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Annex to the

**Communication from the Commission to the Council, the European Parliament, the
European Economic and Social Committee and the Committee of the Regions**

on accelerating the transition from analogue to digital broadcasting

{COM(2005)204 final}

This Commission Services Working Document provides additional material to complement the Commission’s Communication on accelerating the transition from analogue to digital terrestrial broadcasting COM(2005)204 final. It includes a synthesis of information from Member States regarding roll out of digital terrestrial TV and switch off of analogue terrestrial TV. Best practice of consumer information in Member States is identified and financing aspects of switchover and the situation of digital radio are analysed.¹

TABLE OF CONTENTS

A.	Switchover Information on Member States.	3
1.	Roll out of Digital Terrestrial TV in (15) Member States	3
2.	Switch off dates of Analogue Terrestrial TV in (15) Member States.....	4
B.	How to make switchover a success.....	6
1.	Consumer information strategy.....	6
1.1.	Scope of information.....	6
1.2.	Provision of information	8
2.	Implications of Switchover for spectrum planning.....	9
3.	Financing the upgrade.....	10
4.	Implications for capacity in networks with must-carry obligations.....	12
5.	The Situation of Digital Radio	12

¹ The national switchover plans can be found at http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_sw_o_plans/index_en.htm

A. SWITCHOVER INFORMATION ON MEMBER STATES²

1. Roll out of Digital Terrestrial TV in Member States

Country	Date	Other details
BE	2005 (in Flanders)	
DK	1 July 2005 (possible delay)	Coverage of whole country
DE	2002-2010	Start in densely populated islands
EL	from 2005	Roll out by zone
ES	Since 2000	
FR	from 2005	Coverage 35% of population by 2005
HU	From 2007	Starting with "islands" and subsequent extension of network coverage
IE	n.a.	Re-evaluation of rollout plans in 2004
IT	Since end 2003	Coverage 50% of population in 2004; 70% in 2005
LI	30 June 2006	Start in Vilnius, by end 2007 in the five biggest cities, by beginning of 2009 one network should cover 95% of the population
LU	currently 1 TV channel in LUX city	
NL	since 2003 around Amsterdam	
AT	2006-2010	Start in densely populated islands
PL	No decision yet	Ratification of strategy expected in Feb. 2005
PT	Mid 2004 (tentative)	Roll out by region

² Sources: See fn 1 and <http://www.digitag.org/lateupdate/globeupdate.htm>

FI	Available since 2001/2002; full network rollout autumn 2004 to autumn 2005	Coverage of entire country by end 2005
SE	since 1999/2000;	90% of population currently covered
SI	2008-2012	Introduction of digital terrestrial TV
SK	Start before end 2005	By islands, step by step
UK	Since 1998	70%-80% of population covered

2. Switch off dates of Analogue Terrestrial TV in Member States

Country	Date	Other details
BE	2012 envisaged in Flanders	Switch off is planned to start in 2010
DK	No decision yet	
DE	2010 envisaged, however no scenario	Berlin area switched off in 2003, other densely populated islands will follow
EL	after 2010	
ES	31 Dec. 2011 (tentative)	
FR	No decision yet	
HU	31 Dec. 2012	Gradual switch off of the analogue transmitters
IE	No decision yet	No spectrum scarcity identified which would call for switch off
IT	2006	
LI	Beginning in 2012	Gradual switch off, 90% of households receiving analogue terrestrial programs should be capable to receive digital terrestrial programs before an area can be switched off
LU	No decision yet	One analogue channel has been switched off already

NL	No decision yet	
AT	2010 envisaged	
PL	No decision yet	
PT	No decision yet	
FI	31 Aug 2007 proposed, same date all over the country	
SE	Final date of Feb 2008 proposed	Switch off may start already earlier, by region
SI	2012	
SK	2012	
UK	2007-2012 (tentative)	decision on switch off by end 2004

B. HOW TO MAKE SWITCHOVER A SUCCESS

1. Consumer information strategy

1.1. Scope of information

Consumers need to have as much transparency as possible regarding programme availability and connectivity of devices. Where this information is not efficiently provided consumers will tend to delay their switch to digital reception, may choose sub-optimal reception devices which do not coincide with their preferences, may not have the programmes/services/ features available they want and will generally assess the switchover process not as favourably as this would otherwise be the case.

Citizens³ should have available information on switch on of digital TV programmes and services and on switch off dates of analogue TV.⁴ It should be made clear which services are available on which channels (channelling tables). This information usually has two dimensions: time (this means that the switch on/switch off dates must be known) and geography (i.e where the services are available).⁵ Consumers must be given coverage information for digital terrestrial TV, as well as information on cable and satellite possibilities⁶. Current best European practice for helping consumers to ascertain whether terrestrial coverage includes a particular address seems to be post-code-sensitive Web info as given in the UK and the Netherlands, but this is also criticised by consumer organisations for not being fit for purpose; even within the small area of a single post code, some households can receive a signal while others cannot.

In order to make their decisions about reception equipment consumers must also be aware of antenna requirements (none/room/roof) and about portable and mobile reception. This information may have or may not have time and geography dimensions different from the basic switch on / switch off information. It may also be useful to provide lists of equipment capable to receive the digital broadcasts. The table below gives a non-exhaustive list of broadcast information which should be made available to consumers:

³ Including older people and people with disabilities

⁴ This is important as people with disabilities and older citizens represent about 20% of the European population.

⁵ It is not sufficient if Web information is only available on terrestrial coverage prognoses dating from a time before the switchover has taken place as is currently the case in the Berlin/Brandenburg area in Germany. In addition, the information is very technical and not consumer-friendly since it is not clear which programs can be received in which places.

⁶ Consumers will either buy TV receivers in a shop at a location different from the one where they intend to receive digital services or from a distant seller e.g. over the Internet. It is therefore not sufficient for them to test the receiver in the shop before the purchase. In the case of a distant sale it is in most cases impossible to test the receiver before the purchase.

Table 1: Relevant broadcast information

(a) Switch on / switch off dates
(b) Fixed / portable / mobile reception
(c) Antenna requirements (none/room/roof)
(d) Geographical dimension of (a), (b) and (c)
(e) Channelling tables
(f) Pay TV information
(g) Availability of additional services, including wide-screen/HDTV, interactive TV services
(h) Available programming information for recording
(i) Recommendations and guidance on re-conversion of digital signals
(j) List of capable reception equipment with indicative prices
(k) Accessibility services: audio description, subtitles, sign language, EPG
(i) Information on all transmission networks: e.g. terrestrial, cable, satellite, DSL

Regarding the digital TV reception equipment itself, users should be fully informed about the features of the equipment they buy and its capabilities in relation to the signals broadcast in their area of reception. The table below gives a non-exhaustive list of equipment information which should be available for the consumer:

Table 2: Relevant equipment information

(a) Equipment prices
(b) Pay TV connectivity
(c) Interactivity features
(d) Software download
(e) Which and how analogue/digital recorders can be used
(f) Reception of program information for Video recorders
(g) Audio channel separation for a second language
(h) How to deal with potential terrestrial trunked radio (TETRA) interference
(i) Capabilities of equipment in relation to the signals broadcast in the reception area
(j) Accessibility features
(k) Information whether suitable for reception via one or more transmission networks

1.2. Provision of information

Consumers need to reconcile information on the availability of the digital signals broadcast and on the capabilities of equipment offered to process these signals. Therefore, for any successful information campaign it is essential that Member States to co-ordinate the information from broadcasters and from manufacturers.

Because of the complexity of the information to be passed on, a hotline and a website⁷ may be necessary from which such information can be obtained. It is obvious that TV broadcast announcements would be best targeted to the audience concerned. Direct mailing to households could support the information campaign. The relevant information should also be available at the shops where consumers buy TV equipment. This could be done by flyers and brochures given to dealers. As a last resort, NRAs could require undertakings that provide the TV services to the end users to provide information on the quality of their services.⁸

⁷ To ensure accessibility to the website for people with disabilities see W3C/WAI web accessibility guidelines.

⁸ See Article 22 (1) of the Universal Service Directive.

Regarding the equipment, manufacturers will provide the necessary information themselves in manuals, catalogues, online⁹, via hotlines etc. For simplification, additional national labelling schemes for TV equipment could be helpful to point consumers to sources from which the necessary information can be obtained.¹⁰ Such labels could be applied to analogue-only TV equipment indicating the need to upgrade it for digital reception and referring to the relevant hotlines and websites. The advantage of targeting analogue TV equipment only is that the scope of the scheme could remain relatively limited.

Alternatively the labelling could be applied to equipment for digital TV and could indicate that the equipment is ready for digital reception in the Member State concerned and refer to the relevant hotlines and websites. Such a label would have to specify the platform (terrestrial, cable¹¹, satellite) and would have to include potentially a wide range of equipment such as set-top boxes, integrated TV sets¹², video recorders and TV cards for PCs. Additional labels may be used for pay TV, interactive and other capabilities.

Member States cannot impose *de jure* or *de facto* compulsory labelling schemes without prior notification under Directive 98/34/EC, as modified by Directive 98/48/EC. The definition of measures that are compulsory *de jure* or *de facto* can be found in Article 1(11) of Directive 98/34/EC.

2. Implications for spectrum planning

As a general principle, Community law requires Member States to ensure the effective management of spectrum¹³. In addition, the allocation and assignment procedures for electronic communications services (which include services used for transmission of broadcast content) must be based on objective, transparent, non-discriminatory and proportionate criteria.¹⁴ These principles apply to the re-use of spectrum released by switch-off.¹⁵

⁹ See e.g. <http://www.samsungusa.com/dtvguide/>

However, those who depend exclusively on analogue reception may be also less likely to have access to the Internet. Therefore manufacturers may consider to use a variety of communication channels in parallel including hotlines.

¹⁰ In order to address people with disabilities it is important to provide the information in accessible alternative formats. Labelling could also be used to clarify accessibility features to the consumers with disabilities.

¹¹ The cable industry has created a certificate for interoperability of cable modems and cable set-top boxes. For further information see: <http://www.euro-docsis.com/> The label refers to properties of the product alone and does not include references to information about the status of the cable system. There are assumptions made about the properties of a standard cable system and interoperability then is certified. The initiative has been taken by the cable operators.

¹² In the UK Television sets with a built in digital tuner are labelled by the Digital Video Broadcasting mark as carried by the majority of integrated digital TVs either through a screen sticker or a badge imprinted on the TV fascia surround (see <http://www.dvb.org>). The government is also considering a labelling of TV sets setting out what equipment will be needed to receive digital signals. In the US, the FCC has adopted rules for the labelling of digital television receivers that operate with cable TV systems. The rules specify three label series with increasing interconnector, advanced TV and interactive capabilities of the equipment. Framework Directive 2002/21/EC.

¹⁴ See: http://rspg.groups.eu.int/doc/documents/meeting/rspg5/rspg04_55_opinion_digit_switchover.pdf In its adopted opinion RSPG proposes to develop a spectrum plan that is flexible enough to allow the introduction of both digital broadcasting services and other electronic communications services.

¹⁵ The public consultation undertaken by the RSPG in the context of establishing their opinion (fn 14) confirmed that:

1) The pace of market and technology change requires the spectrum assignment framework to be flexible, technology neutral and adaptable. The convergence of broadcasting and telecommunication services and markets means that access to spectrum, and the fees charged, should also be fair and equal across all

A study by independent consultants conducted on behalf of the Commission¹⁶ concludes that significant gains could be achieved by introducing spectrum trading and liberalisation in the EU. The Commission is actively following up this report and is working on a Communication on Secondary Trading. It is planned to adopt that Communication later in 2005.

The uptake of new services and applications to the benefit of consumers will not only be facilitated by these new management approaches. Consumer benefits could be significantly enhanced further if a part of the spectrum dividend could be made available at EU level rather than in an uncoordinated and fragmented manner at national level. The availability of harmonised spectrum would allow pan-European applications to be deployed, such as new convergent services. The Commission will examine the feasibility of a coordinated approach to create such a dividend available at EU level in the light of the new technological developments. Member States are encouraged to observe the situation carefully and to cooperate amongst each other and with the Commission.¹⁷ Meanwhile, it will be important notably in the context of the international planning exercises not to preclude the potential of establishing at least part of the spectrum dividend as a common radio resource at EU level. It is premature at this juncture to identify specific services which could make use of the spectrum dividend given the unpredictability of the technological, market and regulatory developments in the next eight years, considering the growing ability of radio services to operate seamlessly over different frequency bands and taking into account the increased flexibility in spectrum usage if spectrum trading and liberalisation of spectrum use are implemented.

In summary, the potential of establishing at least part of the spectrum dividend as a common radio resource at EU level should be safeguarded.

3. Financing the upgrade

Network upgrade for digital television constitutes a considerable cost for network operators. Some costs also accrue to broadcasters to upgrade studio equipment and links between the production sites and the points where the signals are fed into broadcasting networks. But digital broadcasting gives also raise to considerable economies in variable costs for transmission. Several channels can be broadcast within the capacity of one analogue channel which means that the costs for the transmission of one old analogue channel are shared between several digital channels¹⁸. In addition, digital broadcasting requires lower power which reduces energy consumption of terrestrial transmitters. The latter economies however will not accrue before analogue terrestrial transmission will have been terminated. During the simulcast period variable costs of terrestrial transmission may even increase in cases where power of analogue broadcasts is not sufficiently reduced to compensate for the cost of additional digital broadcasting. Therefore

operators who needed access to the spectrum resource in order to deliver networks and services. This would ensure full and equal competition.

2) In so far as digital terrestrial TV is a substitute for analogue terrestrial TV - delivering a range of social and cultural benefits – it is necessary to ensure guaranteed access to sufficient spectrum, at a reasonable price, to ensure delivery of the non-commercial broadcasting objectives of Member States. The analogue TV broadcasters have a key role in delivering switchover.

¹⁶ See "Study on conditions and options in introducing secondary trading of radio spectrum in the European Community" at http://europa.eu.int/information_society/topics/radio_spectrum/useful_info/studies/secondtrad_study/index_en.htm

¹⁷ See Framework Directive 2002/21/EC, Art. 9(2).

¹⁸ This cost sharing effect applies to terrestrial, cable and satellite networks.

financing the upgrade to digital television requires a careful analysis of all costs and benefits involved.¹⁹

Many broadcasters are obliged by law to broadcast their programs terrestrially. Such obligations may slow down the switchover process since the broadcasters concerned have no possibility to rely on other networks either exclusively or in combination with terrestrial networks for the transmission of their services. Other broadcasters without such obligations might consider the termination of terrestrial broadcasting in order to avoid upgrading costs. This may particularly be the case where terrestrial penetration is already very low. Termination may appear to be particularly attractive in situations where terrestrial transmission can be considered to be the most expensive platform to deliver TV services.²⁰ Such considerations reflect market dynamics and may contribute to reduce transmission costs for network operators, broadcasters and will ultimately benefit consumers²¹. In general termination of broadcasting of a service over a particular platform (e.g. terrestrial) does not constitute an impediment for switchover where stranded (e.g. terrestrial viewers) can easily switch to digital reception on other platforms such as cable or satellite. In areas where consumers are unable to receive a digital signal, structural funds may be used to increase network coverage.²² However, in general subsidies for the switchover process can trigger concerns with regard to competition and state aid rules, especially when there is a possibility of market distortion between different delivery mechanisms. Where such concerns arise they need to be analysed carefully on a case-by-case base.²³

¹⁹ This applies to all networks. It may appear that costs and benefits may accrue to different players in the market. In terrestrial, public broadcasters either operate the terrestrial network themselves or they have to pay for the transmission to the operators of terrestrial networks. Private broadcasters in general have to pay for terrestrial distribution. Where network operators have significant market power, there is a potential that lower variable transmission costs are not passed on to the broadcasters. In the case of cable operators, depending on the business model either broadcasters have to pay the networks for transmission or the networks have to pay broadcasters for their content. In the former case there is again a potential for SMP operators to retain variable transmission cost advantages. Where National Regulatory Authorities find in accordance with Articles 15 and 16 of the Framework Directive that network operators have significant market power in any relevant broadcasting transmission market, they shall ensure that there is no distortion or restriction of competition and that consumers derive the maximum benefit in terms of quality, choice and prices by imposing proportionate obligations on these operators that do not discourage efficient investment in infrastructure.

²⁰ Documents from Finland however suggest that digital terrestrial TV is considered to be the cheapest way to deliver digital TV in the sparsely populated northern areas of the country. Evidence from Sweden however indicates that for Sweden as a whole (thus including the southern and densely populated areas of the country) variable cost for satellite transmission would be much lower than for DVB-T transmission.

²¹ It can however be expected that these effects are limited since transmission costs constitute in most cases only a small fraction of total costs of broadcasters. Even though consumers usually do not directly pay transmission costs, they have to spend time viewing commercials and have to pay licence fees to public broadcasters. These revenues are used to cover (inter alia) transmission costs. Consumers could therefore benefit in several ways from reductions in transmission costs: better programmes, lower licence fees and/or less advertising in the programmes.

²² Technological neutrality between platforms has to be applied. For principles and procedures regarding structural funds see http://europa.eu.int/comm/regional_policy/sources/docoffic/working/doc/telecom_en.pdf

²³ The Commission has opened formal investigations in Sweden (see http://europa.eu.int/comm/competition/state_aid/decisions/35_2004/en.pdf) and Germany (see http://europa.eu.int/comm/competition/state_aid/decisions/36_2004/en.pdf)

4. Implications of Switchover for capacity in networks with must-carry obligations

Digitisation in networks will allow the current analogue programmes to be carried in a fraction of the spectrum currently required.²⁴ Such digitisation requires considerable investment. Incentives to invest into digitisation of networks are high where network operators are given full commercial freedom as to how they use the additional spectrum available to them. Incentives would however be reduced or can even be destroyed for some business cases if 'must carry' obligations would be extended to more services than currently carried. , This concern applies to the incentives to invest into the distribution of TV services via all platforms (terrestrial, cable, satellite and in the future possibly DSL) if new 'must carry' obligations were introduced or existing ones would be extended.

In particular, the Universal Service Directive²⁵, requires that 'must-carry' obligations are justified by clearly identified public interest objectives. These objectives do not change as a result of the change from analogue to digital transmission, and existing obligations to carry analogue services may be carried over to digital transmission. If the change in the transmission technique as such however is used as a justification to extend obligations relating to general interest and thereby to increase existing must carry obligations, it has to be made transparent why this is reasonable and why such additional obligations are necessary to meet clearly defined public interest objectives and that such obligations are proportionate. Broadcasters can use provisions of the Access Directive when they wish to extend the services they provide over digitised networks.

5. The Situation of Digital Radio

Availability of new services beyond those currently available over analogue radio will be the crucial driver for the digital radio market. Other advantages are better sound and less interference. Unlike TV, the current DAB (digital audio broadcasting) standard does not permit a significant increase in efficiency of spectrum use when migrating from analogue to digital terrestrial transmission. DAB has made increasing progress in the UK, Sweden, Denmark, Belgium and Germany. There is a second digital radio standard called DRM - digital radio mondiale. This is intended as a replacement for analogue AM and shortwave radio broadcasts with speech quality - rather than FM which is traditionally DAB's mission. There are also digital radio services in cable, satellite and over the Internet. Recently there are initiatives in the UK to provide the DRM services in FM bands currently used for analogue radio services. Digital radio services are also provided via digital terrestrial TV spectrum. Trials in some Member States explore the capabilities of the DVB-H (Digital Video Broadcasting – handheld) and DMB (Digital Multimedia Broadcasting) standards to provide terrestrial radio services when on the move.

The Transport Protocol Experts Group forum (TPEG), sponsored by the European Broadcasting Union, is developing new technology to be used on digital media (DAB, Internet, etc) for the delivery of language independent Traffic and Travel Information including digital maps. This will serve a wide range of client devices such as simple receivers and hand held devices (for example, Personal Digital Assistants), and navigational systems. TPEG technology already

²⁴ See fn 15 of the Communication on accelerating the transition from analogue to digital broadcasting COM(2005)204 final. Consumers derive significant benefits from digital TV compared to analogue TV. The capacity released can be used e.g. for the provision of new or improved broadcasting services and/or other new electronic communication services (see Chapter 4 of the Communication) or for digital radio (see Chapter B 4 .below).

²⁵ Universal Service Directive 2002/22/EC, Art 31.

supports applications such as Road Traffic Information and Public Transport Information, and Parking Information will soon follow. Congestion and Travel time information is the next application to be developed.

Some players also expect a promising future for the combination of 3G mobile networks and services and digital radio services. Digital radio would provide a cheap channel to provide content at high data rates and the mobile networks would offer a flexible and ubiquitous back channel which could also be used for charging and payment purposes. These ideas are similar to plans for combining e.g. digital terrestrial television and GPRS into one platform.

Given the extended use of radio among blind and partially sighted persons it is important to develop accessible solutions in the radio equipment to address the special needs of these people.²⁶

Although market and technological developments are considered to be very promising it is still too early to envisage the switch off of analogue terrestrial radio broadcasting in the immediate future. However, many market players intend that digital radio will ultimately replace conventional analogue broadcasting. Germany has taken the lead on this issue by setting a goal that will enable analogue terrestrial radio to be phased out between 2010 and 2015. Also, in the UK, analogue terrestrial radio shutdown is under active discussion.

²⁶ One potential barrier is the development of new digital receivers where information is displayed on a screen and the user interface is becoming increasingly complex.