prevented Luxembourg radio stations from engaging into digital transmissions. Luxembourg is closely following the developments in the neighbouring countries and at the European level regarding future introduction of digital terrestrial radio in the FM and/or VHF band.<br><br>Today the FM band is heavily and still efficiently used. No mandatory switch-off date for analogue radio should be foreseen in this band. Digitisation of this band is supported if it can be done by a non disruptive transition. Luxembourg is not considering the use of L-band as there is little chance for terrestrial digital radio developments in this band. Luxembourg recommends considering reverting part of L-Band to satellite digital radio.<br><br>In any case digital radio is developing in the Internet and access through mobile broadband will be the natural route towards digitisation if no other dedicated solution makes its way. |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
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**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
| --- |
| Luxembourg has not directly a strategy for digital terrestrial radio, mainly because private initiative is predominant in comparison to public broadcasting. However, if terrestrial digital radio has to be introduced using different frequency bands, the obstacle would be the cost of the |

simulcast from the broadcaster side and the use of new equipments from the consumer side.

Value added services may only have a limited impact taking into account that this kind of services are more and more distributed via the Internet and mobile broadband networks. Taking into account the high penetration rate of mobile devices, such services would be accessible to nearly everybody.

May-be more user-friendly functionalities in comparison to analogue radio could play a role for the introduction of digital radio.

How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies?

Radio plays an essential role for in car and portable indoor reception. Having good coverage and good penetration via economically affordable networks would be the essential requirement on frequency bands. In addition technologies using multiplex systems may perhaps not be the ideal solution for local radio distribution; maybe a mix of radio technologies is needed depending on coverage size.

In Luxembourg, digital terrestrial radio is expected to mainly cover national and local programmes. Other forms of digital radio are expected, notably satellite-delivered to enhance and complement the offer with a wider variety of international and niche content, and introduce some mobility to enable the listening of national & local programmes abroad. The different forms of digital radio are therefore likely to be complementary in nature. Noting the very limited use of the L-Band spectrum in Europe, Luxembourg would recommend a flexible approach, allowing, on a national basis, L-band frequencies in the band below 1,479.5 MHz to support satellite-delivered services, for instance by permitting repetition of L-Band satellite signals.

Satellite may also play a role for broadcasting radio to in-vehicle receivers, together with the automotive industry, and to mobile devices such as mobile phones, portable media players and PDA, I-Pad. In Luxembourg, 95% of the population have a cable connection, also used for the reception of radio programmes.

But Internet radio over broadband either on fixed or mobile networks (with a flate rate subscription) could in our opinion play a crucial role for the introduction of digital radio, solving probably also the problem of a costly simulcast in different frequency bands, by using maybe hybrid terrestrial/internet receivers. In this regard, it has to be noted that the Luxembourg government has a very ambitious objective, which is to deliver to each household till 2020

broadband services via fibre with a data rate of 1 Gbit/s and to make available also mobile broadband.

**Part 3 – European initiatives**

What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope.

In our view, given the local and national nature of terrestrial digital radio services and content, there could perhaps be a limited need or demand for a common action plan for terrestrial digital radio. However we are not opposed to a European initiative, but we think that

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | Not used | No | No plans |
| Band II | 87,5 – 108 MHz | Is used for national, regional and local radio | No | Yes, for digital transmission |
| Band III | 174 – 230 MHz | Not used | No | Yes, only if there will be a request |
| L-band | 1452-1479,5 MHz | Not used | No | No plans |

## 1.20 Spain

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☒ Yes | ☐ No |

If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.

The terrestrial digital radio is regulated by the 1287/1999 Royal Decree modified by the 776/2006, which establish the National Technical Plan for digital radio in the sub-bands 195 MHz - 223 MHz and 1452 MHz - 1479'5 MHz.

The current Technical Plan establishes three nationwide networks (1 SFN, 2 MFN), two regional networks (1 SFN, 1 MFN), and one local network established by a Ministerial Order of 15th October 2001. Each multiplex with six programs at least. The nationwide networks titles are granted by the national administration. The regional and local networks titles are granted by regional administrations. The titles are granted for 15 years, automatically renewable (modification from the Audiovisual Communications General Law of 31st March 2010, LGCA hereafter).

Currently, there are twelve licensees for the nationwide networks together with the national provider of radio communication services, and the coverage achieved by these nationwide networks is around the 50% of the population (around 23 cities).

There are only two regional networks implemented. The planned L Band has not been used. A very low number of receivers have been sold. On the 31st March 2010, the LGCA was approved with a provision about Digitization of Terrestrial Sound Broadcasting Service in order to promote digital radio.

If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc).

The main objectives have been established in order to accomplish a population coverage rate, but also taking into account the advantages of the digital technology as the introduction of new added and exclusive services and the easy configuration of coverage of programs in different areas, national, regional and local.

It has been noted that the flexible configuration at the different levels, national and regional, has lead to different scenarios for digital radio. At regional level, there had been only two regional bids. This situation prevents a significant demand of receivers, programs etc.

The process should be coordinated in order to follow the same objective. Another issue to address is the share of the multiplex by different providers *of radio communication services.*

Finally, some problems for good reception in interiors and/or in mobility have been signalled. To solve them, providers should increase the investment in transmitters. At present there is a perception that digital technology should break the old business model and transform it into a new more sustainable by increasing the amount and quality of radio signals as well as ratings. To do this, the LGCA has introduced provisions which will guide the study of the Plan for Digitization of the Terrestrial Sound Broadcasting Service that this Law provides.

The current Technical Plan for terrestrial sound broadcasting doesn't foresee an analogue switch-off. The long term strategy for digital radio is in the process of being developed in consultation with the industry and other interested parties.

For the development of the strategy of Digitization of the Terrestrial Sound Broadcasting Service, it is intended to consult the sector.

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| Some of the potential obstacles are:<br>• Uncertainty about the future of digital radio by the providers of radio communication services.<br>• Economical aspects for the providers of radio communication services.<br>• Users/listeners do not see improvements nor added value in digital radio and are comfortable and satisfied with the reception quality of the signal in modulated frequency (FM).<br>• The very existence of another radio broadcasting band working properly (87'5 MHz- 108 MHz, FM band).<br>• Currently there are about 4000 FM stations in the country. There would be a lack of spectrum for the migration to digital using DAB technology. Besides, the migration to a |

digital technology for the band 87'5-108 MHz, should be carefully studied since it is very congested.

- The cost of receivers and lack of a common denominator regarding standards. Bad reception in-door.
- There is a need for more and exclusive programs and specific content with added value services.
- A push is needed at national, regional and local levels. And at the supranational level, establishing an action plan at European level allowing a larger market which will provide benefits to manufacturers, providers of radio communication services and radio listeners.
- Improving the technology used so far (i.e. DAB+, instead of DAB classic).
- One of the key elements to consider is the automotive industry.

As is clear from the text above, the current uncertainty can be reduced by establishing a common European framework and/or coordination procedure between Member States, for the deployment of digital radio all around Europe and ensuring the digital radio reception for listeners when they are moving in Europe. It should be taking into account the needs of spectrum, compatibility aspects, and the reduction of technologies costs through economies of scale, inter alia.

How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies?

The main form of radio broadcasting in Spain is by terrestrial networks in the VHF Band II (87'5 – 108 MHz).

The deployment of DTT technology with the analogue switch-off for television (in April 2010), introduces digital radio in almost every home. However, there is no competition with traditional analogue radio nor with digital portable radio either, since it is necessary to turn on the TV receiver and the programs are the same as in analogue mode.

The mobile terminals and Internet radio are complementary to traditional terrestrial sound broadcasting service.

Consideration should be given regarding the foreseeable needs for spectrum in a scenario of an analogue switch-off in order to study the technologies to use, costs for receiving equipment, and distribution networks and so on.

## Part 3 – European initiatives

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| A European-wide strategy to provide a common framework and a coordinated action plan for the deployment of digital radio at European level is the key element that should boost the digital radio. Would provide a large market that would lead to economies of scale and cost reduction. Would avoid uncertainties which prevent assert the benefits of the migration to digital technology. This strategy should consider a plan migration to digital-only, considering the real needs of spectrum, by setting a date for analogue switch-off. |

## Part 4 – Usage of spectrum

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** | |
|---|---|---|---|---|---|
| Band II | 87,5 – 108 MHz | Analogue FM broadcasting (nationwide, regional, local) | Micro-transmitters for portable wireless audio applications and very short range. Application with consideration of common use. | Same use. | |
| Band III | 174 – 230 MHz | Digital terrestrial sound broadcasting (T-DAB) in the sub-band 195-223 MHz.<br>The sub-band 174-195 MHz is additionally allocated on a primary basis to the terrestrial mobile service, mainly for transporting broadcasting programs.<br>Wireless microphones.<br>The sub-band 223-230 MHz | Wireless microphones. | Band I | 47 - |

| | | | | | |
|---|---|---|---|---|---|
| | | is additionally allocated on a primary basis to the terrestrial mobile service. | | | |
| L-band | 1452-1479,5 MHz | The sub-band 1452-1479'5 MHz is allocated to terrestrial digital sound broadcasting. Currently not in use. | | Same use | |

## 1.21 Portugal

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☐ Yes | ☒ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>Nevertheless, the relevant Law states that the licences held by analogue radio broadcasting operators are adequate authorisations for conducting its activity via the digital technology.<br><br>Normally, the policies are formulated through relevant legislation, but the definition of policy objectives shall always be developed in coordination with the Authority for the Media, which is a separate body.<br><br>When defining policy objectives, the existence of at least, a solid standard(s) which is (are) already introduced or which is (are) being introduced in other european countries is of major importance. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
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**Part 2 – Market issues**

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|---|
| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
| No, we don't fore see any obstacles. Once the quality of the FM service is, in our opinion, quite good, the success of digital radio will depend on the provision of innovative services, that will bring added value for both the broadcasters and the general public. |

| |
|---|
| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
| In our opinion and in our country, the market reached by terrestrial radio is completely different from the market reached by internet radio and so they can be considered as complementary. In our view T-DAB system is more suitable for media groups who broadcast already in FM two or three programmes, while DRM+ system will be more suitable for local stations which broadcast only one programme. However this approach may give rise to a market fragmentation, which can be avoided if future receivers are developed with capability to receive both systems. |

**Part 3 – European initiatives**

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| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
| No strong views on this subject. However European harmonised initiatives may always contribute in a positive way to the development of new services. |

**Part 4 – Usage of spectrum**

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|---|
| Please provide us with information regarding the current and future use for radio broadcasting |

| of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz? | | | | |
|---|---|---|---|---|
| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
| Band I | 47 – 68 MHz | 0 | 0 | 0 |
| Band II | 87,5 – 108 MHz | 6 National networks<br>2 Regional networks<br>350 local stations | 0 | Some more local stations in rural areas |
| Band III | 174 – 230 MHz | 1 National network (T-DAB) | 0 | 2 National networks<br>12 Regional networks |
| L-band | 1452-1479,5 MHz | 0 | 0 | 14 Regional networks<br>60 local networks |

## 1.22 Belgium

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☐ Yes | |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>Flemish Community.<br><br>A frequency block (12A) in band III is in operation to broadcast programmes of the Flemish public broadcaster in T-DAB. Another frequency block (11A) was put into the market and licenced to be used for the distribution of broadcasting services in DAB technology.<br><br>The Flemish Community will investigate if not yet licensed frequency spectrum in band III or L-band obtained at RRC-06 or a European conference can and/or should be put into operation for digital radio broadcast services. Also the different players will be invited to reflect on potential | |

driving forces to stimulate the digitalisation of radio broadcasting.

The results of the above mentioned study are not yet known.

French Speaking Community

A frequency block (12B) in band III is in operation since several years to broadcast programmes of the public broadcaster in T-DAB. The other channels obtained at the RRC-06 for digital radio are not yet allocated.

A public consultation was launched a year ago in the French speaking Community. It results from this that the radios are interested in digital radio, but are currently spending their financial and human capacity to implement the new FM plan and are very concerned about the current economic crisis.

So far, no decision has yet been taken on the standard to be used.

German-speaking Community

**In Band III**, the only frequency block obtained by the German-speaking Community during the RRC-06 is the block 8A . This multiplex will be divided between the public broadcaster and the private broadcasters and will not be on air before the new infrastructure be ready in 2013/2015.

Concerning the **L-Band,** no decision has been taken for using the obtained coverages for the end of the FM-licenses in 2016.

Also, no decision has been taken on the standard to be used after T-DAB.

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
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**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
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| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
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| - |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| It seems important to have radiosets that can cope with different digital technologies. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | | | |
| Band II | 87,5 – 108 MHz | FM broadcasting licences | | To be studied |

| | | | | |
|---|---|---|---|---|
| | | | | |
| Band III | 174 – 230 MHz | Part licenced for broadcasting services using DAB technology | | To be studied |
| L-band | 1452-1479,5 MHz | | | To be studied |

## 1.23 Latvia

**Part 1 – Public policy objectives**

| Does your administration have an official policy regarding terrestrial digital radio? | |
|---|---|
| ☐ Yes | ☒ No |

If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.

Developing of a guiding document – concept of implementation of digital sound broadcasting in Latvia – was initiated by the Ministry of Transport of Latvia, institution responsible for electronic communications, but was not brought yet to the end. Aim of this document was providing guidance for implementation of digital broadcasting in the country based on DVB-T system and the existing Regional frequency plans – GE06, Wiesbaden 95 and Maastricht 02 as revised in Constanta, 2007.

It was intended to prepare the framework for implementation of T-DAB sound broadcasting in the band III. Frequency assignments for the starting phase were agreed with neighbouring administrations.

To date the perspective of future digitalization of the broadcasting process has not been agreed with potential participants of the process, neither terms for the implementation of digital broadcasting have been set, nor opinion about what should happen with the analogue broadcasting created. FM multi program broadcasting is covering all the country and the band II is fully used without further development possible in the cities of interest. About 140 FM stations are in operation forming eight nationwide public and commercial networks which could be transferred into T-DAB networks. But a big amount of local stations with limited coverage areas are as well operating. Transition of local stations to the multi program T-DAB platform seems not be the appropriate and best solution. Choosing of digital transmission systems which would cover all needs in the transition to digital radio is still an issue which should be further

studied.

In practice during the latest period all attention was devoted to finishing the transition from analogue to digital television thereof activities concerning the implementation of digital sound broadcasting were postponed.

By 1 June 2010 was completed the transition from analogue to digital television in Latvia

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial digital radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| - |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| To awake interest of users the digital radio should perform better than did its "forefather" – the very successful FM. That is, it should provide very reliable reception, moreover when moving, be comfortable in use and offer value added services – increased number of programs, RDS facilities, watch, iPod player etc. It should be suitable for inclusion in other electronic devices, e.g. mobile phones, etc. A low price comparable with FM radio and resulting from mass-production is important. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| I guess the future digital radio will be a success only in case it will provide to the user full mobility of reception. The above mentioned "cabled" platforms providing only fixed reception can not be considered being competitors or partners in the digitalization of sound broadcasting. |

| |
|---|
| A digital radio receiver should first of all be a "wireless" receiver. Implementation of wireless digital sound broadcasting should be considered as an issue separated from cable platform. |

**Part 3 – European initiatives**

| |
|---|
| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
| A European initiative helping the Member States, associations and industry involved in the digitalization of radio, to concentrate on choosing the most appropriate digital system(s) suitable for possibly worldwide use would be beneficial. Promotion of a one or a very limited number of systems seems to be an important factor for success. Actually various systems are proposed what can lead to a useless fragmentation for the industry and users.<br><br>A European common action plan based on input from the Member States and the industry could serve as a tool providing optimization of the process. |

**Part 4 – Usage of spectrum**

Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz?

| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
|---|---|---|---|---|
| Band I | 47 – 68 MHz | Analogue TV and FM, practically ceased. Mobile service (MS), fixed service (FX) | No actual previsions | Under consideration. Probably MS and future digital broadcasting systems |
| Band II | 87,5 – 108 MHz | Intensively used for FM broadcasting | SRD in accordance with ERC/REC 70-03, ERC/REC 25-10 | No change. In visible future will be used for FM broadcasting |
| Band III | 174 – 230 MHz | Analogue TV, practicaly ceased | SAB/SAP (PMSE), SRD in accordance with ERC/REC 70- | Digital TV – 55 %<br>Digital sound– 45 % |

| | | | | |
|---|---|---|---|---|
| | | | 03, ERC/REC 25-10 | |
| L-band | 1452-1479,5 MHz | Digital multimedia systems. Actually no stations in operation | No actual previsions | Future multimedia systems |

## 1.24 Norway

### Part 1 – Public policy objectives

| Does your administration have an official policy regarding terrestrial <u>digital</u> radio? | |
|---|---|
| ☒ Yes | ☐ No |
| If yes, please give broad description of it. If no, please indicate how policy objectives are formulated, and what criteria that would require to be fulfilled before a policy was to be considered.<br><br>The current policy regarding terrestrial digital radio in Norway is described in the report number 30 (2007) to the Norwegian parliament (Storting), "Broadcasting in a digital future". The current policy is now being reviewed by the Ministry of Culture where a new report to the parliament is planned finalized at the end of 2010.<br><br>Norway has implemented a user-oriented frequency management strategy. The marked will therefore play a key role in pointing out the future technical standards for digital radio in Norway. The general aim is to have a technology neutral approach and facilitate the development of the radio media by giving digital radio broadcasters good long-term framework conditions. | |

| If yes above – please also provide information concerning stipulated public policy objectives regarding the implementation of terrestrial <u>digital</u> radio (for example issues such as more programs, competition, local and regional issues, innovation etc). |
|---|
| The purpose of the public policy is to secure high-quality, reasonably priced and future-oriented radio broadcasting services for the users throughout the country through efficient use of the frequencies by facilitating sustainable competition, as well as fostering industrial development and innovation. |

**Part 2 – Market issues**

| Do you fore see any obstacles concerning the implementation of your strategy that could be addressed on a European level? In addressing these – what could be the ways forward? Is there any essential prerequisite for the success of digital radio – such as the issue of "value added services"? |
|---|
| A more harmonized European strategy describing the way forward for digital radio would be important to accelerate the digitalization process and getting a wide range of digital radios on the marked, particularly for cars. Furthermore a common European strategy is important for economy of scale regarding digital radio receivers and transmitters, and giving broadcasters, manufacturers and consumers a more predictable future for digital radio investments. |

| How do you see in your country the relationship between digital terrestrial radio and other forms of digital radio such as satellite, cable, internet radio over broadband etc? What is your view on the use of different digital terrestrial systems for specific radio needs (e.g. local or nation wide coverage). Specific requirements concerning frequencies? |
|---|
| Norway has a challenging topography to roll out cost efficient digital terrestrial radio coverage for all the users throughout the country. Satellite, cable and broadband may therefore be valuable supplementary technologies to provide as many as possible with digital radio services to a reasonable price. |

**Part 3 – European initiatives**

| What is your view on specific European initiatives regarding terrestrial digital radio? Are there any examples that you wish to high light – and if so, why? Would a European common action plan be needed to get things happening – drawing upon examples such as the initiative "Unique Digital Radio" by WorldDMB, EBU and DigitalEurope. |
|---|
| In general Norway welcomes European initiatives to ease the transition to a digital future for radio broadcasting. |

## Part 4 – Usage of spectrum

| Please provide us with information regarding the current and future use for radio broadcasting of the bands VHF (47-68 MHz, 87,5 – 108MHz and 174 – 230MHz) and the L-band frequency range 1452-1479,5 MHz? | | | | |
|---|---|---|---|---|
| **Band** | **Frequencies** | **Licence based services** | **Non-licence based services** | **Future use (planned)** |
| Band I | 47 – 68 MHz | No radio broadcasting | Amateur radio 50-52 MHz, 100 W | Not yet decided |
| Band II | 87,5 – 108 MHz | FM radio | | Not yet decided |
| Band III | 174 – 230 MHz<br>+ 230-240 MHz | T-DAB, T-DMB | | Digital radio broadcasting. Possible other services not yet decided. |
| L-band | 1452-1479,5 MHz | No radio broadcasting | | Not yet decided |

# 2 Replies from Industry

## 2.1 Future use of the bands – view of the industry

Keeping in mind what has been presented above regarding strategy and planned future use by the member states – it is then interesting to compare this with what has been proposed by the different organisations representing the industry. The question that was put forward was: *What do you think would be the most efficient use of the VHF bands (47-68MHz, 87,5-108MHz and 174-230MHz) and the frequency range 1452-1479,5 MHz?*

### 2.1.1 Digital Radio Mondial

| **Answer** |
|---|
| **47-68MHz -** This frequency band is suitable for the introduction of DRM+ services despite some drawbacks inherent in its long wavelength and possible interference issues. DRM+ is robust, relatively easy to implement and presents a number of opportunities. This frequency band could be particularly attractive for local and regional coverage, small radio stations and community radios. DRM+ in this band might be an excellent option for commercial/business uses for transmissions of digital data on a broadcast basis using fixed antennas.<br><br>Information about the current and possible future use of this frequency band in a number of European countries is available in the recently revised ECC Report 117.<br><br>**87,5-108 MHz -** This frequency band is synonymous with FM radio services. In many European countries it is a very valuable commodity exploited almost to the full. Today this is the home of commercial radio broadcasters. When, and if, they will migrate to multiplexes and band II will become decongested and ready for digitisation, the best and most natural option in Europe is DRM+. The reason: DRM+ transmissions were specifically designed to fit into the European spectrum allocation and DRM+ offers flexibility of placement in any available channel in this band (and even bandI).<br><br>The current and possible future use of this frequency band in a number of European countries is being examined more and more seriously by some organisations like CEPT and some administrations.<br><br>**174 - 230 MHz -** This is the primary spectrum range for the introduction of the DAB-family, i.e. DAB, DAB+ and DMB. Recently technical trials in Germany have shown though the possible coexistence, without interference, of DAB multiplexes with DRM+ smaller operators in order to give that two tier (national/regional as well as local) coverage necessary for a full digital offer. This is experimental at this stage. |

### 2.1.2 Satellite Action Plan regulatory Group

| Answer |
| --- |
| SAP REG recommends to maintain the current regulatory certainty that prevails in the L band, whether in the 1452-1479.5 MHz portion, covered by the MA02_revCO07 plan, or the upper 1479.5-1492 MHz sub band, as harmonised for satellite use through ECC/DEC(02)03.<br><br>SAP REG has no specific comment on the most efficient use of the VHF bands, other than that given the huge number of analog users in some of those bands and the established digital transmissions in other parts of the VHF band, actual spectrum usage is already rather efficient. Conversion of the remaining analog bands to digital would entail huge, and possibly unjustified, migration costs, without unlocking vast amounts of spectrum. |

### 2.1.3 European Telecommunications Standardisations Institute

| Answer |
| --- |
| DRM has been designed to use the lower VHF bands from 30 to 174 MHz and allows an efficient transition to digital for locations where there are a few radio services, for example rural areas where private broadcasters find it difficult to attract sufficient advertising revenues to operate profitably. The high VHF spectrum from 174 to 230 MHZ and the L-band are suitable for the DAB family of standards and allow an efficient transition for locations with a high number of radio services, for example large town and cities, and for national services where single frequency networks provide very high spectrum efficiency. |

### 2.1.4 European Broadcasting Union

| Answer |
| --- |
| ***47-68 MHz*** This frequency band is suitable for the introduction of DRM+ services. DRM+ presents a number of opportunities and this frequency band could be particularly attractive for local and regional coverage, small radio stations and community radios (services in this Band are particularly subject to long distance interference (Sporadic E) at certain times of the year and therefore Band I is more suitable for the provision of local services where the wanted signal can be relatively high). DRM is a European and open standard adopted by ETSI (ES 201 980 V3.1.1).<br><br>At the present time, no regulatory framework exists for the introduction of DRM+ and in some countries there are other services in operation in Band I. |

Information about the current and possible future use of this frequency band in a number of European countries is available in the recently revised ECC Report 117 (currently subject to public consultation)

***87.5 - 108 MHz*** This frequency band is predominantly used for FM radio services and in many European countries it is exploited close to its full capacity. Today, and for the foreseeable future, FM is by far the dominant revenue source for commercial radio broadcasters and the major source of listening amongst all radio services.

Currently the market penetration of FM receivers is high and most households have several receivers. Many FM receivers can offer additional facilities like RDS (information and seamless retuning). Furthermore, they are often combined with other technology (e.g. DAB receivers, music players, mobile phones) ensuring even wider availability of FM. Car manufactures still view FM as their de-facto standard.

Although the sound quality of FM radio is considered satisfactory the lack of frequencies hinders further developments. In the medium to long term FM broadcasting will need to be replaced by a digital technology. However, at present there are no plans for the digital switch-over in this frequency band.

Possibilities for the digitalisation of Band II are explored in the ECC Report 141 (available for download from http://www.erodocdb.dk). This document also contains the information about the current and possible future use of this frequency band in a number of European countries, as provided by the national administrations.

***174 - 230 MHz*** This is the primary spectrum range for the introduction of digital radio broadcasting on the basis of the DAB-family, i.e. DAB, DAB+ and DMB. Digital radio in this frequency band is generally supported by broadcasters and industry.

Regulatory framework is provided by the GE06 Agreement where a number of countries have DVB-T entries in the Plan, alongside T-DAB. Furthermore, DAB is a European and open standard adopted by ETSI (EN 300 401, TS 102 563, TS 102 428).

A policy decision at the European level in support of digital radio in this band would help to uplift the digital radio receiver market.

***1452 - 1479.5 MHz*** This frequency band was originally intended for T-DAB services. However, in the recent years there is a growing interest from the industry to use this spectrum for mobile multimedia services. Enhanced digital radio services are well suited to be part of the multimedia service offering.

### 2.1.5 Association Européenne des Radios

| Answer |
| --- |
| As mentioned, radio across Europe is already granted with an efficient, simple-to-use and free-to-air technology: FM on band II. This efficiency relates to the business-model: it is actually an essential part of the only currently-known viable business model for commercially-funded radio. Besides, and as mentioned too, free-to-air FM broadcasting on band II only represents 20,5 MHz. Across Europe, nearly every single frequency is used in this bandwidth. Thanks to the broad receiver penetration and the very high usage by the listeners this small bandwidth is very efficiently used[xiii]. The success of FM is also evidenced by the fact that very modern communication devices such as mobile phones, smartphones and "media-players" have FM receivers included. Furthermore, by its feels-like-free, widely-spread, mobile, simple and direct model, commercially-funded radio is an essential actor of cultural diversity, media pluralism, access to creativity, and social inclusion. It is also the only reliable way to inform the public in case of a catastrophe and a regional power cut as many devices are powered by batteries. **Although analogue, AER therefore perceives FM to be a state-of-the-art efficient technology.**<br><br>However, as mentioned, across the EU, plans to migrate from a satisfying analogue technology (FM) to digital technology are being actively discussed and tested: Radio's plans to broadcast digitally could use band III (174-230 MHz), or L-band (1452-1492 MHz) depending on the EU Member States. And, as described previously, nearly each AER Member defends a different approach to digital broadcasting and the standards to be used. This underlines once again the varied approach, and the need to ensure that decisions are taken at national level for spectrum management and for standards to be used for radios. **AER therefore believes that the various markets should decide which is the most efficient radio standard, depending on the local situation. However, AER would call the EU to support interoperable solutions**. |

### 2.1.6 HD Radio alliance

| Answer |
| --- |
| • We do not see the use of Band I for Radio Broadcasting could make real overall sense in the future (too long wavelength, difficult to integrate in existing Broadcast Transmission Infrastructure)<br>• The FM Band II should remain the long term "Radio Broadcast Band for free over the Air Broadcast" in analogue and/or mixed digital analogue operation , especially for the local and regional "one programme" Broadcasters with small networks. Although analogue, EHDRA perceives FM to be a state-of-the-art efficient technology. EHDRA strongly believes that FM-HD Radio can be a very good supplementing platform |

platform for local and regional Broadcasters in Europe

- Band III should become the primary new digital Home for the big (public and private Radio) Networks (a high number of programs for the very large geographical area) by using DMB Family standards. Band III should become. Long-term experience may show that there is not an off re-financeable potential in the Marketplace for so much programming to fill Band III completely.
- The L-Band (1452-1479.5MHz) should not become a primary digital Radio Broadcast Band, as there is no widespread "real demand".

EHDRA believes that the various markets should decide which is the most efficient radio band and standard, depending on the local situation. However, EHDRA would strongly support interoperable solutions.

### 2.1.7 DigitalEurope

**Answer**

Receiver manufacturers have no general preference for specific bands for digital radio broadcast, but would like to give the following aspects for consideration:

- For portable devices smaller antennas with sufficient gain are essential.
- Digital radio broadcast across all European countries shall focus on **as few as possible bands with sufficient spectrum allocated** to allow to build receivers simpler and in consequence at lower cost.

Band III remains the optimal frequency band for Eureka-147 based digital radio broadcast both for broadcasters (fewer transmitters) and for receiver design. All Eureka-147 radios support Band III while a part of them also supports L-Band, which may also be considered for other mobile multimedia usages.

### 2.1.8 Polish Digital Radio Forum

**Answer**

Talking about time frame 5 years, it seems that most efficient use (apart from analogue) will be the 174-230 MHz band with DAB+ technology. Of course we can discuss the DRM+, but compare the receivers market and the prices of DAB+ and DRM+, the DAB is far ahead.

We have to remember that the price of receiver will be the crucial factor affecting the success of technology. From the broadcasters point of view also the DAB+ is much more cost effective

compare to other systems.

Due to all of this above the Polish Digital Radio Forum suggested the government bodies (both the Office of Telecommunications and Post Regulation and National Broadcasting Council) to focus on DAB+ technology in terms of implementation of digital radio in Poland.

We had discussion also about the efficiency of using the L Band and almost all off our members (public, private broadcasters, government bodies, institutes) pointed the L Band as less useful compare to Band III. The reason is basically connected with the costs of the network.

### 2.1.9 Ericsson

| **Answer** |
| --- |
| Ericsson has no view on the future use of the band 47 – 68 MHz.<br><br>Ericsson understand that the current analogue broadcasting sound system in the band 87.5 – 108 MHz is widely used and is implemented in many homes, cars and mobile phone devices in number of billions, subsequently the installed base is significantly large and therefore the analogue usage could still be considered for a long time to come in this band.<br><br>Ericsson is of the view that the band 174 – 230 MHz could be considered for both digital broadcasting sound and video systems subject to national situations, perhaps as means of offloading the so called UHF band (Bands IV and V).<br><br>Ericsson is of the view that the band 1452 – 1479.5 MHz could be considered for interactive IP based multimedia and broadcasting sound and video systems. Other countries in other regions are already using, or are considering to use this band for such usages, which would provide for the necessary economy of scale for consumer products in this band. |

### 2.1.10 Qualcomm

| **Answer** |
| --- |
| Use of the L-band (1452-1479,5 MHz) for supplemental 3G/4G mobile downlink-only spectrum to support the growth of mobile multimedia services: The broadcasting and mobile industries are witnessing considerable changes in users' behavior, in particular through a clear move from linear audio and video to on-demand, non-linear content consumption. In conjunction, the internet is going mobile through a variety of connected devices, including e-readers and tablets. Those trends require the mobile platform to handle vastly asymmetrical downlink multimedia traffic. |

Indeed, the downlink : uplink median traffic ratio across cells in current mobile networks can reach up to a 9 : 1 ratio. In conjunction, mobile video, a vastly downlink oriented traffic, is predicted to account for 66% of the total traffic in 2014. Meanwhile, spectrum assignments for mobile broadband in Europe have traditionally been symmetrical, based on the underlying past assumption of nearly symmetrical mobile traffic. The availability of supplemental mobile downlink-only spectrum would therefore be crucial to enable the appropriate support of multimedia services on the mobile broadband platform in the future. The **L-band** (1452-1479.5 MHz) is currently the perfect candidate for supplemental 3G/4G downlink-only spectrum in Europe:

- The L-band spectrum remains unused in most European countries,
- 3G/4G technologies have evolved to include multiband and multicarrier aggregation capabilities (UMTS/HSPA+ release 9) i.e. using jointly several carriers in different frequency bands to obtain higher and faster data rates and capacities. This technology enhancement could be used to combine a mobile downlink-only band with symmetrical channeling arrangements, in order to create an overall asymmetrical channeling arrangement with more downlink capacity,
- 3G/4G downlink-only use (base station transmitting towards mobile terminals) of the L-band would be compliant with Maastricht, 2002, Special Arrangement, as revised in Constanța, 2007,
- The L-band represents a unique opportunity over the coming 10 years for additional downlink-only spectrum for 3G/4G in terms of capacity and coverage characteristics,
- The L-band is low enough in frequency, i.e. between the 900 MHz and 1800 MHz bands, to benefit from advantageous propagation conditions and to be supported by current mobile networks grids,
- It is sufficiently wide (25 MHz) to enable an increase in mobile downlink capacity and to support multiple operators,
- It is sufficiently separated, in frequency, from the other mobile bands (900 MHz,1.8 GHz, 2.1 GHz and 2.6 GHz) in order to avoid interference and to cope with compatibility issues in the devices,
- Finally, as users are increasingly consuming digital radio streamed over 3G mobile networks, the availability of increased 3G/4G downlink capacity with the deployment of HSPA+ downlink-only in the L-band, would represent a considerable opportunity for new and enhanced digital radio services in the near future.

#### 2.1.11 World DMB Forum

- DAB was originally designed to be used throughout the VHF and UHF bands and in the L-band. However, tests over the early years showed that VHF band III and L-band were best suited to the DAB family due to the availability of spectrum and the technical issues surrounding a wide-bandwidth signal of 1,536 MHz in the lower VHF spectrum.
- World DMB therefore believes that the 47 to 68 MHz spectrum, where available, is best suited to use by DRM+, the 87,5 to 108 MHz spectrum, at least in the short to medium term is best suited to analogue FM, and the 174 to 230 MHz and 1452 to 1479,5 MHz spectrum are best suited to the DAB family.

## 2.2 Needs and opportunities – industry

In the questionnaire there were especially two questions that related to needs and opportunities, and they concerned market evolution and likely future scenarios of technological platforms.

Question 1: *What is your view upon market evolution regarding Radio Broadcasting in Europe (over the time frame of 2 – 5 years)? Please outline any scenarios you believe to be likely.*

Question 2: *There are many different technical platforms at hand that can deliver digital radio – what do you see as the most likely future scenario regarding these – and why?*

#### 2.2.1 Digital Radio Mondial

**Question 1**

Digital terrestrial radio is making slow inroads in Europe. In the next 2-5 years there will continue to be radio broadcasting transmissions on FM in the frequency band 87.5-108 MHz. There are going to be attempts and an increased interest from public broadcasters and smaller radio operators in various digital experiments either for the introduction of more services or for getting extra spectrum or maintaining current coverage area. Most of the commercial FM operators are likely to maintain their dominant position.

The interest in what happens with VHF Band II will put the spotlight on DRM+. The advantages offered by the use of DRM+ in this band will continue to be examined seriously, separately or in parallel with the migration of some FM services to Band III. The availability of DRM+ equipment (some of it commercially available already) and of receivers could accelerate the discussions about the digital migration enabled by DRM+.

A possible impulse to the digital take-up in Europe might come from the rest of the world where large countries (like India, Russia which have already adopted DRM) deciding to go digital in a

more resolute and directive way would stimulate the mass market production of single or multi-standard receivers. This might give the necessary impulse to the national administrations and broadcasters to go digital quicker than anticipated.

**Question 2**

Digital audio is ubiquitous indeed. Listeners will consume audio in different ways depending on time of day, where they are (at home, in car, in the office etc.) available platform and cost (old fashioned radio is still free one offer to many as opposed to the one to one mobile or IP devices) as well as type of content or even editorial proposition (public service or commercial).

Radio will survive and thrive if it offers:

- universal availability (time and location),
- free access,
- increased functionality and flexibility in the use of radios (such as EPG, associated programme information, recording facilities, interoperability with other digital gadgets i.e. cameras etc.),
- easy and unfussy access (e.g. by automatic tuning),
- appropriate sound quality, and
- a great variety of content catering for all tastes and interests and needs

The majority of listeners listen to relatively few mainstream channels (an average of three) and they are best served by a dedicated terrestrial broadcasting network as a primary distribution platform. The terrestrial radio broadcasting networks need to be digital in order to ensure efficient use of spectrum, more content and more value added services, seamless service integration with other digital distribution platforms. Other considerations like: possible reuse of existing equipment, land used for transmitters, reduced energy costs recommend a digital solution and DRM in particular.

The T-DAB family (based on the Eureka 147 standards) is mainly supported by European broadcasters, industry, and regulators and is being implemented with various degrees of success in some European countries.

In the case where T-DAB cannot meet all requirements, complementary technologies need to be considered with special priority given to DRM30 and DRM+.

As the digital radio options assessment and planning will become more widespread and coordinated there is the great probability that administrations, broadcasters and regulators will realize that the T-DMB family devised by big broadcasters for national and regional coverage

needs and can accommodate a DRM complement so that whole countries can be covered and entire audiences serviced.

Bringing and supporting the very similar receiver profiles of T-DAB and DRM would be the right signal for the manufacturing industry as well.

Other platforms delivering radio are the Internet and the mobiles.

The internet radio offers true interactivity and access to a limitless number of channels from across the world. While the richness of content, the granularity of a targeted offer and the extra services make internet really appealing there are drawbacks too: i.e.cost, not on the go, sometimes not best sound quality or reliable delivery. This is why the internet delivery will have its place, might make into the car separately or via mobiles even but will remain a minority "sport", a niche offer that cannot replicate the mass appeal and all the qualities of terrestrial radio broadcasting.

### 2.2.2 Satellite Action Plan regulatory Group

| **Question 1** |
| --- |
| Given the dynamics of the existing radio broadcasting landscape, SAP REG believes that it may be unlikely to expect significant market evolutions regarding terrestrial Radio Broadcasting in Europe over the 2 – 5 year timeframe. As pointed out above, however, SAP REG believes that the deployment of one or more satellite-delivered platforms may be helpful in stimulating market evolutions. This was for instance the case also for digital television (in particular in the case of High Definition Television), where DTH services were pioneering the introduction of those new services. The satellite technology, either as a component of hybrid systems or for direct satellite-delivered services, is bound to accompany any such development in Europe. SAP REG notes in this regard that some new initiatives have again recently emerged in the L band, which envision to augment by satellite the initial terrestrial deployments employing the MA02_revCO07 plan, by satellite. |

| **Question 2** |
| --- |
| SAP REG believes that one or more digital satellite radio platforms (complemented by terrestrial signal repeaters) further augmented by terrestrial-only channels for local and regional programming could provide the necessary scale and momentum for successfully bringing digital Radio Broadcasting to a mass audience. Such an approach will allow an optimal combination of international, national, regional and local channels using coherent technical characteristics and features. Also, SAP REG believes that the future of radio broadcasting cannot be mono-technology, but on the contrary will be contributed by a multiplicity of telecom, broadcasting, |

unicast, multicast, terrestrial *and* satellite technologies, with a view to addressing both current (digital "immigrants") and future (digital "natives") usages.

### 2.2.3 European Telecommunications Standardisations Institute

**Question 1**

Some countries, for example the UK, are moving towards the switch-over from analogue to digital radio broadcasting in this timeframe, following the successful transition of television services. Other countries are less far along the digitisation route and so are likely to be in the "early adopter" stage, where co-ordinated messages from broadcasters backed up by retail information and promotion will be educating consumers as to the benefits of digital. Other countries still will be deciding on their plans for digital.

With greater co-ordination, the changes could be faster and cause less financial risk. If a common standard could be agreed for receiver products, manufacturers would be more likely to invest, since they would be confident that there was a European market rather than different markets in individual countries, such that they would have to make smaller quantities of a greater number of models in order to satisfy different countries requirements. Some progress on this front has been made at a functional level with the publication of the World DMB digital radio receiver profiles, and the complementary ones for DRM. A European agreement on digital radio could put these profiles together to allow a common product for all European markets.

**Question 2**

There are actually not so many platforms that can actually deliver digital radio to European consumers. The DAB, DAB+ and DMB standards are in fact small variations of the DAB standard, the differences being primarily in the audio coding and transportation, rather than the transmission error coding and modulation. Similarly, DRM30 and DRM+ are terms used to differentiate the different frequency bands used in DRM, again the commonalities are far greater. Both DAB and DRM were developed by collaborative efforts by, primarily, European engineers who understood the needs for open standards and systems which fulfil the needs of both public and private broadcasters, of small and large broadcasters and for spectrum efficiency with real benefits available to consumers. The two systems also have a great deal of commonality in terms of the applications that they provide: EPGs, images, text, and so on. The Electronic Programme Guide (EPG) allows content to be selected either for appointment listening or recording up to 7 days in advance. Dual standard DAB/DRM receivers can present all the services together in the EPG without regard for which transmission standard is used to receive the programme. The images are presented through the SlideShow application, which can also be animated. And the

text messages also have precisely the same format in both DAB and DRM.

There also exist digital radio standards designed for overseas markets and which are tailored to the specific market or spectrum allocations present there. The iBiquity designed HD Radio system is proprietary in nature and designed to exploit the broadcasting situation in the USA. It takes advantage of the rather lax FCC spectrum masks for analogue broadcasting - both AM and FM - to add additional digital signals on both sides of the analogue signal which stays as is on the same frequency. In presentations in Europe, iBiquity have asserted that HD Radio requires no new spectrum, it being able to use a station's existing allocation. Whilst this may be true in its native USA, it is certainly the case that additional spectrum is required for the digital sidebands and that in Europe this spectrum falls outside the existing allocation thereby causing increased interference into adjacent channels - for the AM band, HD Radio uses 30 kHz as against 9kHz currently allocated; for the FM band, 400 kHz is needed.

ISDB-T is a system designed specifically for Japan - it has both a narrow mode for radio and a wide mode for TV. it is sometimes referred to at conferences, but seems not to have made an impact in other regions.

Digital television systems, such as the DVB family, are also able to carry radio services. But the reception is restricted, since TV is primarily a fixed reception service. Whilst mobile TV standards can also carry radio, the limited capacity available for successful mobile reception is very likely to be reserved for premium TV services rather than free-to-air radio.

Satellite radio systems, such as XM-Sirius deployed in the USA, have been advocated for Europe several times over the last 20 years, but without success. Even in the USA, the two formerly competing systems have merged to reduce costs. Successful radio stations in Europe are a live and local service not a music juke-box - satellite cannot cope with the huge diversity of Europe's culture nor the technical challenges of providing reception in all listening positions - in moving vehicles, at home or in the workplace. Indeed, the XM-Sirius system requires ground-based repeaters and complex receivers to work at all in dense urban areas.

Therefore, our view is that the diverse range of radio services available in Europe currently require that if they are all to be digitised then a combination of DAB and DRM will be required, and that since these technologies are complementary, receivers designed to seamlessly receive both standards will be needed.

### 2.2.4 European Broadcasting Union

| **Question 1** |
| --- |
| • Most of the current radio broadcasting transmissions are on the FM in the frequency band 87.5-108 MHz. There are currently no indications that this will change in the |

coming 2-5 years.

- Digital terrestrial radio in most of those countries where it is available, is slowly taking up. Services are provided mainly by the public service broadcasters. Although some administrations actively support digital radio, the tipping point is yet to be reached.
- Some important initiatives are already showing positive effects, for instance:
  - the digital radio receiver profiles adopted in 2008 by WorldDMB Forum, in cooperation with EICTA and EBU are widely adopted by the receiver manufacturers (see http://www.worlddab.org)

RadioDNS - a collaborative project to enable the convergence of radio broadcasting and IP-delivered services. It aims to significantly enhance the experience of radio listening using scalable and resilient broadcast technology in tandem with additional information via IP (see http://radiodns.org).

**Question 2**

There is, indeed, a wide choice of technologies that can deliver digital radio. A choice of a particular delivery method, or methods, needs to be based on the requirements by broadcasters and the audience. These requirements are not only technical, but also programming, economic and, especially for public service broadcasting, need to take account of the public value of radio.

Radio should offer:

- universal availability concerning time and location,
- free access,
- increased functionality and flexibility in the use of radios (such as EPG, associated programme information, recording facilities, etc.),
- to be able to easily find radio stations (e.g. by automatic tuning),
- appropriate sound quality, and
- a great variety of radio channels.

Improved accessibility for people with visual and auditory impairments is also desired.
The majority of listeners listen to relatively few mainstream channels. This audience is best served by a dedicated terrestrial broadcasting network as a primary distribution platform. Terrestrial networks are capable of serving the mass audience with a guaranteed quality of service to fixed, portable and in particular mobile receivers, in a cost effective manner and free-to-air.

The terrestrial radio broadcasting networks need to be digital in order to enable more diverse and value added services, seamless service integration with other digital distribution platforms, and a range of quality-of-service levels.

The T-DAB family (based on the Eureka 147 standards) is widely supported by European

broadcasters, industry, and regulators and is currently the candidate for the sought after digital terrestrial radio distribution platform. It is already being implemented in a number of European countries. T-DAB is also included in the digital radio receiver profiles adopted by WorldDMB Forum, in cooperation with EICTA and the EBU.

In the case where T-DAB cannot meet all requirements, complementary technologies need to be considered. Priority should be given to the European open standards, such as DRM.

Radio broadcasting requires Internet distribution to serve smaller groups of listeners (niche channels) and provide truly interactive non-linear services.

The Internet has already secured its place for delivering radio. Most of the radio channels that are broadcast on the terrestrial platform are also available via the Internet. Some channels are only distributed via the Internet.

On the Internet the number of radio channels is virtually unlimited. Content providers have a possibility to broadcast niche channels and adapt programme content to specific target groups, regardless of their size. Supplementary and interactive services, such as return channel could be offered as well.

Today, Internet delivery is of secondary importance compared to terrestrial broadcasting networks but its importance is growing. The number of people that listen to Internet radio is gradually increasing. However, the total listening time is small compared to the terrestrial platform (currently not more than 10% of the total listening time). Radio broadcasters are increasingly using parallel delivery means, e.g. terrestrial and the Internet.

It is not expected that the Internet will replace terrestrial platform, for a number of reasons (e.g. broadband connection is required to access the radio service; it is not free-to-air; capacity constraints for mobile reception; QoS issues; copyright issues, costs)

Terrestrial and Internet distribution need to be closely intertwined to provide for uninterrupted access to services at any location at any time for all reception modes. This hybrid approach calls for integration of the various technologies into a single receiver capable of offering all new opportunities such as service following across different distribution technologies and - very important - an intuitive customisable receiver handling.

### 2.2.5 Association Européenne des Radios

| **Question 1** |
| --- |
| Each EU Member State is developing a different scheme for radio, based on its history, culture and needs: commercially-funded radios are local, regional or national actors, and |

regulation dealing with their access to spectrum should be adopted at the same level, in order to ensure continuity of programmes listened to by millions of EU citizens.

The situation of digital radio's development illustrates this clearly. Please see the answer to the next question.

As mentioned, the development of digital radio is being intensely discussed and tested across Europe. However the existing framework based on FM broadcasting in band II is likely to remain the main business model for radio in Europe for the next few years, complemented by a growing part of digital online and on-air. To give an example of FM's possibilities, the Radio Data System (RDS) already enables the transmission of digital data on-air via the FM signal. This provides information to the listener, such as the programme name and identification, or information related to the music or content being broadcasted or soon-to-be broadcasted. RDS also enables the receiver to switch from one frequency to another transmitting the same programme, or to programmes broadcasting information of immediate public interest, like traffic news. FM signal with RDS content resembles hybrid analogue / digital signal, illustrating the spectral efficiency of FM transmissions

**Question 2**

As mentioned, on-air commercially-funded digital radio and internet-based economically sustainable radio will be part of the patchwork of transmission techniques for commercially-funded radios in the future, but it is hard to foresee when. Broadcasting is currently the only conceivable transmission technique enabling radio with a sustainable / efficient business-model. Therefore, as planned in ITU / CEPT negotiations, band II, band III and L-band should be maintained for radio broadcasting. To illustrate this, please find below a short description of the situation regarding technologies used for radio broadcasting in a selection of European countries.

Finland: in Finland, 5-year broadcasting licenses are granted. The next tender is organised in 2011 for analogue frequencies and there is very little being said on digital radio since the last DAB trial ended four years ago. Therefore the situation with regard the technology used for radio broadcasting should not evolve in the near future.

France: radio will remain primarily based on FM broadcasting in the next few years, as there is no efficient business model yet for radios apart from FM free-to-air on Band II. There are advanced digital radio tests being run, for different technologies, but there is still no obvious financing solution found to migrate to digital radio. Thus, after deciding to prepare the launch of digital radio services (DMB) 3 years ago, with a beauty contest to deliver licenses in 19 main cities in France, the regulation authority decided last year to

restrain the contest to 3 cities. Finally, no license has been delivered yet (June

2010). There is still no digital radio service in France, nor any commercial offer of digital radio receivers. Digital radio for the next few years will be, at the most, a complementary solution to FM.

Germany: in Germany, FM on Band II is the most important means of transmission for VPRT's radio service members. FM on Band II will remain, in the foreseeable future, the basis of commercial activities for private radio stations. In complement, internet radio will also play a certain role in the future. After carefully analyzing the risks and chances of introducing DAB+ in Germany, VPRT's radio members came to the conclusion that DAB+ is not a market-driven solution and the necessary prerequisite for a successful DAB+ introduction are not fulfilled. To develop digital radio, band III in particular has to be safeguarded for radio use.

Italy: in Italy, the government has finished consulting stakeholders on their suggestions for broadcasting in digital technology. Radios will have the choice to broadcast in DAB+ or DMB. 640 local programmes, 15 national and the public sector (RAI) should start simulcasting programmes in analogue and digital technologies in 6 regions as from November 2010.

The UK: in the UK, commercially-funded radios have worked with the government to set criteria for a potential transition to digital after certain requirements are fulfilled: getting the right infrastructure in place, make sure that listeners will continue listening to digital, etc. Precise elements were set in the UK Digital Economy Act adopted in April: 50% of audience listening to digital radio, the same coverage as the analogue radios have must be guaranteed (98%) and 100% of road coverage must be achieved. If there is sufficient investment in an upgrade, then there will be a transition to digital. The assessment will be run in 2013 to see if the criteria described above are met. In this case, switch- off of analogue radio's main services would take place in 2015. This is very important, because since the mid-1990s radio stations have borne the costs of maintaining 2 platforms and this is no longer sustainable. Moreover, regarding access to national platforms, commercially-funded radios can only compete in an adequate manner with the BBC on digital radio (DAB). A possible outcome of the current discussions in the UK is that only small local stations continue on the Band II.

Switzerland: in Switzerland, the license to digitise FM signals is included in the new FM license of commercial radio stations. In September 2010, five major commercial stations will start transmitting with HD Radio technology. In October 2009, the first DAB+ multiplex with commercial radios started, but commercial participation is still weak. So it is very likely that a combination of FM, DAB+ and HD Radio will develop in this market.

Markets will decide what is the best suited technology for digital radio broadcasting in Europe: a choice endorsed by consumers. However, as the situation stands now, the most likely scenario for the development of digital radio in Europe will take the form of a combination of different technology standards.

### 2.2.6 HD Radio alliance

**Question 1**

- The insight, that there is by far not an off commercial refinancing potential for a high number of new "traditional and adapted Radio Programs" to pay for a fast digital transition will continue to grow and more likely to make the transition process slow as to accelerate it in the coming years substantially.
- The FM usage will remain the stronghold for private (and most public) broadcasters for the foreseeable future. In addition IP-Radio (and in some few cases DAB+) will become relevant in "Listener share"
- There will be no Radio digitalisation Revolution. It will remain or even become more of a slow evolution.
- Regulations like (analog FM License extension only with digital conditions, set Dates for FM switch off and more such "obligations") on a European level may arise, but will not be of major influence on the overall process. The exception could be ,if large amounts of subventions are given to finance the new distribution technology (Germany as example)
- New Entrants (eg via Satellite) with relevant influence are unlikely

**Question 2**

- Markets will decide what is the best suited technology for digital radio broadcasting in Europe: a choice endorsed by consumers. However, as the situation stands now, the most likely scenario for the development of digital radio in Europe will take the form of a combination of different technology standards. A typical Broadcaster will need to invest in minimum three distribution vectors: FM, digital terrestrial and in IP-Radio. This adds a relevant amount to the operational costs in a difficult commercial environment, as in the future is (for a long time period) multiplatform usage will continue to grow.
- **FM , IP-Radio and DAB+ (DAB will disappear within 5-10Years) will be the major used platforms in 5 Years , with FM still in a clear lead.** There will be some of FM digital usage (HD-DRM+ eg ) as well as some DMB applications.
- Public Funded Broadcasters will mainly be engaged in the DMB Family of standards in

| |
|---|
| Band III , private commercial Stations will be under pressure to follow but still hesitate for the real "digital investments" in Band II , IP-Radio and DAB+ |

### 2.2.7 DigitalEurope

| **Question 1** |
|---|
| Digital radio broadcast is expected to gain significant market shares within the next 5 years across Europe. Individual countries may show different speeds. But by 2015 sufficient population and geographical coverage should have been developed with an offer of content to widely enact staged switch-off plans for analogue radio broadcast (AM, FM) with likely multiyear schedules. Pressure on analogue broadcast cost and potential infrastructure maintenance cost may trigger acceleration of a switch-off.<br><br>Capability for FM reception is expected to continuously be a basic function for radio receivers for many more years until switch-off plans start to be widely implemented. |

| **Question 2** |
|---|
| Digitalisation allows easy interaction between various technical platforms and the use of a technology when and where its benefits materialize most. Devices will support automatic selection of the most efficient transport medium for the content / service selected and the local reception / connection conditions.<br><br>Broadcast will and should remain as basic 'primary' platform for digital radio ('one to many' communication) both for the mobile and home use (Eureka 147 based). The classical audio content will be amended by different extends of multimedia content and new services (e.g. traffic information). |

### 2.2.8 Polish Digital Forum

| **Question 1** |
|---|
| Time frame pointed above is very short. We mean it is like we can almost touch it.<br><br>Talking about evolution in Radio Broadcasting we have to take into account the investments process – from the broadcasters side – the new content production, from the operators the network preparation, from the consumers market, the promotion of new services. Due to all of |

this if we are going to talk about the real changes in Radio Broadcasting market in Europe we have to talk about 15-20 years perspective. The exceptions in our continent are UK and Denmark (DAB implementation far ahead compare to others)

Generally speaking the most probably changes will go toward the DAB+ platform. But once again the real impact of the new technologies will be noticed in 15 years perspective (talking about averages in EU).

**Question 2**

In Poland within the Forum we were discussing the following platforms:

- DAB+
  The most possible scenario – effective usage of spectrum, reduced operational costs compare to FM analogue, reasonably good receivers market
- DMB
  Possible, but with limitations, due to content demand. Will use as a part of DAB+ multiplex
- DVB-H
  Implementation in a process, all the biggest cities in Poland covered actually with the DVB-H multiplex ( TV and Radio programs )
- DRM30, DRM+
  The well known technologies, the limitations due to lack of low cost receivers
  Poland with the 225KHz transmitter probably will implement DRM30 but in 10-15 years perspective.
- broadband advanced technologies
  Possible in the future but not at current stage – the broadcasting is the winner in this competition.

### 2.2.9 Ericsson

**Question 1**

Ericsson understands that the broadcasting sound technologies will largely be IP based, towards a situation where more choice is offered to the consumers at a particular location and time while being more individualized using unicasting sound services. This would broaden the access to information and improve the freedom of information as well as be improving the opportunities to produce and consume locally produced content at a language of choice.

| Question 2 |
| --- |
| Ericsson is of the view that several technical platforms will be able to carry the broadcasting sound content; also the new innovative IP bases systems and services will be applied on various technical platforms. The reason for this is that several consumer needs to be satisfied, several technical platforms will be operated in parallel addressing different market segments and environments as well as the need to satisfy legacy requirements. |

#### 2.2.10 World DMB Forum

| Question 1 |
| --- |
| • Digital terrestrial radio is making progress in a number of countries in Europe; however within the next 2-5 years there are no plans for the shutdown of analogue radio broadcasting (with perhaps the exception of the UK). FM broadcasting will continue to be the dominant reception mode for audiences, and so the ability to broadcast digital radio in other bands is essential so that audiences do not lose their services and broadcasters do not lose their audiences. More European countries will commit to starting the transition to digital radio, and counties that have already begun the transition will move closer to completion.<br>• World DMB believes that moving services from analogue AM and FM to the DAB family is the first step in the transition from analogue to digital, bringing with it all the advantages of better reception quality and multimedia services. When listening has transitioned for the majority of consumers, analogue closedown for remaining services can be contemplated, perhaps using released AM and FM spectrum for new digital services for new types of broadcasters. |

| Question 2 |
| --- |
| • The DAB family comprises the DAB, DAB+ and DMB-radio options for digital radio broadcasting. Each of these options has been adopted by European broadcasters, and to some extent this reflects the date of adoption. These three options are in fact very similar and have far greater commonalities than differences, especially in terms of the end-user or listener. The differences are primarily in terms of the audio coding and super-framing utilised: the coding and modulation and multimedia applications are common. In 2008, World DMB, together with the EBU and consumer electronics group Digitaleurope (formerly EICTA), developed the World DMB digital radio receiver profiles in order to bring greater clarity to the commonalities of these options |

and so help to build a stronger European digital radio industry. The profiles have been widely adopted and specify the functionality required by basic, audio receivers and by rich media receivers with a colour screen.

- The DAB family provides an excellent platform for digital radio broadcasting. It is openly specified at ETSI and enjoys the quantity of scale for both transmission and reception equipment that comes from its successful adoption in many countries. There is much experience available to assist others through the sometimes difficult path to digitisation. However, the European radio market is very diverse and varies considerably between different countries in terms of the proportion of national, regional, local or community broadcasters and in terms of population distribution and land area. Therefore, the utilisation of available spectrum varies between countries and other platforms may be needed to complement the DAB family for a complete transition to digital. World DMB engages in a positive way with other organisations that share the same goals towards radio digitisation, as set out in the World DMB Statutes that govern operation of the Forum. As such, World DMB works with organisations that promote open standards for digital radio and which share common formats and application standards for multimedia content such as Electronic Programme Guide, SlideShow, and text messages, such as DRM.

## 2.3 Activities/measures to be taken – industry

In the same manner as for the member states – the organisations contacted were asked about what they thought would be the best way to stimulate the development of radio Broadcasting in Europe. The question was more exactly put as follows: *What are the activities that would be beneficial for the development of Radio Broadcasting in Europe?*

### 2.3.1 Digital Radio Mondial

| **Answer** |
|---|
| Plan and coordinate transition from analogue to digital technology. This would require:<br>• active support by national administrations properly briefed by the promoters of digital standards, like the DRM Consortium, in international organisations like CEPT, ETSI, European Commission, various EBU workgroups<br>• support and incentives from European governments and the EC for radio operators (mainly commercial) who would need to make serious investment for the transition and the rollout of digital radio<br>• active involvement of manufacturers and broadcasters<br><br>Co-ordination of activities in various international fora (e.g. CEPT, ETSI, European Commission, WorldDMB Forum, EICTA, DRM Consortium, EBU) |

Promotion without prejudice of European open standards (e.g. DRM/DRM+, DAB/DAB+/DMB) and their complementarity. DRM, an European and open standard adopted by ETSI (ES 201 980 V3.1.1), can offer a solution for international, national and regional broadcasts, as well as for local, event, community stations, unwilling or unable to afford being part of a multiplex (using DRM+ in VHF bands).
One standard or a flexible combination of standards should practically offer a digitisation solution for any European country. Promoting one standard or a combination of standards should give the courage and clarity needed for the transition to digital radio terrestrial broadcasting.

Creation of a thriving digital radio receiver market showcasing all the benefits of digital radio and which go beyond just spectrum efficiency and better audibility (stressing for example the added value services). Special attention should be paid to car receivers and the opportunities offered by mobiles, PDAs too.

The transition from analogue to digital has to take place in the framework of media innovation giving digital radio the chance to be the glue between many digital platforms, while maintaining its universal attributes.

### 2.3.2 Satellite Action Plan regulatory Group

**Answer**

The satellite industry formed the European Satellite Action Plan Regulatory Group (SAP REG) in 1997 under a mandate from the European Commission, to address from an industry perspective, regulatory provisions affecting satellite communications services in the community.[7] SAP REG believes that the future of Radio in general, and Radio Broadcasting in particular, is digital, as witnessed by the proliferation of digital radio channels for instance on satellite Direct-To-Home (DTH) platforms, and, indeed, the Internet. SAP REG believes that satellites have an important role to play on at least two levels to help further the digitization and modernization of Radio Broadcasting in Europe and beyond: a) delivering thousands of (digital) radio signals to (analog and digital) broadcast headends; and b) delivering multi-channel radio (and possibly multi-media data) directly to end-users via hybrid satellite/terrestrial networks combining the wide coverage of satellites with the deep reach of terrestrial (re)transmitters (for retransmitted satellite channels, as well as local signal insertion). SAP REG notes that the former is already widespread in the EU, whereas the latter is demonstrated successfully in the US with SiriusXM (a pay-radio service with 20M subscribers). SAP REG notes several attempts in the past to establish

[7] SAP REG members include Aeromobile, Alcatel-Lucent Mobile Broadcast, Boeing, EADS Astrium, ESOA, Europa-Max, Eutelsat, France Telecom, GVF, Globalstar, Hispasat, Hogan Lovells International, Hughes Network Systems, ICO Global Communications, Inmarsat Ventures PLC, Intelsat, ISI, Iridium, Mobile Satellite Ventures L.P., MSUA, ONDAS Media, ONDE Numérique, ROSE Vision, SES, SkyTerra, Solaris Mobile, Squire Sanders, Thales Alenia Space, Telespazio, Terrestar, Thuraya and WorldSpace.

similar services also in the EU, which, for a variety of reasons, including access to orbital slots and national spectrum, have yet to succeed. SAP REG believes that the further development of Radio Broadcasting in Europe could be facilitated by the emergence of satellite-delivered services, and notes that the L band has been harmonised in Europe through various regulatory instruments, such as CEPT ECC/DEC/(03)02. The long investment cycle of such projects requires certainty that the regulatory framework prevailing in this frequency band will continue. SAP REG would therefore invite RSPG to take this into consideration, should RSPG wish to propose any specific initiatives in the area of Radio Broadcasting in L band. Finally, SAP REG wishes to emphasize that it has no opinion at this point whether such satellite-delivered services should be on a free-to-air or pay basis.

### 2.3.3 European Telecommunications Standardisations Institute

**Answer**

A co-ordinated approach to transmission digitisation across Europe would assist all member states with increased certainty over the future of radio and provide the necessary volumes for consumer device manufacturers to invest appropriately for affordable and effective devices for all the diverse needs of radio listeners. Many aspects of radio broadcasting are locally or nationally focused: radio is the most live and local medium. This diversity of content, both in terms of formats and languages, is what makes radio unique and vibrant, but at the same time makes it difficult for individual broadcasters to move into the digital age. The specific transmission technology used is less important to broadcasters than the overall capabilities of digital systems and a relatively level playing field for both established and potential new entrants. The DAB family of standards, based around the transmission standard ETSI EN 300 401, has already become established in some parts of Europe and trials have taken place in most European countries. DAB allows a number of services to be combined into a multiplex thus allowing efficient use of spectrum and infrastructure and sharing of costs. The DRM family is a more recent digital radio standard, standardised as ETSI 201 980, and which complements DAB very well by providing the same digital radio benefits but on the basis of using lower radio frequencies and narrower channels. DRM is less well established owing to its more recent introduction, the final extension of the standard being published in 2009.

### 2.3.4 European Broadcasting Union

**Answer**

Transition from analogue to digital technology. This would require:

- active support by national administrations
- the EU policy decisions

- active involvement of manufacturers and broadcasters

Co-ordination of activities in various international fora (e.g. CEPT, ETSI, European Commission, WorldDMB Forum, EICTA, DRM Consortium, IMDA, RadioDNS, EBU)

Promotion of European open standards (e.g. DAB/DAB+, DRM/DRM+)

Creation of a thriving digital radio receiver market. This is a prerequisite for the transition from analogue to digital.

### 2.3.5 Association Européenne des Radios

**Answer**

As a means of introduction to how commercially-funded radios in Europe live their current and future business environment, one should bear in mind that the latter can be dryly presented as being built on three pillars; if one of them is missing, commercially-funded radios cannot exist:

- Access to spectrum
- Access to copyright-protected works
- Access to advertising revenues

So, and although the RSPG deals only with spectrum management issues, AER would like to address shortly these key issues, before presenting AER's views on spectrum issues.

- Access to advertising revenues

AER would like to recall that, in most of Europe, currently and for the foreseeable future, there is only one viable business model: free-to-air FM broadcasting on Band II. European radios can only broadcast programmes free of charge to millions of European citizens, thanks to the revenues they collect by means of advertising. These revenues are decreasing all through Europe due to two factors: the shift towards internet-based advertising, and the recent financial crisis.

For 2009, radio advertising market shares have decreased all across Europe compared to 2008[V]. As a result, any constraint on radio advertising severely endangers AER members' ability to pursue a viable economic activity.

- Access to copyright-protected works

When it comes to copyrights, AER needs to recall a few important facts and trends: Commercially- funded radios constantly use pieces of music for <u>all</u> produced content. This

raw material is almost always protected by copyrights: one of AER's members' primary expenses remains that of copyright clearance. Radio broadcasters across Europe pay over €2.6 billion per year for content, mostly music rights, and payment for these rights is negotiated on a regular basis. Therefore, AER is constantly striving to ensure the best possible copyright regulatory framework for its members via the simplification of clearance rules for copyrights: this should be done from one-stop-shops as the current structure of multi-payments and multi-clearance is unviable.

- Access to spectrum

AER would like to underline that it is still unsure how internet transmission can efficiently replace broadcasting. **Therefore, radios' activities still require use of spectrum, as a primary user**. As mentioned, in most of Europe, currently and for the foreseeable future, there is only one viable business model: free-to-air FM broadcasting on band II, which only represents 20,5 MHz. Across Europe, nearly every single frequency is used in this bandwidth. Thanks to the broad receiver penetration and the very high usage by the listeners this small bandwidth is very efficiently used.

Radio's plans to broadcast digitally could use band III (174-230 MHz), and L-band (1452-1492 MHz), depending on the EU Member States.

Moreover, and as most of them are SMEs, commercially-funded radios are in no position to compete for access to spectrum with other market players. **So, now and for a foreseeable future, commercially-funded radios need guaranteed access to spectrum, in all bands described above: regulation must be tailored to local, regional or national needs in order to allow the best possible development of radio. In these bands, market-based approaches to spectrum management (such as service neutrality or secondary trading) should not be enforced**.

AER welcomes RSPG's acknowledgement that "*spectrum is a national resource*". When considering radio, AER would like to highlight that, as mentioned, audience is local, regional or national. Moreover, spectrum is currently efficiently managed by European States and this should remain the case: national radio frequency landscapes and national radio broadcasting markets are different, with divergent plans for digitization, diverse social, cultural and historical characteristics and with distinct market structures and needs. **Consequently, enhanced coordination at EU level of spectrum management of bands used by radios does not seem necessary, or appropriate.**

However, across the EU, plans to migrate from a satisfying analogue technology (FM) to digital technology are being actively discussed and tested. Any shift towards digital radio broadcasting entails very long-lasting and burdensome investments. Nevertheless, some individual nations may wish to proceed with a move to greater digital broadcasting at a

faster rate, as there will be no 'one-size-fits- all' approach.

**So any shift towards digital radio broadcasting will most likely require a very long process. Decision on the adequate time-frame should be left to each national industry: as a matter of principle, transition to any improved digital broadcasting system should benefit from a long time-frame, unless there is industry agreement to move at a faster rate.**

As mentioned, on-air commercially-funded digital radio has not yet achieved widespread take up across European territories. The same is true for internet-based economically sustainable radio. These two means of transmission will be part of the patchwork of transmission techniques for commercially-funded radios in the future, but it is hard to foresee when. **So no universal switch-off date for analogue broadcasting services should be envisaged at EU level and decision on standards to be used for digital radio broadcasting should be left to the markets.**

### 2.3.6 HD Radio alliance

**Answer**

- Now and for a foreseeable future, private commercially-funded radios need guaranteed access to sufficient spectrum in several Bands. (see question 4)
- Regulation must be tailored to local, regional or national needs in order to allow the best possible development of radio. In these bands, market-based approaches to spectrum management (such as service neutrality or secondary trading) should not be enforced.
- EHDRA welcomes RSPG's acknowledgement that "*spectrum is a national resource*". When considering radio, EHDRA would like to highlight that, as mentioned, audience is local, regional or national. Moreover, spectrum is currently efficiently managed by European States and this should remain the case: national radio frequency landscapes and national radio broadcasting markets are different, with divergent plans for digitization, diverse social, cultural and historical characteristics and with distinct market structures and needs. **Consequently, enhanced coordination at EU level of spectrum management of bands used by radios does not seem necessary, or appropriate.**
- Any shift towards digital radio broadcasting will most likely require a very long process. Decision on the adequate time-frame should be left to each national industry: as a matter of principle, transition to any improved digital broadcasting system should benefit from a long time-frame, unless there is industry agreement to move at a faster rate.
- On-air commercially-funded digital radio has not yet achieved widespread take up
- across European territories. The same is true for internet-based economically sustainable radio. These two means of transmission will be part of the patchwork of transmission techniques for commercially-funded radios in the future, but it is hard to foresee when.

**So no universal switch-off date for analogue broadcasting services should be envisaged at EU level and decision on standards to be used for digital radio broadcasting should be left to the markets.**

### 2.3.7 DigitalEurope

**Answer**

Radio broadcasting is recognised and valued by the consumers over many decades as basic and reliable audio based information & entertainment service available 'seamless' across Europe. The analogue – digital migration shall maintain these characteristics while opening new opportunities in respect to improved & additional services / functions, increased broadcast and receiver (spectrum, energy, ...) efficiencies and connection to other technology platforms.

From receiver manufacturers point of view the primary activities needed are first of all related to the theme of **ensuring interoperability across Europe:**

- Harmonized allocation of sufficient spectrum to radio broadcast

- Utilization of the same broadcast technology platform (Eureka 147 based)

Interoperability of digital radio broadcast services across Europe will not only improve market acceptance by a rich choice of content especially in the border areas, but also by a big variety of receivers which can be made available for a big market.

For the benefit of both commercial and private technology investment planning **roadmaps for the analogue – digital radio broadcast migration need to be developed** very soon defining key criteria (e.g. population and geographical coverage, content availability) and milestones for analogue radio broadcast switch-off.

While a European regulatory framework describing service & technology principles for radio broadcast might be beneficial in driving the migration process it shall not set technology specifics as it would block the evolution of the technology and services within the principles set.

### 2.3.8 Polish Digital Radio Forum

**Answer**

There are probably two most important factors:

- the government regulations - the consumers, producers and broadcasters must be sure, the new platforms are stable for certain period of time ( due to economic calculations )
- the wide selection of receivers in the market ( multisystem receivers ). A low cost receivers will allow to deliver the digital services to the all EU population

### 2.3.9 Ericsson

**Answer**

To review all the complementary and alternative innovative digital multimedia and broadcasting technologies available, without excluding nor ignoring some of the more advanced IP based digital systems, allowing for proposals from outside of the traditional mainstream technologies of the broadcasting industry.

### 2.3.10 World DMB Forum

**Answer**

- Coordination of transition plans to move from analogue to digital technology across Europe would bring benefits to all. Progress has already been made in several European countries using the DAB family of standards, for example, the UK, Denmark, Switzerland, etc., but greater coordination would allow risks to be mitigated and more consistent messages to consumers to be given.
- European standards for digital radio should be promoted within Europe because they have been developed in a collaborative manner between industry players across Europe and beyond and standardised at ETSI. The DAB family of standards, promoted by the World DMB Forum, is an excellent example of well designed, appropriate technology for European radio broadcasters. Complementary to the DAB family, DRM is also ETSI standardised and shares many of the same features.
- World DMB is working towards greater coordination of the activities of the international bodies responsible for radio broadcasting, for example, CEPT, ITU, World DMB Forum, DRM Consortium, EBU, AER, etc.
- Radio listening in vehicles is a large part of overall radio consumption but the lack of an overall European strategy for digital radio has held back digital in-vehicle listening even in countries where digital in-home listening has become significant. World DMB hope that greater coordination and an overall European strategy towards transitioning to digital will overcome the reluctance of some vehicle manufacturers to fit digital radios in their products.