



STUDY ON

**THE REGULATION OF BROADCASTING ISSUES UNDER THE
NEW REGULATORY FRAMEWORK**

prepared for the

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by

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Table of contents

Executive Summary

A. Scope and study objectives	1
B. Licensing and authorisation	2
C. Radio frequencies	3
D. Must-carry and must-offer	3
E. Access to wholesale broadcasting transmission	4
F. Access to associated facilities	5
I. STUDY OVERVIEW	7
A. The regulatory environment for the broadcasting sector	7
B. The review of the EU 2003 regulatory framework and the study objectives	8
C. Key themes in our analysis	10
D. Implementation of the framework for broadcasting in the Member States	16
E. The report structure	18
II. IMPLEMENTATION OF THE FRAMEWORK FOR BROADCASTING IN THE MEMBER STATES	19
A. Introduction	19
B. Data collection and analysis	19
1. Broadcasting platforms, institutional structure, general interest objectives	20
2. Authorisation and licensing	27
3. Broadcasting spectrum	28
4. Must-carry and must-offer	32
5. Access and competition	36
C. Recommendations	39
III. ANALYSIS AND RECOMMENDATIONS	41
A. Licensing and authorisation	41
1. Introduction	41
2. Overlap between broadcasting and electronic communications regulations ..	41
3. Status of authorisations and licensing in Member States	45
4. A possible dividing line for determining whether a broadcasting authorisation is needed: editorial responsibility	49
5. A possible dividing line between regulatory responsibilities	54
6. Linkages between different types of authorisations	56
7. Concluding remarks	60
8. Recommendations	60
B. Radio frequencies for broadcasting	62
2. Frequency assignment procedures	64
3. Frequency fees	70
4. Competition issues	72
5. Recommendations	75
C. Must-carry and must-offer rules	77
1. The purpose of must-carry rules	77
2. Status of must-carry in the Member States	78
3. Competition issues	80
4. The scope and extent of must-carry	84
5. Must-offer	86
6. Towards a market-based approach	87
7. Recommendations	88
D. Access and competition	90
1. Access to wholesale broadcasting transmission	90
2. Access to associated facilities	108
3. Recommendations	121

E. Radio broadcasting.....	126
1. Introduction	126
2. Wholesale broadcasting transmission	126
3. Frequency issues.....	127
4. Transition to digital transmission for radio broadcasting.....	127
IV. "REGULATION FOR THE FUTURE"	135
A. Licensing and authorisation	135
B. Radio frequencies.....	136
C. Must-carry and must-offer	136
D. Access issues.....	137
E. Radio broadcasting.....	138
F. Other recommendations	139
G. Overview of recommendations affecting different broadcasting categories	139
APPENDIX: GLOSSARY.....	141

Study on the regulation of broadcasting issues under the new regulatory framework

Executive summary

A. Scope and study objectives

Communications technologies are reshaping the broadcasting landscape. In particular, radio and television programmes are being transmitted over an increasing number of platforms and transmission technologies. Some of them use wired rather than wireless technologies, or radio frequencies that are not traditionally linked to broadcasting allocations in national frequency plans. Traditional forms of broadcasting also face more and more competition from new types of audiovisual media content offered on an on-demand basis.

This evolution makes it necessary to reconsider broadcasting policies and regulations. This report focuses on issues that are linked to the implementation of the 2003 regulatory framework on electronic communications for the broadcasting sector, i.e. on licensing and authorisation, radio frequencies, must-carry rules and access issues, both for access to wholesale broadcasting transmission and access to associated facilities. It does not deal with content related issues but addresses bridges and overlaps between electronic communications and broadcasting regulations.

Convergence in the underlying technological and economic conditions in the electronic communications and audiovisual sectors should be matched by at least a minimum level of convergence and rationalisation of regulatory regimes. There are three key themes flowing through the analysis contained in this report. First, the EU 2003 regulatory framework is normally defined as applicable to network and transmission related issues, while the broadcasting framework relates to content. It is less recognised that both frameworks also deal with distribution issues, and the fleshing out of the distribution concept and its implications for the broadcasting sector are discussed. Second, in the electronic communications sector it is a clearly identifiable objective to avoid regulatory barriers to entry. In many ways discussed in the report, regulatory barriers to entry can affect the development of competition at one or more levels of the value chain in the broadcasting sector. Third, the overlap between the implementation of the EU 2003 regulatory framework and existing broadcasting regulation can have the additional effect of making regulations less transparent, and this is exacerbated for new market players. The report discusses the ways in which greater transparency is crucial to sound implementation of the regulatory framework.

The report, which focuses on analogue and digital television broadcasting, provides information on the implementation of the relevant provisions of the regulatory framework in all the 25 Member States and where they exist, highlights complexities in the area of implementation. It also puts forward recommendations as to where improvements can be made in view of the evolution of the broadcasting landscape, which is characterised by technological changes (including digitalisation), multiple distribution platforms for broadcasting as well as alternatives to traditional broadcasting content enabled by the Internet.

B. Licensing and authorisation

The EU 2003 regulatory framework for electronic communications brought networks used for broadcasting transmission into the same regime as for telecommunications. While it is clear from this framework that two separate authorisations can be required, one for the transmission of broadcasting signals and one for the provision of broadcast content, the situation of distributors (network operators that retransmit broadcasting signals and offer them to the public, e.g. cable or satellite operators, mobile operators, IP TV providers) is less clear. The electronic communications framework has made a clear distinction between 'content' and 'transmission' but the concept of 'distribution' remains in a grey zone. It is covered by both the electronic communications regulatory framework and broadcasting regulation and this can potentially lead to duplication of requirements and double monitoring. This is recognised in a recital of the Authorisation Directive, which does not preclude network operators from being subject to obligations additional to those of the electronic communications framework as long as they provide services such as content provision or distribution.

The report concludes that there should be greater clarity about when obligations stemming from broadcasting or media regulation can be imposed on distributors of broadcasting services. From a broader policy perspective, it also considers that it should be an objective for regulation to achieve to the extent possible separation between regulatory regimes for content provision and transmission and that certain content distribution activities may be carried out independently of the broadcasting framework. This would contribute to a competitive distribution market and facilitate the rollout of pan-European services because it would create a simpler regulatory framework with less bureaucracy and better legal certainty.

In an attempt to shed some light on this question, the report makes suggestions as to when a 'broadcasting authorisation' may be required, depending on the level of editorial activity undertaken by the distributor. Suggestions are that mere domestic and cross-border relay of television programmes without use of broadcasting frequencies should be subject only to a general authorisation under the electronic communications regulatory framework. Situations where the distributor has limited or minor editorial responsibilities such as management of advertising gaps, timing changes and combination of multiple television stations, would justify involvement of the broadcasting regulator under a lighter regulatory regime than the one applicable to fully-fledged television channels.

While the implementation of the general authorisation for electronic communications networks is straightforward in all of the Member States, there are wide differences in the national broadcast licensing structures and procedures, which sometimes vary from platform to platform and even between regions. These divergences can create barriers to entry for new platform and service providers, in particular for those wanting to operate on a pan-European basis.

For terrestrial television, the links between frequency and content broadcasting licences also differ from one Member State to another, as well as the sequence of the whole licensing process. The report lists a number of national practices that are questionable in view of the objective of achieving the greatest possible separation between regulatory regimes for content provision and transmission, as well as examples of good practice. For television transmitted by terrestrial means, it recommends, over the long term, to break linkages between content and transmission authorisations in order to remove the preferential relationship between authorisations and one particular delivery platform, thus creating a

more level playing field for different platforms. Guidance should be provided to Member States on how to achieve this objective. It also calls for regular reviews of the platforms used to achieve the coverage obligations of broadcasters with public service obligations.¹

The report also calls for more efforts to encourage greater coordination between regulatory authorities for broadcasting and for electronic communications, to discuss bridging issues.

C. Radio frequencies

The report shows the specifics of frequency assignment for broadcasting services, in particular in terms of the assignment process and possibilities for use of the assigned frequencies. In the broadcasting sector, spectrum management tends to prioritise universality and affordability objectives and seek to ensure the provision of broadcasting services that meet general interest objectives. The report looks at the suitability of the current system for the future through three particular issues: flexibility in broadcasting spectrum use, competition between different categories of broadcasters and links between frequency assignment and broadcasting authorisations. It recommends considering removing rights to use spectrum from content authorisations. Where it is considered desirable to ensure access to digital terrestrial networks for broadcasters with public service obligations, this could be ensured through granting access to multiplex capacity rather than to the radio frequencies.

On future frequency allocation, the report recommends that there should be a public debate on how to make best use of the digital dividend, on the basis of transparent and, ideally, quantified analysis of the different options. It stresses that appropriate consideration should be given to the various options for reserving frequencies for particular uses and to the costs and benefits of such reservations. Decisions should be taken at a level where all interested parties are represented.

There are wide national differences in the level of and basis for radio frequency fees, with some broadcasters paying substantial fees in some countries and in other countries no fees at all. The report recommends that broadcasters should pay charges to regulators for spectrum use that at least recover the costs of spectrum management. The report also suggests that it should be considered that broadcasters, in particular commercial broadcasters without public service obligations, should pay commercial rates for spectrum and that frequencies used for broadcasting should be considered as candidates for frequency trading, if the European Commission's proposal for spectrum liberalisation is accepted.

D. Must-carry and must-offer

The report highlights that must-carry obligations have been implemented in very different ways in the Member States. While the Universal Service Directive sets out clear requirements for must-carry policies -- transparency, review procedures and need for consultation -- these are not well reflected in Member States' policies and very few reviews have been carried out. The report therefore calls for a clear identification of the general interest objectives relevant to the selection of must-carry programming, and publication of the

¹ In this study we distinguish between broadcasters with and without public service obligations. Broadcasters with public service obligations typically, but not always, receive public funding. A "public service broadcaster" refers to a broadcaster with public service obligations that receives public funding, typically through an end-user licence fee and other state measures.

criteria for must-carry selection. It explains the rationale behind must-carry provisions and the problems that can arise when there are too many broadcasters with must-carry status or when programming of narrow appeal uses up valuable capacity.

The report stresses the impact of must-carry obligations on competition and calls on the European Commission to take this into account when considering a possible review of the must-carry provisions of the 2003 regulatory framework.

The report recommends that guidance should be given regarding modernising must-carry obligations in the emerging digital environment. Such guidance should include that the number of must-carry channels should be limited to a reasonable number, only channels with a public service (or general interest) profile should be eligible for must-carry status, and the criteria for must-carry channel selection should be made public. While recognising that Member States are probably better suited to decide over which platforms must-carry channels should be available, guidance may have to be provided on the term “significant number of end-users” and “principal means” of reception, as found in the EU 2003 regulatory framework. To be forward-looking, Member States could even consider whether must-carry status for broadcasters with no public service obligations could be determined through use of a public tender based on beauty contest or auction where the general interest objectives would be specified in detail.

Finally, to make sure that broadcasters with must-carry status operate on a level playing field with distributors, it is recommended that these broadcasters are subject to a must-offer obligation to provide their programmes to all platform providers under non-discriminatory terms and conditions. No payment should be made by or to transmission providers for the carriage of must-carry programming.

E. Access to wholesale broadcasting transmission

According to the 2003 regulatory framework on electronic communications, national regulators need to carry out an analysis of a number of defined markets and in case of market failures apply proportionate ex ante regulation. One of these markets is the market for wholesale broadcasting transmission, to deliver broadcast content to end-users (market 18). The report analyses the results of the market analyses carried out so far by national regulators and highlights differences in approach. It also questions whether this exercise has led to more competition.

There is a considerable degree of uncertainty on the scope of market 18, and more specifically on whether it is restricted to the purchase of broadcasting transmission capacity by new entrants that wish to offer transmission services to broadcasters (intra-platform competition), or whether it also covers the provision of end-to-end transmission capacity to broadcasters (inter-platform competition). The report invites the Commission to provide clarification on this key issue and recommends specifying two separate markets for broadcasting transmission, one for managed transmission services and another for access to network elements (intra-platform competition).

The report shows that in the Member States where an analysis of market 18 has been carried out and where remedies have been imposed, this has not led to intra-platform competition, except in France on the DTT market where the market had in fact already been opened by a previous national competition authority decision. The report lists a number of factors that affect the level of competition in market 18 and that might be necessary for the

emergence of intra-platform competition. It also shows that the objectives of entry and competition in television transmission that should result from the market analysis exercise have been compromised by the progress of the digital switchover which was, in many countries, already too advanced for the market analyses to produce a real impact.

Because of the heterogeneity of national broadcasting market structures, the report does not propose a single recommendation that could be applied to all markets. Instead it provides some guidance to national regulators on whether or not to regulate broadcasting access markets and on which market to intervene. According to the report, regulators should first assess the level of competition on the market for managed transmission services. If there is no market failure on that market, no significant market power (SMP) regulation should be imposed. If there is a market failure, regulators should consider whether there is a real prospect for intra-platform competition (by looking, amongst others, at the possibilities of service differentiation, at whether the investment ladder theory can apply and at whether broadcasters are not locked into long-term contracts). If there is a real prospect for intra-platform competition, they should designate one or several operators with SMP on the wholesale market and impose access remedies. If there is no real prospect for intra-platform competition, they should rather regulate the market for managed transmission services.

The report also calls on the Commission to assist and encourage national regulators to coordinate their approaches to defining access remedies for market 18.

F. Access to associated facilities

The report analyses the provisions of the 2003 regulatory framework on access to conditional access systems (CAS), application program interfaces (APIs) and electronic program guides (EPGs) and the way they have been implemented and enforced in the Member States. It shows that, except in the UK, there has been little national experience with implementation, sometimes due to market development or to the fact that access is settled by commercial agreements.

The report highlights some difficulties in relation to the existing provisions of the framework on access to CAS as well as some more general weaknesses that should be overcome in the future to ensure that the framework withstands technology advances and the emergence of potential new bottlenecks. For example, the extent of the obligation that can be imposed on conditional access operators to enable broadcasters to have access to their conditional access systems is not clear. Another difficulty is that there is no guidance at EU level on how to determine the cost of access, to comply with the requirement that it should be granted on fair, reasonable and non-discriminatory terms. Regarding technological change, the report notes that unlike other provisions of the 2003 regulatory framework, the provisions on access to these particular facilities are not neutral from a technological point of view. They assume that conditional access, EPGs and APIs will be the only bottlenecks which could prevent broadcasters from reaching their customer base. This assumption is probably wrong in a rapidly evolving environment, as the emergence of digital rights management systems illustrates.

While it may be premature in this study to propose specific recommendations with respect to associated facilities, more research is suggested to identify whether the EU 2003 regulatory framework should be changed to ensure greater flexibility for Member States to take into account market developments, as well as to require them to match access requirements with the clear identification of actual bottlenecks. This could include consideration of removing the

special access regime for conditional access and making allowances in the provisions on access to associated facilities for the emergence of other potential bottlenecks than EPGs and APIs. It could also consider whether must-carry should guarantee access to a transmission network and to all the associated facilities (including, but not limited to conditional access, EPGs and APIs) under fair, reasonable and non-discriminatory terms, thereby maintaining a special access regime for those channels that benefit from must-carry.

I. STUDY OVERVIEW

A. The regulatory environment for the broadcasting sector

The regulatory environment for the broadcasting sector exists in the context of a rapidly changing technological and economic landscape. We see two major trends:

- In the not so distant past, broadcasting was synonymous with the wireless transmission of radio and television programmes. Cable TV and satellite transmission came relatively early as alternative transmission technologies. Today, we see an increasing number of platforms and transmission technologies able to carry television content. Many of these use cables rather than wireless technologies, or they use radio frequencies that are not linked to the broadcasting allocations in the national frequency plans. One result of this development is that it is, or will become, increasingly viable to operate as a television station (or a "radio station") without access to any of the limited number of radio frequencies set aside for broadcasting;
- Traditional broadcasting is increasingly meeting competition from other types of media and types of video content. The Internet, with its many different forms of content, is particularly important. All these media compete for the time that any individual person has available for receiving sound or image-based information. The role of 'traditional', point-to-multipoint broadcasting may change, and as a result this is currently being addressed with the modernisation of the Television Without Frontiers (TWF) Directive. The proposed directive intends to introduce common rules applicable to all audiovisual media services including linear and non-linear media services.

The convergence between telecommunications and the IT industry on the one hand, and the broadcasting industry with radio and television on the other hand, was recognised in the new regulatory framework for electronic communications (the EU 2003 regulatory framework). The framework was extended to include the transmission of broadcasting content because it was expected that increasingly all networks would be capable of carrying any type of traffic. Regulating all networks through the same regulatory framework should ensure a fair and consistent framework for all, and would contribute to the consolidation of the internal market in the EU, as one of the main objectives of the framework was to:

consolidate the internal market in a converging environment, by removing obstacles to the provision of communications networks and services at the European level so that, in similar circumstances, similar operators are treated in similar ways wherever they operate in the EU.²

An unintended consequence of including networks used for broadcasting services in the EU 2003 regulatory framework may be some degree of overlap and confusion between two regulatory regimes: legacy broadcasting regulation and the newer regime for electronic communications under the European regulatory framework. This is undesirable as it may create difficulties for the internal market.

² European Commission, Communication – Towards a new framework for electronic communications infrastructure and associated services: The 1999 Communications Review, COM(1999)539, 1999 (1999 Communication).

One way to proceed is to ensure that national broadcasting regulation should focus more narrowly on the content and policy aspects of broadcasting, while the conveyance aspects of television and radio signals should no longer be included in the broadcasting regulation but be part of the framework for electronic communications. This was clearly expressed for example in the 1999 Communications Review with regard to authorisation and licensing:

*This implies two separate authorisations, one relating to operation of the network infrastructure and the transmission of broadcast signals, and the other concerned with the content of broadcast transmissions.*³

Regardless of where particular regulations are located in national laws, however, the more significant point is that convergence in the underlying technological and economic conditions in the electronic communications and audiovisual sectors should be matched by at least a minimum level of convergence and rationalisation of regulatory regimes. In the EU at present, much more remains to be done in this direction.

B. The review of the EU 2003 regulatory framework and the study objectives

During 2006, the European Commission is conducting a review of the electronic communications framework. In this context, it is important to understand how the Member States have implemented the framework for the broadcasting sector and whether they have done so in a way that supports the internal market. The main objectives of this study, undertaken for the European Commission, are therefore to provide information covering potential implementation issues in all 25 Member States and to make recommendations as to where improvements can be made.⁴

We would describe the potential issues as falling into three main categories:

1. There could be a problem from the point of view of implementation of the framework if national broadcasting regulations have not been sufficiently reviewed and modified to reflect the inclusion of regulations affecting broadcasting distribution in regulations affecting electronic communications networks and services. In that case, the new regulatory framework could represent an additional layer of regulations on top of what already existed under the broadcasting regime. This could become particularly critical when new transmission technologies raise new issues seen from a broadcasting perspective.

In order to examine these issues, it is necessary to examine:

- the system of authorisation of electronic communications networks and services for distribution of radio and television programmes;
- the rights of use for radio frequencies for broadcasting.

Many types of activities require multiple licences or authorisations, which are often inter-linked or have mutual dependencies.

³ European Commission, Communication – Towards a new framework for electronic communications infrastructure and associated services: The 1999 Communications Review, COM(1999)539, 1999.

⁴ This study does not provide an assessment of compliance of Member State laws with the EU 2003 regulatory framework.

2. It may not be possible to completely separate the two sets of regulations and it may be that including broadcasting in the regulatory framework for electronic communications necessitates some element of control over the way content is distributed. Therefore, the 2003 acquis for electronic communications includes certain bridges to accommodate regulatory concerns stemming from the broadcasting sector. These bridges include:
 - must-carry regulations;
 - access to networks and associated facilities, defined as conditional access systems (CAS), application programme interfaces (APIs) and electronic programme guides (EPGs); and
 - rights of use for spectrum for providers of radio and television broadcast content.⁵
3. There does not appear to be a well defined, shared understanding among policy makers and industry of what the goals of access regulation are in the broadcasting sector. In contrast to the many decades of effort that went into understanding the policy problems and the design of appropriate regulatory approaches to remedying those problems in telecommunications markets, competition issues – of which access is only one type – in the broadcasting sector are not as well understood. This means that the ex ante regulatory regime found in the EU regulatory framework for the wholesale market for broadcast transmission is not implemented consistently in the Member States. Nor is it likely to be in future without additional discussion and guidance.

Furthermore, the parallel progress of access regulation for associated facilities outside of the framework's market analysis procedure only adds to the uncertainty in market conditions caused by changes in technology and consumer demand. While the ultimate goal of the ex ante regulation of the market for broadcasting transmission, as with all of the other markets in the framework, is to substitute competition law for ex ante regulation, this can not necessarily be said for access to associated facilities, and this divergence will become increasingly difficult to justify to market participants.

This study has been commissioned by the section in the DG Information Society of the European Commission responsible for the electronic communications framework. Its focus is therefore on these regulations. However, as explained above, new communications technologies are reshaping the broadcasting landscape in a way that makes it necessary to reconsider broadcasting policies as well as their regulations. In 2005 the Commission presented a proposal for the modernisation of the Television without Frontiers Directive. Both the review of the electronic communication sector and the modernisation of the Television without Frontiers Directive must be considered as complementary efforts to move the Member States toward meeting the goals of I2010, the digital economy part of EU's revised "Lisbon" strategy for growth and jobs.

In our analysis, we must therefore consider all bridging and overlap issues, whether the ultimate responsibility lies with broadcasting or electronic communications. In some cases, our recommendations may suggest adjustments to the electronic communications

⁵ "Without prejudice to specific criteria and procedures adopted by Member States to grant rights of use of radio frequencies to providers of radio or television broadcast content services with a view to pursuing general interest objectives in conformity with Community law, such rights of use shall be granted through open, transparent and non-discriminatory procedures." Directive 2002/20/EC on the authorisation of electronic communications networks and services (Authorisation Directive), Art. 5, OJ L 108, April 24, 2002.

framework. In other cases, our recommendations may call for a wider debate on broadcasting policy objectives. Still, the objectives of this study do not go beyond these bridging issues. For example, there is no intention to examine content issues, such as those currently being discussed with the revision of the "Television without Frontiers" Directive.

Given the challenges facing the European Commission in this sector, our much more modest goal in this study is to analyse where multiple, overlapping regulatory regimes with different objectives in electronic communications and broadcasting regulation may create problems for the internal market. In addition, we seek to provide the Commission with up-to-date information on regulation affecting broadcasting in all the 25 EU Member States, to better inform its future policy initiatives for the sector.

This study includes analogue as well as digital television and radio broadcasting. However, the main focus is on digital television. Although in general there are a number of policy concerns unique to the radio industry, we could not identify major differences in principle from the implementation issues for television broadcasting. Furthermore, some issues, such as analysis of market 18 and access to associated facilities under the framework, do not appear to have much relevance for radio. Within digital television, the study considers all relevant delivery platforms, including the status of their development and how they are regulated.

C. Key themes in our analysis

The EU 2003 regulatory framework for electronic communications brought broadcasting networks into the same regulatory regime as for telecommunications. There were good reasons for taking this step, as technology convergence enables all types of networks to provide all types of services and regulations should facilitate this process.⁶ In such a situation, it would be impossible to have fair market conditions if different types of networks were subject to different sets of regulations (and under the control of different regulatory authorities).⁷

The evolutionary change of regulatory regimes toward greater convergence should, in our view, be accompanied by rolling back those national broadcasting regulations that previously dealt with networking aspects (as opposed to content) or at minimum, making the effort to rationalise overlapping regulations to decrease the burden on market players. This has been carried out in some Member States, but far from all. For example, as discussed in the section on licensing and authorisations, a number of Member States have retained broadcasting content regulations even for those networks that retransmit content that has already been authorised.

However, a distinction should be made between regulatory means and ends. The main purpose of the EU regulatory framework for electronic communications was to promote innovation and investment in the sector with a view to ensuring consumer benefits. The rationale of regulation of the electronic communications sector is very clear: the main purpose of *ex ante* regulation is the establishment of a level playing field. Most of it is

⁶ See for example the recent [speech](#) of Commissioner Reding, Digital convergence: a whole new way of life, May 2006.

⁷ We do not in this interim report make a direct assessment of the advantages and disadvantages of particular institutional structures for broadcasting regulation, such as a converged regulator. However this is clearly an important subject for future research.

supposed to disappear at some point, once the economic conditions become optimal, to be replaced by the application of competition law.

The rationale for regulation of the audiovisual sector is more complex because of the specific nature of media content. Audiovisual content creation and distribution is clearly an economic activity. However, a number of objectives of general interest are at stake in the media sector: protection of minors and human dignity, cultural diversity and media pluralism. Audiovisual policy therefore has to balance economic and public interest objectives.

In summary, if the ends are different for the two sectors, changing the means will necessarily have limited effect. Furthermore, it is difficult to benchmark best and worst practice among Member States' implementation efforts without a consensus on regulatory rationales.

What is clear is that neither electronic communications nor broadcasting regulation should be unnecessarily burdensome. Where national broadcasting regulation may have been excessive in the past, this is becoming more noticeable with the emergence of new technologies for broadcasting transmission, such as mobile and IP TV. However, there is a clear Member State interest in recognising and preserving general interest objectives for broadcasting. Within these considerations lies opportunity for reducing overlapping regulations, for clarifying which regulations should "belong" to different regulatory competences (for example, to a broadcasting regulator or electronic communications regulator, if separate), for reducing regulatory barriers to entry, and for enhancing regulatory transparency.

a) Overlapping regulations: Distribution versus transmission

The EU 2003 regulatory framework is normally defined as applicable to network and transmission related issues, while the broadcasting framework relates to content. It is less recognised that both frameworks also deal with distribution issues. This distribution concept is further discussed below.

Most of the public networks that are regulated through the electronic communications framework are used for transmission of information between users that are "outside" the network. A typical example is a telephony network whereby a caller uses the network to communicate with the receiver of the call through the network. In this case, the network operator performs a function which consists of transmission and switching. This simple relationship is illustrated in the figure below.

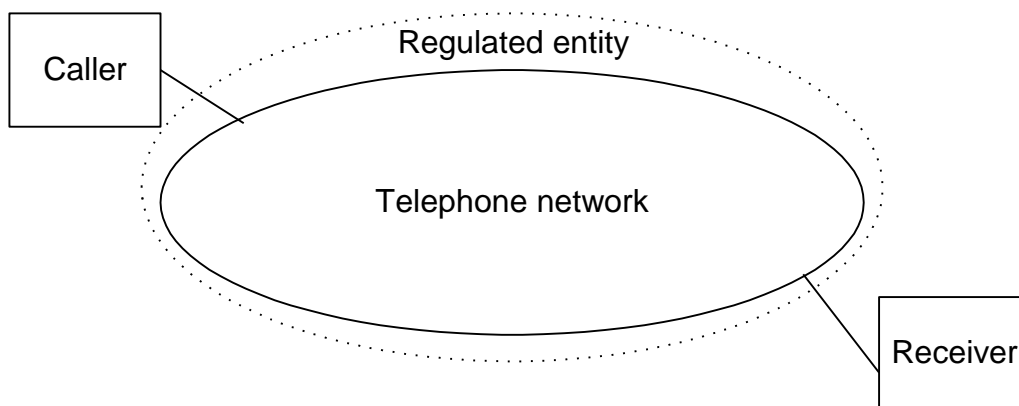


Figure 1 – Telephone network

An organisation that offers an alternative platform for television, such as a cable TV operator, normally performs two functions:

- Distribution of television signals. The operator makes arrangements to capture the television channels that he offers to his subscribers and makes the necessary agreements for the rights to re-transmit them.
- Transmission of television signals. The operator makes arrangements for a network that enables him to transmit the television signals to his subscribers.

This relationship is illustrated in the figure below.

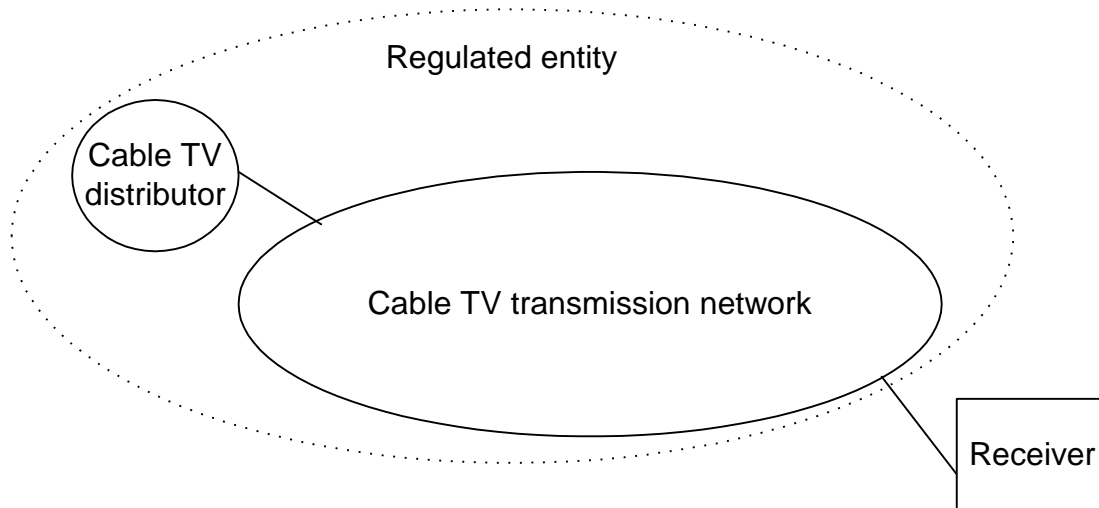


Figure 2 – Cable TV distribution and transmission functions

The two functions, distribution and transmission, may be both performed by the same entity, i.e. the cable TV provider. Alternatively, they may be performed separately. Distribution decisions taken by the cable TV provider are normally determined by his own choice, but

they can also be subject to access regulations of various kinds including must-carry provisions. We have used the cable TV provider to illustrate this point of distribution vs. transmission, but it also applies to other technologies, such as mobile and IP TV.

While the electronic communications framework has made a clear distinction between “content” and “transmission”, the concept of “distribution” as explained above has remained largely in the grey zone. Clearly, both the electronic communications framework and broadcasting regulation address concerns that must be considered to be distribution issues and which are neither content nor transmission issues.

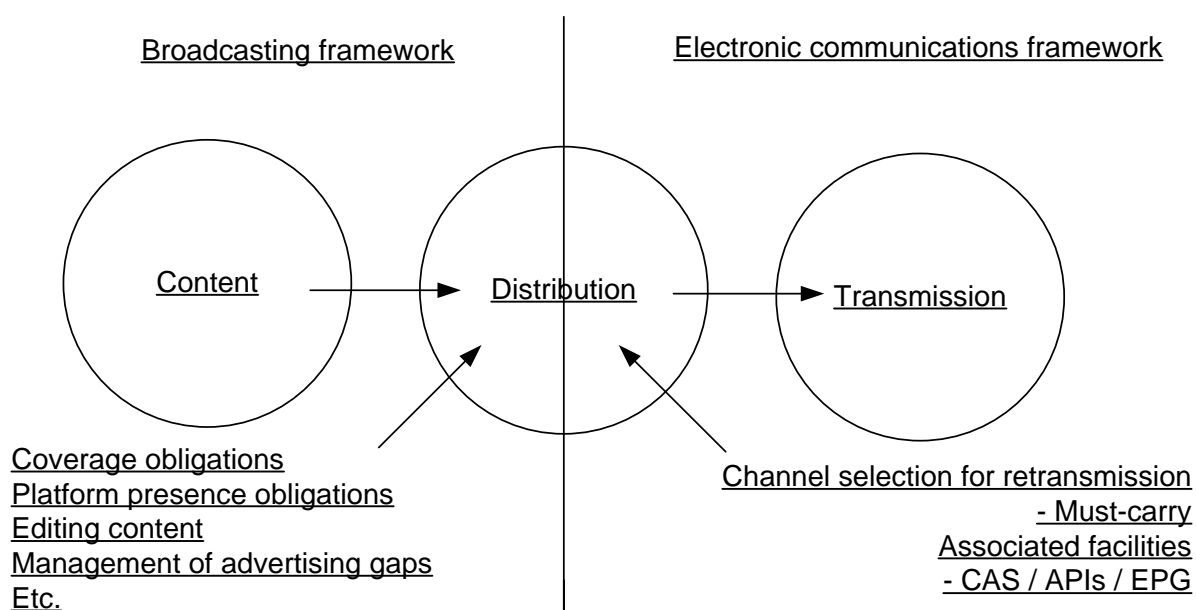


Figure 3 – Distribution function under two regulatory frameworks

For example, it is clear that the electronic communications framework extends into the distribution function because it includes provisions for must-carry and associated facilities:

- Must-carry requirements restrict the platform operator in which channels he can provide. Presumably, except for must-carry requirements, a platform provider has full freedom of choice with regard to retransmission of broadcasting programmes.

In our view, a must-carry obligation is a “bridging” obligation that extends electronic communications regulation into distribution of content. Even if the must-carry requirement in the electronic communications framework⁸ refers to “obligations for the transmission of specified radio and television”, it is clearly outside the scope of a transmission activity to meet this requirement without control of the distribution function,

⁸ Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive). Art. 31.1, OJ L 108, April 24, 2002.

where the decision is taken on which content to transmit⁹. Therefore, an interpretation that would exclude the distribution function from the electronic communications framework and limit the framework's applicability to transmission or conveyance only would lead to a conclusion that the must-carry obligations would be invalid.

- Conditional access systems affect the ability of receivers to view programmes that are sent in encoded form and they enable a platform provider to define different subscription packages. This is clearly a distribution function which involves databases and management of signals that are being inserted into the network. Furthermore, Electronic programme guides must be considered as a special form of content with clear linkages to the distribution function. These distribution functions may be considered to be an extension of a transmission network for broadcasting, but they cannot by themselves be defined as being "transmission".

The distribution function also deserves clarification in the Access Directive. Art. 4 of the Access Directive sets out that access and interconnection rights to public communications networks (i.e. to "transmission") are provided for operators of public communications networks. It should be clarified that access and interconnection rights to those distribution functions that are regulated by the electronic communications framework, on the other hand, apply to broadcasters (see further discussion in section III.D of this report).

It is equally clear that there are also distribution functions that are normally considered to be under the responsibility of the broadcasting regulator, such as:

- requirements of coverage obligations in distribution networks;
- requirements of presence or participation on different distribution platforms;
- various forms of editing of content that may be carried out by a distributor.

Recital 20 of the Authorisation Directive recognises the right for broadcasting regulations also to cover functions related to "the commercialisation of an offer of sound or television broadcasting content services." We believe it is important to clarify in more detail which distribution functions are regulated in which regime and to avoid double legislation in this area. It is equally important to avoid being monitored by two different regulators if this can be avoided. In particular, we believe it is important to agree on some practical roles and functions that can be carried out fully under one regulatory regime and one regulator without involvement of the other.

It should be a strong objective to achieve separation between a broadcasting authorisation and a communications authorisation to the extent possible. This will contribute to a competitive distribution market, facilitate rollout of pan-European services and make it easier for introduction of new distribution platforms. Furthermore, defining a distribution function could provide a possible dividing line to justify broadcasting regulations and the involvement of a broadcasting regulator (see further discussion in section III.A of this report).

⁹ The fact that the Directive makes use of the word "transmission" rather than "distribution" is a clear indication of a perception of a high degree of integration between the two tasks.

b) Regulatory barriers to entry

One important difference between electronic communications and broadcasting regulation is the vertical linkages preserved between different levels of the value chain, as shown in the figure¹⁰ below.

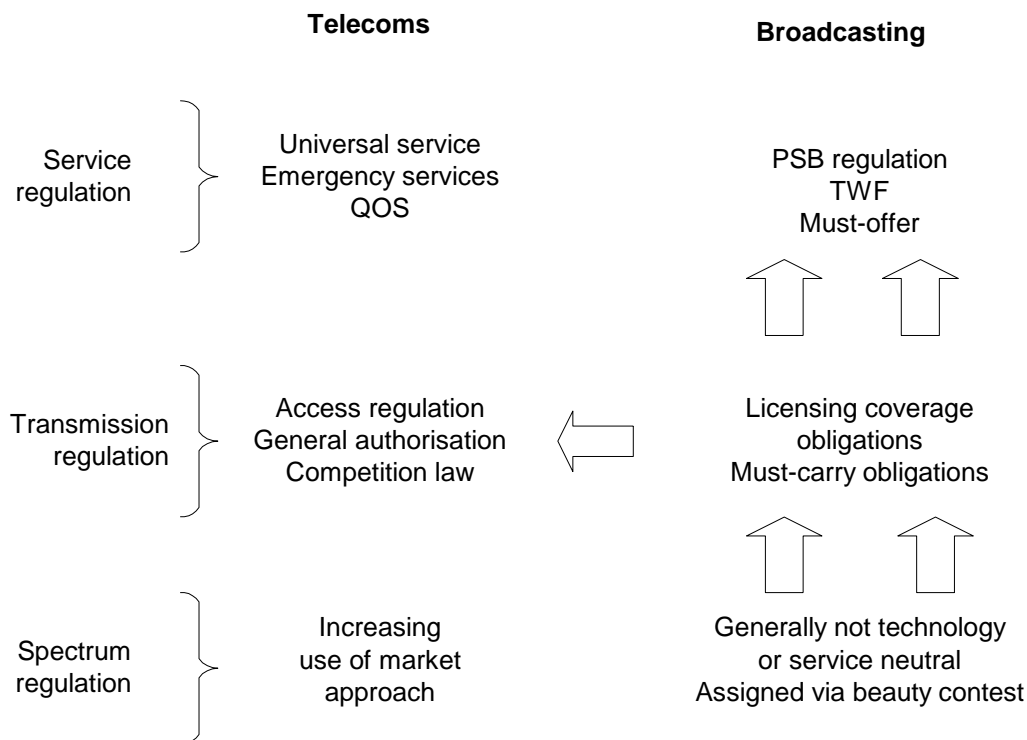


Figure 4: Regulatory models for telecommunications and broadcasting

In the electronic communications sector, such vertical links are increasingly avoided, as they can create regulatory barriers to entry.¹¹ A regulatory barrier to entry is defined in the Commission recommendation on relevant markets as being “not based on economic conditions” but the result of “legislative, administrative or other state measures that have a direct effect on the conditions of entry and/or the positioning of operators on the relevant market.”¹² Regulatory barriers to entry can greatly affect the development of competition at one or more levels of the value chain in the broadcasting sector, for example if lengthy licence terms between broadcasters and transmission operators preclude competition in wholesale broadcasting transmission.

¹⁰ Of course, many other regulatory regimes affect the broadcasting sector, such as competition law (including state aid), industrial policy (digital switchover), tax law, intellectual property and copyright laws.

¹¹ We do not mean to say all vertical links in electronic communications and broadcasting sectors should be avoided. Vertical integration as a result of market forces may or may not create barriers to entry or result in negative effects on competition. We discuss here only the effects specifically caused by regulatory barriers to entry.

¹² European Commission, Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services, OJ L 114, May 5, 2003 (Recommendation on relevant markets).

Furthermore, in some respects, from what we have observed the creation of additional platforms for broadcasting distribution through new transmission technologies may have the effect of introducing a new layer of broadcasting regulations, including their vertical links, to traditional telecommunications networks. For example, licensing for terrestrial television in particular preserves vertical links between content and spectrum. If licensing for mobile TV follows the licensing procedure for digital terrestrial television, it may contribute to barriers to entry as well as be unnecessarily burdensome for new market players.

c) Enhancing transparency

The overlap between the implementation of the EU 2003 regulatory framework and broadcasting regulation can have the additional effect of making regulations less transparent. In particular, when multiple laws exist side-by-side attempting to achieve the same goal, such as different types of carriage and coverage obligations, this can create confusion for firms unsure of what rules they should follow. This is exacerbated for new market players such as mobile and IP TV providers. It also makes a regulator's job more difficult in attempting to sort out the effects of their efforts from the effects of other, similar rules and regulations, or to target where outdated regulations could or should be removed. Transparency can certainly be enhanced by greater co-ordination between electronic communications and broadcasting regulators, as we note in the report. Greater transparency is also a crucial component of regulatory best practice for the sector going forward, for example in determining the future uses of any "digital dividend" (see discussion in section III.B of this report).

Aside from good governance principles, we also observe that transparency is very important for assessing the congruence between general interest objectives for broadcasting and regulation, in particular with respect to the proportionality requirement. For example, Member States' systems for assignment of rights to use radio spectrum, including for broadcasting, must be proportionate according to the Authorisation Directive. Furthermore, the requirement for proportionality of regulations enacted to serve general interest purposes play a large role in considering whether some Member State policies could be considered to be state aid (see discussion in sections III.B and III.C of this report).

D. Implementation of the framework for broadcasting in the Member States

The main conclusions that can be drawn from the information collected for this report are (see section II of this report):

- In all the 25 Member States except Greece and Italy, where cable penetration is extremely low, there are multiple providers of the main broadcasting transmission platforms (terrestrial, cable or satellite). Many other Member States also offer newer platforms such as mobile and IP TV. As a result there are real choices among broadcasting viewing platforms for most consumers, although the choice may be limited in certain geographic locations, such as rural regions. This means that as we evaluate good practices in Member States in terms of the level of the regulatory burden on market players, we take into account the environment of competitive service provision at the retail level in the majority of the EU.
- Digital switchover provides an opportunity for Member States to determine whether frequencies allocated for broadcasting will remain so in the future. Due to international negotiations in progress during the study (May-June 2006), few Member States had firm

plans other than to indicate which applications may benefit from the release of any spectrum (the “digital dividend”). It is important that the digital dividend is considered taking into account alternative uses and not automatically reassigned to broadcasting. Our analysis shows that in some Member States, broadcasting frequencies appear to be frozen for the sector without consideration for other uses or availability for spectrum liberalisation.

- The great divergence in licensing structures and procedures across the Member States may be a barrier to entry for new platform and service providers, especially for those that would like to operate in more than one Member State. In the majority of the Member States, broadcasting regulations and regulators continue to focus not only on content provision, but also on distribution and transmission activities which are regulated under the electronic communications framework.
- There are often strong linkages between frequency licensing and content provision, as in the case of digital multiplex licenses for digital terrestrial television. These linkages prevent inter-platform competition on a level playing field. It also means that the analysis of transmission services as a wholesale market subject to ex ante regulation under the market analysis procedure must take into account regulatory barriers to entry, for example if licensing terms preclude entry for competing transmission providers.
- Must-carry rules are obligations on the network operator to carry specific content. There are multiple types of carriage obligations stemming from different legal sources. Furthermore, some Member States appear not to be following the provisions of the regulatory framework on must-carry rules, such as regular reviews of must-carry regulations and the requirement to link must-carry rules to general interest objectives (see the tables in the Annex to this report). In some Member States, must-carry obligations affect a significant share of the available transmission capacity of the distribution platform.
- The results of the market analyses carried out so far by national regulators for the market for wholesale broadcasting transmission, to deliver broadcast content to end-users (market 18) shows differences in approach across the Member States. There is a considerable degree of uncertainty on the scope of market 18, and more specifically on whether it is restricted to the purchase of broadcasting transmission capacity by new entrants that wish to offer transmission services to broadcasters (intra-platform competition), or whether it also covers the provision of end-to-end transmission capacity to broadcasters (inter-platform competition). Furthermore, in the Member States where an analysis of market 18 has been carried out and where remedies have been imposed, this has not led to intra-platform competition, except in France on the DTT market where the market had in fact already been opened by a previous national competition authority decision. There are a number of factors that affect the level of competition in market 18 and that might be necessary for the emergence of intra-platform competition. However it seems that the objectives of entry and competition in television transmission that should result from the market analysis exercise have been compromised by the progress of digital switchover which was, in many countries, already too advanced for the market analyses to produce a real impact.
- Regarding practice in the Member States on access to associated facilities, there is a divide between regulation and experience. Provision for access has been made in law, but seldom implemented. Our research indicates that while the issue may be particularly important in a few countries (notably the UK), there was little evidence of complaints or

investigations identifying big problems among market participants in obtaining access to associated facilities. The concern expressed at the EU level over devising appropriate solutions regarding access to associated facilities has so far not been in proportion to the underlying “facts on the ground” in most Member States. However, the transition to digital broadcasting is still at a very early stage, and our recommendations with regard to associated facilities take a forward-looking approach in identifying possible bottlenecks related to associated facilities and suggesting potential solutions for the Member States.

E. The report structure

The report consists of two main parts:

- Description of results from the data collection covering 25 Member States, presented in section II of this report. The full database is provided in a set of tables found in an Annex to this report.
- Analysis and recommendations based on this research, presented in section III of this report. The recommendations are also presented separately as a proposal for the Commission for the sector, “Regulation for the future” (section IV of this report).

We have also included a glossary to explain a large number of technical terms and to define some key terms used in this report (Appendix, see page 141).

II. IMPLEMENTATION OF THE FRAMEWORK FOR BROADCASTING IN THE MEMBER STATES

A. Introduction

This section describes the nature of the data collected in this study of regulation concerning the broadcasting sector.

For 25 EU countries¹³, data were collected on the following four topics:

- Licensing and authorisation;
- Spectrum policy and regulation related to broadcasting;
- Must-carry and must-offer;
- Access and competition (market 18¹⁴, access to associated facilities, broadcasting and competition law).

Data were also collected on the background and regulatory context for the broadcasting sector: broadcasting platforms, institutional structure of broadcasting and electronic communications regulation, and general interest objectives served by regulation.

Regulations affecting the broadcasting sector typically address both carriage and content, while the EU 2003 regulatory framework addresses electronic communications networks, services, and associated facilities. Content regulation as represented by the Television without Frontiers Directive is not included in the scope of the study, and is therefore not represented in the data. However, with regard to other content regulation, one of the key findings of the study is that it is difficult to strictly distinguish between carriage and content regulation in many Member States. Regulatory instruments such as licensing and authorisation and must-carry involve both, and data on such regulations are included in the study. .

The result of the data collection is a database of tables on these topics for 25 Member States (in the Annex to this report). The main features of the data are described in the following section. All references below are to the tables found in the Annex.

B. Data collection and analysis

This section provides a description of regulation of the broadcasting sector on the four topics described above for 25 Member States. Data were collected from both desk research and

¹³ The countries to be included in the sample were determined by CI with the Commission's approval. The main criteria for selection was to include a majority of the larger and older Member States in the first phase of data collection, in order to inform the Commission of significant issues from these countries as soon as possible. However, the division between 15 countries in the first phase of data collection and the second 10 countries does not map directly onto the old and new EU members.

¹⁴ Market 18 is defined as "broadcasting transmission services, to deliver broadcast content to end users" in the European Commission's Recommendation on relevant markets in the EU 2003 regulatory framework (Recommendation on relevant markets).

face-to-face interviews with regulators (and industry where possible) in each country in two phases, as follows:

- from February to May 2006 for Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, the Netherlands, Spain, Sweden, and the UK;¹⁵ and
- from June to August 2006 for, Cyprus, Estonia, Greece, Latvia, Luxembourg, Malta, Poland, Portugal, Slovakia, and Slovenia.

To impose consistent cut-off dates for data collection, Annex 2 contains data for each country up until its respective cut-off date (May or August 2006). If significant events occurred in a Member State after the cut-off dates, they are discussed in the main body of this report and not in the tables in the Annex.

The data collected relate primarily to television broadcasting. As the radio industry is primarily local and regionally oriented, and therefore highly fragmented in the Member States, it is difficult to obtain reliable and comparable data for radio markets and regulation.¹⁶ Some data were collected for radio on availability of digital radio on the main broadcasting platforms and on licensing. However, they are not presented here and radio is not discussed further in this section (for a discussion of the main issues for radio broadcasting relevant to the four main topics of this study, see section III.E of this report).

The rest of this section discusses highlights from data collection for the sector context and each of the four main topics of the study.

1. Broadcasting platforms, institutional structure, general interest objectives

a) The broadcasting sector, by platform

Data were gathered on broadcasting platforms (digital and analogue terrestrial, cable, satellite, mobile and IP TV). However, there are a number of issues in data validity and reliability raised by these statistics¹⁷, and the following caveats should be taken into account.

- Many data sources do not clarify if a TV household is counted as being subscribed to a platform if only the main TV set is connected to that platform. Since many households have more than one set, statistics may not indicate the full extent of reception of non-terrestrial broadcasts and it may be unwise to assume that non-terrestrial platforms are irrelevant in some countries.
- In some countries it was difficult to obtain valid statistics on satellite subscriptions, as satellite transmissions are received from operators not residing in those countries and the regulatory authority does not collect data on them.

¹⁵ Note only selected data collected in Belgium for the Wallonia region.

¹⁶ The lack of reliable data on the radio industry European-wide was confirmed in discussion with the Association Européenne des Radios.

¹⁷ The OECD last reported on its Member Countries in 2001/2 and the OECD does not include all of the EU Member States, while the European Audiovisual Observatory did not have recent data on all platforms and did not use the same measures for each platform (percentage of TV households). Therefore, we asked for information in interviews in each Member State to provide the results reported in Table 1 in the Annex, although this increases data unreliability.

Statistics for broadcasting platform penetration (percentage of TV households by platform) for a single year, 2005, were provided by the European Commission and are shown in the table below.

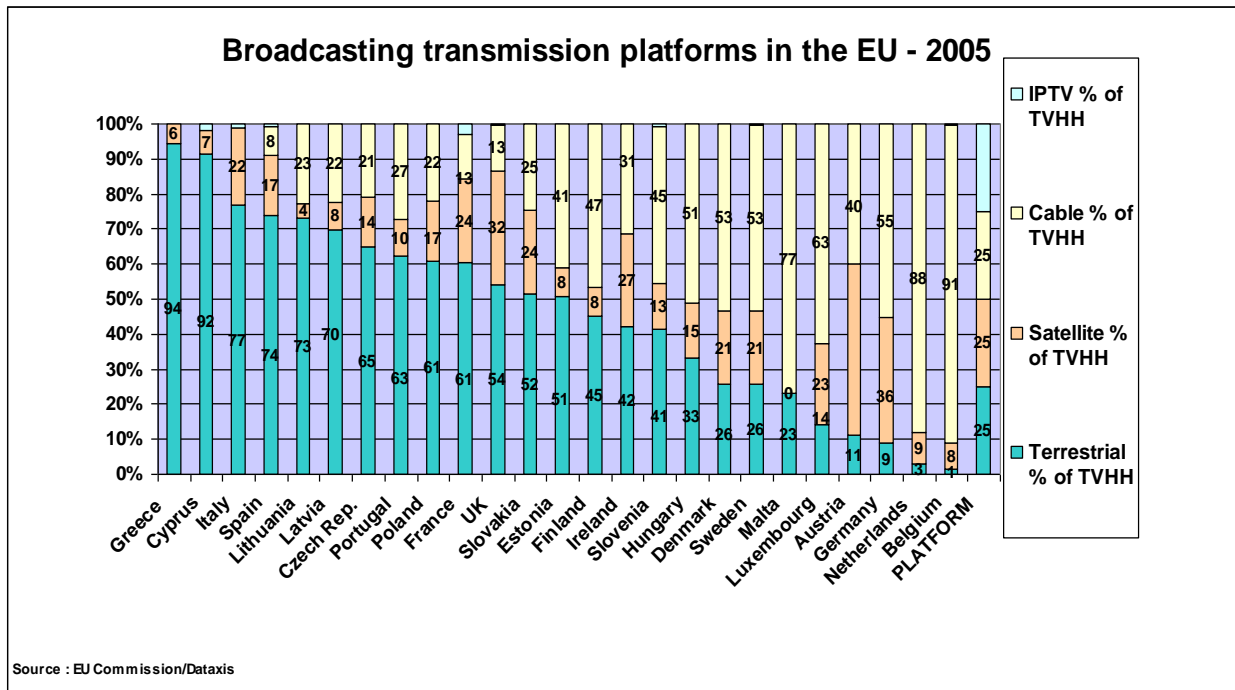


Figure 5: Broadcasting transmission platforms in the EU, 2005

In most of the Member States there is a choice for viewers among at least two of the three main platforms for terrestrial, cable, and satellite television broadcasting. There are four Member States where penetration of more than one platform is extremely low: in Cyprus and Greece, terrestrial is the main broadcast platform, while in the Netherlands and Belgium, cable is the main broadcast platform. In all countries except for Cyprus, Greece, Hungary, Ireland, Lithuania, Slovakia and Slovenia the choice includes digital terrestrial television.¹⁸ Nevertheless, this does not mean that this choice exists throughout the entire territory of a Member State; for example, in Italy cable TV subscribers are a fraction of the 22 million TV households.

In many Member States, television broadcasting over two new distribution platforms, mobile TV and IP TV, is available.

- IP television (IP TV) consists of television programming offered over a transmission network employing the Internet protocol (IP) via a broadband connection to the end user. The service requires either a PC or a set-top box. The two most discussed IP TV transmission technologies are TV over DSL and TV over fibre-to-the-home (FTTH).

¹⁸ As of November 2006, DTT in Greece and Ireland is in a pilot phase only. Hungary plans to launch DTT in 2007.

- Mobile television consists of television programming offered over a wireless transmission network to mobile devices, such as a mobile handset or personal digital assistant (PDA). The two most discussed mobile broadcasting transmission technologies are UMTS (3G) and a variation of the European digital video broadcasting (DVB) standard, known as DVB-H (H for handhelds).

Member State	Trials			Commercial launch		
	Mobile TV via 3G	Mobile TV via other (DVB-H, etc.)	IP TV	Mobile TV via 3G	Mobile TV via other (DVB-H, etc.)	IP TV
AT		✓		✓		✓
BE		✓		✓		✓
CY				✓		✓
CZ				✓		✓
DK	✓	✓				✓
EE				✓		✓
FI	✓	✓				✓
FR		✓		✓		✓
DE		✓ (DVB-H)		✓	✓ (DMB)	✓
GR			✓	✓		
HU		✓	✓	✓		
IE		✓		✓		✓
IT				✓	✓	✓
LV				✓		✓
LT				✓		✓
LU		✓				
MT			✓	✓		
NL		✓		✓		✓
PL				✓		✓
PT		✓		✓		✓
SK				✓		
SI	✓					✓
ES		✓		✓		✓
SE		✓		✓		✓
UK		✓		✓		✓

Table 1: Status of new TV platforms (mobile and IP TV) in the EU

Most Member States, however, have not yet addressed whether or not broadcasting on these new platforms require separate regulatory frameworks, or whether they are included in existing frameworks – for example, if IP TV is classified as broadcasting via a fixed network and therefore subject to the same regulations as cable TV networks.

This may change as mobile and IP TV become more widespread, however. In France, on July 26, 2006 the Culture Ministry presented to the Council of Ministers a bill to modernise Law 86-1067 on the freedom of communication in view of the launch of mobile television over terrestrial networks. The bill proposes to grant editors of mobile television services the right to use frequencies, following a beauty contest. For the authorisations, account would be

taken of the commitments of the applicants in relation to territory coverage and quality of indoor reception. The retransmission of service already authorised for digital terrestrial television would have to be favoured. Distributors would be subject to must-carry obligations. The bill also foresees a report to be adopted by the government by March 31, 2010 on the possibility to replace the foreseen authorisation procedure by a procedure where the frequencies would be granted to the distributors of mobile services.

In summary, in all of the 25 Member States studied there are multiple providers of broadcasting transmission and as a result, viable choices for most consumers, although the choice may be limited in certain geographic locations, such as rural regions.¹⁹

NB. See tables 1 (Broadcasting transmission platforms in a Member State), 6 and 7 (Mobile and IP TV) in the Annex.

b) Institutional structure

Institutions with legal authority in the broadcasting sector include independent regulatory authorities, government ministries, and other official institutions (excluding courts and competition authorities²⁰). In addition to these national-level institutions, there may be sub-national (local, regional, etc.) institutions with legal authority in the sector. Finally, there are also institutions without formal legal authority that have a role in regulating the sector, such as industry self-or co-regulatory bodies and advisory committees. A converged regulator with full jurisdiction over both the electronic communications and broadcasting sectors under the same management is only found in Finland, Italy, and the UK. Austria has both legal frameworks covered by the same regulatory organisation, but under different managements.²¹ Poland is in the process of evolving to a converged regulator, Spain is considering doing so. Some Member States share responsibilities for the broadcasting sector between a regulator and one or more government ministries.

The most complex institutional structures regulating the broadcasting sector may be found in the four Member States where there are local or regional authorities in addition to national-level authorities. Belgium, Germany, Italy and Spain all feature sub-national regulatory authorities.

- Belgium is a federal state and competences are split between the Federal State, three communities (Flemish, French-speaking and German-speaking communities) and three regions (Flemish, Walloon and Brussels regions). Broadcasting falls within the scope of the Communities' competence, each of them being responsible for broadcasting on their respective 'territory'. There is one exception for the Region of Brussels, where it is the Federal State that is responsible for broadcasting. The Federal State is also responsible

¹⁹ As one national regulatory authority put it, *"the broadcasting market has retail competition other communications sectors only dream of."*

²⁰ See table 23 for data on competition authorities and the broadcasting sector.

²¹ Austria's RTR in our view is not a converged regulator. It hosts both the telecom regulator TKK and the broadcasting regulator KommAustria and provides operational support for both (e. g. both have the same website www.rtr.at and their publications have the same layout). But from a legal point of view the competences of KommAustria and TKK are strictly separated; they have different appeal bodies; and from an organisational point of view there is also separation. RTR has two managing directors (one for telecommunications, one for broadcasting) and it is difficult to discern convergence in the regulators' practical work (for example, there are no strategic documents or consultations supported by both bodies). RTR could act as a convergent regulator (not from a legal point of view, because the decisions are made by TKK and KommAustria, but they could act as if they were convergent), but only in 2006, five years after the current legal form was established, they started an internal project as well as requested opinions on convergence.

for telecommunications including global allocation and monitoring of spectrum. As a consequence, there are 4 regulators in charge of broadcasting: one per Community and one for Brussels. Each regulator is competent for content issues but also for transmission issues linked to broadcasting. In addition, there is one national regulator in charge of telecommunications for the whole country.

- Germany is a federal state and competences are split between the national level and the 16 federal states. Federal states have their own parliaments and governments. Media regulation falls in the competence of the federal states and is performed by the federal states' governments (e.g. licensing of public service broadcasters and policy issues) and the regional media authorities.²² Some issues are harmonised by Interstate Treaties between the federal states (such a treaty has the same legal effect as a law; it needs approval of the federal states' parliaments). Some issues are harmonised by joint working groups of the regional media authorities. The regional media authorities are responsible for licensing of private broadcasters and must-carry regulation. Spectrum management is split between the federal level and the federal states' level. On the federal level the Federal Network Agency (Bundesnetzagentur, or BNetzA) issues frequency license to infrastructure operators. The capacity realised by the same frequencies is allocated to broadcasters by the regional media authorities under federal states' legislation (see Table 11 for details).²³
- In Italy, regional and/or provincial authorities give authorisations for content providers for regional/provincial digital terrestrial broadcasting. There are 20 regions, of which five are autonomous, and 110 provinces in Italy).
- In Spain, there is no independent broadcasting authority at the national level but there is pending legislation on the creation of a national audiovisual authority (Consejo Estatal de Medios Audiovisuales). Broadcasting responsibilities are shared, at the national level, between the Ministry for Industry, Tourism and Trade and the national communications regulator CMT. In addition, at the regional level, all autonomous regions have broadcasting responsibilities which are exercised directly by the regional government or by independent regional audiovisual councils (Cataluña, Andalucía and Navarra).

The range of issues under jurisdiction by broadcasting regulatory institutions includes: frequency allocation and assignment, authorisation and licensing, supervision of public service broadcasting, market analysis under the EU 2003 regulatory framework, content regulation, enforcement and dispute resolution, and competition policy.

In many of the Member States, there are recent or expected changes to regulation affecting the broadcasting sector since the EU 2003 regulatory framework came into effect. For example:

²² There are 15 regional media authorities; each federal state has its own, Berlin and Brandenburg have a common media authority. For this study, only the regional media authorities for North Rhine-Westphalia and for the federal states of Berlin and Brandenburg (joint authority) were interviewed in addition to BNetzA.

²³ Deutschlandfunk is one of the two radio programmes of Deutschlandradio, a public service broadcaster. Its legal basis is a treaty of the 16 federal states. Like other German public service broadcasters it does not have a real content regulator, but its own self-regulating council (with representatives of the federal states and various social interest groups). It was founded by the US military as "RIAS" and between 1960 and 1990 it was based on the (Western Germany's) federation's competence to re-unite Germany, as it was argued that the programme was not broadcasting, but a re-unification activity. Between 1990 and 1994 its legal status was vague, but since 1994 it is based on a state treaty of the federal states.

- In the Czech Republic, there was a separation of content regulation from the regulation of transmission platforms.
- In Denmark, monitoring responsibility for must-carry and for rules on conditional access systems (decoders) was transferred to the electronic communications regulatory authority.
- Poland at the end of 2005 began to converge the functions of its electronic communications regulatory authority UKE and the broadcasting regulatory authority KRRiT, by transferring some responsibilities over broadcasting from KRRiT to UKE.
- Portugal created a new independent regulatory authority for broadcasting (ERC), which replaced the former High Authority for the Media. ERC started its activities in February 2006.
- The UK converged regulator Ofcom was created from the old sector-specific regulatory authorities in 2003.

NB. See tables 2 (National regulations for broadcasting) and 5 (National regulatory authorities for broadcasting) in the Annex.

c) General interest objectives and public service broadcasting

Member States have certain goals, or “general interest objectives”, for the broadcasting sector.²⁴ Such general interest objectives usually include:

- universal access by the population to specific content;
- media plurality;
- cultural diversity;
- freedom of opinion and to receive and disseminate information.

Member States set out to achieve these goals through regulation, including the establishment and regulation of public service broadcasters.

Most of the Member States defined some combination of freedom of expression, plurality, and diversity as general interest objectives. Many others added a variety of cultural concerns, such as promoting tolerance and equality among cultures, such as the Czech Republic, Finland, Denmark, Germany, France, Italy, and Spain, either with or without linking those concerns to specific content requirements, such as European or language-specific programming. A number of Member States included protection of minors or youth as a general interest objective (France, Greece, Latvia, Lithuania, Poland, Slovakia and Spain).

Audiovisual policy intended to protect media plurality may have the substantial side effect of structuring market relations in the broadcast sector, by

- establishing a “dual system” of public and private broadcasting (Austria, Germany);

²⁴ See European Commission, Communication from the Commission on the application of State aid rules to public service broadcasting, OJ C 320, Nov. 15, 2001.

- ensuring broadcasting's independence from the state (Germany) or affirming ultimate state control (Greece)²⁵;
- establishing an interest in technology development and innovation in the broadcasting sector (Denmark, Germany, Ireland, Malta and the UK); and
- requiring free competition and non-discriminatory relationships between content providers and distributors (France).

Support for sub-national (local or regional) interests also were expressed as general interest objectives by some Member States, such as Belgium, Germany, Ireland, Portugal and Spain.

These general interest objectives are enshrined in a number of different legal instruments, from national constitutions and court decisions to broadcasting legislation, to the public service broadcaster remit, and to individual broadcasting licences. Universal access to specific programming is typically expressed in relation to the public service broadcaster remit rather than expressed as a general interest objective applicable to all.

The location of the general interest objectives in specific legal instruments could affect the discretion of the regulatory authority or authorities to implement regulation affecting broadcasting. For example, if media pluralism in particular is located in the national constitution, it may be much more difficult for the Member State to change must-carry regulations, as opposed to national legislation or other laws establishing different general interest objectives. Furthermore, general interest objectives may conflict, such as provisions promoting free competition and media diversity. For example, a general interest objective of free competition would allow market forces to determine the number of players, while media diversity may require a regulatory authority to make this decision to ensure a minimum number of information sources.²⁶ In any case, the location of general interest objectives in multiple legal instruments at different levels acts against transparency, as it is difficult to determine links between regulatory ends and means.²⁷

Most Member States subject public service broadcasting to regular reviews, and many Member States are planning on a review in the next few years. Others have made recent changes since 2003, for example Lithuania in December 2005 made a series of changes to its public service broadcasting:

- It rejected the idea of introducing a licence fee for public service broadcaster LRT, which was foreseen earlier with the purpose that LRT becomes independent from Government.

²⁵ The Greek Constitution, art. 15, par. 2: "Radio and television shall be under the direct control of the state... The direct control of the State... shall aim at the objective and on equal terms transmission of information and news reports, as well as of works of literature and art, at ensuring the quality level of programs mandated by the social mission of radio and television and by the cultural development of the Country, as well as at the respect of the value of the human being and the protection of childhood and youth."

²⁶ Discerning the effects of the interaction between general interest objectives and sector-specific regulation would likely depend on a number of factors including the type of legal system and the nature of the general interest objective (economic, cultural, etc.) in addition to the degree of liberalisation of the broadcasting sector.

²⁷ This is clear in the case of must-carry, which according to the Universal Service Directive requires Member States to link must-carry regulations with general interest objectives (see Table 15). However, the issue is broader than must-carry. Before determining whether a particular regulation meets a general interest objective, or could be improved, one must clearly identify the objective and why that regulation is suited to the objective. This may not be the case, for example, with trying to meet objectives for universal access to certain programming via coverage requirements for broadcasters in licences affecting transmission.

- The public broadcaster has to offer programmes for national minorities and for the disabled. Previously, it was the right of the LRT, but not an obligation.
- It will increase allocations to LRT from the state budget, and strengthen transparency in accounting for the annual report of LRT's finances, to show revenues collected from the State budget, advertising and commercial activity and the utilisation of revenue from each of these sources.
- It will reduce advertising time progressively to 10% of the daily transmission time, from 15%.
- Apart from the LRT Council and the Director General, an administrative commission, introduced in April 2006, will control the overall financial activity of the broadcaster; and

NB. See tables 3 on general interest objectives linked to broadcasting and 4 on public service broadcasting in the Annex.

2. Authorisation and licensing

The implementation of a general authorisation procedure for electronic communications networks including those used for broadcasting is straightforward. In most Member States, the notification procedure is a simple registration and no approval is required, although in some cases more is needed. For example in Belgium (Flanders region) prior approval is needed for terrestrial networks.

Collecting data on licensing (individual authorisations) in the broadcasting sector, on the other hand, was the most challenging part of the entire data collection exercise for this study. Unlike general authorisations, which tend to be reflected in national legislation following the provisions of the Authorisation Directive, the structure of a broadcast licensing regime for transmission and content in a Member State is very much the result of idiosyncratic national factors depending on the Member State's policy goals for spectrum allocation and assignment, and for broadcasting in general.²⁸ The complexity of licensing as a regulatory instrument is not a new phenomenon.²⁹ This study confirms that the complexity remains and, if anything, is becoming worse as technology and market conditions evolve.

In line with the emphasis of this study on broadcasting regulation vis-à-vis the EU 2003 regulatory framework, data were collected primarily on licensing for transmission (frequency licences). The details of the content aspects of broadcast licensing (for example, rules on advertising) were not examined, although data on the different licence classes by platform were collected in order to give as complete a picture of the licensing structure as possible for each Member State.

Regulations for broadcast licensing may be found in communications legislation, in broadcasting legislation, and in numerous other rules, orders, and decisions by a broadcasting authority, Ministry or other body. The actual licences are not always publicly

²⁸ This was confirmed by many of our interviewees, in particular broadcasters and NRAs.

²⁹ "There have been two interlinked, but different, facets in public broadcasting policy. The first has had to do with licensing broadcasters to provide infrastructure and transmit programming services. The second has been to set goals for content, programming, and other social goals. Traditionally, these two aspects have been merged into a single licensing process." OECD, *Convergence and licensing in broadcasting*, 1999. See also Cullen International, *Survey of telecommunications licensing regimes in the European Union Member States* (Study for the European Commission), 1998.

available. Furthermore, a simple division of frequency and content (broadcasting) licences, for example, was not observed in most Member States; for digital terrestrial television, many countries have licence classes which mix transmission and content.³⁰ Frequency licences may be required for platforms other than terrestrial television, for example for satellite uplinks and/or downlinks. Licence classes and licensing procedure may vary by platform, particularly as one authority may be in charge of frequencies for telecommunications networks and another authority for broadcasting frequencies. In Member States with sub-national regulatory institutions such as Belgium and Germany, licences may also vary by region. Finally, within a Member State licences may be given to any combination of transmission providers, multiplex operators, and broadcasters.

Data for conditions attached to licences were collected, but there were many problems of data validity. As a practical matter, it was often difficult to obtain copies of the relevant licences, nor were there in many instances clear guidelines explaining for each licence class the structure of the licence in order to examine the conditions. Therefore, it was not straightforward to, for example, examine a licence and its conditions to compare it to the conditions listed in Annex B of the Authorisation Directive. It was also difficult to determine if conditions were located only in the frequency licence or if they were duplicated in other licences, for example for digital terrestrial television where there may be three different licences (for transmission, for multiplexes and for content). Due to these data issues licence conditions are not further discussed in this report. Data collected are presented in the Annex.

Regarding licensing procedure, in most Member States the assignment of frequencies for broadcasting is done via a beauty contest, although Denmark is considering using auctions in the future for subsequent multiplexes (the first multiplex was assigned directly). The sequence of licensing varies, as in some Member States licences for frequencies and for broadcast content are given simultaneously and in others, the frequency or broadcasting licence must be obtained first. In many countries there is not yet an established procedure for assigning frequency licences for mobile TV; France and Sweden are currently examining the issue (see Table 6 on mobile TV in the Annex).

In summary, as licensing is the main regulatory instrument used to control entry and many other aspects of sector-specific regulation for broadcasting, the lack of transparency in the Member States on this topic is extremely significant.³¹

NB. See tables 8 and 9 on licensing and authorisations, 11 on authorities granting licences and assignment procedures and 12 on licence conditions.

3. Broadcasting spectrum

Much work on spectrum policy for broadcasting has already been undertaken at the national level, for example in preparation for international negotiations to allocate spectrum at the Regional Radio Conference (RRC) under the aegis of the International Telecommunications Union (ITU) during May-June 2006 (RRC-06). In order not to overlap with this more specialised, technical work, data collection was limited to examining the current status of

³⁰ One NRA told us that in the course of revising national legislation for electronic communications to implement the EU regulatory framework, they tried to rationalise broadcast licensing at the same time and gave up as it was too difficult (!)

³¹ To take one example, long licence terms (5 or more years) where licences include arrangements between broadcasters and transmission providers affects competition in the market for broadcasting transmission.

Member State intentions for reserving frequencies for broadcasting after digital switchover, and collecting information on fees for broadcasting spectrum.

Regarding existing frequency reservations, in many Member States frequency allocations for broadcasting in the respective national frequency plans were the same (with a few exceptions) across all Member States, as that is decided in international negotiations.³² However, it is not always clear whether the Member State takes an additional step to formally reserve those frequencies for broadcasting, as allocation of spectrum for broadcasting has not traditionally been considered flexible or appropriate to open to other uses.

The UK for example lists its reserved frequencies for broadcasting as follows:

- Transmission of terrestrial UHF analogue TV and digital TV multiplexes: 470.0-854.0 MHz
- Transmission of national and local radio broadcasting: 148.5-283.5 kHz (LW), 526.5-1605.5 kHz (MW), 87.5-108.0 MHz (FM) and 217.5-230.0 MHz (T-DAB)
- Restricted radio services transmission, for low-power restricted geographic area or private systems as for campuses and hospitals: 526.5-1605.5 kHz and 87.5-108.0 MHz

Digital switchover provides an opportunity for Member States to determine whether frequencies allocated for broadcasting will remain so in the future. The table below shows the switchover dates for each Member State, if decided (the Czech Republic, Greece, Hungary, Ireland, Luxembourg, and Portugal have not yet formally decided on a date, and are represented at 2012, the date the European Commission has proposed for digital switchover in the EU).³³

³² CEPT and the ERO's [Frequency Information System](#) both provide information on frequency allocation for European countries.

³³ European Commission, Communication on accelerating the transition from analogue to digital broadcasting, OJ C 49, February 28, 2006 (Communication on switchover).

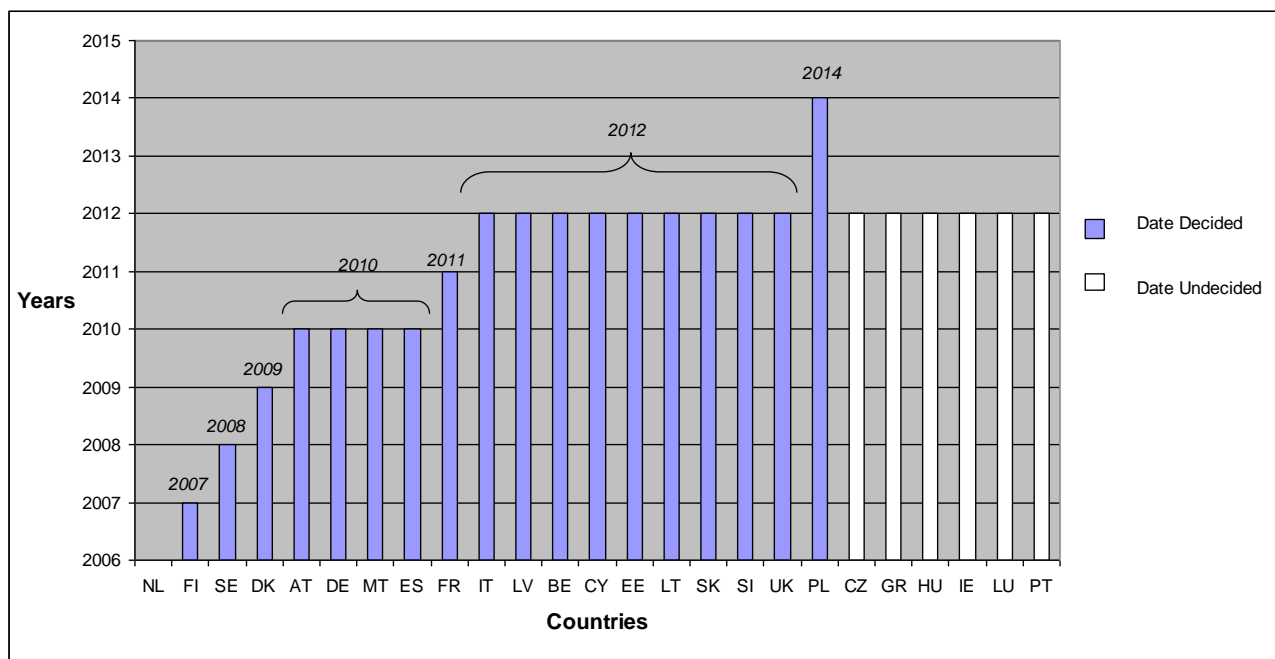


Figure 6: Digital switchover dates, 2006 - 2014

However, there are few Member States that have firm plans for future use of broadcasting spectrum other than to indicate which applications may benefit from the release of any spectrum (the digital “dividend”):³⁴

- In Austria, KommAustria has to reserve all frequencies suitable for digital terrestrial television in a “frequency pool” specifically for digital terrestrial television.
- In the Czech Republic, if there are available frequencies for DVB-T these will not be able to be used for other services than broadcasting and related services.
- Finland plans for any digital dividend to be used for HD TV.
- In France, a bill on the modernisation of audiovisual transmission states that the majority of the digital dividend will be dedicated to audiovisual services.³⁵
- The UK listed a broad range of possible services to be used in released frequencies, including new mobile services, wireless broadband, wider coverage for advanced services in remote and rural areas (particularly for low cost, wider-area coverage), advanced business and broadcasting services, for example to support major sporting events, and additional television channels including HD TV.

³⁴ For more on the technical and administrative challenges to using the digital dividend for non-broadcasting use, see Radio Spectrum Policy Group (RSPG) Draft Opinion on EU spectrum policy implications of the digital dividend, October 30, 2006.

³⁵ The current version of the bill on the modernisation of audiovisual transmission also states that the use of the digital dividend will be decided by the Prime Minister, in line with the general orientations of a national scheme to be drafted by the Prime Minister after consultation of the commission for the digital dividend. The commission includes four members of the Senate, four members of the National Assembly, the chairman of CSA, the chairman of ARCEP and the directorate general of the National Agency for frequencies. This will ensure a coordinated approach.

Institutional issues such as jurisdiction may affect how the frequencies will be used after switchover:

- In Germany, broadcasting is the responsibility of the federal states and if the federal states declare a demand for broadcasting, frequencies must be used for broadcasting purposes. A “digital dividend” used for telecommunications applications would therefore require the federal states to find that there is no broadcasting-related demand for that spectrum, and thus to give up their responsibility over that spectrum.
- For states with border regions with multiple countries, co-ordination on frequency usage will affect switchover plans. Hungary for example has seven neighbouring countries, which requires a considerable amount of frequency co-ordination.³⁶

Italy presents particular problems with regard to spectrum allocation and assignment. Briefly, in the past, undertakings ‘occupied’ analogue frequencies and started to broadcast without any specific licence or authorisation. Now, the transition from analogue to digital terrestrial broadcasting is done in an environment where, in practice, all the frequencies are already occupied by analogue broadcasters. Therefore, undertakings wanting to operate as DVB-T network operators needed to acquire masts and the related frequencies from other operators, mainly from local broadcasters that have decided to cease operations in connection with the analogue switch-off. In addition, the legislation includes provisions that enable analogue broadcasters to acquire concessions, on request, for digital broadcasting, subject to certain conditions. In summary, switchover in Italy is characterised by a gradual transformation of *existing* analogue networks to digital by *existing* network operators. As a result broadcasting frequencies are scattered over the spectrum, without clear grouping.

Regarding fees charged for broadcasting spectrum, as has been observed elsewhere³⁷ the structure of charges by regulatory authorities is complex:

- Broadcasters or transmission providers – depending on who is assigned frequencies -- may be charged for the value or use of spectrum, for administrative costs of spectrum management borne by the regulatory authorities, or both.
- Spectrum fees may be charged to broadcasters with public service obligations, to commercial broadcasters, or both (administrative fees are generally charged to both).
- Fees may be based on criteria such as the number of transmitters, the number of channels, population coverage and power levels.
- Fees may be annual and/or one-off, in addition to fees charged during the course of assignment (auction, beauty contest, etc.).

There is some consideration among the Member States concerning bringing fees charged for spectrum used for broadcasting in line with spectrum used for other purposes. In the UK for

³⁶ The problem may not necessarily be the number of borders (Germany has nine neighbouring countries, Austria eight), but the total number of countries needed for coordination and the size and topology of the country concerned which determines the percentage of population affected by cross-border interference. Many smaller countries with smaller neighbours not only have to coordinate with adjacent countries, but also with countries more distant, for example Austria coordinates also with Croatia and Serbia.

³⁷ CEPT (Electronic Communications Committee), ECC Report No 84 on analysis of responses on fees for broadcasting and fees for non-commercial and passive services, May 2006. Regarding fees charged for telecommunications spectrum, see Aegis Consulting, Study on administrative and frequency fees related to the licensing of networks involving the use of frequencies, November 2001.

example, on July 27, 2006 Ofcom launched a consultation³⁸ on the future pricing of spectrum currently used for terrestrial broadcasting services. It proposed the following approach to introducing charges for broadcast spectrum in the UK:

- Broadcasters and transmission providers would not be charged for current analogue television spectrum use;
- Digital television multiplex operators would not be charged until 2014, which is the end of the existing licence period for most of the multiplex operators. Digital radio multiplex operators would not be charged until 2012, also to reflect the end of their existing licences;
- Ofcom will determine the level of administrative incentive pricing (AIP) to be applied closer to 2012 for radio and 2014 for television;
- The current fees for analogue radio, based in part on AIP principles, would be extended to the BBC in 2008, after further consultation;
- AIP would be applied to any new spectrum acquired to be used for broadcasting services, unless such spectrum was auctioned;

NB. See tables 10 on digital switchover and 13 on spectrum fees in the Annex.

4. Must-carry and must-offer

This section discusses the data collected on obligations linking the availability of certain kinds of content with carriage on TV transmission platforms (must-carry and must-offer regulations).

Must-carry rules are a form of carriage obligation: they are an obligation on the network operator to carry specific content. In some Member States there are carriage obligations which the Member State does not consider to be must-carry or where the status was uncertain.³⁹ For example,

- in Germany many broadcasting licences for content providers in cable TV networks allocate a channel for the content provider. The channel allocation plan is decided by the media authority in a decision addressed both to the cable TV network operator and to the content providers. In some federal states the channel allocation plan covers all or almost all of the channels available in analogue cable TV;⁴⁰
- in Italy, the only carriage obligation on a network used for television transmission is the requirement that digital terrestrial TV network operators must-offer access to transmission capacity to independent providers of content of 'particular value' in terms of such factors as programme quality or media plurality; up to 20% of capacity can be dedicated to such third party content providers;

³⁸ Ofcom, Future pricing of spectrum used for terrestrial broadcasting, July 27, 2006. Ofcom will consult further on updating cost recovery fees charged to certain broadcasters (in 2007) and application of similar spectrum use fees to some satellite users (no date set). The consultation closed on October 27, 2006.

³⁹ In Cyprus and Luxembourg there are no must-carry regulations.

⁴⁰ This situation is part of a complaint filed by the German Cable Association to the European Commission in August 2005. The complaint is pending as of September 7, 2006.

- in Malta, cable operators are subject to multiple, overlapping carriage obligations from different legal sources, imposing the obligation to carry anywhere from two to seven channels in addition to obligations where the number of channels is not specified;
- in Poland, regulations on cable networks require a specific sequence for programming to be “introduced” or made available: nationwide public radio and TV programmes, regional public radio and TV programmes, national programmes of social broadcasters⁴¹ available in the given region, and programmes of other national and foreign broadcasters.

In this study, data on all carriage obligations on all broadcasting platforms were collected regardless of legal origin or national terminology.

Must-offer, in contrast to must-carry, is an obligation on a broadcaster to offer his content to one or more broadcasting platforms. As with must-carry, must-offer may overlap with broadcasting regulations that achieve the same effect, namely a requirement on a public service broadcaster to offer its content to all networks to achieve a given level of coverage (for example in the UK; see discussion below).

NB. Coverage obligations on public service broadcasters are found in table 4 in the Annex.

a) Platform and carriage obligations

Must-carry obligations are primarily placed on cable networks. Notable exceptions include:

- In some Member States, must-carry obligations apply to communal cable systems/system antenna, usually serving a defined locality or block of flats.
- In some Member States, must-carry is imposed on satellite operators (for example, France and Lithuania).⁴² However, in most countries there are no impositions on satellite. Denmark lifted carriage obligations on satellite since the start of DVB-T in April 2006.
- Few countries have imposed must-carry obligations on emerging broadcast transmission networks such as mobile or IP TV. France is a notable exception as it imposed must-carry on all platforms. Sweden makes a distinction between different types of network technology in imposing must-carry on fixed networks: where networks such as fibre-based broadband are used to relay broadcast channels and a significant number of connected households use it as their principal means of reception, they have must-carry obligations. However, on networks with limited technical capacity to relay broadcast channels, there are no must-carry obligations.⁴³
- There are obligations with respect to digital terrestrial transmission that could be considered must-carry to the extent that such obligations ensure certain content is made

⁴¹ A social broadcaster is defined in The Broadcasting Act, Article 4 as one who “propagates learning and educational activities, promotes charitable deeds, respects the Christian system of values, being guided by the universal principles of ethics, and strives to preserve national identity in the programme service...does not transmit advertising or teleshopping, sponsored programmes or other sponsored broadcasts; and does not charge any fees for transmission, retransmission or reception of the programme service.”

⁴² UK legislation allows must-carry obligations to be placed on satellite; however, the law is not implemented as platform operators have negotiated commercial agreements with broadcasters for carriage (see Annex).

⁴³ The Swedish regulation mentions specifically ADSL, although the channel capacity of an ADSL based TV transmission system is related to channel availability on the server side and not on the ADSL transmission line itself.

available to the public. This is done by, for example, ensuring a broadcaster with public service obligations or other content providers access to multiplex capacity (Austria, Finland, Italy, Poland, Portugal, Slovenia) or assigning an entire multiplex (for example in the Czech Republic, Denmark, Sweden, the UK). Alternatively, if spectrum is given directly to broadcasters instead of to network and/or multiplex operators, this could be considered a form of must-carry.

b) What must be carried?

Consistent with previous studies on must-carry regulations,⁴⁴ Member States have made full use of their discretion to designate which content, in the form of programmes, channels, or broadcasters, must be carried by a network operator. This is shown by the wide variety of must-carry content, from the type of organisation (publicly owned, non-profit, commercial, etc.), the business model of content provision (free to air, commercial) to the content genre (sports, educational, drama, etc.). Still, the main content included in must-carry in the Member States is content provided in order to satisfy public service requirements, which in most Member States means the content offered by broadcasters with public service obligations.

Some exceptions include:

- In Austria on the cable network, a programme for local information must be carried if it produces more than 120 minutes of content per day and the cable network does not already carry more than one similar programme. Similarly, a programme with Austrian content must be carried if it produces more than 12 hours per day and the cable network does not already carry a similar programme.
- In Finland, in addition to the free-to-air public service broadcasting programming, a cable network faces a potentially unlimited burden as all commercial channels (i.e. also pay channels) of undertakings licensed to operate on a national terrestrial broadcasting network (*programme licensees*), advertisements and other services related to programmes must be carried. However, there is no requirement for the cable operator to significantly invest in improvements in network capacity to fulfil the must-carry obligation and no must-carry obligation if the network capacity is used by the cable operator's own TV/radio operations, or reserved for its reasonable future needs.
- Germany has extensive must-carry obligations. In the federal states of Hamburg, Berlin, Lower Saxony, Bremen, Hesse and Schleswig-Holstein the regional media authorities define the programmes on more than 80% of the available channels in analogue cable TV. For digital cable TV, must-carry regulations were reduced and harmonised by the Interstate Broadcasting Treaty. The reduced must-carry obligations still comprise all public service broadcasters, some nation-wide private broadcasters, regional and local programmes. For a third of the remaining capacity the cable TV operator must follow pre-defined selection criteria, under ex post control of the media authorities. Although most relevant legislation contains some criteria for selection of must-carry programmes, the application of these criteria is not always transparent because many regional media authorities do not publish how they interpret and apply the criteria. In North Rhine-

⁴⁴ European Audiovisual Observatory, To have or not to have: must-carry rules, 2005.

Westphalia there is a legal obligation for the regional media authority to select 17 analogue channels additional to those already selected by the law itself.⁴⁵

- In Italy, the content that must be carried on digital terrestrial TV is that of independent providers which provide programming that contributes explicitly to social goals. Examples include providing educational content addressed to school and pre-school students, content that strengthens information pluralism by thematic (i.e. at least 70% of the programming on same theme) news channels, content that improves the relationship between the citizens and public administration, or citizens and providers of services of general interest, and other content that promotes national and European cultural identity.
- In Malta, the public service broadcaster TVM's free-to-air channel, private free-to-air channels, an education channel run by the Department of Education and a weather/information channel (with information such as flight schedules) must be carried.
- In Slovenia, all four channels of the public service broadcaster RTVS must be carried plus some 30 channels with a status of 'special importance', defined as including local and regional channels that produce at least 30% local in-house content, non-profit television channels and student television channels.

c) Remuneration arrangements

Member States vary widely in who pays what to whom for must-carry: networks pay broadcasters, broadcasters pay networks, a net payment is made for the obligation, or there may be no payments at all. In some Member States remuneration for must-carry is not specified in regulation, while in others it may be specified in the law but the method of compensation is determined by commercial agreement between the parties (for example in Belgium, Germany, Sweden, the UK). In many Member States data were unavailable about the details of these commercial agreements.

d) Must-offer regulations

Must-offer⁴⁶ regulations are not nearly as prevalent as must-carry, as only the Czech Republic, France, and the UK have must-offer obligations. However, if coverage obligations on broadcasters are considered to be must-offer; this may simply be an issue of terminology, and most Member States impose coverage obligations at least on public service broadcasters (see Table 4 in the Annex).

In the UK, must-offer and coverage obligations on broadcasters with public service obligations are explicitly linked. The Communications Act 2003 defines must-offer rules as requiring Ofcom to put in the licence for each broadcaster with public service obligations coverage obligations to ensure:

- they are carried on all networks offering public electronic communications to a significant number of end-users as their primary means of receiving TV programming;

⁴⁵ The law says that at least one of these 17 channels must be a teleshopping programme (!)

⁴⁶ Data were not collected on rules for programming for "listed special events", such as national sports matches or political programming. These could be considered a type of must-offer obligation where they require a broadcaster to offer these particular programme events for distribution.

- their content is made available to as many members of the intended audience as possible;
- broadcasters may not charge for their content.

In France, there are two obligations that are close to must-offer. Broadcasters (editeurs) cannot oppose the retransmission of their services over the internal distribution network of a collective building where this network is connected to a cable network ('service antenne'). Specifically for cable TV networks, during the 5 years after the entry into force of Law 2004-669, these broadcasters also cannot oppose the retransmission of their services over cable networks.

In Spain, an obligation on a broadcaster to offer programming was imposed as a result of merger control. In 2002 the merger between Sogecable and Via Digital (satellite pay-TV platforms) was approved with conditions including the obligation to offer to third parties at least one premium channel as well as the thematic channels directly produced by Sogecable or commissioned by Sogecable from third parties. Furthermore, if Sogecable acquires exclusive retransmission rights for the Spanish Football League and other premium sports content, it must sublicense those rights to free to air and pay per view TV.

e) Reviews and recent changes to must-carry rules

A striking observation from the data is the lack of regular reviews of must-carry rules by Member States, as required by the EU 2003 regulatory framework. Only France, Germany, Latvia and Sweden have made reviews of must-carry regulations.

On the other hand, must-carry rules in some Member States have been amended or rewritten in recent years, for example Denmark (2004 and 2006), Finland (2003), Germany (2004⁴⁷), France (2004), Spain (2003) Sweden (2005) and the UK (2003). In Finland, further changes may occur as a Ministry working group in 2004 proposed to extend must-carry from cable to other communications networks that are "*mainly used for broadcasting*" and must-carry programming to freely available commercial channels (including advertisements and related programme services). France is reviewing its must-carry rules in 2006, in particular to consider whether to include mobile TV via terrestrial networks in must-carry (having already extended them to IP TV and 3G mobile TV in 2004).

NB. See tables 14-17 on must-carry and must-offer in the Annex.

5. Access and competition

Access and competition in this study includes both access to wholesale broadcasting transmission as defined in the EU 2003 recommendation on relevant markets, and access to associated facilities under the Universal Service Directive. Data were collected on both types of access.

In addition, at the suggestion of the UK regulator Ofcom, data were collected on the interaction of competition law and regulation affecting the broadcasting sector, specifically

⁴⁷ Must-carry regulation for digital cable TV was changed in an amendment of the Interstate Broadcasting Treaty in October 2004. The new regulation applies in all federal states. Additionally, some federal states changed must-carry regulation for analogue cable TV.

the institutional structure (co-ordination between regulatory authorities with broadcasting and competition powers) and recent examples of such co-ordination. This interaction between competition law and sector-specific regulation may affect the implementation of the EU 2003 regulatory framework, as that framework's foundation is a competition law approach, and as competition and regulatory authorities gain greater experience with co-ordination going forward.

a) Access to wholesale broadcasting transmission

The EU 2003 regulatory framework includes the market for wholesale broadcasting transmission (market 18) in its recommendation on relevant markets as a candidate for ex ante regulation. As of November 2006,

- Final decisions on market 18 have been taken in Austria, Czech Republic, Finland, France, Ireland, the Netherlands, Spain, Sweden and the UK. Germany and Italy have postponed notification of regulatory obligations until later.
- Cyprus, Lithuania, Poland, Slovakia, and Slovenia have all notified the Commission of their analyses of market 18.

The analysis of this market is proving to be a particularly difficult one for NRAs and for the Commission, with variations in market definition and regulatory obligations across the Member States. Member States have generally defined platform-specific markets for wholesale broadcasting transmission (terrestrial, satellite, or cable). However, there is some uncertainty as to whether Member States defined market 18 as including competition among transmission service providers at the wholesale level (intra-platform competition), access by broadcasters to wholesale broadcasting transmission facilities and/or services (inter-platform competition), or both (see discussion in section III.D of this report). Only some Member States imposed an access remedy after finding SMP on market 18, and even among those that did, the scope of the access varies.

NB. See tables 18 and 19 on market analysis (Market 18) – Access and price control obligations, in the Annex.

b) Access to associated facilities

This concerns access by content providers to associated transmission facilities: conditional access systems (CAS), applications programme interfaces (APIs) and electronic programme guides (EPGs). Regarding practice in the Member States on access to associated facilities, there is a large divide between regulation and experience in most Member States. Provision for access has been made, but seldom implemented.

- For CAS, access obligations have been duly written into law for CAS in all Member States except Cyprus and Hungary. Finland⁴⁸ and the UK have imposed cost-orientation obligations for access. No Member State has performed a market analysis for CAS in

⁴⁸ However, FICORA did not explicitly impose cost orientation, as the obligation for cost orientation derives directly from the wording of the law. The legislation does not elaborate, but simply states that the CAS operator must grant access, and if this creates costs the other party must pay them.

order to consider whether to roll back obligations.⁴⁹ Yet in interviews, only in the UK have there been major concerns regarding access to associated facilities and regular regulatory action (the latest consultation on access to CAS in the UK was launched in November 2005.)

- For APIs, only in the UK has access to APIs of a specific provider (Sky) been imposed. In most Member States open standards are encouraged.
- For EPGs, as with APIs, although Member States make provision in the law for access, only Austria and the UK have formally imposed an access obligation to the EPG of individual providers (ORS in Austria, Sky in the UK).

NB. See tables 20-22 on access to associated facilities in the Annex.

Regarding the interaction of competition law and regulations affecting broadcasting,⁵⁰ many Member States give a regulatory authority competition powers for the broadcasting sector, which are shared with the competition authorities in varying degrees of informal and formal co-ordination. For example, in Finland, Ireland, and the UK there are published co-ordination agreements between the competition and regulatory authorities in the communications sector, including broadcasting.

In many countries there are special provisions for competition action in media sectors, such as considering media plurality in merger control. In Austria, for example, a media merger must be forbidden if it impairs media plurality,⁵¹ while in other Member States media plurality must be taken into account in making a decision.

In the last five years, many countries have seen significant competition policy interventions in the broadcasting sector at the national level, some of which involved consideration of criteria other than competition policy, as in the following examples:⁵²

- France and Hungary have made competition investigations against terrestrial broadcasting transmission operators for abuse of a dominant position.
- In Austria, France, Italy, the Netherlands, Spain, and the UK, access to premium content has been investigated by competition and broadcasting authorities, either in an abuse of dominance investigation or in merger control.
- In Italy, competition authority AGCM has issued opinions and made a market investigation on television broadcasting in Italy, noting the high level of concentration in radio and television broadcasting. It linked the market structure in part to regulatory and institutional barriers to entry, in particular the scarcity of available frequencies. In other

⁴⁹ In Poland, the broadcasting regulator KRRiT issued on 25 January 2005 a decision to start a procedure aimed at assessing whether the markets for provision of conditional access systems, EPG and multiplexing of digital signals are effectively competitive. The work was interrupted after enactment of legislation on changes in the division of responsibilities of state organs in matter relating to communications, radio and TV, because now it is the UKE that is responsible for all market analyses.

⁵⁰ Data were not gathered for the study on cross-ownership rules specifically, but should be considered in future research as these rules can have a significant impact on market structure.

⁵¹ In practice Austria's Cartel Court did not prevented a merger on grounds of media plurality in the print media sector that formed a conglomerate of the two biggest daily papers and the two largest magazine groups. See RTR Communications Report 2001, chapter 4.1.5.

⁵² For an overview of recent competition actions at the European level, see D. Geradin, "Access to content by new media platforms: A review of the competition law problems," *European Law Review*, February 2005; C. Schoser and S. Santamato, "The Commission's state aid policy on the digital switchover," *EC Competition Policy Newsletter* Spring 2006; and the pair of articles on public service broadcasting and state aid by S. Depypere and N. Tigchelaar in the *EC Competition Policy Newsletter* Spring and Summer 2004.

actions it has attempted to address the high level of concentration. For example, in April of 2006 AGCOM authorised the acquisition by RTI (part of the Mediaset Group) of the analogue transmission network of Europa TV, but only on the condition that DVB-H (mobile TV) would be used on those frequencies. Among other reasons for such a requirement, this would prevent RTI, which already owns significant digital TV infrastructure, from acquiring further market power in digital TV transmission.

- In Germany, the planned merger between ProSiebenSat 1 and Springer was blocked. Among the reasons was the decision by a joint body of the regional media authorities with jurisdiction over broadcasting that the merger would harm media plurality.
- In the UK, competition law provides an important counterpart to broadcasting regulation, as the Office of Fair Trading (OFT) and the UK Competition Commission have investigated the satellite and cable distribution and content markets (abuse of dominance) as well as broadcasting content markets (mergers) numerous times. In media mergers in particular, Ofcom has provided significant input into merger reviews in order to protect plurality.

NB. See table 23 on the intersection of competition law and broadcasting regulation in the Annex.

C. Recommendations

This section provided a description of the data collected in this study for the 25 Member States. It is unsurprising to find that Member States vary on most of the dimensions of analysis – since market conditions vary, the regulations should also vary. Variation in and of itself is not necessarily a bad thing, nor is absolute harmonisation in regulatory approaches always a good thing (or achievable in practice).⁵³ Where variation matters from the perspective of good governance principles is when policy makers have difficulty in properly defining regulatory problems and solutions. The sources and the effects of variation in relation to specific regulatory choices on the four main topics of the study are discussed in the remaining sections of this report.

One point may be made from the experience of data collection for this study: there is a pressing need to collect data at the national level on market and regulatory aspects of broadcasting. The Commission should make an effort to develop higher quality data for the broadcasting sector. This would seem to be an ideal role for the Commission, as it has both more authority and resources to collect information compared to individual Member States.

Recommendation 1

Data on the broadcasting sector should be included in the annual implementation reports on electronic communications regulations and markets.

⁵³ Kip Meek, Speech to Ofcom Conference on Next Generation Regulation - Delivering Competitive Communications, November 2005.

Recommendation 2

The Commission should encourage greater consistency in data collection and analysis by NRAs in particular for analyses of market 18, for example by publishing an explanatory memorandum.

III. ANALYSIS AND RECOMMENDATIONS

A. Licensing and authorisation

1. Introduction

We have identified three main issues that relate to licensing and authorisations:

a) Whether the framework enables competition for broadcasting networks

The framework and procedures for authorisation of broadcasting networks, in particular with regard to digital terrestrial networks, determines to a great extent whether or not there can be competition in the sector. However, competition in digital terrestrial networks is the exception rather than the rule. Most Member States have chosen to implement a framework and/or procedures that directly or indirectly promotes a monopoly structure. This aspect is further discussed in the section on Access and competition below.

b) Overlap between broadcasting regulations and electronic communications regulations

In many Member States, there is significant overlap between the two sets of regulations and in many cases there are two different regulators involved with monitoring the same activity or different activities over the same network.⁵⁴ These aspects are further discussed below in this section, which also presents a proposal for connecting the level of licensing and authorisations required with the extent to which a network provider is involved in content provision and editing tasks.

c) Linkages between content and radio frequencies

In most cases today, there are strong linkages between television licenses and radio frequency and/or multiplexer licenses. The increasing significance of alternative distribution platforms raises questions whether such linkages are still appropriate and justified. This question is discussed later in this section.

Finally, this section proposes recommendations for Commission action in licensing and authorisation.

2. Overlap between broadcasting and electronic communications regulations

a) Types of authorisations

For the purposes of discussion in this chapter only, we will define the two main types of permission granted by regulatory authorities to providers in the broadcasting sector as:

⁵⁴ One solution in that regard could be to establish memoranda of understanding (MoUs) such as those between competition authorities and sector regulators, to work out jurisdictional issues and co-ordinate on analyses (see table 23 in the Annex).

- a *communications authorisation*, which refers to an authorisation (or license, depending on context) given to an electronic communications network or service provider that distributes broadcast programming – in other words, an authorisation to *distribute and transmit* broadcasting programmes; and
- a *broadcasting authorisation*, which refers to a license or authorisation given to a broadcaster or other content provider in order to provide broadcasting programmes – in other words, a content authorisation.⁵⁵

b) What is being authorised

Traditionally, a broadcasting authorisation represented a combination of the right to produce a programme and access to a limited resource, namely the radio frequency used for air transmission. With the current framework for electronic communications, these two rights are separated but nevertheless often linked together so that one authorisation paves the way for the other. For digital terrestrial networks, there may even be three authorisations involved because the multiplex also represents a limited resource, closely associated with the radio frequency, which requires its own authorisation. In addition, there is the authorisation to operate the broadcasting network itself. There are different systems and procedures for linking these authorisations together.

On the other hand, broadcasting programmes can also be made for distribution through resources that are less severely limited, such as cable TV, satellite and IP TV platforms. Such broadcasting authorisations may be subject to a lighter regime based on general authorisations with notifications for a permission to provide an original television programme over a cable TV network. In addition, the communications authorisations for retransmission platforms that use non-limited resources may be based on general authorisations.

This means that there are two main categories of broadcasting authorisations:

1. Authorisations with associated rights for radio transmission. These channels can also be retransmitted on alternative platforms. Sometimes, the alternative platforms are obliged to transmit certain channels through must-carry regulations.

Within this broad category, there can be many sub-groups, based on several criteria:

- Funding: Public funding / licence fees / advertising / subscription fees / etc;
 - Content profile: Public service / general interest / special profiles / TV-shopping;
 - Objective: Public service / commercial.
2. Authorisations without associated rights for radio transmission. These channels fully depend on alternative platforms in order to reach the public. Such channels must normally negotiate transmission with the alternative platforms on commercial terms, unless included in must-carry regulations.

⁵⁵ "Broadcast content" is defined following the existing Television Without Frontiers Directive. European Parliament and Council Directive 97/36/EC of June 30, 1997 amending Council Directive 89/552/EEC on the co-ordination of certain provisions laid down by law, regulations and administrative action in Member States concerning the pursuit of television broadcasting activities (Television Without Frontiers), OJ L 202, July 30, 1997.

c) Authorisation conditions vs. operating conditions

Following a narrow interpretation, an authorisation may be viewed as a market entry requirement. For example, an individual authorisation requires approval from an authority before an activity can be started. The regulatory framework for electronic communications allows individual authorisations only in connection with allocation of scarce resources.

In all other cases, general authorisations must be used. A general authorisation exists when the licensing conditions are defined in one or more legal documents that apply equally to all operators. A new entrant may be required to submit a notification, but can start its activities without waiting for approval from the regulator.

The operating conditions that apply to the activity, whether it requires an individual or general authorisation, may be defined in an authorisation document. For general authorisations, these are often defined as class licences. However, in many Member States, such class licences do not exist. Instead, there is a body of primary and secondary legislation that make up the operating conditions, with different provisions applicable to different types of activities.

In addition to those requirements that may be specifically designated as authorisation conditions, the operator is of course required to follow all types of legislation that may apply to the activity. With many types of activities being subject only to general authorisations, it means that in many Member States, it may be insufficient to ask for authorisation conditions narrowly defined. Asking for authorisation conditions may produce one answer, while asking for operating conditions found in general legislation and not directly associated with authorisations, may produce another answer.

For example, broadcasting retransmission networks, such as cable TV networks, may or may not be subject to broadcasting authorisation in Member States. But even if there are no "authorisation conditions", there can nevertheless be legal requirements derived from broadcasting legislation, which are applicable to such operators.

However, in the Authorisation Directive, a "general authorisation" is defined as⁵⁶:

a legal framework established by the Member State ensuring rights for the provision of electronic communications networks or services and laying down sector specific obligations that may apply to all or to specific types of electronic communications networks and services, in accordance with this Directive;

When making an analysis of overlap between the regulatory framework of electronic communications and the framework for broadcasting regulations, it is therefore not sufficient to consider only authorisation conditions. Even though the definition of a general authorisation above does not apply to the broadcasting sector, we need to include all types of operating conditions and requirements regardless of the legal instruments which are used.

d) The EU regulatory framework

Leaving radio frequency authorisations to the side for the moment, it is clear that the EU legal framework assumes two different authorisations for broadcasting. The European

⁵⁶ Authorisation Directive, Art. 2.

Commission Communication on the 1999 review, which led up to the new regulatory framework, stated:

This implies two separate authorisations, one relating to operation of the network infrastructure and the transmission of broadcast signals, and the other concerned with the content of broadcast transmissions.⁵⁷

The new framework is also clear on the point that double legislation should be avoided. Article 6 of the Authorisation Directive states:

The general authorisation shall only contain conditions which are specific for that sector and are set out in Part A of the Annex and shall not duplicate conditions which are applicable to undertakings by virtue of other national legislation.

One of the key questions to consider is whether an operator of a network for retransmission of broadcasting signals may also be required to be authorised for the content.

Recital 20 of the Authorisation Directive⁵⁸ states:

The same undertaking, for example a cable operator, can offer both an electronic communications service, such as the conveyance of television signals, and services not covered under this Directive, such as the commercialisation of an offer of sound or television broadcasting content services, and therefore additional obligations can be imposed on this undertaking in relation to its activity as a content provider or distributor, according to provisions other than those of this Directive, without prejudice to the list of conditions laid in the Annex to this Directive.

However, when will a cable operator, for example, be able to operate under a "communication authorisation" only, and when will he have to have a "broadcasting authorisation" in addition?

It is relevant to see that the current version of the Television Without Frontiers Directive regulates television broadcasting that is defined as :

'The initial transmission by wire or of the air, including that by satellite, in unencoded or encoded form, of television programmes intended for reception by the public. It includes the communication of programmes between undertakings with a view to their being relayed to the public...'

The main requirements contained in the directive are directed towards the 'broadcaster' who is defined as the person who has the editorial responsibility for the composition of schedules of television programmes ... and who transmits them or has them transmitted to the public.

It should be remembered that the directive is a minimum harmonisation directive, meaning that Member States are allowed to introduce more stringent regulations. In addition, they are free to regulate aspects that are not covered in the directive.

⁵⁷ 1999 Communication.

⁵⁸ Authorisation Directive, Recital 20.

From this, it seems clear that Member States are allowed to introduce licensing or registration regimes for operators to the extent that they have an editorial responsibility in the composition of schedules of television programmes.

In addition to these national licensing and registration regimes, operators also need to obtain authorisations from the various holders of copyright and related rights to transmit programmes. This question is specifically addressed in Council Directive 93/83/EEC on the coordination of certain rules concerning copyright and rights related to copyright applicable to satellite broadcasting and cable retransmission (the Cable and Satellite Directive). This directive harmonises the protection of copyright and related rights in the area of cross-border satellite broadcasting and cable retransmission.

- For satellite broadcasting, the directive addresses the situation of operators of satellites (e.g. ASTRA) and not of 'satellite TV operators' (e.g. BskyB). It provides that satellite operators only need to clear the rights in one Member State: the one where, under the control and responsibility of the broadcaster, the programmes carrying the signals are introduced into an uninterrupted chain of communication leading to the satellite and down towards the earth. The directive does not require additional clearances in the receiving Member States.
- For cable (re)transmission, the directive provides that cable operators must seek consent for each country where the broadcast is made available. To facilitate the clearance of rights, the directive provides that copyright owners and holders of related rights must exercise their rights through a collecting society. Alternatively, broadcasters can exercise cable retransmission rights directly (if the rights were their own at the outset or if they have acquired them from other right holders). In practice, this means that cable operators either have to obtain rights from the collecting societies and/or from the broadcaster.

A Commission implementation report of 2002 evaluated the directive in the new media context and noted that there were other retransmission platforms which raise the question of whether the rules on cable retransmission should not be extended to other means of simultaneous cross-border retransmissions, following the principle of technical neutrality. It concluded that it was appropriate (then), to extend the mandatory collective management regime to other forms of retransmissions. This conclusion probably needs to be reconsidered as these platforms are now a reality and uncertainty surrounding the application of the directive could ultimately slow-down the take-up of IP TV services and create distortions between various types of operators.

3. Status of authorisations and licensing in Member States

Table 9 on the licensing and authorisation requirements for different types of broadcasting platforms in the Annex illustrates the great variety of regulatory structures and frameworks in the Member States. In the discussion below, we examine in particular how retransmission platforms are regulated. We consider that a retransmission platform provider distributes television channels from sources that all have their own television content licenses so that the retransmission platform does not require a separate television content license.

We have identified in particular two practices which we find questionable:

1. Two different sets of regulations and regulators for the same retransmission platform

In many Member States the communications regulator is the primary regulator for a retransmission platform⁵⁹, but the broadcasting regulator is nevertheless involved in one or more tasks, such as:

- monitoring the content provided over the retransmission networks;
- approving channel selections;
- making channel assignments;
- and monitoring in general the compliance with regulations for retransmission of broadcasting content.

In other Member States, the primary regulator for a retransmission platform is the broadcasting regulator. This regulator has, however, only the authority for the transmission of broadcasting content. For other communications activities, the communications authority is the responsible regulator. With triple play becoming increasingly common, this means that the communications regulator will normally also be involved.

Where both the communications regulator and the broadcasting regulator are involved with a retransmission platform, it is a rather clear indication that the broadcasting regulations have not been rolled back after the communications framework was extended to include broadcasting networks. However, we also note that in some cases, such as in Spain, broadcasting regulations have been recently been extended.

Below, we argue the case that a retransmission platform without any editorial activity should only need a communications authorisation and be monitored only by the communications regulator and that the involvement of an additional regulator leads to additional complexity and inefficiency.

2. Different regulators for different retransmission platforms

In some Member States, different retransmission platforms are regulated differently and sometimes monitored by different regulators. For example, a cable TV network may be controlled by a broadcasting regulator and an IPTV platform by a communications regulator.

This is contrary to the objective of having these different converging networks in the same framework. It raises issues of fair competition between retransmission platforms when they are regulated differently.

⁵⁹ The term "retransmission platform" is used in the following sense. A broadcaster will often be authorised and obliged to provide its signals over a specific platform, typically a terrestrial broadcasting platform. This platform can be seen as the primary distribution platform for this station. This is often recognised through copyright arrangements, where the broadcaster acquires rights for its primary distribution channel(s). Other distribution platforms, which may be used on a commercial basis, are in this study considered as "retransmission platforms".

Where one retransmission platform is controlled by the broadcasting regulator and another by the communications regulator, it is a rather clear indication that the convergence between these two sectors has not been sufficiently recognised.

We have also identified two criteria for what we will characterise as good practices:

1. Simple framework for simple retransmission platforms

Some Member States have introduced a framework where a retransmission platform operator, such as a cable TV operator, can operate under a general authorisation under the electronic communications framework, provided they do not perform editorial activities.

The question of what constitutes editorial activities may vary from country to country. For example, in Denmark, a cable TV operator must retransmit its television channels without any change and is not allowed to provide its own television programmes without further authorisation. However, it is allowed to transmit text messages to be received on a television screen.

2. Common regulatory authority for communications and broadcasting

There is little doubt that having what are traditionally two different authorities brought together under the same management in the same organisation avoids many practical problems and conflicts. Below in this section, we discuss the need for a consensus between the two regulators on how the two frameworks should be aligned. Such a consensus is obviously simpler to achieve under a common management.

The table below presents an overview of the Member States according to these four criteria of questionable and good practices.

Questionable practices		Country	Good practices	
Different retransmission networks controlled by different authorities	Same (retransmission) network covered by two authorities		Simple framework for retransmission network	Common authority for communications and broadcasting
		Austria		
		Belgium (Flanders)		
		Cyprus		
		Czech Republic		
		Denmark		
		Estonia		
		Finland		
		France		
		Germany		
		Greece		
		Hungary		
		Ireland		
		Italy		
		Latvia		
		Lithuania		
		Luxembourg		
		Malta		
		Netherlands		
		Poland		
		Portugal		
		Slovakia		
		Slovenia		
		Spain		
		Sweden		
		UK		

Comments:

- Austria: Is difficult to classify. The country has a converged regulator on the operational level (RTR), but with two managing directors, one for broadcasting and one for telecommunications. So the two frameworks are not under a common management even if they formally reside in the same organisation. In addition, RTR has two decision-making bodies, KommAustria for broadcasting and Telecom Control Commission (TKK) for telecommunications. The regulatory tasks are divided among all these three organisations, e.g. spectrum licenses are issued by KommAustria (broadcasting frequencies) and TKK (UMTS). Cable TV networks are covered by KommAustria (e.g. general authorisation for broadcasting, must-carry, market 18), RTR (e.g. general authorisation for telecommunication, market definition of market 12) and TKK (e.g. market analysis of market 12).
- Finland: Ficora has regulatory responsibilities for both the Communications Market Act and the Act on Radio and Television Operations. Television programme licenses are granted by the Ministry of Transport and Communications.
- Greece: There are no cable networks, nor satellite programmes uplinked from Greece. The analogue terrestrial network authorisation is managed by the electronic communications NRA, the broadcasting regulator and the Ministry of Transport and Communications.
- Malta: Melita Cable, which is the major cable TV provider in Malta, has a combined licence for retransmission and provision of its television channels.
- Poland plans to create a unified regulator, but the action depends on constitutional amendments which have not yet been agreed.
- Spain: There is a notification requirement for cable TV networks in Catalonia. A new law in Spain adopted in July 2006 will extend this requirement to the rest of the country.

Table 2: Questionable and good authorisation practices for retransmission networks

4. A possible dividing line for determining whether a broadcasting authorisation is needed: editorial responsibility

As explained above, audiovisual and media policies are not only about content and transmission, but also about distribution. While content is clearly a broadcasting policy matter, and transmission is equally clearly an electronic communications policy matter, the distribution issues fall under the policy concerns of both frameworks.

In this section, we describe different distribution activities and propose a possible dividing line between those distribution activities that may be performed under the electronic communications framework only and those distribution activities that fall under the broadcasting framework.

For example, it seems logical that a cable operator that merely relays the signals from a television station that is already authorised by the broadcasting authorities in the same Member State should only need a "communication authorisation". Bearing in mind that the "communication authorisation" may include must-carry obligations and other "bridge requirements", it cannot be justified to impose additional content obligations when the content is already authorised. Nor are there any resource constraints, as is the case for radio transmission in terrestrial networks, that would justify the involvement of a broadcasting authority to allocate a resource that is scarce in relationship to a broadcasting objective.

On the other hand, the cable operator may decide to offer its own television programme which could include its own live studio performances. In this case, it would in fact operate its own television station and it seems equally logical that a "broadcasting authorisation" would be required.

Between these two extreme cases, there is a range of roles that a cable operator may play, each representing a different level of involvement with regard to content. The key question is at what point would it be justified or reasonable to require a "broadcasting authorisation"?

This is an important question, because the "broadcasting authorisation" may constitute an additional burden and even a barrier to entry of new and innovative services.

In the following Member States a cable TV operator may provide services under the electronic communications framework without notification to or authorisation by the broadcasting regulator, as long as he is not involved in editorial or programme activities:

- Cyprus;
- Denmark;
- Estonia;
- Finland;
- Ireland;
- Italy;
- Malta;
- Netherlands;
- UK.

In some countries, such as Denmark, a cable TV operator may be engaged in programme production under a lighter scheme than television channels licensed for air transmission. A cable TV operator must make a notification to the broadcasting regulator if it is engaged in some form of editorial or programming activity. Programming activity is interpreted to mean that the cable TV operator actually produces moving video content. The cable TV operator may transmit text panels or still pictures without any need for notification.

Below we make an attempt to describe theoretical cases which are intended to illustrate different degrees of involvement with content or different levels of editorial responsibility and we suggest a breakpoint where we believe that a "broadcasting authorisation" may be justified.

This breakpoint is not currently defined in EU legislation⁶⁰ and we are not recommending to define it. However, it is important that this breakpoint should be discussed among regulatory authorities of the Member States with a view to reaching a consensus that can be a basis for national implementation.

⁶⁰ Recital 20 of the Authorisation Directive (2002/20/EC) sets out that broadcasting regulations may be applied to the distribution functions of, for example, a cable operator.

a) Distribution services with no editorial activity

Case 1: Domestic relay services

These are services that relay the signals of television stations that are already authorised within the national framework. The relay takes place for all practical purposes in real time without any change to the content. The transmission also takes place without the use of broadcasting frequencies, which may be limited resources to be assigned in accordance with broadcasting policy.

Clearly these services should only be subject to a “communication authorisation”. This principle should apply to all delivery platforms, including not only cable TV providers, but also IPTV, certain forms of mobile TV and all forms of “triple play” provision.

It may also be argued that frequencies used to transmit radio and television content may be divided into two categories, namely primary and secondary broadcasting frequencies. The primary category is where a television or radio broadcaster has been assigned radio spectrum or where terrestrial coverage obligations are included in their licensing conditions. The latter category could be used solely for relay of television programmes to a different distribution platform. An example of this would be frequencies for DVB-H intended for mobile broadcasting applications. If these frequencies would be used only for relay of television programmes that are already authorised, there should be no need for a “broadcasting authorisation”.

We recognise the argument that DVB-H frequencies are a limited resource and that the frequency assignment may be accompanied by coverage obligations. This may be true, but it may be covered in the frequency authorisation and it does not automatically follow that an additional “broadcasting authorisation” is necessary. There is also an argument that mobile TV is an emerging technology with as yet an unproven future and that it would benefit from a light regulatory touch.

The following circumstances should not detract from the principle that national relay services should not require a “broadcasting authorisation”:

- the provision of formatting transformations when the intended receiving apparatus is not a television set;
- the slight delay in real time caused by retransmission and re-formatting functions;
- the requirement for transcontrol⁶¹ in conditional access systems.

In some Member States it is considered that the selection of a “bouquet of channels” is in itself an editorial activity that needs to be supervised by the broadcasting authority. This idea is, however, logically in conflict with EU directives because:

- a regulatory decision to require inclusion of an additional channel would fall into the domain of must-carry regulations,

⁶¹ See further discussion on transcontrol in the section on associated facilities in this report (section IV.D.2).

- a regulatory decision to require the removal of one of the selected channels would be in conflict with the Television Without Frontiers Directive, at least if it is a channel that originates in another Member State.
- This leaves theoretically a scope for a regulatory decision to require the removal of channel from the same Member State. However, if that channel has been authorised in that Member State, one would wonder what could be the justification for requiring it to be removed from a distribution platform.

Case 2: Relay services from other Member States

Relay services from other Member States are increasingly important as the increasing European integration means that more and more people travel, work and live outside their home country. While doing so, they may expect to view broadcast content from their own Member State while abroad. Furthermore, advances in technology make this expectation increasingly viable.

This is the same case as (1) above, except that television signals originate from a television station in another Member State, with authorisation under the broadcasting regulations in that country.

The Television Without Frontiers (TWF) Directive, in Article 2a, states that:

Member States shall ensure freedom of reception and shall not restrict retransmissions on their territory of television broadcasts from other Member States for reasons which fall within the fields coordinated by this Directive.

The freedom of reception principle is intrinsically linked to the other requirement of the TWF Directive according to which Member States must ensure that all television broadcasts transmitted by broadcasters under their jurisdiction comply with their national rules (country of origin principle).

Member States' licensing and authorisation schemes may contain two types of requirements:

- requirements whereby operators have to ensure that the content does not contain programmes that could be in breach of national requirements on the protection of minors, public order or advertising. Where this requirement applies to programmes of a broadcaster that is already licensed in another Member State, this could be seen as being inconsistent the principle of freedom of reception and retransmission of the TWF Directive;
- requirements whereby operators have to notify which programmes they retransmit. For example, we have heard from operators that some regulators require a copy in its own national language of the broadcaster's licence delivered by the broadcasting authority of its Member State of origin. This represents a burdensome administrative requirement;

The different EU Member States are clearly divided on this issue. We will argue that the countries that do not require a "broadcasting authorisation" represent best practice, because:

- the additional "broadcasting authorisation" is an additional burden and level of complexity. For organisations that consider offering pan-European services, this level of complexity is a significant barrier to entry;

- it respects the philosophy of the TWF Directive, which is to promote the free movement of EU television broadcasts.

NB. The TWF directive applies to Member States in the EU and in the EEA. According to the TWF directive (Art. 2), non-EU television stations fall under the jurisdiction of a Member State if they use radio frequencies or satellite up-link capacity granted by or satellite up-link located in that Member State. The normal procedure for other third country television stations is to have a broadcasting licence or to be authorised in a Member State to be able to benefit from the country of origin principle and the principle of freedom of retransmission of the TWF directive.

b) Distribution services with limited editorial responsibilities

The first two cases in the previous section describe distribution services without any editorial involvement. These are, in our view, clear cases for being regulated wholly under the electronic communications framework.

The next three cases in this section describe situations with limited or minor editorial responsibilities. These are cases where broadcasting regulations and oversight are justified. Nevertheless, it may be a topic of discussion whether there are some “limited editorial responsibilities” that would justify a particularly light approach and whether this would contribute to the development of pan-European services.

Case 3: Management of advertising gaps

Management of advertising gaps may be particularly relevant for distribution of television programmes from other Member States. It enables the original advertising intended for viewers in the originating Member State to be replaced by national advertising for the retransmission country.

The ability to manage advertising gaps may provide an incentive to show more foreign channels and thus support the objectives of the internal market and the TWF directive.

Management of advertising gaps must be seen as a form of editorial activity that obviously requires compliance with broadcasting regulations and is clearly therefore a concern for the broadcasting regulator.

Case 4: Relay services from other Member States with timing changes

Normally a relay service is supposed to be retransmitted in real time without any changes. However, it may make sense to deviate from this main rule, if:

- there are potential problems with relay of programmes from different time zones, because certain programmes with timing constraints may be legally transmitted in the country of origin, but not in the country of reception because of the timing difference;
- some programmes may need to be blocked due to national constraints.

Again, such management may be considered editorial activities that should be under control of the broadcasting regulator.

Case 5: Time-of-day channel combinations

In terrestrial radio frequency networks, a given frequency is often shared between two or more television stations on a time-of-day basis. The question then arises whether a retransmission platform would be obliged to retransmit the shared channel continuously, retransmitting all the sharing television stations in the same way as they are transmitted on the air.

In other words, in order to be a “pure” provider of relay services without editorial intervention (such as in cases 1 and 2 above), should the retransmission platform relay a frequency or should it relay a channel? If it relays a channel, and the channel is active only 12 hours per day, can it then provide an alternative channel in the inactive period?

So there is a need for interpretation to determine when decisions on timing splits constitute editorial actions. On the other hand, a more active approach to management of timing splits would clearly constitute an editorial action. For example, a retransmission platform could put together a “best selection package” from a variety of sources, all retransmitted in real time. Such editorial activities would probably be under control of the broadcasting regulator.

c) **A light regime?**

We argue that management of advertising gaps, timing changes and the combination of multiple television stations on the same channel in different time slots as described above are editorial activities that fall under the broadcasting framework. They are discussed in this study in order to clarify where we believe the dividing line should go between the two regulatory frameworks.

That being said, we will nevertheless suggest that these activities are rather limited compared with the programming and management of a television station (with or without original content). It may therefore be justified to permit such activities under a lighter regulatory scheme than what is required for a full broadcast television channel. Denmark provides an example of such a framework, where cable TV operators may engage in programming activities after notifying the broadcasting authority (without having a television license).

5. **A possible dividing line between regulatory responsibilities**

As we are discussing the dividing line between whether or not a broadcasting authorisation should be required, we make the following points regarding the distribution of responsibilities between different regulators who are involved in the authorisation process.

a) **Must-carry**

Channel selection and network obligations

Must-carry is part of the electronic communications framework in the sense that it places an obligation on the network provider to carry certain channels for the benefit of users. The framework also requires the must-carry obligations to be reviewed regularly.

However, the selection of the channels that shall be subject to must-carry obligations belongs clearly to the broadcasting framework. Only the broadcasting authorities (and Member State governments, as appropriate) are competent to assess general interest objectives related to broadcasting. The work associated with reviews and justification of the framework in terms of what programming should have the must-carry status is logically a broadcasting responsibility.

Once a set of must-carry broadcasters is determined, however, it should be for the regulator of the electronic communications network to determine to which distribution platform(s) the requirement should apply, based on an assessment of which platforms best meet the requirement of being used by “*a significant number of end-users*” *as their principal means to receive radio and television broadcasts*⁶². It should also be for the regulator of electronic communications networks to monitor the implementation of the must-carry requirement and to conduct regular reviews to determine the appropriate distribution platform(s) as they develop.

Must-carry and must-offer

We argue elsewhere⁶³ that there should be a balance between must-carry and must-offer obligations.

In a regulatory sense, the must-carry obligation belongs to the electronic communications framework because the obligation is placed on the network provider. However, following the same logic, the must-offer obligation must belong to the broadcasting framework, because the obligation is placed on the content owner.

b) Coverage obligations

It is fairly common for broadcasting regulations to include coverage obligations for television and radio channels, in particular for public service channels. Such obligations are typically part of authorisation conditions.⁶⁴

Such obligations are primarily directed toward broadcasting channels. In a sense, they can be seen as an extension of a must-offer provision. Not only must the broadcaster offer the content to a platform provider, he must actually achieve a presence and possibly meet an objective in terms of population coverage.

If the obligations includes objectives in terms of population or geographic coverage, they will also have consequences for network operators because the requirements translate into specific network requirements. While population or geographic coverage objectives are particularly related to terrestrial broadcasting networks, we argue below in the following section that the relationship between different platforms is likely to evolve over time and that the terrestrial platform should not have automatically a preferred status.

In a rapidly changing technological environment, coverage objectives can be met in many different ways. For example, in the extreme case, Greece is almost fully operating over the

⁶² 2002/22/EC - Universal Service Directive Art. 31

⁶³ See section IV.C on must-carry and must-offer

⁶⁴ See Table 4 in the Annex to this report.

terrestrial television platform, while Belgium is almost fully operating over the cable TV platform. In between, there are all kinds of combinations and the picture is changing rapidly.

The question of how the coverage obligations of public service broadcasters can best be met should be subject to periodic reviews. In particular, it should be recognised that the cost of coverage of 100% of population through a digital terrestrial network has sharply increasing costs per viewer as one approaches full coverage. It may well be that it is more cost effective to achieve 100% coverage through a combination of two or more platforms.⁶⁵ In addition, the take-up of alternative distribution platforms may at some point raise questions about the logic of maintaining coverage obligations and a privileged position in terms of public subsidies for digital terrestrial networks if they are no longer commonly used by television viewers.

It would seem that a logical solution would be for the broadcasting regulator to set objectives for coverage by publicly funded operators. These objectives should, however, not be platform specific.

The electronic communications regulator should determine how coverage obligations could best be met in terms of cost and efficiency. These obligations could partly be implemented through coverage obligations linked to frequency licences, and partly through the assignment of must-carry obligations to specific platforms.

6. Linkages between different types of authorisations

a) The role of terrestrial networks

Historically, broadcasters were dependent on radio frequencies for their existence. Since radio frequencies are a limited resource, broadcasting authorisations usually combined content obligations and rights to use radio frequencies.

Terrestrial radio frequency networks have retained in many ways a special position relative to the other platforms, because in most countries, access to terrestrial frequencies for television broadcasting is directly or indirectly determined through a broadcasting license, and a broadcaster with public service obligations is subject to national coverage obligations. These obligations more often than not either specify presence on a terrestrial network or are specified in such a way as to require terrestrial transmission, for example coverage of a high percentage of the population (usually 90-100%) or other, unspecified obligations to cover as much of the population as they can reach, as shown in the table below.

Member State	Coverage obligations for broadcasters with public service obligations on...		
	Network(s)	Population covered	Other
AT	✓		
BE			✓
CY		✓	
CZ		✓	

⁶⁵ See the analysis of the costs of transmission and coverage for different digital television platforms in Analysis, Public policy treatment of digital terrestrial television (DTT) in communications markets, August 2005.

Member State	Coverage obligations for broadcasters with public service obligations on...		
	Network(s)	Population covered	Other
DK		✓	
EE	No coverage obligations on PSB		
FI			✓
FR	✓	✓	
DE	No coverage obligations on PSB		
GR		✓	
HU	✓	✓	
IE	✓	✓	
IT	✓	✓	
LV		✓	
LT	✓		
LU	No coverage obligations on PSB		
MT	No coverage obligations on PSB		
NL		✓	
PL	✓		
PT	✓	✓	
SK	✓	✓	
SI		✓	
ES		✓	
SE		✓	
UK	✓	✓	

Table 3: Coverage obligations for broadcasters with public service obligations in the EU

A first observation is that as terrestrial networks shift from analogue to digital, the best way to ensure access to distribution facilities is no longer the right to use radio frequencies. Because digital television involves multiple television channels sharing a common frequency, the appropriate means of access is to a slot on the multiplex that enables this sharing of frequency. Thus in a digital environment, the linkage between a broadcasting authorisation and a frequency licence, if required, should be set out in the form of a frequency enabled multiplex slot rather than the frequency itself. This approach has been adopted in some Member States for some broadcasters, such as Sweden, and can mean that less radio spectrum needs to be allocated to broadcasters with public service obligations to meet general interest objectives than if they were given the frequency for an entire multiplex.

Another possible advantage of this approach is that increases in capacity allowed by technology advancement can be used to support innovative audiovisual services rather than simply an expansion of the current activities of broadcasters with public service obligations, although this view depends on whether Member States wish the activities of broadcasters with public service obligations to expand or not. A disadvantage is that terms and conditions of multiplex access by broadcasters would need to be addressed and potentially subject to

regulatory oversight, as broadcasters may be captive to a multiplex provider who offers a desired level of coverage.⁶⁶

A more fundamental question is whether it is desirable as a general matter to determine access to the digital terrestrial platform through a broadcasting authorisation. The alternative is to consider the digital terrestrial network as a distribution platform like any other where access to the platform is determined through commercial negotiations between the broadcaster and the distribution platform, as in the UK for broadcasters without public service obligations.

We argue that there should be no linkage between a broadcasting authorisation and frequencies for broadcasting, because:

- there is diminishing justification to consider the radio frequency network as a special distribution platform that is different from other distribution platforms. Over time, the role of terrestrial radio frequency networks has become less critical as cable TV and satellite distribution networks have become major television platforms in many Member States. New distribution platforms based on broadband Internet services are emerging and are expected to play an increasingly important role in the years ahead, and last but not least, mobile TV provides yet another distribution platform;
- it would bring all distribution platforms to the same level and provide a basis for fairer competition among delivery platforms (technology neutrality);
- it would enable a market-based approach to the practical switch predicted by Nicholas Negroponte⁶⁷, namely that fixed reception television will shift from wireless to wired transmission, while telephony will shift from wired to wireless transmission. This transition is evident today, particularly in developed markets;
- after spectrum liberalisation, with trading, the amount of spectrum and implicitly the number of multiplex slots required for the terrestrial television broadcasting may be determined by the market (see discussion in section III.B of this report); and
- breaking the link between a broadcasting authorisation and frequency assignment would enhance transparency in spectrum management as well as evaluation of the proportionality of state measures to support broadcasters with public service obligations (see discussion in section III.B of this report).

It should be acknowledged that the legacy issues involved with changing existing broadcasting authorisations would be formidable both for legal and economic reasons. There may be little legal basis for revoking or changing existing licences in a Member State, and changing licences that have already been awarded, in some cases recently for digital terrestrial television, may send the wrong signals to market players and create considerable regulatory uncertainty. We also recognise that this may not be a good time to implement such a policy change, as the EU is in the very early phase of transition to digital terrestrial networks. This means that many investment decisions have been taken and business strategies established based on the current framework, and would be particularly disruptive

⁶⁶ Furthermore, this may introduce complexities at the level of multiplex management, as transmission bandwidth can be allocated dynamically to programmes broadcast over one multiplex.

⁶⁷ Nicholas Negroponte, the famous MIT professor, made this prediction many years ago.

to introduce such a change on the eve of digital switchover. On the other hand, it is essential that such changes be considered now, not least because the current system of authorisations for digital terrestrial television are likely to be carried over in many Member States to authorisations for mobile television (see Table 6 in the Annex to this report).

Considering opposing views to breaking the link between broadcasting authorisations and frequency assignment, it may be argued that in some countries the combination of non-terrestrial distribution platforms (such as cable TV, satellite and IP TV) do not (yet?) provide a complete substitute to terrestrial distribution of broadcast content:

- In many countries, the basic infrastructure for terrestrial television, including both networks, transmission antennas and reception aerials is significant. Making the necessary upgrade to digital transmission may be cheaper for households and the economy as a whole than requiring cable or satellite distribution for much of the population.
- A significant proportion of the population (around 50% in the UK, for example) do not want to pay for any TV (beyond the licence fee) and have little interest in multi-channel TV. Considering how different distribution platforms are funded, with a terrestrial platform funded by the television stations and other platforms funded by directly by viewers, they would favour free-to-air terrestrial television regardless of the relative cost-efficiencies of the alternatives.
- Even in households which subscribe to a non-terrestrial platform such as cable TV or satellite TV, there may be demand for terrestrial broadcasting for second sets and for use when travelling.
- National free-to-air coverage is also sometimes claimed to play a role in national security, for example if government authorities need to reach the population to transmit emergency messages. However, we observe technology today permits other and more efficient means. Furthermore, the small number of critical points in a network, such as major antenna sites, may also weaken the security argument.

A counter argument to many of these concerns is that if they are correct then the terrestrial network may be subject to a must-carry requirement because it is used by a significant proportion of the population. This should assure that the public interest objectives are met even if there is no direct linkage between the broadcasting authorisation and the frequency and/or the multiplex license.

The question of how coverage obligations of public service broadcasters can best be met should be subject to periodic reviews. In particular, it should be recognised that the cost of coverage of 100% of population through a digital terrestrial network has sharply increasing costs per viewer as one approaches full coverage. It may well be that it is more cost effective to achieve 100% coverage through a combination of two or more platforms.⁶⁸ In addition, the take-up of alternative distribution platforms may at some point raise questions about the logic of maintaining coverage obligations and a privileged position in terms of public subsidies for digital terrestrial networks if they are no longer commonly used by television viewers. For example, in Belgium cable TV services provide distribution services to 99% of the population.

⁶⁸ See the analysis of the costs of transmission and coverage for different digital television platforms in Analysis, Public policy treatment of digital terrestrial television (DTT) in communications markets, August 2005.

7. Concluding remarks

The broadcasting regulators in most Member States are responsible for regulating the distribution of television programmes on the national (and sometimes regional) level. This responsibility is executed in regulations mainly through:

- must-carry regulations, as discussed above and in section [IV.C.](#) of this report; and
- coverage obligations setting out platform specific coverage requirements for publicly funded public service operators and included, directly or indirectly, in broadcasting authorisations where a certain level of coverage is required in return for the radio frequency as a limited resource.

The transfer of supervision of networks used for broadcasting into electronic communications regulation has not removed the sense of responsibility for these distribution issues from the broadcasting regulators. It is not so that the broadcasting regulators are only concerned about content; they are equally concerned with, and take responsibility for, the availability of this content for all potential viewers.

This sense of responsibility underlies many of the problems of overlapping regulations reported in this chapter. It will be difficult to agree on a well defined borderline between the two sets of regulations without tackling these distribution issues, but this discussion needs to take account of the:

- interest of broadcasting regulators in ensuring general interest objectives; and
- access by viewers to publicly funded radio and television programmes across the nation without any additional costs, once a license fee has been paid.

8. Recommendations

Recommendation 3

The Framework Directive should deal with the issue of distribution and how it relates to the electronic communications framework. It should clarify which of its provisions relate to the distribution function (must-carry and associated facilities).

This has particular consequences for:

- **Authorisation Directive:** There should be further guidance for the interpretation of Article 6.1 and Recital 20 in the Authorisation Directive as to when additional obligations (under broadcasting or media regulations) can be justified and define the case(s) where such obligations are not justified.

This guidance should in particular define a list of distribution activities that can be carried out under the electronic communications framework without the involvement of broadcasting regulations and/or a broadcasting regulator.

- **Access Directive:** There should be clarification that access regulations applicable to distribution functions covered by the electronic communications framework create access and interconnection rights for broadcasters.

Recommendation 4

Establish a long-term objective to break linkages between broadcasting (content) authorisations and frequency and/or multiplex authorisations for commercial broadcasters.

NB. See also Recommendation 7, which deals with another aspect of such linkages.

The Commission should provide guidance for how this objective can be achieved. Such guidance may address the following issues:

- new licenses for commercial broadcasters should not include, directly or indirectly, a frequency license and/or the right to a multiplex slot.
- limitations on the validity of frequency licenses for broadcasting purposes to a maximum of 10 years so that the situation may be reviewed at that time;
- when a frequency license expires, it should not be automatically renewed. Instead, it should be considered whether this frequency should be part of the WAPECS bands (see section III.B of this report); and
- periodic reviews of how coverage obligations for broadcasters with public service obligations can best be achieved, given the national-level development of television delivery platforms.

Recommendation 5

The Commission should encourage greater coordination between broadcasting/media regulators and electronic communications regulators to discuss authorisation issues, as well as other issues where regulations overlap.

B. Radio frequencies for broadcasting

This section discusses:

- the regulatory context for spectrum used for broadcasting;
- frequency assignment for broadcasting;
- frequency allocation for broadcasting versus other uses;
- fees charged for spectrum used for broadcasting;
- competition issues; and
- recommendations for Commission action.

a) The regulatory context

The 2003 regulatory framework recognises the potential for regulating access to radio frequencies as a scarce resource and the particular use of radio frequencies for broadcasting purposes, as described in the table below.

State measure	Relevant provisions of the Directives
Assignment of radio frequencies	<p>The Framework Directive (Article 9(1)) Directive requires that the assignment of radio frequencies is based on objective, transparent, non-discriminatory and proportionate criteria</p> <ul style="list-style-type: none"> • The Authorisation Directive Article 5(2) qualifies "without prejudice to specific criteria and procedures adopted by Member States to grant rights of use of radio frequencies to providers of radio or television broadcast content services with a view to pursuing general interest objectives"
Promote efficient use and management of radio frequencies	<p>The Framework Directive (Article 1) requires NRAs to promote the efficient use and management of radio frequencies</p> <ul style="list-style-type: none"> • This is echoed in the Radio Spectrum Decision which refers to the dual aims of optimising the use of radio spectrum and avoiding harmful interference
Rights of use to radio frequencies	<ul style="list-style-type: none"> • Rights of use of radio frequencies may be granted directly to broadcasters, even though they may not operate an Electronic Communications Network Service (ECNS). In this case, the broadcaster would be responsible for compliance with the terms of a radio frequency licence • The Authorisation Directive (Annex B) specifies the conditions that may be attached to rights of use of radio frequencies and include "the exclusive use of a frequency for the transmission of specific content or specific audio visual service"
Charges for use of radio frequencies	<p>The Authorisation Directive sets out the basis for charges for use of radio frequencies including administrative charges, which cover:</p> <ul style="list-style-type: none"> • administrative costs incurred in the management, control and enforcement of rights of spectrum use (Article 12); and • fees which reflect the need to ensure optimal use of frequencies (Article 13)

State measure	Relevant provisions of the Directives
General interest objectives	The Radio Spectrum Decision (Article 1) refers to the need for policy with regard to the use of radio spectrum that takes into consideration inter alia public interest, freedom of expression and cultural aspects of Community policies and that the Decision is without prejudice to Community and national measures aimed at pursuing general interest objectives, in particular relating to content regulation and audio-visual policy.

Table 4: Key spectrum-related measures of EU 2003 regulatory framework

The European Commission has also recently made a number of significant moves towards the development of a policy to promote more flexible use of spectrum and greater use of market approaches to spectrum management. The main elements of this policy⁶⁹ are:

- achieving a balance between all spectrum models including spectrum markets, licence exempt use (commons model) and the administrative model taking account of economic and general interest objectives;
- in the period up to 2010 to put into practice at EU level the right to trade individual rights to use frequencies in a selection of spectrum bands for terrestrial electronic communications services;
- in the period up to 2010 to put into practice at EU level the right to use frequencies in a selection of spectrum bands in a flexible manner which as far as possible is service and technology neutral;
- achieving analogue to digital TV switchover by 2012;⁷⁰
- identification of a number of frequency bands for the introduction of flexible tradable rights of use on a harmonised basis – these are referred to as bands for Wireless Access Policy for Electronic Communications Services (WAPECS).⁷¹

The Communication on the Review of the EU Regulatory Framework concludes that an approach to spectrum management based on these policies while retaining the existing institutional arrangements is to be preferred. It is suggested that selected bands would be available for use under general authorisations and that comitology decisions could designate certain bands as tradable in all Member States and in those cases market mechanisms would replace administrative decision making for assignment of spectrum. These bands are likely to include those identified in the Commission's mandate to CEPT for the development of least restrictive technical conditions in the context of WAPECS.⁷²

The objectives of the EC's spectrum policy are to promote the i2010 strategy for enabling an open and competitive digital economy, to support the renewed strategy for growth and jobs and to allow operators to exploit the internal market more effectively. Key tenets of the policy are that economic performance of industrialised countries is largely explained by ICT

⁶⁹ European Commission, Communication on a forward-looking radio spectrum policy for the European Union: second annual report, OJ C 49, February 28, 2006; and European Commission, COM(2005) 400, A market based approach to spectrum management in the European Union, September 2005.

⁷⁰ European Commission, Communication on switchover.

⁷¹ Radio Spectrum Policy Group document "Public consultation on Wireless Access Policy for Electronic Communications Services" (WAPECS), November 2005, RSPG05-102 final; See also European Commission DGINFSO/B4, Mandate to CEPT to Develop least Restrictive technical Conditions for Frequency Bands addressed in the Context of WAPECS, 5 July 2006.

⁷² These bands are 470-862 MHz (i.e. UHF TV bands); 880-915/825-960 MHz (900 MHz mobile band); 1710-1785/1805-1880MHz (1800 MHz mobile band); 1900-1980/2010-2025/2110-2170 MHz (2GHz mobile band); 2500-2690 MHz; 3.4-3.8 GHz.

investment, research and use, that effective use of radio spectrum can make an important contribution to economic performance and that a more flexible policy framework is required to make best use of the radio spectrum resource in a converged digital world.

The issue we need to consider is whether in relation to radio frequency policy general interest objectives for broadcasting are met in a sufficiently transparent, objective and proportionate way. Such an assessment needs to be forward looking to take account of the potential for alternative uses for the spectrum currently used by broadcasting and the fact that terrestrial broadcasting will increasingly compete with other transmission platforms including cable, satellite, mobile TV and IP TV.

2. Frequency assignment procedures

a) Current situation

The approach to frequency assignment for digital broadcasting services is very different from that used in the Member States for telecommunications services. Where there are competing demands for spectrum Member States generally assign radio frequencies for telecommunications services through competitive processes and auctions are increasingly used rather than beauty contests (in part for transparency reasons). The right to use radio frequencies is generally separate from the authorisation to provide a communications service.

In contrast, radio frequencies for radio and TV services are generally assigned either by direct grant to public service broadcasters or through a competitive processes (beauty contest or auctions) for non-public service broadcasters.⁷³ The right to use the frequencies (frequency authorisation) tends to be granted together with the broadcasting authorisation, as discussed in the previous section of this report (section III.A; see also the Annex to this report). For example, digital TV multiplex frequencies have been assigned together with content authorisations, either directly in the case of broadcasters with public service obligations or by beauty contest for other broadcasters.⁷⁴

The table below shows to which party frequencies for digital (or analogue, if digital transmission has not yet begun) broadcasting are assigned in the Member States.

Member State	Broadcasting frequencies assigned to...		
	Broadcaster	Network operator	Multiplex operator
AT			✓
BE			✓
CY	✓		
CZ			✓
DK			✓

⁷³ AM and FM Radio licences have variously been auctioned in Denmark, the Netherlands and the UK. Commercial TV licences were assigned via a mixed auction/beauty contest in the UK.

⁷⁴ This difference in approach for public and private broadcasters is of concern to some commercial broadcasters. AER submission on the call for on the forthcoming review of the EU regulatory framework for electronic communications and services including review of the Recommendation on relevant markets, January 2006; and Association for Commercial Television in Europe, Safeguarding the future of the European audiovisual market: A white paper on the financing and regulation of publicly funded broadcasters, March 2004.

Member State	Broadcasting frequencies assigned to...		
	Broadcaster	Network operator	Multiplex operator
EE		✓	
FI		✓	
FR	✓		✓
DE	✓	✓	
GR	✓		
HU	✓	✓	
IE	✓		
IT		✓	
LV		✓	
LT	✓	✓	
LU	✓	✓	✓
MT		✓	
NL			✓
PL			✓
PT	✓	✓	
SK	✓		
SI	✓		
ES	✓		
SE		✓	
UK	✓	✓	

Table 5: Assignment of broadcasting frequencies in the EU

In seven Member States (France, Germany, Hungary, Lithuania, Luxembourg, Portugal, and the UK), there is overlap between parties that can be assigned frequencies, for different reasons. Luxembourg, for example, allows any party to obtain broadcasting frequencies as it believes in a market-led approach (and there is no scarcity of available frequencies); Portugal similarly allows frequencies to be given to different parties. In France, Germany, Hungary, and the UK, there is close co-ordination between broadcasters, multiplex operators and/or network operators, with one party being given the actual frequency and the other party the right to use the frequency, sometimes in multiple authorisations. In some countries the frequencies assigned to a particular service/multiplex even appear in both the multiplex and radio frequency licences.

Ultimately, the responsibility for ensuring that use of the radio frequencies complies with technical requirements lies with the transmission operator. Best practice would imply frequencies to be assigned to the party that has the most control over transmission facilities and therefore over potential interference problems, that being the main point of having an individual right to use frequencies. Therefore, other things being equal, one would consider best practice to assign frequencies to either the network or multiplex operator. However, assigning the right to use spectrum to broadcasters and/or transmission operators is permitted under the Authorisation Directive and does not appear to cause problems other than the lack of transparency in assignment. As long as co-ordination is achieved through contracts with the multiplex operator the goal of interference avoidance can be achieved.

Such contracts must be carefully designed in order to avoid creating regulatory barriers to entry. If a broadcaster is vertically integrated into either network or multiplex operation, it is true that there will be little practical effect of separating overlapping frequency assignments, depending on how many market players there are at each layer of the value chain. Vertically integrated broadcasters who provide both content and operate their own transmission and/or distribution facilities is common in a number of Member States. A forward-looking approach however would suggest that minimising such overlaps could create future opportunities to entry in broadcasting transmission, distribution and/or content.

Frequency licences for broadcasting are technology- and service-specific. However, as mentioned above, the Commission is promoting the use of market based spectrum management including the auction of spectrum on a liberalised (i.e. technology and service neutral) basis. This approach is being adopted in certain bands by some Member States, for example the UK, Ireland, and the Netherlands. So far this approach has been applied to bands that could be used to provide a range of wireless communications services, though in the US frequencies within the traditional UHF broadcasting band have been auctioned on a technology/service-neutral basis and the proposed WAPECs bands include the UHF band currently allocated to TV services.⁷⁵

The differences in approach to assigning frequencies for broadcasting versus telecommunications services largely reflects the desire of governments to ensure the provision of particular broadcasting services that meet general interest objectives and more generally the provision of broadcasting via the terrestrial platform for reasons of universality and affordability (as discussed in the previous section of this report [IV.A](#)). Taking the example of digital TV, assignment policies reflect:

- the need to simulcast popular analogue TV services (i.e. reserve multiplex capacity/radio frequencies for these services), if DTT adoption is to be stimulated and switchover is to be politically feasible;
- the fact that a digital platform needs to offer a wider range of services (free to air and pay TV) than that offered by analogue TV (i.e. more than the traditional PSB channels) for consumers to have an incentive to buy set top boxes⁷⁶ ;
- the political desire in many Member States to see the continued existence of the terrestrial TV platform for at least the next 10 years. This means not only the provision of a wide range of services over DTT but also in future could mean the provision of additional spectrum to support high definition television (HD TV) transmissions.⁷⁷ High definition transmissions over satellite and cable systems have only just started in Europe but it is possible that high definition transmissions will in time become the norm, rather than a complete change as occurred when colour TV replaced black and white, and that the terrestrial platform will need to offer at least some high definition content to remain competitive with cable, satellite and IP TV.

⁷⁵ This band is included in the mandate to CEPT from the EC to develop least restrictive technical conditions. DG INFSO/B4, 5 July 2006. The RSPG opinion on WAPECs also included frequencies allocated to broadcasting at VHF and L band.

⁷⁶ Factors driving DTT take-up are discussed in Public policy treatment of digital terrestrial television (DTT) in communications markets, Analysys, August 2005.

⁷⁷ High definition transmission requires about three times the amount of multiplex capacity as standard definition transmission.

b) Suitability for the future

In this section we discuss whether the use of spectrum used for broadcasting can be made more flexible while still meeting general interest obligations.

Flexibility in spectrum use

It is often thought that spectrum trading and liberalisation are instruments that cannot be applied to spectrum used for broadcasting purposes, because of the need to meet quality of service and coverage obligations and requirements to deliver particular services. While such obligations may limit the flexibility with which the spectrum can be used and the ability to trade spectrum, the constraints are not always absolute in a digital environment. The figure below shows the example of local DAB services where one or two centrally located, omnidirectional transmitters export more interference than a larger number of directional transmitters located near the edge of the coverage area, i.e. less spectrum is used with a greater number of low power transmitters. In this instance coverage obligations can be met using different infrastructure configurations and there would seem to be merit in giving the operator discretion to choose the configuration that best meets his business requirements given the coverage obligation and interference constraints.

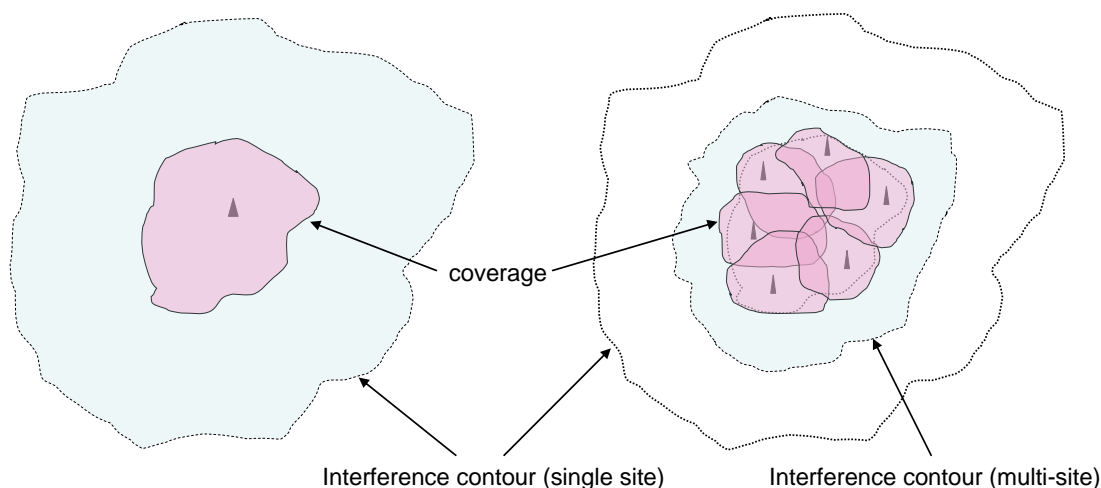


Figure 7: Coverage and interference contour for a single site and multi-site DAB service

In addition, there may be scope to engage in spectrum trading or increased possibility for licence transfers in the broadcast sector. For example, in the UK an entire multiplex and the associated rights to frequencies was transferred while still meeting all relevant licence obligations.⁷⁸

Frequency allocation

Broadcasting services operate in frequency bands that are allocated for broadcasting (and possibly other) purposes. These allocations are decided at an international level in the ITU and CEPT, though countries may deviate from these allocations through registering

⁷⁸ In August 2005, UK broadcaster with public service obligations ITV, which already operated one multiplex, acquired SDN, the operator of another multiplex. Office of Fair Trading, Completed acquisition by ITV plc of SDN Limited, August 24, 2005.

footnotes in the Radio Regulations or accepting that services that do not conform with the allocations must operate on a no-interference, no-protection basis. As can be seen from the figure⁷⁹ below most countries in Europe have some non-broadcast use in the 470-862 MHz band, though broadcasting is clearly the dominant use.

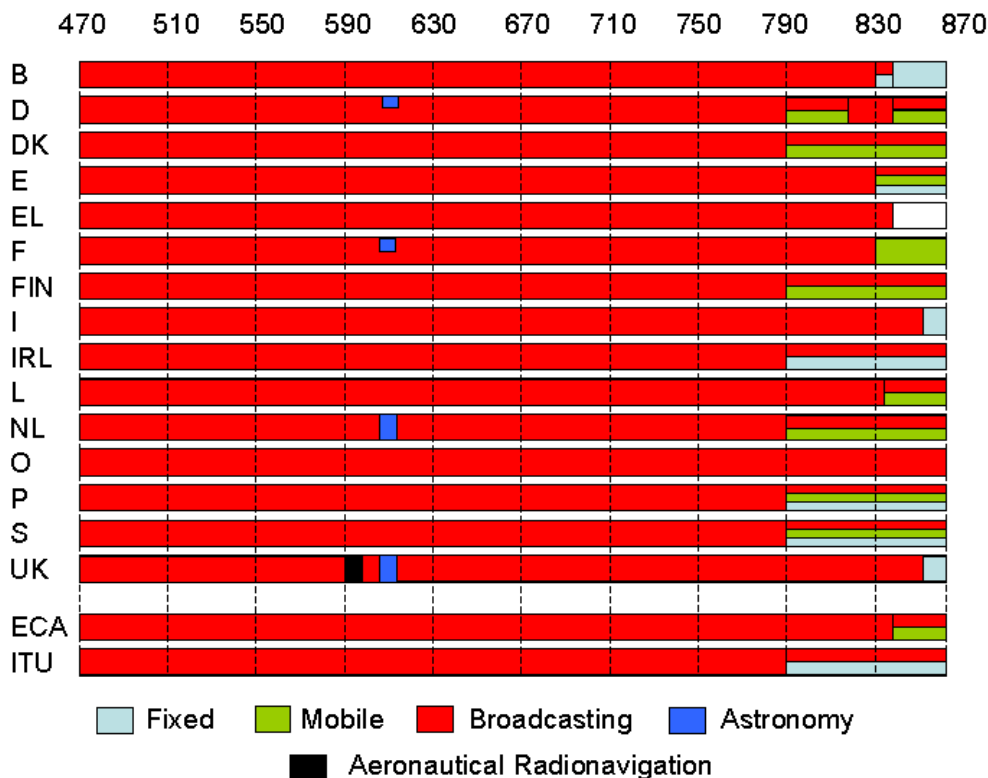


Figure 8 - Use of 470-862 MHz band in Europe

The future use of bands currently allocated to broadcasting is a live issue, as technology change increasingly allows communications services other than broadcasting to use these bands. For example, technologies for mobile TV have been developed that can operate over VHF, UHF and L band frequencies and there are proposals for the use of UHF bands for broadband mobile services.⁸⁰ There is clearly here a potential conflict between the achievement of general interest objectives and other objectives such as those for rural delivery of mobile broadband services and mobile service delivery in general.

Also, in view of the European Commission’s initiative to move towards a more flexible spectrum management policy, with a set of frequencies available for spectrum trading and spectrum liberalisation (for example for WAPECs), the question also has to be debated whether part of the digital dividend should be made available in this way. In principle there seems little reason why radio and TV broadcasting services which do not have any general interest programming or other obligations should not compete for spectrum on the same

⁷⁹ Aegis/Indepen/IDATE, Study on spectrum management in the field of broadcasting: Implications of digital switchover for spectrum management, 2004.

⁸⁰ The UMTS forum has indicated interest in spectrum below 600 MHz for UMTS services in sparsely populated areas. This issue will be discussed at WRC07. In addition, the WiMax forum has promoted use of UHF band in rural areas. “Regulatory position and goals of the WiMAX Forum”, August 2004.

basis as other commercial communications services. It has been argued that a critical mass of services may be required to support a particular platform, such as the digital terrestrial platform. On the other hand it may be questioned why the digital terrestrial platform should benefit from support and subsidies in order to be successful relative to alternative platforms.

NRAs are expected to manage the spectrum to support its optimal use where use is judged to be optimal if it maximises economic and social welfare⁸¹. In this regard the i2010 initiative refers to the role of analogue switch-off as assisting the development of new high speed wireless applications and the importance of not unduly constraining the use of these bands for new innovative services. The issues for this study concern the objectivity, transparency and proportionality of regulatory intervention in determining the amounts of spectrum allocated to traditional broadcasting as opposed to other uses.

The information we have collected shows that Member States are at very different stages in the switchover process but most have not yet determined whether switchover will release spectrum for new services (the so-called digital dividend). This depends on policies in respect of high definition television and the provision of additional television services on the terrestrial platform. However, based on the information we have collected so far, the prospect of the release of radio frequencies in the 470-862 MHz range on a pan-European basis for services other than more DTT (SD or HD) is uncertain.⁸²

In respect of the information used to make decisions over potential future uses of the UHF spectrum (post switchover), we note that some countries have published analysis of the costs and benefits of different options (the UK and Sweden), while the majority have not. There is a need for greater transparency in this area of policy making. We note that some Member States have legal structures that could work against using the digital dividend for other purposes than broadcasting. For example, according to the German constitutional system, broadcasting is within the responsibility of the federal states, whereas telecommunication is assigned to the federation⁸³. If federal states declare a demand to use a certain part of the frequency spectrum for broadcasting purposes, BNetzA must follow this demand. Using the digital dividend for telecommunications applications would therefore require the federal states to abstain from declaring a demand.

A transparent approach would need to involve consideration of options for regulatory intervention (i.e. reserving frequencies for particular uses) and the costs and benefits associated with such reservations taking account of the potential to use substitute frequency bands or platforms. We note in this regard that some broad-brush estimates of the social benefits of reallocating 200 MHz of spectrum in the TV band for 12 EU Member States have been reported by academics.⁸⁴ These estimates suggest that the gains could fall between \$500-2100 per person, depending on the country under consideration.

⁸¹ The Radio Spectrum Decision refers to the need to take account of economic, political, cultural, health and social considerations (recital 8)

⁸² Radio Spectrum Policy Group (RSPG) Draft Opinion on EU spectrum policy implications of the digital dividend, October 30, 2006. This is in contrast to the situation in both Japan and the US where switchover dates have been announced (24 July 2011 and 17 February 2009 respectively) and there are concrete plans for the release of over 100 MHz spectrum for alternative uses. In both cases some spectrum will be reserved for mobile public safety services and it is expected that other spectrum will be assigned competitively to mobile broadband services.

⁸³ German Constitutional Court, Constitutional Court, 1961, BVerfGE 12, 205 (see table 3 in the Annex to this report).

⁸⁴ T Hazlett, J Mueller and R Munoz, The social value of the TV band spectrum in European countries, info (Vol 8, No 2), pp 62-73.

There is a European as well as a national dimension to be considered in respect of decisions concerning the allocated use of the spectrum. For example, if mobile services are deployed in the UHF band then there are clear advantages to users if they can access these services as they cross national boundaries. This requires such services to be made available on a pan-European basis, though if multi-band terminals are available at a reasonable cost (e.g. covering traditional mobile bands as well as those at UHF for example) this reduces the need for European harmonisation. For broadcast mobile services, different issues arise as the issue for the consumer is whether they can access (or want to access) the same content they access at home as they roam around Europe. Language and cultural differences mean that pan-European mobile broadcast television content⁸⁵ or full mobile TV roaming where a viewer can access the same content they receive in their home Member State in any other Member State is unlikely to emerge, regardless of the degree of frequency harmonisation. Harmonisation however offers manufacturers a larger potential market and so helps reduce equipment costs.

3. Frequency fees

The level and basis for fees for radio frequencies used by broadcasters varies widely across Member States. Few Member States charge fees that bear any relationship to the value of the spectrum, as opposed to the costs incurred by the state for managing it. In some cases broadcasters pay substantial fees for their broadcasting licences but this generally does not reflect the scarcity value of the spectrum. Exceptions include:

- the Netherlands, where an auction procedure for a series of FM radio licences was concluded in 2003. In total the State collected over 300M € in auction revenues. These revenues are paid in equal annual instalments over the life of the licences and are around 37,5M € per annum.
- In Spain, annual fees for rights to broadcasting frequencies include charges for the use of the spectrum for broadcasters with and without public service obligations (broadcasters with public service obligations are charged as they receive revenues for advertising, but ordinarily they would be exempt if they did not receive compensation, either directly or indirectly, for their public service activities). The components of the charge for spectrum use include the existence of “non-commercial” activities, the income deriving from the service provided in the frequencies, the social interest of the band, market demand, and population density.⁸⁶

Furthermore, some broadcasters pay nothing at all for use of radio frequencies while others pay substantial amounts, as shown in the table below.

⁸⁵ Some popular services may develop and be made available in localised language versions; the development of mobile-TV specific content is still in a nascent stage.

⁸⁶ Spain is considering changing the method of charging for spectrum, possibly in a consultation in January 2007.

Member State	Use or value of spectrum charged to...		Administrative fees charged to...	
	Broadcasters with public service obligations	Commercial broadcasters	Broadcasters with public service obligations	Commercial broadcasters
AT	No	No	Yes	Yes
BE	No information available			
CY	No	No	No	Yes
CZ	No	No	Yes	Yes
DK	No	No	Yes	Yes
EE	No	No	Yes	Yes
FI	Yes	Yes	Yes	Yes
FR	No	No	No	No
DE	Yes	Yes	Yes	Yes
GR	No	No	No information available	Yes
HU	Yes	Yes	Yes	Yes
IE	No	No	Yes	Yes
IT	No	No	Yes	Yes
LV	No	No	No	No
LT	No	No	Yes	Yes
LU	No	No	No	Yes
MT	No	Yes	No	Yes
NL	No	Yes	Yes	Yes
PL	No	No	No information available	Yes
PT	Yes	Yes	No	No
SK	No	No	No	No
SI	No	No	Yes	Yes
ES	Yes	Yes	No	No
SE	No	No	Yes	Yes
UK	Some PSBs yes, some no	No	Yes	Yes

Table 6: Different categories of spectrum fees charged to broadcasters in the EU

As broadcasting markets become more competitive, the advantages given to some broadcasters and not others in respect of frequency fees will increasingly be challenged in terms of whether the differences in fees charged are justified, proportionate and/or whether they meet state aid tests (see next section on competition issues). The European Commission has already launched infringement proceedings against Italy to investigate national legislation giving analogue broadcasters special rights in regard to access to frequencies may contravene the EU 2003 regulatory framework.⁸⁷

⁸⁷ European Commission, Commission requests Italy to comply with EU rules on electronic communications, Press release IP/06/1019, July 19, 2006. According to the Commission's press release, the following provisions in the Italian legislation give special rights to the existing analogue broadcasting transmission operators, and may infringe articles 2 and 4 of the Competition Directive: Article 2bis of Law 66/01, together with article 25 of Law 112/04, extending broadcasting authorisations to analogue operators without a licence until the analogue switch-off; Article 23 of Law 112/04 providing that only existing analogue broadcasters can launch trials of digital terrestrial transmission, limiting frequency trading to digital transmission and allowing operators to maintain control of their

Broadcasters' use of spectrum causes spectrum management costs to be incurred (e.g. planning, co-ordination and interference investigation costs). As with other uses of the spectrum, such as electronic communications services and networks, there is a good case on economic efficiency grounds for users paying fees to cover these costs – as a general rule if users cannot afford to pay these costs then there would be greater economic benefit if the spectrum was used by another application or service. On the other hand, public service broadcasters have argued that as the licence fee is raised from the general public, it is inappropriate to increase the fees on broadcasters to pay for a public body, and the regulatory authority(ies) should be directly funded.

Where there is excess demand for radio frequencies as in the case of UHF TV spectrum and for FM frequencies in the major cities, there is also a case for broadcasters to face the opportunity costs associated with their spectrum use. This is particular the case where there are potential competing uses, as in the UHF bands (e.g. mobile TV or HDTV), for otherwise choices between these uses risk being distorted. Broadcasting is often considered to differ from other electronic communication services in that the service is regarded as providing benefits that are external to the supplier (e.g. promoting cultural and educational objectives) and it is sometimes argued that this justifies free or low cost access to the spectrum. However, there is a good economic argument for focusing any policy intervention (e.g. subsidies) on outputs (i.e. programme content) rather than inputs (e.g. spectrum).⁸⁸

4. Competition issues

a) State aid and access to spectrum

Giving access to spectrum to broadcasters without the state receiving proper payment for the value of the spectrum could be considered unlawful state aid in certain circumstances. This could be so if the state funds payments for transmission by broadcasters, or foregoes revenue due to the state by directly granting broadcasters access to spectrum or multiplex capacity. In a recent case related to digital switchover in Germany, the European Commission concluded that allocating commercial broadcasters digital multiplex capacity and defraying terrestrial transmission costs violated state aid rules:

analogue frequencies even after the analogue switch-off; and Article 23(5) of Law 112/04 allowing analogue operators to convert their analogue licences (and thus networks) into digital network licences until the analogue switch-off. In addition, the Commission considers that these same laws may also infringe article 9 of the Framework Directive and articles 3, 5 and 7 of the Authorisation Directive if they require undertakings to obtain an individual licence rather than a general authorisation for the operation of a broadcast transmission network; prevent new entrants from installing and operating digital transmission networks; prevent new entrants from acquiring or using frequencies for digital transmissions; allow existing analogue operators to acquire more frequencies for digital trials than they need for simulcasting their programmes in analogue and digital; and fail to require operators to return the analogue frequencies that will be freed after the analogue switch-off.

⁸⁸ "...in the case of positive externalities (benefits) arising from the delivery of outputs, it is generally better to intervene in the market for the delivery of such outputs (for example by subsidising the production of such goods) than to intervene in input markets (e.g. subsidising the price of an input) – better in the sense that the result is more likely to be economically efficient. The logic behind this is that the production of most goods requires a number of different inputs – e.g. in the case of broadcasting it requires land, buildings, electronic equipment, electricity, staff and presenters, as well as spectrum. Discounting the price of one of these inputs will not by itself ensure that the socially desirable outcome is achieved – e.g. if the price of spectrum is discounted that may merely allow broadcasters to deliver more commercial programming, not encourage them to deliver socially desirable programming. At the same time discounting the price of one input will almost certainly lead to inefficient decisions being made about the use of other inputs. Since producing the socially desirable level of broadcasting involves several inputs, the most efficient way of achieving this output would be to apply discounts to all inputs in relation to their marginal impact on output. If only spectrum is discounted a broadcaster is likely to use more spectrum than would be efficient, and invest too little in other inputs to achieve the desired level of output. Moreover, discounting the price of an input to one class of user may also create competitive distortions in downstream markets if those users compete with others that are not offered the same discount (and may thereby give rise to inefficient results). It soon becomes apparent that a potentially large number of input subsidies would need to be calculated in order to sustain production of the socially optimal broadcasting output without creating additional distortions in the economy." Ofcom, Future pricing of spectrum used for terrestrial broadcasting, July 27, 2006.

by reducing broadcasters' transmission costs, the aid introduces a distortion in the process of spectrum allocation: the objective of achieving a more efficient use of frequencies implies that those frequencies be allocated in a way that reflects their economic value, without decisions by market operators being affected by the granting of aid...

Even if account is taken of the fact that the amount of aid is relatively low in absolute terms and that the distortion of competition at broadcasting level is rather limited, the aid amounts, in case of some channels, to close to half of the transmission costs and may have influenced the choice of broadcasters in favour of the DVB-T platform, thereby causing a more important distortion of competition at network level.⁸⁹

The situation in Germany concerned commercial broadcasters. Giving spectrum to broadcasters with public service obligations may be more difficult to evaluate, if as is usually the case the broadcaster receives spectrum in exchange for fulfilling its service of general economic interest, that is, for providing public service broadcasting.

However, even if the Member State giving a public service broadcaster access to spectrum constitutes state aid under article 87(1) of the Treaty, it may receive an exemption from the Commission under certain circumstances.⁹⁰ In particular, a recent Commission Decision introduces thresholds for exempting aid in exchange for a service of general economic interest clearly entrusted and properly costed.⁹¹ The 2005 Decision gives a block exemption to aid amounts less than 30 million Euro per year to an undertaking with less than 100 million Euro turnover in the two years preceding the assignment of a general interest obligation. If the aid falls under this threshold, the Member State does not even have to notify it to the Commission to be considered for exemption.

Another important consideration in this regard is the proportionality of the measure. According to the Commission:

Proportionality under Article 86(2) implies that the means used to fulfil the general interest mission shall not create unnecessary distortions of trade. Specifically, it has to be ensured that any restrictions to the rules of the EC Treaty, and in particular, restrictions of competition and limitations of the freedoms of the internal market do not exceed what is necessary to guarantee effective fulfilment of the mission. The performance of the service of general economic interest must be ensured and the

⁸⁹ European Commission, Decision on the state aid which the Federal Republic of Germany has implemented for the introduction of digital terrestrial television (DVB-T) in Berlin Brandenburg, OJ L 200, July 22, 2006. The case has been appealed to the Court of First Instance. See Case T-8/06 – FAB Fernsehen aus Berlin v. Commission and Case T-21/06 – Germany v. Commission, and Case T-24/06 – Medienanstalt Berlin-Brandenburg v. Commission. The Commission has opened a similar investigation into state aid granted for switchover in Bavaria and North Rhine-Westphalia. See Commission press release ip.06/1024, July 20, 2006.

⁹⁰ Briefly, a service of general economic interest (SGEI) is mentioned in the Treaty but not formally defined. According to the Commission an SGEI “refers to services of an economic nature which the Member States or the Community subject to specific public service obligations by virtue of a general interest criterion.” A “service of general interest” is not defined in the Treaty but may refer to both market and non-market services. The freedom to provide services, the right of establishment, and the competition rules of the Treaty apply to SGEIs and not to services of general interest. European Commission, Green paper on services of general interest, May 21, 2003. Public service broadcasting is an SGEI; however, not all broadcasting may be classified as an SGEI. Communication on the application of state aid rules to public service broadcasting, 2001. See also the discussion in the next section of the report on must-carry and state aid (section IV.C).

⁹¹ European Commission, Decision on the application of Article 86(2) of the Treaty to State aid in the form of public service compensation granted to certain undertakings entrusted with the operation of services of general economic interest, OJ L 312, November 29, 2005.

*entrusted undertakings must be able to carry the specific burden and the net extra costs of the particular task assigned to them.*⁹²

The Commission's practice concerning proportionality may be viewed as requiring the Member State to properly cost the public service obligation on the broadcaster in order for the aid to be exempted from state aid rules.⁹³ The Commission in a number of recent cases considering the legality of state aid for public service broadcasting has grappled with the issue of proportionality in state funding. For example, in the recent state aid case concerning the licences for digital switchover granted to broadcasters with public service obligations in the UK, the Commission found that the UK had evaluated the costs properly, as it assigned a market price to the value to the spectrum given to the broadcasters:

In return for the licences, Channel 3, Channel 5 and Public Teletext have to pay a licence fee called "additional payments". The additional payments have the purpose of ensuring that the State receives a fair value for providing broadcasters with a scarce resource of high economic value being the analogue frequency spectrum for broadcasting...

*The valuation methodology adopted by the UK authorities has the very purpose of calculating the market value of the DRLs by quantifying the costs and benefits of all rights and obligations related to the licences. Based on this calculation, the additional payments absorb the entire market value of the DRLs except for a reasonable return to the licensees on their use of capital. Any profit attributable to the licensed service over and above the reasonable return is recovered for the public purse. The valuation methodology thus aims at making sure that, at any time and for any licence holder, the costs and benefits of all rights and obligations are taken into account in the calculation of the additional payments and, hence, no advantage is granted to any licence holder.*⁹⁴

Following the same logic, the Member State would have to examine the cost of transmission and the cost of fulfilling the general interest objectives in addition to the other conditions being met (for example, a clearly specified public service remit), to ensure such aid was proportionate.

Regardless of whether spectrum assignments to broadcasters constitutes state aid, technological and market developments call into question the appropriate economic policy framework for ensuring that optimum social welfare is realised through free availability of spectrum. Spectrum scarcity and convergence between the services offered over broadcasting and telecommunications networks strongly suggests that the spectrum inputs to these services should be regulated on the same basis, otherwise there will be inefficiencies in market allocation of resources between the two services. This is particularly the case for encrypted transmission of commercial programmes, for which it is difficult to argue that there is a cultural added value that justifies free access to spectrum for terrestrial broadcasting. If this is not the case, competition and consumer choices between different services and technologies may be distorted.

⁹² European Commission, Communication on services of general interest in Europe, OJ C 17, January 19, 2001.

⁹³ European Commission, Press release, Public service broadcasting and state aid – frequently asked questions, MEMO/05/73, 2005.

⁹⁴ European Commission, State Aid Case NN/64/2005, Digital replacement licences, January 25, 2006.

These arguments have been accepted by the UK regulator Ofcom, which recently published proposals to apply spectrum pricing to broadcasting. Ofcom proposed that spectrum pricing would be applied:⁹⁵

- to existing and planned digital TV services from 2014 on but not to analogue TV;
- to existing and planned digital radio services from 2012 on; and
- to any new terrestrial broadcast service unless the spectrum is acquired at auction.

The situation in most countries is a long way from one in which broadcasters are charged the opportunity cost of their spectrum use. However, for reasons of transparency and to ensure decisions concerning spectrum use are proportionate, this opportunity cost should be taken into account when governments make decisions about the allocation of spectrum to broadcasting or other uses, for example it should be factored into the analysis of the costs and benefits of allocation decisions.

5. Recommendations

We have identified several ways in which frequency assignment and fees for spectrum used for broadcasting could be placed on a more transparent and objective basis that addresses issues of convergence and growing competition between different delivery platforms for audio-visual content.

Recommendation 6

The digital dividend should be subject to public debate and supported by a transparent and ideally quantified analysis of the different options.

The decision should be taken at a level where all interested parties are represented. Depending on national institutional arrangements, this means that the decision body may not be at the level of a national regulatory authority.⁹⁶

Recommendation 7

Assigning frequencies to broadcasters through a procedure that is not “open, transparent and non-discriminatory” as required by the Authorisation Directive should be curtailed.

As a long-term objective, broadcasters with public service obligations should be granted access to multiplex capacity rather than rights to use of radio frequencies. This of course requires that the public service remit is clearly defined.

NB. See also Recommendation 4, which recommends consideration of breaking the link between access to frequencies and content authorisations.

⁹⁵ Ofcom, Future pricing of spectrum used for terrestrial broadcasting: A consultation, July 27, 2006.

⁹⁶ Alternatively, depending upon the institutional arrangements of the Member State, the decision could be taken at the level of the national government or Parliament together with regulatory authorities, such as in Germany.

Recommendation 8

All broadcasters should pay for spectrum use that at a minimum recovers the costs of spectrum management.

Furthermore, consideration should be given to requiring broadcasters to pay market rates for spectrum and/or multiplex slots. In particular, there is little justification for commercial broadcasters without public service obligations to benefit from radio spectrum that is either free or priced at lower than its market value.

Consideration should be given to limiting the common practice of assigning frequencies to broadcasters with public service obligations without payment, or without proper analysis of the costs and benefits of the public service obligations against the value of the spectrum.

C. Must-carry and must-offer rules

This section discusses

- the purpose of must-carry rules;
- distortion of competition introduced by must-carry;
- the scope of must-carry with respect to platforms;
- the scope of must-carry with respect to content that must be carried;
- recommendations.

1. The purpose of must-carry rules

Must-carry (MC) regulations require certain television and radio broadcast content to be carried over certain networks. For many Member States, rules on must-carry pre-date the 2003⁹⁷ regulatory framework for electronic communications. They have been justified on media diversity and pluralism grounds and as a measure to ensure that certain programmes are available to the population at large. These are the general interest objectives most commonly expressed as the rationale for imposing must-carry obligations on a network, but the precise reasons may vary across Member States as the definition of general interest objectives is defined by the Member State (subsidiarity principle).

After broadcasting networks were brought into the regulatory framework for electronic communications, the national MC regulations should be compatible with the conditions set out in the Universal Service Directive (USD), which states in Article 31:

Member States may impose reasonable must-carry obligations, for the transmission of specified radio and television broadcast channels and services, on undertakings under their jurisdiction providing electronic communications networks used for the distribution of radio or television broadcasts to the public where a significant number of end-users of such networks use them as their principal means to receive radio and television broadcasts. Such broadcasts shall only be imposed where they are necessary to meet clearly defined general interest objectives and shall be proportionate and transparent. The obligations shall be subject to periodical review.

According to our research, all of the terms underlined above are susceptible to different interpretation in the Member States or are simply not implemented to date.⁹⁸ While the

⁹⁷ This framework is also often referred to as the 2002 framework. Since the previous framework was known as the 1998 framework, with reference to the year when the regulations became effective in Member States, CI prefers to refer to the 2003 framework rather than 2002, which was the year when the directives were adopted.

⁹⁸ The Commission recently opened infringement actions against Belgium, Finland, Germany, and the Netherlands regarding must-carry. European Commission, EU telecoms rules: 18 more infringement cases closed, 5 new ones opened, Press release IP/06/948, July 7, 2006 and Press release IP/06/1358, October 12, 2006. Each case was opened on the basis of complaints to the Commission that the must-carry rules were not transparent or proportionate to serve general interest objectives. As of November 2006, the Commission has received replies from all four Member States and is analysing them, and the Commission can decide whether to close the case or issue a reasoned opinion to the Member State, who must comply with the opinion within two months, or face possible action before the European Court of Justice. The Commission does not have a time limit for issuing an opinion or closing

Directive clearly sets out requirements for criteria for policies, transparency, review procedures and need for consultation, including consumer interests, these are not well reflected in the policies of Member States. This can be seen from the relevant data in the Annex of this report. The consequences of this disarray are further explored below.

The fact that there has been no meaningful review in Member States makes it difficult to assess how effective the must-carry rules have proved.

Before the USD was adopted the major concern expressed by the European institutions was that public service broadcasters might have difficulty in gaining access to satellite and other networks. To date the major burden of MC requirements has fallen on cable companies. While there are advantages to cable operators and others in carrying the mainstream popular channels listed under must-carry, problems arise when there are too many channels listed or when channels of too narrow appeal use up valuable capacity, as discussed in more detail below.

The absence of review has meant that, where there may have been some misunderstanding of what the USD required, this has deepened rather than been corrected. Furthermore, with technology changing to make a larger number of channels available to users, and because the must-carry channels, particularly the main public service broadcasting channels to the extent they are the most popular, would be carried voluntarily anyway without any obligation, there was an expectation that it would be phased out in time. The reverse has happened. Some MS have introduced must-carry rules for the first time as a result of the directive. Others have taken the mention of “technical neutrality” to mean that they must extend must-carry to all platforms. Now there is the prospect of extending MC to new networks, including mobile, which could be a disincentive to potential new or emerging market entrants.⁹⁹

Although most of the attention paid to MC focuses on the burdens on operators, we suggest that the consumer interest in must-carry should receive greater attention. As a minimum, given the increased choice for consumers in network operators and available channels, the need for a re-statement of the justification for MC rules is appropriate. The public interest, which should include citizens and consumers, is intended to be the foundation of must-carry rules, but there is little sign of public opinion having been tested. The provision of publicly funded channels free-to-air on all main networks could be regarded as serving the interests of consumers and citizens – although this can be taken to the undesirable extreme of defining the public interest as anything that public service broadcasters (or even some private broadcasters with must-carry status) offer. But as new technology is introduced, other considerations must be taken into account, namely as the consumer benefit from innovation and investment required by the i2010 initiatives. Furthermore, if a stricter system of reviewing must-carry rules is put in place, it should include public consultation, in order to give full effect to the provisions in Art 33 of the USD for taking account of the views of end-users.

2. Status of must-carry in the Member States

The table below provides a snapshot of the extent of must-carry provisions for television in the Member States. It shows that five Member States have not implemented must-carry for

the case, but generally decides within six months from opening the infringement action. The reasoned opinion or decision to close the case are not made public.

⁹⁹ On the other hand, we have heard in interviews that mobile operators and even some cable operators want to be able to benefit from must-carry as this secures access to the most important channels.

retransmission networks. Otherwise, where must-carry rules have been implemented, there are typically from three to seven national channels plus one or more regional channels. A few Member States have, however, must-carry requirements for many more channels. Data on television households are provided for comparison purposes, as a Member State with a larger television market, as represented by number of households, may be more likely to have a larger number of must-carry channels, although this is not always the case.

Member State	TV households 2005 (millions)	Must-carry channels - national	Must-carry channels – regional or local
AT	3.28	3	Yes
BE	4.34	Public broadcasters' channels from each of the 3 main communities, plus the Netherlands	Yes
CY	.25	-	-
CZ	4.10	All national channels	No
DK	2.48	3	Yes
EE	.61	3	Yes
FI	2.42	All national channels	No
FR	26.30	8	Yes
DE	34.83	<ul style="list-style-type: none"> • Analogue cable: differs by federal states. In some federal states 30+ channels • Digital cable: ~30% capacity 	Yes
GR	3.91	Political and social programming	No
HU	3.90	3	Yes
IE	1.40	4	Yes
IT	22.50	-	-
LV	.91	2	No
LT	1.37	4 – 7	Yes
LU	.18	-	-
MT	.13	2-7	No
NL	7.05	All public TV channels from the Netherlands and Belgium (Flanders region)	Yes
PL	13.70	National public service programming, including socio-religious programming	Yes
PT	5.10	4-7 (potential)	Yes
SK	1.84	All free-to-air channels	Yes
SI	.69	4	Yes
ES	14.43	6	Yes
SE	4.51	4-5	No
UK	24.8	5	No

Table 7: Must-carry obligations in the Member States

3. Competition issues

a) Must-carry as a state aid

We believe that the purpose of meeting general interest objections via must-carry rules for public service broadcasting must be weighed against the distortion of competition that it introduces. Even if must-carry would not be considered unlawful under EC state aid rules, competition is likely to be distorted in related markets due to the link between distribution and content, and this should be taken into account in reviewing must-carry provisions.

As the Commission stated in its Communication on the application of state aid rules to public service broadcasting:

*The Commission considers that the digital revolution does not call into question the need for audiovisual policy to identify relevant general interests and, where necessary, to protect them through the regulatory process. Technological developments, however, call for ongoing evaluation of the means and methods used, in order to ensure that they continue to be proportionate to the objectives to be achieved.*¹⁰⁰

Must-carry rules would not be considered as state aid unless they involved the transfer of state resources, such as through funding of broadcasters for content classified as must-carry. If the state does not fund must-carry, generally there are no state resources involved and hence no state aid. Even if the state funded must-carry by financing transmission on all platforms for the public service broadcaster, as long as the compensation to the broadcaster for transmission was in exchange for providing the service of general interest, and did not exceed the net cost of transmission, it would not be considered aid.¹⁰¹ In *TV Denmark*, the Commission found that must-carry was not state aid under Article 87, the general Treaty provision defining state aid, as “*the State is neither forgoing any income nor actively transferring funds to such operators [terrestrial platform]. It follows that the access rule does not confer any financial advantage from State resources to TV2 [the public service broadcaster].*”¹⁰²

In the Member States, there is no evidence that the state is involved either in paying the transmission operators directly for must-carry or forgoing revenue.¹⁰³ Article 31.2 of the Universal Service Directive requires that appropriate remuneration for consequences of must-carry to be determined by Member States in a proportionate and transparent manner. Not all Member States specify a remuneration system for must-carry, and in practice payments between network operators and broadcasters may go in either direction (see Table 16). In the majority of Member States, network operators carry public service broadcaster programming for free. In some Member States, copyright payments are made by the must-carry platforms. In other cases, networks can request payment from broadcasters for carriage or network maintenance. In several Member States broadcasters are prohibited

¹⁰⁰ European Commission, Communication on the application of state aid rules to public service broadcasting, OJ C 320, November 15, 2001. According to the State Aid Action Plan, the Communication is due to be reviewed in 2007-8.

¹⁰¹ S. Depypere, J. Broche and N. Tigchelaar, State aid and broadcasting: State of play, EC Competition Policy Newsletter, Spring 2004.

¹⁰² Commission Decision of 19 May 2004 on measures implemented by Denmark for TV2/Danmark, OC L 85, March 23, 2006.

¹⁰³ This is aside from the observation that given that the main reason for a must-carry regime is to ensure the widespread reception of channels with public service obligations, broadcasters should not expect nor receive payment for carriage of such services and viewers should not pay to receive such services.

from charging platforms for content; in others the matter is resolved by commercial negotiation.

In the context of digital switchover, the Commission has reviewed aid to the broadcasting sector for possible exemption for reasons of social or regional cohesion, and concluded that such aid, in the form of ensuring public service broadcasters access to distribution platforms, must be carefully assessed and targeted toward resolving specific market failures:

Member States may also consider measures to ensure that all geographical areas continue to have appropriate TV coverage by imposing obligations on and possibly providing compensation for network operators. Public authorities also fund the transmission costs of public service broadcasters to ensure their presence in different platforms. All these measures have to be assessed in their specific context. The methodology should be the usual one: firstly, to assess whether there are sufficient elements to indicate the presence of a social and regional cohesion issue; secondly, to assess whether state aid is the appropriate instrument to address the issue and, if so, whether the aid is limited to the minimum necessary.¹⁰⁴

Even in the Member States that have reviewed must-carry regulations, there was no analysis of the associated costs. Therefore, it appears that at present Member States have not carried out an analysis of the cost of must-carry in relation to the service of general interest provided by a broadcaster.

The relation of broadcasting provided in pursuit of public service obligations to state aid rules¹⁰⁵ is summarised in the following diagram.

¹⁰⁴ C. Schooser and S. Santamato, The Commission's state aid policy on the digital switchover, EC Competition Policy Newsletter, Spring 2006.

¹⁰⁵ The European Court of Justice in the *Altmark Trans* judgment of July 24, 2003 has indicated that compensation for costs resulting from public service obligation is not considered to be state aid in the meaning of Article 87(1) of the EC Treaty, provided that certain conditions, applicable to any type of SGEI including public service broadcasting, are fulfilled. The *Altmark* conditions are not likely to be met for state funding of public service broadcasting. In most cases, there are no objective, pre-established criteria for determining compensation to broadcasters for public service activities, and compensation is not determined on the basis of an analysis of the costs of a typical well-run undertaking. Furthermore, public service broadcasters have not been selected by way of a tender procedure. Therefore, state measures for public service broadcasting are generally considered for exemption under either Articles 87(2)-87(3) or 86(2) of the EU Treaty.

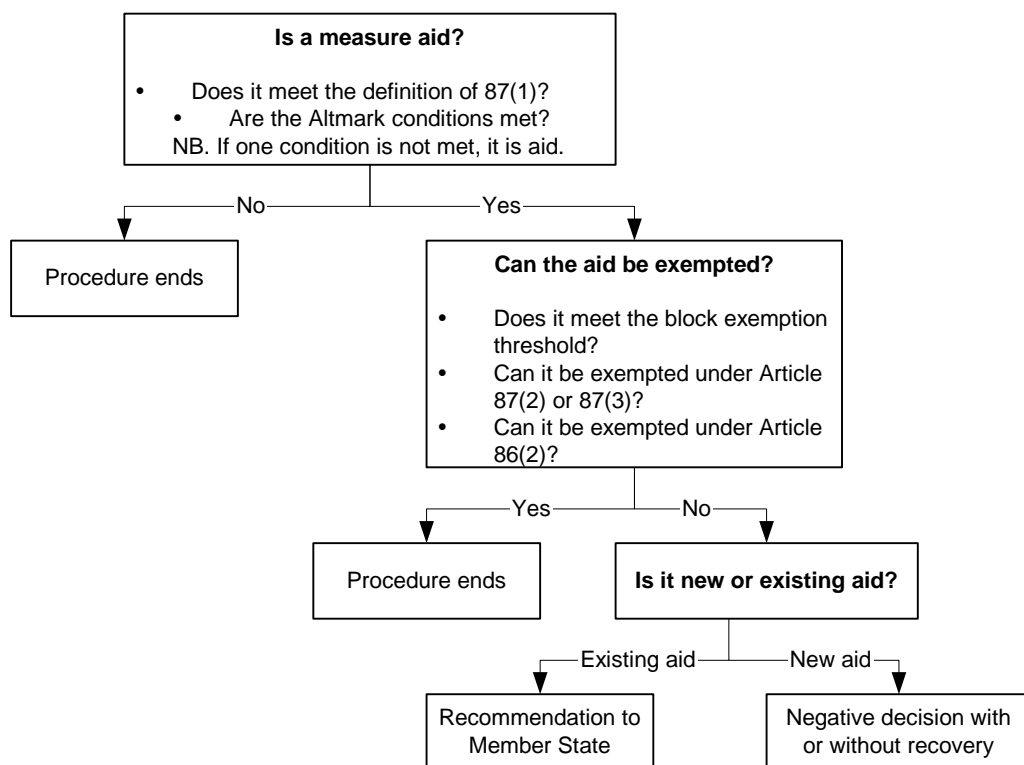


Figure 9: EU state aid rules and public service broadcasting

The evidence suggests that the Commission should take the opportunity now to consider whether or not must-carry is still the best way to ensure that broadcasters with public service obligations fulfil their mission, given technology change and digitisation of distribution platforms. It is too simple to conclude that the added capacity of broadcast transmission platforms caused by digitisation means that there is no longer *any* justification for must-carry in *any* Member State. National circumstances such as the pace of digitisation and the development of competing transmission platforms will affect the public service broadcaster and Member State’s evaluation of matching viewer’s needs with the conditions of supply. However, it is no longer possible to assume that the only way that the public service broadcaster’s obligations can be met is through potential imposition of must-carry on all platforms in any Member State.

There is precedent for such considerations. Technology change required a similar assessment of the proportionality of state measures in revoking the special and exclusive rights given to telecommunications operators to preserve universal service. It was decided then by the Commission that on balance, exclusive rights were no longer necessary to ensure universal service in telecommunications, particularly when weighed against other factors equally as important, such as enabling consumer choice and innovation:

The basis of action in the telecommunications sector was that the Commission recognised the universal service objectives in the sector, but that there was general conviction in the sector that this task could be secured by less restrictive means

*than retention of monopoly rights, e.g. by financial contributions or the creation of a universal service fund.*¹⁰⁶

b) Other effects on competition from must-carry

Broadcasters certainly benefit by having must-carry status. The guaranteed coverage resulting from must-carry affects competition between broadcasters benefiting from the must-carry status and broadcasters not benefiting from this status on related markets for advertising content and premium content rights (such as for sports events or films). Greater coverage for a broadcaster with must-carry status translates to increased advertising revenue as advertisers are willing to pay more to reach more viewers, and increased viewers means that public service broadcasters may be able to bid more for valuable content rights.¹⁰⁷

However, the effects of must-carry on distribution platforms are paramount in our assessment, as networks are the main subject of the EU 2003 regulatory framework.¹⁰⁸ Must-carry is not analogous to universal service in telecommunications networks in terms of its effects on competition, as it involves linking two different markets – content and distribution – rather than obligations imposed on only distribution markets. A Member State may intervene in a market in order to ensure a universal service for infrastructure and services, according to established policy on services of general interest. Such intervention should be focused on encouraging intraplatform competition, that is, competition at one level of the value chain:

*Where there is effective competition, market mechanisms may ensure the provision of affordable services of an adequate quality, thus greatly reducing the need for regulatory intervention... However...network access may be necessary for competitors to be able to compete with the incumbent on downstream markets. If third party access to existing networks at fair and non-discriminatory conditions was not possible, de facto monopolies or at least the incentive for the incumbent to discriminate in the access terms, thus distorting competition downstream, would be maintained. Therefore, in order to meet competition policy and internal market objectives, thereby offering customers more choice, higher quality and lower prices, sector-specific Community legislation for the sectors liberalised at Community level harmonises and regulates the access to network infrastructures.*¹⁰⁹

However, must-carry is a measure that ensures distribution for a content provider. According to public service broadcasters such a measure is justified because without security of access

¹⁰⁶ H. Ungerer, "EU competition law in the telecommunications, media and information technology sectors," Fordham Corporate Law Institute Annual Conference on International Antitrust Law & Policy, 1995; and H. Ungerer, "Legal and regulatory aspects of public service broadcasting," Speech to the conference on public service broadcasting, Bucharest, Hungary, 19-20 September 2003 ("the dominating political themes in the media discussion in the EU. [include] enhancing citizen's choice, where we have to tackle the task to give citizens access to the new opportunities that innovation and markets open up.") See also A. Bartosch, The liberalisation of telecommunications and broadcasting markets: The road from monopolies to competition and universal service," in C. Koenig, A. Bartosch, and J. Braun, eds. EC competition and telecommunications law, 2002, Kluwer Law International.

¹⁰⁷ See for example the arguments put forth by commercial broadcasters in Association for Commercial Television in Europe, Safeguarding the future of the European audiovisual market, March 2004.

¹⁰⁸ We observe that extensive must-carry regulations also indirectly may infringe the Television Without Frontiers directive. The Television Without Frontiers regime is intended to ensure the rights of re-transmission of television channels from other Member States. This right no longer exists when the total capacity for re-transmission has been determined through regulation. Such an approach must be seen as an infringement of this directive. When the must-carry requirements specify a number of channels that is large relative to the available capacity, but falling short of 100%, the negative impact on the TWF directive becomes one of degree.

¹⁰⁹ European Commission, Green paper on services of general interest, May 21, 2003.

to distribution, the obligation on them to provide their content to viewers that pay the licence fee is meaningless. But the intent of imposing must-carry, unlike for telecommunications, is not to get distribution or access infrastructure itself, but for end users (viewers) to get access to something else upstream, e.g. the *content*. Aside from the question of whether that link of content and distribution is in fact necessary to fulfil general interest objectives, must-carry in this sense is a different regulatory measure as compared to universal service affecting only one level of competition, and necessarily has different effects.

Finally, most distribution platforms for television content, especially analogue but also digital, have limited capacity in terms of the number of channels they can carry, at least for the medium term as digital switchover will require simulcasting of analogue and digital broadcast content until digitisation is complete. Digitisation and the resulting capacity increases will reduce the burden placed on broadcasting platforms by must-carry, but will not reduce them entirely as the platform operator may be prevented from allocating capacity on the platform in the most efficient way.

In principle, the decision on what content to distribute should be left to the market, that is, to individual operators of transmission capacity. It is clear that when the use of a significant portion of the total available capacity for a given platform is determined by must-carry regulation, this causes even more significant distortion. In this case, it is the regulator that determines market access for broadcasters as well as the manner in which the distributor is allowed to compete with other platforms.

c) Internal market considerations

We find it difficult to reconcile must-carry requirements imposed for commercial broadcasters in some Member States with EU legislation with regard to the principles for the internal market. Some Member States, such as the Czech Republic and Finland, grant must-carry status to all national broadcasters, including commercial broadcasters. However, by doing so, the regulations provide preferential treatment for national broadcasters to the disadvantage of broadcasters from other Member States. Preferential treatment for national services would normally be considered a barrier to the internal market.

4. The scope and extent of must-carry

a) Platforms

The basis of all must-carry regulation should rest in the Universal Service Directive, but the qualifications clearly set out in Article 31 are not well reflected in Member State policies. To ensure that public service broadcasting content is received by viewers who pay for that content through their licence fees, there is a tendency to include all platforms rather than only those used by a significant number of viewers as their principal means to receive certain broadcasts. This is encouraged by public service broadcasters:

provisions that secure links between infrastructure and content regulation do not become obsolete in the context of the digitalisation of distribution channels, new business models, market trends or technological convergence. Even if the regulatory framework for electronic communications were revised, there would still

*be a need to ensure that distribution infrastructures can appropriately fulfil their key role of distributing audiovisual services...*¹¹⁰

However, extending must-carry to new networks, such as mobile, is of doubtful benefit given the burden that would be placed on emerging technologies. Even if such systems develop rapidly, they may not be the principal means used by subscribers to receive the listed channels, and they will certainly not be the only means.

It could be argued that, provided all licence fee payers/citizens have access to one platform carrying public service channels, that would fit the notion of “proportionate” in EU law. Given that the criteria for the choice of platforms subject to must-carry rules are far from transparent, nor are they subject to review, it is difficult to test their merits. In our view:

- the Universal Service Directive limits MC to platforms which are used by a significant number of users as their principal means;
- the requirement that MC only applies to the network that is used as the “principal means” of reception strongly suggests that the objective is, when seen from a user or household perspective, that the MC requirement does not extend beyond one platform. Because there may be categories of households, with each of them having significant number of users and with different principal means of reception, depending on national circumstances, MC may apply to more than one platform. Conversely, MC cannot be justified under the Universal Service Directive which does not satisfy these two requirements. This condition should rule out MC requirements for new and emerging platforms and also for platforms that do not serve as a “principal means” of reception;
- the policy objective of a must-carry requirement may in this sense be compared to the universal service requirement in telecommunications. The primary telecommunications objective is to ensure that each household can be connected to the public network by (at least) one access provider. Similarly the MC objective is to ensure that each household has access to the particular MC content by (at least) one platform, i.e. the one they use as their principal means.. However, the number of platforms over which the programmes with a must-carry status must be available will vary from Member State to Member State depending on the rate of penetration of the different platforms.

b) Content that must be carried

There are good reasons to restrict the number of must-carry channels to the minimum required in order to ensure the availability of general interest content that would otherwise not be provided under normal market conditions.

Several operators that were subject to MC obligations, when asked about the effect of a possible withdrawal of the obligation, responded that it would probably not have any effect on their offerings, because the MC channels were popular channels that their customers expected to receive.

¹¹⁰ ARD/ZDF [comments](#) to the Call for Input on the review of the EU 2003 regulatory framework, January 31, 2006. See also ARD/ZDF, Commission Workshop on mobile broadcasting, February 23, 2006 (“Free-to-air broadcasters, in particular public service broadcasters but also advertising financed private broadcasters, must have sufficient access to the airwaves...Mobile broadcasting serves citizens in a unique way and in unique situations, and cannot thus be substituted by other networks, such as cable, satellite, or broadband. The public service remit of public service broadcasters cannot depend on whether citizens watch audiovisual content at home on their sofas, while standing at a bus stop, or sitting on a commuter train.”)

We would argue that there is a diminishing return in terms of contribution to a national objective for each additional must-carry channel with the same profile. In order to justify several must-carry channels, they should serve different objectives and should be justified on different grounds. This follows the same logic as the larger debate over state aid for public service broadcasters, in that commercial broadcasters argue that the more broadcasters with public service obligations offer programming that resembles purely commercial broadcasting, the less justification remains for state support.

5. Must-offer

The must-carry provisions of the Universal Service Directive are limited to the obligation for a network operator to carry specified content. They do not, however, include an obligation for the broadcaster to offer a programme (must-offer). Must-offer regulations are not nearly as prevalent as must-carry, as only the Czech Republic, France, and the UK have must-offer obligations. However, if coverage obligations on broadcasters are considered to be must-offer; this may simply be an issue of terminology, and most Member States impose coverage obligations at least on public service broadcasters (see table 4 in the Annex).

Broadcasters with public service obligations are often given advantages when compared with other commercial broadcasters, as discussed elsewhere in this report. They typically receive public funding, often from licence fees paid by the viewers, or they may be awarded frequency licences without competition and without the need to pay the frequency fees that other commercial stations are required to do. Similarly, many operators have suggested that must-carry status hands broadcasters an enormous advantage in commercial negotiations over carriage, as the broadcasters know that the networks have a legal obligation to carry them, and can withhold their content if they do not receive distribution from the networks at terms and conditions they prefer.

In order to remedy the advantage given to broadcasters with must-carry status vis-à-vis network operators or distributors, we argue that must-carry should contribute to a level playing field so that all broadcasters with must-carry status should have an accompanying must-offer obligation to provide their programmes to all platform providers under non-discriminatory terms and conditions. This is already addressed by many Member States in coverage obligations imposed on most broadcasters with public service obligations in their licences, but there may be some broadcasters who have must-carry status but not must-offer. Finally, a non-discrimination requirement should also include a broadcaster's own distribution facility or transmission network, in the case of a vertically integrated broadcaster.

This is not to say that the imposition of must-offer for broadcasters without coverage obligations or other requirements to offer their content (for example, based on fulfilment of a public service obligations), which would be imposed on a broadcaster and therefore at the level of content provision, would solve the problems identified with must-carry imposed on the network level. However, it would at least remedy the distortion caused by granting content providers an advantage in the form of must-carry status over distribution or network providers. We believe there could be scope for Commission guidance on combining must-carry with must-offer requirements as best practice in this regard.

6. Towards a market-based approach

The distortion of competition caused by must-carry could possibly be addressed by introducing market-based approaches and introducing selection procedures for broadcasters which specify details of the public service obligations attached to the must-carry status. This could be done in the form of a beauty contest or other public tender procedure.¹¹¹ The authority in charge of the tendering procedure would have to define the criteria by which the must-carry channels would be chosen. These criteria should be based on meeting general interest objectives for content that the market could not be expected to deliver. Thus in addition to ensuring a must-carry selection that is neutral from a competition perspective, it also has the added advantage in enforcing transparency in the selection process.

In addition, the tender information would also need to include any specific terms and conditions for access to the distribution platform(s) associated with the must-carry obligation. In particular, if the must-carry obligations would apply to the digital terrestrial platform, any requirement for payments to the operator of that platform should be identified.

Sweden is currently considering implementing such a procedure for must-carry. Until digital switchover in February 2008, must-carry continues to cover four public service channels financed by TV-licence fees (SVT1, SVT2, SVT24 and UR) and one commercial FTA analogue channel (TV4). After February 2008, TV4 will no longer have a must-carry status. Instead, must-carry will continue to apply to the four public service channels. In addition, any commercial broadcaster not funded by TV licence fees could, in legislation currently under consideration, be able to apply for a broadcasting licence with such conditions as are required to be subject to the must-carry obligation: impartiality, objectivity, and a condition on a diverse programme range, including news.

We believe that must-carry status in any case should have a medium term duration. Too short duration would prevent new television channels from making investments in manpower and otherwise to fulfil the must-carry selection criteria. On the other hand, investments are not as significant as those of mobile operators, which are typically granted licenses for 10 to 20 years. Such long duration would also work against market dynamics. We suggest that a 3-5 year duration may be reasonable.

However, allowing must-carry status to be achieved via a tender procedure would likely require a change in the Universal Service Directive (Art. 31), which currently makes reference only to "specified" channels.

a) Non-encrypted transmission

A last point on must-carry for commercial channels is that all such channels should be free-to-air. There is a perception that there is a transition from free-to-air television to encryption and that this will be a result of digital switch-over.¹¹² General interest objectives, which must-

¹¹¹ Other countries are experimenting with market-based approaches to provide services in the public interest. In the US, in August 2006 the Federal-State Joint Board on Universal Service, established by the US NRA (Federal Communications Commission) launched a consultation on the proposed use of competitive bidding auctions to select service providers and determine the amount of funding to provide universal service to high cost areas of the country.

¹¹² Of course, encryption does not necessarily mean that it is costly. Austrian public service broadcaster ORF encrypts its satellite program, but sells the smart cards for a small one-time fee, as does Sky satellite in the UK (for one of its service offerings).

carry obligations are intended to promote, cannot be met by transmission in encrypted format which require subscriptions and payments.

This raises another point, namely that a broadcaster with no public service obligation must have the right to refuse must-carry status. It would go too far for a broadcasting regulation to assign a must-carry obligation if this also enforces a certain business model on the television channel against its will. Of course, if must-carry status is determined by competitive tender for broadcasters with no public service obligations, this would no longer be an issue, as all relevant must-carry conditions would be expected to be defined in the tender.

7. Recommendations

We suggest that it should be recognised that increased capacity offered by digital technology will both:

- *decrease* the weight and economic costs of must-carry in terms of the burden imposed on the platform providers; but also
- *increase* the likelihood that platform providers would decide to include must-carry channels even without a must-carry obligation, because they will be motivated to fill up the additional capacity with quality content.

Regular reviews of must-carry should include an assessment of the need to continue must-carry obligations as a means to correct market failure. They could also incorporate consideration of new approaches to fulfilling the goals of must-carry, for example if Member States wished to experiment with implementing a tender procedure for selection of broadcasters with must-carry status.

Finally, we propose that in order to level the playing field between broadcasters and platform providers in the new digital environment, Member States could consider coupling must-carry with must-offer.

Recommendation 9

The Commission should enforce the provisions already in the EU regulatory framework:

- Member States should have regular reviews of their must-carry framework.
- Member States should clearly define the general interest objectives that can justify MC status. General interest objectives may include special transmissions for disabled viewers.
- The Member State must clearly link the general interest objectives relevant to the selection of each broadcaster with must-carry status.

Recommendation 10

The Commission should refine the provisions in the framework, perhaps by providing guidance through a recommendation or communication:

- The number of must-carry channels should be limited to a reasonable number.
- Only channels with a public service (or general interest) profile should be automatically eligible for must-carry status.
- Criteria for must-carry channel selection for all broadcasters should be made public.
- Member States should consider in their reviews whether must-carry status for broadcasters could be determined through use of a public tender based on beauty contest or auction.
- No payment should be made by or to network operators for carriage of broadcasters with must-carry status, and they must be provided without need for specific payments by the viewers.
- While recognising that Member States are probably better suited to decide over which platforms must-carry channels should be available, guidance may have to be provided on the term “significant number of end-users” e.g. 40% of total households in a relevant area. Such guidance could also include a discussion of the term “principal means” of reception.
- The number of platforms over which the programmes with a must-carry status must be available is to be assessed by each Member State depending among others on its population density, and the rate of penetration of the different platforms.
- Problems with universal coverage for programming offered pursuant to a public service remit could be solved with targeted subsidies for transmission, for example to rural regions as is done for broadband.

D. Access and competition

1. Access to wholesale broadcasting transmission

a) Market definition

Under the Framework Directive, national regulators have to undertake market analyses to identify market failures and apply proportionate ex-ante regulation where justified. The Commission 2003 recommendation on relevant product and services markets defines 18 markets for NRA's consideration, including one pertaining to the transmission of broadcasting services: the wholesale market for broadcasting transmission services, to deliver broadcast content to end users (market 18).

In the explanatory memorandum to the recommendation, the Commission notes that:

Electronic communications services include transmission services in networks used for broadcasting but exclude services providing or exercising control over content transmitted using electronic communications networks and services. The provision of broadcasting services therefore lies outside the scope of this regulatory framework, but the networks and associated facilities used for the delivery of broadcast services are within its scope. Consequently, no retail market is identified for the purposes of the Recommendation.

Few NRAs has found significant market power (SMP) on a separate wholesale market for radio transmission. This section therefore focuses on television transmission.

Most regulators so far have segmented market 18 into several sub-markets: typically terrestrial TV transmission, cable and satellite. Ofcom, for example, considers that cable and satellite broadcasting transmission do not provide a constraint on terrestrial transmission at the wholesale level, and therefore these services are not part of the same relevant market. A notable exception is the Netherlands where OPTA does not define separate wholesale markets for digital terrestrial TV, IP DSL TV or TV over fibre optic as operators of those infrastructures are constrained by the cable operators.

To simplify terminology, in the rest of the section, we will refer to the analogue and the digital terrestrial TV markets and to the cable market rather than to the wholesale market for analogue terrestrial TV transmission, the wholesale market for digital terrestrial TV transmission and the wholesale market for TV transmission via cable.

Who is entitled to access and interconnection

Regarding market definition, there appears to be a fundamental problem in consistency across those Member States that have done market analysis for market 18. A literal interpretation of the regulatory framework would suggest that market 18 is restricted to the purchasing of TV transmission capacity by new entrants that wish to offer transmission services to broadcasters (intra-platform competition) and that market 18 does not cover the provision of transmission capacity to pure broadcasters. The latter is more akin in nature to the purchasing of electronic communications services by a large corporate user such as a bank.

The main reason is that broadcasters are not providers of electronic communications services (ECS) (unless they decide to be vertically integrated).

"electronic communications service" means a service normally provided for remuneration which consists wholly or mainly in the conveyance of signals on electronic communications networks, including telecommunications services and transmission services in networks used for broadcasting, but exclude services providing, or exercising editorial control over content transmitted using electronic communications networks and services. (underlining is ours – CI)

If broadcasters are not deemed to be providers of electronic communications services, then they are not entitled to access and interconnection (Art 4.2 Authorisation Directive). However, any broadcaster could make the necessary network investments and become an electronic communications provider. In fact, there are instances of broadcasters operating the whole transmission and broadcasting chain themselves (self-provision). In a similar way, a content provider is not entitled to, say, unbundled loops but they may choose to become an ISP (i.e. an ECS provider).

NB. In the section above on licensing and authorisation (section IV.A), we make a recommendation that the regulatory framework should define "distribution" and clarify that broadcasters can benefit from access and interconnection rights to distribution functions.

This question would merit a clarification from the Commission but this has only been done implicitly so far. For example, in its comments on the Polish notification (August 2006 - Case PL/2006/0455), the Commission presents market 18 "as comprising the commercial relationships where providers of broadcasting transmission services offer the delivery of the content to broadcasters (individual channels, multiplex operators or other content providers)."

In its comments on the 2004 Finnish notification (case FI/2004/0076), the Commission stated that "the demanders of broadcasting transmission services, for the purposes of the markets being considered, are both television and radio broadcasters, local and national, who wish their content to be carried on a specific platform."

A complicating institutional factor is that some electronic communications regulators such as UKE in Poland do not have the power to intervene in the relationship between transmission operators and broadcasters. This is also true for ARCEP in France. In its comments on the French notification, the Commission recalled that under the Framework Directive, Member States must ensure that each of the tasks assigned to NRAs in the Framework Directive is undertaken by a competent body. The above market still needs to be analysed by a competent body and the results notified to the Commission.

What kind of services are sold on a wholesale market?

Another way of shedding some light on the nature of market 18 is to look at the nature of services normally traded on a wholesale market.

All the other wholesale markets included in the Commission recommendation (with perhaps the exception of market 17) are *partial services*, not end-to-end services. The services sold on market 9 (fixed call termination) have to be combined with a call origination and a transit service to build an end-to-end service. End users, even large corporations, do not buy call origination or termination services, they purchase end-to-end services on a retail market.

According to that line of thinking, pure broadcasters will want to purchase end-to-end broadcasting transmission services (e.g. the original feed through the multiplex and antennas to the viewer). If broadcasters wish to use wholesale services, they would have to operate a network and become an electronic communications provider.

Member States' positions

Member States have not necessarily expressed themselves clearly on the issues raised above. The following section is an attempt to show where they stand.

In Finland, FICORA, the converged electronic communications and broadcasting regulator, explained during the interview that the access obligations imposed on transmission provider Digita are aimed at the 'programme licensees' (i.e. broadcasters) and only secondarily, if there is capacity left in the multiplex, access to providers of electronic communications services e.g. data. In practice, there are no new entrants on the market. FICORA says that access to masts and sites would be assessed again if the situation changes.

In the UK, by defining a separate market termed "managed transmission services" (MTS). Ofcom sought to create conditions for future entry at that level, as entry in the other level of physical transmission was extremely unlikely.¹¹³

NB. MTS are services bought by multiplex operators. MTS providers take responsibility for a broadcast stream arriving at a transmission site and make arrangements necessary for it to be transmitted from an antenna at that site, monitoring and assuring quality of the transmitted signal and making arrangements for maintenance of the transmission equipment. So combined with a leased line or a satellite link to carry the signal from the multiplex to the site, MTS fall in the category of end-to-end services.

However, after discussion with the Commission the UK withdrew its notification for a separate market for managed transmission services and only the market for physical transmission was defined.

In France, on the other hand, after making a distinction between transmission services provided to competing transmission providers and transmission provided to broadcasters or multiplex operators, ARCEP, the French NRA, decided that the latter was not in their jurisdiction and excluded it from the market, leaving only physical transmission. In its February 2006 comments on the French notification, the Commission hinted that such an exclusion might not be justified. ARCEP considered that the wholesale market for transmission services offered to broadcasters or multiplex operators falls under the audiovisual and electronic legislation (law on freedom of communication of September 1986 that among other things deals with matters such as must-carry and must-offer) enforced by the French broadcasting regulator, CSA. ARCEP is therefore not competent to impose remedies on this market. Furthermore, ARCEP considered that *editors of services* (i.e. TV channels) do provide services that are explicitly excluded from the scope of the definition of electronic communications services. In any case, ARCEP suggested that this market tends towards effective competition and competition law would be sufficient to remedy potential competition problems. The Commission commented that under the Framework Directive, Member States must ensure that each of the tasks assigned to NRAs in the Framework

¹¹³ This was because of not only the large investment required, but also because of licensing conditions of the multiplex operators and the broadcasters. See Ofcom final decision on market 18, April 18, 2005.

Directive is undertaken by a competent body; the above market still needs to be analysed by a competent body and the results notified to the Commission. This amounts to a request to the CSA to undertake an analysis of this market.

In Lithuania, RRT, the Lithuanian NRA, defined two separate markets depending on the use of the incumbent's broadcasting transmission services by a broadcaster. Indeed, in cases where a broadcaster has been assigned frequencies it acquires access to the incumbent terrestrial transmission operator LRTC's facilities and the right to install and operate its own antennas or the antennas of LRTC. In these cases services provided by LRTC are minimal and are limited to technical and maintenance support (type 1). In cases where frequencies have been assigned to LRTC, it carries out all operations associated with broadcasting thus providing both broadcasting transmission services and facilities services to the broadcaster i.e. services akin to the UK MTSs (type 2). Most broadcasters do use the first type of services provided by LRTC. As much as 93% of radio hours broadcast and 69% of TV hours broadcast are not transmitted using the broadcasting transmission services of the incumbent.

New terminology

For the sake of this study, a new terminology is suggested based on three generic broadcasting markets. For each category of markets, there will usually be several sub-markets, one per major platform.

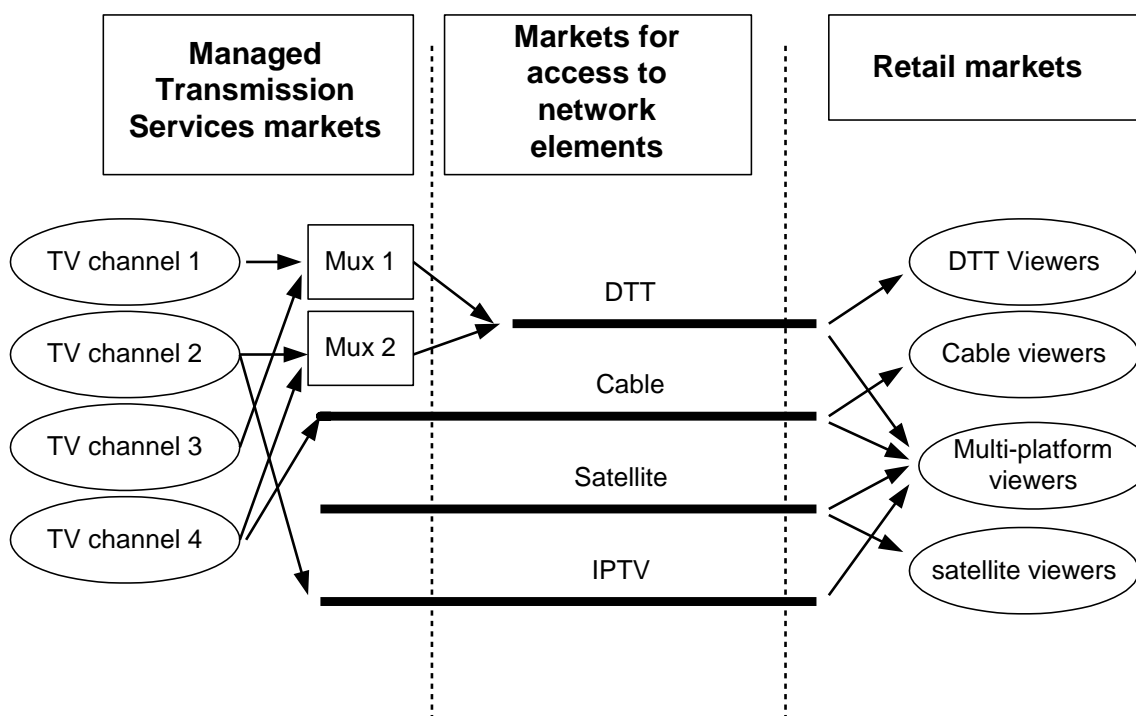


Figure 10: Market concepts related to distribution platforms

Two-sided markets – why retail markets need to be analysed

Although retail markets fall outside the recommendation on relevant markets and have in general not been regulated, it is important for regulators to understand these markets as they have close links with the other markets described below. Broadcasting transmission networks are two-sided platforms (2SPs) and the focus on a given market should not make regulators lose sight of the effects on other markets. The relations between the different markets is particularly important at the SMP designation stage when assessment whether countervailing buyer power exists.

A definition of two-sided markets was proposed by Rochet and Tirole¹¹⁴:

“A market is two-sided if the platform can affect the volume of transactions by charging more to one side of the market and reducing the price by the other side by an equal amount; in other words, the price structure matters”.

The concept of two-sided markets can help understand why different pricing structure on the retail residential market could lead to a different outcome regarding dominance on the market for Managed Transmission Services. The following example pitches cable for which end-users pay a subscription against terrestrial TV where at least a number of channels are free-to-air. This is illustrated by the German, Dutch and UK notifications on market 18 below.

¹¹⁴ See “A Review of certain markets in the Commission Recommendation on relevant markets subject to ex ante regulation” page 23 by M. Cave, U. Stumpf and T. Valletti (July 2006)

The German cable operators, for example, have argued that where a particular content bundle of a broadcaster is popular with viewers, the threat of this content not being available can act to constrain the price a cable company charges (for carrying the bundle) to well below the monopoly level. The absence of such a channel from the programming bundle could reduce the overall value of the content offer to consumers and lead to less revenue for the cable operator. In this particular instance, BNetzA concluded that the level of buyer power was anyway unbalanced to the benefit of cable companies. In the Netherlands, in the case of the small cable operators, OPTA concluded that although they have a monopolistic position, they are not able to behave independently from broadcasters for the same reason.

For the terrestrial market, Ofcom argued that it is not likely that broadcasters would be able to exert any buyer power on ntl and Crown Castle. Although the broadcasters can obtain a national Managed Transmission Service from either of the two providers, the extent to which they might exert buyer power depends on the pressures they face from consumers of broadcasting services. If the reduced cost of transmission is not passed to consumers, and the cost of transmission is not likely to cause consumers to switch broadcasters, it is unlikely that consumers will be able to exert any pressure on broadcasters.

The contrasting examples of cable in the Netherlands and terrestrial in the UK shows that the pricing structures on the retail market may have far reaching consequences on market power on the wholesale markets.

Retail residential market

The retail residential market is the market where viewers purchase a combination of transmission services and contents. In some cases, they are entirely funded by advertising and therefore offered at no charge to end-users.

As noted above, in its explanatory memorandum to the 2003 recommendation on relevant markets, the Commission notes that the provision of broadcasting services therefore lies outside the scope of this regulatory framework, but the networks and associated facilities used for the delivery of broadcast services are within its scope. Consequently, no retail market is identified for the purposes of the Recommendation.

The development of IPTV has improved the long term prospect for greater competition on the retail residential market. In the few Member States where the market is shared more or less evenly by two or three platforms, one could argue that the costs of switching between platforms should be low as each platform tries to attract new customers: in the UK, for example, Sky provides customers subscribing for a minimum 12-month period with a set-top box, dish, viewing card and installation for free. This would point towards the existence of a broader retail market encompassing the different platforms.

On the other hand, most NRAs have segmented market 18 into separate not-substitutable wholesale markets: one per major platform. If wholesale market are not substitutable, it does not mean that retail markets cannot be. This will depend on the degree of dominance of main platform.

OPTA is so far the only regulator to have regulated a retail broadcasting market. It has defined various retail markets and so far has focused its attention on two: the retail cable market for pay TV, and free-to-air TV. OPTA identified a set of competition problems: cross-subsidisation, bundling of services, excessive retail prices and reduced choice for the end-

users. OPTA investigated whether those problems could be fixed by the sole imposition of wholesale obligations on each cable operator. The regulator concluded that it was not the case on the retail market for supply of free-to-air RTV packages via cable transmission and that therefore retail obligations were to be imposed on this market.

OPTA then applied the three criteria test and concluded that ex-ante regulation can be applied to that retail market.

OPTA designated UPC, Essent and Casema as having SMP, each on their respective retail markets because:

- each operator is monopolist on its market;
- cable operators have control of infrastructure that is difficult to duplicate;
- there is a lack of countervailing buyer power as end-users are mainly households;
- cable operators have the ability to propose diversified services by way of bundled offers;
- strong distribution and sales network (90% of households have a cable connection);
- lack of potential competition with alternative platforms;
- economies of scale; and
- vertical integration of cable companies.

Market for Managed Transmission Services

The market for MTSs is the market where broadcasters purchase end-to-end broadcasting transmission services from transmission operators. The existence of competition on this market is briefly discussed below under section f) Regulation of the wholesale (intra-platform) market.

Market for access to network elements (intra-platform competition)

The wholesale (intra-platform) market is a market where the cable or terrestrial TV operator grants access (i.e. a special network access) to a competitor or to a broadcaster operating its own electronic communications network (vertical integration). The services traded on this market are not end-to-end services but partial services (similar to network elements or interconnect services in the telecom world) to be combined with self-provided equipment and transmission capacity purchased from a third operator. An illustration of this is the access granted by TDF to Antalis and Towercast in France.

- b) SMP designation, remedies and new market entry: the case of digital terrestrial transmission

SMP designation

Finland, France, Lithuania, Poland, Spain, Sweden and the UK have all designated one or sometimes two operators as having SMP on the DTT market. The obligations imposed on those operators with SMP are summarised in the tables below.

NB. Germany and the Netherlands are so far the only two Member States to have designated operators as having SMP on the cable market. However, the OPTA decision is being challenged before the court of appeal (College van Beroep voor het bedrijfsleven). BNetzA has not notified to the Commission the remedies to be imposed on KBW, UM and KDG yet. This study will therefore focus on the terrestrial platform, as analogue terrestrial will be switched off in the coming years.

Remedies

In the six Member States where an operator was designated as having SMP on the DTT market, all NRAs have imposed access obligations under non-discriminatory conditions. The publication of a reference offer is only imposed in three countries. Price control obligations have in many cases not been accompanied by specification of cost accounting methodologies.

Country	Access obligation	Reference Offer	Non discrimination	Accounting separation	Price control
Finland	Yes	Yes	Yes	Yes Cost accounting	cost orientation (not further defined)
France	Yes	Yes	Yes	-	Prohibition of excessive or predatory prices
Poland	Yes	Yes	Yes	Yes	Yes
Spain	Yes	No Notification to CMT	Yes	Yes	Yes Cost-orientation (not further defined)
Sweden	Yes	No	Yes	Yes	price control based on fully distributed cost and historical costing
UK	Yes	Yes	Yes	No	cost orientation of access charges

Table 8: Regulatory obligations for digital terrestrial operators in market 18, September 4, 2006

Access remedy

The table below summarises access obligations imposed on SMP operators on the DTT market.

In the absence of intra-platform competition in most countries, it is not always clear whether the access obligations imposed by NRAs are related to the market for Managed Transmission services (i.e. access to an end-to-end service) or to the wholesale (intra-platform) market (e.g. France or Poland) or to both (e.g. Finland).

Country	Access imposed on DTT transmission operators with SMP	
	Where possible, the table below separates obligations of access to end to end services and of access to network elements	
	Access to Managed Transmission Services	Access to network elements
Finland	"Provision of capacity in the digital terrestrial network", i.e. a service that covers <ul style="list-style-type: none"> • multiplexing • transmission (from multiplex to antennas) • broadcasting (from antennas to end-users). 	Other possible access obligation under § 28 of the Act would be to "lease out part of a terrestrial mass communications network". On terrestrial digital TV/radio this would mean access to any or all of the 3 components listed above. This obligation was not imposed
France	– ARCEP does not have responsibility for the regulation of distribution (relating to a market for managed transmission services)	Provision of access on reasonable request. ARCEP distinguishes between two types of access: <ul style="list-style-type: none"> • access to TDF buildings and masts. Under this scenario, a TDF competitor would install at a given TDF site its reception equipment, own transceivers, feeders, antennas, etc. simply using TDF's mast. • access to TDF combiner. Under this scenario, a TDF competitor would still install its own reception equipment and transceivers but would use TDF's combiner, feeders and antennas
Poland	– UKE does not have responsibility for the regulation of a market for managed transmission services	Provision of access to, and use of, and on reasonable request specific network elements and associated facilities. This includes access to TP Emitel's masts and towers and the provision of collocation by TP Emitel
Spain		Access is meant to include <i>inter alia</i> : <ul style="list-style-type: none"> • physical access (collocation) to Abertis' technical infrastructure or other modalities of infrastructure sharing, including conduits, buildings or masts, in every Abertis' transmission and retransmission sites; and subsidiary • interconnection to Abertis' infrastructure at every transmission and re-transmission site Abertis has been subject to an access obligation in Catalonia since 2003 as a result of the conditions imposed by the Spanish Council of Ministers on the merger between Abertis/Retevisión
Sweden	–	Access is meant to include <i>inter alia</i> <ul style="list-style-type: none"> • <i>physical access</i> to the technical infrastructure, where the accessing party performs the actual broadcasting itself using its own equipment co-located at Teracom's transmission site (rather than mast sharing, this obligation includes site sharing and the right for the accessing party to connect its transmission equipment to Teracom's combiner chain); or • a <i>wholesale product</i>, where the accessing party is connected to Teracom's infrastructure at one or several access points, and Teracom provides the digital broadcasting service using its own equipment

Country	Access imposed on DTT transmission operators with SMP	
UK	<p style="text-align: center;">–</p> <p>OFCOM notified a market for Managed Transmission Services (MTS) but withdrew its notification.</p>	<p>Access on reasonable request as necessary, including:</p> <ul style="list-style-type: none"> • access to allow for the installation and maintenance of broadcast transmission equipment and related equipment (or provision of access to permit installation by third parties) • access to allow for the connection of such equipment to power and other essential services • access to sites for the use or establishment of common or exclusive building accommodation • access to and use of shared or shareable broadcast equipment comprising combiners, feeders, data lines, antennae, transmitters and self-contained equipment housing <p>(See also network operator Arqiva Reference Offer page 13)</p>

Table 9: Access remedies for DTT transmission in market 18

c) Achievements in creating intra-platform competition on the terrestrial TV market

So far, France is the only Member State to have seen market entry on the DTT transmission market. The SMP operator, TDF, is under the obligation to provide two types of access:

- Type 1: access to TDF buildings and masts. Under this scenario, a TDF competitor would install at a given TDF site its reception equipment, own transceivers, feeders, antennas, etc. simply using TDF's mast. This form of access could perhaps be compared to local loop unbundling in the DSL value chain;
- Type 2: access to TDF combiner (antenna system). Under this scenario, a TDF competitor would still install its own reception equipment and transceivers but would use TDF's feeders and antennas. This form of access could perhaps be compared to bitstream in the DSL value chain.

In both cases, TDF provides collocation rooms and energy.

According to AntalisTV, a new entrant, as of June 2006, the two new entrants – AntalisTV and Towercast – had each captured around 14% of the market for the sale of broadcasting transmission capacity to the multiplexes. This was achieved thanks to the type 2 access provided by TDF as well as the construction of a few new sites in rural areas (4 as of June 2006 for AntalisTV). Type 1 access is not used in practice.

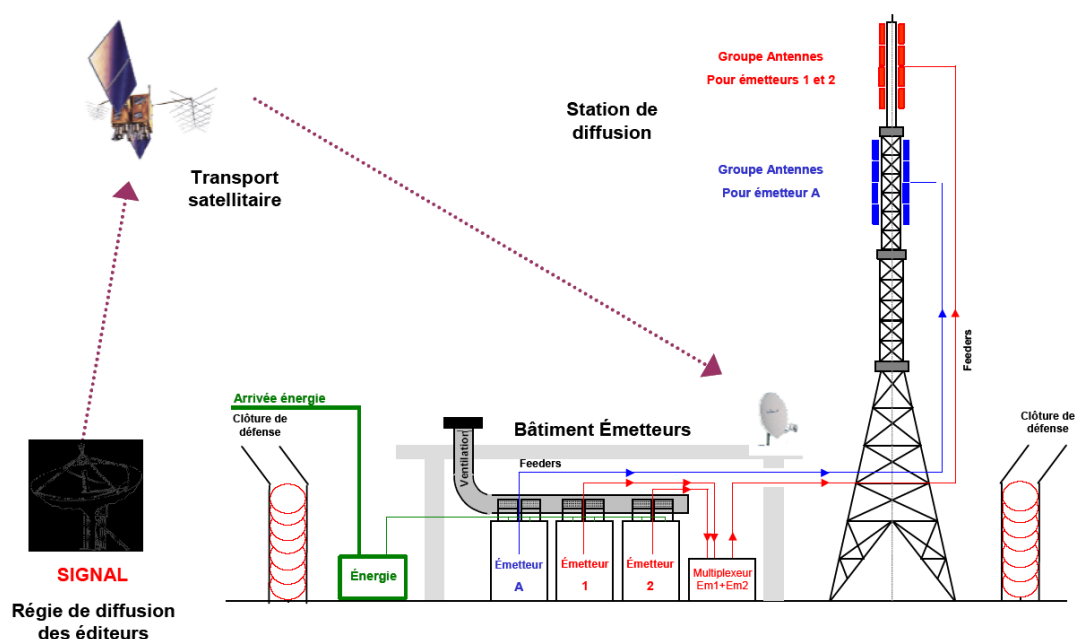


Figure 11: Terrestrial TV broadcasting site (graphic courtesy TNT France)

Notably, the market was not opened by ARCEP April 2006 decision on market 18 but rather by a previous national competition authority decision. In 2002, the national competition authority (Conseil de la Concurrence) adopted a decision¹¹⁵ forcing TDF to provide on request collocation offerings on its broadcasting sites. These offerings should be itemised. Terms and prices should be objective, transparent and non-discriminatory.

d) Other factors necessary to the emergence of intra-platform competition on the DTT market

The analysis of market 18 appears to have been compromised by the parallel progress of an initiative stemming from frequency policy, namely digital switchover. What appears to have happened is that NRAs in many Member States have placed market 18 at the “bottom of the pile” in terms of prioritising among markets to analyse in the Recommendation, while the clock was ticking for plans for DTT to be launched.

DTT launch – market analysis: wrong sequence

The following table compares the national plan for DTT launch and population coverage with the timing of NRAs’ decisions on market 18. In the seven Member States that have decided to impose access obligations on DTT transmission operators at present, five were too late and the sixth has missed the deadline for the coverage of the capital city. Given that broadcasting contracts are routinely signed for very long periods - five years or more - some of these decisions as a result will only have a marginal effect on the market.

¹¹⁵ Decision n° 2002-MC-04 of April 11, 2002 - TDF vs. AntalisTV

	Launch date and population coverage milestones	NRA Decision re. SMP designation in market 18 - DTT segment	NRA decision or DTT launch: which one came first?
Finland	Launch: Aug. 28, 2001 Population coverage currently: <ul style="list-style-type: none"> • Multiplex A: 99.9% • Multiplex B: 99.9% • Multiplex C: 78-81% 	September 2004	DTT launch Too late
France	Launch: March 31, 2005 Population coverage: <ul style="list-style-type: none"> • 50% by Sep. 2005; • 60% by June 2006; • 80%-85% by the beginning of 2007. 	April 6, 2006	DTT launch Too late but see comments
Lithuania	June 30, 2006: Vilnius (capital of Lithuania) December 31, 2007: five largest cities; By 2009 at least one digital network to cover 95% of the territory There are two DTT networks: Radio and TV Centre (LRTC) and Lithuanian Telecom (LT).	April 2006	Market analysis OK Although a bit short for capital city
Poland	Not yet set NB DTT is on trial. Three transmitters are in operation (two operated by Emitel and one by INFO-TV-FM); only a few thousand people have bought decoders and the standard for commercial launch has not yet been decided.	Awaited in September 2006	Market analysis
Estonia	Different launch dates (after simulcast) according to the scope of the coverage: <ul style="list-style-type: none"> • national (autumn 2005); • autonomous communities (Jan. 1, 2005); • local (from Aug. 2005 to Jan. 1, 2008). Coverage <ul style="list-style-type: none"> • 80% of population by Dec. 31, 2005; • 90% of population by Dec. 31, 2008. • 98% of population by April 3, 2008 (for TVE and the regional public channels); 95% of population by April 3, 2010 (for national private channels) 	February 2006	DTT launch Too late
Sweden	Launched in 1997. No full coverage deadline.	November 2005	DTT launch Too late
UK	New DTT platform Freeview was launched in October 2002.	April 2005	DTT launch Too late

Table 10: Comparison of the timing for DTT planning and market 18 analysis

Other key factors

Other factors affecting the level of competition in market 18 are derived from the overlap of broadcasting regulation, such as licensing and frequency assignment, with electronic communications regulation represented by SMP obligations in market analysis decisions:

- Do broadcasters want to select one technical operator for the whole country or are there calls for tender for every site, as in France?
- Are frequencies granted by allotment (more freedom for the operator, in particular no specification of the site location) or by assignment (more detailed prescriptions including location sites)? If the site is not specified by the frequency licence, as in France, then a new entrant can compete with the incumbent without using its site.
- Are contracts between broadcasters and transmission providers long-term, as in the UK? If so, this can create a barrier to entry for those seeking to offer transmission services.

The lack of attention by many Member States paid to market 18 could perhaps be explained by the relatively small size of this market compared with wholesale broadband markets, the mobile voice call termination market or actually any other of the 17 telecom markets.

Lack of direct impact on viewers

Another reason for NRAs lack of enthusiasm in tackling market 18 could be the absence of direct impact on end-users. DTT transmission is financed largely by broadcasters, not directly by viewers. Therefore any reductions in transmission prices only benefit consumers indirectly through the emergence of new channels made possible by lower broadcasting prices or by the improvement in programming by broadcasters able and willing to reinvest the cost savings made in transmission into programming.

In summary, entry and competition in the market for digital terrestrial television appears highly unlikely in most countries, due in part to the conflicting requirements between analyses of market 18 under the electronic communications regulatory framework, and plans for digital switchover.

e) One size does not fit all

One major difference between fixed telecommunications and broadcasting distribution markets is related to the degree of homogeneity of market structures. Telecommunications market structures tend to be similar across Member States with one national incumbent operator with SMP, with exceptions such as Hungary or Finland. Even where broadband cable has a strong presence such as in The Netherlands or Scandinavia the pattern has not changed; the incumbent operator is designated as having SMP in all fixed wholesale markets and in most retail markets. On the broadcasting front, the situation varies widely across Europe in terms of whether the largest platform is terrestrial or cable, whether several competing platforms exist or not; whether digital terrestrial was launched before or after the analysis of market 18 was carried out by the NRA. And not only market structures differ, but the regulatory regime as well as the institutional environment may also vary widely.

In France, DTT channels are selected by the broadcasting regulator while in the UK (except for public channels) it is a commercial negotiation between the broadcasters and the multiplexer that determines which TV channels go on air. In France, multiplexes shop around for the best deal from three transmission operators, while in Germany, at the same time as receiving a media licence, the DTT broadcaster is told which terrestrial transmission operator will broadcast its signal. The latter is designated by BNetzA following a tender.

When carrying out modified green field tests (market analysis taking into account the non-SMP regulation: must-carry, frequency assignment, analogue switch off policy...) regulators are faced with widely different circumstances. In its May 2006 national consultation on market 18, NITA, the Danish NRA, proposes to exclude terrestrial platform for Radio and TV transmission, because the platform is already regulated under the current legislation with regard to access to spectrum and access to masts and sites. Spectrum licences are issued by NITA only to broadcasters authorised under the law on radio and TV (Lov Om Radio- Og Fjernsynsvirksomhed) – i.e. not to some external transmission providers. Provisions on access to masts and site sharing are regulated in other existing laws: law on the establishment and joint use of masts for radiocommunications, planning and construction regulations.

It is therefore not possible to attempt to devise a one-size-fits-all recommendation for all countries as was done for other electronic communications markets¹¹⁶. We will therefore list some of the pros and cons of regulating wholesale broadcasting markets. Depending on the particular circumstances of a given country, these pros and cons will have a different weight and may give grounds or not for a regulator to intervene.

f) Regulation of the wholesale market: the pros

The arguments in favour of a regulation of the wholesale (intra-platform) market include the following.

Consistency with telecommunications markets

The key policy concept on the fixed telecom side is the investment ladder. Alternative operators need to be given access/interconnection at increasingly deeper points of the incumbent networks and, if properly managed, they will build their own network up to higher and higher rungs of the ladder.

Broadcasting networks were placed together with telecommunications networks under the common umbrella of electronic communications networks in recognition of the fact that convergence was at long last emerging. A logical consequence of this is that the same policy should be applied to broadcasting transmission markets. So far, only France seems to have gone down that route with some tangible results. Two alternative operators have captured around 30% of the MTS market, largely by reselling the incumbent terrestrial operator's wholesale service.

¹¹⁶ A Review of certain markets in the Commission Recommendation on relevant markets subject to ex ante regulation by M. Cave, U. Stumpf and T. Valletti (July 2006)

Real estate versus electronics

Another parallel often drawn between telecommunications and terrestrial broadcasting networks is that both copper loops and the big broadcasting sites were built in the monopoly days. In both cases, this gives their owners a large competitive advantage which finds its roots in real estate markets and town and country planning rather than in clever marketing or complex electronic technologies. Consequently, access obligations amount to a simple virtual divestiture of incumbent terrestrial broadcasting operators.

The myth of inter-platform competition

Inter-platform competition exist in some countries and has even improved in the last few years with the arrival of TV over DSL and tomorrow of personal (mobile) TV. In other Member States, a single platform is ultra-dominant and inter-platform competition is at best potential but certainly not real.

Where it exists, competition is fiercer on the retail residential market than on the market for Managed Transmission Services. Many viewers may be happy with a connection to a single platform if the programming satisfies them. A major TV channel that wants to reach >90% of the national audience still has to deal with all the major platforms that exist in a given country.

In some Member States (e.g. France or Spain) frequencies are granted to broadcasters together with population coverage obligations. Once a TV channel has won a DTT frequency licence, it has no choice but to deal with the DTT transmission operator. The same goes for public channels that often have legal obligations to be present on the DTT platform and the existence of inter-platform competition does not improve their bargaining position.

Double-sided markets

An important consideration when considering the pros and cons of regulating wholesale access broadcasting networks is to assess the relations between retail and wholesale markets. The analysis by OPTA, the Dutch regulator, of the cable market offers contrasted views on this matter.

OPTA reasoned that broadcasters' advertising revenues depend on the audience reached. It is therefore important for them to access cable networks with a large number of subscribers. Cable operators reaching many households have the power to impose their prices on programme suppliers who depend on advertising revenues. Furthermore, programme suppliers have less power to negotiate if they must compete with the retail package proposed by the cable operators.

Conversely, OPTA considers that even if the small cable operators have a monopolistic position, they are not able to behave independently from broadcasters. In that case, broadcasters have a high degree of countervailing buying power because denial of access to small cable networks would only have little impact on the broadcasters' revenues, due to the limited numbers of subscribers connected to these networks.

Vertical integration

Another fundamental consideration is the existence of vertically integrated firms. In Austria, for example, ORS's main shareholder is the Austrian public broadcaster ORF (two nation-

wide television channels, three nation-wide radio channels and a number of regional radio channels). ORF/ORS is therefore a vertically integrated company that according to KommAustria may have an incentive to foreclose its competitors on both the radio and television broadcasting markets. With regard to television, ORS controls more than 98% of the sites and transmitters for analogue terrestrial television broadcast. ATV, the only private nation-wide television broadcaster, rents all its transmission capacity. A similar situation prevails in countries such as Ireland and Italy (although a joint dominance prevails in Italy).

In some circumstances, competition law may be sufficient and no regulatory intervention is needed.

DTT is a primary candidate for regulation

Among broadcasting markets, it is often argued that DTT is a primary candidate for regulation. There are several factors that support ex ante regulation:

- DTT networks use radio frequency spectrum, which is a limited resource. Therefore, access to the distribution platform is limited in terms of number of channels.

NB. This implies that if an era of relative spectrum abundance emerged (thanks to digital dividend and WAPECS) the case of regulating DTT would be weaker.

- Access to the platform is normally required by the authorisation conditions. The broadcaster may have no commercial choice whether or not to use the distribution platform, but must nevertheless have to negotiate the actual terms and conditions.
- DTT networks are financed by broadcasters (rather than by viewers).
- The platform is normally associated with national coverage requirements.
- There is typically only one, or in some exceptional cases, two networks.

These characteristics prevent this distribution platform from being subject to normal market forces for negotiations between broadcasters and transmission network owners.

g) Regulation of the wholesale (intra-platform) market: The cons

There are also several valid reasons not to regulate wholesale (intra-platform) markets. These include the following.

Where is the failure on the retail market?

A question often asked about market 18 is: *where is the failure on the retail residential market?* This question is particularly relevant for the terrestrial markets where at least a number of (free-to-air) channels may be received free of charge. In such circumstances, competition can not bring lower prices to end-users.

The possible benefits for viewers are at best indirect and limited. The argument goes as follows. Intra-platform competition brings lower transmission prices for broadcasters. Therefore, TV channels spend less on transmission and more on programming. For some small (and new) TV channels, the savings on transmission may enable the emergence of a profitable business and therefore a greater variety of channels for viewers. It should also be

stressed that the rolling out of new technologies such as TV over DSL is also fostering competition in the retail market.

Is the investment ladder theory applicable?

A second objection that can be made to the regulation of wholesale (intra-platform) markets is that the investment ladder theory does not apply.

For reasons explained above (i.e. no NRA decision in force today), it is premature to speculate on the form that access obligations could take for the cable platform. Focusing on the DTT platform, we have shown (see d) above) that entry into the market is unlikely in most countries even after obligations are imposed on the SMP DTT operator. Furthermore, the French case seems to suggest that the two alternative operators are content with type 2 access (see c) above) and have no intention of using type 1 access or to build their own masts on a significant scale. Drawing a parallel with broadband, would regulators have imposed bitstream access, if alternative operators had no intention of unbundling loops nor of building their own local loops? Regulation of retail broadband prices would probably have been favoured.

No Quality of Service (QoS) differentiation

While competition in broadband access thrives on differentiation (speed, contention rate, help desk, QoS, free email address, web-hosting...), the room for service differentiation between two operators for the broadcasting of a DTT multiplex signal looks slim.

Do benefits outweigh the costs?

Another potential criticism of the regulation of wholesale broadcasting markets, given their relative small size, is whether benefits outweigh costs. No attempt will be made here to do justice to this question, but here are some considerations. From the interviews with French broadcasters who benefit from intra-platform competition, it seems reasonable to assume that the benefits to TV channels (and then indirectly to viewers) are larger than the costs incurred by the regulator when undertaking the analysis of market 18.

However, compared with the benefits brought by access obligations in broadband markets, access obligations imposed on market 18 are bound to be small because of the small size of the market, the absence of possible differentiation and the absence of direct benefits for consumers.

Swedish appeal

In Sweden, Teracom, the broadcasting transmission network operator designated as having SMP on market 18, has submitted an appeal against the regulator's decision on SMP designation and the regulatory obligations. It has also asked the administrative court to suspend PTS's decision pending the final ruling. Teracom's main arguments are:

- *"Incorrect market definition"*. PTS definition of the relevant market is too narrow. PTS incorrectly concluded that TV broadcasting transmission services over different platforms are not substitutable from the end-user or from the programme broadcaster perspective.

- “*Incorrect conclusion on Teracom market power*”. The relevant product market should be defined to cover all distribution platforms. Then Teracom’s analogue terrestrial transmission network would constitute around 10-15% of the market and its digital network about 15%.
- “*No SMP*” – no remedies should therefore be imposed on Teracom.
- “*Disproportional and imprecisely defined remedies*”. No clearly identified competition problems. No assessment of consequences of the regulatory measures.

The outcome of the appeal is not known at this stage.

Criteria 3 – insufficiency of competition law

Finally, among the arguments against the ex-ante regulation of wholesale broadcasting markets (i.e. intra-platform competition) is the potential sufficiency of competition law as illustrated by the French case. France is the only country with three competing operators on the market for managed transmission services – including two new entrants having captured around 30% of the market. The access arrangements granted to these two new entrants by the incumbent operators are the result of a 2002 decision by the French competition authority! So the market was not opened by the recent ARCEP decision on market 18 but rather by a previous national competition authority decision. The ARCEP decision has not generated any visible changes in the access conditions yet.

In summary, in 2002, the national competition authority (Conseil de la Concurrence) adopted a decision¹¹⁷ forcing TDF to provide on request collocation offerings on its broadcasting sites. These offerings should be itemised. Terms and prices should be objective, transparent and non-discriminatory.

h) Overall assessment of the opportunity of regulating market 18

As explained above, market 18 covers two entirely different markets:

- the market for access to network elements;
- the market for Managed Transmission Services (MTSs).

Market for access to network elements (intra-platform competition)

Weighting the pros and the cons, it seems that, in general, the costs of regulating the market for access to network elements outweigh the benefits. Firstly, any benefits arising from greater competition would only benefit consumers indirectly. Then, for reasons explained above, the chances for NRAs of stimulating intra-platform competition in the same way as they enabled broadband by imposing bitstream access are rather small.

Market for Managed Transmission Services (MTSs)

There could be a case for regulating the market for MTSs in the following circumstances:

¹¹⁷ Decision n° 2002-MC-04 of April 11, 2002 - TDF vs. AntalisTV

- If the NRA concludes to the absence of platform competition i.e. broadcasters have no choice but to broadcast on the major platform(s) available in the country.
- The NRA has taken into account any possible effect on the retail market that would limit the platform power on the MTS market (markets are double sided) and still conclude that the monopolistic position of the platform operator vis-à-vis broadcasters/multiplexers is not softened by consumers demand for specific content on the retail market.

2. Access to associated facilities

a) Introduction

This section is mainly focussed the EU regulatory framework on access to conditional access, electronic program guides (EPG) and application programme interfaces (API) because a special treatment is given to these particular types of associated facilities in the Access Directive. It does not cover the many other questions that are raised by conditional access systems, EPG and API (e.g. licensing of intellectual property rights, interoperability of digital consumer equipment).

The electronic communications framework¹¹⁸ covers access to ‘associated facilities’, which are defined as:

Those facilities associated with an electronic communications network and/or and electronic communications service which enable and/or support the provision of services via that network and/or support the provision of services via that network and/or service. It includes conditional access systems and electronic programme guides.

Special treatment is reserved in the framework to three types of facilities: conditional access, EPGs and APIs.

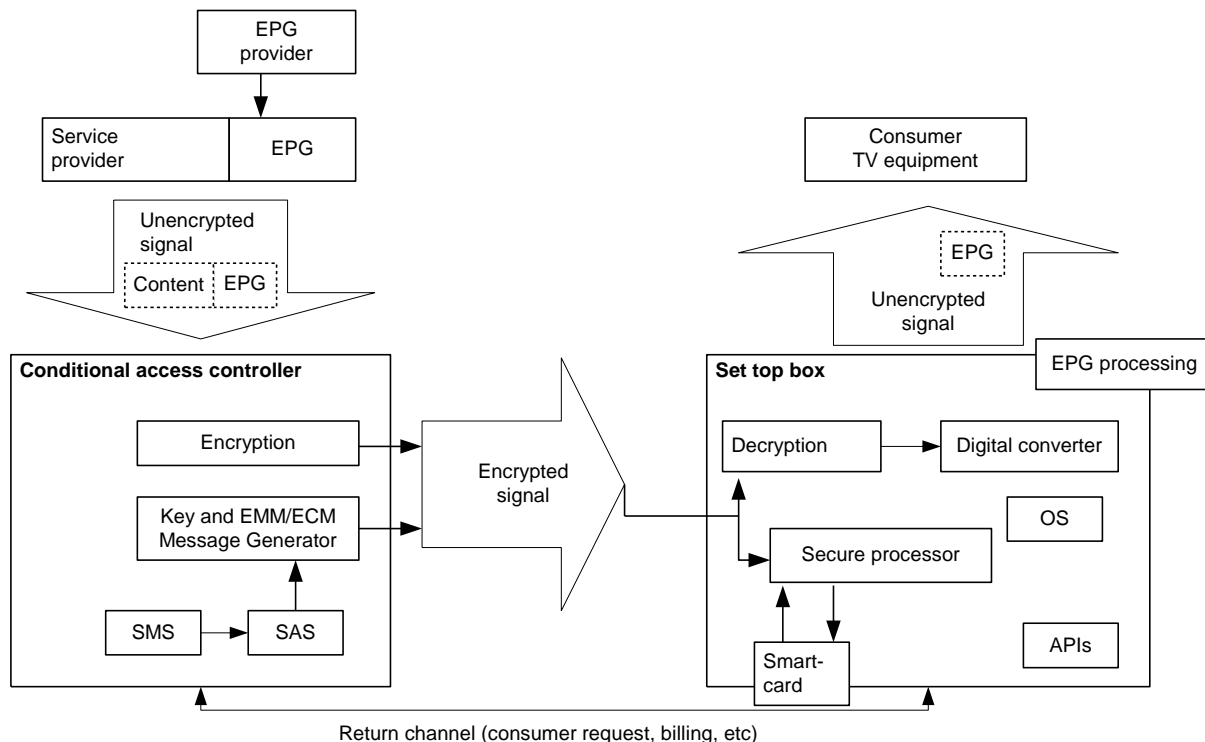
Before analysing the way in which these particular associated facilities are treated from a regulatory point of view and assessing the robustness of these provisions for the years to come, it is useful to recall the various functions of a set-top-box.

As the figure below illustrates, set-top-boxes are pieces of equipment that connect televisions to an external signal source and transform the signal into content that can be displayed on a screen. The source of the signal can come from any source: cable, satellite dish, or telephone line. Set-top boxes are however usually specifically designed to receive a signal from a given source, unless they contain a (digital) tuner, which enables them to receive signals from various sources. Digital set-top boxes are normally needed for receiving digital broadcasts (including free-to-air channels). Set-top boxes are a mix of software and hardware which can include:

- a conditional access function (to control access);
- an API (for interactivity);

¹¹⁸ 2002/21/EC - Framework Directive – Art. 2 e

- a hard disk which enables information to be stored.



API: Application programme interface
 EPG: Electronic programme guide
 OS: Operating system
 SAS: Subscriber authorisation system
 SMS: Subscriber management system

Source: Adaptation from figure by Natali Helberger, Controlling Access to Content - Regulating Conditional access in digital broadcasting (2005)

Figure 12: Associated facilities

We have heard from some operators that they do not use a conditional access system, but a digital rights management system (DRM) to control access to content, including audiovisual content. DRMs are used to manage rights in digital content but also control the onward use of downloaded content. We will analyse below if DRMs are a form of conditional access system or if they are different.

Access to the hard disk of a set-top-box is also apparently becoming an issue for some content providers. Some services like video-on-demand service may imply that films are stored on the set-top box for later retrieval. Content providers have told us that access to the storage capacity of a set-top-box may become a concern in the coming years.

The other factor to bear in mind is that it has become very clear that the content that flows through these devices is not purely broadcasting services but often a mix of scheduled audiovisual content and of purely on-demand services, be it games, films or music. This trend is bound to continue and this is an important factor, because the current regulatory

framework only regulates access to APIs, conditional access and EPG for radio and television services.

In the following sections, for each of these regulated facilities we will provide an overview of the regulatory provisions, as these are rather complex, and the way in which they have been implemented and enforced in the Member States. We will also bring to light some difficulties and in a last section, we will put forward some ideas to ensure that the regulatory framework withstands technology advances and the emergence of other potential bottlenecks.

b) Conditional Access (CAS)

Introduction

Conditional access systems is a method for a broadcaster/programme distributor to control access to its content. Conditional access can be a tool used by a channel to implement a business strategy based fully or partly on subscription revenues as an alternative to a free-to-air strategy with advertising revenues.

Conditional access can also be used by a platform provider to offer different programme packages, enabling each subscriber to see the programmes belonging to the subscribed package, which can include both free television and pay channels.

The directives

The Framework Directive¹¹⁹ defines conditional access as:

Any technical measure and/or arrangement whereby access to a protected radio or television broadcasting service in intelligible form is made conditional upon subscription or other form of prior individual authorisation.

Article 6, combined with Annex I of the Access Directive states that Member States must ensure that conditional access systems are technically capable of cost effective transcontrol¹²⁰ allowing full control by the network operator.

Two different sets of obligation apply to the following entities, which may be distinct:

First, all conditional access operators, irrespective of the means of transmission, who provide access services to digital television and radio services and whose access services broadcasters depend on to reach any group of potential viewers or listeners, must:

- offer to all broadcasters on a fair, reasonable and non-discriminatory basis, technical services to allow the TV and radio programmes to be received by viewers. Member States can allow their national regulatory authority to roll-back (amend or withdraw)

¹¹⁹ Art. 2 f

¹²⁰ "Cable operators may receive programming and other services for rebroadcast as required to their own subscribers via the same satellite broadcasts as are used to transmit direct to viewers' homes. Transcontrol is the process by which control of the broadcast stream is transferred from the conditional access operator to the cable operator...The transcontrol process should enable the cable operator to identify and remove the conditional access data and operate its own conditional access system. Transcontrol may involve the complete or partial substitution of parts of the data stream which relate to the use of the conditional access system, such as the electronic programme guide." Ofel, [The regulation of conditional access for digital television services](#), 1997.

obligations in relation to conditional access operators that do not have significant market power following market analysis if:

- end-users are not deprived from receiving the 'must-carry channels' as foreseen in article 31 of the Universal Service Directive;
- effective competition in the markets for retail digital television and radio broadcasting services and conditional access systems and other associated facilities are not adversely affected by the amendment or withdrawal.
- keep separate financial accounts for their activity as conditional access providers.

Second, holders of industrial property rights to conditional access products when granting licences to manufacturers of consumer equipment, must ensure that this is done on fair, reasonable and non-discriminatory terms. Taking into account technical and commercial factors, they cannot require licence conditions designed to prevent:

- a common interface allowing connection with several other access systems, or
- other access system functions as long as the security of his own system is not jeopardised.

National experiences

As the table at the end of this section shows, in most countries, there is little experience with implementation of regulations for conditional access systems. Sometimes, this is due to market development (if digital television is not yet launched), or, as is usually the case, access is settled by commercial arrangements, which according to the law must be fair, reasonable and non-discriminatory. There has been no instance so far where the regulator has decided to roll-back or amend access duties for operators that do not have significant market power.

The following national situations are interesting to highlight:

- The UK is the only country that has imposed specific requirements on a defined operator (BskyB). The choice of the operator was not linked to the market analysis procedure for market 18. It is interesting to see that Ofcom is trying to determine in its recent consultation on technical platform service (TPS) a methodology for determining the cost of access to TPS to meet the requirement of the Access Directive that access should be granted on fair, reasonable and non-discriminatory terms. The consultation has a wider scope than CAS, APIs and EPGs as it covers access to other related technical services such as geographic masking¹²¹ and access control services which include access to the digital broadcaster's remote computer hardware and software systems.
- In France, the audiovisual council has been granted the responsibility to settle disputes that might arise in relation to conditional access. Decisions have to be adopted within two months.

¹²¹ "Where purchasers of CA services are able to restrict access to content to defined geographic territories by implementing technologies and procedures which seek to restrict and/or record the geographic locations in which each of its digital receivers is installed and used. This technique is used to minimize the number of digital receivers that are able to access specific encrypted channels outside of specific geographic territories, such as the UK." Ofcom, Provision of technical platform services: Consultation on draft guidelines and explanatory statement, April 2006.

Potential problems or difficulties in implementation

Although there is very little practice in the Member States on the implementation of article 6 of the Access Directive it is easy to see that the mechanism foreseen in the Access Directive to allow national regulatory authorities to roll back obligations in relation to operators that do not have significant market power is difficult to exercise. One reason for this is the institutional structure. The regulatory authority for electronic communications networks and services, if it is responsible for market analyses, may not necessarily take account of conditional access, if it is considered to be under the jurisdiction of a broadcasting authority.

Another reason is the resource burden on newer or smaller NRAs, to launch a full market analysis exercise for CAS access, especially as in most Member States access to associated facilities including CAS is not at this time controversial or problematic for market participants. Another question is to identify the relevant market for CAS. It would appear obvious to suggest market 18, which would be in line with the fact that broadcasters (to the extent that they do not transmit their signals themselves) are the intended beneficiaries of the ex-ante access obligations imposed on operators with SMP.

Some operators have raised the question of what is meant by 'technical services', which is referred to in Annex I, part 1 of the Access Directive¹²². For instance, does this provision mean that operators must actually develop additional (possibly expensive) function to enable broadcasters to be able to interact with a conditional access system? Here, we could draw on an example of potential good practice in Finland, where the law specifies that unless it is technically inappropriate or otherwise unreasonable, operators using a decoding system are obliged to ensure that they do not prevent the distribution of broadcasting services.

Another difficulty is illustrated in the current consultation on technical platform services in the UK, where the regulator is trying to set a methodology for determining the cost of access to these services, which should be granted under fair, reasonable and non-discriminatory terms. This shows that the definition of "fair, reasonable and non-discriminatory" may not be precise enough and that it is the task of regulators to set some criteria for access. We therefore see that there may be a role for the European Commission to publish guidance as to the definition and implementation of access to associated facilities in the Member States, in order to strengthen harmonisation of these provisions of the EU 2003 regulatory framework.¹²³

For instance, one may consider whether the financial agreement between the broadcaster and the operator of the conditional access system should take account of the following factors:

- The broadcaster is broadcasting on a free-to-air basis, and is therefore not using the conditional access system to its 'full extent.
- The channel of the broadcaster has a must-carry status.

¹²² Annex I, part I of the Access Directive refers to the obligation imposed on operators of conditional access services to offer to all broadcasters, on a fair, reasonable and non-discriminatory basis, 'technical services' to enable their services to be received by viewers.

¹²³ A good precedent in this regard would be the 1998 EC Notice on the application of the competition rules to access agreements in the telecommunications sector.

- The operator of the conditional access system (who is often vertically integrated with the platform operators) significantly benefits from the presence of the channel on its platform.

Case study: Encryption and CAS in Germany, the Netherlands and the UK

In Germany, the encryption of programmes by CAS has been much discussed for about two years, while a strong trend toward encryption has been seen on all television platforms. Since January 2006 the private broadcasters' programmes are encrypted in the digital offers of cable TV operators. SES Astra plans to introduce a payment platform (codename "Dolphin") on its satellites. In August 2006 SES Astra closed agreements with two big private broadcaster groups (RTL and MTV). The new platform will be launched at begin of 2007 and will cost a maximum of 3.50 euro per receiver. Private broadcasters also wish to use encryption on digital terrestrial television.

There are many reasons for introducing encryption. In Germany the big cable TV operators on network layer 3 often do not have contracts with households because their networks end outside buildings (the "network layer 4" inside the buildings is operated by about 14,000 other operators). Encryption allows cable TV operators to establish a subscriber base with direct contracts with subscribers. Private broadcasters also have some reasons to favour encryption (e. g. that it gives them better information about their subscriber base) although they also were reluctant for some time to be carried on digital cable TV networks, because they would have more competition from other content providers.

The German public service broadcasters strongly oppose the trend to encryption and insist on being carried unencrypted on all platforms. Also, the regional media authorities have expressed concerns that it would harm media plurality.

In the Netherlands, the digital multiplex operator had specified the use of encryption (albeit a least-cost variety) on all multiplexes. The system specified would have been embedded in a variety of set-top boxes from differing manufacturers, thereby offering an element of choice. However, this decision would have resulted in the loss of free-to-air programmes with the transition to digital terrestrial TV. In particular, the public service broadcaster would have to change from free-to-air to encrypted transmission. Further, visitors to the country would be unable to view the local PBS programming unless they purchased a suitable set-top box.

The changeover to encrypted transmission was planned to take place at the end of October 2006, but the Dutch Government changed its mind in June 2006. Current information indicates that the television stations Holland 1, 2, 3 and the regional stations will be accessible via digital terrestrial transmission on November 27, 2006 and that the government made these transmissions free to view without need of a card.

In the UK, up until 2003, the BBC channels were available to UK viewers on BskyB's digital platform in encrypted format for copyright reasons. Because the BBC is financed by a licence fee, it distributed conditional access cards to all licence fee payers so that they could view the programmes "for free". As the cost of Sky's conditional access services increased, it decided to terminate the agreement with BskyB and to become available – by moving all of its services to the Astra 2D satellite - to all digital satellite viewers in the UK without a Sky viewing card. ITV has also decided to terminate its conditional access agreement with BskyB but the BBC and ITV continue to pay BskyB for EPG listings.

c) Application Program Interfaces (API)

Introduction

One of the primary purposes of an API is to describe how to access a set of functions that reside in the digital television set or the set-top box. For example, an API might describe how to draw windows or icons on the screen using a library that has been written for that purpose. In general an API is used to define how interactive functions work. Software accessed via a particular API is said to *implement* that API.

- APIs may be located on a continuum from “open” (accessible) to “closed” (proprietary), although it can be difficult to classify a particular API. Some companies guard their APIs zealously, while other companies propagate them freely.

We noted earlier that different APIs support different standards. Regardless if the standard is proprietary or open, providers of interactive applications need to develop services that are compatible with the API to make sure they will be compatible with the API platform.

The directives

There are a number of provisions in the EU regulatory framework on electronic communications which concern APIs. These can be summarised as follows:

- Article 18(1) of the Framework Directive calls on Member States to encourage providers of digital interactive television services and providers of digital television equipment to use open APIs. *It does not mandate a particular standard but the Commission must assess whether interoperability and freedom of choice of consumers have been achieved. If not, the Commission could take action and mandate an open standard.* Article 17 of the Framework Directive allows the Commission to draw up and publish in the Official Journal a list of standards which Member States must encourage the use of.

NB. Three standards have so far been published in the Official Journal for APIs: MHP, which is the most widely used, MHEG-5 and WTVML. The MHEG-5 standard is described as being simpler than the MHP standard; and the WTVML standard as an extension of the Wireless Mark-up Language (WML) for TV. It is a micro-browser for interactive television applications.

- Article 18 (2) of the Framework Directive requires Member States to encourage proprietors of APIs to make available all information necessary to enable providers of digital interactive TV services to provide all services supported by the API in a fully functional form. This information should be made available on fair, reasonable and non-discriminatory terms, and against appropriate remuneration, This provision is intended to enable broadcasters to develop services that will be compatible with the APIs.
- Article 5 and annex I of the Access Directive say that even in the absence of significant market power, national regulatory authorities are able to impose obligations on operators to provide access to APIs on fair, reasonable and non-discriminatory terms to ensure accessibility for end-users to digital radio and television broadcasting services specified by the Member State.

The interpretation of article 18 of the Framework Directive, which encourages the use of open standards and the provision of information on APIs has been recently assessed by the Commission in its consultation and communication on interoperability of digital interactive television services¹²⁴.

It concluded that there is no clear case for mandating standards, inter alia because of late development of the standard, and more importantly because in the market there are differing views on what interoperability really means. Some (especially public broadcasters) would like it to be interpreted to mandate open and non-proprietary standards. For others (infrastructure operators), it should be interpreted to require the availability of identical interactive services over different distribution channels. From the interviews that we have conducted during the course of this study, there indeed appears to be a widespread view that no standard should be mandated.

The Communication also highlights that the demand for interactive TV applications has proved to be less than forecast. It notes that the most extensive deployment of interactive set-top-boxes using MHP open standard has been in Italy, largely because of its consumer subsidy scheme. Other standards, such as PCF¹²⁵, are also being considered with a view to them being added to the list of standards. PCF enhances interoperability by enabling content providers to author their content once and run it on multiple platforms. It will be able to cover 80% of interactive television applications.

National experiences and potential problems

Regulators only seem to have very limited practical experience on access to APIs. This is not entirely surprising as APIs only come into operation with digital interactive television. On the implementation of article 5 of the Access Directive, we have seen that although the Access Directive mentions that Member States have to specify the broadcasting services that should be available to end-users, only one Member State has done so. Finland has made a distinction in the law between operators with SMP and without SMP. The NRA may impose an obligation on those with SMP to provide access to APIs for digital television or radio systems, whereas operators without SMP may be forced to provide access only if necessary to ensure availability of the must-carry channels. However, FICORA has not yet implemented these provisions.

Some Member States are trying to boost interactive digital television. Sweden for example is trying to promote the deployment of a common MHP standard, through inclusion in the broadcasting licence of conditions requiring the use of an open API standard and by giving priority to MHP-based services when processing licence applications. Teracom and Boxer have also been asked to promote the distribution of MHP-based set-top boxes

d) Electronic Programming Guides

Introduction

An electronic programme guide (EPG) is an on-screen guide to television and radio programmes. Information updates are typically transmitted via a data channel of a digital

¹²⁴ European Commission, [Communication](#) on reviewing the interoperability of digital interactive television services, February 2006.

¹²⁵ Portable Content Format.

broadcasting channel or even through an analogue channel using the space between pictures (the Teletext solution). The content of the programme guides can either be viewed directly, or modified by a customer premises device, such as a DVD-recorder or a decoder for viewing. This allows a viewer to navigate, select, and discover content by time, title, channel, genre, etc, by use of his remote control, a keyboard or a telephone keypad. Advanced EPGs allow the user to programme his I video recorder directly from the EPG itself.

The Directives

The Access Directive Article 5(1) and Annex 1 Part II of the Access Directive note that even in the absence of significant market power, national regulatory authorities are able to impose obligations on operators to provide access to EPGs on fair, reasonable and non-discriminatory terms to ensure accessibility for end-users to digital radio and television broadcasting services specified by the Member States.

National experience

There has only been a small amount of regulatory activity in the Member States, apart from the mere transposition of the provisions of the Access Directive. A notable exception is in the UK where a specific code of practice has been drawn up to provide guidance on the practice to be followed in the provision of EPGs. It has two main objectives:

- to ensure that public service channels are given appropriate prominence, and
- to spell out that EPGs must help people with hearing or vision difficulties.

Ofcom explains that public service channels should get 'appropriate prominence' because these channels are required to meet certain public service objectives, such as the provision of a high quality news service and the provision of a wide variety of programmes. They are also required to be made available everywhere in the UK. The code does not specify how these channels should receive 'appropriate prominence' but lets EPG providers make their own judgment. Ofcom only has the power to intervene in case of dispute.

France has specified that access to EPG should be granted by 'distributors of services' to editors of free-to-air analogue or digital television services who request it (under fair, reasonable and non-discriminatory terms).

In Spain, the law specifies that the government can specify to which broadcasting services the access requirements apply.

e) Interoperability of digital consumer equipment

Another interesting provision worth mentioning in the context of digital television is contained in Annex VI of the Universal Service Directive, which provides that

All consumer equipment intended for the reception of digital television signals, for sale or rent or otherwise made available in the Community, capable of de-scrambling digital television signals, is to possess the capability:

- to allow the de-scrambling of such signals according to the common European scrambling algorithm as administered by a recognised European Standards Organisation, currently ETSI;
- to display signals that have been transmitted in clear provided that, in the event that such equipment is rented, the rentee is in compliance with the relevant rental agreement.

There are two different methods for how this can be achieved.

- With Multicrypt, the set-top boxes of the viewers receive only customer messages from the CAS provider, with whom the viewer (or his platform provider) has an agreement. The customer message is processed with the aid of an exchangeable module which is connected to the set-top box through the “common interface”. If the viewer wishes to change platform and/or CAS provider, he can change PCMCA card, but otherwise retain the set-top box. But it has a disadvantage that the set-top box becomes more expensive.
- With Simulcrypt, the set-top boxes of the viewers receive customer messages simultaneously from different CAS providers. Each set-top box picks up the particular customer message addressed to it from the CAS provider, with whom the viewer (or his platform provider) has an agreement. Simulcrypt therefore provides the capability for a user to use the same set-top box to receive programmes from different sources as long as these sources have agreed to carry each others customer messages. Simulcrypt, when compared with Multicrypt, provides a simpler solution at a lower cost.

In Germany, DT's IP TV offer 'T-Home' is based on a Microsoft platform that uses the Windows Media DRM and not the Common Scrambling Algorithm. Based on the German transposition of Annex VI of the Universal Service Directive, BNetzA only allowed this for a transition period until conditional access systems for IP TV over DSL are standardised. After July 1, 2007, DT will be required to use the Common Scrambling Algorithm¹²⁶.

This is an interesting development, which illustrates that this provision could lead to ensuring that all digital consumer equipment, including set-to-boxes, mobile phones, capable of receiving television signals become compatible with all conditional access systems.

f) Access to associated facilities – a broader solution

There are very few problems in the Member States with the regulatory provisions on access to conditional access, APIs and EPGs. However, these issues are largely associated with the transition to digital broadcasting transmission technologies. This transition is still at a very early stage. Therefore, the current absence of problems should not be interpreted as a sign that there will not be problems after the transition. Therefore, we suggest that the existing regulatory tools should be reviewed and enabled to cope with the potential issues as we now understand them. In this context, we want to highlight that the regulatory framework does have some weaknesses, which are discussed in the following section.

¹²⁶ BNetzA, Notice 251/2006 in the official journal of July 5, 2006. The notice clearly refers to set-top-boxes that encrypt TV signals that are transmitted via DSL.

Characteristics and scope of application of article 6 of the Access Directive

It is interesting to note that the access regime of article 6:

- does not apply to bottlenecks other than the CA device, as defined in the directive (see below). For example, as explained above, some content providers are concerned that access to the storage capacity of consumer equipment such as a set-top-box, could become a concern in the years to come;
- exclusively refers to conditional access services for digital television and radio broadcasting services. Hence, it does not apply to CA devices that control access to non-broadcasting services such as non-linear audiovisual services and other information society services;

It provides that all operators of conditional access services must offer to all broadcasters, on fair, reasonable and non-discriminatory terms, technical services to allow their services to be received by viewers or listeners. The access obligation is therefore unconditional or 'absolute'¹²⁷ It is possible to question whether the special regulatory treatment for conditional access is still justified because it contrasts with:

- the more flexible approach of articles 8 to 13 of the Access Directive which concerns access to electronic communications networks and (other) associated facilities.
- the legal treatment of access to APIs and EPGs, which is not absolute in that it refers to 'specified television and radio services', as explained above.

We have found that article 6 of the Access Directive raises a number of issues:

First, there is no clear justification for the difference in legal treatment between the unconditional access obligation for CAS on the hand and the more limited access obligations contained in the provisions on API and EPG on the other hand. The justification of this difference in legal treatment lies perhaps in the fact that at the time of adoption of the TV Standards Directive in 1995 it was assumed that conditional access would be the primary bottleneck. However, in 1999 the Commission recognised that there was already a certain amount of awareness that other elements in digital television could constitute bottlenecks but it was uncertain when or if they would be introduced into the market. The Commission's report of 1999 on the TV Standards Directive report listed the following potential bottlenecks:

- the multiplex operator and its potential ability to favour certain broadcasters;
- APIs;
- EPGs;
- management of memory and storage;
- the return channel and the authentication server (which verifies the authenticity of messages from users that could be manipulated by platform operators against the interests of third parties; and

¹²⁷ N. Helberger, Access to technical bottleneck facilities: the new European approach, Communications & Strategies 2002 – 2, p. 33.

- digital copyright protection systems, which in 1999 were perceived as an unlikely bottleneck, but needed to be included for sake of completeness.

Secondly, the definition of conditional access is not robust enough to cover all future forms of potential bottlenecks that could emerge. For instance, the definition¹²⁸ relies on the notion of subscription or prior individual authorisation, whereas CAS are also used in free-to-air services.

More importantly, it is unclear whether the definition of CAS would cover new forms of potential bottlenecks, such as DRMs.¹²⁹ Although DRM could be considered as a form of CA under the current definition, there are different views in the market as to whether DRMs are a form of conditional access or something different. DRMs are based, like conditional access, on encryption but perform other functions such as to restrict the onward use of protected content. On some platforms (e.g. mobile TV), there are operators who use a DRM system which may be considered a form of conditional access under the current definition. At present, there is not a uniform view among operators or regulators. It is obvious that when CAS and DRM are used to control how a viewer has access to a broadcasting channel provided by a broadcaster or platform provider, the treatment of access to CAS and DRM should be identical from a regulatory point of view. .

Thirdly, article 6 only covers conditional access for digital television and radio services. The reason for this reference to television and radio services goes back to the time of adoption of the TV Standards Directive, which was aimed at boosting the development of digital television services, which at the time were only 'linear' services. Things have greatly evolved and all types of content can now be delivered through CAS. For instance, a content provider wanting to offer a video-on-demand service may have to negotiate access to a conditional access system.

Possible ways forward

It could be argued that it would be better to have a more flexible approach to bottleneck problems by regulating CAS - but why not also all other bottlenecks – as an associated facility under articles 8 to 13 of the Access Directive, which do not deal with predefined bottlenecks. As has been suggested¹³⁰ this approach would have the following distinct advantages:

- articles 8 to 13 do not distinguish between specific bottlenecks. This has the advantage of not freezing regulation in time;
- NRAs would be able to determine under which circumstances the facilities could be considered as potential bottlenecks;
- NRAs would be able to impose specific and possibly more effective ex-ante access obligations in case of significant market power.

¹²⁸ It covers 'technical measure and/or arrangement whereby access to a protected radio or television broadcasting service in intelligible form is made conditional upon subscription or other form of prior individual authorisation'

¹²⁹ The consultation on technical platform services in the UK suggested that broadcasters must seek access to other types of technical services from operators if they are to go through their platform, which are also regulated.

¹³⁰ Controlling access to content, Regulating Conditional Access in Digital Broadcasting, Information Law Series 15

This approach may not be an option under the current regulatory framework for electronic communications, because, as was explained above, if broadcasters are not providers of electronic communications services, then it is not clear that they are entitled to access and interconnection (Art 4.2 Authorisation Directive) under the Access Directive. To become effective this option would therefore require amending or otherwise clarifying the Access Directive. One option could be for the Access Directive to define associated facilities as distribution functions, and make it clear that broadcasters have access rights to distribution functions.

At the same time, a special regime should be reserved for channels that have a must-carry status. This could be achieved by grouping the provisions on must-carry, and on access to conditional access, APIs and other associated facilities into a separate legal provision, the beneficiaries of which would be the primary broadcasters for the channels that benefit from a must-carry status.

Under this proposal, the channels that benefit from a must-carry status should also have access to other network elements that are indispensable to reach potential viewers, under fair, reasonable and non-discriminatory terms. This would obviously cover conditional access, API and EPG but could also cover, other access systems such as DRMs, set-top-boxes, the multiplex, search engines, etc.

This idea is already contained, albeit in an indirect manner, in the Access Directive:

- In relation to conditional access, the directive specifies that national regulatory authorities are allowed to roll-back, amend or withdraw access obligations in relation to conditional access operators that do not have significant market power following market analysis, if end-users are not deprived from receiving the 'must-carry channels' as foreseen in article 31 of the Universal Service Directive.
- In relation to EPGs and APIs the directive also contains the idea that not all broadcasters should benefit from access obligation but that the Member States must specify which television and radio services should be able to benefit from them.

g) Summary table on national situation on CA, API and EPG

This table contains an overview of the implementation status of the provisions on access to CA, APIs and EPGs. It also shows which Member States have more specific requirements (e.g. cost orientation for access to CA) or where regulators have intervened in particular cases.

Member State	Conditional access		API		EPG	
	Implementation?	National specificities or issues?	Implementation?	National specificities or issues?	Implementation?	National specificities or issues?
AT	✓		✓		✓	✓
BE	✓		✓		✓	✓
CY						
CZ	✓		✓		✓	
DK	✓		✓		✓	✓
EE	✓	✓	✓		✓	

Member State	Conditional access		API		EPG	
	Implementation?	National specificities or issues?	Implementation?	National specificities or issues?	Implementation?	National specificities or issues?
FI	✓	✓	✓	✓	✓	✓
FR	✓	✓	✓	✓	✓	
DE	✓	✓	✓	✓	✓	✓
GR	✓				✓	
HU						
IE	✓	✓	✓		✓	
IT	✓		✓		✓	
LV	✓		✓		✓	
LT	✓		✓		✓	
LU	✓		✓		✓	
MT	✓		✓		✓	
NL	✓		✓		✓	
PL	✓	✓	✓		✓	
PT	✓		✓		✓	
SK	✓		-		-	
SI	✓		✓		✓	
ES	✓		✓		✓	
SE	✓		✓	✓	✓	✓
UK	✓	✓	✓	✓	✓	✓

Table 11: CAS, API, EPGs

3. Recommendations

a) Access to wholesale broadcasting transmission

One size does not fit all

While telecommunications market structures tend to be similar across Member States with one national incumbent operator being designated as having SMP on all fixed markets, national broadcasting markets are looking very different. In countries such as Greece, Italy or Spain over 70% of viewers watch terrestrial TV. In Scandinavia cable has around 50% market share; in the Benelux countries they have is around 90%. In countries such as France, Portugal, Slovakia or the UK, terrestrial TV has over 50% market share but cable and satellite have a significant presence. In Ireland market shares tend towards being even among the three platforms.

Markets to be regulated

With respect to SMP designation and remedies the following approach is recommended. When deciding on which markets SMP operators exist, NRAs should ask the following questions:

- Is there a market failure on the market for managed transmission services?

An absence of market failure of this market may be the result of countervailing buying power exerted by broadcasters or of effective non-SMP regulation (e.g. must-carry).

If no market failure exists, no SMP regulation should be imposed. If a market failure is observed, the next question should be raised.

- Is there a real prospect for intra-platform competition? Access obligations imposed on markets 11 and 12 have in most countries lead to investments by new entrants first reselling the incumbent services, then building to the ATM switches and increasingly to the MDF. Consumers have enjoyed the benefits of competition in terms of variety of services and prices. Can the same results be achieved by imposing access conditions on the wholesale market? In other words, is there scope for service differentiation? Does the investment ladder theory apply? Are broadcasters not already locked into long term contracts?
 - If there is a real prospect for intra-platform competition: a SMP operator should be designated and access remedies should be imposed on the market for access to network elements (intra-platform competition);
 - If there is no real prospect for intra-platform competition: a SMP operator should be designated and access remedies should be imposed on the market for managed transmission services.

The recommended approach is summarised in the figure below.

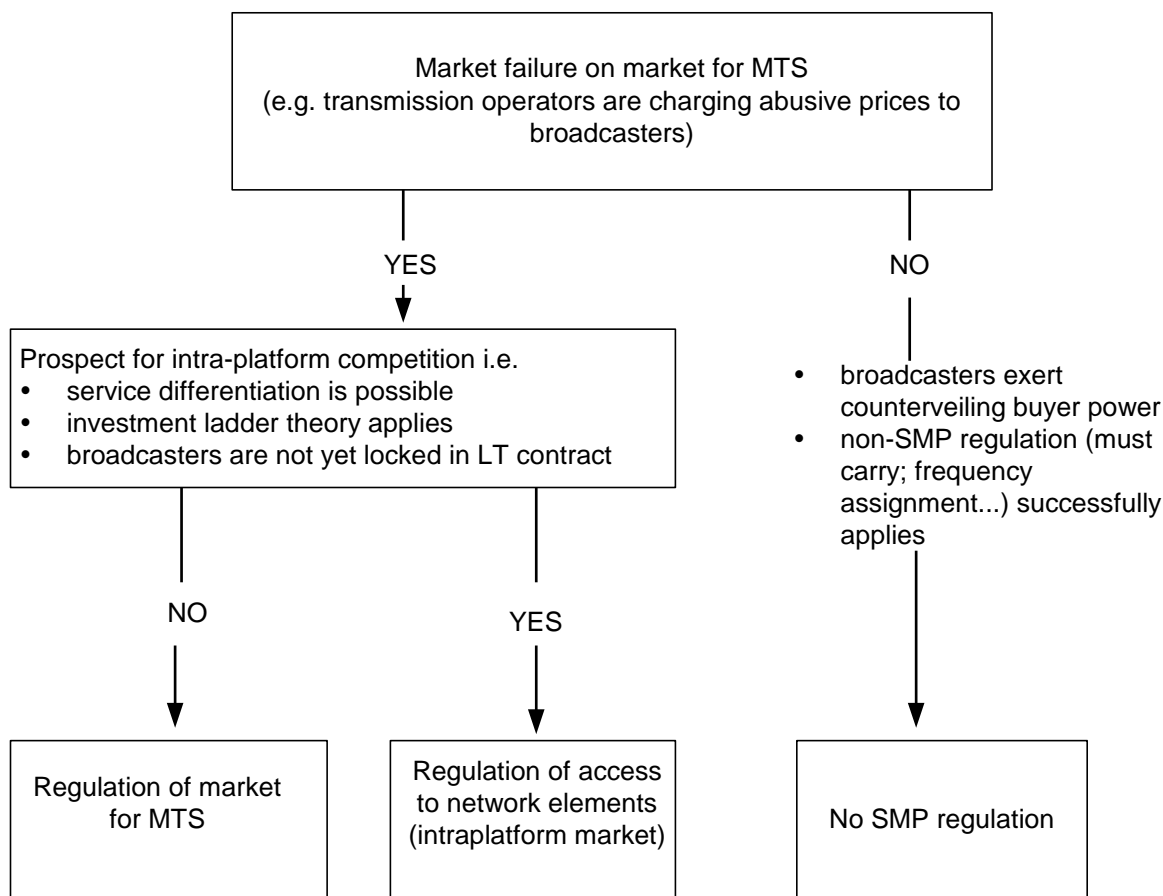


Figure 13: The recommended approach to market 18

Recommendation 11

If the Commission includes market 18 in its 2nd recommendation on relevant markets, which will be adopted in 2007, it could as a minimum step clarify that it includes two separate elements:

- Managed Transmission Services, and;
- access to network elements.

Furthermore, in view of the evidence gathered in this report, the Commission should question whether there is a real prospect of creating intra-platform competition. France is the only country that have succeeded in introducing such competition and it will largely depend on approaches to spectrum assignment and to authorisation if such form of competition will emerge in other countries.

It may therefore be considered to confine the scope of market 18 to Managed Transmission Services.

The need for greater harmonisation

The absence of new entrants (except in France) on the DTT transmission market for reasons explained above are not an incentive for NRAs to invest resources in the development of burdensome regulatory obligations for access. Nevertheless, if the Commission still sees a value in ensuring that proper obligations are imposed on the SMP operators in that market, then more cooperation should be encouraged between NRAs to define the costing principles. A good example to follow would be the work to properly define bitstream access options undertaken by ERG in the past. Perhaps a ERG working group could be formed, but it might have to be broadened to include broadcasting authorities at least in the Member States where NRAs do not have the responsibility for regulation of the market for managed transmission services.

Recommendation 12

The Commission should assist and encourage NRAs to co-ordinate in their approaches to defining access remedies for market 18, for example by adopting a common position on access in market 18 for competing transmission providers and exchanging information on available reference offers in the EU.

b) Access to associated facilities

Recommendation 13

It is probably premature in this study to propose a 'final' recommendation on the regulatory framework on access to conditional access, APIs and EPGs because there is only limited experience in the Member States on the functioning of the relevant provisions of the Access Directive. We however see that these provisions may not be adequate for the next decade, particularly in a rapidly evolving environment, as the emergence of DRMs illustrates.

We therefore suggest that more research is needed to identify whether the provisions should be changed to ensure greater flexibility for Member States to take into account market developments, as well as to require them to match access requirements with the clear identification of actual bottlenecks. A possible way forward could be to consider:

- Removing the special access regime for conditional access, because there seems to be no justification or reason to maintain it.
- Make allowances in the provisions on access to associated facilities for the emergence of other potential bottlenecks than EPGs and APIs. This could for instance be achieved by giving national regulators the ability to ensure access to proven bottlenecks (including but not limited to conditional access, EPGs and APIs) following a market analysis procedure under articles 8 to 13 of the Access Directive.

NB. This approach would benefit from clarification that broadcasters are able to benefit from Articles 8 to 13 of the Access Directive, as discussed in other sections of this report.

- Specifying that must-carry guarantees access to a transmission network and to all the associated facilities (including, but not limited to conditional access, EPGs and APIs) under fair, reasonable and non-discriminatory terms, thereby maintaining a special access regime for those channels that benefit from must-carry.

E. Radio broadcasting

1. Introduction

The information we have collected suggests that the regulation of sound radio broadcasting in the Member States is more consistent with the EU 2003 regulatory framework than is the case for television broadcasting. In addition, issues regarding licensing and authorisation, must-carry and access to conditional access and associated facilities present far less problems in the case of radio services. The reasons for this are as follows:

- The channels occupy a much narrower bandwidth. Thus finding frequency capacity or capacity on wired systems (e.g. cable and broadband) for a new sound radio service is normally an easier task than finding the capacity for a new television service. Must-carry requirements may not therefore need to be mandated. If mandated, they would be less obtrusive.
- Radio markets in most Member States are highly fragmented, locally oriented and likely to remain that way, despite moves toward consolidation in some Member States. This means that there is less interest in re-broadcasting radio services in other Member States than is the case for TV. Licensing issues associated with retransmission of radio signals do not appear to have arisen. The fact that there is no radio equivalent of the TWF suggests the market works well in allowing re-transmission and pan-European service delivery. Many radio programmes are retransmitted or transmitted exclusively through the Internet.
- Commercial Radio services are generally advertiser financed and free-to-air, so encryption and associated facilities issues do not arise. While subscription radio services have started on the Internet and over satellite (in the US), we are not aware of any issues regarding associated facilities for radio services and so it would seem premature to introduce new regulatory arrangements.

However, in many Member States there is a shortage of frequencies in the FM radio band and issues concerning access to spectrum for digital radio are of concern to industry. Frequency issues are discussed in Chapter C and are summarised below together with a discussion of the issues around digital switchover.

In addition, in some Member States issues have arisen in respect of the provision of site and mast rental and transmission services (i.e. market 18) and these are also discussed below.

2. Wholesale broadcasting transmission

Local radio broadcasts are normally relatively low powered using antennas that do not need to be located on high masts. This means that radio broadcasters have a wider choice of transmission sites (and transmission providers) for their services than television, where large high powered sites are often required. Although we note that the high power AM/MF broadcasts require large isolated sites for which there will be few substitutes, in the case of the low power AM/MF stations that are intended for local coverage only, a relatively wide range of sites should be available.

This means that it would be easier to have competition in the supply of sites for radio broadcasting.

3. Frequency issues

European commercial radio broadcasters have expressed their concern about:

- preferential access by public broadcasters to frequencies for analogue and digital radio broadcasting, and:
- access to radio spectrum for the provision of digital services in a liberalised environment in which spectrum that is allocated internationally to broadcasting may in future be auctioned on a technology and service neutral basis.

These issues were discussed in section III.B where we concluded that as a general rule there did not seem to be good reasons for purely commercial radio services to obtain preferential access to spectrum.

4. Transition to digital transmission for radio broadcasting

a) Introduction

The main area where there is a major difference between radio and TV concerns the process by which analogue to digital migration on the terrestrial platform may occur. For television the process is well advanced with switchover targeted to occur in many Member States by 2012.¹³¹ DVB-T technology is being deployed and switchover is occurring in bands already allocated to TV services.

By contrast in radio the migration from analogue to digital transmission using a terrestrial platform is only just starting.

This section explains the differences between digitalisation for television and radio, the status of digital radio transmission standards, the potential dividend from transition to digital transmission and the practical issues that such a transition would face. Finally, it concludes that the digital transmission of radio may have a significant dividend in terms additional radio channels and alternative applications and that an effort should be made to reach a consensus for a transition strategy.

a) Why does the dividend exist?

Broadcast service using radio frequencies commenced using analogue technologies. These technologies added the broadcast information directly onto the radio frequency bearer signal – the carrier wave.

As analogue broadcasting moved from developmental into a mature market, various techniques became available to improve and increase the amount of information which could be carried by a given carrier wave. However, great care was taken to ensure that the existing

¹³¹ <http://www.digitag.org/DVBHandbook.pdf>

audience with its investment in legacy receivers was not excluded by any “improved” signal – rather if quality improvement was being offered - then the audience was encouraged to migrate gradually to the new improved service. Hence for many years the improved quality and performance (stereo) offered by using a Frequency Modulation (FM) technology, duplicated the lower quality mono service available using the original Amplitude Modulation (AM) signals. More could have been achieved technically in a shorter time but the audience is the target of the transmission of the broadcast signals and hence the availability and price of suitable receivers for the new service determined the speed of change. This argument holds for all incremental improvements – *but digitisation is a fundamental rather than incremental change.*

The development of digital technology and the market drivers of computing, telecommunications networks, and mobile services, have enabled a phenomenal increase in information transmission. As a practical illustration, the telephone line that is currently used to offer 8 million bits of information per second (with more to come), is the same line that could *not* offer a single high quality analogue sound signal due to insufficient bandwidth.

This illustration for a fixed line circuit also holds good for radio circuits. As such, the ability to offer more information in digital format via a given radio frequency (r.f.) channel than in analogue format, means that less transmission resource will be needed for the broadcast signal. Hence a significant level of frequency spectrum resource should become available for redeployment – the digital dividend

b) The changes to broadcast television

Converting broadcast television signals from an analogue format to a digital format offered significant increase to the number of programme channels available within a given radio frequency (r.f.) channel¹³²). This comes about principally because of two techniques:

- use of compression (data reduction) techniques based upon predictive algorithms and a greater appreciation of the way in which the human eye and brain perceive what they see, and:
- removal of all redundant information such as frequent synchronising/framing pulses from the TV signal.

This prospect was fully appreciated EC and, in consultation with Member States, agreement was reached to target 2012 for changeover to digital of all TV Broadcasting in the EU. This agreement is being implemented by the individual NRAs in collaboration with ITU who recently confirmed a date of 2015 for effective end of analogue TV services in Bands 4 and 5.

Note that the actual digital dividend due to digitisation of TV Bands 4 and 5 which can be achieved in each Member State will be different. Small countries surrounded by other countries will achieve less than countries on the edge of Europe. As an illustration, UK identified 14 channels to be available (=14x8=112MHz) for redeployment at recent RRC-06 planning conference in Geneva.

¹³² The radio frequency channels are agreed internationally with ITU to minimise interference between countries. In analogue broadcasting one programme channel normally fully occupies one radio frequency channel.

c) Potential for changes to broadcast radio

Transmission efficiency is relatively higher for analogue radio services than for television services because no timing information need be transmitted. Whilst there is no direct radio equivalent to the predictive techniques used in television, there is considerable scope for data compression through improved understanding of the human hearing mechanism. Many aural techniques exist, such as use of “masking” (the inability of the human ear to discriminate a low level sound at any frequency in the presence of a loud sound at another frequency - therefore no need to transmit the low level sound). Such techniques enable significant savings to transmission requirements for a single radio channel.

d) Available Digital Radio Systems

Four technologies are currently approved by ITU for general terrestrial broadcast use:

- Digital audio broadcasting (DAB) is the main digital technology currently being deployed in Europe. DAB transmissions require additional spectrum over and above the existing AM and FM Bands.
- Digital Radio Mondiale (DRM)¹³³. This an open, non-proprietary standard developed in Europe and is intended to provide a digital alternative to existing AM transmissions that will fit into the existing 9 kHz (European) or 10 kHz (American) channels. It is being developed¹³⁴ to cover the whole of the FM Bands. DRM is claimed to deliver audio quality approaching that of existing FM services (15 kHz audio bandwidth) and can also deliver limited multimedia content, such as station names and formats or the transmission of HTML pages. It is significantly more spectrally efficient than analogue broadcasts in that it should use only 25% of an existing FM channel to provide similar quality.
- In-Band On-Channel (IBOC) This standard is developed in US and is being deployed on AM and FM bands with FCC approval. It provides a similar facility to DRM.
- Standard DVB-T transmission is also used for radio channels¹³⁵.

Each of the three competing technologies (DAB, DRM and IBOC) has its own interest groups and development programmes. The move from analogue to digital will take place over at least as long a period in radio as it is doing in television.

Much of the coding and modulation developments for DAB provided the basis of the designs for Digital Vision Broadcasting. However further rapid development of coding technology has

¹³³ Digital Radio Mondiale utilises more recent coding developments to offer better transmission efficiency than either the AM, the FM or the DAB systems. It has been developed to offer digital radio and multimedia in the same channels (i.e no new spectrum needed). Agreement has been reached for use in the AM bands, and the DRM120 project exists to enable it to be used in the FM bands where it will need approximately 25% of the existing channel capacity. This system offers the nearest option to a digital dividend in the Radio environment since it offers new services without needing new spectrum. It is understood that Digital Radio Mondiale system has recently been approved by ITU for worldwide usage for ShortWave broadcasting and for all except ITU Region2 for use in Long Wave, Medium Wave and FM bands. The exception for Region2 is because USA has developed its own variation of Digital Radio Mondiale called InBand-On Channel (IBOC). http://www.drm.org/pdfs/press_release_1.pdf#search=%22DRM%20120%22 (they also do a software receiver)

¹³⁴ the DRM120 project

¹³⁵ Radio over DVT-T is carried within a DVB-T mix and does not as appear as a separate service. It is designed for reception by a fixed antenna, as opposed to DAB and DRM which are designed for portable devices with small antennas.

taken place in the last decade, resulting in significantly improved transmission efficiencies than offered by DAB.

The importance of these coding improvements is such that WorldDAB organisation (which changed its name to WorldDMB on 30th October 2006) has instituted work on a new standard - DAB+ or DAB2. This standard will use more recent coding schemes such as AAC, requiring a new version DAB receiver.

Furthermore, the DRM Consortium has now registered with ITU its development of DRM 120 (or DRM+) for use in the Broadcast Bands from 30MHz to 120MHz and which offers 10 channels in the place of 1.

In the case of television in the UHF Bands, only one system (DVB-T) had been developed and agreed for use throughout Region 1 of ITU. In the case of radio in the FM bands, four technologies are being developed utilising similar techniques and claiming to offer digital dividends. Differences do exist at the margins relating to cost and ease of meeting the needs of local and region services. Discussion of these aspects is beyond the remit of this note.

Two points remain to be made before comparisons are drawn:

- all technologies (DRM, DAB, DVB-T, IBOC) are in service. DAB in both Band III and L-Band utilising additional broadcast spectrum, and offering additional services together with “TV to mobiles” via the DMB derivative.
- DRM is in service in Europe to enable digitisation of the AM bands, IBOC in the US.

The technologies are approved for use in many parts of the world. There is thus a growing need to clearly address the issue of whether to agree a system for use throughout Europe to facilitate transition from analogue to digital radio broadcasting.

e) Estimate of digital dividend potential

In Table 12 below, a comparison is made between the theoretical digital dividend in television and radio in terms of channels and spectrum.

- Digitisation of the television channels allows up to 5 high quality TV services to exist in the same spectrum space as that occupied by 1 analogue TV channel.
- Digitisation of the sound radio broadcasting service will allow 10 high quality radio programmes to exist in the spectrum space of 1 FM Radio channel.¹³⁶

¹³⁶ ITU Doc 6E/413-E dated 14th August 2006- Narrowband Digital Broadcasting with the DRM system in Bands I, II

Type of comparison	Spectrum Allocated to Broadcast Television	Spectrum Allocated to VHF Broadcast Radio	Spectrum Allocated to AM Broadcast Radio	Spectrum Currently Allocated to Digital Radio
Allocation	470-862MHz (UHF)	87.5-108MHz (VHF)	148.5-283.5kHz (LF) 526.5-1606.5kHz (MF)	174-240MHz (Band-III) 1452-1492MHz (L-Band)
Total Spectrum Available	392Mhz	20.5MHz	135kHz +1080kHz =1215kHz	66MHz +40MHz =106MHz
Analogue Programme Channels Available ¹³⁷	49 Channels	102 ¹³⁸	135	N/A
Digital Programme Channels Available	245 high quality Channels (Standard Definition) or up to 490 at lower quality ¹³⁹	1020 ¹⁴⁰	135	Approx 100 Multiplexes ¹⁴¹
Apparent Digital Dividend in Programme channels	From minimum 245 – 49 = 196 to maximum 490 – 49 = 441	1020 – 102 = 918	0	0
Apparent Digital Dividend in MHz <i>The released spectrum may be redeployed to other usage</i>	= 392 – ((49/5)*8) = 313 MHz ¹⁴²	=20.5 – ((102/10)*0.2) = 18.46MHz		
Please note that: <ul style="list-style-type: none"> The Allocations shown over are appropriate for the European Region of the ITU (Region 1). For simplicity, the bands shown exclude any current TV usage in Bands I (47-68MHz) and Band III (174-230MHz) The details of usage in these bands are included in the GE06 plan of ITU but are the exception rather than the rule. The AM broadcast bands are the Long Wave (LW), Medium Wave (MW) and ShortWave (SW) Bands. Frequencies in all three bands can cover large geographic areas and their coverage characteristics vary by night and day, also (in the case of SW) seasonally. The figures in column 4 are split to show which is the LW and MW spectrum. The SW spectrum (3MHz to 30MHz) is used for broadcasting across international frontiers and therefore affects all regions of ITU (1, 2, and 3). As such it is principally subject to direct planning by ITU and is not considered further in this note, except to note that DRM is the internationally approved standard for use in this band. 				

¹³⁷ For information, the ITU figures for 2003 indicate that frequency reuse has allowed in excess of 60,000 individual transmitters to operate throughout Europe using these radio frequency channels on a non-interference basis to ensure the required population coverage for each Programme Channel.

¹³⁸ Taking a channel spacing of 200kHz

¹³⁹ These numbers are based upon current technology. Improving compression techniques will increase the numbers

¹⁴⁰ Derived from Reference ITU document 6E/413-E dated 14th August 2006 regarding DRM.

¹⁴¹ Note that a DAB multiplex will vary in bitrate carried – approximately 1150kb/s being typical. The number of channels carried in each multiplex will depend upon quality and type of channels. The early MP2 compression system is used, hence 192kb/s is needed for high quality whilst 128kb/s offers acceptable quality. The new DAB+ system is being designed using AAC+ coding which will allow greater capacity.

¹⁴² UHF r.f. channel is 8MHz wide to take account of the vestigial vision and also of the sound carrier and FM sidebands. 49 program channels can be provided within 49/5 ~ 10 digital radio channels = 80MHz. Thus theoretically some 313MHz could be available, but as discussed the issues of acceptable levels of interference and other aspects of service planning mean that considerably more rf channels are needed for coverage in a real country.

Type of comparison	Spectrum Allocated to Broadcast Television	Spectrum Allocated to VHF Broadcast Radio	Spectrum Allocated to AM Broadcast Radio	Spectrum Currently Allocated to Digital Radio
<ul style="list-style-type: none"> All AM bands can transfer to digital broadcasting using DRM technology. There will be a gain in broadcast quality and available service (e.g.. limited additional data capacity), but little tangible in the way a Digital Dividend of available spectrum The precise number of Radio or TV channels which are actually broadcast in a given country or region will depend upon planning criteria such as interference limits, population coverage requirements etc. The numbers given in Table 1 are directly computed from the maximum number of channels available within the band. <i>As such whilst the absolute numbers given in the table are for guidance only, the comparison between the capacity available for analogue signals compared to digital signals is theoretically accurate at the date of this report.</i> 				

Table 12 – Comparison of digital dividend potential between radio and television broadcasting

f) Transition issues

DAB services are currently transmitted in almost all Member States, though coverage and range of services varies considerably as does consumer adoption of DAB equipment. In August 2005, the World DAB Forum reported¹⁴³ coverage ranging from 0% in Ireland to 99% in Belgium. Take-up in the UK is the highest at around 14% of households (in the first quarter of 2006)¹⁴⁴ and high growth rates experienced in Belgium and Denmark.

Whilst the DAB system does offer more effective use of the frequency spectrum than does FM broadcasting¹⁴⁵, the need to maintain services into existing analogue broadcast receivers has resulted in a decision that it cannot operate in the existing frequency bands and therefore additional spectrum is needed to enable the rollout. The frequency channels used are amongst those which were earlier allocated to monochrome TV broadcasting in the upper range of the VHF bands, together with an additional allocation at L-Band (between the two main GSM telephony bands).

The ubiquitous availability of low cost FM receivers and the suitability of this mode for localised transmissions carrying a single broadcast service¹⁴⁶ suggest migration to digital transmission can be expected to take a considerable period of time – probably in excess of 10 years. One methodology is to continue the policy started with DAB of allocation of additional spectrum to Digital Radio Services. Then, if digital radio coverage and penetration eventually reaches levels comparable to today's analogue services, it might be possible to migrate national FM services to DAB (and/or to DRM), enabling the spectrum to be released for local services.

Coverage of DAB and/or DRM in Europe is unlikely to offer the near ubiquitous coverage of the FM systems for many years yet. In the face of a wide choice of technologies for receiving radio services, the listener in the near to middle term future may benefit from access to a radio which is able to configure itself (or be configured) to receive differing types of signal. The idea of software-defined radio (SDR) system has been in place for some years. In essence it is a radio communication system which uses software for the modulation and

¹⁴³ <http://www.worlddab.org/gendocs.aspx>

¹⁴⁴ <http://213.232.71.20/images/information/Final%20report%202006.pdf>

¹⁴⁵ However a significant spectrum dividend can only be achieved with new receivers implementing the new standard (see above).

¹⁴⁶ The DRM system seems to be a digital technology well adapted for the same circumstances.

demodulation of radio signals. The concept can also be described more generally as a multimode radio.

An SDR performs significant amounts of signal processing in a general purpose computer, or a reconfigurable piece of digital electronics. The goal of this design is to produce a radio that can receive and transmit a new form of radio protocol just by running new software. Software-defined radio can currently be used to implement simple radio modem technologies. In the long run, software-defined radio is expected by its proponents to become the dominant technology in radio communications. Whilst much of the original work on SDR was carried out for military uses, it is recognised that public emergency services also need the facilities. Thus a body of research and development work is underway at present, for example NTT are working with the objective of developing a hand-held SDR mobile terminal that is as small as current mobile terminals and has the same low power consumption.

An SDR, therefore, could help avoid some of the paralysis caused by multiple competing standards for digital radio if a consumer could simply purchase a radio receiver with multiple chips in it. However, the cost of SDR solution is a negative factor, particularly bearing in mind that cost will always be an issue and that radio is far more price sensitive than is TV.

Clearly, whilst radio is inherently simpler than television and uses less spectrum, the problems raised in a transition from analogue to digital broadcasting of radio programmes are of the same order as for television

In view of these uncertainties, it may be unrealistic to expect the Commission to require all Member States to implement a co-ordinated approach for the transition to digital radio as has been the case for digital television. However given this situation, where there are competing technologies and several fundamentally different solutions, then focusing on a demand-side led solution to get consumers equipment that will encourage the switchover in digital radio could be a valuable approach.

g) Conclusion

A first point to be made is that radio broadcasting suffered from being first in the field to exploit digital transmission with the DAB development. As such DAB is currently locked into an inefficient coding technology. However the situation can and is being addressed in the near future before markets are too well established and the newer technology is to be incorporated.

As an adjunct to this it is believed that, unlike Moores Law, the advance of coding technology has practical limits and that the rapid advances made over the past decade have now largely been replaced by refinements rather than radical change.

Secondly, radio broadcasting is well placed to benefit significantly from the practical experience of the transition of the UHF TV bands. A given analogue FM radio programme must be suitable for use in a noisy environment, fixed or mobile, and for use on basic or high quality receiving equipment in a home. TV programming is only now – with the transition from analogue to digital - starting to address such a stringent breadth of requirement. Radio will benefit from being second service to transition.

The third point is that the bands used for radio broadcasting (excluding the L-Band DAB allotment) are lower than those used for UHF Television and hence their propagation

characteristics differ. Frequencies in the VHF band travel round topographical features and through walls etc better than those of the UHF TV bands. As such the infrastructure costs of any network offering coverage at VHF frequencies will be less than for UHF TV as it will need fewer base stations

The final point is that the quantity of spectrum currently used by radio broadcasting (the bandwidth) is significantly less than that for television broadcasting and hence the potential for digital dividend is apparently less.

The above points combine to render any available spectrum in these VHF bands as highly desirable for many types of communication service.

Table 12 above has shown that the move from analogue to digital radio broadcasting service could yield between twice to five times the theoretical dividend in terms of efficiency than is available from the TV bands. However as there is only approximately 1/20th of the spectral bandwidth in the VHF bands than in the UHF TV bands then, in terms of MHz, the overall digital dividend in the radio band II is likely to approximate to 6% of that realised in the UHF TV Bands.

However, in terms of practical utilisation, the difference is less. For, example, the situation is complicated by the propagation characteristics of the two bands. As the radio broadcasting in Band II is between 4 and 8 times lower in frequency than are the UHF TV Bands, fewer base stations are needed for coverage of a given geographical area. For several technical reasons, radio broadcasting may be able to use more of the theoretically available spectrum than is normal for television broadcasting¹⁴⁷. An economic case taking cost of coverage into account may therefore show greater parity between the potential dividends.

In conclusion, while the potential digital dividend for radio broadcasting seems to be quite modest in terms of the ability to release spectrum measured in MHz, the actual impact on the radio broadcasting industry in terms of the economic potential of additional radio stations as well as other uses of the spectrum, is likely to be significantly higher than appears at first sight.

Recommendation 14

The question of the right choice of standards and strategy for transition to digital transmission for radio broadcasting should be left to the market.

The European Commission should take attention that radio aspects are covered by initiative, such as the European Mobile Broadcasting Council, with a view to stimulating industry to discuss standards and possible scope for transition strategies in digital switchover.

¹⁴⁷ A principal reason can be found in the modulation and coding schemes which are used to overcome some of the difficulties experienced with the analogue modulation systems. Interference to analogue broadcast signals is caused by effects such as reflections on walls of buildings etc. This effect causes "ghosting" and in extreme cases loss of picture on vision signals, whilst on sound signals it can cause serious distortion of the speech/music. The Coded Orthogonal Frequency Division Multiplex (COFDM) system which has been developed for the European Digital Broadcast systems, is designed to be largely immune to effects such as this. Further, aspects of the coding allow "Single Frequency Networks" to be used which are highly spectrally efficient. If the new modulation systems and coding can be used with GSM like frequency re-use plans, then the whole of the current FM bands could be replanned to offer effective Digital Radio Service in proportionally less spectrum than is used for Digital TV Broadcasting.

IV. "REGULATION FOR THE FUTURE"

The main purpose of the EU regulatory framework for electronic communications was to promote innovation and investment in the sector with a view to ensuring consumer benefits. The rationale of regulation of the electronic communications sector is very clear: the main purpose of *ex ante* regulation is the establishment of a level playing field. Most of it is supposed to disappear at some point, once the economic conditions become optimal, to be replaced by the application of competition law.

The rationale for regulation of the audiovisual sector is more complex because of the specific nature of media content. Audiovisual content creation and distribution is clearly an economic activity. However, a number of objectives of general interest are at stake in relation to media content: protection of minors and human dignity, cultural diversity and media pluralism. Audiovisual policy therefore has to balance economic and public interest objectives.

Below we summarise the recommendations discussed in our report. The recommendations could be taken into account by the Commission in future actions, such as changes to the existing regulatory framework, dissemination of guidelines, communications, and/or recommendations, and initiating discussion and debate in order to bring about more co-ordination and harmonisation of regulation affecting the broadcasting sector. We encourage the widest possible review and consideration of these issues among industry, governments and consumers.

To conclude, we also offer an overview table of the recommendations as they affect different categories of broadcasting organisations (broadcasters with and without public service obligations).

A. Licensing and authorisation

The Framework Directive should deal with the issue of distribution and how it relates to the electronic communications framework. It should clarify which of its provisions relate to the distribution function (must-carry and associated facilities).

This has particular consequences for the:

- **Authorisation Directive:** There should be further guidance for the interpretation of Article 6.1 and Recital 20 in the Authorisation Directive as to when additional obligations (under broadcasting or media regulations) can be justified and define the case(s) where such obligations are not justified.

This guidance should in particular define a list of distribution activities that can be carried out under the electronic communications framework without the involvement of broadcasting regulations and/or a broadcasting regulator;

- **Access Directive:** There should be clarification that access regulations applicable to distribution functions covered by the electronic communications framework create access and interconnection rights for broadcasters.

The Commission should establish a long-term objective to break linkages between broadcasting (content) authorisations and frequency and/or multiplex authorisations for

broadcasters. The Commission should provide guidance for how this objective can be achieved. Such guidance may address the following issues:

- New licenses for broadcasters should not include, directly or indirectly, a frequency license and/or the right to a multiplex slot.
- Limitations on the validity of frequency licenses for broadcasting purposes to a maximum of 10 years so that the situation may be reviewed at that time.
- When a frequency license expires, it should not be automatically renewed. Instead, it should be considered whether this frequency should be part of the WAPECS bands.
- Periodic reviews of how coverage obligations for broadcasters with public service obligations can best be achieved, given the national-level development of television delivery platforms.

B. Radio frequencies

We recommend that:

- The digital dividend should be subject to public debate and supported by a transparent and ideally quantified analysis of the different options. The decision should be taken at a level where all interested parties are represented. Depending on national institutional arrangements, this means that the decision body may not be at the level of a national regulatory authority.
- Assigning frequencies to broadcasters through a procedure that is not “open, transparent and non-discriminatory” as required by the Authorisation Directive should be curtailed.
- As a long-term objective, broadcasters with public service obligations should be granted access to multiplex capacity rather than rights to use of radio frequencies. This of course requires that the public service remit is clearly defined.
- All broadcasters should pay for spectrum use that at a minimum recovers the costs of spectrum management.
- Furthermore, consideration should be given to requiring broadcasters to pay market rates for spectrum and/or multiplex slots. In particular, there is little justification for commercial broadcasters without public service obligations to benefit from radio spectrum that is either free or priced at lower than its market value.
- Consideration should be given to limiting the common practice of assigning frequencies to broadcasters with public service obligations without payment, or without proper analysis of the costs and benefits of the public service obligations against the value of the spectrum.

C. Must-carry and must-offer

The Commission should enforce the provisions already in the EU regulatory framework:

- Member States should have regular reviews of their must-carry framework.

- Member States should clearly define the general interest objectives that can justify MC status. General interest objectives may include special transmissions for disabled viewers.
- The Member State must clearly link the general interest objectives relevant to the selection of each broadcaster with must-carry status.

The Commission should refine the provisions in the framework, perhaps by providing guidance through a recommendation or communication:

- The number of must-carry channels should be limited to a reasonable number.
- Only channels with a public service (or general interest) profile should be eligible for must-carry status.
- Criteria for must-carry channel selection for all broadcasters should be made public.
- Member States should consider in their reviews whether must-carry status for broadcasters could be determined through use of a public tender based on beauty contest or auction specifying public service obligations.
- No payment should be made by or to network operators for carriage of channels with must-carry status, and they must be provided without need for specific payments by the viewers.
- While recognising that Member States are probably better suited to decide over which platforms must-carry channels should be available, guidance may have to be provided on the term “significant number of end-users” e.g. 40% of total households in a relevant area. Such guidance could also include a discussion of the term “principal means” of reception.
- The number of platforms over which the programmes with a must-carry status must be available is to be assessed by each Member State depending among others on its population density, and the rate of penetration of the different platforms. Problems with universal coverage for programming offered pursuant to a public service remit could be solved with targeted subsidies, for example to rural regions as is done for broadband.

D. Access issues

a) Access to wholesale broadcasting transmission

If in its 2nd recommendation on relevant markets to be adopted in 2007, the Commission includes market 18 it should clarify that this market includes two separate elements:

- a market for Managed Transmission Services, and;
- a market for access to network elements.

Furthermore, in view of the evidences gathered in this report, the Commission should question whether there is a real prospect of creating intra-platform competition. France is the only country that succeeded in introducing such competition and it will largely depend on

approaches to spectrum assignment and to authorisation if such form of competition will emerge in other countries.

It may therefore be considered to confine the scope of market 18 to Managed Transmission Services. The Commission should also assist and encourage NRAs to co-ordinate in their approaches to defining access remedies for market 18, for example by adopting a common position on access in market 18 for competing transmission providers and exchanging information on available reference offers in the EU.

b) Access to associated facilities

It is probably premature in this study to propose a 'final' recommendation on the regulatory framework on access to conditional access, APIs and EPGs because there is only limited experience in the Member States on the functioning of the relevant provisions of the Access Directive. We however see that these provisions may not be adequate for the next decade, particularly in a rapidly evolving environment, as the emergence of DRMs illustrates.

We therefore suggest that more research is needed to identify whether the provisions should be changed to ensure greater flexibility for Member States to take into account market developments, as well as to require them to match access requirements with the clear identification of actual bottlenecks. A possible way forward could be to consider:

- Removing the special access regime for conditional access, because there seems to be no justification or reason to maintain it.
- Make allowances in the provisions on access to associated facilities for the emergence of other potential bottlenecks than EPGs and APIs. This could for instance be achieved by giving national regulators the ability to ensure access to proven bottlenecks (including but not limited to conditional access, EPGs and APIs) following a market analysis procedure under articles 8 to 13 of the Access Directive. This approach would require clarification that broadcasters are able to benefit from Articles 8 to 13 of the Access Directive.
- Specifying that must-carry guarantees access to a transmission network and to all the associated facilities (including, but not limited to conditional access, EPGs and APIs) under fair, reasonable and non-discriminatory terms, thereby maintaining a special access regime for those channels that benefit from must-carry.

E. Radio broadcasting

Finally, we suggest that the Commission emphasise that the needs of radio broadcasting in particular should not be left behind in digital switchover and any regulatory changes made for television broadcasting should take radio broadcasting into account.

- The European Commission should take attention that radio aspects are covered by initiatives, such as the European Mobile Broadcasting Council, with a view to stimulating industry to discuss standards and possible scope for transition strategies in digital switchover.

F. Other recommendations

The Commission could also encourage greater co-ordination and harmonisation by developing guidelines, for example concerning improving the quality of data collected on the sector, and launch consultations where appropriate to explore the implementation issues affecting the broadcasting sector and benefit from cross-fertilization of existing knowledge and practice.

- Data on the broadcasting sector should be included in the annual Implementation Reports on electronic communications regulations and markets.
- The Commission should encourage greater consistency in data collection and analysis by NRAs in particular for market analyses of market 18, for example by publishing an explanatory memorandum.

In its role as facilitator and co-ordinator of regulatory policy, the Commission can take steps to stimulate dialogue between regulatory authorities in the Member States. We recommend that in addition to pursuing these activities, the Commission remind Member States that where possible and appropriate, public consultations, studies and conferences on broadcasting regulation should be undertaken at the national level, with a view to stimulating debate and discussion.

- The Commission should consider establishing joint electronic communications – broadcasting/audiovisual regulator meetings to discuss issues where their respective regulations overlap or are duplicated, typically the “bridging issues” as discussed in this document which involve the interests of both content and network regulators. As required depending on the issue, for example in the analysis of market 18, such co-ordination among authorities could also consider involving national competition authorities (through the European Competition Network) who have jurisdiction over broadcasting.

G. Overview of recommendations affecting different broadcasting categories

The recommendations made in this report would have a strong impact on the distribution framework for television broadcasters and many of our recommendations would have different impact on different categories of broadcasters. Below, we include a table which presents the different recommendations as they affect different categories of broadcasters.

Issue	Broadcasters with public service obligations		Commercial broadcaster
	Publicly funded	Commercial	
Linkage between content authorisation and frequency and/or multiplex position to assure that a broadcaster has access to terrestrial transmission	Publicly funded broadcasters may be assured access to terrestrial transmission through regulation. However, the question which distribution platform is most appropriate in terms of the broadcasting policy objectives should be subject to periodic reviews. (Recommendation 4)	New broadcasters should not be granted access to terrestrial transmission, either directly or indirectly, as part of their television license. They should be free to chose among distribution platforms, including air transmission on commercial terms. (Recommendation 4.)	

Issue	Broadcasters with public service obligations		Commercial broadcaster
	Publicly funded	Commercial	
Linkage between content authorisation and frequency and/or multiplex position to assure that a broadcaster has access to terrestrial transmission	Publicly funded broadcasters may be assured access to terrestrial transmission through regulation. However, the question which distribution platform is most appropriate in terms of the broadcasting policy objectives should be subject to periodic reviews. (Recommendation 4)	New broadcasters should not be granted access to terrestrial transmission, either directly or indirectly, as part of their television license. They should be free to choose among distribution platforms, including air transmission on commercial terms. (Recommendation 4.)	
Access to terrestrial transmission for public service broadcasters		Where terrestrial transmission is important for a significant number of population, and if the television license does not provide such access, it may be assured through must-carry obligations. NB Special terms and conditions will then have to be worked out in order to ensure appropriate funding for the cost of air transmission. (There is no recommendation for this aspect, because it is covered by current regulations. It is included, here however, in order for the reader better to understand how the different recommendations would work together.)	
Regulatory means to assure access to transmission in terrestrial digital networks	Where it has been decided that a PSB shall have access to terrestrial transmission, this should be assured through the assignment of a slot in the multiplex and not by the assignment of a frequency. (Recommendation 7).		
Frequency fees - administrative fees	All broadcasters should pay frequency fees to cover the administrative cost of frequency management of the regulator. (Recommendation 8)		
Frequency fees – commercial value			Consideration should be given in particular for commercial broadcasters to pay frequency fees according to the commercial value of the spectrum. (Recommendation 8).
Must-carry designation	May be designated MC after review of public service objectives (Recommendation 10)	May be designated MC after public tender (Recommendation 10)	May be designated MC after public tender in which they commit to a public service undertaking. (Recommendation 10)

Table 13: Recommendations for different categories of television broadcasters

APPENDIX: GLOSSARY

In the main report text, whenever an acronym is used for the first time it is preceded by the full name. This glossary includes a full list of all such acronyms, together with their full names and a brief explanation if needed.

All definitions used in this glossary can be traced to International Telecommunications Union (ITU) and other European Commission (EC) publications. Where a definition is not available from these institutions, other sources were used, such as from the European Broadcasting Union (EBU), national regulators, and specialist institutions.

We note that many terms may have more than one meaning. For example, “multiplex” can refer to a packager of broadcast content or to the combination of multiple streams of data on a telecommunications network. We have noted such distinctions in the glossary where appropriate.

Access charge: Amount paid per minute, charged by network operators for the use of their network by other network operators. Also known as an interconnect payment.

Access Providers: Access providers operate physical media physical mode of transmissions and manage end-user equipment (set-top boxes). Typically, access providers are responsible for the billing process, the usage tracking (through conditional access) and the customer relationship (some say they “own” the customer). Access providers are often called gateways as they offer customers access to a range of services as well as the Internet.

Acquisitions: Acquisitions are programmes purchased by a broadcaster but which were not commissioned by the broadcaster.

ADSL: see Asymmetric Digital Subscriber Line.

Advertising Share: Part of the total TV advertising budget allocated to a specific broadcaster in a country.

AM: see Amplitude Modulation.

Amplitude Modulation: [AM amplitude modulation] Type of modulation produced by varying the strength of a radio signal. In this way the information is added to the radio (carrier) signal. This type of modulation is used by broadcasters in three frequency bands: medium frequency (MF, also known as medium wave: MW); low frequency (LF, also known as long wave: LW), and high frequency (HF, also known as short wave: SW). The term AM is often used to refer to the medium frequency band (see MF below).

AMPS: see Advanced Mobile Phone System.

Analogue: Transmission of voice and images using electrical signals. Analogue mobile cellular systems include AMPS, NMT and TACS. Analogue TV broadcast systems include SECAM, PAL and NTSC colour coding systems, analogue radio broadcast systems include the AM and FM bands. Essentially the information is broadcast direct rather than converted to a digital data series.

API: see Application Program Interface.

Application Program Interface: [API, application programme interface]. One of the advantages of digital TV is the ability to have fully interactive applications, where the viewer is able to interact with the broadcaster via a ‘return channel’. Interactive applications require a software stack in the receiver called an ‘applications program interface’ or API. API is the software interface between applications, made available by broadcasters or service providers, and the resources in the enhanced digital television equipment for digital television and radio services. It is a set of documented programming routines, provided by the manufacturer of an application or a device, designed to allow third-party access to functions or capabilities of the application or device. Used to facilitate the development of value-added features by parties other than the manufacturer. APIs are developed for operating systems to allow access to and modification of low-level routines, such as those that provide the user interface or perform screen redraws.

Associated Facilities: means those facilities associated with an electronic communications network and/or an electronic communications service which enable and/or support the

provision of services via that network and/or service. It includes conditional access systems and electronic programme guides.

Asymmetric Digital Subscriber Line: [ADSL, asymmetric digital subscriber line]. It is a technology for transmitting digital information at a high bandwidth (the width of a band of electromagnetic frequencies) on existing phone lines to homes and businesses. Unlike regular dialup phone service, ADSL provides continuously available, "always on" connection. ADSL is asymmetric in that it uses most of the channel to transmit downstream to the user and only a small part to receive information from the user. ADSL simultaneously accommodates analogue (voice) information on the same line. ADSL is generally offered at downstream data rates from 512 Kbps to about 2 Mbps.

Asynchronous Transfer Mode: [ATM, asynchronous transfer mode] A transmission mode in which the information is organized into cells; it is asynchronous in the sense that the recurrence of cells from an individual user is not necessarily periodic.

ATM: see Asynchronous Transfer Mode.

Audience share (Radio): Amount of listening hours to a particular radio station as a percentage of all radio listening within that station's Total Survey Area.

Audience share (Television): Part of the audience obtained by the broadcaster in the total TV consumption time.

Audiovisual commercial communication: Means moving images with or without sound which accompany audiovisual media services and are designed to promote, directly or indirectly, the goods, services or image of a natural or legal entity pursuing an economic activity.

Audiovisual media service: Means a service as defined by Articles 49 and 50 of the "TWF" Treaty the principal purpose of which is the provision of moving images with or without sound, in order to inform, entertain or educate, to the general public by electronic communications networks within the meaning of Article 2(a) of Directive 2002/21/EC of the European Parliament and of the Council.

Bandwidth: The range of frequencies available to be occupied by signals. In analogue systems it is measured in terms of Hertz (Hz) and in digital systems in bit/s per second (bit/s). The higher the bandwidth, the greater the amount of information that can be transmitted in a given time. High bandwidth channels are referred to as *broadband* which typically means 1.5/2.0 Mbit/s or higher.

In digital circuits it describes the ability of a data network to send information measured in bits per second.

Base station: A radio transmitter/receiver and antenna used in the mobile cellular network. It maintains communications with cellular telephones within a given cell and transfers mobile traffic to other base stations and the fixed telephone network.

Bit: contraction of **Binary digit**. The smallest unit of data in a digital system. A bit is a single one or zero.

Bit-rates: The rate at which digital information is carried within a specified communication channel.

Broadband: A service or connection generally defined as being "always on" and providing a bandwidth greater than 128kbit/s.

Broadcast: In radio and television, electromagnetic signals transmitted multidirectionally over air, and intended for reception by the public.

Broadcaster: The natural or legal person who has editorial responsibility for the composition of schedules of Radio and/or TV programmes and who transmits them or has them transmitted by third parties.

Broadcasting Service: A radiocommunication service in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmission.

CA: see Conditional Access.

Cable TV: [CATV, Cable TV - originally "community antenna television," now often "community access television"]. In addition to bringing television and radio programs to many people throughout the world who are connected to a community antenna, cable TV is a method to interact with the World Wide Web and other new forms of multimedia information and entertainment services.

CAS: see Conditional Access System.

CATV: Community Access Television (originally "community antenna television," now often "community access television") see Cable TV.

CDMA: see Code Division Multiple Access.

Cell: The geographic area covered by a single base station in a cellular mobile network.

Cellular: A mobile telephone service provided by a network of base stations, each of which covers one geographic *cell* within the total cellular system service area.

Channel: A word which can have more than one meaning dependent upon usage – for example:

- **Channel:** (used in GSM telephony) One of a number of discrete frequency ranges utilized by a base station to transmit and receive information from cellular terminals (such as mobile handsets).
- **Channel:** (used in television engineering), the band of frequency (8 MHz in Europe) allocated to each separate television signal (when using traditional broadcast methods).
- **Channel:** Also used to describe any of the discrete signals in alternative delivery methods of television distribution (such as cable TV or DBS).

CI: see Common Interface

Coders: The devices which convert a signal in one form into another, digital form. The input may be an analogue signal or it may be a digital signal coded in a form other than that desired for the particular purpose of communication required. In digital radio, the term generally refers to the devices which produce a digital sound programme service in a form suitable for acceptance by a multiplexer, which combines it with the other services for transmission as a single, combined complex signal (see also Multiplex). A particular feature of these digital radio coders is that they seek to avoid sending information that is calculated not to be needed to recreate the sound in the receiver, thereby to require less capacity (bit-rate) in the multiplex transmission. However, the more that information is taken away from the signal, the greater the probability of imperfect reproduction of sound by the receiver.

Code Division Multiple Access: [CDMA, code division multiple access] A technology for digital transmission of radio signals based on spread spectrum techniques where each voice or data call uses the whole radio band and is assigned a unique code.

Combiner: [Diplexer/triplexer etc.] Combines radio frequency signals of two or more transmitters into a single output. This can be used to reduce the number of radio antennas on a tower and/or the size of the tower itself. Diplexers are designed and aligned to minimise interaction between the transmitted signals. This ability to combine discrete radio carriers into a signal radio frequency feeder is similar in form to the Multiplexer which combines several sources of digital signals into a single stream. The key difference is that the combiner operates in the frequency domain whereas the multiplexer operates in the time domain.

Common Interface: [CI, common interface] The intended principle is to define a standard interface, common to all current and future CAS to be built into the receiver. Typically, all CAS elements are placed in a detachable module.

Compression: A process where information is converted from its raw format into a smaller format. Voice, data, video and images are often compressed in order to reduce the cost associated with storage or to reduce the bandwidth requirements for transmission over a network. Compression can use lossless coding or lossy coding.

Conditional Access: [CA, conditional access] is a technology used to control access to digital television services to authorised users by encrypting the transmitted programming.

Conditional access device: Any equipment or software designed or adapted to give access to protected service in an intelligible form.

Conditional Access System: Means any technical measure and/or arrangement whereby access to a protected radio or television broadcasting service in intelligible form is made conditional upon subscription or other form of prior individual authorization.

These systems are necessary to prevent unauthorised access to broadcast services to subscribers, protected by digital encryption. Legitimate subscribers can access to encrypted services by means of decryption keys (known as “control words”), which are transmitted together with the services and allow decryption.

Consumer: means any natural person who uses or requests a publicly available electronic communications service for purposes which are outside his or her trade, business or profession.

Content producers: Content producers assume responsibility for the production of audio-visual works by combining artistic, financial and commercial know-how. They can produce content or be solely responsible for the creation of formats.

Coverage: Refers to the range of a radio frequency network (broadcast or telecommunications), measured in terms of *geographic* coverage (the percentage of the territorial area covered by mobile cellular) or *population* coverage (the percentage of the population within range of a mobile cellular network).

DAB: see Digital Audio Broadcasting.

DBS: see Direct Broadcast Satellite.

Digital: Representation of voice or other information using digits 0 and 1. The digits are transmitted as a series of pulses. Digital networks allow for higher capacity, greater functionality and improved quality. Examples of digital cellular networks include GSM, CDMA, and TDMA.

Digital Audio Broadcasting: [DAB, Digital Audio Broadcasting] A name for a technology by which terrestrial Digital Radio multiplex services are broadcast. The current EU digital radio standard.

Digital Broadband Networks: Allow the transport of media content and new media-rich applications between the players in the value chain and to the end customer.

Digital media asset management: Series of processes and technologies aimed at digitising, cataloguing, and delivering media content.

Digital Mobile Broadcasting:. [DMB, digital mobile broadcasting] A variant of the DAB digital radio standard for mobile TV services, and an alternative to DVB-H.

Digital Radio Mondiale: [DRM, Digital Radio Mondiale] a narrowband digital radio system designed for use in the low frequency (LF) medium frequency (MF) and high frequency (HF) terrestrial broadcasting bands below 30 MHz. It allows high quality digital broadcasting to coexist with analogue signals.

Digital Rights Management: [DRM, Digital Rights Management] System functioning on the digital transmission networks that safeguards revenues and intellectual property rights.

Digital Signal Processing System: [DSPS digital signal processing system] a generic term applied to a unit for digitally manipulating an electronic signal.

Digital Subscriber Line: [DSL, digital subscriber line] A family of technologies generally referred to as DSL, or xDSL, capable of transforming ordinary phone lines (also known as 'twisted copper pairs') into high-speed digital lines, capable of supporting advanced services such as fast Internet access and video-on-demand. ADSL, HDSL (High data rate Digital Subscriber Line) and VDSL (Very high data rate Digital Subscriber Line) are all variants of xDSL).

Digital TV: [DTV digital television] Digital television (DTV) is the transmission of television signals using digital rather than conventional analogue methods It can offer wide spectrum of

features and services, encompassing everything from basic control enhancements like EPGs to much more complex systems incorporating Internet access, VOD and TV-based commerce.

Digital television network: A television network that transmits digital, as opposed to analogue, television signals. In digital systems, signals are coded into strings of numbers represented in binary form, which are then organised in a data processing file. Digital transmission enables interactivity and mobile reception of moving images, and improves picture quality and capacity.

Digital Terrestrial Television: [DTT digital terrestrial television] Broadcasting of digital television signals, using locally available radio spectrum.

Digital Video Broadcasting: [DVB, digital video broadcasting] A set of internationally accepted open standards for digital broadcasting, including standards for distribution by satellite, cable, radio and handheld devices (the latter known as DVB-H).

Digital Video Recorder: [DVR, digital video recorder] A high-capacity magnetic hard drive, TV tuner, video compression circuitry, dial-up modem and downloaded programme guide.

Direct Broadcast Satellite: [DBS, Direct Broadcast Satellite] A system for the satellite broadcast of signals direct to the consumer.

Direct to Home: [DTH, direct to home] Also referred to as Direct to home satellite reception. A system for the satellite broadcast of television signals direct to the consumer via small antennae (18 to 36 inch dishes), rather than using transmissions through a cable or MDS system. Signals may be digitised and compressed (using an MPEG protocol) at the headend, uplinked to satellites via 17 GHz Ku band, and downlinked to customers via 12 GHz Ku band.

Distribution: In cable TV, the portion of the system to which subscribers are connected. Usually this is a cable extending from a bridging amplifier into a specific area or feeder for that area.

Distributor (distributeur): In French law a distributor is an undertaking that contracts with a broadcaster (or editor – see below) to provide audiovisual services to the public via electronic communications networks.

DMB: see Digital Mobile Broadcasting.

DRM: see Digital Radio Mondiale and Digital Rights Management.

DSL: see Digital Subscriber Line.

DSPTS: see Digital Signal Processing System.

DTH: see Direct to Home.

DTT: see Digital Terrestrial Television.

DTV: see Digital TV.

DVB: see Digital Video Broadcasting.

DVB-C: Digital Video Broadcasting for Cable. Part of the DVB specification set.

DVB-S: Digital Video Broadcasting for Satellite. Part of the DVB specification set.

DVB-T: Digital Video Broadcasting Terrestrial. Part of the DVB specification set.

EBU: see European Broadcasting Union.

ECN: see Electronic communications network.

EDGE: see Enhanced Data rates for GSM Evolution.

Editor (editeur): In French law an editor in the broadcasting sector refers to a broadcaster.

Effective Radiated Power; [ERP, effective radiated power] the power of a transmitter multiplied by the gain of the transmitting antenna.

Electronic Communications Network: [ECN, electronic communications network] means transmission systems and, where applicable, switching or routing equipment and other resources which permit the conveyance of signals by wire, by radio, by optical or by other electromagnetic means, including satellite networks, fixed (circuit- and packet-switched, including Internet) and mobile terrestrial networks, electricity cable systems, to the extent that they are used for the purpose of transmitting signals, networks used for radio and television broadcasting, and cable television networks, irrespective of the type of information conveyed.

Electronic Communications Service: Means a service normally provided for remuneration which consists wholly or mainly in the conveyance of signals on electronic communications networks, including telecommunications services and transmission services in networks used for broadcasting, but exclude services providing, or exercising editorial control over, content transmitted using electronic communications networks and services; it does not include information society services, as defined in Article 1 of Directive 98/34/EC, which do not consist wholly or mainly in the conveyance of signals on electronic communications networks.

Electronic Programme Guide: [EPG, electronic programme guide] A programme schedule, typically broadcast alongside digital television or radio services, to provide information on the content and scheduling of current and future programmes. An electronic directory for advanced multichannel television and interactive TV. A sophisticated interface programme installed in the STB or television set that enables users to search and select programmes interactively.

Encryption: The translation of data into a secret code. Encryption is the most effective way to achieve data security. To read an encrypted file, you must have access to a secret key or password that enables you to decrypt it. Unencrypted data is called plain text; encrypted data is referred to as cipher text. There are two main types of encryption: asymmetric encryption (also called public-key encryption) and symmetric encryption.

End-user: Means a user not providing public communications networks or publicly available electronic communications services.

Enhanced Data rates for GSM Evolution: [EDGE, enhanced data rates for GSM evolution] An intermediate technology that brings second-generation GSM closer to third-generation capacity for handling data speeds up to 384 kbit/s.

Enhanced Digital Television equipment: means set-top boxes intended for connection to television sets or integrated digital television sets, able to receive digital interactive television services.

Entitlement Control Messages: [ECM entitlement control messages].

EPG: see Electronic Programme Guide.

ERO: see European Radiocommunications Office.

ERP: see Effective Radiated Power.

ETSI: see European Telecommunications Standards Institute. Telecommunication standards body for Europe.

European Broadcasting Union: [EBU, European Broadcasting Union] is a professional association of national broadcasters. The Union has 74 active Members in 54 countries of Europe, North Africa and the Middle East, and 44 associate Members in 25 other countries. The EBU negotiates broadcasting rights for major sports events, operates the Eurovision and Euroradio networks, organizes programme exchanges, stimulates and coordinates co-productions, and provides a full range of other operational, commercial, technical, legal and strategic services.

European Radiocommunications Office: [ERO, European Radiocommunications Office]. ERO is the permanent office supporting the Electronic Communications Committee (ECC) of the CEPT. ECC is the Committee that brings together the radio- and telecommunications regulatory authorities of the 46 CEPT member countries.

European Telecommunications Standards Institute: [ETSI, European Telecommunications Standards Office] Telecommunication standards body for Europe. For more information see their website at: <http://www.etsi.org>.

Fair, Reasonable and Non-Discriminatory: [FRND, free reasonable and non-discriminatory] Part of the European Access and Interconnect Directive which is imposed to all operators (those who produce and market conditional access).

Fixed line: A physical line connecting the subscriber to the telephone exchange. Typically, *fixed-line network* is used to refer to the *PSTN* (see later) to distinguish it from mobile networks.

FM: see Frequency Modulation.

Footage: The process of capturing quality pictures.

Format: The type of programme service broadcast by radio stations. Also, the part of a broadcast station's licence which describes the programme service.

Free commercial broadcasters: National free-to-air commercial broadcasters that entered the market during the general liberalisation in the 1980's (and 1970's for Italy) with mainly a generalist programming, whose only source of revenue is advertising.

Free To Air: [FTA, free to air] TV Channel financed by advertising and/or public funding. It may be broadcast through terrestrial, cable or satellite.

Free To The Home: [FTTH, Free to the Home] defines a broadcast channel which can be received directly by a user without payment of additional subscription.

Frequency: The rate at which an electrical current alternates, usually measured in Hertz (Hz). It is also used to refer to a location on the radio frequency spectrum, such as 800, 900 or 1800 MHz.

Frequency Modulation: [FM, Frequency Modulation]. Type of modulation produced by varying the frequency of a radio signal. This is the type of modulation used by broadcasters in part of the VHF (Very High Frequency) band, known as VHF Band 2.

Frequency reuse: The ability to use the same frequencies repeatedly across any type of cellular radio system (broadcast or telecommunications). As each cell uses radio frequencies only within its boundaries, the same frequencies can be reused in other cells not far away with a limited possibility of interference. The reuse of frequencies is the key concept that enables a cellular system to handle a large amount of calls with a limited number of channels.

FRND: see Fair, Reasonable and Non-Discriminatory.

FTA: see free to air.

FTTH: Free to the Home].

Global System for Mobile communications: [GSM, Global system for Mobile communications] European-developed digital mobile cellular standard. For more information see the GSM Association website at: <http://www.gsmworld.com/index.html>.

GPRS: *General Packet Radio Service*. An enhancement for GSM, based on packet-switched technology enabling high-speed data transmission (115 kbit/s per second).

GSM: see Global System for Mobile communications.

Harmful Interference: Interference which endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with Radio Regulations.

HDTV: see High Definition Television.

High Definition Television: [HDTV, high definition television] A technology that offers pictures of higher resolution than standard definition. (c.f 1920/1080/25i, 1920/1080/25p – where i = interlaced scan and p = progressive scan). HDTV requires a larger television set with 16:9 aspect ratio for wide screen television services ratio.

Home media gateway: This is a user device that connects the broadband network to the media consumption devices the user selects (TV, PC, etc.).

Home Media Server: [HMS home media server], generic name of home storage devices of which the current PVRs represent the first generation.

HMS: see Home Media Server.

HTTP: Hypertext Transport Protocol (see WWW).

Hz (Hertz): The frequency measurement unit equal to one cycle per second.

iDTV: see Interactive Digital TV.

Interactive Digital TV: [iDTV: interactive digital television] Interactive services delivered through digital broadcasts to a set-top box with phone or cable return path.

Incumbent: The (former) monopoly service and network provider in a particular country.

Independent film industry: Companies engaged in the production and/or distribution worldwide in all media of all motion pictures and television programmes that are not generated by the recognised major studios. It includes independent productions, in which the producer retains a significant portion of production costs.

Interconnection: The physical connection of telephone networks owned by two different operators. Network operators typically charge a per minute fee for use of their network by other network operators (referred to as an “interconnect payment” or “access charge”). This linking of one Public Electronic Communications Network to another enables the persons using one of them to be able to (a) communicate with users of the other one; (b) make use of services provided by means of the other one (whether by the provider of that network or by another person).

Interference: The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.

Internet: The collection of interconnected networks that use the Internet Protocols (IP).

Intellectual Property Rights: [IPR, Intellectual property rights].

Intellectual Property Rights Management: [IPRM, Intellectual Property Rights Management]

Interactive TV: [iTV, interactive television] Any activity in which viewers interact with information displayed on a TV screen. A range of services in which the consumer uses a television set for receiving downstream information, and an upstream channel for responding to, or controlling the downstream information.

International Telecommunication Union: [ITU International Telecommunication Union] The UN treaty institution for telecommunications regulation, including internet and broadcasting services.

Internet Protocol Television: [IPTV, internet protocol television] a system which can supply television programming on demand over the internet. Usually needs reliable broadband service but new services are being developed for use on small screens at lower bit rates.

Internet Service Provider: [ISP, internet service provider] ISPs provide end-users, and other ISPs, access to the Internet. ISPs may also offer their own proprietary content and access to online services such as e-mail.

IP: Internet Protocol. The packet data protocol used for routing and carriage of messages across the Internet and similar networks.

IPG: Interactive Program Guide, see electronic programme guide.

IP video: internet protocol video -the transmission and display of digital video data over IP networks, including corporate intranets and the public Internet.

ISP: see Internet Service Provider.

ITU: see International Telecommunication Union.

iTV: see Interactive TV .

iTV platform: A suite of software programs used to implement and manage networked interactive content and services that viewers can access through their TV sets.

Kb/s: Kilobits per second: A unit of transmission rate, equal to one thousand bits per second

LAN: see Local Area Network

License Fee: Audio-visual tax that is due by TV households and whose original purpose is to finance public service broadcasters.

LLU: see Local Loop Unbundling.

Local Area Network: [LAN, local area network] intercommunication of a group of computers on a single site, primarily for the sharing of resources and exchange of information (e.g. email).

Local loop: The system used to connect the subscriber to the nearest switch. It generally consists of a pair of copper wires, but may also employ fibre-optic or wireless technologies.

Local Loop Unbundling: [LLU, local loop unbundling] A process by which an incumbent's exchange lines are physically disconnected from its network and are connected to the network of another operator.

Masking Pattern Universal Sub-band Integrated Coding And Multiplexing: [MUSICAM, masking pattern universal sub-band integrated coding and multiplexing] This coding system employs the technique of psychoacoustical coding as specified for MPEG-2 Audio Layer II encoding. This exploits knowledge of the properties of the human auditory system; in particular, the spectral and temporal masking effects of the inner ear. Essentially, the system codes only audio signal components that the ear will hear, and discards any audio information that, according to the psychoacoustical model, the ear will not perceive. Thus

valuable bit-rate capacity is allocated only to coding and conveying information that is important to maintaining a high subjective audio quality.

Media service provider: means the natural or legal person who has editorial responsibility for the choice of the audiovisual content of the audiovisual media service and determines the manner in which it is organised.

Medium Frequency: [MF, Medium Frequency] The part of the radio frequency spectrum between 300 kHz and 3000 kHz. The broadcast part of this band (531 kHz to 1602 kHz) is often known as the medium wave (MW) or AM band (see AM earlier).

Metadata: Informational data about the programme, included in a signal's data stream.

MF: see Medium Frequency.

MHEG: see Multimedia and Hypermedia Experts Group.

MHP: see Multimedia Home Platform standard. .

Microwave Video Distribution System: [MVDS, microwave video distribution system] an electronic system which uses radio frequencies to carry high bandwidth information such as television signals. Some operation is in the 2GHz to 5GHz bands but majority is in the 20GHz bands and above to avoid interference with existing services. The MVDS systems can operate as point-to-point or point-to-multipoint and hence are sometimes called radio cable or MMDS.

MMDS: see Multichannel Multipoint Distribution Service.

Mobile: As used in this report, the term refers to mobile systems.

Moving Picture Experts Group: [MPEG, Moving Picture Experts Group] A set of international standards for compression and transmission of digital audio-visual content. Most current European television services use MPEG2, but MPEG4 offers greater efficiency (more information carried with fewer bits) and is likely to be used for new services including TV over DSL and HDTV.

MP3: see MPEG Audio Layer 3.

MPEG: see Moving Picture Experts Group.

MPEG-4: MPEG 4 is an ISO standard for the coding of digital content that supports very low to very high bandwidth and is portable to many devices.

MPEG-7: MPEG 7 is an ISO standard digital content description interface based on the XML standard. MPEG7 is an efficient way to code and interchange metadata between the different players along the value chain.

MPEG Audio Layer 3: [MP3, Moving Picture Experts Group definition for Audio Layer 3] An audio compression standard derived from the MPEG video and audio compression standards. MP3 uses the audio "layer" (Layer 3) of MPEG-1 compression to reduce a digital CD music stream of ~1.4 Mb/s to ~128 Kb/s without a noticeable reduction in sound quality.

Multichannel: Provision or receipt of television services other than the main terrestrial channels. 'Multichannel homes' comprise all those with digital terrestrial TV, satellite TV, digital cable or analogue cable, or TV over broadband. Also used as a noun to refer to a channel only available on digital platforms (or analogue cable).

Multichannel Multipoint Distribution Service: [MMDS, multichannel multipoint distribution service] Broadcasting and communications service that operates in the ultra-high-frequency (UHF) portion of the radio spectrum between 2.1 and 2.7 GHz. MMDS is also known as wireless cable.

Multimedia: The integration of more than one multiple Information elements using media such as text, sound files, static images or digital video files, into a single presentation or application. Implies a computing environment that presents information in an attractive, easily accessed manner, with a high level of user interaction.

Multimedia and Hypermedia Experts Group: [MHEG, multimedia and hypermedia experts group] An international group who are responsible for the development of an international standard MHEG-5, which is simpler than MHP. There are estimated to be more than 5 million set-top boxes using MHEG-5.

Multimedia Home Platform: [MHP, multimedia home platform] This standard defines a generic interface between interactive digital applications and the terminals on which those applications execute. The interface decouples different provider's applications from the specific hardware and software details of different MHP terminal implementations. The MHP extends the existing, successful DVB open standards for broadcast and interactive services in all transmission networks including satellite, cable, terrestrial and microwave systems.

Multiple Systems Operator: [MSO, multiple systems operator] A cable company which operates several franchises.

Multiplex: A methodology for combining more than one information stream into a single stream for transmission (non-preferred abbreviation - Mux).

Multiplexer: An electronic device for creating a Multiplex (note - US may be Multiplexor).

Multiplex Operator: – the Organisation or Legal Person which creates, operates and takes responsibility for, a Broadcast Multiplex.

MUSICAM: see Masking Pattern Universal Sub-band Integrated Coding And Multiplexing.

Must Carry: Must Carry Regulation: Legal requirement whereby the owner or operator of a distribution infrastructure (be it cable network, satellite, etc.) has to provide selected broadcast channels over its network (TV or radio) to its customers.

Must Offer: Legal requirement whereby the operator of selected broadcast channel must make the programming available for carriage by operators of other distribution channels.

MVDS: see Microwave Video Distribution System.

MW: see MF and AM.

National Regulatory Authority: [NRA, National Regulatory Agency] means the body or bodies charged by a Member State with any of the regulatory tasks assigned in the Framework Directive and appropriate Specific Directives.

Necessary Bandwidth: For a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.

Non-linear service: means an audiovisual media service where the user decides upon the moment in time when a specific programme is transmitted on the basis of a choice of content selected by the media service provider.

Near Video-on- Demand: [NVoD, near video on demand] A service that allows a subscriber to watch a programmer-chosen video program at nearly any time. nVoD provides access to movies within minutes rather than the seconds associated with VOD.

NRA: see National Regulatory Authority.

NVoD: see Near Video-on- Demand .

Originations: Originated programming is that programming made by (own production) or for (commissioning) the broadcaster which first shows them; coproductions will constitute originated programmes for the two or more broadcasters that participate in the production.

OS: Operating System

Out-of-Band Emission: Emission on a frequency or frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

Pay-per-view: [PPV, pay per view] A video service in which a subscriber has to pay a special price to view a special, one-time event. In most architectures, the event is broadcast to many subscriber, but only subscriber that pay to view the program are given the code to descramble the signal.

Pay-TV operators: These operators are mainly pay-TV channels. They are often categorised as the more targeted or thematic channels, typically cable and satellite channels that emerged mainly in the late 1980's and the 1990's. The third generation programme packagers' revenues consist in subscription and in some case advertising.

Peaktime: The period during which:

- a radio station broadcasts its breakfast show and, on weekdays only, also its afternoon drive-time show;
- a television station broadcasts its early- and mid-evening schedule, typically used by regulators to refer to the period between 18:00 and 22:30 each day (including weekends).

Personal Video Recorders: [PVR, Personal Video Recorder (also known as Digital Video Recorder)]. Consumer devices that use an intelligent interface and an internal hard drive to record programming digitally in anticipation of viewer preferences.

Point of Presence: [PoP, Population or Point of Presence] The *population* within a mobile operator's licensed area. Also, within the Internet world, this is used to describe *Points of Presence*.

POP: see Point of Presence.

Power: Whenever the power of a radio transmitter, etc. is referred to it is expressed in one of the following forms, according to the class of emission, using the arbitrary symbols indicated:

- peak envelope power (PX or pX);
- mean power (PY or pY);
- carrier power (PZ or pZ).

For different classes of emission, the relationships between peak envelope power, mean power and carrier power, under the conditions of normal operation and of no modulation, are contained in ITU-R Recommendations which may be used as a guide.

PPV: see Pay-Per-View.

Prime time: It can be defined as the evening window where most viewers watch television, typically from 7 pm to 10 pm.

Producer : The person that organises the practical and financial matters connected with the preparation of a film, play or television or radio programme.

Programme expenditure: The cost to the broadcaster of programming transmitted in a given period, not including the costs of the transmission network itself, nor engineering and play out costs. Programme expenditure reflects fully allocated costs (staff costs attributable to production, facilities costs (including depreciation), legal costs, film/tape stock and purchased inputs (including programmes).

Programme Packagers: are responsible for the selection of individual programmes, for the creation of a schedule through packaging of programmes and for selling advertising airtime to fund this schedule. Some channels will outsource content production while others will produce internally.

Programmes /Programming: is the output of a channel, excluding commercials but including presentation material (links, trailers, on-screen logos, etc.). This includes originated programmes (in-house and commissioned by the broadcaster from independents), acquisitions (including co-financed and pre-purchased programmes), and re-transmissions as well as first-run. This definition of programming, therefore, makes no distinction as to the genre of the programme. Equally, no distinction is made between "stock" programmes (i.e. programmes designed to be re-used) and "flow" programmes (i.e. programmes designed to be shown only once).

Provision of an Electronic Communications Network: Means the establishment, operation, control or making available of such a network;

PSB: see Public Service Broadcasting or Public Service Broadcaster.

PTO: see Public Telecommunication Operator.

Public Communications Network: means an electronic communications network used wholly or mainly for the provision of publicly available electronic communications services.

Public Funding: The third source of financing for the audio-visual industry, beside advertising and subscription. It consists mainly of *Public Funding to public service broadcasters*: state financing of public service broadcasters for the fulfilment of their public service remit. *Public Funding to cinematographic and other audio-visual works*.

Public Service Broadcasters: [PSB, Public Service Broadcasters] A broadcaster who operates with a Public Service Remit, which varies between countries and is defined by the Member State. They are generally financed with public funds, with specific content requirements, strong licence conditions, and programme expenditure regulations.

Public Telecommunication Operator: [PTO, Public Telecommunication Operator.] A provider of telecommunication infrastructure and services to the general public. The term public relates to the customer rather than the ownership of the PTO.

PVR: see Personal Video Recorders.

Relay: To pass on programming by retransmission with or without time delay making no change to the programme content.

Restricted Service Licence: [RSL, restricted service licence] A radio licence serving a single site (e.g. a hospital or university campus) or serving a wider area on a temporary basis (e.g. for festivals and events).

RSL: see Restricted Service Licence.

Scrolling text facilities: The feature of digital radios which enables broadcaster-compiled text to be displayed. Limitations on physical space on the display leads to the messages being scrolled across the display so that they can be read.

Service provider: A provider of electronic communication services to third parties whether over its own network or otherwise.

Set-top box: [STB, set-top box] A device, usually on top of a subscriber's television set, which processes and interprets an incoming signal for output to a subscriber's television set. Frequently used in emergent alternative delivery systems, the device can interpret and display video signals as well as navigational aids and other information (such as email or system billing information).

Share (Radio): Amount of listening hours to a particular radio station as a percentage of all radio listening within that station's Total Survey Area.

Share (TV): Proportion of total TV viewing to a particular channel over a specified time period.

Significant Market Power: [SMP, significant market power] An undertaking is considered to have SMP if "either individually or jointly to other" it is able to act to an appreciable extent

independently of competitors, customers, and consumers,” according to the EU 2003 regulatory framework.

Simulcasting: The broadcasting of a television or radio programme service on more than one transmission technology (e.g. FM and MW, DAB and FM, analogue and digital terrestrial television, digital terrestrial and satellite).

Simulcrypt: The principle of simulcrypt is the simultaneous transmission of one programme with the conditional access messages corresponding to several different CAS, opening several populations of decoders.

SMP: see Significant Market Power.

Sponsorship: means any contribution made by a public or private undertaking not engaged in providing audiovisual media services or in the production of audio-visual works, to the financing of audiovisual media services, with a view to promoting its name, its trade mark, its image, its activities or its products.

STB: see Set-top box.

Subscriber: Means any natural person or legal entity who or which is party to a contract with the provider of publicly available electronic communications services for the supply of such services.

Switch: Part of an electronic system that routes information to its destination.

TACS: see Total Access Communications System.

Technical Platform Services: [TPS, technical platform services] Term used in the UK to refer to associated facilities in the EU 2003 regulatory framework (conditional access, electronic programme guides, and APIs).

Teletext: Text embedded in analogue TV broadcasts and viewable by all teletext-ready TV sets

Television Advertising: Means any form of announcement broadcast whether in return for payment or for similar consideration or broadcast for self promotional purposes by a public or private undertaking in connection with a trade, business, craft or profession in order to promote the supply of goods or services, including immovable property, rights and obligations, in return for payment.

Television Broadcasting’ or ‘Television Broadcast: Means a linear audiovisual media service where a media service provider decides upon the moment in time when a specific programme is transmitted and establishes the programme schedule.

Television Households: [TVHH, television households] Households equipped with at least one TV set.

Television Without Frontiers: [TWF, Television without Frontiers] A directive containing a range of provisions designed to achieve coordination of the legal, regulatory, and administrative frameworks of European Union member states with respect to television broadcasting, adopted by the European Council in 1989 and amended in 1997.

Thematic channel: Television channel that broadcasts only one type of thematic content (e.g. sports channel, news channel, music channel, etc.).

Timeshifting: The broadcasting of a television service on more than one channel with a specified delay (typically an hour), to provide more than one opportunity for viewers to watch the service. Alternatively, the recording of programmes by viewers (using PVRs, recordable DVDs or VCRs) to watch the service at another time.

TLCS: Television Licensable Content Services.

Transmission Relay Company: A company which relays programming within a given country for which the Broadcast Licence is held by another company.

TPS: see Technical Platform Services.

Transmitter: A device which amplifies an electrical signal at a frequency to be converted, by means of an aerial, into an electromagnetic wave (or radio wave). The term is commonly used to include other, attached devices, notably a modulator, which imposes a more simple signal carrying information onto the frequency which is to be sent as a radio wave. The term is sometimes also used to include the cable and aerial system referred to above, and indeed the whole electrical, electronic and physical system at the site of the transmitter.

Transnational Markets: Means markets identified in accordance with Article 15(4) of relevant Framework Directive covering the Community or a substantial part thereof.

Triple/Quad –Play: “tripleplay” or “quadplay strategies”: Strategies adapted by access providers to enlarge their value proposition to digital TV, Internet access and sometimes telephony services, wireline only for triple play, wireline and wireless for quadplay.

TV HH: see Television Households.

TV Set-top box: [TVSTB, television set-top box] a unit which converts incoming signals into a form that can be used by a standard television receiver.

TV over DSL/TV over Broadband: A technology that allows viewers to access TV content – either in a linear programme schedule, or on-demand – using Internet Protocol via broadband services, either on a PC or (via a set-top box) on a TV set.

TWF: see Television Without Frontiers.

Uniform Resource Locator: [URL, uniform resource locator] a crucial software development which allows addressing on internet. It is a string of characters conforming to a standardized format, which refers to a resource on the Internet (such as a document or an image) by its location. An HTTP URL, commonly called a **web address**, is usually shown in the address bar of a web browser.

Universal Service: Means a minimum set of services, defined in Directive 2002/22/EC (Universal Service Directive), of specified quality which is available to all users regardless of their geographical location and, in the light of specific national conditions, at an affordable price.

Universal Service Obligation: [USO, Universal Service Obligation] this refers to availability, non-discriminatory access and wide-spread affordability of telephone service. The level of universal service is statistically measured as the percentage of households with a telephone. The European Union has identified the common scope of Universal Service obligations in Europe. This will improve the level of service currently found in Europe and will operate as a guarantee that these services are widely spread and that the interests of consumers are taken into consideration.

URL: see Uniform Resource Locator.

User: means a legal entity or natural person using or requesting a publicly available electronic communications service.

US: see Universal Service.

USO: see Universal Service Obligation.

VBI: see Vertical Blanking Interval.

VCR: see Video Cassette Recorder.

Vertical Blanking Interval: [VBI, vertical blanking interval;] The part of a television transmission signal that is blanked, or left clear of viewable content, to allow time for the television's electron gun to move from the bottom to the top of the screen as it scans images. This blank area is now being used to broadcast closed caption and HTML -formatted information.

Very High Frequency: [VHF, very high frequency] The part of the radio frequency spectrum between 30 MHz and 300MHz. FM radio is broadcast on part of this band (87.6 MHz to 107.9 MHz) and DAB digital radio is broadcast on another (Band III: 217.5 MHz to 230 MHz in the UK and over a wider range but shared with TV services elsewhere in Europe).

VHF: see Very High Frequency.

VHS: see Video Home System.

Video Cassette Recorder: [VCR, video cassette recorder] A consumer-grade device for displaying and recording a broadcast television signal. The most popular tape format for VCRs is VHS cassettes.

Video Home System: [VHS, video home system] A video cassette recording format.

Video-On-Demand: [VoD, video on demand] The virtual VCR service, whereby a subscriber can view any video program at any time, with pause, resume, forward and possibly rewind control. This service works with the use of sophisticated and very powerful video servers. It is a service or technology that enables TV viewers to watch programmes or films whenever they choose to, not restricted by a linear schedule. Also Near Video on Demand (NVoD), a service based on a linear schedule that is regularly repeated on multiple channels, usually at 15-minute intervals, so that viewers are never more than 15 minutes away from the start of the next transmission.

Web Casters: an organisation or legal person who webcasts – see Webcasting.

Web Casting: derived from "web" and "broadcast". Its use has varied over the past decade by different types of organisation and as the nature of the medium came into public use. The generally accepted use of the term webcast is the "transmission of linear audio or video content over the internet". A webcast uses streaming media technology to take a single content source and distribute it to many simultaneous listeners/viewers. The largest "webcasters" include existing radio and TV stations who "simulcast" their output, as well as a multitude of internet only "stations". The term webcasting is usually reserved for referring to non-interactive linear streams or live events.

Wi-Fi: see Wireless Fidelity.

Wireless Fidelity: [Wi-Fi Wireless Fidelity] is a brand originally licensed by the Wi-Fi Alliance to describe the underlying technology of wireless local area networks (WLAN) based on the IEEE 802.11 specifications. Wi-Fi is now so pervasive, and the term so generic, that the brand is no longer protected.

Wi-Fi was intended to be used for mobile computing devices, such as laptops, in LANs, but is now often used for increasingly more applications, including Internet access, gaming, and basic connectivity of consumer electronics such as televisions and DVD players. There are further standards in development that will allow Wi-Fi to be used by cars in highways in support of an Intelligent Transportation System to increase safety, gather statistics, and enable mobile commerce (IEEE 802.11p).

Wireless LAN: or WiFi Short range wireless technologies using any type of 802.11 standard such as 802.11b or 802.11a. These technologies allow ion between a wireless client and a base station, or between two wireless clients.

World Wide Web: [www, world wide web]

1. Technically refers to the hypertext servers (HTTP servers) which are the servers that allow text, graphics, and sound files to be mixed together.
2. Loosely refers to all types of resources that can be accessed.

WWW: see World Wide Web.

3G: Third generation of mobile systems. Provide high-speed data transmission and supporting multimedia applications such as full-motion video, video-conferencing and Internet access.

3G (services): Third Generation Wireless System. It refers to the next major evolution in the technologies for digital cellular and PCS after 2G. One major driving force for 3G is the desire to support wireless Internet access at data rates exceeding 144 Kb/s in a vehicular environment, exceeding 384 Kb/s in an outdoor/indoor pedestrian environment, and exceeding 2 Mb/s in an indoor environment. Another major driving force is the desire for even more efficient digital cellular/PCS technologies to support increasing voice traffic.