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Tomorrow's Delivery of Audiovisual Services

Legal Questions Raised by Digital Broadcasting and Mobile Reception

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IRIS Special: **Tomorrow's Delivery of Audiovisual Services**
Legal Questions Raised by Digital Broadcasting and Mobile Reception

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Director of the Publication:
Wolfgang Closs, Executive Director of the European Audiovisual Observatory
E-mail: wolfgang.closs@obs.coe.int

Editor and Coordinator:
Dr. Susanne Nikoltchev (LL.M. EUI and U of M)
Head of Department for Legal Information
E-mail: susanne.nikoltchev@obs.coe.int

Contributing Partner Organisation:

Institute of European Media Law (EMR)
Nell-Breuning-Allee 6
D-66115 Saarbrücken
Tel.: +49 (0) 681 99 275 11
Fax: +49 (0) 681 99 275 12
E-mail: emr@emr-sb.de
URL: http://www.emr-sb.de/

Translation:
Isabelle Herold-Vieublé, Robert Spence

Proofreading:
Géraldine Pilard-Murray, Britta Probol, Candelaria van Strien-Reney

Editorial Assistance:
Nadia Ebel, Michelle Ganter

Marketing:
Markus Booms
E-mail: markus.booms@obs.coe.int

Typesetting/Print:
Pointillés, Hoenheim (France)

Publisher:
European Audiovisual Observatory
76 Allée de la Robertsau
F-67000 Strasbourg
Tel.: +33 (0)3 88 14 44 00
Fax: +33 (0)3 88 14 44 19
E-mail: obs@obs.coe.int
URL: http://www.obs.coe.int

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What is the difference between a television and a mobile phone? Until a few years ago this question would have been a good opening line for a joke, no more. Now, however, it has to be taken more seriously, which is why it has been chosen as the subject of this edition of *IRIS Special*.

Admittedly, for most of us, television sets are still what we use to watch television and mobile handsets a phoning device that requires no fixed network connection. The boundaries between the two, however, are becoming increasingly blurred.

When fitted out with various technical "extras", televisions can be used not only to watch DVDs and display teletext, but also for unlimited enjoyment with video games, interactive participation in broadcast programmes, and surfing on the Internet. Using webcam technology plugged into our TV screen, we can see who we are talking to via a computer link. Surely it is only a short step to televisions that double up as telephones.

The rapid development of the different services available to mobile phone owners is even more impressive. Here, it is a case not so much of what they can but what they cannot do, as the mushrooming of new functions drives the race for better, "all-singing, all-dancing" devices. It is already possible to receive television transmissions on a mobile phone, and with playback networks interactivity also becomes a valid option.

And as services that used to be separate continue to converge, so the legal issues connected with television and telephony increasingly overlap. It is no wonder then that providers and users are so keen to know the difference between a TV service and a mobile-based service, to the extent that the content involved is largely the same.

For example, what about the "must carry" obligation in Article 31 of the EC Universal Service Directive which applies (only?) to broadcast services. How are such "broadcast services" defined? Does the definition also apply to TV content received via a mobile handset? And if so, should such a service be subject to a licence fee?

Comparisons drawn between conventional and new media content services are also interesting in relation to other areas such as frequency use and interoperability. Each side has a lot to learn from the other, in terms of both the technical and legal aspects at stake. The overriding question here is what needs to be regulated, and how to go about it?

It is impossible to get to the bottom of these issues without examining their roots, which are indissociable from the subject of digitalisation. That explains why, after taking stock of developments on the television market generally, this *IRIS Special* begins with a description of

how digital terrestrial television has developed and the different services that have become possible as a result of digitalisation. It then goes on to look at those aspects of particular importance for digital television such as "must carry" obligations, interoperability, and competition. Finally, it addresses the issues raised by "mobile" TV.

This issue of *IRIS Special* also contains a wealth of information about the basic technical and legal considerations associated with electronic media content services. This should be of interest to anyone who comes into contact with such services, whether in the professional or private sphere.

Strasbourg, January 2005

Wolfgang Closs
Executive Director

Susanne Nikoltchev
Head of Department for Legal Information

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Susanne Nikoltchev & Francisco Javier Cabrera Blázquez

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Kathrin Berger and Max Schoenthal
Institute of European Media Law (EMR), Saarbrücken/Brussels

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A - Introduction

In November 2004, the International Short Film Festival in Berlin featured entries in a new category: the "MicroMovie". The prize in this category is awarded to a short film, no longer than 90 seconds in length, that has been created using the "video recording" function of a mobile (i.e., a mobile phone, a.k.a. cellphone).[1] Here it is not so much the form of artistic expression, namely the genre "short film", that stands out on account of its novelty. Rather, this initiative deserves mention for two other reasons: First, it is only very recently that the device used for the recording has acquired a photographic capability – and the telephone-plus-digital-camera has now turned into a multimedia device that includes a video camera. Second, digital recording allows the recorded sequences to be sent quickly and easily anywhere in the world. Not just via mobile phone networks on mobile end devices, but also via other digitised means of transmission to a wide variety of receivers, e.g. via uploading to the internet from a home PC. Does this mean that each of us who uses such a piece of equipment will automatically become a broadcaster?

This is one of many examples which demonstrate that new forms of audiovisual content provision will, and indeed already do, exist. Today it is already possible to use second-generation mobile phone technology to provide audiovisual content to a large number of users. This is true, for example, of the procedure that uses GPRS (*General Packet Radio Service*) to give access to server-based media content services, which are then transferred to the mobile phone via audio/video-streaming technology. The service can be activated via a link displayed by the WAP browser, or via the push procedure. The advantage of streaming is that it allows significantly greater amounts of data to be transferred than is possible via normal downloading. Furthermore, the introduction of the next generation of mobile telephone technology, UMTS (*Universal Mobile Telecommunications System*), will soon make other bandwidths available for the transfer of even larger amounts of data. A number of mobile phone operators have already acquired rights for football match highlights to be broadcast to mobile devices. Will services such as these come to be equated with the classical forms of television?

Digitisation opens up new means of transmission for television programmes, means previously used for other types of content. And the necessary devices are not (any longer) aimed exclusively at the classical (exclusive) uses. In addition, digitisation, as we saw above, begins with content production. The new electronic media content services are, moreover, increasingly designed in such a way that uniform standards make it possible for them to be marketed via a variety of supply routes without the need for major modifications. Furthermore, so-called hybrid networks and the installation of several receiver modules will enable a single device to use a variety of means of transmission and technologies in combination.

Here it is not merely a question of the supply of signals via terrestrial networks, as this is yet another area of digital media that can involve the use of satellites. And one particularly impressive overall factor is the rapid progress being made in the area of mobile services and contents.

Digital television has been the subject of discussion in Europe for more than a decade. By the end of the nineties a number of European states had already enacted specific legal regulations concerning the digitising of broadcasting. Partially dependent upon this, digital services and devices were launched on the market, but initially only to a relatively small extent and at a modest pace. At the same time, digitisation of the means of transmission was introduced, a process which today has been largely completed, although the situation varies according to the country and the infrastructure concerned.

In both the online and the mobile telephony sector, development took a wide variety of technical and economic forms and even a variety of legal forms, insofar as – in relation to the internet – there

1) In view of the current state of technological development of modern multimedia/multifunction devices, the reader is asked to forgive the potentially misleading element included in the use of the term "mobile *phone*" here.

was in fact any legal framework in existence at all at that time. The convergence of the media, or more specifically of media contents (services and applications), technical equipment and means of transmission, was discussed in an inflationary manner during this period. The bursting of the "internet bubble" played a significant part in the fact that developments at the beginning of the new millennium (i.e. the beginning of the digital era of the information and knowledge society) subsequently parted course with initial predictions. Convergence did not occur to the extent anticipated. In the past two years, however, a great deal has changed, not least in the area of mobile telephony. Many of the services offered have a considerable similarity with what has traditionally been regarded as television or as audiovisual content.

These were the reasons that led the European Audiovisual Observatory, together with its partner organisation the Institute of European Media Law (EMR) to conduct a workshop entitled *"Die nächste Generation elektronischer Medieninhaltedienste"* ("The Next Generation of Electronic Media Content Services") in Saarbrücken on 9-10 September 2004.

The title of the workshop reflects its dual goals: first, to survey the current state of digital television, and second, to focus on the latest forms in which media content is being offered. The common element linking these two main themes was the discussion of new approaches to regulation in media and telecommunications law. This involved asking the fundamental question of what regulation is necessary for new electronic media content services and what instruments might be appropriate here.

A legal framework that is "appropriate" in this sense, the workshop assumed, should not restrict the supply or use of new electronic media content services via means of transmission and devices that previously had no relevance for broadcasting, nor should such a legal framework lose sight of the recognised goals of media policy. Ideally, one might think, the right mix of broadcasting law and electronic communications law would lead to the best results – but who concocts this mix, and according to what criteria?

In view of technical and economic developments (for which regulatory measures and regulatory experience "beyond" broadcasting are characteristic), simply adopting the general approaches of existing broadcasting law would be difficult. Until recently, freely receivable television could ignore questions relating to privacy, billing, or even portability of numbers. The law applicable to mobile telephony, on the other hand, lacked familiarity with the regulation of contents. To date, it has not had to concern itself with topics such as the protection of minors. It is only in relation to certain "transverse" topics such as copyright law that television broadcasters and mobile telephone providers have an equal store of experience.

What insights can be provided by the introduction of digital television, so as to allow these previously separate worlds to be drawn together in law? How are the new approaches to regulation in media law to be evaluated? What can media law and media policy learn from electronic communications law, as far as the industry's policy goals in relation to the introduction of new technologies and services are concerned? Which approaches could possibly be transferred to the other area? How are we to deal with frictions that could arise in the event that broadcasting and electronic communications "get in each other's way"? What potentially joint challenges have to be faced (such as interoperability)? How can we turn things into a win-win situation for all those involved?

Such were the questions – both numerous and exciting – that were taken up at the workshop. This issue of *IRIS Special* reflects the positions and discussions that played a part within the framework of that meeting. It also describes the framework for possible answers to the questions listed above.

Part B of this *IRIS Special* is devoted to a survey of the current state of affairs, including in particular the development of the television market and the regulatory status quo. Part C investigates the new challenges that digital broadcasting of programme content has created. The discussion will include problems involved in the changeover to DVB-T, stipulations for new enhanced television services, "must carry" regulations, aspects of interoperability and the influence of the market. The investigation also extends to the question of how "television" is presented via mobile devices (Part D). This includes an overview of the technical fundamentals as well as a discussion of the new contents of regulation and of the new tasks of regulation. A summary of the main results of the discussion concludes this issue of *IRIS Special*.

B - Survey of the Current State of Affairs

In order to be able to look into the future of electronic media content services, it is necessary to have an overview of the current situation. After a brief portrayal of the development of the television market, we investigate the media policy goal of guaranteeing pluralism in the content offered to the viewer, foregrounding the two aspects of "vertical and horizontal integration" and "technical bottlenecks". Both of these aspects have a direct effect on that goal; they will be explained in respect of both analogue and digital modes of transmission.

The State influences the development of market structure and, consequently, the development of the range of content offered, by intervening to regulate or to monitor compliance. Accordingly, this chapter ends with an overview of regulatory measures at national and European level.

I. Development of the Television Market

According to a current study,[2] the development of the television market can be divided into three phases.

"*Fernsehen* 1.0" (Television 1.0) describes the period from the beginnings of television up to the developments of the 1980s, a phase in which the image of the citizen occupied centre-stage. Television was exclusively organised on a public service basis and had the politically motivated function of educating and entertaining the viewer, a function confirmed by constitutional court rulings.

"*Fernsehen* 2.0" (Television 2.0) characterises the approx. 15-year-long phase that followed the introduction of privately organised broadcasting, this time "provider-driven", i.e. the broadcaster fills niches he has identified and tests formats and topics that either survive or perish on the audience market.

"*Fernsehen* 3.0" (Television 3.0) is now set to begin; it is predicted that it will be "customer-driven", i.e. heavily influenced by the demands of the viewer. The individualisation of the services offered, the availability of content via mobile phone, TV screens on trains, at the airport, on planes and in cars, at work and at home – all coupled with the possibility of responding interactively – suggest that content providers will know with considerably greater accuracy than at present whether viewers are actually taking advantage of what is offered. The question that is raised here relates to the mode of access to those very infrastructures without which the content-provider cannot find his way to the viewer.

1. The Goal: Competition and Diversity from the Viewer's Perspective

From a legal perspective, some of the workshop participants argued, the prerequisites for the scenario described by "*Fernsehen* 3.0" have not yet been fully created: German case law so far contains hardly any cases in which the basic right to freedom of information established by Article 5 of the Basic Law (*Grundgesetz*, GG) has been interpreted as creating a right of access on the part of viewers to certain sources of information or entertainment or a right to bidirectional communication. The basic right to freedom of information established by Article 10 ECHR, however, whose very wording includes the "freedom to receive [...] information or ideas", has been interpreted by the European Court of Human Rights as founding a general right of access on the part of viewers to the individual communications networks, i.e. a freedom of reception.[3]

2) White Paper: *Fernsehen 3.0 – Strategien für ein gesättigtes Marktumfeld* ("Television 3.0 – Strategies for a saturated market"), a study by Detecon & Diebold Consultants, available (for a fee) at: http://www.detecon.com/de/publikationen/studienbuecher.php?sid=b1f4916f72b9ed3d4e2f18801e03a343

3) Roßnagel/Sosalla/Kleist: *Der Zugang zur digitalen Satellitenverbreitung* ("Access to Digital Satellite Broadcasting"), p. 75.

Convergence in the field of media could lead to a fragmentation of the market. Niche and "special interest" programmes will be further diversified, the viewer or user will have a greater interest in gaining access to programme contents that satisfy his personal preferences and current (information) needs. This will mean that the wishes of recipients will become increasingly determinative and will become an essential factor in the development of the market. Among the problems raised by the workshop participants was the question of whether and, if so how, the rights of recipients too, would continue to evolve in the course of this process.

2. Aspect: Horizontal and Vertical Integration

At the beginning of the 1990s, the telecommunications infrastructure in Germany and in the rest of Europe was in the hands of state monopoly undertakings. In the case of Germany, this monopoly was vested in the Post Office (*Deutsche Bundespost*), which underwent a step by step process in which it was first privatised and then exposed to competition. Terrestrial broadcasting networks are almost exclusively run by Deutsche Telekom AG (DTAG) as far as the new federal states of Germany are concerned (in the old federal states, on the other hand, it is the ARD that has the largest broadcasting networks); their share of the market has now fallen to well under 10% of all receiver households, which means they have lost much of their importance as far as TV broadcasting is concerned. In Germany there were monopoly-like conditions in the terrestrial and cable markets, which were heavily regulated by the broadcasting law of the individual federal states (*Länder*) as well, whereas there was competition in the satellite direct reception market, although here, too, a tendency soon became apparent towards a market in which there was one strong player.

From the point of view of the content providers, this initial situation was not necessarily a bad one: given sufficient capacity and non-discriminatory price structures, it was possible to live with this infrastructure. The increasing number of new programmes and services that became available as television advanced towards the latest generation, however, rapidly exposed this model's limits: there were no more free Astra transponders in analogue TV, the cable channels were all occupied, and ranking decisions made by the media authorities determined the well-being or otherwise of the content suppliers. Terrestrial television was expensive and of no interest as far as the opening up of the market on the part of new television broadcasters was concerned.

The first step towards using existing infrastructure capacities seemed logically to be a horizontal concentration, i.e. a merger of competitors or competitive products at the same market level.

As a second step, it seemed attractive to engage in mergers with infrastructure undertakings so as to guarantee access to recipients and to open up new forms of access to them. There had already been a number of initiatives along these lines. From the point of view of cartel law, the vertical integration brought about by mergers needed to be submitted to very critical examination, whereas economists also saw definite advantages in such mergers. Thus, for example, a vertically integrated sector was felt to involve a cost advantage for the end user by comparison with unbundled services, first of all because a combination of production and distribution would be provided, and second, because it would thus be possible to avoid a double profit mark-up.[4]

3. Aspect: Technical Bottlenecks

Access to television can be made more difficult in the case of digital transmission by the fact that additional equipment is required. So-called technical bottlenecks can arise through vertical integration of undertakings. This means that end devices or certain software needed for digital TV reception are not compatible with all the programmes offered. Thus, for example, one could imagine a situation in which a set-top box manufacturer, with the cooperation of a programme provider, restricts the functionality of its products so that they can only receive the programmes of that particular provider. Access to the full range of possibilities opened up by digital television is therefore restricted. There are entire markets for controlled-access services and conditional access (CA); in particular, the pay-TV markets are in the hands of a small number of undertakings, and these are intertwined with each other. Electronic programme guides (EPG), subscriber management systems (SMS), billing systems and chips for set-top boxes are also potential bottlenecks. The same applies to control via Application Programming Interfaces (APIs), the operating system (OS), standards or special software applications, even including service platforms behind the decoder. In this way it can be hard to separate infrastructure and content. This is a cause of concern, especially in view of ensuring diversity.

4) See IRIS Special: Regulating Access to Digital Television, European Audiovisual Observatory, Strasbourg 2004, pp. 39, 41.

II. Regulatory Measures

To enable recipients to have access to a wide range of programmes, content providers must have access to the means of transmission. In order to ensure this, content providers are subject to cartel and/or competition law. Moreover, content providers are indirectly protected by media law provisions as well. These do not aim at ensuring the providers' financial well-being, but are intended to ensure diversity in the interests of the public as a whole. The content providers' right of access is used as an instrument to guarantee diversity.

As far as the law is concerned, the challenges posed by integration among operators on the market and by technical bottlenecks are countered in two ways:

1. Ex Ante: Market Structure Control

One possible way of regulating the coupling of contents with available equipment is to enact legislation prohibiting vertical mergers among undertakings. This kind of intervention in the market is the regulatory approach first attempted.

a) Ownership Restrictions

One such approach takes the form of ownership restrictions, which prohibit in advance certain kinds of interpenetration.

In Europe there are a number of different approaches to regulating media concentration.[5] Essentially, there are three types of restrictions prescribed by the Member States: first, limiting the number of licences or refusing to grant a licence due to other forms of involvement in the media sector; second, an upper limit on involvement (in terms of capital interest or voting rights) in individual communications media; and finally an upper limit on involvement of media company shareholders in other media.[6]

The criterion for measuring concentration is either the share of viewer ratings or the market share in terms of advertising revenue or in terms of turnover.

In many cases there are special regulations concerning diagonal concentration in the area of media, i.e. concerning the question of whether and, if so, to what extent a natural or legal person can have involvements in undertakings in different media sectors.

The provisions differ markedly from country to country.[7]

In France and Greece, involvements are limited by sector; in Slovakia, all connections between the press, radio and television are prohibited; in Austria, there are restrictions on the granting of licences to shareholders in other communications media; in Malta, only one licence per sector is allowed; in Hungary, Slovenia, Ireland and Cyprus, there are upper limits on capital interest for actors already having an involvement in other media. In the United Kingdom and the Netherlands, the provisions concerning the effect of shares in the area of media upon the granting of licences are being relaxed (in the United Kingdom, the change was effected in 2003; in the Netherlands, relaxation is planned). In Italy, restrictions on diagonal involvements are due to be lifted in 2008. To a limited extent, there are limitations on diagonal concentration in the Flemish part of Belgium and in Estonia. No provisions of this kind exist in the Wallonian part of Belgium, in Denmark, Finland, Latvia, Lithuania, Luxembourg, Poland, Portugal, Sweden, Spain or the Czech Republic.

German law contains such regulations only in relation to television broadcasters, as laid down in §§ 26 *et seq*. of the Inter-State Agreement on Broadcasting (*Rundfunkstaatsvertrag*–RfStV). According to these paragraphs, an undertaking (either the undertaking itself, or undertakings assignable to it) is allowed to broadcast an unlimited number of television programmes nationwide, provided it does

5) See IRIS Special: Television and Media Concentration – Regulatory Models on the National and the European Level, European Audiovisual Observatory, Strasbourg 2001.
6) Cf. on this point the study undertaken by the European Institute for the Media and commissioned by the European Parliament: Kevin/Ader/Fueg/Pertzinidou/Schoenthal: *"Die Information der Bürger in der EU: Pflichten der Medien und der Institutionen im Hinblick auf das Recht des Bürgers auf umfassende und objektive Information"* ("The information of citizens in the EU: responsibilities of the media and of the institutions in respect of the right of citizens to comprehensive and objective information").
7) All information from: Kevin/Ader/Fueg/Pertzinidou/Schoenthal: *"Die Information der Bürger in der EU: Pflichten der Medien und der Institutionen im Hinblick auf das Recht des Bürgers auf umfassende und objektive Information"*.

not come to exercise a dominant influence as far as the shaping of public opinion is concerned. This is deemed to be indicated by an average annual viewer ratings share of 30 per cent.

b) Merger Control

The second, classically competition-law *ex ante* control of market structures is achieved by merger control within the scope of the European Merger Control Regulation and, taking Germany as an example, the law against restriction of competition (*Gesetz gegen Wettbewerbsbeschränkungen*–GWB). This constitutes yet another possible way for the anti-cartel authorities to approach the task of implementing principles relating to the separation of infrastructure and contents in a converging media environment. The cases of planned or completed mergers that are described below are intended to illustrate the way the competent authorities deal with this issue.

(aa) Bertelsmann/Kirch/Premiere/Deutsche Telekom

In the double decision Bertelsmann/Kirch/Premiere and Deutsche Telekom/BetaResearch[8] the European Commission based its refusal to approve the merger on 27 May 1998 on the interdependencies between the markets. The undertakings involved – Kirch, Bertelsmann and Premiere – were planning to establish a joint venture to run pay-TV and pay-per-view via the Kirch d-box, with their own subscriber management system. Complex contracts were to be used to bring BetaResearch, the holder of the exclusive licences for the encrypting technology, under the partial control of DTAG. The latter undertaking pledged to make its cable network available for this technology.

The Commission referred to the issue of access to the programme resources and stated that the undertakings that had announced the planned merger would control the market access of others. The d-box decoder infrastructure, with a proprietary access control system, the Commission argued, would need to be used by every competitor, and it could not be expected that the undertakings involved would guarantee this in a non-discriminatory way. Finally, the merger would mean that alternative cable network operators would also have no realistic chance of being able to set up other programme platforms or of offering other services. Rather, Premiere and/or BetaResearch would dictate the conditions of other undertakings' access to the market.

When Deutsche Telekom regionalised the cable networks some years later, and offered six of them to the US undertaking Liberty Media Corporation, owned by John Malone, Germany's Federal Cartel Authority (*Bundeskartellamt*) prohibited the acquisition of these regional undertakings on 22 February 2002. This happened above all because the Authority feared that Liberty would reinforce the existing market-dominant position it was buying into, first of all on the end customer market, second on the content market in relation to the programme providers, and third on the signal supply market in relation to the network level 4 operators. One of the key arguments supporting this fear of reinforced market domination was the good access to contents provided by undertakings connected with Liberty and the increase in purchasing power, also associated with the possibility of making exclusivity agreements with the content providers.[9]

(bb) Sogecable/Vía Digital

On 8 May 2002 Sogecable SA[10] made an agreement with Grupo Admira Media SA to the effect that Sogecable and DTS Distribuidora de Televisión Digital SA ("Vía Digital"[11]), which was controlled by Admira Media SA, should merge via an exchange of shares. The merger of these two Spanish digital pay-TV platforms gave rise to Digital+, a platform with a market share of almost 80% and more than 2.8 million subscribers. In the face of the concerns raised by this extremely strong market position, the two undertakings argued that the merger was justified in view of the difficult situation of the entire European television industry, and in the light of the heavy losses that both Sogecable and Vía Digital had had to endure.[12]

8) Cases IV/M. 993 and IV/M. 1027, OJ L 53 of 27 February 1999, p. 31.
9) *Wirtschaft und Wettbewerb* (WuW) ("Economy and Competition") No. 6/2002, p. 632 (637).
10) Sogecable SA ("Sogecable") is controlled by the Spanish undertaking Promotora de Informaciones SA ("Prisa") and the French group Canal+ SA ("Canal+"), with the latter belonging to the Vivendi-Universal group. Sogecable is chiefly involved in the following areas: terrestrial television (Canal+ analogue) and Pay-TV via satellite direct reception systems (Canal Satélite Digital), film production and distribution, acquisition and reselling of sporting rights, and provision of services of a technical nature.
11) Before the merger Vía Digital provided pay-TV via satellite and was controlled by Telefónica by way of Admira Media. The remaining shares were held by institutional investors, the majority of which were TV broadcasters (Televisa, Canal 9, Direct TV, TVG, TVC, Telemadrid).
12) For more information on the financial situation of the European television industry in the area of digital Pay-TV see Harcourt, A., "The collapse of digital platforms in European Union Member States", published in: Regulating Access to Digital Television – Technical Bottlenecks, Vertically-integrated Markets and New Forms of Media Concentration, European Audiovisual Observatory, Strasbourg 2004.

On 3 July 2002 the two operators reported the merger, as required by Regulation (EEC) No. 4064/89,[13] to the European Commission.[14] From the point of view of competition law, the planned merger had a community dimension, and in accordance with the Merger Control Regulation the body responsible for examining the proposal would normally be the European Commission. The Spanish government, however, under the terms of Article 9(6)(a) of the Merger Control Regulation, requested that the case be referred to the Spanish competition authority, as the planned merger threatened to establish a dominant position on various Spanish markets, which displayed all the characteristics of a separate market, whereupon the Commission resolved on 14 August 2002, to approve the application by the Spanish competition authority and to refer the merger to the Spanish authority.[15] The Commission noted that the merger threatened to establish or reinforce a dominant position on the Spanish market exclusively. Due to the spatial markets that were involved the Spanish authorities were best able to examine the procedure. The Spanish government finally approved the plan subject to 34 conditions.

The resulting new platform Digital+ is now controlled by Sogecable's two most important partners, Canal Plus and PRISA, and by Vía Digital's principal shareholder Telefónica. One market upon which this control has a considerable effect is the market for television broadcasting rights for football matches.[16] The undertaking is not allowed to have any exclusive rights on specialist channels that are produced by the major US studios or international producers. The duration of contracts that Sogecable would be able to sign with "Hollywood Majors" or with Spanish football clubs is limited. Sogecable must grant independent programme providers access to its platform on reasonable, transparent and non-discriminatory conditions and must allow third parties to distribute the undertaking's specialist channels.[17]

The competition authority had noted inter alia that the merger could have considerable effects on the telecommunications market. In particular, Telefónica's right of co-determination in respect of the digital platform that controlled the most important audiovisual contents for pay-TV, in conjunction with Telefónica's activity as a provider of telephony services, internet access and ADSL television (with its project Imagenio),[18] could have anti-competition effects on these markets. Since Telefónica already has a dominant position in the field of telecommunications, the additional possibility of gaining Sogecable premium contents for transmission via ADSL television or other broadband technologies would jeopardise the market position of other telecommunications providers. Accordingly, in its purchases of audiovisual contents Sogecable was prohibited from putting at a disadvantage telephone or internet service providers supplying ADSL or other technologies (especially cable), to the benefit of the Imagenio project or another Telefónica ADSL project.[19] In addition, Sogecable was prohibited from acquiring or exercising exclusive rights to national league football or cup football matches for commercial transmission via mobile telecommunications or data transmission systems.[20]

Other conditions were intended to prevent commercial strategies which might have succeeded in creating a certain synergy between Sogecable and Telefónica: the Sogecable undertaking is not permitted to market its digital television services together with Telefónica's internet access services or with the latter undertaking's Imagenio project,[21] and it must guarantee that the return channel for the interactive services provided via its platform is not restricted to the Telefónica network but can be implemented using the networks of other providers as well.[22]

(cc) Telenor/Canal+/Canal Digital

Telenor was a subsidiary of the Norwegian telecommunications network operator, which provided satellite transmission and cable broadcasting services. Telenor operated Canal Digital jointly with Groupe Canal+, the film and television division of the Vivendi-Universal group. Groupe Canal+ also

13) Council Regulation (EEC) No 4064/89 of 21 December 1989 on the control of concentrations between undertakings (EC Merger Control Regulation).
14) Prior notification of a concentration (Case COMP/M.2845 – Sogecable/Canalsatélite Digital/Vía Digital), OJ EC C 166 of 12 July 2002, p. 9.
15) Commission Decision of 14 August 2002 to refer Case No COMP/M.2845 - Sogecable/Canalsatélite Digital/Vía Digital to the Spanish competition authority in accordance with Article 9(2)(a) of the Merger Control Regulation.
16) Decision of the Council of Ministers of 29 November 2002 with the conditions for the merger between Vía Digital and Sogecable – general decision, available at: http://www.mineco.es/dgdc/sdc/Acuerdos%20Consejo%20Ministros/N-280_1_ACM.htm and Decision of the Council of Ministers of 29 November 2002 with conditions in respect of the market for acquisition of transmission rights for football matches as part of the merger agreement between Vía Digital and Sogecable – special decision, available at: http://www.mineco.es/dgdc/sdc/Acuerdos%20Consejo%20Ministros/N-280_2_ACM.htm
17) A summary of the conditions imposed by the government can be found in IRIS 2003-3: 10, available at: http://merlin.obs.coe.int/iris/2003/3/article17.en.html
18) Imagenio is an integrated ADSL service of Telefónica, which intends to provide landline telephony, internet access and pay-TV.
19) Conditions No. 14 and 15 of the general decision.
20) Condition No. 4 of the special decision.
21) Condition No. 13 of the general decision.
22) Condition No. 16 of the general decision.

produced pay-TV programmes and distributed bouquets of pay-TV channels[23] through its subsidiary Canal+ Nordic. When Groupe Canal+ decided to transfer its shares in Canal Digital to Telenor, a series of agreements was entered into concerning the distribution of Canal+ Nordic pay-TV channels through Canal Digital and the provision of pay-per-view and near-video-on-demand channels by Canal+ Nordic to Canal Digital. Inter alia, Telenor was granted for a period of 10 years the exclusive right to distribute Canal+ Nordic's pay-TV premium-content channels through Canal Digital. At the same time, Groupe Canal+ gave up its operation of a competing DTH[24]/SMATV[25] master antenna system platform in the Nordic region.

In return, Telenor undertook for the whole of this period not to own or operate a "premium" pay-TV channel for DTH/SMATV broadcasting and not to broadcast "premium" pay-TV channels of competing providers. The European Commission, after examining these agreements, had arrived at the preliminary conclusion that a restriction of competition could come about, in particular due to the long duration of certain exclusivity clauses; the undertakings concerned then considerably shortened the durations that had been the subject of complaint. In its decision of 5 January 2004[26] the Commission expressed the view that the restrictive effects of the exclusive agreements were now more than compensated for by the advantages that had been achieved. The Commission therefore exempted the notified agreements for a period of five years in accordance with Article 81(3) of the EC Treaty.

2. Ex Post: Behaviour Control

A somewhat more complicated procedure is *ex post* control of behaviour, i.e. examining whether a market-dominant position has been misused or a cartel has been formed. The complaints procedure, which in most cases is initiated by a third party, has high thresholds as far as showing cause is concerned, and it is up to the competent bodies to decide whether to pursue the procedure further; it is rare for vertical integrations to be affected. However, in accordance with Article 7 of the new regulation on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (Antitrust Regulation),[27] the Community is now for the first time even empowered to adopt structural measures, i.e. to decartelise. Experience of this instrument had previously been limited to US anti-trust law.

III. Provisional Conclusion

It should be noted that television is undergoing a period of rapid and fundamental change. The expected shift in the direction of a predominant orientation towards viewers' needs and desires, the individualisation of channels and services and the comprehensive availability of programme content via a wide variety of signal-receivers are all on the horizon. Possibly this will result in regulation of the television market, a regulation which will be more heavily influenced by user interests. In technical terms, the prerequisites are being (and to some extent already have been) created by the digitisation of the transmission routes, a process which, to the extent content-access occurs "on demand", may possibly require new approaches to regulation.

23) Bouquets of channels are packets consisting of channels and services distributed under a programme guide.
24) DTH ("direct to home") refers to the reception of satellite programmes in a household via that household's own satellite reception antenna.
25) SMATV ("Satellite-delivered Master Antenna Television System") refers to a communal system that has been extended so as to receive satellite signals.
26) The decision is available for download at:
http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/c_149/c_14920030626en00160017.pdf
27) Council Regulation No 1/2003, OJ L 1 of 4 January 2003, p.1.

C - The Challenge of Digital Television

The digitisation of television is advancing inexorably. This brings new associated challenges. First, the timing of the complete shutdown of analogue signals needs to be planned exactly. Second, digital technology must be affordable, and recipients must also be introduced to this technology, so that the population as a whole can continue to receive television (albeit in digital form in future). Third, digital transmission, too, requires frequencies and channels to be coordinated. Fourth, new services, such as programming interfaces and navigators, which are transmitted together with the television signal, will possibly require new approaches to regulation. Not least, there are questions concerning the extent to which "must carry" regulations will still be necessary and make sense in digital networks, and what part will be played by system interoperability.

This varied list of the challenges posed by digitisation is taken up in the following chapter, which includes a number of concrete examples from individual countries.

I. The Switch-Over to Digital Terrestrial Television (DVB-T)

1. Technical Foundations and Standards

Television is an electronic service for the provision of contents that requires a transport medium in order to reach the recipient. Traditionally, the only medium taken into consideration for that purpose was the terrestrial frequency spectrum; later this was complemented by cable and satellite.

In the digital field, satellite, broadband cable and terrestrial broadcasting are available as means of distribution; alongside these there is broadband internet access. The switch-over from analogue to digital will involve all means of distribution used for broadcasting, and the only differences will concern the time scale. Digital satellite transmission already has its place with broadcasters and viewers; it will continue to develop further under the pressure of the market and will completely replace analogue reception in the foreseeable future.

The switch-over to digital means of transmission is also aided by the technological progress being made in the area of content production; for cost reasons, production is nowadays almost exclusively digital. This means that digital transmission no longer requires conversion of the signal. Another factor, however, is that digital transmission lacks the blanking interval, which is characteristic of analogue means of transmission and has traditionally been used to transmit videotext signals.[28] Videotext in its classical form will therefore not exist in digital television. In its place there will be a digital ancillary service, which will perhaps also carry the name "videotext".

Digital data can be handled in a wide variety of ways (e.g. various kinds of software are used, there are different types of compression, etc.). It is necessary to set international standards in order to avoid a situation in which digital television in different places is based on different software concepts that prevent any kind of compatibility or make such compatibility unnecessarily difficult to achieve.

The task of creating such international standards for the transmission of digital television and digital data services has been taken up by the *Digital Video Broadcasting Project* (DVB Project).[29] The project consists of a consortium of broadcasters, production companies, network operators, software

28) The phenomenon of the blanking interval describes the fact that not all picture lines are used for transmitting pictures and that the time during which no picture content is being transmitted (due to the vertical line return in the monitor) can be used for transmitting additional information.
29) Details at http://www.dvb.org

developers and regulatory authorities from more than 35 different countries. The results of this work include the standards DVB-C (*Cable*) for digital cable television, DVB-S (*Satellite*) for digital satellite television and DVB-T for digital terrestrial television, and in addition DVB-H (*Handheld*) for mobile reception of digital television and the return channel standards DVB-RCS (for satellite) and DVB-RCC (for cable), which are intended to make interactive television possible.

The broadband cable is currently one of the most important means of transmission in Europe. Digital cable transmission (DVB-C) provides considerably greater capacities than have previously been available. At present the existing cable networks, e.g. in Germany, carry as a rule 34 analogue television and 35 radio programmes; the same cable networks have 12 digital channels available for the transmission of up to 120 digital TV programmes. Continuing progress in the conversion of analogue to digital channels in broadband cable, and the extension of the frequency range to 862 MHz, will enable the provision of up to 100 channels, i.e. 1000 programmes. The broadband cable is capable of carrying a return channel. This means that data can be transmitted not just in one direction, but that the user, too, can send data via the cable. This makes interactive communication possible, with the cable becoming a multimedia network.

For digital terrestrial television DVB-T is the standard for the provision of television services in accordance with the Access Directive 2002/19/EC,[30] the Universal Service Directive 2002/22/EC[31] and the Framework Directive 2002/21/EC.[32] In Article 17(2) of the Framework Directive the Member States call for the application of the standards and specifications established by the European standardisation organisations such as the European Telecommunications Standards Institute ETSI or, if no such standards or specifications are available, the application of international standards or recommendations of the International Telecommunications Union (ITU), the International Organization for Standardization (ISO) or the International Electrotechnical Commission (IEC).

DVB-T enables the transmission of four digital programmes in place of one analogue programme with no loss of quality. In addition, DVB-T has the advantage of portable and mobile[33] reception. This is a factor which makes it unique; no other means of transmission currently allows such reception to any significant extent – as measured by its use by viewers. In total, 24-30 programmes can be broadcast, instead of the 6-8 that are possible with analogue terrestrial operation, since digital compression techniques enable a more efficient use of the frequency spectrum. One channel, i.e. the frequency range previously used for broadcasting just one programme, can now be used to transmit several programmes in a single data stream. The bundling of these programmes into a data stream is called multiplex. When transmitting digital programmes it is possible to broadcast data services on not-yet-used frequencies, as they do not use up much transmission capacity. On one channel, for example, three television programmes and one data service can be transmitted. Every possible kind of content can be transmitted in this way, provided it has the right digital format. DVB-T as such, however, is not capable of providing a return channel, i.e. genuinely interactive applications are not possible. Interactive use is only achievable in conjunction with other media or, in the long term, via hybrid networks that employ mobile telephony and radio in one and the same device.[34]

At the moment, analogue television use – in Germany, for example – is tending to decline, and many households are switching over to satellite or cable reception. To this extent, there is sometimes doubt as to whether the investment in the digitisation of terrestrial broadcasting will pay off at all. However, it is widely held that digital television via antenna, despite the smaller number of programme places compared with digital cable and satellite transmission, is capable of offering an alternative for cable and satellite users. The typical dependencies of the other means of transmission would be absent from digital terrestrial broadcasting if the technological advantages are taken up and programmes are also orientated, for example, to the possibility of mobile reception – in particular, for additional (second, third) TV sets, so as to gain access to new target groups. In the United Kingdom, the conversion of digital terrestrial television to a free-to-air service (FreeView) has proven to be a great success and has given digitisation a major impetus.

30) Directive 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities, OJ L 108 of 24 April 2002, pp. 7-20.
31) Directive 2002/22/EC of 7 March 2002 on universal service and users' rights relating to electronic communication networks and services, OJ L 108 of 24 April 2002, pp. 51-77.
32) Directive 2002/21/EC of the European Parliament and the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services, OJ L 108 of 24 April 2002, pp. 33-50.
33) For digital satellite broadcasting, such concepts have already been implemented in part (radio), others are in preparation. Cf. also Part D below on mobile reception.
34) See Part D I. for further details concerning hybrid networks.

2. Steering Measures at European Level

Prescriptions on the part of the European Union for the further development of transmission technologies can be found in the Action Plans of the *e*Europe Initiative that was commenced in the year 2000. *e*Europe is part of the strategy decided upon by the European Council in Lisbon that aims to make Europe the world's most dynamic and competitive knowledge-based economy by 2010. The goal of the *e*Europe Action Plan 2002 was to provide internet access to as many citizens and undertakings in the European Union as possible by reorganising the legal environment for communications networks and services and by reorganising electronic business, to assist the working population in acquiring the skills required in a knowledge-based society, and to provide people in general with media competence so as to enable them to take part in social processes. Once it became possible to assume that the goals of this plan had been largely achieved, the European Commission at the request of the European Council in Barcelona set up an Action Plan *e*Europe 2005 so as to further encourage internet use and create new services. The main thrust of the plan is to ensure that broadband networks are widely available (and actually used) throughout the entire Union by the year 2005 and to ensure that greater use is made of the internet protocol IPv6.

The Member States of the European Union, in their *e*Europe Resolution, committed themselves in February 2003 to the implementation of this plan.[35]

With respect to digital terrestrial television, it was envisaged that the Member States should arrive at a clearer conception of the necessary conditions, so as to accelerate the transition. They were to publish their intentions in this regard by the end of 2003. It was suggested that there be an announcement of a time plan, of an evaluation of the market, and possibly also of a date for the termination of analogue terrestrial transmission and thus also for the freeing-up and reallocation of the frequencies previously used for analogue transmission.

In the European Commission's Mid-term Review (of 18 February 2004) concerning the *e*Europe 2005 Action Plan and in the Communication of the Commission of 26 May 2004 on the actualisation of the *e*Europe 2005 Action Plan[36] these stipulations are no longer mentioned, with the result that there is now a certain lack of clarity as to exactly what action the Commission will take in future. However, the plans of the Member States for the switch-over to digital terrestrial television have been published.[37]

At Council of Europe level, there have also been a number of activities undertaken in relation to the transition to digital television. The Group of Specialists on the Democratic and Social Implications of Digital Broadcasting, under the supervision of the Steering Committee on the Mass Media (CDMM), was to prepare, inter alia, a draft recommendation on the implications for democracy and society of the development of digital broadcasting services. The principles[38] contained therein are to be encouraged – e.g. via a forum for the exchange of information and experience among the Member States. The Committee of Ministers has approved the draft put forward by the Group of Specialists.[39] Alongside this, the Group of Specialists supported the Steering Committee in questions of public access to information and in questions of broadcasting regulation.

The Advisory Committee on Media Diversity, as part of its work, also dealt with digital terrestrial television. Its fourth meeting in September 2002 stressed the advantages of digital terrestrial broadcasting as a means of transmission and also pointed out the role played by digital terrestrial broadcasting's democracy-encouraging potential in the determination of many governments to hasten its introduction. In many countries and regions, according to the advisory committee, DVB-T was the only possible way of providing all households with digital television.

3. Cross-Border Approaches and Problems

What exactly are the factors involved in a successful switch-over to DVB-T? What demands are posed by the viewer? These are the issues that will be investigated in the present section.

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35) Council Resolution on the implementation of the *e*Europe action plan, OJ C 48 of 28 February 2003, p. 2.
36) The Communication is accessible via:http://europa.eu.int/information_society/eeurope/2005/doc/all_about/com_eeurope_en.doc
37) The plans are accessible via the European Commission's DG INFSO website at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/text_en.htm
38) Among the principles listed are: interoperability, low-cost access to devices such as set-top boxes, public information, protection of minors and human dignity, making EPGs user-friendly, ensuring recipients have access to free, cross-border programmes, and ensuring access to public service broadcasting stations.
39) Recommendation Rec (2003) 9, accessible at: http://www.coe.int/T/E/Human_Rights/media/7_Links/Previous_News.asp#TopOfPage

a) Frequency Management

The pan-European switch-over to digital terrestrial television (DVB-T)[40] reawakens a number of problems which had been off the agenda for a long time in the pre-digitisation period due to the decreasing importance of terrestrial means of transmission. For one thing, during the switch-over stage, there will be an increased demand for frequencies as long as there continues to be parallel broadcasting of analogue and digital programmes (so-called simulcasting); for another, even after that there will be the general problem of coordinating and allocating the scarce frequencies for terrestrial broadcasting in Europe. Terrestrial broadcasting is carried out via terrestrial broadcasting frequencies. Since, however, the frequency spectrum available in all transmission areas is the same, and each frequency can be used only once within each transmission area, problems can arise in the border regions between various countries or regions.

In Germany, for example, channel 8 was already being used in the federal state (*Bundesland*) of the Saarland for DAB but was also – despite possible interference from the federal state of Hesse – earmarked for DVB-T. Germany's *Regulierungsbehörde für Telekommunikation und Post* (Regulatory Authority for Telecommunications and Posts – RegTP) now plans to undertake the allocation of channels.[41] To take another example: in the area around Bonn in Germany, channels 64 and 66 have been allocated until the year 2006, although they are used as military channels in France. This type of use in France means that the channels cannot be used in the border regions of Germany, in order to avoid interference. But if that means that these frequencies are not available for broadcasting in Baden-Württemberg, for example, then the same is true for other neighbouring German *Bundesländer* (Rhineland-Palatinate, Saarland, Hesse, North Rhine-Westphalia), because here, too, there would be a danger of mutual interference. A comparable situation exists in Luxembourg and Belgium which – once again due to their being situated so close to France – have to take into account the existing (and priority) use. The frequencies allocated for the Bonn region are therefore, for comparable reasons, unavailable in Belgium and the Netherlands during the transitional period. Such overlaps will cause considerable problems, particularly for smaller cultural communities and in regions close to borders.[42]

An additional difficulty for terrestrial broadcasting is that the number of programme places will remain limited, even after the previously-mentioned expansion of capacity that will come about in the course of digitisation. Regional operators have little chance as far as broadcasting is concerned, if the available multiplexes are each allocated for an entire country. This is all the more so due to the fact that the introduction of new technologies involves considerable expenditure. For example, the financing of a nationwide DVB-T network in Germany is considered problematic even without regional variation in the allocation of multiplexes, whereas a greater degree of regionalisation of the networks is considered to involve an even heavier demand for frequencies and therefore also heavier expenditure; there is controversy, however, as to whether there really would be a heavier demand for frequencies, and thus higher costs.

A political and/or legal approach to a solution might be imaginable in a Europe-wide coordination of the issues addressed here. The European Community, however, has only limited competence in this area. Nevertheless, the Radio Spectrum Decision[43] sketches out a framework for a "European" coordination of this kind. It envisages certain procedures for the coordination of political approaches and, if possible, for the creation of harmonised conditions with respect to the available and efficient use of the frequency spectrum. A greater degree of coordination by the Community, with reference to the Stockholm Follow-Up Conference[44] in the year 2006, is also recommended in a study on frequency trading produced at the request of the European Commission.[45] To date, however, there has been virtually no formal coordination at all.

More than a few of the workshop participants expressed the fear that regional variety would be totally sacrificed in the course of the introduction of the new transmission technology.

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40) On the present state of development in the individual European states cf. the report of the EPRA Working Group on Digital Terrestrial Television, accessible at: http://www.epra.org/content/english/index2.html

41) Details on the authority's website at: http://www.regtp.de/reg_tele/start/fs_05.html

42) For more on this topic, taking the German-speaking community in Belgium as an example, see 4.c below.

43) Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community, OJ L 108 of 24 April 2002, p. 1.

44) The Stockholm Follow-Up Conference is organised by the ITU (International Telecommunications Union), an inter-state organisation concerned with technical and administrative issues of telecommunication. It establishes standards and ensures worldwide allocation and coordination of broadcasting frequencies. In particular, it establishes which frequencies are used for which services. As part of the Stockholm Follow-up Conference a decision will be made at the beginning of 2006 concerning the future use of the frequencies which today are mainly used for broadcasting analogue terrestrial television.

45) The study by Analysys Consulting, DotEcon, Hogan & Hartson is accessible at: http://europa.eu.int/information_society/policy/radio_spectrum/docs/ref_info/secontrad_study/secontrad_final.pdf

This concern is also very real in relation to cable transmission, viz. if the programme places available are allocated nationally, for example, or if in the course of cable allocation preference is given to public service and major commercial programmes and small, regional broadcasters are ignored. The situation is similar for satellite transmission.

The possible solutions to these types of problems that were discussed at the workshop are partly technical, partly political, in nature. On the one hand, as far as broadcasting is concerned, completely new means of transmission such as broadband access to television via Internet could in future serve to preserve regional diversity, as users would then be able to access the programmes of their choice from the range available on the Internet and would thus be able to receive programmes of whatever linguistic or cultural provenance they desired, independently of their own location. It appears doubtful, however, whether these new possibilities of reception would really mean that every television programme could be accessed from any location at all, as the operators' right to broadcast certain contents is often regionally limited and it is possible to restrict access to particular Internet services such that they can only be received by computers with IP addresses corresponding to particular groups of countries.

It is often maintained that a coordination or, in a second step, an integration of frequency policy would put an end to most of the problems that have arisen in this area. But there are doubts as to whether such a development could ever take place, and these doubts are supported by the fact that there are no signs of corresponding provisions being enacted at European Community level.

b) The Role of Public Service Broadcasting

It can be observed that the transition to digital terrestrial television is most successful in those countries in which the public service broadcasters are assigned a leading role by the State and the existing broadcasters take on the responsibility for the switch-over.[46] The majority of European countries have opted for an approach of this kind.[47]

The decisive factors in this process include, on the one hand, the procedure adopted by State authorities with respect to the provision of technical and financial resources, and on the other hand a positive attitude on the part of the broadcasters themselves towards digital terrestrial television, an attitude that is shown, for example, in a readiness to develop new channels and to modernise existing networks.[48]

In the opinion of many a public service broadcaster, the existing system of standards provides insufficient protection against the access risks that can result from digitisation, i.e. against the dangers for public service broadcasting. Those who hold this opinion feel that a practical concordance should be achieved, a careful balance between two legal interests, so that neither of them is essentially infringed. The first of the legal interests involved is the freedom to provide broadcasting services – this is protected by article 10 ECHR, as the freedom to impart opinions by means of broadcasting is an aspect of the freedom to hold and impart opinions, i.e. it is one aspect of freedom of expression. To protect the freedom to provide broadcasting services, it is necessary to adopt preventative measures, as unfavourable developments in this area are rarely reversible once they have actually come about. The second of the two legal interests involved here is the cable network operators' right of property ownership and their freedom to choose an occupation.

In the area of digitisation of cable, the suggestion has been made that the freedom to provide broadcasting services could be protected by having a segment of capacity reserved for broadcasting (at least one third of the capacity of the relevant cable network for freely-receivable broadcasting); in addition, there would need to be a guarantee that public service contents could not be marketed by cable network operators without the approval of the original public service broadcasters.

Public service broadcasters such as the German Union of Public Service Broadcasters (*Arbeitsgemeinschaft der öffentlich-rechtlichen Rundfunkanstalten in der Bundesrepublik Deutschland* – ARD) are above all concerned with maintaining their ratings after the switchover and continuing to reach as many potential users as possible. So far, however, it is a matter of speculation as to how the use of the higher transmission capacities that go hand in hand with digitisation will develop.

46) Report of the EPRA Working Group on Digital Terrestrial Television, p. 7; available at: http://www.epra.org/content/english/index2.html
47) Ibid.
48) Ibid.

It is also unclear when the exact date for the completion of the switch-over process will be and which means of distribution and end devices will come to predominate. The ARD plans to have a presence on all means of distribution, in order to fulfil its constitutional obligation to provide a basic level of services (*Grundversorgung*).[49] This, it is claimed, should also be considered in the context of the discussion on the self-imposed remit under § 11 of the Inter-State Agreement on Broadcasting (*Rundfunkstaatsvertrag* – RStV).[50] The development of adequate formats is already being planned.

There is disagreement concerning just what standards are derivable from the doctrine of provision of a basic level of services and how they are applicable in practice to public service broadcasting in the digital era. According to one opinion, provision of a basic level of services does not necessarily mean a presence on all available means of transmission; the contrary view argues from case law (citing rulings by Germany's Federal Constitutional Court)[51] that all means of transmission must be available to public service broadcasting and restrictions are only admissible on the grounds of limited financial resources.

In practice the German public service broadcasters attempt to reach as many potential recipients as possible with a mix of means of transmission, in order to avoid the so-called Digital Divide, i.e. a splitting of the public into two classes: those with access to the latest media, and those without. This strategy involves accepting that in certain regions – particularly in rural areas – only one means of transmission (usually satellite reception) will be available.

At the level of European Community law, in this connection, there have been discussions on the scope of the remit of public service broadcasting – in particular with respect to the activities of broadcasters on other means of distribution than the classical ones.[52] According to the Amsterdam Protocol of 1997 the Member States can confer, define and organise the remit of public service broadcasting. They can thus determine the type and content of public service programmes and can finance public broadcasting to the extent that this financing is for the fulfilment of the public service remit. The protocol also prescribes that such financing shall not affect trading conditions and competition within the European Community to an extent that would be contrary to the common interest.

One other factor – by no means the least important – affecting the future of public service television is to be found in the "must carry" regulations.[53] For the most part, "must carry" regulations currently exist only with respect to cable television. They ensure that public service broadcasting reaches every home. In the case of digital terrestrial television also, such regulations could ensure reception of public service broadcasting; this could be achieved comparatively easily, especially since (as described above) the special role of public service broadcasters is already included in the planning of the transition.

The status of public service broadcasting often also leads to controversy in the area of cable-based broadcasting. In the Dutch cable network, for example, there are three different possibilities for receiving audiovisual contents: analogue reception, digital reception (in the sense of point-to-multipoint distribution) and reception via Internet Protocol (IP). They are each subject to different rules. Especially where reception of audiovisual contents via IP is concerned, the user for the most part has a free choice as to the time and type of transmission. Either contents are in that case transmitted in encrypted form, and the recipient gains access to the contents of his choice by acquiring an individual key (such as a smartcard, for example), or else the broadcasters – on condition of further progress in the development of compression techniques and in network capacity – make the desired contents available on a larger scale at the individual request of a user (point-to-point) e.g. using the streaming technique.

Here, too, there are technically straightforward solutions that are possible; for example, a law could be passed requiring that the public service broadcasting stations should be automatically available to anyone purchasing a smartcard, without needing to be specially applied for.

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49) Provision of a basic level of services refers to the fulfilment of the essential functions of broadcasting for the democratic order as well as for cultural life. Provision of a basic level of services should not be understood as provision of a minimum level of services, but includes all programmes in the areas of education, information and entertainment; it also includes the provision of a basic level of technological services, i.e. guaranteeing the reception of broadcasts by citizens via suitable transmission technology.

50) Cf. on the discussion of the self-defined remit: Scheuer, "Public Service Broadcasters Define Their Remit", *IRIS* 2003-1: 8. The article is available at: http://merlin.obs.coe.int/iris/2003/1/article16.en.html

51) The doctrine of the provision of a basic level of services was developed by Germany's Federal Constitutional Court in the so-called Lower Saxony Decision (*Niedersachsen-Urteil*), BVerfGE 73, p. 118.

52) Discussion is currently tending to centre on internet activities. For recent developments in this area see V. Wiedemann, *"Geschäftserwartungen der Wettbewerber – Wendungen der EU-Rundfunkpolitik"* ("Business expectations of competitors – changes in EU broadcasting policy"), in: epd medien No. 68/2004, p. 3 *et seq.*; Held/Schulz, *"Europarechtliche Beurteilung von Online-Angeboten öffentlich-rechtlicher Rundfunkanstalten"* ("European-law assessment of online services of public service broadcasters"), a report commissioned by the *Friedrich-Ebert-Stiftung* (Friedrich Ebert Foundation), Berlin/Hamburg/Brussels 2004.

53) See section C III. below.

An equally important factor as far as ensuring adequate provision of public service broadcasting (PSB) programmes to recipients is concerned is the access of the platform operators to PSB contents; here, consideration can be given to so-called "must offer" regulations, i.e. the broadcasters must make their programmes available –possibly in return for a fee to cover their costs.[54]

c) Financial Assistance

One factor of decisive importance for the success of the switch-over to digital terrestrial television is the assistance it receives in legal, political, social and financial terms. Here it is essentially a question of ensuring that the forms of support that are chosen are appropriate and also in conformity with Community law, as demonstrated by the recent actions of the Commission in the cases of the Swedish[55] and the German[56] (Berlin-Potsdam area) DVB-T switch-over subsidies.

In Sweden, the network operator Teracom AB received a variety of different forms of financial aid including capital grants, guarantees and a commitment by the public service broadcaster SVT to pay Teracom fees for the transmission of programmes.

In Germany, the Media Authority (*Medienanstalt*) for Berlin-Brandenburg subsidises the introduction and development of digital terrestrial television in the pilot zone Berlin-Potsdam. Private broadcasters are financially compensated for the costs they incur due to having to use the network owned by an undertaking called T-Systems to broadcast their programmes digitally. Thus, subsidies are flowing to the commercial broadcasters and also (indirectly) to the network operators.

Following complaints by operators of other means of transmission, the Commission is investigating these two cases in order to establish whether they involve illegal state aid. In neither case has there been a notification under the terms of Article 88(3) of the EC Treaty.

According to Article 87(1) of the EC Treaty, state aid in any form is incompatible with the common market, in so far as it distorts or threatens to distort competition or affect trade within the Community by favouring certain undertakings or groups of undertakings.

The European Commission refers to Article 88 of the EC Treaty to determine the compatibility or incompatibility of state aid with the common market in a separate procedure for each individual case. As part of the aid supervision procedure the Commission, in cooperation with the Member States, keeps under constant review the systems of aid already in existence in those States and proposes to the latter any appropriate measures required by the progressive development or by the functioning of the common market. In accordance with Article 88(3) the Member States are required to inform the Commission of any plans to grant new aid in individual cases or of the issuance of any new aid regulations. The notified aid is then examined by the European Commission in accordance with Article 88(2) of the EC Treaty to determine whether it is compatible with the common market. During this phase of the examination, Article 88(3)(3) of the EC Treaty provides for a prohibition on implementing the notified aid. The granting of new aid, of which the Commission has not been informed, is illegal.[57]

A number of participants expressed the expectation that the Commission would determine that state aid was in fact involved here.[58] It remained to be seen, they said, whether in the view of the Commission there were circumstances involved that would justify such aid.

The main thing that is still not clear, as far as financial subsidising of the switch-over to DVB-T is concerned, is which participants it would make most sense to subsidise.

The participants in question include essentially the network operators who provide the infrastructure, the broadcasters who are to broadcast their programmes digitally, the recipients[59] who are to be encouraged to purchase receivers, or the producers of receivers.[60]

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54) For a further discussion of the "must carry" approach, see below (Part C III.).
55) Cf. the press release of the European Commission at:
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/912&format=HTML&aged=0&language=DE&guiLanguage=en
56) Cf. the press release of the European Commission at:
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/911&format=HTML&aged=0&language=DE&guiLanguage=en
57) Heidenhain, *Handbuch des Europäischen Beihilferechts*, ("Manual of European aid law") § 1 side note 3.
58) The details concerning the aid procedure are those in place as at October 2004.
59) In Italy, for example, the purchase of a set-top box attracts a subsidy (see below), cf. Maja Cappello, "Incentives for T-DVB and C-DVB Decoders and Broadband Access", in IRIS 2004-3: 11. This item is accessible at:
http://merlin.obs.coe.int/iris/2004/3/article25.en.html
60) Subsiding of end receivers was carried out in the United Kingdom.

There are those who argue that DVB-T in fact leads to a cost-reduction for programme providers, and that subsidising the cost of transmission therefore ends up being counterproductive, since the broadcasting network operator would then seek to benefit indirectly from the subsidies granted to the programme providers by charging the latter excessively high prices. Moreover, the broadcasters were already profiting from DVB-T in a variety of ways, since they were first of all expanding their coverage with respect to additional and mobile devices, second they were benefiting from the fact that cable network operators were subject to more pressure in negotiations, and third, mobile reception was possible without a UMTS (*Universal Mobile Telecommunications System*)[61] operator as a middleman.

There are also suggestions that the operation of the broadcast network should be separated from the production of programmes, especially on the part of the public service broadcasters, as happened for example in the United Kingdom in 1997, when broadcast network operations were sold to the US network operator Crown Castle. In Finland, too, the public service broadcaster YLE had to separate itself from network operation and was required to use the revenue generated from the sale of shares in the broadcast network operator Digita for the production of new digital programmes. A neutral broadcast network operator, it is argued, would ensure more competition, as it would mean that undertakings that already had a strong position on the market would not in addition have subsidies poured into them.

Other considerations concern the question of whether assistance could tie in with the issue of winning over recipients who are currently still using terrestrial reception. If this is viewed as an important starting point for assistance for a successful switch-over to digital television, then one option, it is argued, would be to provide financial support to socially disadvantaged viewers, i.e. those viewers who have so far been unable to afford to switch to transmission routes other than analogue terrestrial broadcasting. On the other hand, the so-called "casual" or "occasional" viewers, who only access particular programmes and who have made a conscious decision to stick with reception by antenna, would only find digital television attractive, it is argued, if it offered them stimulating programmes. It cannot necessarily be expected that viewers belonging to this latter category – the so-called "refuseniks" – would acquire a means of receiving digital television simply because of the "pressure" of the impending switch-off of the analogue signal. This problem is currently under discussion in the United Kingdom, for example.

In order to ensure that financial assistance is not contrary to European law, another sensible option – in addition to notifying the European Commission of planned payments – is a more heavily technology-neutral type of assistance in regard to certain services. Thus, in Italy, for example, set-top boxes are subsidised irrespective of whether they are used for the reception of digital signals via cable, terrestrial broadcasting, or internet broadband.[62] However, this procedure also was not notified, and the Commission is expected to take action here as well.

In Austria, the financing of the switch-over is being done with the help of the so-called digitisation fund. This was originally set up as a result of an initiative on the part of *Rundfunk und Telekom Regulierungs-GmbH* (RTR-GmbH) in the context of the "Digital Platform Austria" working group. RTR functions both as the office of the media supervisory authority *Kommunikationsbehörde Austria* (KommAustria) and also of the telecommunications control commission.

The Digitisation Report 2003 noted that in Austria – as in many other EU Member States – the move from analogue to digital terrestrial broadcasting would not be an exclusively market-driven process.

The reasons for this include the extremely difficult topography, the scarce transmission resources due to the short distances to the neighbouring countries, small broadcasting areas and a small number of broadcasters. It was expected that there would be a need for extra resources – particularly for the introduction phase, which will be characterised by increased expenditures in the areas of planning, trials, pilot operations, increasing public awareness and, eventually, the implementation of the expensive simulcast operation.

Alongside the already existing legal basis for terrestrial digitisation, it was therefore also considered necessary to create appropriate financial incentives for building up the necessary infrastructure and for providing specific innovative programmes and applications.

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61) UMTS is a mobile communications standard that allows internet access, etc., from mobile telephones due to high rates of data transmission.

62) Cf. on this point Cappello, "Incentives for T-DVB and C-DCB Decoders and Broadband Access", IRIS 2004-3: 11. This item is accessible at: http://merlin.obs.coe.int/iris/2004/3/article25.en.html

The legislature has taken up this recommendation and established the digitisation fund as from the beginning of 2004. This fund will receive an annual sum of EUR 7.5 million from radio and television licence fees.

Although the main emphasis for aid is in the area of terrestrial broadcasting, the fund has nevertheless adopted a technology-neutral approach which is open to the provision of assistance for the introduction of any form of digital broadcasting. Purposes capable of attracting aid under the terms of § 9b of the KommAustria Act (*KommAustria-Gesetz*) are:

- Carrying out of scientific studies and analyses on technical, economic, programme-related and consumer-orientated issues concerning the introduction of digital transmission of radio and television programmes;
- Providing assistance for test runs and research projects on digital transmission of radio and television programmes;
- Development of programmes and additional services including in particular Electronic Programme Guides, Navigators, interactive and mobile applications that highlight the programme-related and interactive advantages of digital transmission and go beyond traditional broadcasting applications;
- Measures aimed at informing the public about the digital transmission of radio and television programmes;
- Planning and setting up of the terrestrial broadcast infrastructure for the transmission of digital radio and television programme, taking into consideration a corresponding optimisation of the broadcast network and attainment of an appropriate level of service-provision to rural areas;
- Providing assistance for the acquisition of the end receivers necessary for the reception of digitally transmitted radio and television programmes;
- Assistance to broadcasters to ease the switch-over from analogue to digital transmission;
- Measures aimed at creating financial incentives for consumers who make an early start in the switch-over to digital terrestrial reception of radio and television programmes;
- Financing of the expenses incurred by KommAustria and RTR-GmbH in creating and implementing the digitisation concept.

Allocation of aid from the digitisation fund is subject to guidelines established by RTR-GmbH which are in turn subject to a European Commission approval procedure under subsidies law. The Commission's decision is currently still awaited.

d) Support Policy Measures

Apart from financial assistance, the most effective steering measure available to policy-makers seems to be the setting of a definite switch-off date. This means that a time is determined at which analogue transmission operations would cease once and for all. There would then be no doubt that from that date onwards only digitally broadcast programmes could be received via antenna, and all those involved in the change-over would be compelled to cooperate.

e) Role of Regulators and Supervisory Authorities

The main activities of the national regulatory authorities in regard to the transition to DVB-T are, as a rule, to assist legislators to draft laws, to manage the switching-off of analogue transmission operations and to develop and carry out the licensing procedure, as well as allocating frequencies and the putting together of the multiplexes.[63]

The regulators are confronted with the "two faces" of broadcasting, which needs regulating both as a network and also in relation to its audiovisual content:[64]

63) Report of the EPRA Working Group on Digital Terrestrial Television, p. 9; accessible at: http://www.epra.org/content/english/index2.html
64) Report of the EPRA Working Group on Digital Terrestrial Television, p. 9; accessible at: http://www.epra.org/content/english/index2.html

This double challenge means that convergent regulatory authorities may possibly have an advantage, since they combine responsibility for network and content regulation in one and the same body.[65]

4. The Example of Various Countries: Time-Planning and Specific Problems

a) Austria

The Austrian Private Television Act (*Privatfernsehgesetz*) envisaged achieving the introduction of DVB-T by the end of 2003; in order to assist the regulatory authority the "Digital Platform Austria" was set up. The digitisation concept of the media supervisory authority KommAustria places the main emphasis on terrestrial broadcasting, as it is in this area that the shortage of resources[66] gives rise to particular regulatory requirements.

From a temporal point of view, the concept is divided into four stages: the first stage, the so-called preparatory phase (from 2003 until the 4th quarter of 2005), is devoted to frequency planning and coordination with neighbouring countries; this includes participating in the first session of the Stockholm Follow-Up Conference in May 2004; there will also be DVB-T test runs and, at the beginning of 2005, calls for tenders in relation to the multiplexes.

The second stage is devoted to building up the provision of services in densely populated areas (1st to 4th quarter of 2006); it begins with the coming into force of the authorisations for planning, constructing and operating a multiplex platform and includes participating in the second session of the Stockholm Follow-Up Conference at the beginning of 2006.

In the third stage, there will be a region-by-region switch-over and analogue broadcasting operations will finally cease (2007 to 2010); a limited simulcast period lasting between six and 12 months is envisaged.

Stage four refers to the time after the switching-off of the last analogue TV stations (from 2010); the aim is to have five or six coverages[67] in Austria.

b) Germany

In Germany, the situation at the start of the switch-over to DVB-T left a great deal to be desired, due to the existing nationwide availability of satellite programmes (largely free-TV), a high degree of cable service provision and a proportion of terrestrial users of under 10 per cent. On top of this, the remaining terrestrial recipients were to a considerable extent made up of socially somewhat disadvantaged portions of society, or were consumers who had made a conscious choice to limit their television consumption. Thus there was little prospect of achieving higher user numbers in the short term. Instead, it was necessary to aim at people who would be using the service for an additional (second or third) television receiver or for portable solutions, and at cable customers who might be prepared to switch over to terrestrial reception.

In order to limit costs, DVB-T is being introduced for individual "start-up islands" in major urban areas. The first of these was the Berlin-Brandenburg region, with 27 programmes available. Further regions followed, viz. the Hanover, Bremen, Cologne, Hamburg/Lübeck/Kiel and Rhine-Main areas. In May 2005 DVB-T will also commence in parts of Bavaria.

The switch-over in the individual regions is considered a success by all concerned, decoder sales are better than expected, and although some of the previous terrestrial users have changed to other means of transmission, it also appears that recipients of other means of transmission are switching to DVB-T. It is uncertain, however, whether the statistics are not to a large extent a reflection of the number of additional (second or third) television sets that are being re-equipped for digital terrestrial reception.

65) For a detailed treatment of the topic of convergent regulatory authorities, see Scheuer/Strothmann, "Media Supervision on the Threshold of the 21st Century: What are the Requirements of Broadcasting, Telecommunications and Concentration Regulation?", *IRIS plus* 2002-2.

66) Cf. C I. 3. (Bottlenecks in available frequencies for DVB-T).

67) A coverage is the regionwide terrestrial provision of services to a certain region via one channel. Digital terrestrial television, with its so-called multiplex channels, allows many programmes to be broadcast, which means that for each coverage it is possible to broadcast up to four programmes nationwide.

This form of transmission is meeting with the recipients' approval, despite costs of up to EUR 100 per set-top box and although there are fewer programmes available than with cable or satellite transmission (e.g. only 8 out of 16 from ARD-digital).

One bitter drop however is the request for information lodged by the European Commission, which doubts whether the Berlin financing model is compatible with Community regulations relating to aid.

The introduction of DVB-T in Germany has attracted criticism from the point of view of competition. It is claimed that this technology does not create any new programmes or alternatives to those that are provided by existing cable services, but rather that, due to the frequency allocation via the regional media authorities (*Landesmedienanstalten*), the only broadcasters that have a chance are those that are already present on the cable and satellite means of distribution.

Furthermore, there is concern due to the fact that the broadcast network operator T-Systems imposes the same scale of fees regardless of the size of the broadcaster concerned, so that "minor" broadcasters can hardly afford the digital terrestrial option.

In this connection, an important part is played by the linking-together of terrestrial broadcasting and cable allocation contained in the text of some of the media laws of the individual federal states of Germany (*Landesmediengesetze*).[68] For example, § 18(2) of the Media Act of the state of North Rhine-Westphalia (*Landesmediengesetz* NW) prescribes that, in cases where a shortage of cable capacity makes it necessary to assign priorities, the regional media authority of North Rhine-Westphalia (*Landesanstalt für Medien Nordrhein-Westfalen*, LfM NW) shall give preference to those radio and television programmes which, due to a decision of the LfM, are broadcast terrestrially statewide. This regulation also covers DVB-T frequency users. Similarly, § 42(1)(2) of the Act governing Private Broadcasting in the federal state of Hesse (*Gesetz über den privaten Rundfunk in Hessen*)[69] in combination with the cable allocation regulations states that priority shall be given to those radio and television programmes that can be received terrestrially throughout the whole area covered by the cable system.

Due to these regulations, many broadcasters consider digital terrestrial broadcasting attractive simply because it also means they can secure a place in the cable system.[70] It seems logical that this may be the main reason for some broadcasters to apply for multiplexes.

This is considered problematic from a legal point of view by some experts, as it need not automatically be associated with programme diversity:[71] the priority that has been given to terrestrial programmes in the past, it is argued, was intended as compensation for the grid antennas that had to be dismantled when cable was installed, i.e. the place in the cable system was intended to compensate for the fact that terrestrial reception of the programmes concerned could no longer be guaranteed. What was not intended, however, was a guarantee to broadcasters that they would be able to be present on both means of transmission.

c) Belgium

In Belgium's federal system the separate linguistically-defined communities enjoy a certain constitutional autonomy. As states-within-the-state, they have full responsibility and legislative competence for broadcasting including its technical aspects. Thus they are also independent as far as ensuring the introduction of digital television is concerned.

The already-mentioned problems in the area of frequency allocation are particularly highlighted by the example of Belgium's German-speaking community. The fact that the German-speaking community is surrounded by many neighbours with considerably larger broadcasting markets makes it difficult to maintain a broad diversity of terrestrial television programmes. What is more, the cable infrastructure does not meet the latest standards.

50 per cent of households in the German-speaking community are connected to the cable network, whereas the remainder receive television programmes almost exclusively via satellite.

68) The problems are discussed at length in M. Schmittmann, *"Landesmedienrechtliche Must-carry-Regelungen – ein Fall für Europa"* ("Regional media law "must carry" regulations – a case for Europe"), in: AfP No. 3/2004, p. 225 *et seq.*
69) *Gesetz über den privaten Rundfunk in Hessen in der Fassung 13. Dezember 2002, GVBl. Teil I Nr. 33, 23. Dezember 2002,* p. 778.
70) Cf. Schmittmann, *loc. cit.*, p. 226.
71) Schmittmann, *loc. cit.*

There is a problem due to the fact the cable network operators are not investing in the expansion of the cable network, since feeding German broadcasters into the network (the network operators have to pay the broadcasters between EUR 0.36 and EUR 1.00 per station per customer) is not profitable due to the low total numbers of customers. Thus, access to German-language programmes from other Member States is restricted.

However, access by German cable network customers to programmes from Belgium is also restricted. For example, the North Rhine-Westphalian cable operator ish removed the Belgian French-language broadcaster RTBF from the cable network because RTBF was no longer prepared to pay the fees demanded by ish.

These examples also demonstrate the various cable-based radio and television programme distribution models. In Germany, the so-called transport model is used, i.e. the broadcaster has to make payments to the network operator in return for distribution, whereas in Belgium (at least in part) the so-called marketing model is used, which involves the network operator making payments to the broadcaster in order to be allowed to distribute the broadcaster's programmes.

In the case of digital terrestrial television, the question of channel allocation is a difficult one. In the German-speaking community of Belgium[72] many possible scenarios have been discussed. One approach envisaged that, within a context of coordination, the channel could be allocated to the public service broadcasters – both the domestic Belgian (BRF and RTBF) and the neighbouring foreign (WDR) ones. Another attempt at a solution asked whether or not it would be possible to include a programme produced by the local German-speaking community as a "regional window" in "foreign" multiplexes, e.g. in the neighbouring German *Länder* or in German satellite programmes. This would effectively mean ceasing to operate a channel of one's own.

Finally, in a series of meetings with representatives of the German and Dutch sides, an agreement was reached on a coordinated approach, so that channel allocation would not be governed by the principle of "first come, first served". Moreover, efforts would be made to reach an agreement to the effect that channels could be exchanged on the basis of negotiations, and it was agreed that frequencies – at least in the short term – would be left in a pool until further coordination could be achieved. They would thus not be allocated or used. Later, they could be made available in a simulcast phase. The goal of providing the German-language community with programmes of its own could then be achieved via neighbouring supply areas (chiefly the Flemish and French communities).

d) Finland

The initial position for the switch-over to DVB-T in Finland was favourable, since 45 per cent of the population – particularly in the sparsely populated north – had no cable or satellite connection and were therefore forced to rely on terrestrial reception, which meant that for large parts of the population the transition to digital terrestrial television would mean a considerable increase in the number of programmes that could be received. This was a major factor in favour of a rapid replacement of analogue television.

At the end of 1998 there was a call for tenders for licences for digital radio and digital television, with one of the three available multiplexes being reserved for the public service broadcaster YLE. In 2001 it was intended that 70 per cent of the population should be able to be reached technically, and by the time of the planned switch-off of analogue transmission operations in 2006 the complete provision of services to the entire country including the northernmost regions is envisaged.

The next step will involve the establishment of DVB-H in Finland. To achieve this, the project FinPilot has been launched, which commenced at the end of 2004 and is aimed at creating a certain acceptance of mobile services. All the technologies needed for mobile television services are to be tested, so as to result in the creation of a basis for further technological development and so as to be able to assist in the process of regulation and frequency allocation (see below, Part D).

e) Poland

In Poland there are two strategy papers of the National Council for Radio and Television (KRRiT) on the topic of digital television dating from the years 2001 and 2003 as well as a study by the telecommunications and postal authority. These documents sketch two different scenarios for the

72) The originally analogue frequency which is earmarked for conversion (K 45) was assigned to Belgium in 1961 (and was placed at the disposal of the German-speaking community in 1987).

transition to digital terrestrial television, namely a longer simulcast phase on the one hand, and on the other hand an accelerated switch-over with a short simultcast phase and a region-by-region change-over to digital broadcasting operations. Both these alternatives are currently under discussion in Poland. There is thus as yet no final time plan for the introduction of DVB-T.

f) Latvia

The legislative framework for broadcasting in Latvia is the Radio and Television Act of 1995. Article 9.1 of the Act stipulates that the details of the transition to digital television shall be decided by the Cabinet of Ministers. To date, no such decision has been published.

However, there are now two pieces of draft legislation that are intended to replace the existing law. These are the draft versions of a new radio and television law and a new law on public service broadcasting. Neither of these, however, will be passed before January 2005. They are limited to questions of content, i.e. they maintain the legal separation of content and infrastructure presently in existence; in Latvia at present, infrastructure is subject to specific telecommunications-law regulations of its own.

An official strategy for the transition to DVB-T has only been in existence in Latvia since September 2004, although various initial attempts towards implementation of DVB-T have been made since 1998. For example, in the year 2000 the Latvian Radio and Television Centre set up a subsidiary, Digital Latvian Radio and Television Centre, which was to have the task of introducing digital television in Latvia.

In 2001 the Latvian authority for electronic communications began planning digital frequencies and channels. The authority announced its need for a concrete strategy to guide its future activities. The Digital Centre thereupon elaborated a plan for the introduction of digital television in Latvia which envisaged that the final transition would be completed by 2006.

In November 2002 the Digital Centre signed a contract with a British undertaking that provides services in the area of media technology. The contract envisaged that the contractor should take all necessary measures to introduce digital television in Latvia. The Digital Centre retained for itself only a supervisory role in relation to the contractor's activities. However, the contract was signed without the necessary approval of the Ministerial Cabinet. As a consequence, an investigation was commenced – it is still ongoing – which involved criminal law proceedings being instigated and the dismissal of the Digital Centre's directors. The events are also the subject of a legal dispute between the Digital Centre and the contractor which is being conducted before the ICC (International Chamber of Commerce) in Stockholm over the question of the validity of that contract and over claims for compensation lodged by the contractor.

The work on the implementation strategies is now being continued by the Ministry of Transport and Communications. On 1 December 2003 the Ministry approved a draft plan for the development of digital television in Latvia; due to the legal action still pending, as mentioned above, no further work is being done on the draft plan at present. At the end of 2003 the National Broadcasting Council decided to take up the issue of implementation strategies for DVB-T. In March 2004 a working group was formed and in July a plan was presented. On 16 September 2004 the National Broadcasting Council of Latvia finally formulated a resolution approving the plan for the introduction of terrestrial digital television. The plan is not legally binding, but it could be taken into consideration when a decision is taken at government level concerning the further development of digital television. It was sent to the Ministry of Transport and Communications for inclusion in the Ministry's overall draft plan.

The plan lists three stages for the transition to DVB-T, taking into account that the terrestrial means of transmission is the one that is most used as far as nationally broadcast television programmes in Latvia are concerned. As part of the first stage, existing programmes can be broadcast digitally both at national level as well as at regional and local level; in addition, the necessary laws will be laid down and the need to develop new programmes will be investigated. In the second phase, a start will be made on the licensing of programme *packages* that are to be broadcast in DVB-T standard. The National Broadcasting Council will issue a call for tenders for these licences. In the third phase, the programme package makers will choose the distributors of these packages, who will receive their licences from the Commission for Public Supply Facilities. Finally, there will be a partial shut-off of analogue broadcasting services, with a distinction being made here between public service and private broadcasters. The analogue programmes of the public service broadcaster LTV, which is to receive preferential treatment in the allocation of frequencies, can only be switched off when the region concerned has a 100 per cent digital coverage. The private broadcasters can cease their analogue broadcasting operations at any time.

g) Sweden

In 1995 a commission for digital television was set up in Sweden; in its report for the year 1996 the commission recommended that a nationwide DVB-T network be established as soon as possible. The goals included providing assistance to the domestic information and communications industry and raising the level of information in Sweden.

The Swedish state wanted to guarantee the nationwide digital broadcasting of public service television and thus pursue the traditional cultural policy goals of ensuring diversity and encouraging democratic values. What was planned was a dual system, with the public service part being financed via fees paid by the private broadcasters (utilisation fees). The network infrastructure was set up and operated by Teracom, a state undertaking.

In 1997 there was a call for tenders for two multiplexes, and the first licences were granted in 1998. The main problem affecting the transition was the fact that in 1999 there were no digital receivers available and the majority of commercial licence-holders were delaying the start of digital transmission operations until decoders were available in sufficient numbers. This meant that initially only the public service broadcaster SVT and a small number of commercial stations took up their positions on the starting line for DVB-T.

In the year 2000 the Modern Times Group (MTG), which operated some digital channels, triggered a crisis. It charged such high prices for subscriptions that, as a result, the network operator Teracom paid compensation to the subscribers in order to protect the platform against financial loss; after these payments ceased, MTG gave up its channels.

By 2002 additional frequencies were authorised, so that by mid-2002 there were four multiplexes available.

There are now 17 nationwide and three regional channels. However, the digital terrestrial range of programmes is, in total, very much smaller than that of the three digital satellite platforms.

Only 17 per cent of households use digital television at all, and in most of those cases it is pay-TV. The proportion of users of digital television among the recipients who receive signals terrestrially is only about 11 per cent. The annual user switch-over rate to DVB-T among terrestrial users is as low as 1-2 per cent.[73]

The Swedish approach to financing the switch-over to DVB-T is also, as described above, the object of an investigation by the European Commission.

5. The Regulation of Platforms

In the course of the expansion of transmission capacities that goes hand in hand with digitisation, the attention of regulators is shifting away from individual stations and broadcasters and coming to be focussed more on entire platforms. A digital platform in the broadest sense can be defined as the entirety of all services and marketing activities in connection with the (digital) transmission of audiovisual media, including multiplexing, delivery mechanisms, access systems, marketing, customer services etc.[74] Currently, the switch-over to digital terrestrial television is forcing media supervisory authorities to come to terms with the task of regulating so-called multiplex platforms. This means the technical infrastructure for bundling and transmitting the programmes and additional services that are put together into a digital data stream.

Below, by way of example, the Austrian concept for the regulation of multiplex platforms in the switch-over phase to DVB-T will be described.

The call for tenders for a licence for the setting up and operating of a multiplex platform (at the beginning of 2005) encompasses the planning, technical equipping, and operation of a nationwide multiplex platform with two coverages. No concrete transmission capacities were specified in the call

73) Details from: Aulis Gröndahl, *"Digitales Fernsehen in den nordischen Ländern"* ("Digital television in the Nordic countries"), in: *Media Perspektiven 2002*, p. 460 (464 *et seq*.).

74) Scheuer/Knopp, Digital Television Glossary, p. 4; Sosalla, *"Anforderungen an die zugangsoffene Plattform"* ("Demands on the open-access platform"), in: Institute of European Media Law (EMR) (ed.), *"Digitale Breitbanddienste in Europa"* ("Digital broadband services in Europe"), EMR publications, Volume 27, p. 131 *et seq*.

for tenders, and for a limited time the entire frequency pool for digital terrestrial television will be made available for the planning of the multiplex platform – the concrete planning work will then be done in cooperation with the regulatory authority.

In the call for tenders, the following selection criteria were applied as stipulated by the Private Television Act (*Privatfernsehgesetz*):[75]

- rapid achievement of the required degree of supply of digital signals
- outstanding technical quality of the digital signals
- utilisation of the expertise of broadcasters in the setting up and operating of the digital platform
- user-friendliness of the concept for the consumer
- existence of a plan for promoting the provision of equipment for the reception of digital signals
- diversity of opinion in the range of digital programmes available, with preference being given to the broadcasting of those that include Austrian-related content.

KommAustria issued a regulation specifying the selection criteria in more detail prior to calling for tenders. It will take particular care to ensure that the range of programmes available via DVB-T goes beyond the analogue programmes currently receivable and that they are free-TV. In addition, interactive services on the basis of European software standards are to be offered right from the start, and both portable indoor as well as mobile TV reception, at least in heavily populated areas, is to be achieved as quickly as possible.

The heavily populated areas are the initial goal – the main transmitters[76] in Austria are to be used to provide a full-area signal supply to them, as rapidly as possible; following this, digital services will be set up on a state-by-state basis. The aim is to supply 60 per cent of the population with one coverage for stationary reception after one year. When the system is fully complete, it should provide a technical range that largely corresponds to today's analogue supply.

Among the duties incumbent upon the multiplex operators is the broadcasting of digital programmes under fair, non-discriminatory conditions. The two television programmes transmitted nationwide by the public service broadcaster are to be included in the digital programme package upon request and for a reasonable fee, if these programmes are not yet digitally broadcast in the supply region concerned. The programme of the holder of the nationwide licence for analogue terrestrial (private) television is also to be included in the digital programme package upon request and for a reasonable fee, if that programme is not yet digitally broadcast in the supply region concerned.

The greater part of the frequency capacity available for digital signals is to be used for broadcasting digital programmes. The costs of the technical side of broadcasting the digital programmes and of supplying the additional services are to be billed to the providers by the multiplex operators on a proportional basis. Where programmes are put together in an EPG, all digital programmes and additional services must be locatable under fair, equal and non-discriminatory conditions. All digital programmes and services represented on the multiplex platform must have proportionally identical data transfer rates available to them. All digital programmes and additional services must be offered on equal terms, with reference to their visual layout, their locatability and their readability. It must be possible to access individual programmes and additional services immediately.

The technical quality of the multiplex platforms must meet European standards, and ongoing technical refurbishment must be guaranteed. Furthermore, the range of digital programmes offered must meet the basic standards of diversity of opinion.

In addition to the duties listed above, additional requirements can be prescribed by the regulatory authority.

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75) The Austrian Private Television Act can be accessed via the internet pages of the Austrian Federal Chancellor's Office at: http://bkacms.bka.gv.at/DesktopDefault.aspx?TabID=3478&Alias=BKA

76) A main transmitter is a transmitting station that supplies a larger region with a broadcasting programme via the terrestrial route. In order to achieve this, main transmitters are situated at exposed locations with high antenna towers and transmit the programmes with a high-amplitude signal to the surrounding areas. Areas which cannot be adequately reached by the main transmitters (mostly valleys) are supplied via low-power transmitters called repeaters.

6. Provisional Conclusion

The degree to which digital terrestrial television has established itself in the Member States of the European Union varies from country to country. This is due in part to the different starting conditions in the individual countries – for example, in countries where the majority of the population were still restricted to terrestrial reception and were therefore only able to receive a small number of programmes, there was of course greater interest in the new transmission technology than there was in countries where almost the entire population already had access to a wide variety of programmes (multi-channel) via cable and/or satellite.

One problem that has not yet been solved is the financing of the switch-over. It appears that the switch-over – especially in less heavily populated regions – will not develop in a purely market-driven way, and there is thus widespread agreement that financial incentives need to be offered in order to encourage those concerned to make the necessary changes. Which of the existing financing models will stand up to scrutiny from the perspective of European law, is something that will be decided by the future course of events.

There were comparatively few problems facing the transition, as a rule, in places where all groups were actively working towards it together and where the state also encouraged the switch-over through prompt decision-making processes and support measures. It appears to be a hindrance, however, if there is no single authority with clear responsibility for decision-making and a large number of participants develop their own switch-over scenarios independently of each other. Cross-border difficulties concerning frequency allocation can only be overcome by mutual agreement or by an internationally coordinated approach.

In addition to financial support for the switch-over, it is important overall to convince all those involved of the advantages of the new technology. For example, recipients must be encouraged to purchase end devices, the public service broadcasters should be a leading force in the switch-over phase and commercial broadcasters with new business models should utilise the opportunities provided by digitisation.

The development of attractive programmes, too, is important for the switch-over. Here, however, it can be noted that most initiatives in digital television also continue to work on the basis of national-level planning only. For example, as far as broadcasting is concerned (with the exception of stations like Euronews and Eurosport as well as Arte) there are hardly any programmes that would be receivable across the whole of or even just in parts of Europe and which – even if they were adapted to the needs of individual countries – would be competing with each other on a single European market. Of course, the lack of a single language zone represents an obstacle to that kind of "European" programme. But even in places where such a common language zone exists it is not possible to discern a noticeably increasing tendency towards cross-border cooperation.

II. Stipulations for New Enhanced Television Services

Digitisation has given rise to navigators and electronic programme guides as new enhanced television services. The interoperability of the services in connection with audiovisual media, and of the systems underlying those services, will be a key factor for the success of the new technology. As in the case of multiplex services, the question arises as to what laws and regulations exist for the new digital services and whether a new, specifically adapted form of regulation is necessary. Possibly, the market itself is also capable of solving questions such as that of interoperability; there has already been some initial movement in this direction.

The digital world has identified a whole series of factors that could pose barriers to access, such as encryption and subscriber management, or the area of interfaces (middleware) or of additional services.[77] Another important factor is the whole complex of navigation and marketing/packaging of contents. Problems can arise here especially due to the bundling of different services and through vertical integration.

As far as regulation is concerned, the question that arises is whether regulation needs to be "bundled" (in a similar way to the way the services requiring regulation are bundled); and furthermore, which fields can be left to the market and which cannot.

77) For more detail on this point, see IRIS Special 2004: Regulating Access to Digital Television.

1. Navigators

Navigators[78] are systems which manage the selection of television programmes and which are used as higher-level user interfaces for all services provided via the system (unofficial translation of the legal definition from the German Inter-State Agreement on Broadcasting (*Rundfunkstaatsvertrag*), § 53(2)(1)).

In the context of a constantly growing range of available media services, navigation within the total range of services, i.e. the process by which users locate the contents they want, will be of paramount importance.

Regulation should guarantee two things here: on the one hand, viewers should be able to choose freely among the programmes available and should be able, as far as possible, to make such decisions on their own. On the other hand, it must be possible for programme providers to have free and fair access to the viewers.

a) Manifestations and Technical Foundations

Various types of navigation systems can be distinguished:

(aa) Basic or SI Navigator

The basic navigator displays the service information (SI) from the DVB data stream in an unfiltered form. No selection of programmes takes place. The display of the available programmes is performed on the basis of content-neutral criteria (e.g. following the order of the cable channels, or alphabetically), and no deliberate arrangement or selection takes place. To this extent, there is no potential for discrimination.

(bb) EPG Navigator

An EPG navigator is a system or service that evaluates the SI data transmitted with the DVB data stream and organises the SI data in terms of graphic presentation or content. Display is not limited, as it is in the case of a basic navigator, to a simple listing of the programmes available, but also provides additional information on the programme (this information is normally supplied along with the SI data stream, and includes information on such things as broadcast times, background information on individual broadcasts, and programme line-ups). The programmes available are for the most part organised into categories, in order to facilitate selection.

Moreover, it is possible to offer – in connection with such an EPG navigator or as a service supplied separately – such additional services as search, reminder, and programming functions. The EPG supplier can editorially expand and enhance contents and thus in effect provide the electronic equivalent of the traditional TV guide.

(cc) Bouquet or Programme EPG

A distinction is made between traditional EPG navigators, on the one hand, and on the other hand EPGs of individual television stations or families of stations that only enable navigation with a programme bouquet. The latter do not fall under the scope of § 53(2) of the Inter-State Agreement on Broadcasting (*Rundfunkstaatsvertrag*–RStV) in Germany, for example, as other programme providers have no right of access to this kind of internal navigation system. However, viewers must be able to switch from the bouquet or programme EPG to other programmes that are not managed by this EPG system. Otherwise the access of other programme providers to the viewer would be blocked and the viewer's freedom of choice would be restricted.

(dd) Portals

The homepages of platform providers, which allow a selection to be made from the various services the provider offers, such as broadcasting, video-on-demand, Internet, e-mail and the like, are called portals. Cable television is then only one menu item among many. These portals, however, do not steer one towards immediate access to the individual broadcasting services available, so that the access regulation for radio and television only has legal effect at the second level. The platform operator can

78) Cf. on regulation in the area of navigators: Schulz, "Extending the Access Obligations to EPGs and Service Platforms?", in: IRIS Special 2004 Regulating Access to Digital Television.

use such portals to re-direct users from the classic broadcasting services to services such as Internet access or e-mail, in which the platform operator (as a rule the network operator) has a special economic interest, since such operators can generate additional revenue here in addition to the cable fees payable for radio and television reception. This may possibly mean a change in the viewers' patterns of use, to the disadvantage of traditional television programmes.

However, digitisation involves an increase in bandwidth and the possibility of setting up a return channel (in the case of DVB-C, and via hybrid networks in the case of DVB-T; in the case of satellite transmission, the setting up of a return channel is possible, but at a high technical cost),[79] and this will automatically mean that networks will come to be used not just for a greater number of television programmes but also for other services as well. That this will in part occur at the expense of traditional radio and television is something that, in the opinion of many, will simply have to be accepted; in any case, however, network operators must be able to promote their services.

b) Demands on such Systems

When navigator systems are operated by an undertaking which itself provides content, there is the danger that discrimination against other content providers may occur. One participant at the workshop argued that the sale of subsidised end devices in connection with a contract – e.g. one signed with a platform operator – should perhaps attract a more critical view. Such platform operators, who often either provide their own content or at any rate market content produced by others – and thus share in their economic success –, could present an obstacle to other programmes. For example, they could position their own products, or products of others that they are marketing along with their own, in an advantageous location. It is questionable, however, just how this should be judged from a regulatory point of view. A similar procedure occurs in the mobile communications sector, where providers pre-install particular services of their own, such as telephone directory assistance, or other non-free hotlines on mobile communications devices, which they offer at a discount as part of a fixed-term contract.

Here, however, it is assumed in part that customers who agree to purchase such subsidised equipment do in fact expect the provider to behave in such a way, so that they do not require any additional protection. However, one could also insist that such devices should at least be individually reconfigurable, to the extent that this is technically possible without undue effort.

2. Programming Interfaces – APIs

In order to be able to programme services (such as the EPGs described above or other interactive services) for end devices, a so-called Application Programming Interface (API) is required.

a) Technical Foundations

The API serves to decouple the applications software from the specific properties of the different types of hardware.

APIs establish the connection to the operating software of the receiver (set-top box). They ensure that all programmes, if possible, can be received by all set-top boxes. Incompatible APIs, on the other hand, which lack interoperability, place obstacles in the way of access.

If a receiver is equipped with an API, then the only thing one needs to know in order to programme applications is the relevant data of the API – it is not necessary to know the technical details of the hardware or the operating software, which, given the large number of different receivers, can vary widely.

Receivers technically do not need applications programming interfaces in order to function, and in fact they even have higher system requirements (compared with set-top boxes that do not have such interfaces), e.g. in terms of memory and processor speed. This means that the receivers are more expensive to manufacture, and are therefore less likely to be able to assert themselves on the market. This is of course true on the one hand for the sales market, but on the other hand the higher price could also scare off those network operators and platform providers whose business model includes providing subscribers with subsidised receivers.

79) Cf. on this point Roßnagel/Sosalla/Kleist: *Der Zugang zur digitalen Satellitenverbreitung* ("Access to digital satellite broadcasting"), p. 229.

b) Regulation of APIs

The use of APIs in general or of a particular API is also, in legal terms, not compulsorily prescribed. Regulation of APIs is essentially based around two approaches: on the one hand, non-discriminatory access to the interfaces can be prescribed, on the other hand, the creation of uniform and/or open standards could be considered. European Community law has so far taken the first approach. Article 5 of the Access Directive states that in respect of APIs, regardless of the market strength of the undertakings concerned, access obligations can be imposed.

APIs (and also EPGs) are regulated in Article 5(1) in conjunction with Annex I Part II of the Access Directive. According to the Directive, the national regulatory authorities are to encourage and if necessary to guarantee appropriate access and appropriate interconnection and interoperability of APIs. Whereas the Directive reserves for the Commission the right, as far as APIs are concerned, to set its own standards under certain conditions, the regulation of access to EPGs is left entirely to the Member States. Moreover, only the technical aspects of these bottlenecks are dealt with, not the content-related aspects.

The remaining services – to the extent that they are located at infrastructure level – can be considered "associated facilities" in accordance with Articles 8 to 11 of the Access Directive. This flexible approach defines bottlenecks – as opposed to Article 6 of the Access Directive – on the basis of the actual market structure and leaves national regulatory authorities a large amount of freedom for making and implementing decisions.

It is also necessary to raise the question of the conditions under which an access obligation is the appropriate regulatory instrument.

According to Article 18(1) of the Framework Directive, the Member States must encourage providers of digital interactive television services and providers of equipment to use an open API. Article 18(2) additionally requires the Member States to encourage proprietors of APIs to make available all such information as is necessary to enable providers of digital interactive television services to provide all services supported by the API in a fully functional form.

In its communication of 30 July 2004 on the interoperability of digital interactive television[80] the European Commission – after conducting hearings with the parties concerned – declared that it would for the time being continue to rely on the method of open coordination between the Member States and would not prescribe any compulsory standards.

In Germany, § 49 of the Telecommunications Act (*Telekommunikationsgesetz*–TKG) prescribes discrimination-free access via a making-available of the necessary information. In addition, according to §48(2)(2) of the Telecommunications Act, recognised, open standards are to be used from 1 January 2005 onwards if an API is envisaged. § 53(1) of the Inter-State Agreement on Broadcasting – as amended by the proposed eighth set of amendments – states that providers of telecommunications services who broadcast radio and television or comparable telemedia services must ensure that the technology employed allows a diverse range of programmes to be offered. For this reason, providers of broadcasting or telemedia services must not be directly or indirectly exposed, in the distribution of their programmes, to undue obstacles posed by interfaces for application programmes and must not be treated differently from similar providers without legitimate objective grounds.

c) MHP as Applications Programming Standard

MHP (Multimedia Home Platform) is an applications programming interface developed by the DVB group for overcoming obstacles to access. It has been standardised by the ETSI and has been recommended by the European Commission as an open standard.[81] To date, MHP is not legally prescribed under the terms of European law, but the European Commission recommends the encouragement of this standard by the Member States.[82]

There are many agreements on the introduction of this standard, such as the agreement reached in 2001[83] in the context of the NorDig project, which consists of the public service broadcasters of the

80) Accessible at: http://europa.eu.int/information_society/topics/ecomm/doc/useful_information/library/communic_reports/interoperability_idtv/com_2004_541_en.pdf
81) The official specification of the MHP standard was published in OJ C 331 of 31 December 2002, p. 47.
82) Cf. on this point most recently the communication of the European Commission on interoperability of digital interactive television services COM (2004) 541 final, 30 July 2004, p. 2.
83) Details at http://www.nordig.org

Nordic countries, the major network operators and the manufacturers of receiving equipment, or the Mainz Declaration (*Mainzer Erklärung*)[84] in which the major German broadcasters and programme providers as well as the Directors' Conference of the German State Broadcasting Regulatory Authorities (*Direktorenkonferenz der Landesmedienanstalten*) agreed to support MHP. So far, however, MHP has not established itself once and for all in all countries. The breakthrough here could perhaps come with the development of MHP applications that have mass appeal.

3. Conditional Access

Conditional access means any technical measure and/or arrangement whereby access to a protected service in an intelligible form is made conditional upon prior individual authorisation.[85] Such systems primarily serve to select authorised recipients and to register and calculate the fees for pay-TV programmes. But even in the domain of free-TV there are reasons in favour of encrypting essentially all contents (a so-called basic encryption), such as, for example, securing them from unauthorised access to the transmission medium concerned, the possibility of identifying customers, or the control of technical coverage for the protection of regional broadcasting rights.[86]

a) Technical Requirements

The basis of conditional access services is encryption, i.e. the data that is to be transmitted is altered via a cryptographic key. For all those who do not have the key at their disposal, the data are unusable. Due to the different procedures in existence, encryption can represent an obstacle to free access to the market.[87] This is especially so when the systems concerned are proprietary systems, i.e. systems that are under the control of a single provider, who can take unilateral decisions as to the integration of other providers in the conditional access system at issue. But even a piece of equipment operated independently of particular broadcasters or platform operators has little appeal to consumers if it is incapable of receiving encrypted services. As part of the DVB standards two procedures have been developed to make the decoders more universally employable: simulcrypt and multicrypt.

Simulcrypt refers to the simultaneous transmission of several encryption variants, so that a receiver that has only one of the employed encryption systems at its disposal is in a position to decrypt without the need for a second device.[88] This method has the advantage that the cost to the recipient is low; the cost to the transmitting station, however, is higher.

Multicrypt means that each of the transmitted programmes is broadcast using only one encryption system and the ability to use the set-top box for various differently encrypted programmes has to be provided by the box itself.[89] In order to be able to receive a programme, the receiver requires the precise decryption system intended for that programme.

The prerequisite for a CA system is a conditional access module in the receiver. On the one hand, there are the variants of the so-called embedded CA, i.e. the device for decrypting the data stream that has been encrypted at the transmitter end is built into the set-top box. This kind of set-top box cannot be used for programmes that are encrypted in another way. Changing from one provider to another, however, provided both use the same encryption technology, is possible by simply exchanging the smartcard (PCMCIA card).

More possibilities are offered by boxes with a so-called Common Interface (CI), a standardised module for taking plug-in cards, which allows various decryption modules to be connected to it. When switching over to programme packages that are encrypted using another technology, or when using two differently encrypted programmes simultaneously, no new receiver is necessary. One or more CIs can also be installed alongside a permanently built-in module.

It must be remembered, however, that increasingly elaborate technology raises the price of receivers, which can make it more difficult for them to establish themselves on the market.

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84) http://www.ard-digital.de/index.php?id=849&languageid=1
85) See Directive 98/84/EC on the legal protection of services based on, or consisting of, conditional access; also: http://www.dvb.org/index.php?id=50§id=4
86) Hartstein/Ring/Kreile/Dörr/Stettner, *Kommentar zum Rundfunkstaatsvertrag* ("Commentary on the Inter-State Agreement on Broadcasting"), § 53, side note 8.
87) Scheuer/Knopp, Digital Television Glossary, p. 9.
88) Scheuer/Knopp, Digital Television Glossary, p. 11.
89) Scheuer/Knopp, Digital Television Glossary, p. 11.

The receivers commonly in use in Germany are often still criticised for being proprietary, especially as the providers refuse, in part, to certify third-party applications for their technical platform. There have even been calls for the media regulatory authorities to take up the matter.

On the German market, Nagravision has now effectively replaced the proprietary betacrypt as the de facto decryption standard. In the view of the Federal Cartel Authority (*Bundeskartellamt*) even a basic encryption with an embedded conditional access system in combination with the simulcrypt procedure represents a proprietary strategy.

The German public service broadcasters have been able to reach agreement with the cable network operators on the unencrypted (i.e. free of even basic encryption) and unaltered re-broadcasting of the programme bouquets. It is generally assumed, however, that the largest German cable network operator will be able to impose its own end encryption procedure on other, primarily commercial free-TV programmes. In this case, there will be – at least in the digital cable network – a basic encryption in practice. "Smaller" stations which have no "must carry" status are therefore in a weak position when it comes to negotiations with the cable operators. It is argued that encryption is disadvantageous to the latter as well, and that there should therefore be only a uniform basic encryption or else the encryption procedure should be dispensed with entirely.

b) Regulation

As far as regulation of conditional access systems is concerned, relevance attaches to Article 6 of the Access Directive, in accordance with which providers of such systems must offer their service in a non-discriminatory way.

The Access Directive adopts the sector-specific approach. By access it understands in the broadest sense "the making available of facilities and/or services, to another undertaking, under defined conditions, on either an exclusive or non-exclusive basis, for the purpose of providing electronic communications services" (Article 2a). The Access Directive, in other words, is intended to establish a uniform approach for dealing with bottlenecks at infrastructure level.[90]

The scope of the Access Directive, however, is limited. An *ex ante* access obligation, according to Article 6(2), is introduced merely for CA systems. The Member States are to ensure that with reference to access entitlement for digital television and radio services that are broadcast to viewers and listeners in the Community, the conditions laid down in Annex I Part I apply regardless of the form of transmission. These conditions relate, for example, to the obligation to provide technical services under fair, appropriate and non-discriminatory conditions. They explicitly mention the possibility of integrating a common interface for interconnection with various other access systems.

At national level, § 50(2) of the new German Telecommunications Act (*Telekommunikationsgesetz*, TKG 2004) provides that the granting of licences to manufacturers of digital television receivers is to be performed in a non-discriminatory way and other access control systems must not be excluded.

According to § 50(3)(1) TKG 2004, providers and users of conditional access systems must allow all broadcasting providers to use the necessary technical services of their systems in a non-discriminatory manner and must provide the information necessary thereto in a non-discriminatory manner.

However, § 50(5) TKG 2004 also makes provision for the regulatory authorities, under certain conditions, to alter or suspend the conditions mentioned, provided one or more providers of conditional access systems do not have at their disposal considerable power over the market. The draft version of the eighth set of amendments to the Inter-State Agreement on Broadcasting (*8. Rundfunkänderungsstaatsvertrag*) states that providers of telecommunications services who broadcast radio and television (or comparable telemedia services) must ensure that the technology employed allows a diversity of programmes to be offered. Therefore, providers of radio and television (or telemedia services) must not be unduly hindered, whether directly or indirectly, by conditional access systems in the broadcasting of their programmes and must not be treated differently from similar providers without an objectively valid reason.

90) See: European Commission, Communication [...] on a new framework for electronic communications infrastructure and associated services – Communications Review, 1999, COM (1999) 539 final, 10 November 1999, pp. 25-28.

4. Outlook

With respect to the regulation of the new enhanced television services, it has been claimed that the regulatory horizon needs to be broadened. Now that services are integrated in an overall strategy, the isolated consideration of individual services, it is said, no longer does justice to their potential to jeopardise. There is thus, it is argued, a need for further improvements to telecommunications and broadcasting regulation. There are also calls for better practical cooperation between the two regulatory authorities, in order to do justice to the new developments.

As for the rest, many of the workshop participants had faith in the market's ability to facilitate fair competition. So far, they argued, none of the players has been disadvantaged to any major degree by digital services. Each provider was currently attempting to occupy a good starting position in the digital world, and regulation should not allow itself to be used as an instrument by either side.

In addition to the competition law instruments presented in Part B II., there are also the regulations of the telecommunications directives package, which have been described with special attention in the present chapter and which are also intended as a provisional solution to the new problems in this area that have arisen due to the major technical changes that have been taking place. In the long term, here as well as elsewhere, it is anticipated that the general provisions of competition law will be sufficient to enable markets to function. In the short term, however, it has proven useful to address the specific demands of the new digital environment via special regulations, thus guaranteeing a diverse media environment via non-discriminatory access possibilities.

III. "Must Carry" Regulations

The question arises whether a "must carry" arrangement, as already in existence for television in its traditional form and for the most part related to cable as the means of distribution, is also necessary in the area of new services and for other means of distribution, or whether this is an area where the market itself will ensure diversity due to the existing pressures of consumer demand. The objection is raised in this context that the obligation to carry particular programmes could hamper digitisation via a restriction of business models. Anyone favouring the establishment of such a regulation would need to consider for which services and contents it might make sense.

1. Legal Framework

Article 31(1) of the Universal Service Directive is an important European-law regulation for "must carry" obligations; it reads:

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 obligations 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.

This regulation is to be transposed into German law via clauses 3 and 4 of the revised wording of § 52(1) that is contained in the draft version of the eighth set of amendments to the Inter-State Agreement on Broadcasting (*8. Rundfunkänderungsstaatsvertrag*); according to these proposed amendments, regulations on analogue cable channel allocation under state (i.e. *Land*) law are permissible, to the extent that they are necessary to meet clearly-defined general interest objectives. In particular, they can be issued in order to ensure a pluralistic media system which conforms to the diversity of opinion requirement. There are additional stipulations that apply to digital cable: § 52 of the Inter-State Agreement on Broadcasting in conjunction with the state (i.e. *Land*) media laws concerned (*Landesmediengesetze*) requires that the operator of a cable facility ensures that transmission capacities are available for public service television programmes and for regional and local television programmes. The eighth set of amendments to the Inter-State Agreement on Broadcasting would extend this to private radio and television programmes that include regional "windows".

The European Commission's Proposal for a Directive on Services in the Internal Market[91] contains regulations concerning access. According to Article 15(1) in conjunction with Article 15(2)(i), Member States are to examine whether their legal system makes access to a service activity or the exercise of it subject to compliance with certain requirements. For example, whether an intermediary provider is required to allow access to certain specific services provided by other service-providers. According to Article 15(3) of the Proposal, these requirements must be non-discriminatory, necessary, and proportional. In Recital 34 it is claimed that requirements such as the "must carry" rules applicable to cable operators must be examined, as they affect the freedom of choice of these intermediate providers, while at the same time restricting both access to programmes and the choice of the recipients.

2. The Term "Broadcasting"

Article 31(1) of the Universal Service Directive provides, as already shown, for possible transmission obligations for network operators in respect of radio and television services. The Universal Service Directive does not contain a definition of the terms radio and television or of the term broadcasting. In the Framework Directive electronic communications services and networks are distinguished from other services to which the communications directives do not apply. The latter kind of services includes services that provide content via electronic communications networks or exercise editorial control over them. This definition relies heavily on the definition of television broadcasting in Article 1(a) in conjunction with Article 1(b) of the "Television without Frontiers" Directive.[92] From this it can be deduced that the communications directives, and consequently the regulation in Article 31 of the Universal Service Directive as well, presuppose the definitions employed in the relevant secondary law of the Community. Thus, in the area of television, "broadcasts" is to be understood in the sense of the "Television without Frontiers" Directive.

However, there is still the general question of what can be designated as "broadcasting" in the digital age and which services thus fall within the scope of broadcasting regulation.

a) Problems of Delimitation

The meaning of the definition in the "Television without Frontiers" Directive is not entirely clear. Specifically, distinguishing broadcasting from Information Society services causes problems.

Recently a Dutch court arrived at the conclusion that the relevant definitions in the European Community law were unclear. The highest administrative court of the Netherlands, the *Raad van State*, referred a series of questions to the European Court of Justice in a preliminary ruling procedure.[93]

In the case at issue the provider of a new kind of service ("Filmtime"), the undertaking Mediakabel, had disputed a decision of the Dutch media supervisory authority (*Commissariaat voor de Media*), which however was subsequently upheld by a court of lower instance. "Filmtime" functions as follows: The signal that is used to transmit the "Filmtime" films in encrypted form is fed into the cable network at regular intervals. The customer selects a film from the provider's catalogue and orders it. As soon as he has paid the required fee, he receives an individual key from the undertaking, with which access can be gained to the film.

Since the signal that is fed in, however, can basically be received by everyone – although in encrypted form –, the service was classified as broadcasting by the supervisory authority.

The authority had decided that, from a technical point of view, what was involved in the case of "Filmtime" was a so-called "near video-on-demand" service and that "Filmtime" was therefore (unlike genuine video-on-demand services) to be classified as broadcasting. As a consequence of this, broadcasting legislation applied to "Filmtime". This means that Mediakabel had to apply for a broadcasting licence and that the media law standards by which the regulations of the "Television without Frontiers" Directive (in particular the regulations on European quotas and on quotas for independent productions) were transposed into Dutch law, were applicable to "Filmtime". For the Mediakabel undertaking, the classification of the service is of paramount importance. If it were

91) The proposal is accessible on the website of the European Commission at: http://europa.eu.int/eur-lex/en/com/pdf/2004/com2004_0002en03.pdf

92) Directive 89/552/EEC of 3 October 1989 on the coordination of certain provisions laid down by Law, Regulation or Administrative Action in Member States concerning the pursuit of television broadcasting activities, OJ L 298 of 17 October 1989, p. 23, amended by Directive 97/36/EC of 30 June 1997, OJ L 202 of 30 July 1997.

93) The decision is available at http://www.raadvanstate.nl (Document No. 200205951/1).

required to adhere to the European quota regulations, it would be forced to make heavy investments in films which would be of little interest to its viewers and which in the opinion of Mediakabel could not be broadcast at a profit.

Mediakabel therefore maintained that "Filmtime" could not be classified as broadcasting. Rather, it was comparable to the hiring out of video cassettes or DVDs. What was involved in the case of "Filmtime" was an Information Society service.

In arguing against the classification it was claimed that it would also be technically possible for "Filmtime" to send the desired film exclusively to the user who had ordered it. Then it would be a case of video-on-demand, which is recognised as constituting a service of the information society and cannot therefore be considered broadcasting. Such a procedure, from the customer's point of view, would differ only slightly from that described above, since the customer in this case would have the film sent to him upon payment, whereas he would otherwise receive the key and would have to wait a certain period of time until the next transmission of the films. Due to this similarity, it was claimed, a different classification of the two services could not be justified in the final outcome.

By referring the questions to the European Court of Justice the *Raad van State* wishes to ascertain whether the "Television without Frontiers" Directive is in fact to be interpreted in such a way that services like near video-on-demand fall within the scope of the definition of television, whereas Information Society services do not. Moreover, the question is asked as to how the distinction between broadcasting and Information Society services is to be made if the service at issue contains elements of both. Is it the perspective of the provider or the perspective of the customer that is decisive, and is it significant what kind of services the service in question is competing with? Does it matter that the European quota regulations, in the case of services such as that described above, have been effectively quashed by the fact that customers decide for themselves, independent of the European or non-European origin of the films, which film they will select?

b) Legal Definitions of the Term "Broadcasting" and/or Television

Article 1(a) of the "Television without Frontiers" Directive defines "television broadcasting" as "the initial transmission by wire or over 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. It does not include communications services providing items of information or other messages on individual demand such as telecopying, electronic data banks and other similar services."

According to Article 1(b) of the "Television without Frontiers" Directive, a "broadcaster" is "the natural or legal person who has editorial responsibility for the composition of schedules of television programmes within the meaning of (a) and who transmits them or has them transmitted by third parties."

According to Article 2(c) of the European Convention on Transfrontier Television of the Council of Europe, a "broadcaster" is the "natural or legal person who has editorial responsibility for the composition of television programme services for reception by the general public and transmits them or has them transmitted, complete and unchanged, by a third party".

Article 3 states that the Convention shall apply "to any programme service transmitted or retransmitted by entities or by technical means within the jurisdiction of a Party, whether by cable, terrestrial transmitter or satellite, and which can be received, directly or indirectly, in one or more other Parties."

As opposed to broadcasting, the so-called Information Society services are defined both by the Council of Europe in the Convention on Information and Legal Co-operation concerning "Information Society Services" and by the European Community in Article 1(2) of Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services[94] as "any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services".

94) Directive 98/34/EC of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services, OJ L 204 of 21 July 1998, p. 37, amended by Directive 98/48/EC, OJ L 217 of 5 August 1998, p. 18.

3. "Must Carry" Regulations for Which Networks?

"Must carry" regulations have traditionally been a means of ensuring – especially for cable broadcasting, more recently for DVB-T as well – that the public service broadcasters and possibly also important commercial broadcasters are redistributed by the network operators and can thus be received by listeners and viewers.

With the increase in the number of available programme places as a result of the digitisation of terrestrial transmission, as described above, the question of how to allocate the remaining places has acquired significance for DVB-T, as well. At stake here are the capacities that are not already taken up by stations with "must carry" status. In the "analogue age" this was scarcely ever an issue, as for the most part only the public service broadcasters and a small number of commercial broadcasters could be distributed.

The reasons put forward in support of "must carry" obligations for DVB-T are essentially the same as before: public service broadcasting should be able to fulfil the programme tasks laid down for it and should be capable of being received by all potential users.

This goal, however, can in the final analysis only be achieved, according to the proponents of such regulations,[95] if the reception of these *service public* programmes is guaranteed on all competing platforms, i.e. only if "must carry" regulations apply to all platforms. Different regulations for different platforms would make no sense, since that would mean precisely that not every potential user would be reached.

Some observers consider Article 31 of the Universal Service Directive insufficient, as it is not clear, they say, which programmes and services must be carried by the cable operator and why. If, for example, operators of networks themselves create content and package it, without leaving any chance for competitors in the field of content providers, then there is little point, say these observers, in asking whether the sum of programmes and services offered is "diverse". Therefore, it is urged, regulation should not be limited to having the national media supervisory authorities monitor abuses in relation to diversity. Instead, competitor access should be ensured.

There are some who consider "must carry" regulations unnecessary, as these are generally intended to ensure that all recipients have access to the programmes of the public service broadcasters and of a few commercial broadcasters who already have a wide distribution. These programmes, however, are already so attractive to consumers that consumer demand alone would suffice to ensure distribution even without "must carry" regulations, since it is in the economic interests of the network operator to distribute programmes that are popular.

Furthermore, it is argued, wherever there are conditional access systems, "must carry" regulations are no longer necessary, since the obligation to grant non-discriminatory access embodied in Article 6 in conjunction with Annex I Part I of the Access Directive means that the public service broadcasters must be included in any case. In addition there is, it is pointed out, an obligation to convey freely receivable programmes. This results from Article 24 in conjunction with Annex VI of the Universal Service Directive.

Another argument that is put forward against "must carry" rules is that they, too, will become irrelevant if the redistribution of television programmes via Internet Protocol comes to prevail. The individual composition of the "programme" will then be the foremost aspect; the fact that the public service broadcaster is providing a complete programme will be overtaken by the individualised patterns of use. But even the public service broadcaster's programme could be made accessible on demand, which would mean that the "must carry" concept would be outdated. Public service broadcasting executives have responded to these arguments, however, by stressing that it is precisely the trend towards individualisation that makes it necessary for the informative and reliable public service broadcasting programmes that are on offer to continue to be available to everyone.

95) See also II. 3. a) above.

IV. Aspects of Interoperability as Exemplified by DRM Systems

1. Description and Fields of Deployment

Digital Rights Management (DRM) combines techniques and methods for the protection of copyright-protected works and of other performance protection rights for digital documents.[96] DRM systems (DRMS) are thus electronic systems for distributing copyright-protected contents, which enable the secure dissemination and utilisation of those contents.[97]

According to a study by business consultants PricewaterhouseCoopers, content is considered an important engine for future economic growth and employment. The goal should be "any content, anytime, anywhere, any platform", i.e. universal availability of all content via all means of distribution, as an important part of the Lisbon goals. What needs to be ensured, the study says, is content producer access to all platforms and the introduction of effective DRM systems.[98]

To ensure revenue for all operators in the value chain, it must be possible to acquire copyright quickly, and digital rights management must function efficiently.

2. Interoperability

One problem posed is that the systems currently available are not yet interoperable.

Interoperability means more than just the possibility of using different systems together without special modification or adaptation. Going beyond simple compatibility, it extends to the proper overall functioning of all elements of interoperating systems, so that recipients can choose between various devices and employ them in using various services, and so that content producers are not limited to a single means of distribution.[99] The ETSI defines interoperability as "the capability to provide successful communication between end-users across a mixed environment of different domains, networks, facilities, equipment, etc. from different manufacturers and (or) providers. In this context the communication is meant between end-users or between an end-user and a service provider."[100]

This definition makes it clear that systems interoperability is a factor affecting both the telecommunications sector and the broadcasting sector (e.g. in the area of navigators and APIs described above).

It remains uncertain, however, to what extent standards establishment, interoperability and compatibility can be left to the market. From the industry point of view, DRM systems should be open and interoperable. They should be able to be tested, both technically and on the market, without regulatory prescriptions. Development should be orchestrated by the manufacturers themselves.

The High Level Group on Digital Rights Management also noted in its report for March-July 2004 that market forces are the main engine for DRM systems and the main driving force on the road to interoperability.[101]

96) Thomas Enders, *"Digital Rights Management Systeme (DRMS) als besondere Herausforderung an das Urheberrecht"* ("Digital Rights Management Systems (DRMS) as a special challenge for copyright law"), in: *Zeitschrift für Urheber- und Medienrecht* ("Journal of Copyright and Media Law") 2004, p. 593.

97) Flechsig, *Digitales Rechtemanagement im Lichte ergänzender Schutzbestimmungen* ("Digital Rights Management in the light of supplementary safeguarding provisions"), FS-Nordemann, 6th edition, 2003, p. 130.

98) "Rethinking the European ICT Agenda", a study conducted by business consultants PricewaterhouseCoopers, p. 10. The study is accessible at: http://www.ictstrategy-eu2004.nl/

99) High Level Group on Digital Rights Management, Final Report, March-July 2004, p. 9 *et seq.*, under 2. The report is accessible at: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/040709_hlg_drm_final_report.doc

100) Communication from the Commission on Barriers to widespread access to new services and applications of the information society through open platforms in digital television and third generation mobile communication, COM (2003) 410 final of 9 July 2003, p. 9.

101) High Level Group on Digital Rights Management, Final Report, March-July 2004, p. 10 under 5. The report is accessible at: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/040709_hlg_drm_final_report.doc

V. "The Market Can Manage"

In summary, it can be said that a majority of the workshop participants had considerable faith in the market as a guarantor of conditions enabling fair competition, and that the dominant view was that regulatory measures should only be resorted to if a problem turned out to be unsolvable using market mechanisms alone.

Such a finding, in relation to new forms of technical bottlenecks and instruments available for regulating them, contrasts significantly with the classical regulatory approaches in the area of television. These are orientated – as stated in Part B above – more towards "hard" structural prescriptions designed to ensure diversity.

D - Television Goes Mobile

The global trend is towards mobile communications, and a mobile lifestyle. This also includes mobile use of television or, more generally, audiovisual content. The third part of the workshop was therefore concerned with new electronic media content services, which are in part already on the market, in part still at the trial stage.

The main emphases of the new services are in the use of broadband services over IP-based networks (e.g. Internet) and, above all, in the field of mobile reception, which has great potential for technical and economic development. In recent years the field of mobile communications and mobile services has grown enormously, and is exerting an ever-greater influence on the economy and on society, in Europe as well as globally.

The prototype of the mobile end device, the mobile phone, is no longer used merely for telephoning, but has become a multimedia device. In addition to being capable of taking photos and making video-recordings, the mobile phone also enables access to the Internet. It is possible to receive television and interactive services and also to take advantage of the availability of music and video. One of the very latest developments has led to a situation where the mobile phone can now be used like a credit card.[102] The mobile phone has thus even become an electronic wallet. Alongside mobile phones and mini-computers, so-called handhelds or personal digital assistants (PDA), multimedia end devices are being developed that are small enough to fit into a waistcoat pocket, while being able to perform a wide variety of different functions. Even today, simple value-added services such as ringtones, logos, background images, MMS and Java games are being marketed and used as an important entertainment factor and as an expression of the mobile phone's personalisation.

In connection with the new electronic media content services, the workshop discussed technical questions, economic considerations and legal issues.

One technical problem arises for example due to the fact that the power performance and memory capacity of mobiles is still limited. Where larger amounts of data are involved, there can be memory shortages, and longer download times can place excessive demands on the battery.

Moreover, the various services are not compatible with all end devices. This is due to different file formats and different forms of transmission as well as differing DRM systems to provide protection against illegal usage. Generally recognised standards have so far not been implemented in all areas.

One factor that needs to be taken into consideration from an economic point of view is the high cost of mobile telecommunications connections, which could impede the widespread use of mobile multimedia services.

I. Technical Foundations

New developments in data transmission enable the provision of new services and devices, and the consumer is increasingly becoming accustomed to being reachable everywhere and being informed about everything at any time. User demand for mobility of services and devices is constantly growing. The data transmission this requires can be performed in a number of different ways.

102) This is performed by wireless transmission of the data over a short distance (ca. 20 cm) from the mobile to a reader. See: http://www.paybox.at

1. Networks/Data Transmission

A very rough division can be made between the use of broadcasting frequencies without a return channel and telecommunications frequencies with a return channel. Both routes are used in the mobile sector for data transmission.

The GSM (General System for Mobile Communications) standard is a telecommunications frequency that was officially introduced in 1992. GSM is the mobile telecommunications standard of the second generation (2G). At the same time, the market had its first taste of mobile phones of a kind that made mobile telephony feasible as a mass technology. The devices now consisted only of a handheld receiver which at the same time functioned as the base station, and thus were really suited for mobile use. GSM is very widespread in Europe. It is primarily used for speech transmission. Since 1995 it has also been possible to send text messages via mobile phones, using SMS (Short Message Service). In addition, e-mails can be sent via GSM. Wireless Application Protocols (WAP) in combination with GSM enables mobile access to the Internet. WAP combines mobile telephony and the Internet by using an HTML-like software language of its own (WML) to display Internet content on the mobile. Access to the Internet, however, is limited to websites that are provided exclusively for the purpose of being called up by WAP. Other sites consist of quantities of data that are too large to be made (properly) available via WAP. Due to the limited data transmission capacities and the correspondingly difficult process of building up each page, this service has not been able to establish itself to any great extent.

Since then other, higher-performance technologies have been developed. These include GPRS (General Packet Radio Service), which enables transmission of data over GSM at rates as high as 115 kbit/s (kilobit per second). Data is transmitted in data packets using channel bundling. This has the advantage of being able to achieve a maximal data transmission capacity. The data packets are only transmitted when there are network capacities free, which takes some of the load off the network. This technique, however, also results in a situation where, if there is a heavy network load, only a few data packets can be transmitted. For the user, the possibility of packet-based data transmission means a saving, as he only pays for the data packets sent. Due to the lack of continuous data transmission, however, the use of services such as internet radio or video streams involves bad quality and long loading times. GPRS already represents a step towards fast data transmission via UMTS and is therefore also referred to as the 2.5G standard.

UMTS (Universal Mobile Telecommunications System) is the mobile telecommunications standard of the third generation (3G), which will in future replace GSM. With UMTS, data transmission rates of up to two Megabits per second are possible. UMTS is thus 30 times faster than ISDN and up to 200 times faster than a WAP mobile phone.

The high data transmission rates make multimedia applications and internet access possible. Downloading large quantities of data from the internet (such as films) is possible with UMTS. At the moment, however, UMTS frequencies are not available continent-wide in Europe.

Another transmission possibility is WLAN (Wireless Local Area Network), a radio-based network that enables wireless data transmission within a certain local signal supply zone called a hotspot. It is mainly used to establish a connection to the internet. The mobility of WLAN is essentially limited due to the fact that it is also possible to have mobile hotspots e.g. in trains or on planes.[103] WLAN however cannot really be called a "mobile" technology, as it is heavily limited to a particular local area that data reception is dependent on. WLAN should rather be considered an extension of the fixed (landline) network.

Even DVB-T reception is theoretically possible on mobile devices. Experiments in this direction failed, however, due to the fact that too much data needed to be transmitted, which meant that more power was consumed than could easily be provided using mobile devices such as mobile phones or PDAs. On the other hand, DVB-T is suitable for mobile reception in vehicles and also for laptops, where greater energy resources and a larger display are available.

Recently, another kind of technology has become available as well: DVB-H technology, a radio frequency without a return channel, which is optimised for use on small mobile devices. The most important thing DVB-H enables is mobile television reception; it is based on the DVB-T standard for digital terrestrial broadcasting, and can be considered a kind of "extended DVB-T". Content is transported via IP Datacast, i.e. by means of IP data packets. IP technology is a way of transmitting all conceivable kinds of digital content and is mainly used in the area of the internet. DVB-H works with additional technologies such as technologies for battery-saving data compression and for

103) See http://www.pressetext.at/pte.mc?pte=040908010&phrase=Handy%20WLAN

compensating disturbances to reception that can arise through rapid motion. DVB-H is being promoted as an international standard.

Whereas DVB-T can carry four TV programmes per frequency/channel, each with a bandwidth of 3 Mbit/s (Megabits per second), DVB-H can carry ten times as many programmes, since each one only requires 120-300 kbit/s. It also has to be taken into account that handhelds and mobiles are supposed to be able to last several days without battery-recharging. That problem has been solved for DVB-H by means of "time-slicing". This involves large quantities of IP data packets being transmitted and/or received in bursts, after which the receiver switches off; thus, in order to replay a broadcast, the receiver does not have to remain switched on throughout the whole broadcast time, which means greater battery usage duration.

One problem with terrestrial reception on mobile devices is that there can be frequency disturbance if users are moving at high speeds. To compensate for this disturbance, the 4K mode and MPE-FEC (multiprotocol-encapsulation forward error correction) were developed, both of which are used with DVB-H. The 4K mode involves using a particular modulation scheme to make data streams more robust, i.e. less subject to disturbance.

DVB-H is compatible with DVB-T. Data in the formats of both types of transmission can share the same multiplex. A provider can thus combine DVB-T and DVB-H programmes in one multiplex.

2. New Technologies as a Convergence Trigger

Broadcasting and telecommunications have traditionally been two separate fields. Broadcasting provides the general population with content (point-to-multipoint), whereas telecommunications is aimed at one-to-one exchange between individuals (point-to-point). Traditional broadcasting requires a considerably greater transmission bandwidth than telecommunications. This has not been fundamentally changed by the digitisation of the two means of transmission. There has been a change, however, in that new digital technologies have brought the two fields closer together, and in the mobile area a situation will arise in which the user can no longer discern clear boundaries between them. From the user's point of view, it will no longer be possible to tell which services he is receiving over the mobile telecommunications network and which ones he is receiving over the broadcasting network.

Digital mobile services can be offered either as point-to-multipoint services or as point-to-point services, i.e. either via DVB-T/DVB-H or via GSM/UMTS. The services can be offered by the content providers either as MHP or as SDTV (Standard Definition Television)[104] services (i.e. in the same format as for DVB-T) or in the format of Java EE XML, which is used by GSM/UMTS services for content.

Special possibilities are now being opened up by the so-called hybrid networks, which allow both telecommunications and broadcasting transmissions. Hybrid networks enable access to services via a combination of various frequencies, e.g. DVB-H and UMTS. This coupling of networks is what makes it possible to support data services that require a high data transmission rate, such as video transmissions for example, which require a data rate of 100 kbit/s and more. Hybrid networks present the user first and foremost with the choice of the content he wishes to utilise. As far as the user is concerned, it is no longer important via which network he actually receives that content.

One example of an application of such a hybrid network is IP Datacast (Internet Protocol Datacast – IPDC). IPDC forms a complete system consisting of DVB-H and mobile telecommunications network including all data formats. It allows broadcasting and mobile telecommunications networks to melt into one. IPDC is a system with which every imaginable kind of digital content can be transported. Thus it is possible, using IPDC, to display various types of IP-based content on one end device.

There is then, for example, a DVB-H radio and television broadcasting route on the one hand, and on the other a route which has a return channel and can be used interactively for mobile telephony. This makes possible services such as downloading of content, programme-accompanying services, interactive television, and teleshopping in conjunction with internet links. The broadcasting route is no longer utilised separately from the telecommunications route; instead, both routes are available simultaneously for the same application. One possible area of application of such a hybrid network is its use in bridging disturbances to reception in the DVB-H network via the use of the mobile telecommunications network. IPDC is thus a convergence platform for mobile telephony and broadcasting.

104) A television broadcasting format which, like HDTV (High Definition TV), is intended to become a standard. SDTV signals require a smaller amount of data than HDTV signals, and are thus better suited for mobile devices.

Another possibility of convergent use lies in a combination of GSM and WLAN technology in one and the same device. This would allow data transmission and telephony via internet.[105] If the user went beyond the WLAN hotspot, the connection could be transferred automatically onto the GSM network. This would mean that the GSM network could be replaced wherever there was a WLAN signal available that would allow the use of "Voice over Internet-Protocol", i.e. voice telephony via the Internet.

3. Location-Independent Use of Audiovisual Services

The utilisation of different means of transmission can be exemplified by the live transmission of audiovisual content to mobile devices ("mobile television").

a) GSM/GPRS

Even the mobile telecommunications system of the second generation (2G) allows audio/video content to be received. This occurs via a streaming procedure, which is used in a similar form on the Internet. Streaming means the transmitting of content to a receiver on demand. When an end device has the necessary software installed and the audio/video streams are activated via a link in the WAP browser, a connection to the streaming server is set up and the film is played.

Mobile television reception via GSM/GPRS has not established itself, however. And in the opinion of some experts it is now unlikely that it will ever do so in future, due to the relatively poor quality and the newer, more comfortable services available.

b) UMTS

Mobile television services are also offered via UMTS, and can then be received on a mobile phone, laptop, computer or PDA. Access is possible anywhere. It is possible to access either the UMTS network operator's own audiovisual content or to access the Internet. Both ways can conceivably be used to transmit audiovisual content. The network operator has the possibility of offering his own content, e.g. in cooperation with television content providers, and the Internet can be used to call up the content that already exists there.

With UMTS, however, the content within a UMTS transmission cell is only available to a small number of users simultaneously. If a larger number of users in the one transmission cell receive television simultaneously, they have to share the bandwidth of that cell, and the transmission can suffer as a result, or else it will no longer be possible to receive the service at all.

It is, moreover, expensive to set up a separate point-to-point connection for each user. Whether accessing the audiovisual services offered by the network operator, or using the internet stream, television via mobile in this way is a relatively expensive affair.

c) DVB-H/IP Datacast

In terms of suitability for mobile reception, the field is led by narrowband "television" via DVB-H/IP Datacast, which is fine-tuned to the requirements of mobile devices. The small screens can provide good resolution without requiring the same quantity of bits as needs to be transmitted in the case of DVB-T. The required amount of data can be reduced even further using modern compression techniques. By way of comparison: a 20-minute speech in DVB-T quality corresponds to 3.5 Mbit/s (525 MByte), whereas DVB-H format requires less than 380 kbit/s (57 MByte). In addition, transmission technology is very robust and prone to hardly any disturbance (due to Time-Slicing, MPE-FEC and 4K mode, see above) and energy consumption is low.

DVB-H is not in direct competition with UMTS. The two technologies aim at two different areas of application, and thus complement each other rather than posing mutual obstacles. The UMTS services have the advantage of interactivity. They are less suitable for reception of point-to-multipoint services, since the users have to share a transmission cell, which can quickly become overloaded (see above). Access to these services, moreover, is always fee-based, and is charged to the mobile phone bill.

DVB-H, on the other hand, is used for the point-to-multipoint broadcasting procedure. An overloading of the networks is therefore unlikely. The lack of interactivity is as a rule compensated for by the fact that DVB-H is received on a device that already supports networks capable of a return

105) See http://www.pressetext.at/pte.mc?pte=040908010&phrase=WLAN%20GSM

channel (UMTS, GSM or GPRS). The likely costs involved in DVB-H cannot yet be predicted accurately. It is possible that radio and television licence fees will be imposed on DVB-H-capable mobiles; it is also possible that pay-TV programmes for mobile devices will be offered. Another possibility might be a flatrate for mobile television, which the mobile operator might offer. Finally, one can imagine a model in which the broadcasters make television available via DVB-H and the mobile telecommunications providers offer accompanying services.

4. DVB-H Pilot Projects

DVB-H pilot projects have already started in Berlin, Helsinki and Pittsburgh (USA). There are plans for DVB-H tests in Oxford (United Kingdom) and a nationwide DVB-H network in the USA.

In Germany there are two DVB-H pilot projects: bmco (Broadcast Mobile Convergence) and MMD (Mobile Media Distribution), both in Berlin.

Bmco[106] was launched by four mobile sector undertakings in order to test the economic potential, user behaviour and market acceptance of the convergent technology. A hybrid platform was set up and the test run began in August 2003. The standards that were combined were the mobile telecommunications standards GSM/UMTS and the broadcasting standard DVB-H. The end devices used were mobile telephones and portable digital television sets. Both mobile television and interactive services were available to the test users.

The goal was to develop new formats for mobile utilisation, to test convergent services and to design portable and/or mobile end devices, while encouraging inexpensive data transmission services for the consumer. In addition, the project was intended to sound out user expectations as well as economic, technical and regulatory requirements. The test phase ended in October 2004. The result[107] was that both mobile television services and interactive services were well accepted. The contents most often demanded were news, sport, music and infotainment formats. The test users made extensive use of the services offered and considered the technical quality acceptable.

MMD was launched in June 2004 with similar goals. In addition to user behaviour and acceptance of various services, the project also aims to investigate the performance of end devices under conditions of simultaneous reception of broadcasting and telecommunications signals.

The DVB-H pilot project in Finland (FinPilot) involved a consortium of several undertakings from the mobile telecommunications, content provision and end device manufacturing sectors; they had similar goals to those of the bmco project in Germany. The field trial began in the Helsinki area in October 2004 and is to last 8 months. An end device is lent to each user, and users have to pay fees for any services or subscriptions they take up beyond those that constitute the free, basic range of services. There are three television programmes and four radio programmes available for reception. During the test phase the users will be surveyed. In the Finnish model the undertakings are involved on an equal basis: on the one hand the content providers who supply the radio and television programmes, on the other hand the network providers who make the transmission capacity available, and finally the mobile telecommunications providers who are responsible for the interactive services, billing and payments, and user identification. This is a way of allaying the fears of the mobile telecommunications providers in particular, who were afraid they would not profit from the new technology. After the test phase described above, DVB-H and the services associated with it should go into regular service in 2006.

5. End Devices

The end device market for mobile reception is undergoing rapid development, directly connected with the announcement of new services. The "traditional" mobile reception devices include radio and portable television, mobile phone, laptop and PDA. Navigation systems in cars work with GPS data or with satellite services such as Galileo, currently under construction. Integrated multimedia end devices for radio, television, telephone and internet can be used for mobile reception of services via UMTS, satellite or DVB-H. Almost all end devices have so far been constructed only for individual services or for a small number of services. New technologies now make it possible for several functions/services to be integrated in one device. This in turn allows a convergence of various services. Theoretically, all

106) See http://www.bmco-berlin.com
107) bmco press release: http://www.bmco-berlin.com/docs/bmco-Pressrelease_english_041013.pdf

the different services could be integrated in a single device, but for cost-related and marketing reasons usually only a few are selected.

Such a mobile multimedia end device can envisage a component with which DVB-H can be received, and another component to utilise the return-channel-capable telephone services. The necessary modules are small enough to avoid restricting mobility.

A decisive contribution to development is also made by new, expanded memory capacities, higher-performance batteries, screens, etc..

II. New Contents and New Regulatory Tasks

As in the course of digitisation in general, so too in the case of mobile services the questions arise: which contents meet with the user's approval? Should they be subject to broadcasting regulation? To what extent is state supervision of content necessary? Should a uniform European standard be created here, and if so, what might it be like? How are frequencies to be allocated? What approach should be taken towards issues such as protection of minors and copyright protection?

Some of these questions were discussed in the last phase of the workshop.

1. Possible Contents, Formats and Business Models

One important point when setting up new mobile services is what contents are requested and accepted by users. All of the technical development will lead to nothing if mobile devices do not offer content that is of interest to people, content that they also wish to utilise on handheld devices, mostly outside the home.

Contents of mobile communication can encompass both personal and also mass communication.

Essentially all broadcasting services already in existence, i.e. radio and television programmes, are also of interest as far as mobile reception is concerned. Other media content services, too, could be considered, such as information services (with or without moving pictures and sound), e.g. city guides, traffic reports or electronic newspapers, as well as entertainment services, including games. In addition, all services available on the Internet in IP format. Value-added services (e.g. ringtones) will continue to be a major area of business.

The special feature of content for mobile use, however, lies in the fact that it should be as flexible and interactive as possible. This is unproblematic as far as Information Society services are concerned, as these are already "on demand" services anyway. In terms of content transmitted via DVB-H, these premises could lead to an emphasis on "near video-on-demand" services. With DVB-H reception on a mobile phone in a hybrid network, there is also the possibility of interactivity, which would be necessary in such cases. The flexibility will then consist in the fact that the services offered are not tied to a particular time. The typical user of mobile services will not, for example, want to use his mobile at a particular time of day to watch news. Rather, he will want to take advantage of this service while travelling, whenever he has to wait and therefore has some time to fill.

The duration of use of all mobile services will tend to be short, due for example to the size of the display and the limited capacity of the battery. Full feature-length film formats will be less suitable for mobile use. Already brief summaries of TV series are being produced specially for mobile reception. For example, the German TV broadcaster RTL II intends to make its series "24 hours" available for reception by mobile phone from 2005, in one-minute episodes.[108] At any rate there is a need for content produced specially for the mobile market. Due to new technical developments on the end device market such as "multi-access terminals" it is possible to use various forms of data transmission without the need for an additional device each time. This is leading to a convergence that goes right across all networks and contents. Mobile telecommunications, television services, mobile games and computer use are now possible with a single device. Mobile phone transmission formats could thus in future become an important area of business for the existing broadcasting stations.

108) News item of 15 November 2004, accessible at: http://www.wuv.de/news/artikel/2004/11/36659/index.html

From the consumer's point of view, the most important factors are the greatest possible degree of mobility and a broad range of services that are as inexpensive as possible.

To the extent that partial financing via advertising revenue is being considered, it will first of all be necessary to create special formats for mobile reception. Hardly anyone would be prepared to "sacrifice" his mobile phone's battery for a five-minute advertising break.

In the initial phase of DVB-H, existing broadcasts and services, such as those used for DVB-T, will be transmitted in essentially the same form as before. New formats – ones that are specially tailored for the DVB-H user, or interactive ones – will then have to be developed.

As far as content marketing is concerned, it should be remembered that mobile telecommunications services and DVB-H are associated with high prices. To promote acceptance on the market, consideration could be given to financing from advertisements, subscriptions to particular services or flatrates. In addition, it remains to be decided whether one payment should be made for each service taken advantage of, or whether one fixed sum should be charged for the possibility of having the service available for use.

2. Regulation

Digitisation means more room to manoeuvre in some matters, e.g. the terrestrial television frequencies can be used for more programmes, but the possibilities are not unlimited. Given the limits that still apply, it will only be possible to treat all interest groups fairly if mechanisms can be found that promote this balance. There are many who demand that, instead of exercising state regulation, the market itself should be allowed to regulate everything (for example, access to frequencies). Whoever comes up with the most attractive offer will be successful. Another point of discussion is the regulation of the protection of minors and the regulation of advertising. In this area, in particular, it is important to be able to offer effective solutions for the protection of minors and of consumers.

a) Access to Frequencies

As far as new services are concerned, access to frequencies is a factor in relation to the terrestrial broadcasting and telecommunications frequency spectrums alike.

(aa) Broadcasting Frequencies

Access to broadcasting frequencies is of great importance for the development of DVB-H.

Access to digital terrestrial frequencies was discussed in Part C I 2 above, and is essentially no different from the analogue world. Analogue technology allowed only one programme to be broadcast per frequency, whereas with digitised transmission it is possible to distribute 4-6 programmes via one frequency. The number of frequencies is, however, limited, and allocating them involves new dependencies that must be taken into consideration.

DVB-H requires no complete frequency infrastructure of its own. Multiplexes that are suitable for DVB-T can also be allocated for DVB-H (see D I. 1., last part). It is thus possible to be a co-user of DVB-T broadcast networks. These will be established on a wide scale, but without complete geographical coverage in all cases, within the next few years. Access to these frequencies will thus involve essentially the same problems as in the case of DVB-T.

Frequency allocation for DVB-H will also depend on whether or not it is classified as television. In Austria, for example, § 25(2)(4) of the Private Television Act (*Privatfernsehgesetz*) envisages that the major part of the frequency capacity available for digital signals is to be used for the distribution of digital television programmes. It still remains to be decided whether the programmes distributed via DVB-H will also be considered digital television programmes. This is a factor in, among other things, the decision about how to divide up the multiplexes between DVB-T and DVB-H – a problem that has yet to be solved. It is not necessarily the case that DVB-H providers will also be DVB-T providers, so the former may have an interest of their own in making frequencies available for handheld television.

(bb) Telecommunications Frequencies

Access to telecommunications frequencies is regulated separately. At European level, however, there is as yet no uniform regulatory framework for the allocation of frequencies for electronic

communication. The individual Member States are to cooperate,[109] but in the final analysis each country is itself responsible for regulating allocation. This is done in the individual countries via different procedures.[110]

The telecommunications licences (in the present context: UMTS in particular) are managed by the regulatory authorities of each country. Licences are acquired by the network operators, who in turn can give content providers access to the networks. Under what conditions content or other service providers must compulsorily be given access is essentially regulated by the Access Directive 2002/19/EC.[111] In accordance with Article 4(1) of the Directive, the network operators must offer undertakings access and interconnection under conditions that accord with the obligations that are recommended by the national regulatory authorities in accordance with the Directive. The regulatory authorities are obliged to guarantee appropriate access. Despite these stipulations, the market is allowed to exert a large amount of influence.

In order to be able to market content via UMTS, the content provider must therefore sell that content to the network owner or else sign a distribution agreement with him. The content will then be marketed by the network or platform operator.

But even if the network operator did not offer this additional content, there is still an enormous variety of content on offer, since UMTS allows internet access, as well. From the consumer's point of view it would therefore not be necessary for the network owner to offer content of his own, especially as it would be charged for. For there to be a demand for programmes offered by the network operator, they would need to be particularly attractive. To this extent, the network operator is forced to work together with the content provider. Therefore the network owner will also be prepared to pay the content provider for the service the latter offers, i.e. the making available of content.

For a programme provider who wishes to make his content available via mobile reception, it can therefore essentially be cheaper to provide it via the telecommunications frequencies. On this part of the spectrum there is more room for mobile contents (whereas there will be only a limited amount of space available for DVB-H on the multiplexes), and in any case it is also in the network operator's own interests to market attractive content.

Looked at from the demand side, however, transmitting content via DVB-H may be more profitable for the programme provider. DVB-H reaches a broader audience and will probably be cheaper for the user.

b) What Kind of Regulation?

Specific laws for the regulation of mobile electronic media content services do not yet exist in the European countries. As far as the technical side is concerned – e.g. the question of authorisation, access or frequencies – it should be remembered that the Directives package on electronic communications networks and services follows a technology-neutral approach. The technical aspects of the new services are thus dealt with by regulation. But this says nothing about the possible necessity of regulating content.

If the aim is to work with the existing approaches to regulation for broadcasting and Information Society services, then there is the problem of which category the new mobile services can be assigned to (see also Part C).

DVB-H, in terms of the type of transmission involved (point-to-multipoint), is a classical television services standard. It must be expected, however, that special formats for reception via mobile devices will be developed (see above), which will then have more of an "on demand" nature and will thus also be classifiable as an Information Society service. By contrast, services via the telecommunications network have more of an Information Society service character in terms of type of transmission (point-to-point) but can also be used to transport content similar to that which would be provided via DVB-H.

Essentially, the problems of classification that arise here ("broadcasting or Information Society service?") are the same as those that arise with the Internet or other electronic services and offers-of-content such as (near) video-on-demand.

109) Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision), OJ L 108 of 24 April 2002, p. 1.
110) For example, in the Netherlands, Austria and Germany they are auctioned.
111) Directive 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities, OJ L 108 of 24 April 2002, pp. 7-20.

Classification on the basis of the existing criteria is difficult, as the existing regulations are based on a different set of technical realities. A uniform European solution is made more difficult by the fact that, in Europe, classifications differ from one country to another even in the case of the services that have been around for a longer time, and the conditions for classifying services as broadcasting also vary. The following examples are intended to illustrate just how much regulation can vary:

In France the definition of broadcasting is a broad one, in accordance with Articles 1 and 2 of the Law on Freedom of Communication.[112] Broadcasting means audiovisual communication, including television, radio and also electronic services (which are not online services). The online services are regulated by the Law on Confidence in the Digital Economy.[113]

In Germany, the criterion that applies to broadcasting is that it must contribute to shaping public opinion. This follows from § 2(1) of the Inter-State Agreement on Broadcasting (*Rundfunkstaatsvertrag*) and the interpretation placed by the Federal Constitutional Court (*Bundesverfassungsgericht*) on the fundamental right of freedom to broadcast embodied in Article 5 of the Basic Law (*Grundgesetz* – GG). Prescriptions relative to opinion-shaping media services are included in the Inter-State Agreement on Media Services (*Mediendienstestaatsvertrag*). Non-opinion-shaping media services (teleservices) are regulated in the Teleservices Act (*Teledienstegesetz*).

The EC's "Television without Frontiers" Directive regulates point-to-multipoint services – i.e. classical broadcasting in the technical sense. An additional condition is that the services involved be television transmissions, i.e. the broadcasting of programmes intended for reception by the public (Article 1(a) in conjunction with Article 2, "Television without Frontiers" Directive).

It has been argued that existing regulations on broadcasting would not be able to be simply extended to new services. In future, it is claimed, there will have to be more finely differentiated regulations, relating more to content than to the means of distribution involved. Particular regulations, such as the stipulations on the protection of minors, must apply to all services. This is the kind of approach that has already been adopted in Council Recommendation 98/560/EC on promoting a comparable and effective level of protection of minors and human dignity.[114] That recommendation referred to online services, but can also be interpreted as applying to the new mobile services, among others.

In the event of legal uncertainty, a number of participants felt that the following approach would be practicable: codes of practice on the part of individual providers (e.g. the mobile telecommunications providers) could be a means (even if only a temporarily effective one) of achieving regulation. At present, legally non-binding agreements of this kind have primarily been established in relation to the protection of minors (see below). It can definitely be in the interests of providers to adopt such codes of practice, it is claimed, because they demonstrate what kind of regulation providers could envisage and because they create an example of what a solution on the part of the State might look like. An overhasty regulation, it is felt, could thus potentially be forestalled. The important thing, it is said, especially as far as protection of minors is concerned, is that some form of coordination be achieved. With these codes of practice, undertakings are letting it be known that they have not failed to give due consideration to the consequences of offering the services they offer. The State can monitor how things develop and eventually, perhaps, take up aspects of the codes of practice and embody them in law. This could even encourage co-regulation to develop.

Another advantage of codes of practice is that they at least provide a framework within which the developers of new technology are entitled to have some degree of confidence in its "legality". In the case of the existing regulations it is not clear which regulation potentially applies to which service or content. This can be an obstacle when new services are being introduced – if, for example, a service is unexpectedly classified as broadcasting or television and therefore becomes subject to particular regulations.[115]

Discussions continue on whether state supervision should be completely abolished, with serious offences then being punished by the application of criminal law. The advantage of such an approach, it is claimed, would be that only really serious cases would be prosecuted, and there would also be the

112) *Loi No. 86-1067 du 30 septembre 1986 relative à la liberté de communication*, J.O. *du* 19 *septembre* 1986.
113) *Loi No. 2004-575 pour la confiance dans l´économie numerique*, J.O. No. 143 *du* 22 *juin* 2004.
114) OJ EC L 270 of 7 October 1998.
115) See the example "Filmtime" above (C III 2 a): The Mediakabel undertaking had disputed a decision of the Dutch media supervisory authority (*Commissariaat voor de Media*), which had subsequently however been upheld by a court of lower instance. The decision is available at http://www.raadvanstate.nl (Document No. 200205951/1).

deterrent effect of criminal law proceedings. One disadvantage, however, would be that courts and public prosecutors would also have to deal with offences against the law on the protection of minors, and moreover, application of criminal law would mean criminalisation, which might not be appropriate in every case.

The future possibility of using Internet applications from all over the world via a mobile also raises the problem of content from other countries that is not subject to supervision in the country of reception. A monitoring of such content can only, so it appears at present, occur on the basis of voluntary measures (such as a general blocking of access to foreign websites).

Finally, thought must be given to the question of how to treat services that cannot be clearly defined either as broadcasting or as media content services in view of a possible authorisation or compulsory notification scheme. At present, most European countries require authorisation of broadcasting services. The Directive on electronic commerce (Directive 2000/31/EC)[116] provides in Article 4 that information society services do not require authorisation. A more precise classification, or a completely separate solution, may possibly come about as the services develop further.

In this connection, the new mobile services also give rise to the question of the extent to which public service broadcasters must be represented. Discussion here is essentially along the same lines as in the case of DVB-T. Here, too, there is discussion about whether the public service providers must offer all possible means of transmission in order to fulfil their duty to provide a basic level of service.

Especially in the case of the mobile sector, it will be more a question of "pull" than of "push" services. This means that the user, due in part to the limited capacity of the end device, will in any case only call up content that he has explicitly sought. This, it is argued, will lead to a situation where the complete programme offer of the public service broadcasters, which is important from the point of view of diversity of opinion, is being received as a "pull" service and is thus unable to fulfil its prescribed duty. On the other hand, precisely in this area there may be a need for other aspects of public service broadcasting – for example, for its news reporting, where the guaranteeing of quality is understood as constituting one of the chief duties of the public service broadcasters.

c) Copyright Protection

Digital television can potentially involve considerable legal problems in the area of copyright and performance protection. This is due in particular to the fact that digital media make it easy to produce a large number of copies with no loss of quality. This possibility is also opened up by DVB-H and services receivable via mobile telecommunications networks. Ordering ringtones via mobile is already on the agenda. Soon it will be possible to store entire music tracks or videos on a mobile and to send them on to other users.

Rightsholders are concerned about the possibility of bulk illegal redistribution of digital content, which means that they have an interest in preventing services that do not provide for an effective protection of copyright and performance rights. To that extent, protection of these rights, in particular protection against bulk illegal copies, must be taken into account during the development of new services. In the long run, services will only establish themselves permanently if the content concerned is protected. Copyright protection thus has a great influence on the market. One conceivable instrument might be technical protection mechanisms (Digital Rights Management – DRM), and one important component of DRM might be the development of software solutions that permit encryption of mobile services. There is a problem here, however, namely that a common standard needs to be found. Otherwise, the existence of a variety of different encryption systems might unreasonably impede access to content. At the moment there are not yet any really effective DRM systems available. Supporters of DRM systems, however, will maintain that even a form of protection that is not one hundred per cent secure is still better than none at all. Thought has also been given to the possibility of protecting works against unauthorised redistribution by transmitting content that is subject to a time limit. This would mean that it would only be possible to pass a work on within a particular time window, which would restrict the possibility of making copies.

Digital technology makes it possible to have not just systems for the individual control of copy-making, but also systems for individual billing. The user would then pay a "copyright fee" for each service actually taken advantage of, and the fee would then be paid to the author. The fee could be charged to the user's mobile telephone bill.

116) Directive 2000/31/EC of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (OJ L 178 of 17 July 2000, p. 1).

In addition to technical systems for the protection of content there is also the possibility of imposing a levy on devices with which private copies can be produced, as for example is prescribed in § 54 of Germany's Copyright Act (*Urheberrechtsgesetz* — UrRG). It remains to be seen whether such a levy would also be applied to mobiles when these reach a stage of technical sophistication that allows them to be used to store digital content and reproduce it on another device without further ado. There are some who maintain that this is the only way to consistently ensure that compensation to authors for private copies can be achieved in practice. Mobile telecommunications devices that have storage and copying facilities of such a kind should, it is claimed, be treated in exactly the same way as are other devices with these capabilities.

On the other hand, say the opponents of such a solution, that would mean that a levy would need to be imposed on all mobile telecommunications devices, even though most of them are not used for making private copies. Strictly speaking, they say, it would be necessary to include all devices that have a storage medium. Even restricting the definition here to the chief intended form of use of a device would be of little help in the face of the constantly expanding range of functions that modern devices have. Thus it would be difficult, opponents say, to keep up with technological developments. A compulsory levy that was restricted to particular devices would also involve the ever-present danger of distortion of competition.

d) Protection of Minors

In all media, special regulations apply to the protection of minors and to advertising. To further the protection of minors and of consumers there are certain restrictions on what content can be transmitted at what point in time. Here, too, however, there is an absence of specific regulations for mobile services unless the service in question can be assigned to one of the existing categories. It is not possible simply to transfer the regulations for broadcasting or for information society services to the new media content services.

A mobile is part of the standard outfit of today's teenagers, being a status symbol and a fashion accessory. As the number of services and the range of content that are receivable on mobile devices increase, so too does the possibility that minors will also come into contact with content likely to endanger them. Possibly they will call up the services themselves, or possibly advertising for such services will be sent to their mobile. In addition, the mobile form of use makes effective control by parents or those entrusted with the care of minors more difficult.

This is shown by a case from Norway, for example. A minor had been sent a telephone sex advertisement via MMS to his mobile by a provider.[117] The case was taken up by the Norwegian consumer ombudsman.[118] Direct advertising to minors is not forbidden in Norway, but the advertising of sexual services is. SMS/MMS direct advertising is in any case only permitted if the consumer has registered for this service.

In another case, the built-in camera of a mobile was used to film a girl being raped. This film was redistributed directly by mobile.[119] Mobile telecommunications devices thus provide a straightforward way of distributing self-recorded audiovisual content.

In order to tackle this problem, a number of self regulation initiatives based on various approaches have already been launched by the mobile telecommunications providers.

(aa) The Code of Practice in the United Kingdom

At the beginning of 2004 some of the UK's major mobile operators developed a code of practice in relation to the regulation of mobile content.[120] The code covers only the new services, i.e. audiovisual content, online gambling, mobile gaming, chat rooms and internet access. Services such as SMS were already covered by the ICSTIS code of practice.[121]

The mobile operators committed themselves to the setting up of an independent classification body. This was established in October 2004 and was called the Independent Mobile Classification Body

117) News item, 8 October 2003, accessible at: http://www.forbrukerombudet.no/index.db2?id=
118) The Norwegian consumer ombudsman is an independent organisation that monitors compliance with advertising regulations and investigates complaints: www.forbrukerombudet.no
119) Spiegel Online of 31 August 2004, "Der Teufel wohnt im Handy" ("The devil lives in the mobile"), accessible at http://www.spiegel.de/archiv
120) *UK Code of Practice*, accessible at: http://www.o2.co.uk/abouto2/ukcodeofpractice.html
121) Accessible at: www.icstis.org.uk

(IMPC). Its task is to investigate commercial content to ascertain its suitability or otherwise for under-18s. The criteria for this procedure are to correspond to those used for classification in other media. The responsibility for the development of this regulatory framework is vested in the classification body, which is also responsible for classification-related complaints directed against content providers. Content providers are urged to undertake their own classification. Content classified "18" should then only be made available to customers who have undergone age verification.

The problem of internet content that cannot be controlled by the mobile operator is to be solved by using a filter. The code intends that the filter is to prevent access to content that has not been cleared for minors. As an additional measure, advice will be published for parents and children that will contain explanations concerning the use of mobile devices. Often, it is felt, parents are not aware of the possibilities that mobiles offer their children. Better information is to promote better control. It still remains to be seen whether this measure will have the desired effect.

(bb) The Code of Practice in Ireland

A similar code of practice has also been published by the major mobile operators in Ireland.[122] The Irish Cellular Industry Association (ICIA), an alliance of Irish mobile operators, has developed a three-pronged plan. The emphasis is on parental control of the mobile telephones of minors. Parents are to be given (dual) access to their children's account. This will enable them to view the numbers called and the account balance. The second part of the plan involves the publication of an advice booklet, as in the UK. In addition, a trial method for filtering mobile content is to be tested.

Consumers are to be better protected against malicious or offensive person to person communications via mobile. Unsolicited commercial communications (Spam) will be monitored and passed on to the regulatory authorities for further action.

As far as control over internet access is concerned, the Irish mobile operators have joined the Internet Service Providers Association of Ireland (ISPAI) and are thus bound to adhere to the ISPAI Code of Practice.

Another possible way to control children's use of mobiles is to be tested via the setting up of a UMTS register (a register of 3G handsets).[123] The register will be set up jointly by mobile operators and government, and is intended to record all users of UMTS mobiles. The register is designed to assist in providing increased safety mechanisms for the protection of minors before the market is flooded with UMTS mobile telephones.

(cc) The Self-Regulation Initiative in Italy

In Italy, audiovisual content that is not suitable for under-18s is labelled "18" by the mobile operators. Content so labelled is only made available when an age verification procedure has determined that the users have come of age. The classification of content is comparable with that in force for other media.

e) Advertising

The interactivity of services that can be utilised via mobile end devices will change the nature of advertising; advertising will be addressed more directly to the user. In this area, too, consideration is being given to possible forms of regulation.

The limitations on the permissible length of advertising breaks, as applicable in broadcasting law, are presumably irrelevant, since long advertising breaks are hardly a possibility at all as far as the new services are concerned. Other forms of advertising will develop instead, which may make a new kind of regulation necessary (comparable to Spam with e-mails). Since this problem is still not serious, there are as yet no codes of practice on the part of the mobile operators to cover it. However, advertising would be another area in which codes of conduct could be a first step towards controlling content.

122) Irish Cellular Industry Association (ICIA): "The Irish mobile operators Code of Practice for the responsible and secure use of mobile services": http://www.icia.ie

123) Cf. the speech given by Communications Minister Mr. Dermot Ahern T.D.: http://www.dcmnr.gov.ie/files/ICIAlaunch.doc

f) Compulsory Radio and Television Licence Fee for Mobiles

With the use of broadcasting frequencies for DVB-H and with the services receivable in this way via mobile telephones, the question arises as to whether these mobile devices should be treated like normal radio or television sets. This is in some European countries decisive in determining whether or not a radio and television licence fee has to be paid.

According to § 13(2) of the Inter-State Agreement on Broadcasting (*Rundfunkstaatsvertrag*)[124] a radio and television licence fee is to be paid for all devices in Germany that are equipped with a radio or television receiver. In France, Article 1 of the Decree on Radio and Television Reception Fees[125] has the same stipulation. In Austria, too, § 2 of the Radio and Television Fees Act (*Rundfunkgebührengesetz*)[126] stipulates that fees are to be paid by anyone who has a device ready that can receive radio or television. The same may possibly apply to mobiles capable of receiving radio. This, however, raises in turn the question of whether the services that are received – whether via broadcasting or via telecommunications frequencies – can be considered broadcasting at all. A general regulation for multimedia devices has not yet been arrived at; however, radio and television licence fees for computers, a topic which has been subject to a moratorium for the last few yeas, will be introduced in Germany in 2007.

122) Irish Cellular Industry Association (ICIA): "The Irish mobile operators Code of Practice for the responsible and secure use of mobile services": http://www.icia.ie
123) Cf. the speech given by Communications Minister Mr. Dermot Ahern T.D.: http://www.dcmnr.gov.ie/files/ICIAlaunch.doc
124) *Rundfunkstaatsvertrag vom 31. August 1991 in der Fassung vom 26. September 2003*. ("Inter-State Agreement on Broadcasting of 31 August 1991 as amended 16 September 2003")
125) *Décret n° 92-304 du 30 mars 1992 relatif à l'assiette et au recouvrement de la redevance pour droit d´usage des appareils récepteurs de télévision,* last amended by the decree of 23 May 2001, J.O. n°125 of 31 May 2001, p. 8641.
126) *Gesetz vom 17. August 1999, BGBI. I Nr. 159/1999.*

E - Summary

As our description of technical developments and of mobile television projects currently being implemented has shown, audiovisual media are going through a reorientation phase. Media and electronic communication are now effectively becoming one. This is true not merely with respect to the linking-up of digitised means of transmission that have classically been used either for broadcasting or for telecommunications applications. Rather, players on the market – players operating at different levels of the value chain - are now working more closely together. They, too, no longer necessarily feel bound by the traditional division of labour.

As the example of digital terrestrial television and our description of mobile "television" have shown, telecommunications providers are today increasingly offering technical services (e.g. conditional access, multiplex) and/or media content related services (e.g. EPGs). From the perspective of the content provider, e.g. the television broadcaster or – upstream – the programme producer, providers of networks and services for electronic communication are no longer functioning merely as "transporters" of audiovisual content. Rather, a wide variety of partnerships is evolving, in which the content provider is also becoming a supplier for providers of mobile services or for providers of platforms. The latter two operators market this content, thus connecting up with the customer.

What part does the regulatory environment now play, as far as the development of the digital world is concerned?

The introduction of DVB-T involves the metamorphosis of a classical means of television transmission from analogue to digital. Alongside the general prescriptions of telecommunications law and competition law, therefore, broadcasting-specific regulation is also acquiring more importance.

It is necessary to respect the rights of those broadcasters who, up until now, have distributed their programme offer terrestrially in analogue form. As a result of digitisation and the associated increase in transmission capacities, however, it is now possible for other television broadcasters as well to have a turn, broadcasters who to date have offered no programme at all or whose programmes were only available via other means of transmission, i.e. cable or satellite. Moreover, it is now possible for other services, in addition to traditional television, to make use of the digital transmission capacities.

In view of the increase in the number of service providers, the spectrum of specific regulatory tasks has broadened considerably. Alongside the issues already familiar from the analogue world – such as frequency allocation, licensing and supervision, media concentration law regulations and decisions concerning priority in situations involving a scarcity of resources – there are today new regulatory approaches such as legal prescriptions for navigators, APIs, conditional access and interoperability.

Among the new services, it is DVB-H that most readily allows a legal framework to be delineated. In view of the strong similarities to DVB-T, it can be assumed that DVB-H, too, will be subject to television regulation. This, however, means that the development of this mobile reception capability will be characterised by similar provisions as in the case of DVB-T.

Two factors, which are generally invoked to justify the regulation of broadcasting, would need to be present in order to bring a new electronic media content service within the scope of broadcasting regulation: first, it would need to be a case of a television broadcast, consequently a case of a programme for which editorial responsibility is taken. Second, the service in question would need to be broadcast according to the traditional concept, i.e. for the purpose of reception by the general public, which means – to put it simply – that as a rule the point-to-multipoint procedure would be involved.

In the case of a number of new services now being offered, however, a point-to-point connection is used, which is based for example on the IPv6 protocol. This procedure is based on the individual selection by the recipient of an offered service, and thus differs technologically from traditional television broadcasting.

The use of mobile communications networks and services for transmitting audiovisual content to portable or mobile end devices (mobile television) will primarily be subject to the EC legal framework for electronic communications and to the respective legislatures of the Member States. It is uncertain, however, what additional requirements will need to be observed, such as requirements of advertising law, or of the law on the protection of minors. Will such content-related regulations, of the kind that apply to television as well, be applied "horizontally", without regard to the type of service involved? In Europe there are only few countries (Germany for example is one of them) that already have at their disposal a horizontal regulation framework for transmitted content. In the majority of countries, only television is subject to such regulations. This is in keeping with the fact that television as such is the most heavily regulated audiovisual medium.

As long as a country has no regulation system of its own for new services, above all for transmitted content, the path that is followed seems to be that providers increasingly rely on self-imposed codes of practice. This is encouraged, in part, by media policy-makers, who occasionally also signal an intention to consider co-regulation measures based on such codes of practice. This means that the solution does not lie in the classical form of regulation using media and telecommunications law.

There is as yet no definitive agreement as to what connection there is between the state of development of the various platforms for the broadcasting of digital television on the one hand, and the establishment of new mobile services on the other. Such an influence can be assumed, in technical terms, in at least one case – after all, DVB-H uses the digital terrestrial means of transmission to deliver media content services to mobile end devices. On the other hand, there still appears to be no definite answer to this question as far as economic and legal considerations are concerned.

In the mobile communications technology scene, the user has always been accustomed to having to pay a fee for each and every service. This factor thus plays a role when new business models are introduced. Often, signing a new service contract automatically involves acquiring a (subsidised) end device. Both these matters are simply in keeping with customer expectations.

The classical approach of analogue television, however, was different. Apart from the fees that were imposed (across the board, i.e. independent of degree of use), there were no other charges to pay. However, the providers of pay-TV platforms have in recent years adopted similar models to those outlined above for mobile telecommunications. This has created – and in part still creates today – obstacles to an open horizontal sales market for the required equipment (viz., the set-top box). Moreover, such business models have increased the influence the provider has on end device technology, as was shown by the example of the Kirch group. Digital and mobile television are in future likely to involve similar issues that will need to be dealt with.

Attention must be paid to the challenges of digitised technology, challenges which each of the two types of service will need to face up to. These challenges include interoperability requirements. On this point, but also with respect to the future economic development of the new market, digital rights management systems appear to deserve particular attention.

From a media policy perspective, the question that arises is: What strategies will – even in a new environment – best allow general policy goals to be achieved? Issues such as the protection of minors, and advertising, have been addressed. Factors such as providing assistance to audiovisual production in Europe, and ensuring diversity, may possibly need to be considered in greater depth. General competition law and in particular, its instruments such as *ex ante* structural interventions and *ex post* monitoring of abuses, could play an important part here, provided the law of electronic communication is understood as a sector-specific expression of the law of competition. This is connected with the question of whether or not it is a true prognosis to claim that regulation via market forces can be allowed a good deal of leeway.

In any case, the introduction of mobile television is a phenomenon that deserves to be followed closely. Even if, as is widely believed, there is little chance in the medium term of viewers abandoning their traditional patterns of use, television will by no means develop in complete isolation from other forms of service offered or from other forms of distribution.

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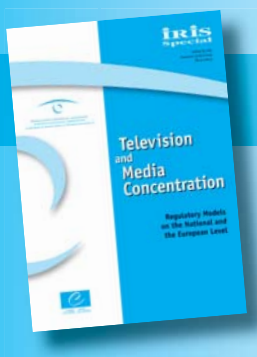

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