

Report for the European Commission

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

Summary of the Stakeholders’ Hearings

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HOGAN &
HARTSON

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1 Introduction

This document is a summary of the Stakeholders' Hearings held in Brussels on 6 March 2009 on a coordinated European approach to the digital dividend. The Hearings were part of the study being carried out for the European Commission ("the Commission") by the consortium comprised of Analysys Mason, DotEcon and Hogan & Hartson.

Mr Antti Peltomäki (Deputy Director-General, DG INFSO) chaired the Hearing Panel and was assisted by Mr Daniel Pataki (Chairman, Radio Spectrum Policy Group (RSPG)), Mr Amit Nagpal (Partner, Analysys Mason) and Mr Gerry Oberst (Partner, Hogan & Hartson).

There were two principal objectives of the Hearings. Firstly, to enable the Commission and the consortium to gain a comprehensive understanding of the issues that are most important to spectrum users, over and above the issues already well publicised through existing reports and study material. Secondly, to provide potential and existing users of digital dividend spectrum with an opportunity to offer their views, particularly on what action may be required at a European level to ensure that the full benefits of the digital dividend are realised and to minimise possible negative effects for existing users.

The Hearings comprised three distinct sessions (one for the broadcasting industry, one for the telecoms industry and one for other spectrum users). Each session was split into three parts: the Hearing Panel gave a brief introduction to the session; the stakeholder panels then presented answers to a set of pre-announced questions and themes; then there was an open discussion during which all attendee stakeholders (including representative associations, members of the RSPG and members of the Commission) were invited to contribute.

The objective of this document is to provide a summary of the main views offered by the stakeholders. It is not intended to provide a detailed account of all the issues discussed.

The consortium would like to thank all participants in the Hearings for their attendance and contributions during the discussions, as the views expressed during the Hearings will be a formal input to the consortium's study.

2 Session 1 – Broadcasting industry

This section summarises discussions held during Session 1 with stakeholders from the broadcasting sector.

2.1 The stakeholders

Figure 1 below lists the stakeholders that participated in the panel in Part 2 of Session 1 (responses to pre-announced questions).

<i>Company</i>	<i>Sub-sector</i>
BBC	Public broadcaster
France Télévisions	Public broadcaster
Canal+	Private broadcaster
Mediaset	Private broadcaster
RTL	Private broadcaster
Sky Italia	Private broadcaster
TF1	Private broadcaster
Abertis	Network operator
ORS	Network operator
TDF	Network operator
Teracom	Network operator
Thomson	Equipment manufacturer

Figure 1: *The stakeholder panel for the broadcasting sector*

Figure 2 below lists the other stakeholders that attended Session 1 and participated in Part 3 of this session (open discussion).

<i>Company</i>	<i>Sub-sector</i>
Broadcasting Center Europe	Private broadcaster
Panasonic	Equipment manufacturer
ACTE	Broadcasting representative association
BEUC	Broadcasting representative association
Broadcast Mobile Convergence Forum	Broadcasting representative association
EBU	Broadcasting representative association
HD Forum	Broadcasting representative association

Figure 2: *The other stakeholders that attended Session 1*

All stakeholders were invited to participate in Part 3 of the session, including the stakeholder panel, representative associations, members of the RSPG and members of the Commission. The summary below includes information gathered from Parts 2 and 3 of the session.

2.2 Summary of main discussions

The stakeholders discussed five themes during this session:

- the value of the digital dividend to the broadcasting sector
- the benefits of new technologies/standards such as DVB-T2 and MPEG-4
- the benefits of single frequency networks (SFNs)
- the potential for the digital dividend to be used by other services
- suggested actions for the Commission.

A summary of the discussions on each theme is provided below.

The value of the digital dividend for the broadcasting sector

All sub-sectors (broadcasters, network operators, and equipment manufacturers) emphasised the need to preserve and extend broadcasting services. Stakeholders noted the unique value that broadcasting generates, including benefits to consumers and society as a whole. One stakeholder highlighted that broadcasters provide socially important programming such as news, current affairs and cultural content. It was highlighted that this has been recognised by the Commission in its Communication 531.

Emphasis was also placed on the importance of the DTT platform. It is the main source of free-to-view content in many Member States. It was also noted that the terrestrial platform has a stable base of existing viewers, and that the interests of these viewers should be protected. Further, there is no suitable spectrum available for DTT other than UHF bands IV/V. However it was pointed out that the situation in each Member State, and therefore the potential value of the digital dividend for DTT, differs widely between Member States.

Stakeholders pointed out that it was important for DTT to provide an enhanced service compared to that offered by analogue terrestrial TV (through more channels and/or through providing high-definition (HD) services). Further, the DTT platform needs a minimum number of channels to compete with other platforms (25 to 30 channels was quoted by one stakeholder, 40 by another). However, there was no consensus between stakeholders. Indeed one stakeholder stated that it very much depended on the situation within a specific Member State.

Some broadcasters mentioned that adding more channels to the DTT platform would not always financially benefit the broadcasters since revenues (e.g. from advertising) are largely fixed. However, it can increase viewing time (increasing

from an average of 3 to 3.5 hours per day in one Member State, between 2007 and 2008). For instance in France, an increase from 6 free-to-view analogue TV programming channels to 18 free-to-view DTT programming channels (as well as 11 subscription DTT programming channels) did not increase the total advertising revenue. However, other broadcasters highlighted the benefits of more TV programming channels include greater employment and greater cultural diversity.

Several stakeholders emphasised the importance of HD services being on the DTT platform, particularly because the DTT platform is primarily free-to-view in many Member States. One stakeholder stated that a survey in the UK revealed that 85% of consumers were highly interested in HD services. It was noted that the provision of HD services is a central element in some national plans (in France for example).

According to a network operator, "HD is a must on DTT – as soon as possible".

Stakeholders agreed that HD is essential for DTT and that broadcasters should be allowed to broadcast HD if they wish, but it should not be mandatory.

It was also noted that it will be important to find the right means to implement HD (whether MPEG-4 and/or DVB-T2 will be required) and also to manage the transition from standard definition (SD) to HD carefully. One broadcaster illustrated this with the "success of HD in France" where there are already five HD DTT programming channels and it is mandatory by law to sell HD-capable receivers.

Some stakeholders commented that digital dividend spectrum should be made available for broadcast mobile TV networks, and that any economic analysis should not omit this service.

The benefits of new technologies and standards such as DVB-T2 and MPEG-4

One stakeholder estimated that using MPEG-4 and DVB-T2, and without using spectrum identified in the 790–862MHz sub-band, it would be possible to broadcast around 30 HD TV programming channels.

Stakeholders noted that the increase in transmission efficiency is much greater when moving from MPEG-2 to MPEG-4, than moving from DVB-T to DVB-T2 (potentially just an improvement of between 20% and 25% in transmission capacity in the latter case). One stakeholder also mentioned the fact that MPEG-4 is an established technology, while DVB-T2 is still in development. Even so, DVB-T2 may be needed in order to offer sufficient HD TV programming channels on the DTT platform, particularly if the 790–862MHz sub-band is used for other services and if the remaining

spectrum is already used to provide SD TV programming channels.

There were differences of opinion on whether action is required at a European level regarding MPEG-4/DVB-T2. Some stakeholders believe that coordinated European action could help realise the benefits from economies of scale, particularly regarding MPEG-4 (DVB-T2 harmonisation was seen as less desirable). However, one stakeholder stated that the technical standards and pace of any technical migration should be left to Member States.

One stakeholder noted that consumers had already been subject to disruption due the digital switchover; further migrations (such as to MPEG-4 and particularly DVB-T2) could cause more disruption. Consumers should not be subject to too many instances of such disruption.

The benefits of single frequency networks (SFNs)

Stakeholders underlined the need for more information/time in order to quantify the benefits of SFNs.

One network operator stated that SFNs were just one way to improve frequency planning, but not the only one. Further, SFNs might not work in all countries. Also it is not always possible to provide local content on SFNs.

One stakeholder highlighted that Spain has four nationwide SFN multiplexes in the proposed 790–862MHz sub-band and how this is a very spectrally efficient method of providing these services.

One stakeholder highlighted that using SFNs may mean that a significant number of consumers may need to upgrade to wideband antennas. This is because consumers in some areas would not be able to receive transmissions due to the type of aerial they have. The resulting cost should be taken into account.

The potential for the digital dividend to be used by other services

Several stakeholders indicated that they appreciate that it may be beneficial for some of the digital dividend to be used for services other than broadcasting (e.g. potentially in the 790–862MHz sub-band), as long as the spectrum is actually used. One stakeholder emphasised that Member States need to make sure that spectrum is not allocated to “hypothetical” services. A broadcaster urged the Commission to take action to ensure the development of services (taking the example of some frequencies under-used by the telecoms sector).

One stakeholder stated that the negative environmental impact of using the digital dividend for dense networks (rather than for DTT) should be considered.

There was concern expressed that reallocating DTT assignments in order to free up the 790–862MHz sub-band would be costly to broadcasters. One broadcaster also underlined the fact that DTT is still a young platform and that it is not yet mature enough to bear such additional costs (“Don’t throw the baby with the bath water”). There was also concern regarding who would pay for these reallocations (including any required upgrades to MPEG-4 and/or DVB-T2).

There was consensus between stakeholders that another regional planning exercise (similar to GE-06) in order to free up spectrum in the 790–862MHz sub-band was not desirable. Instead bilateral or multilateral negotiations would be more productive.

*Suggested actions
for the Commission*

There was broad consensus between most of the stakeholders on seven recommendations:

- Equipment standards are needed for receivers. In particular:
 - radio performance standards, to ensure that out-of-band noise is effectively filtered out
 - all receivers should be prepared for HD services: a number of stakeholders recommended that HD and MPEG-4 capable tuners should be mandated in all DTT receivers.
- MPEG-4 transmission standards and a date for transition should not be mandated.
- A regional planning exercise (such as GE-06) is not desirable, bilateral/multilateral negotiations are likely to be sufficient and more effective. However, the Commission could assist in setting timeframes for such negotiations, and support negotiations with non-EU countries.
- Broadcasting transmissions should be protected from interference from new services using digital dividend spectrum.
- An allocated sub-band for broadcast mobile TV networks is not desirable.
- A framework should be set to allow Member States who want to allocate the 790–862MHz sub-band to telecoms to do so (“Full coordination but not full harmonisation” was mentioned).
- Broadcasters should not have to pay for any additional costs that are incurred in freeing up spectrum in the 790–862MHz sub-band. Coordinated European action to ensure this would be welcomed.

3 Session 2 – Telecoms industry

This section summarises discussions held during Session 2 with stakeholders from the telecoms sector.

3.1 The stakeholders

Figure 3 below lists the stakeholders that participated in the panel in Part 2 of Session 2 (responses to pre-announced questions).

<i>Company</i>	<i>Sub-sector</i>
Mobilkom	Mobile operator
Orange	Mobile operator
Telefonica/O2	Mobile operator
TeliaSonera	Mobile operator
T-Mobile	Mobile operator
Telenor	Fixed/mobile operator
Tele2	Fixed/mobile operator
BT	Fixed operator
UPC Ireland	Cable operator
Cisco	Equipment manufacturer
Ericsson	Equipment manufacturer
Nokia/Nokia Siemens Networks	Equipment manufacturer
Qualcomm	Equipment manufacturer

Figure 3: *The stakeholder panel for the telecoms sector*

Figure 4 below lists the other stakeholders that attended Session 2 and participated in Part 3 of this session (open discussion).

<i>Company</i>	<i>Sub-sector</i>
LGI	Cable operator
BEUC	Telecoms representative association
ECTA	Telecoms representative association
ETNO	Telecoms representative association
GSMA	Telecoms representative association

Figure 4: *The other stakeholders that attended Session 2*

All stakeholders were invited to participate in Part 3 of the session, including the stakeholder panel, representative associations, members of the RSPG and members of the Commission. The summary below includes information gathered from Parts 2 and 3 of the session.

3.2 Summary of main discussions

The stakeholders discussed five themes during this session:

- the value of the digital dividend for the telecoms sector
- the amount of digital dividend spectrum required for telecoms services
- the costs/benefits of harmonisation (including economies of scale)
- potential options for incentivising Member States to free up the sub-band
- suggested actions for the Commission.

A summary of the discussions on each theme is provided below.

The value of the digital dividend for the telecoms sector All stakeholders agreed that there is real economic value in terms of GDP and job creation from using digital dividend spectrum for telecoms services. A mobile operator made reference to existing published studies by SCF, Spectrum Value Partners, Analysys Mason and the Commission. One stakeholder noted that telecoms services, including mobile broadband, generate significant social benefits.

The majority of stakeholders said that they were interested in using digital dividend spectrum for mobile broadband services. However, one stated that it would consider using the digital dividend to provide fixed broadband services. An equipment manufacturer thought that both fixed and mobile services could be offered using the same technology, therefore differentiating the spectrum between these services may not be necessary.

Digital dividend spectrum could be used to provide coverage to rural areas. This could be achieved using other, higher frequency bands, but would be much more costly. Using the 2.6GHz band could potentially be around six times more expensive than using the digital dividend (based on calculations of the cost of deployment at 2.4GHz and 600MHz).

Digital dividend spectrum could also be used to provide higher quality indoor coverage.

One stakeholder identified a joint study by Oxford and Oviedo universities that stated that all consumers would require a broadband speed of 11.25Mbit/s within three to five years. Currently only Japan is ready to deliver this. Digital dividend spectrum will be very beneficial to achieving this aim.

Another stakeholder stated that mobile technology is approaching Shannon's law (the theoretical maximum transmission rate using a limited amount of spectrum). Therefore, in order to offer higher speed services, more spectrum is required.

The amount of digital dividend spectrum required for telecoms services

Stakeholders felt strongly that 72MHz (i.e. using the 790–862MHz sub-band) may not be sufficient, and that spectrum below 790MHz should be considered.

One mobile operator stated that a total of 100MHz would be required as a "starting point". A mobile operator gave the example of a study in Germany that showed that to provide 6Mbit/s in rural areas, at least 160MHz of spectrum would be required.

One stakeholder indicated that if LTE is used to offer the highest speed broadband services, 2×20MHz of spectrum is required per network. Two such networks could not fit into the 72MHz available.

Some stakeholders suggested that the Commission should mandate CEPT to investigate opportunities and potential band plans for telecoms use below 790MHz.

The costs/benefits of harmonisation

One equipment manufacturer stated that if a market the size of Europe was to conform to one band plan for the digital dividend, then the bill of materials for the RF (radio frequency) components would be USD0.80 per device. If there were three different band plans, this would rise to USD3.80. Therefore, a harmonised band plan is very desirable.

Stakeholders highlighted that the proposed 790–862MHz sub-band is a different range to that identified in other parts of the world (particularly the USA or Asia). Hence, Europe will not benefit from economies of scale from sharing common frequencies with these regions/countries. Therefore, it is even more important that European Member States coordinate to develop a harmonised band plan, in order to generate economies of scale. Stakeholders indicated that if this weren't to happen Europe could lag behind the USA or Asian countries. This could potentially prevent the export benefits of European technologies (as realised with GSM).

National markets, as opposed to the European market, could greatly increase the cost of R&D and lead to some Member States being "stranded" (i.e. being subject to higher costs for devices and poor device availability). A mobile operator expressed concern about the fact that manufacturers are today focusing on the USA and not on Europe.

An equipment manufacturer pledged that the industry will still make equipment available even if just a sub-set of Member States make the sub-band available, though this will be more expensive. However, given the current economic climate, equipment manufacturers are very dependent on economies of scale, and therefore a coordinated European approach is crucial if manufacturers are to invest further in R&D.

From the consumer's perspective, economies of scale can have an impact on prices. For instance phone components can double the price of a handset, hence reaching a significant market size is key (a market of 100 million people was mentioned).

One mobile operator stated that they expect LTE equipment to be available for the sub-band by 2011, therefore, it would be ready to deploy a service in 2012 (when analogue switch-off is planned).

When asked why FDD technologies required a fixed duplex gap, one stakeholder responded that investments are being made in this area, however, mass-market frequency-agile technologies are not expected in the foreseeable future.

Potential options for incentivising Member States to free up the sub-band

One stakeholder suggested that hopefully all Member States will recognise the benefit of using the sub-band for mobile broadband, and therefore incentives will not be required.

Regarding the appropriate process for broadcasters to recover the incremental costs to free up the sub-band, a stakeholder suggested there was "no one size fits all" approach for Member States. Though for some Member States costs could be recovered through the revenues raised from auctions to award the sub-band.

Another stakeholder stated that costs to compensate SAB/SAP users for exiting the sub-band were not that great when compared to the benefits of mobile broadband using the sub-band.

Suggested actions for the Commission

There was broad consensus between stakeholders on five recommendations.

- The allocation of the 790–862MHz sub-band (or potentially other allocations) should not be mandatory. Instead "voluntary harmonisation" may be desirable for political reasons. One stakeholder suggested that mandating the freeing up of the sub-band could lead to delays.
- The Commission should encourage, coordinate and educate Member States on freeing up the sub-band. This could include developing road maps,

fostering national cost-benefit analyses or identifying best practice.

- The Commission should ensure that the analogue switch-off is completed on time in 2012. This would provide certainty to equipment manufacturers to invest in developing equipment for the sub-band. (However, there were differences in opinion as to whether “derogations” should be allowed. One stakeholder suggested that this may lead to delays in the analogue switch-off and thus use of the digital dividend for mobile broadband).
- The Commission should assist cross-border coordination. This is especially the case with non-EU countries.
- The Commission should mandate CEPT to identify opportunities and develop band plans for use of frequencies below 790MHz.

4 Session 3 – Other uses

This section summarises discussions held during Session 3 with stakeholders representing other industries and potential uses of the digital dividend.

4.1 The stakeholders

Figure 5 below list the stakeholders that participated in the panel in Part 2 of Session 3 (responses to pre-announced questions).

<i>Company</i>	<i>Sector</i>
Google	Cognitive technology
Microsoft	Cognitive technology
Astrid	Public safety
DTRC (Belgian Police)	Public safety
EADS	Public safety
Motorola	Public safety
Inmarsat	Mobile satellite operator
NEM	R&D
Düsseldorf Congress	SAB/SAP
Audio Technica Europe	SAB/SAP
Shure	SAB/SAP
Sennheiser	SAB/SAP

Figure 5: *The stakeholder panel representing other industries and potential uses of the digital dividend*

Figure 6 below lists the other stakeholders that attended Session 3 and participated in Part 3 of this session (open discussion).

<i>Company</i>	<i>Sub-sector</i>
APWPT	Representative association
EICTA	Representative association

Figure 6: *The other stakeholders that attended Session 3*

All stakeholders were invited to participate in Part 3 of the session, including the stakeholder panel, representative associations, members of the RSPG and members of the Commission. The summary below includes information gathered from Parts 2 and 3 of the session.

4.2 Summary of main discussions

The stakeholders discussed three themes during this session:

- the value of the digital dividend for the other spectrum users
- the costs/benefits of harmonisation (including economies of scale)
- suggested actions for the Commission.

A summary of the discussions on each theme is provided below.

The value of the digital dividend for the “other” spectrum users

The SAB/SAP stakeholders expressed the following views.

- Strong concern was expressed over the prospect of SAB/SAP spectrum being made unavailable, particularly in the 790–862MHz sub-band, where many countries have nationwide allocations. This would cause disruption and would be costly as current equipment would become redundant.
- SAB/SAP equipment manufacturers stated that a period of three to five years is required for developing and marketing new products.
- The economic loss could be EUR3.5 billion to replace all equipment throughout the EU. This would dramatically increase the cost to end users.
- Services that use SAB/SAP equipment in this spectrum (which is mainly used for radio microphones) provide significant social and cultural benefits.
- SAB/SAP stakeholders believe that they cannot win digital dividend spectrum in an auction. Therefore, the loss of social benefits from SAB/SAP due to such an auction should be taken into consideration.

The public safety and satellite stakeholders expressed the following views.

- The value of public safety services goes beyond purely an economic one; therefore it is extremely difficult to quantify.
- The digital dividend could be used for mobile broadband services for public safety services. There are existing pan-European public safety networks (TETRA and Tetrapol), however these can only provide narrowband services.
- Stakeholders expressed mixed views on the amount of spectrum required although 2×15MHz was mentioned.

The mobile satellite operator stakeholder expressed the following views.

- Satellite providers already supply valuable services in 2GHz band (S-Band) including broadband for emergency and public services.
- Such satellite services should be viewed as an alternative to using the digital dividend for public safety services.

The cognitive technology industry expressed the following views.

- Cognitive technologies are a new, promising field. Stakeholders thought that they could be used to serve rural areas and other under-served places (as a complement to fibre roll-out). This is especially the case in Europe where there are gaps in coverage in rural areas.
- As cognitive technologies can use interleaved spectrum ('the white spaces'), they are very spectrally efficient.
- One stakeholder said that early estimates of the economic value generated by cognitive technologies could be as much as EUR200–300 million in one Member State (according to Ofcom's estimates).
- When asked what would happen to the cognitive technology industry if all Member States rolled out SFNs for DTT, thus significantly reducing the amount of white space, stakeholders answered that there is enough time between now and the hypothetical full implementation of SFNs to deploy products and make a return on their investments. Further, there will still be white spaces available where there is demand for local TV content.

The R&D community thought that the Commission must look at the long-term perspective (2020 and beyond).

The costs/benefits of harmonisation (including on economies of scale)

The SAB/SAP stakeholders welcomed the harmonisation of nationally available channels. They also acknowledged that it was not necessary to have exactly the same channel available in all Member States, availability within the tuning range of the equipment would be sufficient. However, the tuning range depends on the equipment.

- The tuning range can be widened, but at the cost of spectrum efficiency.
- Basic equipment (often used by many non-professional users) can tune over approximately two 8MHz channels.

Public safety stakeholders strongly support harmonisation (“the more harmonisation we can get the better”). This is for two reasons:

- there is a critical need for interoperability and roaming across borders
- a pan-European approach would bring economies of scale and thus significantly reduce costs (an example was provided indicating that economies of scale could lower the cost of device units from EUR2000 to EUR500).

One stakeholder stated that the success of the 380MHz decision 15 years ago demonstrates the value of harmonising spectrum for public safety services. However, doing this through Commission decisions might be a more appropriate approach.

Public safety stakeholders stated that priority access to public mobile broadband networks is insufficient, as such public safety systems will be required in many low user density areas. In these areas commercial systems are not viable. This is also why public safety users require access to spectrum below 1GHz to limit network costs.

*Suggested actions
for the Commission*

The SAB/SAP community wants to be recognised as an existing user, and that the Commission should ensure that sufficient spectrum is available for existing users. There should also be certainty over which frequencies will be used for SAB/SAP and when this move will take place.

They also expressed the view that EU guidance regarding the harmonisation of SAB/SAP spectrum would be welcomed. The standardisation of SAB/SAP licensing schemes across Europe was thought to be beneficial. Finally, the SAB/SAP community should not incur any additional costs resulting from liberalising the use of digital dividend for other services.

Stakeholders also suggested that cognitive technologies should be subject to the appropriate CEPT and ETSI procedures in order to ensure that there is no interference for SAB/SAP users.

The public safety stakeholders requested that spectrum is harmonised for a public safety mobile service. However, the sector is currently defining its operational and spectrum requirements for such a service.

The cognitive radio community believes the Commission should follow the FCC's lead (the American regulator) in allowing the use of cognitive technologies and by defining a European framework.