

Report for the European Commission

**‘Exploiting the digital dividend’ –
a European approach**

Summary of the Member States’ workshop

5 May 2009

13496-193



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1 Introduction

This document is a summary of the Member States' workshop held in Brussels on 15 April 2009 to discuss a coordinated European approach to the digital dividend. The workshop was part of the study being carried out for the European Commission ('the Commission') by a consortium comprising Analysys Mason, DotEcon and Hogan & Hartson. The workshop was hosted jointly by the Commission and the RSPG¹ Working Group on the digital dividend. During the workshop they were assisted by Mr Amit Nagpal (Partner, Analysys Mason), Mr Lee Sanders (Partner, Analysys Mason) and Mr Gerry Oberst (Partner, Hogan & Hartson) from the consortium.

The workshop had two principal objectives. First, to seek input from Member States on the consortium's initial views of the European dimension for potential uses of the digital dividend and the options for European coordinated action. Second, to allow Member States to participate in an open exchange of views on the scope, nature and timeframe of any action.

The objective of this document is to provide a summary of the main views put forward by the Member States. It is not intended to provide a detailed account of all the issues discussed. Member States were invited to submit written comments regarding the consortium's views; these comments are not included in this summary.

Participants attended from the Commission, the RSPG, 21 Member States and two countries from outside the EU: Norway and Switzerland. A list of participants from the Member States, Norway and Switzerland is provided in Annex A. The consortium would like to thank all participants in the workshop for their involvement and their contributions to the discussions. The views expressed during the workshop will be a formal input to the consortium's study.

For more information, please visit http://www.analysismason.com/EC_digital_dividend_study. Here you can see an overview of the study and its timetable, find a schedule of events, download documents published during the study and the contact the study team.

¹ Radio Spectrum Policy Group.

2 Agenda and participants

- **Opening address by the Commission:** A brief overview was given of previous EU-level action, beginning with the Commission's Communication regarding the digital switchover (DSO)², which set a target analogue switch-off (ASO) date of 2012, and including the European Parliament's resolution of September 2008. Mr O'Donohue stressed the importance of direct involvement from Member States in the development of European-level action regarding the digital dividend, of which the workshop was an important part.
- **Presentation by the RSPG:** "RSPG Draft Opinion on the Digital Dividend". This presentation outlined the status of the RSPG's position paper on the digital dividend, its draft recommendations for the public consultation, and the next steps for the Working Group.
- **Presentation by the consortium:** "Exploiting the digital dividend: initial findings and options for action". In this presentation, the consortium summarised the initial findings of the study to date; identified why European actions may be required; and identified an initial range of options for such actions. As mentioned above, this presentation can be downloaded from: http://www.analysismason.com/EC_digital_dividend_study.
- **Session 1:** What European action could be taken to encourage the efficient use of the 470–862MHz band by broadcasting networks?
- **Session 2:** What European action could be taken to facilitate wireless broadband use of the digital dividend?
- **Session 3:** What European action could be taken regarding the use of interleaved spectrum?
- **Session 4:** What European action could be taken regarding other potential uses of the digital dividend?
- **Session 5:** What other measures could be taken to encourage the more efficient use of the 470–862MHz band?
- **Closing comments from the Commission:** The "dynamic" dimension of the digital dividend policy was stressed, noting that the process will continue beyond the DSO. The importance of developing an overarching strategy for the digital dividend was emphasised, as policy decisions may need to be made that will influence competing uses of the same spectrum. Such decisions should be based on robust socio-economic analysis.

Each session opened with the consortium reiterating the theme under discussion and presenting a number of options for European coordinated action. In Sessions 1, 2 and 3, participants from

² COM(2005)04.

individual Member States gave brief presentations, in which they outlined their views on the theme of the session. In each session the summary from the consortium or presentation was followed by an open discussion involving all attendees. The sessions were chaired by Mr Amit Nagpal.

3 Session 1 – Increasing efficiency of use by broadcasting networks

3.1 Potential actions discussed

During Session 1 the consortium presented potential actions that could be undertaken at a European level in order to encourage the efficient use of the 470–862MHz band by broadcasting networks. These potential actions were related to three main topics:

<i>Topic</i>	<i>Potential options for action</i>
DTT transmission technologies	Share deployment plans for MPEG-4 and DVB-T2 (including timelines) Produce guidelines on the timeline for adoption of MPEG-4 and/or DVB-T2 Mandate the timeline/requirement for adoption of MPEG-4 and/or DVB-T2
DTT receivers	Specify minimum standards for DTT receivers (interference, rejection, etc.) Produce guidelines for including MPEG-4 and/or DVB-T2 in all sold receivers Mandate the inclusion of MPEG-4 and/or DVB-T2 in all sold receivers
DTT deployment topologies	Share wider SFN ³ deployment plans Produce guidelines on the timeline for wider adoption/deployment of SFNs Mandate the wider adoption of SFNs (including timeline)

Figure 1: Potential options for action discussed during Session 1

3.2 Summary of the main discussion

This session included a presentation from the Italian telecommunications regulator, Agcom, regarding Italy's implementation of SFNs for DTT. This presentation led to an open discussion on the three topics given above; this discussion is summarised below.

DTT transmission technologies (MPEG-4 and DVB-T2) Some Member States, in which DTT has already been deployed, were opposed to specific action to encourage the migration to DVB-T2 and to a lesser extent MPEG-4. Some indicated that any migration should be market-driven.

³ Single frequency network.

- Some Member States highlighted that the DTT transmission technologies currently in use in a Member State are highly dependent on when DTT was launched in that country. Member States that launched DTT earlier typically use MPEG-2 and DVB-T, as these were the only technologies available at that time. According to these Member States, migrating to DVB-T2 and to a lesser extent MPEG-4 would raise legacy problems. Member States that were later in deploying DTT have mostly adopted MPEG-4 (though not DVB-T2). Similarly, most Member States that have yet to deploy DTT plan to use MPEG-4 (though not DVB-T2).
- Some Member States raised concerns regarding further DTT transmission technology migrations so soon after the successful completion of the ASO.
- One Member State pointed out that the GE-06 agreement is based on DVB-T technology. DVB-T2 has significantly different propagation characteristics to DVB-T. Therefore, a widespread migration to this technology would require extensive re-planning of GE-06 assignments. It was highlighted that such re-planning is not possible for many Member States at present as they are currently preoccupied with bilateral negotiations relating to the forthcoming digital switchover (DSO).
- On the other hand, one Member State noted that there may be benefits in encouraging the migration to both MPEG-4 and DVB-T2 at the European level.

*DTT receivers
(MPEG-4 and
DVB-T2)*

Member States mostly favoured European action to ensure that all sold DTT receivers are MPEG-4 compatible, but showed some concern over similar actions for DVB-T2.

- One Member State indicated that in contrast to the choice of DTT transmission technologies, which is a national matter, European action regarding DTT receivers may be beneficial. Television sets and set-top boxes are manufactured to be usable across major markets, such as the EU. Therefore, a mandate to have MPEG-4 compatible DTT receivers would be welcome. However, this Member State was less in favour of DVB-T2, stating that it had not been considered in its country. It also stressed that an impact analysis of the cost for consumers should be undertaken before taking any action.
- One Member State, which is planning one DVB-T2 multiplex, urged caution regarding a full migration to DVB-T2. However, encouraging one multiplex to be DVB-T2 (in order to enable HD transmission) may

make the DTT platform as a whole more attractive. It may also be beneficial if new multiplexes used DVB-T2.

- One Member State stated that it would favour guidelines regarding DTT receivers rather than mandatory action. It also stated that such guidelines should be complementary to the R&TTE⁴ and EMC⁵ Directives.

DTT deployment topologies (SFN)

Several Member States mentioned that they already use SFN topologies on a regional basis for some of their DTT multiplexes but only one Member State has deployed national SFNs, using a lower power, denser network.

Regional SFNs can be deployed using existing high-power, high-tower transmission sites. However, using this approach, there is a limit to the size of each SFN transmission area. Member States said that 120–170km was the maximum transmission-area size. Larger areas are prone to destructive interference from distant transmitters.

National SFNs are possible, but lower-power, denser networks are required. Such networks are more costly than high-power networks because significantly more transmission sites are required. One Member State illustrated this point by saying that in its country an SFN would need 160 transmitters to cover 80% of the population; more than 800 high/medium-power transmitters to cover 92% of the population; and more than 2000 high/medium/low-power transmitters to cover 96% of the population. Also, fixed links are required for the transmission feed, which are more expensive than for MFNs.⁶

Most Member States appeared not to favour action to encourage the wider adoption of SFNs.

- Some Member States noted that deploying national SFNs would require significant changes to existing regional SFNs or MFNs. This would include adding significantly more transmission sites. Therefore, SFNs would be a more costly option.
- Some Member States that have already deployed regional SFNs stated that in order to deploy more SFNs, further bilateral/multilateral negotiations would be required. In order to deploy national SFNs a large

⁴ Radio and Telecommunications Terminal Equipment: <http://ec.europa.eu/enterprise/rte/dir99-5.htm>

⁵ Electromagnetic Compatibility: http://ec.europa.eu/enterprise/electr_equipment/emc/index.htm

⁶ Multiple frequency networks.

reorganisation of the 470–862MHz band would be required.

- Several Member States mentioned that SFNs make cross-border coordination more complex. This is especially the case for Member States with many neighbours.
- Another Member State commented that since national SFNs use the same frequency across entire countries and SFN multiplexes could be spread across the 470–862MHz band, households would require wideband antennas. Member States in which narrowband antennas are common, would need to ensure that these are replaced.

Some Member States commented on the benefits of SFNs.

- One Member State acknowledged that the use of DVB-T2 technology may allow SFNs to be deployed over large areas. DVB-T2 also enables the maximum area of regional SFN using high-power transmission sites to be increased.
- Another Member State highlighted that the implementation of SFNs may allow the release of a significant number of spectrum channels for new uses.

4 Session 2 – Facilitating wireless broadband use

4.1 Potential actions discussed

During Session 2 the consortium presented potential actions that could be undertaken at a European level in order to facilitate use of the digital dividend by wireless broadband. These potential actions were related to three main topics:

<i>Topic</i>	<i>Potential options for action</i>
The creation of the 790–862MHz sub-band	Share plans for creation of sub-band (including timing) Produce guidelines on timing of creation of sub-band Mandate the creation of a sub-band and mandate use of frequencies for medium-power services in all Member States Change GE-06 interference parameters to protect medium-power uses in 790–862MHz (including uplinks)
The renegotiation of DTT assignments for the 790–862MHz sub-band	Produce guidelines for Member States on bilateral negotiations (including negotiations with non-EU countries) Mandate a deadline for bilateral negotiations to be completed (including negotiations with non-EU countries)
The creation of additional sub-bands below 790MHz	Share plans for the creation of any additional frequency bands below the sub-band (including timing) Mandate CEPT ⁷ to develop band plans for additional frequency band(s)

Figure 2: *Potential options for action discussed during Session 2*

4.2 Summary of the main discussion

Session 2 included a presentation from the Czech Telecommunication Office that described the current roll-out of DTT in the Czech Republic and the actions taken to enable wireless broadband use in the digital dividend spectrum. This was followed by a presentation from the Spanish Ministry of Industry, Tourism and Trade that highlighted the difficulties that Spain faces in making any of the 470–862MHz band available for new uses. These presentations led to an open discussion on the three topics presented above; this discussion is summarised below.

The creation of the 790–862MHz sub-band Many Member States appeared to favour non-mandatory European action to create a sub-band for wireless broadband services.

⁷ European Conference of Postal and Telecommunications Administrations.

- Some Member States that have already decided to make the sub-band available indicated that they would favour European action to encourage other Member States to do the same.
- One Member State favoured no mandatory action regarding the services/technologies that can be used in the sub-band (for example FDD⁸ or TDD⁹). Instead it suggested the sub-band should be made available on a service- and technology-neutral basis. It also asked for the Commission to move as quickly as possible in order to give confidence to the market.

However, some Member States, mentioned that they face many unresolved challenges, which currently make the release of the sub-band extremely difficult.

- For several Member States, neighbouring non-EU countries use the sub-band for other services (e.g. military, aeronautical). This may prevent them using the sub-band for wireless broadband. One Member State said that due to such issues, it was unable to make Channels 66–69 available for wireless broadband. Therefore, it was considering making Channels 61–65 available for TDD use. This however raises coordination issues with other neighbours that are planning FDD technologies.
- In one Member State, only one channel (Channel 64) is available for new uses. It expects that the remainder of the sub-band, which is currently used by the military, will be made available by 2015 at the earliest. Additionally, this Member State highlighted that in its country wireless broadband players had yet to request access to this spectrum.
- One Member State noted that due to its small population and its language, it does not have an attractive satellite TV platform. Therefore, DTT is an essential TV platform. Since future migration to HDTV will require a lot of spectrum, it is unattractive to release the sub-band for new uses, other than DTT. By contrast, another Member State noted that in its consultations on the digital dividend, no requirement for additional spectrum due to HDTV was identified.

⁸ Frequency division duplex.

⁹ Time division duplex.

*Renegotiation of
DTT assignments
for the
790–862MHz
sub-band*

Several Member States indicated that they would favour European action to negotiate with non-EU countries, such as Russia.

One Member State mentioned that it is willing to release the sub-band after the ASO, however it is prevented from doing this until its non-EU neighbour completes the ASO in 2015.

However, another Member State that shares a border with a non-EU country stated that it is experienced in negotiating with this country, and believes that bilateral national negotiations regarding the sub-band are appropriate. However, it may be helpful if the Commission could clearly communicate to non-EU countries the value of creating the sub-band.

*Creation of
additional
sub-bands below
790MHz*

Currently, only the UK has announced official plans to release digital dividend spectrum below 790MHz for uses other than broadcasting.

Some Member States expressed concern regarding the creation of another sub-band below 790MHz. One Member State stated that considering a second sub-band would send a “wrong signal” to industry, as this may complicate and delay the release of the first sub-band (790–862MHz). Another Member State suggested that a second sub-band should only be pursued “opportunistically”.

5 Session 3 – Supporting uses of interleaved ('white space') spectrum

5.1 Potential actions discussed

During Session 3 the consortium presented potential actions that could be undertaken at a European level in order to support the use of interleaved spectrum. These potential actions were related to two main topics. The consortium also invited comments from Member States regarding other potential uses of interleaved spectrum:

<i>Topic</i>	<i>Potential options for action</i>
SAB/SAP¹⁰	<p>Produce guidance on a common set of channels which Member States could make available on a dedicated national basis for SAB/SAP</p> <p>Mandate a common set of channels that Member States could make available on dedicated national basis for SAB/SAP</p>
Cognitive technologies	<p>Produce guidance on a common frequency range for cognitive applications</p> <p>Mandate a common frequency range for cognitive applications</p> <p>Develop an agreed European Common Position regarding regulatory measures in order to introduce cognitive technologies for WRC-11</p>

Figure 3: *Potential options for action discussed during Session 3*

5.2 Summary of the main discussion

This session included a presentation from the UK regulator, Ofcom, regarding the work it has undertaken on SAB/SAP and cognitive technologies as part of its Digital Dividend Review. This presentation led to an open discussion on the two topics given above; this discussion is summarised below.

SAB/SAP One Member State pointed out that CEPT is currently studying technical issues regarding SAB/SAP use in the 470–862MHz band. In its view, the Commission's study should take this work into account

Another Member State highlighted that in the USA, SAB/SAP use will be required to exit spectrum in the 470–862MHz band below approximately Channel 48. Therefore, in its view, Europe should note the solutions that the USA develops in order to relocate SAB/SAP users.

¹⁰ Services ancillary to broadcasting and programme making.

One Member State noted that its market was too small to achieve economies of scale. Therefore, a European level solution would be welcome.

Another Member State highlighted the fact that SAB/SAP encompasses two types of user: professional and non-professional. The characteristics of these types are very different. For some events, professional users often require a large number of radio microphones (up to 40). This means that several 8MHz spectrum channels (at least 4) are required. This cannot be provided using one nationally available channel and therefore interleaved spectrum is required. It may not be possible to harmonise such spectrum.

One Member State expressed its concern regarding the use of the FDD duplex gap in the proposed 790–862MHz sub-band for SAB/SAP services. The nearest frequencies that would be available for SAB/SAP would be in Channel 60. This is a greater frequency separation (30MHz) than the typical tuning range of SAB/SAP equipment (16MHz to 24MHz). As a result, SAP/SAB users do not favour this option.

Cognitive technologies

Member States noted that there is a lot of uncertainty regarding the development of cognitive technologies and the services they may enable. Therefore, they are uncertain regarding the necessity of European level action. However, they are keen to ensure that Europe can benefit from a common market for equipment. One Member State indicated that the Commission should promote a common European standard for cognitive technologies.

On a related topic, one Member State highlighted that it was considering reserving digital dividend spectrum in order to support innovation. Spectrum reserved for this purpose is important for equipment manufacturers in order for them to develop and test new technologies. In its view, this should be considered as an additional potential use of the digital dividend.

6 Session 4 – Enabling other uses of digital dividend spectrum

6.1 Potential actions discussed

During Session 4 the consortium presented potential actions that could be undertaken at a European level in order to enable other uses of the digital dividend. These potential actions were related to two main topics. The consortium also invited comments from Member States regarding other potential uses of digital dividend not identified in the consortium's presentation.

<i>Topic</i>	<i>Potential options for action</i>
Broadcast mobile TV	Produce guidance on frequencies to be used by mobile TV Create a dedicated sub-band for one-way, medium-power services Ensure interference parameters for 790–862MHz enable use for broadcast mobile TV networks
PPDR¹¹	Produce guidelines on using part of the sub-band for PPDR Mandate Member States to make part of the sub-band available Produce guidelines on an alternative sub-band/frequency range for PPDR Mandate the creation of an alternative dedicated sub-band for PPDR use

Figure 4: Potential options for action discussed during Session 4

6.2 Summary of the main discussion

A summary of the open discussion on the two topics given above is provided below.

Broadcast mobile TV Member States did not feel that any additional European action was needed in relation to the use of broadcast mobile TV in the 470–862MHz band.

- Several Member States expressed the view that the use of broadcast mobile TV in the 790–862MHz range is not attractive, because devices integrated with GSM (and potentially other technologies such as UMTS and LTE) may experience interference. One Member State mentioned such interference would occur if frequencies above Channel 55 are used for broadcast mobile TV.
- One Member State, which has already deployed a broadcast mobile TV multiplex in the 470–862MHz band, stated that there is no need for

¹¹ Public protection and disaster relief.

European action to create either a dedicated frequency range for broadcast mobile TV or to use the 790–862MHz sub-band for this service.

PPDR

Most Member States did not support European action regarding PPDR in the 470–862MHz band, and indicated that other bands could be used to provide such services.

- One Member State highlighted that CEPT is considering the spectrum requirements for PPDR.
- Several Member States mentioned that they believe that spectrum below 470MHz and above 862MHz should be considered instead (e.g. the 400MHz band and the 2GHz band).
- Another Member State indicated that in a recent conference in Prague, no Member States identified a need in the foreseeable future for harmonised spectrum in the 470–862MHz band for PPDR.

During the discussion two Member States identified other potential uses of the 470–862MHz band.

- One Member State noted that part of this band is used by the military in its jurisdiction, and that this use should be considered as a future potential use of the band.
- Another Member State highlighted that it had received interest in the 470–862MHz band for a large number of other uses. The case for these uses having access to digital dividend spectrum should be given due consideration.

7 Session 5 – Other measures for improving long-term efficiency

7.1 Potential actions discussed

During Session 5 the consortium presented potential actions that could be undertaken at a European level in order to encourage more efficient use of the 470–862MHz band in the long term. These potential actions were related to two main topics:

<i>Topic</i>	<i>Potential options for action</i>
Reconfiguring assignments for MFN multiplexes so that they are close together	Make assignments for MFN multiplexes close together rather than spread across the entire band
Research into flexibly agile FDD technologies	Encourage research into flexibly agile FDD technologies

Figure 5: Potential options for action discussed during Session 5

7.2 Summary of the main discussion

The open discussion in this session became a general debate on how to encourage efficient use of the 470–862MHz band. A summary of the discussion is provided below.

One Member State suggested that spectrum efficiency may mean different things to different stakeholders. Another Member State suggested that not only should the efficient and flexible use of the 470–862MHz band be considered, but also why other spectrum bands are not used, and how they could be made more attractive. A third Member State emphasised that efforts should be focused on making digital dividend spectrum available in as attractive a way as possible, allowing the market to decide on the use.

There was an open debate regarding the appropriateness of another major regional reorganisation of the band (not dissimilar to GE-06).

- One Member State suggested that the study should consider the possibility of such a major reorganisation in order to achieve significant efficiencies through the wider adoption of SFNs, as well as new broadcasting technologies (e.g. DVB-T2).
- Another Member State emphasised that the life cycle of technical solutions for the 470–862MHz band is getting shorter: solutions quickly become obsolete (within a few years). Further, in the medium to long term, demand for certain services may change, for example demand for mobile services may grow. Therefore, the focus should be on ensuring that services can co-exist. This may mean that another replanning exercise needs to take place.

This Member State suggested that an appropriate time for such an exercise might be between 2015 and 2018.

- A third Member State suggested that though it may be beneficial to replan, it will be difficult. For example, at GE-06 it was clear which frequencies were under consideration (470–862MHz). Given that some Member States are freeing up the sub-band for other services, it is not clear which frequencies could or should be considered at a future replanning exercise.
- A fourth Member State suggested that the Commission may find making the sub-band available across Europe is a difficult task and therefore should focus on that task before attempting a more difficult replanning exercise.

One Member State said that the proposed 790–862MHz sub-band requires a band plan with a fixed duplex spacing, and making this sub-band available should be the top priority. It stated that equipment manufacturers have been working on flexible duplex technologies for decades, but they are still not in use. It is difficult to ask industry to invest in technologies that may only be required several years in the future. Flexible duplex technologies are therefore not suitable for the 790–862MHz sub-band, but may be considered in the longer term (“Putting too many things on the table may be counter productive, a balance is required”).

One Member State suggested that it would be helpful for Member States to share the results of public consultations that they have conducted on the digital dividend. This would provide a better view of the European situation.

Annex A: Participating organisations from Member States, Norway and Switzerland

<i>Country</i>	<i>Organisation</i>
Austria	Regulatory Authority RTR-GmbH
Belgium	BIPT
Bulgaria	Permanent Representation of Bulgaria to the EU
Czech Republic	Czech Telecommunication Office
Denmark	National IT- and Telecom Agency
Estonia	Ministry of Economic Affairs and Communications
Finland	Ministry of Transport and Communications
Finland	Finnish Communications Regulatory Authority
France	CSA
France	ANFR
France	MEIE/DGCIS
France	ARCEP
France	Ministère de la Culture et de la Communication
Germany	Directors' Conference of the State Media Regulatory Authorities
Germany	Federal Ministry of Economics and Technology
Greece	EETT-Hellenic Telecommunications and Post Commission
Hungary	National Communications Authority
Italy	AGCOM
Latvia	Electronic Communications Office
Latvia	Ministry of Transport
Lithuania	PERM REP of LT
Lithuania	Communications regulatory authority
Luxembourg	ILR
Luxembourg	Service des Medias et des Communications
Malta	Malta Communications Authority

Netherlands	Ministry of Economic Affairs
Netherlands	Radio Communications Agency Netherlands
Republic of Ireland	DCENR
Republic of Ireland	Commission for Communications Regulation
Republic of Ireland	Broadcasting Commission of Ireland
Spain	Ministry of Industry, Tourism and Trade
Sweden	National Post and Telecom Agency
Sweden	Ministry of Enterprise
United Kingdom	Ofcom (UK)
Switzerland (non-EU country)	Ofcom (Switzerland)
Switzerland (non-EU country)	EFTA Surveillance Authority
Norway (non-EU country)	Norwegian Ministry of Cultural Affairs
Norway (non-EU country)	Norwegian Post and Telecommunications Authority
Norway (non-EU country)	Norwegian Ministry of Transport and Communications
Norway (non-EU country)	Norwegian Ministry of Government Administration and Reform

Figure 6: Organisations from Member States and non-EU countries that participated in the workshop