



# **REGIONAL GUIDELINES ON HOW TO IMPROVE LEGAL FRAMEWORK**

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## 1 INTRODUCTION: BACKGROUND AND GOAL OF THE REPORT

The goal of activity A2: “*Elaboration of regional guidelines - Regional guidelines framework first draft to be prepared on the basis of the legal analysis prepared by APEK*”, within the WP3-Legal framework, is the following: “*On the basis of Analysis of existing legal framework in target countries, Regional guidelines will be elaborated, taking into consideration all diversities in the region as well as lack of legal framework in each particular country. These guidelines will be predominantly in IPA countries in order to align their legislation and enable better and efficient utilization of digital technologies.*”

*IPA partners will contribute to the elaboration of the regional guidelines by analysing it and providing feedback with a clear goal to address challenges faced by particular partner country related to the size and level of development of the AVMS market and its role in narrowing the digital divide following the digital dividend reuse*”.

The regional guidelines, therefore, are to be elaborated on the basis of the findings of the **report “Analysis of existing legal framework in target countries” drafted by APEK (WP3/A1)**, which compared the legal frameworks of 10 Countries of South Eastern Europe<sup>1</sup> part of the transnational Digi.TV SEE project, and came to very interesting conclusions: digital terrestrial TV broadcasting is currently taking place in all of the Countries examined, but the conditions concerning the transition from analogue to digital terrestrial television broadcasting as well as the characteristics of national legal frameworks are very diverse in SEE region: some Countries have adopted specific digital broadcasting laws (e.g. Slovenia, Hungary, Montenegro); others have just amended the existing legislation on electronic communications and mass media (e.g. Italy, Croatia, BiH) or have not adopted any specific digital broadcasting legislation at all (e.g. Macedonia). The legislation may be very comprehensive and detailed (such as Hungarian), or may lay down just the general rules for the switchover and leave the details of their implementation to the regulatory authority (e.g. the Albanian law). “Due to the differences mentioned”, the report WP3/A1 concludes, “it is not possible to present in this study any general findings that would apply in the same way to all countries included, or to formulate such recommendations that would be relevant for all countries in the region. Most generally, it is advisable, of course, that the experience (both positive and negative) of the early-adopter countries in the implementation of digital switchover should be taken into account. Since all of SEE countries concerned are either EU Member States or EU aspirants, the European regulatory framework for electronic communications and for audio-visual media should be followed in the planning and implementation of the digital switchover”. The conclusions of the report for activity WP3/A1 are indeed logical and coherent: the level of implementation of the digital terrestrial television broadcasting is extremely diverse and it is almost impossible both to formulate recommendations and to draft “general guidelines”, as this report is supposed to do, that would be relevant for all Countries in the Region. At the same time, as the mentioned report suggests, the IPA Countries, which are still in the process of drafting a strategy for the digitalization or starting implementing it, may very well benefit from the experi-

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<sup>1</sup> Slovenia, Austria, Hungary, Italy, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Macedonia and Albania

ence (both positive and negative) of the EU Member Countries which have already completed the switch-off or will complete it this year.

The **goal of this report**, therefore, is to **present –in form of guidelines- the common legal or regulatory issues that were part of the experience made by the EU Member States** during their switch-over and switch-off phases and explain the solutions that they have adopted, so that the IPA Countries -that are still at the early stages of their digitalization process- may benefit from such experience.

It is worth mentioning that the EU legal framework is only a small part of such experience: there are very few specific EU rules binding on Member States as regards the switchover from analogue to digital broadcasting, and almost all of them are related to frequency spectrum. For this reason, it is preferable to refer to the European *Acquis Communautaire* for the sectors of electronic communications and audiovisual, because many of the provisions related to digitalization came from mere Communications of the EU Commission, not necessarily from the legally binding EU Directives. A good analysis of the EU legal framework has already been done by the report “*Analysis of existing legal framework in target countries*” drafted by APEK (WP3/A1). **Chapter 2** will therefore briefly summarize the main provisions of the EU Directives on electronic communications and audio-visual media services and will focus specifically on the provisions and policies introduced by the EU (with Directives or simple Communications) that are relevant for the draft of the guidelines.

Once the *Acquis Communautaire* has been analyzed, **Chapter 3** will go through the main regulatory issues that the EU national regulators faced during the switch-over and switch-off periods. We are referring –*inter alia*- to the differentiation of licenses for network operators, content providers and service providers, the numbering plan (LCN), the electronic programming guide (EPG), the common interface (CI), the compression standards, the role of the PSB, the procedures to assign the frequencies, the price assessment for the access to the networks. Each of these features gained a lot of importance in each Member State and required a huge amount of work from the EU regulators, who had to run public consultations, meet stakeholders, analyse the market and, ultimately, come up with the adoption of provisions *ad hoc* that would regulate the matter. For this reason, the analysis of such topics will be of utmost importance for the guidelines, because in our opinion it offers the IPA Countries a few good reasons to update their digitalization strategies.

Talking about strategies, the experience of the EU Member States show that the first step towards the Digitalization should always be the **development of a strategy** aimed at ensuring that the process is well planned, and that the planning is conducted in a transparent manner with the cooperation of all relevant players in the digital switchover process. The need for adequate preparation of digitalisation has been pointed out by the European Commission and by international organizations, such as the Council of Europe and the EBU. Recommendation Rec (2003)9 of Council of Europe's Committee of Ministers provides that States should draw up a well-defined strategy that would ensure a carefully thought-out transition from analogue to digital broadcast-

ing. Such a strategy *“should seek to promote co-operation between operators, complementarities between platforms, the interoperability of decoders, the availability of a wide variety of content, including free-to-air radio and television services, and the widest exploitation of the unique opportunities which digital technology can offer following the necessary reallocation of frequencies.”*

All Countries encompassed in this study have prepared and published their national strategy for the switchover from analogue to digital broadcasting. However, the analysis of switchover strategies shows that such documents often turn out to be rather abstract and somewhat remote from specific problems that may be foreseen in the specific Country. What such strategies typically lack is the operative content adapted to the specific economic and technical conditions in the broadcasting market of a specific country, e.g. concrete tasks of specific national authorities in the digital switchover process and time schedules for the completion of such tasks in order to complete the switchover by a certain date. For example, although most strategies of IPA Countries do include a target date for analogue switch-off, the setting of such dates often seem to be motivated by political purposes rather than based on a realistic switch-over agenda. The result is that the target date for the beginning of the switch-over will be very difficult to reach, and this will have consequences in the whole process that should lead to the switch-off. In addition, the strategies rarely mention issues that are extremely important to ensure a smooth transition to digital terrestrial television (single frequency network or multi frequency network, compression standards, numbering plan, electronic programming guide, common interface standards and so on) and do not take decisions about them. For this reason, a number of critical topics -on which the EU Member States had to invest a lot of time and energies- will be explained in detail in Chapter 3 and will be suggested for adoption to the IPA Countries, so that their strategies may become more effective and timely. The same Chapter 3 will compare practically two examples of successful digitalization strategies: the French and the Italian, which have adopted a totally different approach towards the network operators and the access to the platform.

A broader comparison about the technical standards adopted by the SEE Countries and the level of digitalization reached in each of them has already been done by the report for activity WP4 – A2 *“Strategic roadmap to digitalization”*, which has also analysed technologies and technical standards applied to the digitalization process. That work has been a very valuable source of information for Chapter 3 and Chapter 5 of the present report.

Once the experience of the Member States has been duly analysed in Chapters 2 and 3, **Chapter 4** will draft the regional guidelines, providing a solid background for the development of national legal frameworks in IPA Countries, thus contributing to the successful implementation and harmonization of provisions and activities in the field of digital broadcasting.

The last Chapter of the report will eventually draw the conclusions and the recommendations.

## **2 THE EU *ACQUIS COMMUNAUTAIRE*: FOCUS ON THE SPECIFIC PROVISIONS RELATED TO THE DIGITALIZATION**

The report for activity WP3/A1, describing the “*Analysis of existing legal framework in target countries*” correctly highlights that, although there are no specific EU rules binding on Member States as regards the switchover from analogue to digital broadcasting, the EU has been active in formulating basic policy directions for introduction of digital television, pointing out the advantages of switch-over to digital broadcasting systems, giving information about Member States’ switchover process and acceleration of transition process, establishing priorities in the switchover process etc. For this reason it is preferable to refer this Chapter to the EU *Acquis Communautaire* rather than to the EU legal framework.

In any case, the EU provisions related to the digitalization process has already been very effectively described by the report for activity WP3/A1 and there is no need to go through that analysis again. This Chapter, therefore, will simply summarize the results of the WP3/A1 report and add some useful comments on the principles and the policy directions provided by the EU Directives that will be very useful for the elaboration of guidelines for the IPA Countries.

### **2.1 Regulatory framework for electronic communications**

The electronic communications regulatory framework was put in place in 2002 in order to raise standards of regulation and competition across Member States’ communications markets. It covers all forms of fixed and wireless electronic communications, data transmission and broadcasting and it is aimed at developing a better-functioning and homogeneous internal market for telecommunications networks and services. The framework initially consisted of a package of five Directives:

- Directive (2002/21/EC) on a common regulatory framework (“Framework Directive”)
- Directive (2002/19/EC) on access and interconnection (“Access Directive”)
- Directive (2002/20/EC) on the authorisation of electronic communications networks and services (“Authorisation Directive”)
- Directive (2002/22/EC) on universal service and users' rights relating to electronic communications networks and services (“Universal Service Directive”)
- Directive (2002/58/EC) on privacy and electronic communications (“Directive on privacy and electronic communications”)

The framework was then amended in 2009 by two directives, aimed at taking into account the evolution of markets and services,:

- Directive 2009/140/EC (“Better Regulation Directive”)
- Directive 2009/136/EC (“Citizens' Rights Directive”)

The 27 EU Member States were supposed to transpose the new Directives into national legislation by 25 May 2011

Most of the provisions of the mentioned Directives (in particular the provisions referring to the National Regulatory Authorities, the BEREC and the use of radio frequencies) have been already presented by the Report for activity WP3-A1, describing the “*Analysis of existing legal framework in target countries*”.

In this Chapter, therefore, we will solely refer to the provisions related to the new regime of General Authorization, which is a crucial issue for the guidelines. Those provisions are included mainly in the **Authorisation Directive**, which aims to implement an internal market in electronic communications networks and services through the harmonisation and simplification of authorisation rules and conditions in order to facilitate their provision throughout the European Community.

The most important principles of such Directive are:

- harmonization and simplification of authorization rules and conditions;
- adoption of the general authorization regime, instead of individual or class licences;
- the authorisation must only contain conditions which are specific to the electronic communications sector;
- individual licenses may be issued only when dealing with scarce resources (spectrum and numbering);
- principle of proportionality: the penalties for non-compliance with conditions under the general authorisation commensurate with the infringement.

Therefore, Member States shall ensure the freedom to provide electronic communications networks and services, subject to the conditions set out in the Authorisation Directive. To this end, Member States shall not prevent an undertaking from providing electronic communications networks or services, except where this is necessary for the reason of special treatment for foreign nationals on grounds of public policy, public security or public health (Article 46(1) of the EU Treaty).

In principle, the provision of electronic communications networks or the provision of electronic communications services may only be subject to a general authorisation. **General authorisation** is a legal framework established by the Member State ensuring rights for the provision of electronic communications networks or services and laying down sector specific obligations that may apply to all or to specific types of electronic communications networks and services, in accordance with the Authorisation Directive.

Every Undertaking authorised by the general authorisation shall have the right to:

- provide electronic communications networks and services,
- have their application for the necessary rights to install facilities pursuant to the rights of way provision.

When such undertakings provide electronic communications networks or services to the public the general authorisation shall also give them the right to:

- negotiate interconnection where applicant obtain access to or interconnection from other providers of publicly available communications networks and services covered by a general authorisation anywhere in the Community under the conditions of and in accordance with Directive 2002/19/EC (Access Directive),
- be given an opportunity to be designated to provide different elements of a universal service and/or to cover different parts of the national territory in accordance with Directive 2002/22/EC (Universal Service Directive).

The general authorisation for the provision of electronic communications networks or services may be subject only to specific conditions (listed in part A of the Annex of the Authorisation Directive). The general authorisation shall only contain conditions which are specific for that sector and shall not duplicate conditions which are applicable to undertakings by virtue of other national legislation. Such conditions shall be objectively justified in relation to the network or service concerned, non-discriminatory, proportionate and transparent. Specific obligations which may be imposed on providers of electronic communications networks and services shall be legally separate from the rights and obligations under the general authorisation. In order to achieve transparency for undertakings, the criteria and procedures for imposing such specific obligations on individual undertakings shall be referred to in the general authorisation.

As regards to administrative charges the main principles are the following:

- administrative charges may be imposed in order to finance the activities of the national regulatory authority managing the authorisation system and for the granting of rights of use
- such charges should be limited to cover the actual administrative costs for those activities

The Authorization Directive 2002/20/EC was amended by **Directive 2009/140/EC**, which - according to the principles of technology and service neutrality such Directive- establishes:

- flexibility in spectrum management and access to spectrum must be increased through technology and service-neutral authorisations to allow spectrum users to choose the best technologies and service;
- general authorisations for the use of spectrum unless individual rights are necessary to protect against harmful interference, to ensure technical quality of service, to safeguard efficient use of the spectrum.

As regards to rights of use for radio frequencies and numbers, Member States shall facilitate the use of radio frequencies under general authorisations. Where necessary, Member States may grant individual rights of use in order to:

- avoid harmful interference;
- ensure technical quality of service;
- safeguard efficient use of spectrum, or;
- fulfil other objectives of general interest as defined by Member States in conformity with Community law.

By creating a new regime of general authorizations which has almost completely replaced the individual licenses (as said before, individual licenses may be issued only when dealing with scarce resources such as numbering and frequencies), the Authorization Directive –as amended by Directive 2009/140/EC- has introduced a new and simplified way to enter the electronic communications market that has helped improve the competition in the sector in the EU Member States. This issue will be further analyzed in Chapter 3 and will be one of the most important suggestions in the guidelines for the digitalization of IPA Countries.

## 2.2 Audio-visual media policy

Most of the provisions of the Directives dealing with broadcasting and audiovisual media services (in particular the provisions referring to platform neutrality, freedom of expression and content regulation) have been already presented by the Report for activity WP3-A1, describing the “*Analysis of existing legal framework in target countries*”. In this Chapter, therefore, we will solely refer to the principles and provisions that may be useful for the guidelines.

Access to the Information Society is a fundamental right for people of every social and economic background, in every country of the world. Television programmes, in particular, are vital in defining the cultural landscape of modern societies and provide a primary source of information, education and entertainment.

This fundamental right is recognized and granted by all EU countries and even if Member States pursue their own audiovisual policy, the EU defines some benchmarks to safeguard common interests. Some of the benchmarks have been included in the so-called Television Without Frontiers Directive<sup>2</sup> (TVWF Directive). This Directive, drafted in 1989, aimed to create a single market in television broadcasting services in Europe by setting some basic standards and related obligations for broadcasters. In addition the TVWF Directive required member states to ensure freedom of reception and retransmission of services for any service that complied with the legal framework of originating country.

The TVWF directive was first passed in 1989, then amended in 1997, and provided for the free circulation of television and audiovisual contents in the Member States, regardless of the transmission network they require. Here again, the main target of the legislator was the achievement of a single and fully competitive market. Television and other audiovisual products are compared to any other good and are thus free to be circulated in all National Members States, protecting at the same time the public security function that television broadcast might have. Together with the

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<sup>2</sup> Council 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

principle of free circulation, the Directive states also – and consequently – the principle of freedom of reception of every television or audiovisual content produced in another Member State.

The evolution of the audiovisual sector and the introduction of digital television (available at the beginning through cable and satellite and now also on terrestrial frequencies), however, has made it necessary to update the definition of broadcasting and identify new **roles for the players of the digital broadcasting activities**, with different titles and conditions.

- **network operators**: have the right to install, manage and furnish a network for electronic communications through which content and service providers transmit their content and offer their services. Specific commercial agreements will regulate the relations between network operators and content and service providers and specific provisions (such as the “must carry”<sup>3</sup>) ensure transparency and accessibility to all the operators;
- **content providers** have the editorial responsibility for the realization of broadcasting programmes (channels): any subject who is established in the EU may apply for authorizations, provided that the latter do not exceed the limit of 20% of available programmes;
- **service providers** furnish conditional access services through a network operator or information society services as defined by Directive 98/34/EC as amended by Directive 98/48/EC or electronic programmes guides (EPG).

The provision of a different title and role for the operator delivering content and services, has made it crucial to extend the principle of **technological neutrality** also to the audiovisual sector: according to such principle, the same rules should cover all services with audiovisual content irrespective of the technology used to deliver the content. In other words, the rules apply whether the content is delivered through satellite frequencies, cable or terrestrial frequencies. Platform neutrality ensures fair grounds for all audiovisual media service providers.

In order to adapt Directive 89/552/CE to the recent development of the telecommunication market, a revision process was promoted: the rapid evolution of the media in the recent years has made it possible for the general public to have access to its favourite programmes from all over Europe not only on TV and broadcasting networks, but also via the Internet or on mobile phones. The two previous versions of the Television Without Frontiers Directive (hereinafter referred to as

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<sup>3</sup> Most EU countries enforce some form of must-carry regulation. These rules were devised during a period of scarcity of distribution networks, and usually imposed on what the public considers as “primary networks” In the European regulatory framework on electronic commerce, for example, article 3(1) of the Universal service directive permits member states to impose proportionate and transparent **must carry obligations** on cable television network operators. These obligations may also be imposed on terrestrial and satellite networks. As a result of technological and market developments, there is less dependence on a single infrastructure, and more channels and platforms for distribution of content are now available. Must carry rules should therefore be limited to a reasonable number of channels, especially public service channels. Instead of must carry, consideration could be given to a framework whereby terrestrial broadcast channels should be subject to must offer requirements, i.e. certain (public) broadcasters are obliged to offer their content to other platforms if the ask for it (so that content will not be .locked-in. on a single platform, but can be made available through different devices).

TVWF Directive) were meant to regulate an audiovisual market which still did not include non-linear and on demand products. Specifically, the audiovisual offer had become more varied and rich, and the consumers could for the first time access on-demand contents, which came to be in direct competition with traditional broadcasters.

Non-linear products providers were not considered by the TVWF Directive, and thus were not subject to the same regulatory framework that applied to other broadcasters. This situation created both advantages and disadvantages for non-linear providers, disregarding the principle of technological neutrality. The new Audiovisual Media Service (AVMS) Directive is the result of this revision process: it was adopted in 2007 and it covers all EU audiovisual media services (including on-demand services) in the digital age. The AVMS Directive overcomes the distinction between service providers and content providers, regrouping both activities under the definition of “audiovisual media services<sup>4</sup> providers”.

In practice, however, it is difficult to define on-demand AVMS. The regulators around Europe - and United Kingdom’s Office of Communications (Ofcom) in particular- have proposed a set of tests or criteria by which to identify such a service and suggested that, based on the AVMS Directive, an on-demand AVMS must be:

- a service that is normally provided for reward, as distinct from non-economic services that do not compete with television broadcasting (e.g. e-mails to a limited number of recipients, private websites and private user-generated content);
- provided under the editorial control (in terms of exercising effective control over both the selection of the programmes and their organisation in a catalogue) of a person under the jurisdiction of a member state;
- a mass media service, intended for reception by, and which could have a clear impact on, a significant proportion of the general public;
- provided by means of electronic communications networks;
- a service whose principal purpose is the provision of programmes, which excludes websites that have ancillary audiovisual elements such as animated graphic elements, short advert spots or information related to a product or a service that is not an AVMS, as well as most gambling sites, online games and search engines;
- a service whose programmes consist of moving images with or without sound, which takes radio, text and still picture services out of scope, although accompanying subtitles and electronic programming guides are included;
- a service, whose form and content are comparable (from time to time) to that of television broadcasting (e.g. feature films, sports events, sitcoms, documen-

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<sup>4</sup> Article 1(a) of the directive: “audiovisual media service” means:

- i. a service as defined by Articles 49 and 50 of the Treaty which is under the editorial responsibility of a media service provider and the principal purpose of which is the provision of programmes, in order to inform, entertain or educate, to the general public by electronic communications networks within the meaning of Article 2(a) of Directive 2002/21/EC. Such an audiovisual media service is either a television broadcast as defined in point (e) of this paragraph or an on-demand audiovisual media service as defined in point (g) of this paragraph;
- ii. audiovisual commercial communication

taries and original drama), in the sense that they compete for the same audience as television broadcasts, and the means of access to the service would lead the user to expect reasonable and basic standards to be observed;

- a service other than electronic versions of newspapers and magazines.

To give an example, audiovisual media services definition covers traditional and digital television services, internet and mobile phones services, on-demand television but also mobile television services or menu navigation. With regard to audio visual material on websites (which could be under jurisdiction of the AVMS Directive) the regulators in Europe have indicated that the new regulations will only apply to traditional broadcast “television-like” services as opposed to material on websites which is incidental to the main purpose of the website.

To improve the understanding of the concept of audiovisual media services, the Directive offers additional definitions. The most important ones are probably the definitions of broadcasting and on demand services:

- **Television broadcast** or broadcasting<sup>5</sup> (also known as linear audiovisual media services) is a programme provided by a media service provider at a scheduled time and watched simultaneously by viewers. These linear services correspond to services that “push” content to viewers. The typical example is the television channel, which has its own programme schedule managed by the channel editor (that is the content provider): the viewer cannot choose what to see and when to see in that particular channel; the viewer may only choose to change the channel.
- **On-demand audiovisual media service**<sup>6</sup> (also known as non-linear audiovisual media services) enables users to select programmes from a catalogue offered by the media service provider, to watch at their own convenience. These non-linear services concern services where viewers “pull” content from a network, right in the moment when they want to watch/listen to that content; in most cases the viewers can also stop the content and resume it in a different moment. This type of service requires interactivity and is currently possible only (or nearly only) through cable. as said before, non-linear services were not previously covered by the TVWF Directive. Whilst the AVMS Directive extends the scope of the regulatory framework to cover these services, they are subject to a lesser degree of regulation than linear services. This is justified by the choice and control that can be exercised by users in deciding whether to receive a particular non-linear audiovisual media service. Adding this distinction between linear and non-linear services broadens the scope of the Directive and as a result, the audiovisual media services covered no longer depend on the method of broadcasting: this is the principle of technological neutrality, in-

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<sup>5</sup> Article 1(e) of the Directive: “television broadcasting” or “television broadcast” (i.e. a linear audiovisual media service) means an audiovisual media service provided by a media service provider for simultaneous viewing of programmes on the basis of a programme schedule.

<sup>6</sup> Article 1(e) of the Directive: “on-demand audiovisual media service” (i.e. a non-linear audiovisual media service) means an audiovisual media service provided by a media service provider for the viewing of programmes at the moment chosen by the user and at his individual request on the basis of a catalogue of programmes selected by the media service provider.

roduced for the first time in the audiovisual sector with the AVMS Directive (see below).

In the context of the Directive programme means “a set of moving images with or without sound constituting an individual item within a schedule or a catalogue established by a media service provider. Their form and content are comparable to the form and content of television broadcasting. Examples of programmes include films, sport events, situation comedies, documentaries, children’s programmes and original drama” (Article 1b).

By services, the Treaty establishing the European Communities (EC Treaty) means services provided for remuneration and includes activities of an industrial or commercial character as well as activities of craftsmen and of the professions (Article 49 and 50 of the EC Treaty).

The editorial responsibility concerns an effective choice of the programme as well as of the organization of the schedule for linear services or catalogue for non-linear services. The concept of editorial responsibility is crucial to identify the person responsible for the content offered through the media services.

## 2.3 Radio spectrum policy

Once again, the provisions of the EU legal framework related to the radio spectrum policy have been already effectively presented by the Report for activity WP3-A1, describing the “*Analysis of existing legal framework in target countries*”. In this Chapter, therefore, we will solely summarize the general principles that will be crucial for the guidelines: both the Framework Directive and Authorisation Directive establish common general rules for the management of radio spectrum, to ensure compatibility between national regulations and between the main national and EU level policy objectives. The EU aim is to **harmonise spectrum access** conditions in the single market whenever this is necessary to ensure efficient use of radio spectrum or to enable interoperability of underlying equipment, of course granting the Member States the possibility to provide restrictions, where this is necessary to avoid harmful interference, protect public health against electromagnetic fields, ensure technical quality of service, ensure maximisation of radio frequency sharing, safeguard efficient use of spectrum and ensure the fulfilment of a general interest objective.

Radio frequencies for electronic communication services should be managed by the **national regulatory authorities**. In the context of digital television, multiplex operators will have to obtain the right to use specific broadcasting frequencies. Such radio frequencies must be allocated and assigned on the basis of objective, transparent, non-discriminatory and proportionate criteria. Beyond that, any undertaking intending to transfer rights to use radio frequencies must notify the national regulatory authority responsible for spectrum assignment. NRAs must ensure that competition is not distorted as a result of any such transaction. These latter provision are important to

establish that the institution in charge of managing the spectrum and allocating the resources in the digitalization process in the IPA Countries, should be the NRAs.

## 2.4 Digital switchover

There are no specific EU rules binding on Member States with regard to the **switchover from analogue to digital broadcasting**. However, the EU has been active in formulating basic policy directions for introduction of digital television, pointing out the advantages of switch-over to digital broadcasting systems, giving information about Member States' switchover process and acceleration of transition process, establishing priorities in the switchover process etc.

The EU policy directions for introduction of digital television have been already effectively presented by the Report for activity WP3-A1, describing the "*Analysis of existing legal framework in target countries*". In this Chapter, therefore, we will solely enlist the documents issued and actions undertaken by the EU:

- the action plan "**eEurope2005: an information society for all**" (COM/2002/0263 final), which encouraged Member States to speed up the transition to digital television by creating transparency to implement the envisaged switchover
- the policy framework for the information society and media "**i2010 – A European Information Society for growth and employment**" (COM/2005/0229 final), adopted by the European Commission in 2005, which established that digital convergence calls for a consistent system of rules for information society and media and started de fact the "modernization process which led to the AVMS Directive.
- The current information society policy initiative "A Digital Agenda for Europe" (COM/2010/0245), initiated in 2010, which intended to coordinate, on the basis of the European Radio Spectrum Policy Programme, the technical and regulatory conditions applying to spectrum use
- the **Communication on the transition from analogue to digital broadcasting (from digital 'switchover' to analogue 'switch-off')** (COM(2003) 541 final), published by the EU Commission in September 2003, which set the benefits of switching over to digital broadcasting and initiated the debate on EU policy orientations on the amount and future uses of spectrum potentially released at switch-off of analogue terrestrial television transmission.
- the **Communication on accelerating the transition from analogue to digital broadcasting** (COM (2005) 204 final), in which the Commission proposed that the national switchover plans should all be completed by 2012.
- the **Communication COM(2007) 700** "Reaping the full benefits of the digital dividend in Europe: A common approach to the use of the spectrum released by the digital switch-over" which states that a major benefit of the switchover will be the **freeing up of radio spectrum** thanks to the switching off of less efficient analogue services and describes the opportunities of the digital dividend.

### **3 BEYOND THE EU *ACQUIS COMMUNAUTAIRE*: ANALYSIS OF THE MAIN REGULATORY ISSUES THAT HAD AN IMPACT ON THE DIGITALIZATION STRATEGIES OF THE EU MEMBER STATES**

After reviewing the main provisions, principles and policies issued by the EU institutions as regards the digitalization process, the report will now focus on the main challenges that the Member States faced during the transition to digital broadcasting and for which often an intervention of the national regulatory authority was needed. Each of these features often required a huge amount of work from the EU regulators, who had to run public consultations, meet stakeholders, analyse the market and, ultimately, come up with the adoption of provisions *ad hoc* that would regulate the matter.

The **goal of this Chapter** is therefore to analyze the regulatory challenges faced by the EU Member State during their transition to the DTT and the solutions that they adopted (usually through *ad hoc* provisions of the national regulators), thus providing an effective tool for the IPA Countries to update their digitalization strategies and to plan their regulatory moves in advance.

Just to make an example, at the early stage of its switch-over process, Italy had to decide whether to adopt MPEG-2 or MPEG-4 compression standards. The decision fell on MPEG-2 because the MPEG-2 hardware at the time was readily available and not very expensive. Not many months later, instead, France adopted the MPEG-4 standard, with a decision that proved to be successful due to the higher efficiency of the MPEG-4 algorithm and the possibility to host more channels in a specific frequency/MUX. As it will be explained later in this Chapter, the decision on the compression standard to be adopted influences the equipment that will be sold in the market and should be taken in advance, possibly in each Country's digitalization strategy; on the basis of the experience made by the EU Member States, therefore, the suggestion of this report will be to include in the Country's strategy the adoption of MPEG-4 compression standards (see *infra*).

#### **3.1 Moving from individual licenses to general authorizations**

As said in Chapter 2, the EU legal framework provides only few binding rules on the digitalisation process, most of which are linked to frequency issues. Therefore in Europe several different approaches have been adopted for the allocation of digital spectrum and for the licensing process. The capacity is either licensed to third party, independent network operators (this is for example the approach taken in France and Scandinavia) or directly to the existing broadcasters (this is for

example the approach taken in Italy). What is relevant is how access to this capacity is regulated and that it meets best regulatory standards.

The role of the audiovisual operator in the digital terrestrial television sector differs very much from the traditional role of the broadcaster: in Europe the transition to digital broadcasting has required a complete change of the legal framework: the activities of the former broadcasters have been split in 3 different types of activities (network operator, content provider and service provider), and the license have been kept only for the operators (the network operators) who have been granted scarce resources such as frequencies, while those who are playing roles not connected to the management of scarce resources (provision of content or services) now are given a general authorization.

Chapter 2 has already presented the provisions of the EU Authorization Directive, which introduces the general authorization regime thus replacing almost completely the individual licenses: services and networks used for the transmission of radio and television broadcast content, such as satellite broadcasting networks, terrestrial broadcasting networks or cable television networks, are subject to a **general authorisation regime** which aims to facilitate market access and strengthen competition. The Authorisation Directive did away with the system under which Member States issued individual licences to network and service providers as a means of regulating the communications sector. Member States can no longer demand that a service provider obtain explicit administrative authorisation before starting business. Authorities may ask to be notified of a company's intention to start business, in order to keep a register, but the service provider does not have to wait for a reply to this notification, nor should they be asked to provide more information than necessary for the identification of the company. The Directive stipulates that all relevant information on rights, conditions, procedures, charges, fees and decisions is to be published in a way that makes it easily accessible for all interested parties. Any changes should also involve prior consultation with interested parties. The Directive limits the type of conditions which may be included in general authorisations, in order to ensure service providers are treated in a non-discriminatory, objective, transparent and proportionate fashion by national regulatory authorities. It also ensures consumers' rights to universal service are protected and that competition within the communications market is strengthened through interconnectivity, while setting out the types of charges that can be levied on service providers.

The **difference between licenses and general authorizations** can be explained in a very simple and intuitive way: while the operators who need licenses must submit a request/application to the government and wait until the government takes its decision and –possibly- issues the license before they are allowed to start the activity for which the license itself is required, the operators who need an authorization submit a simple notification to the Government, informing the competent Ministry of the fact that he is starting running a business in the audiovisual sector. Once the notification has been transmitted, the operator may immediately start its business.

Typically, if the operator's business is directly linked to the management of scarce resources (such as frequencies or numbers), it will need the Regulator/Government to issue a license; on

the contrary, if the operator's business is related to a field where scarce resources are not involved, it will simply need a general authorization. License and authorizations may impose the same obligations to the operator: payment of lump-sums or annual fees, provision of information when required, possibility for the government or the regulator to impose sanctions or even to terminate the license/authorization if the operators fails to comply with the legal provisions and so on. The main difference, therefore, is the fact the authorization procedure allows that the operator to start immediately its business, thus contributing to a more effective liberalization of the market and eliminating a traditional barrier to the entry. In accordance to the EU Directive on Authorizations, the provision of audiovisual content or services nowadays requires only a general authorization and, for this reason, the number of content providers in the EU has increased a lot as compared to the beginning of the digitalization.

The separation of content (programming) and transmission licensing is important regardless of the details of the licensing process. In some Countries, like France, the regulator selects the channels that will be shown in each multiplex<sup>7</sup>. In other countries (like the UK, Italy and most of the EU Countries) the capacity is granted to the network operator, who then selects the channels to be carried in its network; of course the network operator's discretionality is limited by the "must-carry" provisions (see chapter 2.2), with which the Government or the Regulator ensure that the access to the networks and to the platforms is affordable (ideally cost oriented), non discriminatory and transparent.

Special rules are also drafted by law or regulation to grant specific benefits to specific categories of broadcasters, in particular to the PBS (which should always be present in any audio-visual platform<sup>8</sup>) and to the channels bringing forth the view of the minorities. In any case, rules are always needed to preserve public interest objectives such as promotion of diversity and plurality, effective public broadcasting service (PBS), universal and affordable access to broadcasting networks and platforms and to other information society services, objective, transparent, non-discriminatory licensing criteria and a fair and transparent licensing processes managed by an independent regulatory body.

### **3.2 The different roles and provisions for the network operators, content providers and service providers**

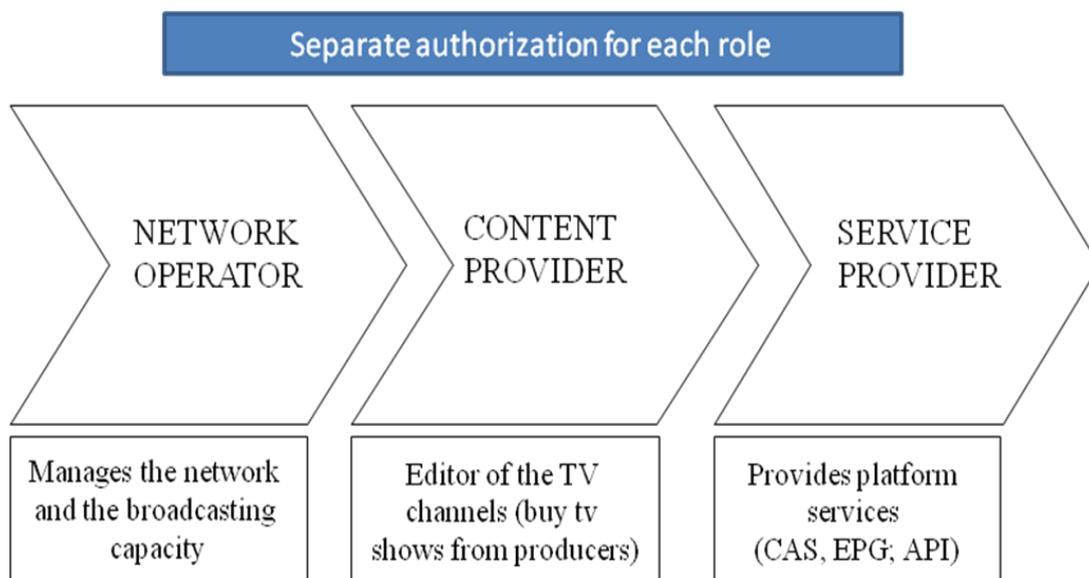
The evolution of the audiovisual sector and the introduction of digital television (available at the beginning through cable and satellite and now also on terrestrial frequencies), however, has made it necessary to update the definition of broadcasting and identify new roles for the players of the digital broadcasting activities, with different titles and conditions.

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<sup>7</sup> The way the selection is done is similar to the analogue licensing process.

<sup>8</sup> Working Group on Digital Terrestrial Television in EPRA Countries. Final Report. June 2nd, 2004. See at the official site of EPRA, the European Platform of Regulatory Authorities, at: [http://www.epra.org/content/english/press/papers/DTTWG\\_finalreport.doc](http://www.epra.org/content/english/press/papers/DTTWG_finalreport.doc)

- **network operators:** have the right to install, manage and furnish a network for electronic communications through which content and service providers transmit their content and offer their services. Specific commercial agreements will regulate the relations between network operators and content and service providers and specific provisions (such as the “must carry” ) ensure transparency and accessibility to all the operators;
- **content providers** have the editorial responsibility for the realization of broadcasting programmes (channels): any subject who is established in the EU may apply for authorizations, provided that the latter do not exceed the limit of 20% of available programmes;
- **service providers** furnish conditional access services through a network operator or information society services as defined by Directive 98/34/EC as amended by Directive 98/48/EC or electronic programmes guides (EPG).



The provision of a different title and role for the operator delivering content and services, has made it crucial to extend the **principle of technological neutrality** also to the audiovisual sector: according to such principle, the same rules should cover all services with audiovisual content irrespective of the technology used to deliver the content. In other words, the rules apply whether the content is delivered through satellite frequencies, cable or terrestrial frequencies. Platform neutrality ensures fair grounds for all audiovisual media service providers.

It is worth noting that the AVMS Directive overcomes the distinction between service providers and content providers, regrouping both activities under the definition of “audiovisual media services<sup>9</sup> providers”. However, in the case of IPA Countries, it is probably too early to adopt the

<sup>9</sup> Article 1(a) of the directive: “audiovisual media service” means:

iii. a service as defined by Articles 49 and 50 of the Treaty which is under the editorial responsibility of a media service provider and the principal purpose of which is the provision of programmes, in

definition of AVMS providers and it might be preferable (at least temporarily) to stick to the roles of content provider and service provider. This is what will be suggested in Chapter 4.

### **3.3 Procedure to assign the frequencies/MUX: beauty contest or historical channels?**

As said in the previous sub-chapter, DTT business value chain is now divided between three main players: content provider, network provider and service provider (in case of conditional access services - Pay TV). One of the most controversial issues of the digitalization process throughout Europe regards the procedure to select the operators which will be licensed and will manage the private networks/Multiplexes. The question, in other words, is whether the frequencies should be assigned through a competitive process or through a procedure that protects the so-called “Historical broadcaster of the Country, who may count on consolidated viewership base, experience in the terrestrial television sector, technical experience in the design and management of broadcasting networks, technical planning for broadcasting network deployment.

The EU framework does not offer any solution to this dilemma. The big advantage of running a competitive process is that such process might attract foreign investments and would select the best competitor in a transparent way. However, a competitive process might be won by a company that is not one of the existing operators in the market, thus jeopardizing the investments already done by the existing broadcasters in infrastructure, services and programs, their experience with the local broadcasting sector and their customers.

To avoid such potential risk, several EU Countries decided to adopt a provision in their digitalization strategies and in their legal framework stating that (some or all of) the licenses for the private networks/Multiplexes should be assigned to the existing national analogue operators (the “Historical operators”) in exchange for their analogue license. In other words, the main broadcasters who had managed a frequency in the analogue environment would be automatically assigned a multiplex in the digital environment, without any tender, auction or beauty contest. The advantage of such approach is that the investments of the Historical operators are protected, as well as their viewers.

If Regulators/Governments prefer not to assign automatically a frequency to the Historical broadcasters but intend to offer to them a special treatment anyway, adopting the beauty contest as a competitive procedure would be the best choice. In fact, a beauty contest procedure enables Public Administrations to exert a considerable influence on the assignment process ensuring that political goals are fulfilled. In case such option was considered, in fact, the broadcasters which have gained a certain level of audience or quality, may be recognized as “Historical channels” and may be given a priority in the auction. Besides, the “beauty contest” procedure ensures that

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order to inform, entertain or educate, to the general public by electronic communications networks within the meaning of Article 2(a) of Directive 2002/21/EC. Such an audiovisual media service is either a television broadcast as defined in point (e) of this paragraph or an on-demand audiovisual media service as defined in point (g) of this paragraph;

- iv. audiovisual commercial communication

the licensees which will manage Multiplexes are selected on the basis of the quality of their proposals, which must meet specific evaluation criteria defined by the Government or the national regulator:

- participation requirements (type of company, ownership structure, minimum experience and so on);
- form and deadline for the presentation of proposals;
- admission and exclusion conditions (bids can be rejected at any stage of the tender proceedings in the event they are not compliant with admission requirements and/or conditions of the tender). A pre-selection may also take place with the aim of verifying the suitability of candidates by checking for example their financial capability, legal form and ownership structure. Pre-selection does not aim at assessing the applicant's proposal but at making sure that the applicant is able to fulfill the obligations that would be imposed on him in case he would be awarded the license;
- criteria for the assessment of the application: for example applicant experience, financial aspects as solidity or credibility of the business plans, technical aspects as the technical quality of the project, technical experience of candidates, technical plan for the network deployment, adoption of technologically innovative solutions and so on;
- obligations of the rights holder to use frequencies (e.g. coverage obligations in terms of population to be covered in a certain period);
- criteria to form the evaluation Commission;
- criteria for positioning specific categories of broadcasters on Electronic Programming Guide, in particular to the PBS and to the channels bringing the view of the minorities.
- any asymmetrical conditions (for example in case the competition equilibrium in the DTT market has to be re-established).

Needless to say, the beauty contest would be related only to the issue of new licenses for the management of DTT licenses/Mux, which are scarce resources. On the contrary, no competition procedure would be needed for the provision of content or services, for which no frequencies (and no scarce resources) are needed.

### **3.3.1 Case study: different views on the selection of the operators who should be assigned the frequencies/MUX and their TV channels. The Italian and French approaches**

The procedure that should be applied in order to select the operators which will be licensed and will manage the private networks/Multiplexes and their content (the channels) has been one of the most controversial issues of the digitalization process throughout Europe.

Several studies have been conducted on the matter<sup>10</sup>, revealing that Countries in Europe are divided between:

- a. those (France, Belgium (French Community), Germany, Sweden, Finland, Slovenia) chose to select directly the line-up of channels via a beauty contest or public procedures similar to those used in the analogue environment – or also via the direct allocation of frequencies to the broadcasters. In other words the regulator chooses, through separate but parallel public procedures, the network operators who will manage the frequency and run the MUX and the content providers who will provide the channels/content to the MUX. No agreements between the network operators and content providers are needed.
- b. those (Czech Republic, Latvia, Slovakia, Denmark, Italy, UK, Norway, Portugal) allowed the multiplex/network operator to manage the capacity and hence play a role in selecting channels for the line-up and behave as gate-keeper. In this case content licensees must however still negotiate with the network operator for access and distribution, and public policy measures such as “must carry” have to be adopted in order to protect pluralism, diversity and fair access to the network or to reserve capacity for special categories of broadcasters.

In order to better explain the approaches taken by the Countries who chose the first or the second option, a short overview of the situation in France and in Italy is provided:

- In **France**, the audio-visual regulator, Conseil supérieur de l’audiovisuel (CSA), published on August the criteria for the selection of the channels for DTT. All channels already broadcasting in analogue before that date automatically received authorization to broadcast in digital: public channels France 2, France 3, France 5, Arte; and private channels TF1, M6, Canal+ (pay). In October 2002 the CSA had selected through a comparative procedure, the 23 national TV channels that went into shaping the DTT lineup. 5 new content providers (AB, Bolloré, Lagardère, NRJ, Pathé) had access to the new platform, that side by side with the historical national TV channels formed the following offer:
  - 16 FTA national channels
  - 15 national PAY TV channels

The CSA had also established the allotment of the channels into 6 MUX, 2 of which exclusively dedicated to the PSB. At the same time French Authority introduced the obligations of keeping separate the activities of content providers and MUX operator. For this matter, content providers of the same MUX have joined in Consortiums which have subsequently submitted to the CSA the request for the authorization of operating the MUX.

In January 2004, following a decision by the French Government not to launch 2 out of the 8 public TV channels planned, the CSA had chosen to group all PSB channels in the same MUX and open a new comparative procedure to allocate the exceeding capacity.

A new comparative procedure had to be opened in October 2004, as the State Council, after the request by TF1, has annulled 6 out of the 23 DTT broadcast authorizations.

In 2005 the Ministry of Economy announced that the MPEG-4 (H.264) compression standard must be used for HDTV services on any terrestrial channel both pay and public.

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<sup>10</sup> See EPRA Paper 2010/13 for the 32nd EPRA Meeting, Belgrade, 6-8 October 2010: Regulatory and Licensing Models for DTT: [www.epra.org](http://www.epra.org)

MPEG-4 is already obligatory for Pay TV operators whilst public service operators can continue to use MPEG-2 for standard definition digital terrestrial services.

In July 2005 the CSA has issued 8 (6 + 2 new ones) authorizations for 4 FTA channels (BFM TV, I-Télé, Europe 2 TV and Jeunesse TV), and 4 pay TV channels (Canal J, Canal+ Cinéma, Canal+ Sport and Planète).

A further decision has reorganized the MUX lineup: all FTA channels on MUX 2 and all PAY TV channels on MUX 3. This more homogeneous organization of the MUX will enhance efficiency of statistical multiplexing in an environment with a double coding system (MPEG-2 and MPEG-4). France switch off was completed in November 2011. Total population coverage at switch off is 97,3%. DTT receivers are now in 23 million households (84.5%) of which 16.6 million have iDTV's and 10.8 million have DTT set top boxes

In September 2011 the French regulator CSA, has proposed the immediate adoption of the DVB-T2 and MPEG-4 standards for all new DTT channels. DVB-T2 will allow broadcasters to air four or more HD channels over a single multiplex and together with MPEG-4 will favor the development of HD, which is expected to be supported by 95% of French TV sets by 2015.

The assignation of the digital dividend which is destined to mobile broadband services took up in 2011. License to the use of 800 MHz band has been granted to Bouygues Telecom, Orange and SFR. Total income (800 MHz and 2,6 GHz bands) has been €3,5 billion.

In October 2011 the CSA launched a call for applications for six HD channels to broadcast on the French DTT system. The channels will broadcast in DVB-T/MPEG-4 over the R7 and R8 multiplexes. The deadline for applications was the 3rd January 2012 with the candidates selected in mid-March. The formal licensing process will be completed at the end of May 2012. The second half of 2012 should hence see the launch of 6 new HD channels for which French Authority CSA has already announced a beauty contest. Licenses should be awarded in May 2012. After that the HD offer will encompass 11 TV channels.

In 2012 it is foreseen an acceleration of the development of "hybrid" OTT-TV offers (Over-the-Top TV), for which the most important broadcasters have already started testing with interactive services delivered via the Internet on connected TV sets with HbbTV technology.

- In **Italy, Law 66 of 2001** paved the path for the introduction of digital terrestrial television by defining a totally innovative approach: allowing the trading of frequencies between broadcasters in order to allow the broadcasters interested in launching DTT services to get extra capacity. It also introduces the distinction of content providers, service providers, and network operators and set a tentative switch-off date. The rationale of the strategy was to assign, on a 1 to 1 basis, one Mux to each holder of a license for analogue broadcasting (the "Historical channels")<sup>11</sup>.

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<sup>11</sup> The logic of the Italian approach was to protect the investments made by the broadcasters and their customer base, thus allowing a smooth and fast transition to the DTT. Unfortunately, however, Italy has always had a vast number of national and local broadcasters. Their decision to move to DTT forced Italy to use also some frequencies not allocated by the GE '06 plan, thus creating some problems of interferences with the neighboring Countries.

The Italian regulatory authority (AGCOM) published in 2001 its Decision No. 435/01/CONS which defined the regulatory framework for the start-up of DTT in Italy.

During 2003 and the early months of 2004 the companies interested in developing new networks started purchasing a number of local television broadcasters and the rights to use their frequencies. Competition on this front drove up prices for frequencies, which in some cases rose as high as € 1 per person residing in the coverage area.

In 2005 Mediaset and Telecom Italia Media launched their pay-per-view offers using the DVB-T (Digital Video Broadcasting -Terrestrial) standard. This service was based on a prepaid card which allowed the viewer to access different contents, upon the payment of each event.

In 2007, Law 29 novembre 2007 n. 222 set at the end of 2012 the final switch-off date and defined a "phased approach" based on a gradual transition of "digital island". The transition plan is summarized in the following figure:

The region of Sardinia, (the first Italian territory where transition to digital was completed - October 2008) prior to the switch-off, had 16 local TV broadcasters. Following the transition to the new transmission technique, in Sardinia there counted 18 multiplexes of local operators, for total of 64 TV programmes and 5 radio channels. In summary, the switch off increased significantly national and local channels that TV viewers can receive as well as pluralism and competition in the sector.

In 2010 AGCOM resolution n. 300/10/CONS defined the Italian frequency plan for DTT by selecting SFN for the 25 national multiplex.

Guarantees and must carry provisions aimed at ensuring pluralism, transparency and access to the network are set in AGCOM Decision 353/11/CONS:

- 1/3 of the capacity must be reserved for local channels (art 22)
- Nobody may control more than 20% of the channels available in the national territory (art 22)
- Nobody may be assigned authorizations to run at the same time national and local channels (art 22)
- Operators owning licenses or authorization of different types must be obliged to keep their accounts separated (artt 24 and 25)
- Agreements between network operators and content providers must be fair, non discriminatory and transparent. AGCOM will monitor the agreements and intervenes to solve possible disputes (art 26)
- After the switch-off, national network operators who are assigned 5 must handover 40% of the transmission capacity of the fifth multiplex to independent content providers. The price of the capacity must be cost-oriented. Similarly, local network operators must handover at least 2 channels (min. capacity 6 Mps) in their MUX to local broadcasters who have not been awarded the MUX. Also in this case, the price for the capacity must be cost-oriented
- The PBS must be assigned at least a MUX for audiovisual broadcasting and 1 MUX for audio broadcasting (art 39 of the AGCOM Decision 435/01/CONS)

At the end of 2011 the DTT penetration in the Italian households was about 87%, the number of DTT receivers sold in Italy since 2004 had reached 55 millions units and the audience of the DTT platform had reached almost 70%.

September 2011 has seen the closing of the bid for the granting of the "external" Digital Dividend (800 MHz band) to TLC operators. Income has been close to €4 billion.

June 2012 shall see the completion of the transition to DTT with the switch off in the remaining 6 regions.

In April 2012 the Italian government has decided that all DTT tuners sold in Italy from 2015 onwards must include the DVB-T2 standard, both for stand-alone set tops and for IDTVs. For consumers, there will be a need to buy new tuners, although a number of DVB-T channels will remain on air for some time.

The analysis of these 2 Countries situation shows that the approach taken by France ensures pluralism and access to the network since the line-up of channels in each multiplex is chosen by CSA. However, any event or any technological improvement which may change the line-up of the channels requires a formal intervention of the CSA, leaving no space for negotiations to market players and no possibility for the multiplex operator to organize more efficiently its business.

The Italian approach, on the contrary, leaves a lot of space to the multiplex operators and the channel providers to get agreements and exploit their business. This choice, however, comes at a cost: pluralism, transparency and access to the network must be protected by the regulator with a formal intervention such as the AGCOM Decision 353/11/CONS.

Both options carry advantages and disadvantages. The choice is left to the Government/regulator of each Country. It should be clear, however, that such choice should be as transparent and non discriminatory as possible and, ideally should be mentioned in the strategy. Once again, therefore, this would be an important issue to add in an update of the IPA Countries digitalization strategies.

### **3.4 Digital dividend**

A detailed description of the digital dividend and how it may be used/allocated is available in the report for activity WP4 – A2 "*Strategic roadmap to digitalization*". In this report we'll simply summarize the conclusions of the WP4/A2 report.

Availability of radio spectrum is a clear enabler for economic and social growth. If the digital dividend is managed efficiently, the range of uses to which it can be applied will be wider, with potentially more wireless applications having efficient access to this valuable resource. Of all the applications, the category of electronic communications is the most promising. These applications include wireless broadband communications providing ubiquitous broadband access for all, additional terrestrial broadcasting services and mobile multimedia applications.

In social terms, making the digital dividend available for broadband, alongside spectrum in other bands, can help close the digital divide.

DVB-T2 is a facilitator for digital dividend because it allows better spectrum efficiency compared to old DVB-T. Such spectrum efficiency shall be used to facilitate the implementation of digital dividend.

In the Radio Spectrum Policy Programme (RSPP) the Member States and the European Parliament decided to mandate the opening up of the 800 MHz throughout the EU by 1 January 2013, on the basis of the conditions of se specified in the existing EC Decision to harmonize the 800 MHz band.

By 1 January 2013, Member States shall carry out the authorization process in order to allow the use of the 800 MHz band for electronic communications services. Many European countries (Sweden, Germany, Italy, France, etc.) have already conducted the auctions for the 800 band in order to make available such band for broadband mobile services.

It would be beneficial, therefore, if also the EU Neighboring Countries planned how to use the digital dividend and how to conduct the auctions, possibly including these decisions in their digitalization strategies..

### **3.5 Single Frequency Networks or Multi Frequency Networks?**

The description of the Single Frequency Network (also referred to as SFN) and the Multi Frequency Network has been presented in the report for activity WP4 – A2 “*Strategic roadmap to digitalization*”.

It appears that all the strategies in the IPA Countries are proposing the adoption of Single Frequency Networks’ standard for the digitalization process. Such proposal is fully supported by this report, considering the advantages that the Single Frequency Network (also referred to as SFN) technology offers in terms of spectrum efficiency: with SFN all transmitters utilize the same frequency and exploit the property that if the SFN is properly designed, the received signal components do not produce ISI (Inter-Symbol Interference) but constructively add in the receiver. This effect, usually referred to as “SFN network gain”, can be obtained if the SFN transmitters are not too far apart to avoid that the delays of the received contributions exceed the guard interval.

Furthermore, SFN allows for a sharp increase of the spectrum efficiency, since the frequency reuse factor is equal to one in case of SFN. In particular, the SFN approach may be favourable for large service areas (however taking account of the limitation of the maximum achievable network size) and where the same frequency is available across such a large area.

Large SFNs are not suitable for the small local broadcasters because the mux stream transmitted from each SFN transmitter must be identical over the whole service area in order to enable signals to be added constructively at the receiver, so for the small local coverage small SFN networks can be used or just single transmitter per targeted service area. DTT network configuration needs to be optimised with regard to a number of parameters, such as the size of the service area, terrain, population distribution, availability of transmission infrastructure and in particular synchronization of all transmitters in a given SFN network should be performed carefully. COFDM systems have been designed to take benefit from echoes, as long as they enter the guard interval. This condition requires time synchronization of the various transmitters, since the same symbol has to be emitted at the same instant from several places, whatever the time delay

introduced by the distribution network. Signals from different transmitters add constructively at the receiver as far as the mutual delay is within the time length of the guard interval. Otherwise, a specific kind of self-interference arises. It follows that, in principle, a longer guard interval ( $T_g$ ) allows to build larger SFNs.

Furthermore, it is often necessary to undertake a large scale frequency re-arrangement to free up such frequencies for national SFNs. Any frequency re-arrangement has to be in conformity with rules for modification of GE06 Plan, as given in Article 4 and 5 of the GE06 Agreement: the basic principle of the GE'06 Agreement and Plan is that the items (allotments and assignments) recorded in the Plan are internationally coordinated and protected so they can be put into operation as such under GE'06 and RR procedure. Prior to any change to the characteristics of an assignment or allotment appearing in the Plan, or addition of a new assignment or allotment to the Plan, an agreement through the coordination procedure should be sought from affected administration, according to the GE'06 Agreement

When a new co-ordination request concludes positively, the item co-ordinated can become part of the Plan with the same rights. In case of a new co-ordination request, if an agreement is not reached among the concerned administrations, administrations can invite ITU to assist in solving the controversy among the ITU State Members. This means that GE06 Agreement allows some flexibility and that evolution of GE06 Plan can accommodate new frequencies per allotment, or even new transmitters (assignments), but in the same time does not allow putting into operation any new assignment prior to the successful conclusion of the coordination procedure with concerned administrations under the provisions of GE'06 Agreement and RR. The procedure for modifications to the GE-06 plans and putting into use assignments is given in Article 4 and 5 of Geneva '06' Agreement. ([www.itu.int/ITU-R/terrestrial/broadcast/plans/ge06/flowchartsGE06/article%20%20flowchart-BC-ver5.8-final.pdf](http://www.itu.int/ITU-R/terrestrial/broadcast/plans/ge06/flowchartsGE06/article%20%20flowchart-BC-ver5.8-final.pdf)).

The European Union (EU) has been encouraging SFN deployment despite resistance from some member states, holding workshops on the subject, while the European Broadcast Union (EBU) has published guidelines for implementation. Several European countries have implemented SFN networks. For example the national DTT networks utilize mainly SFN. Finnish DTV operator DNA has become one of the first in the world to set up a DVB-T2 terrestrial infrastructure using a single-frequency network (SFN) configuration. Most European operators are working on SFN deployment, including Portugal Telecom, which has been implementing SFN across a national network comprising more than 100 transmitters.

### **3.6 Numbering plan (LCN)**

One of the most important standards that any national regulatory authority should include and adopt in the transition process from analogue to digital television, particularly with terrestrial television, is the so-called LCN (Logical Channel Number) policy or automatic channel numbering plan, for free-to-air and subscription channels, with procedures for attributing numbers to media service providers authorised to transmit audiovisual content and the relevant conditions of use.

A specific numerical positioning in a platform, rather than a specific numbering range, as we will see shortly, is clearly of critical importance in channel positioning strategy, particularly in terms of sales and communication with the market (potential viewers and advertising investors); a channel positioned at number 10 will obviously have broader visibility and therefore a greater possibility of attracting viewers than a channel positioned at number 87 on the same decoder or television.

It is therefore necessary to establish precise criteria, preferably agreed on by the market players (network operators, content or audiovisual media service providers and content providers that are independent from the multiplex and distribution platform owners), which should then be adopted in a specific policy by the relevant authorities (the Government or, more correctly, the national regulator). Failure to do so would sooner or later lead to a series of conflicts over reception of the distributed channels. An example would be the case of two channels occupying the same number; at the end of the tuning process, the user would be forced to choose which of the two channels to allocate to a given position.

Considering the problematic nature of these issues (which is due more to the need to reconcile the various interests of the parties involved than to intrinsic technical complexities), any decision made without an established policy would be easily challenged in a court of law; the operators, on their part, would presumably not be capable of adopting unanimously accepted forms of self-regulation. This has been the case in Italy, where the initial lack of a clear regulatory plan has led to various broadcasters taking legal action against others to safeguard their own interests; these conflicts, for obvious reasons, have caused increased uncertainty, confusion and delays in the digitalisation process.

The proper definition of a regulatory plan for both unencoded and subscription channels should therefore ensure compliance with equal, transparent and non-discriminatory conditions, and should specifically guarantee:

- ease-of-use of the system: all televisions should have a graphic interface displaying at least a list of all national and local channels together with the number assigned to each channel through the LCN descriptor, which facilitates the use of decoders by the users themselves;
- respect for users' habits and preferences: individual users' rights to reorganise channels according to their own preferences should be protected, together with the possibility for network operators to introduce additional services geared towards enhanced product enjoyment, particularly for subscription services.

Technically speaking, the digital TV standard (DVB – Digital Video Broadcasting) offers an important tool to Network/Mux operators through its signalling channel called Service Information (DVB-SI). Such a signalling channel allows, in addition to other opportunities, the possibility to communicate to receiving equipment and remote controls the number assigned to each DTT radiated channel. The DTT receivers can automatically order the DTT channels by exploiting a particular identifier/field defined in the Mux transport stream called Logical Channel Number (LCN).

The order of DTT channels is managed by the Network/Mux operators which can insert in the transport stream the correct LCN identifier corresponding to the number assigned for each digital

service. As a result, all DTT receivers (through appropriate software) allow the viewer -when installing the DTT receiver for the first time- to automatically order all DTT received channels according to a pre-defined list (the so-called “DTT numbering plan”).

It is not up to this report to define which category of channels should go to each group of channels, but it should be clear that any regulator should be given the power to define the technical details of the numbering plan: whether the list will have 3 digit or 4 digit numbers, whether there will be empty spaces between the groups of channels or whether the channels will have a consecutive number, starting from 100 onwards, with no empty slots, and so on<sup>12</sup>.

However, the following solution, proposed by many stakeholders in various EU Countries, might be able to accommodate the interests of all the broadcasters present in the market:

- 1) an initial numbering range (1-99), in which the first, single digit, numbers are reserved for the traditional broadcasters, followed by the 2 digit numbers (up to 99), allocated to the various local broadcasters in accordance with users’ habits and programme quality, i.e. prioritising those broadcasters whose programming features locally relevant content, both in the form of daily information as well as highlighting and promotion of tourist features.

An error to be avoided, in accordance with the principles described above, is the allocation of positions to local TV stations on the basis of economic or corporate criteria (e.g. their number of employees or amount of turnover in recent years) rather than factors such as viewer ratings. Despite potentially high statistical error margins, these provide the only data that is certified and recognised by both the market (media centres and advertising investors) and broadcasters, who although they may at times question the methods used to measure ratings, nevertheless analyse and use them for planning their own programming.

An ordering based exclusively on economic criteria would end up, for example, privileging broadcasters whose programming consists mainly of telesales, since the turnover of the companies they represent will obviously be higher than that earned through programming with a more specific focus and which focusses on the local area.

- 2) a second numbering range (100 – 199), in which the “new” digital general viewing and/or entertainment channels will be located;
- 3) a third range (200 – 299) allocated to sport and football channels;
- 4) a fourth range (300 – 399) for film channels, both pay TV as well as pay-per-view for first screenings or films specifically for an adult audience;
- 5) a fifth range (400 – 499) in which lifestyle and culture channels (documentaries, history...) will be located;
- 6) a sixth range (500 – 599) allocated to news and information channels;
- 7) a seventh range (600 – 699) providing space for programmes for children and young people;
- 8) an eighth range (700 – 799) for music channels;
- 9) a ninth range (800 – 899) in which all national and local broadcasters that were not located in the first numbering range can be placed.

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<sup>12</sup> In Italy, for example, the numbers starting with 1XX are assigned to generalistic channels. Since the generalistic channels are more or less 60, the numbers from 61 to 99 are currently not assigned and are left for content providers that may decide in the future to create a new generalistic channel.

Number allocations should be part of the same procedure by which the relevant authority grants broadcasting authorisations, or, for broadcasters that are already authorised, should be made through a separate procedure that is supplementary to authorisation; in particular, a specific time limit should be set (not greater than 30 days) for the recipient of the authorisation or number allocation to begin broadcasting, otherwise the competent authority can take steps to revoke the allocated LCN.

Of course the DTT ordering should not be defined in receiver specifications but through the on-air signal that carries the numbering information through the LCN identifier. The DTT receivers should be able to recognize the number assigned to each DTT channel when performing channel tuning. The automatic channel ordering is proposed to the final viewer as an option on first installation or re-installation (factory reset) or during the release phase of the software which introduces such performance.

### **3.7 Electronic programming guide and Interactive programming guide**

Electronic program guides (EPG) is a continuously updated menu which provides users of television, radio, and other media applications to navigate, select and view (or listen to) content using a remote control, mouse, keyboard or other input device. Information on the broadcast programme or schedule is constantly updated too.

The guides may be interactive or no interactive. Non-interactive electronic program guides (EPG) are typically available for television and radio, and consist of a digitally displayed, non-interactive menu of Broadcast programming scheduling information shown by a DTT, cable or satellite TV provider to its viewers on a dedicated channel. EPGs are broadcast by specialized video character generation (CG) equipment housed within each such provider's central television distribution facility. By tuning into an EPG channel, a menu is displayed that lists current and upcoming television programs on all available channels and the viewer may select the channel he wishes to watch directly from the guide, after navigating into it.

A more modern form of the EPG, associated with both television and radio broadcasting, is the interactive [electronic] program guide (IPG, though often referred to as EPG[2]). An IPG allows television viewers and radio listeners to navigate scheduling information menus interactively, selecting and discovering programming by time, title, station, or genre using an input device such as a keypad, computer keyboard, or TV remote control. Its interactive menus are generated entirely within local receiving or display equipment using raw scheduling data sent by individual broadcast stations or centralized scheduling information providers. Television-based IPGs in conjunction with Programme Delivery Control (PDC) technology can also facilitate the selection of programs for recording with digital video recorders (DVRs), also known as personal video recorders (PVRs). For television, IPG support is built into almost all modern receivers for digital cable, digital satellite, and over-the-air digital broadcasting. They are also commonly featured in

digital video recorders such as TiVo and MythTV. Higher-end receivers for digital broadcast radio and digital satellite radio commonly feature built-in IPGs as well.

Demand for non-interactive TV electronic program guides—television channels displaying listings for currently airing and upcoming programming—has been nearly eliminated by the widespread availability of interactive program guides for television. Television-based IPGs provide the same information as EPGs, but faster and often in much more detail. When television IPGs are supported by PVRs they enable viewers to plan viewing and recording by selecting broadcasts directly from the EPG, rather than programming timers.

The aspect of an IPG most noticed by users is its graphical user interface (GUI), typically a grid or table listing channel names and program titles and times: Web and Television-based IPG interfaces allow the user to highlight any given listing and call up additional information about it supplied by the EPG provider. Programs on offer from subchannels may also be listed. Typical IPGs also allow users the option of searching by genre, as well as immediate one-touch access to, or recording of, a selected program. Reminders and parental control functions are also often included. The IPGs within some DirecTV IRDs can control a VCRs using an attached infrared emitter that emulates its remote control.

Standards for delivery of scheduling information to television-based IPGs vary from application to application, and by country. Older television IPGs like Guide Plus+ relied on analog technology (such as the vertical blanking interval of analog television video signals) to distribute listings data to IPG-enabled consumer receiving equipment. In Europe, the European Telecommunications Standards Institute (ETSI) published standard ETS 300 707 to standardize the delivery of IPG data over digital television broadcast signals. Listings data for IPGs integrated into today's digital terrestrial TV and radio receivers is typically sent within each station's MPEG transport stream, or alongside it in a special data stream. The ATSC standard for terrestrial digital TV, for instance, uses tables sent in each station's PSIP. These tables are meant to contain program start times and titles along with additional program descriptive metadata. Current time signals are also included for on-screen display purposes, and they are also used to set timers on recording devices.

Also in this case, the identifications of the standards for the EPG (or IPG) should not be left to the market (at least not totally): the regulator should set some specifications and criteria that all each network operator and/or service provider will have to comply with in order to create an EPG/IPG compatible with the guides provided by other operators/providers.

The national regulators or the Governments might therefore include some specifications about the EPG (or IPG) in their strategy.

### **3.8 Common interface**

The development of digital television (on satellite frequencies, terrestrial frequencies and cable) and, most of all, the introduction of Pay-TV and conditional access platforms, has generated a wide number of encryption tools, aimed at enabling only the viewer identified with a specific decrypting code to watch the desired programme.

The problem with encryption is that each service provider offering Premium content through Pay-tv channels may use an encryption code that differs from the others. Consequently, the consumer who wishes to view channels available on more than one platforms, encrypted differently, might have to buy a decoder for each encryption system.

This is one of the problems that any NRA should avoid: consumer behaviour statistics show that when there is more than one decoder available in the market, the consumer has more problems in changing service providers. In other words, the consumer will likely prefer to remain with his traditional service provider, even though he is not very satisfied with the channels offered in the bouquet, rather than buying a second decoder to watch different channels. The availability of more than one decoder in the market, therefore, might jeopardize competition and hinder the possibility for the consumer to move from a service provider (i.e. from a bouquet of channels) to another.

The solution to such problem is the adoption of the so-called “Common Interface”, a defined standard that enables the addition of a conditional access module (CAM) in a DTV Receiver, to adapt it to different kinds of cryptography. It is also known as DVB-CI for Digital Video Broadcast Common Interface. The interface allows broadcasters to use modules containing solutions from different suppliers in the same broadcast system, thus increasing their choice and anti-piracy options. The interconnect is formed between a host and a module:

- host : a device where module(s) can be connected; for example, an Integrated receiver/decoder (IRD), a VCR, a PC ...
- module : a small device, not working by itself, designed to run specialised tasks in association with a host; for example, a conditional access sub system, an electronic program guide application module, or to provide resources required by an application but not provided directly by the host.

Examples of a host are a digital television or digital set-top box. The normative DVB-CI standard EN 50221 was defined in 1997 by CENELEC, the European Committee for Electrotechnical Standardization, and allows many types of modules; however, only the Conditional Access Module (CAM) has found popularity because of the Pay TV market. Typically, the host sends an encrypted MPEG transport stream to the CAM and the CAM sends the decrypted transport stream back to the host. The CAM often contains a smart-card reader.

The creation of such standard and its implementation, eventually resulting into the obligation to include a DVB-CI in all digital television terminals<sup>13</sup>, has taken several years to the EU Member States. It would be advisable, therefore, to introduce it immediately, either in the new Law on IMC

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<sup>13</sup> The increased proliferation of television sets with an integrated digital tuner (iDTVs) can ease the task of digital conversion. Already many of the major consumer electronics manufacturers only sell television sets with an integrated digital tuner which thus reduces the number of television sets that need to be converted. In Europe, only France and Italy have mandated digital tuners in television sets. Since March 2008, retailers in France have been obliged to sell television sets with a digital tuner while in Italy this requirement has come into effect in June 2009. In addition, all HD-ready television sets sold in France must include a digital tuner and an HD decoder as of December 2008. While it has not mandated digital tuners, the United Kingdom has benefited from the decision by several major retailers to stop selling analogue television sets. It should be noted that even as late as 2004, for every one DTT receiver sold, two analogue television sets were purchased. The United States has made mandating digital tuners a cornerstone of its digital transition policy. Since March 2007, American manufacturers have been obliged to include a digital tuner in all television sets.

and digitalization, or in a regulation from IMC, before the digitalization process starts, so that the producers of decoders and TV-sets may include the Common Interface devices in the hardware and avoid generating conflicts that would be harmful to the consumers.

The EU market experience also suggests mandating digital tuners in television sets. In fact, according to relevant statistical data, this has stimulated and accelerated the digitalization process and since its introduction the number of receivers integrated in the TV-sets has doubled.

### 3.9 Compression standards

As regards the compression standard to be adopted in the digitalization process, it appears that all the strategies in the IPA Countries are proposing the adoption of MPEG 4 standard. Such proposal is fully supported by this report, considering the advantages that the MPEG 4 technology offers in terms of efficiency, especially if adopted together with DVB-T2 technique.

To allow for better use of spectral resources, the DVB consortium in 2009 issued specifications for DVB-T2 technologies as an extension of the existing standard DVB-T. This resulted in DVB-T2 experiencing a 30-50 % increase in efficiency over DVB-T. DVB-T2 is, however, not designed to replace DVB-T in the short to medium term; rather it is expected that the two standards will coexist for some years.

Testing of the DVB-T2 specification has begun in the United Kingdom and Italy. In June 2008 the British Public Broadcaster (BBC), together with the broadcast network operators Arqiva and National Grid Wireless, made the first DVB-T2 test transmission with three HD channels broadcasted in one multiplex. In Italy, an operator (Europa 7<sup>14</sup>) has recently launched commercial operations on a Mux in August 2010 based on DVB-T2/MPEG-4 technology. Europa 7 has launched a pay-TV offer based on DVB-T2 offering eight HD contents to the final user with a monthly subscription between 7 and 20 Euro per month. The decoder based on DVB-T2/MPEG-4 technology is distributed directly from Europa 7 at a price of about 120/130 Euro. In Finland, the DNA Oy operator has obtained a license to operate two DVB-T2 multiplexes. The launch has taken place recently following a trial period that took place in the city of Lahti in December 2009. Some other countries, such as Sweden and Austria<sup>15</sup>, have now made the relevant announcements or have even already deployed DVB-T2 networks.

The following table summarizes the Mux capacity as a function of the compression technology adopted and the type of television programmes (SD or HD):

Compression	SD channels	HD channels
<b>MPEG-2 + DVB-T</b>	4/8	1
<b>MPEG-4+ DVB-T</b>	8/12	2/3

<sup>14</sup> <http://www.europa7.it>

<sup>15</sup> [http://www.dvb.org/about\\_dvb/dvb\\_worldwide](http://www.dvb.org/about_dvb/dvb_worldwide)

**MPEG-4 + DVB-T2**

14/18

4/6

The results of the table show that the combination of MPEG-4 and DVB-T2 offers the possibility to broadcast 14 to 18 SD television channels or 4 to 6 HD television channels from a single Mux. The cost of DVB-T and DVB-T2 transmission equipment is provided in the following table:

	MPEG-2 + DVB-T	MPEG-4 + DVB-T2
<b>Modulator</b>	10.000 – 12.000 Euro	12.000 – 14.000 Euro
<b>Encoder</b>	7.000 – 9.000 Euro	10.000 – 12.000 Euro
<b>Multiplex</b>	8.000 – 15.000 Euro	10.000 – 20.000 Euro
<b>Chassis for 6 encoders</b>	5.000 – 7.000 Euro	5.000 – 7.000 Euro
<b>SFN adaptor</b>	6.000 – 8.000 Euro	8.000 – 12.000 Euro

According to the table shown above, the price of DVB-T2/MPEG-4 equipment is not significantly higher than DVB-T/MPEG-2, presenting the financial aspect of DVB-T2/MPEG-4 as an advantage.

DVB-T2/MPEG-4 receivers have been made available in select European retail markets as of 2010. Several consumer manufacturers are currently producing and distributing such equipment even if sales are still limited. DVB-T2/MPEG-4 receiver equipment normally supports both HD and SD and incorporates two tuners; one for DVB-T reception, and the other for DVB-T2 reception. Prices range from 60 Euro to around 150 euro for DVB-T/MPEG-2 receivers. For DVB-T2/MPEG-4 receivers, prices range from about 120 Euro to a maximum of about 220 Euro. The cost of transmission equipment is reasonable when compared to MPEG-2/DVB-T equipment costs. However, receiving equipment costs are still quite high when compared to MPEG-2/DVB-T but the cost trend (about 50% cost decrease for equipment every two/three years) shows that receiving equipment will become more affordable within two years. By 2013, it is foreseen that the cost of receiving equipment should drop to about 60-100 Euro.

### 3.10 Role of the PSB

National broadcasters funded out of the public purse have historically formed a vital component of the broadcasting sector in most Countries. In the past, a central broadcasting organization supported by public funding has often been the only national broadcast medium and such organizations have acquired such importance over the time that nowadays they continue to occupy a dominant position in much of the world, although the transition from analogue to digital broadcasting is allowing a greater number of operators to enter the market.

In many Countries, the commitment to publicly-funded broadcasting remains strong and this is reflected in public support, government funding and –often- viewing statistics. There are a num-

ber of good reasons for this. These broadcasters have the potential to ensure that quality programmes covering a wide range of interests, and responding to the needs of all sectors of the population, are broadcast. They can (and should) provide an effective complement to commercial services, satisfying informational needs and interests that the market does not respond to. At their best, they ensure diversity in programming and make an important contribution to satisfying the public's right to know. They also serve as a focal point for promoting a sense of national identity and fostering a democratic and rights-respecting culture.

The primary mission of public broadcasting that of public service, speaking to and engaging as a citizen. The British model (the BBC) has been widely accepted as a universal definition. The model embodies the following principles:

- universal accessibility (geographic): each citizen, at least as a principle, should be able to watch the PSB channels from any location in the Country
- universal appeal (general tastes and interests)
- particular attention to minorities, ensured through programmes that should be aimed at preserving the identity of each of the minorities in a Country
- protection of minors, ensured through the delivery of programmes which are specifically suited for children and minors and the ban of programmes that might jeopardize the moral or psychological development of the child. This should happen in particular at specific moments of the day.
- contribution to sense of national identity and community
- distance from vested interests of the government, parties and private interests
- direct funding and universality of payment
- delivery of "quality" programmes, which should aim at educating and raise the cultural level of the population, regardless the viewership statistics
- particular attention to independent production, that should be preferred to commercial production

The aforementioned goals and principles may be entrusted only to publicly funded broadcasters and not to commercial operators; since they go righteously after profit, in fact, the commercial operators have little interest in covering areas not densely populated and prefer to broadcast mainly programmes aimed at ensuring viewership, regardless of their quality and the educational target.

Of course some controversy exists over the exact role of public broadcasting. There are two competing schools of thought. The first school is that public broadcasting should democratically mirror the composition of the society it serves. This would provide programming to reach all constituencies, which could be formed on the basis of race, age, intelligence, educational background, social class, interests, and so forth. Those critical of this point of view have pointed out that such democratic, market-oriented programming can be found on any niche channel. The opposing view holds that public broadcasting should be focused on high-minded programming that viewers are unlikely to encounter on other broadcasts. This programming would include focus on the arts, literature, history, and philosophy, which are deemed important yet underrepresented. Controversy exists about what exactly constitutes meriting inclusion on such a high-minded broadcast, with many claiming there is too much potential for white, middle class bias.

In most western Countries, however, the controversy is solved by the fact that the PBS is fulfilling both roles, trying to offer programmes that would reach the whole population, including minorities, keeping an eye on the quality and educational level of the programmes themselves and, in any case, offering a viable alternative to commercial, network television.

Of course, the rapid proliferation of commercial and other forms of broadcasting is posing a new and dynamic challenge to publicly-funded broadcasters. Technological developments have completely altered the nature of broadcasting with households in many Countries now having access to tens, if not hundreds, of channels. Digital technology allows limited frequency ranges to accommodate far more signals, opening up the airwaves to ever increasing numbers of broadcasters. The ongoing development of satellite and cable networks has also had a significant impact on access to broadcasting all over the world. These developments are complemented by the rapidly falling costs of starting up a broadcasting enterprise. The Internet promises even more exciting and profound changes and virtually everyone who has access to fairly basic equipment will effectively be in a position to operate as a broadcaster in the near future.

These developments pose a particular threat to broadcasters, which remain under government control. Many citizens prefer to tune in to independent commercial broadcasters, where they are available, than to a national broadcaster, which is often a government mouthpiece. This can lead to a significant erosion of support for publicly-funded broadcasting, to the longer-term detriment of the greater public interest.

Given these developments, it is natural that the question of the extent and nature of direct public support for national broadcasters is coming up increasingly frequently and some Countries are exploring new ways of satisfying the need for an alternative to commercially-driven programming. One approach is to impose public service obligations on private broadcasters. Many countries already impose some such obligations on all licensed broadcasters but the overall trend is towards relaxing regulation and it is becoming increasingly difficult for national governments to effectively impose regulatory conditions.

Another approach is to look for alternative ways of providing public funding for programming which serves various public needs and interests. In some Countries, independent programme producers, who are not linked to a specific broadcaster, may receive public funding for individual programmes.

Despite the growing importance of these alternative models, and the new challenges described above, however, the vast majority of countries world-wide still rely heavily on a national publicly-funded broadcaster or broadcasters to satisfy the public's needs in this area. Support for such broadcasters remains strong where they are able to produce quality programming which complements that provided by the private sector.

This seems to be the case in the IPA Countries, where the viewership statistics of the Public Broadcasting Service providers are still very high.

For this reasons, it seems logical and useful, in order to ensure the development of the digital network and to preserve the public goals achieved by the public broadcasting services in general, to specify a number of "must-carry" provisions obliging the network operators in the IPA Countries to carry PBS channels or to assign a MUX to them (which may be given the explicit obligation to cover progressively the whole population and then the whole national territory).

### 3.11 Price to be paid to access DTT networks

As said in Chapter 2, the **Access Directive** stresses that in an open and competitive market there should be no restrictions that prevent companies from negotiating access and interconnection agreements, including cross-border agreements. In principle, all requests for access made in good faith should be met on a commercial basis. When there are significant differences in negotiating power, the regulatory authorities may act to ensure that companies controlling access to end-users provide such access to content providers through interconnection to their networks. The Access Directive mentions digital radio and television broadcasting specifically. These provisions are aimed at service providers that have control over a facility that is essential for providing a service. In digital broadcasting this will be the platform operators who control the transmission facilities.

Of course, if on the one hand the network operators have to grant access to their networks in a fair, non discriminatory, transparent and –possibly- cost oriented way, on the other hand it is clear that they should rightfully receive a profit for hosting other content providers in their digital network.

The problem, that many regulators in Europe have already faced or are still facing, is to determine what would be the right cost to have access to the networks: the first step should be an accurate cost estimate of each element composing the digital network. The elements that build up a digital network, typically, are:

- Head-end, which includes encoders,
- Transmitter: The COFDM modulators convert the digital data stream from the remultiplexer into an OFDM signal ready for broadcasting. The high power amplifiers then amplify the modulator output to provide the necessary RF power. Next, the high power RF signals from multiplex is being fed up the mast. Normally we refer to the modulator and high power amplifier together as the RF transmitter, and the combiners and antennae as the antenna system.
- Distribution system;
- Infrastructures: Towers, masts
- Operational costs (electricity, etc.)

In order to estimate the cost of a digital network (Mux) it would be then sufficient to determine the number and kind of transmitters needed for each allotment in order to achieve the coverage goal through a planning simulator.

The second step would be to place a value on the operator's assets, or the capital cost base. This cost base then has to be spread over its useful life, i.e. annualized. A reasonable return on the capital base (cost of capital) has to be determined and added to the depreciation charge to bring about the total necessary capital charge or cost to be recovered in that period. Finally, allo-

cating relevant operating and general overhead costs to the regulated products or services and adding them to the capital charge produces the total revenue requirement.

Once these computations are completed, it is easy to define a reasonable price to apply to all content providers willing to be carried on a Mux. Such price is usually expressed in eurocent per Mbps per inhabitant and it is a solid basis to ensure non-discriminatory or predatory behaviour from the network operators against content providers.

It is indeed a useful computation, whose result might well be included in the strategy of Countries approximating to digitalization.

### 3.11.1 National Network cost assessment

The costs relative to the build-up of a digital broadcast terrestrial network and in particular those relative to the public broadcaster national network can be divided in two main categories:

- fixed costs (investment costs); these are the investment costs i.e. all costs that are necessary in order to acquire digital transmitters/equipments, to build new infrastructures/sites<sup>16</sup>, build the distribution network, local and national head-ends, etc. As it will be explained in the following paragraph, it is important to define the depreciation period (that is the systematic and rational process of distributing the cost of tangible assets, such as equipments, over the life of the assets).
- variable costs (yearly costs); these are usually operational costs as electricity/power, maintenance costs, personnel costs and infrastructure costs when site re-utilization can be performed by the network operator. Such costs are usually very similar between analogue and digital transmission and should hence defined very accurately according to the public operator experience.

The first step in order to assess the total fixed cost associated to the public broadcaster national network is to estimate through a simulator the number of sites and the associated power of each transmitter for the given population or territory coverage. Such planning is very useful because transmitter costs depend essentially from transmitter size in terms of power. For example transmitter costs could be easily summarized in table below:

Transmitter Power	Equipment cost (transmitter + RF/antenna sub-system)
1-10 W	X Euro
11-100 W	Y Euro
101 – 1 KW	Z Euro
> 1 KW	T Euro

Such computation can be repeated for each of the 11 allotments of the 11-SFN network. Then the structure of the network, in terms of number of local head-ends, connections between local

<sup>16</sup> for example when additional sites further to existing analogue are necessary or existing sites for analogue can not be utilized for digital transmission

head-ends and central head-end, must be defined as it has been done in section 2.11.1.1. Once all the cost components have been determined, the fixed cost estimate can be easily achieved.

### **3.11.2 Mux capacity price assessment**

Once the evaluation of fixed and variable costs has been completed, the Mux capacity price assessment (normally expressed in terms of Euro/Mbps/inhabitant) that is the amount of money the operator accessing the Mux has to pay to the Mux operator, can be calculated as follows.

First of all, the depreciation relative to the fixed costs must be defined in terms of duration (useful life) and depreciation method. The useful life for digital broadcasting equipment is usually set between 5 and 10 years. The most common depreciation methods are: straight line depreciation, and the declining-balance depreciation. It is recommended to use the straight line depreciation mainly due to its simplicity. After computing the depreciation it is necessary to define a reasonable return rate on the capital base (cost of capital) to take into consideration the capital charge to be recovered in the defined period. The choice of the reasonable return rate on the capital base (cost of capital) is of fundamental importance for the determination of the Mux capacity price assessment. For example, should the principle of cost orientation is applied (as this report suggests), the return rate will be equal to the WACC (weighted average cost of capital). It is strongly advised to utilize economical base arguments when defining the operator return rate because of its effect on the Mux capacity price.

Examples of estimates of Mux capacity prices based on the above described methodology have been offered by both Finland<sup>17</sup> and Italy<sup>18</sup>.

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<sup>17</sup> See, for reference, the “Cost Accounting and Pricing Principles in Finnish Digital TV Transmission, Condensed Report to FICORA for Public Consultation”, drafted by Europe Economics and Quotient Associates in September 2005, available on the Finnish regulator’s website.

<sup>18</sup> See, for reference, the computation of the Mux capacity assessment price published by the Italian PBS, RAI, on the website: <http://www.rai.it/dl/portale/text/ContentItem-1fc137b1-132e-4813-85d4-422a44b159d5.html>

## 4 GUIDELINES FOR THE DIGITALIZATION PROCESS OF IPA COUNTRIES

As stated into the introduction to this report, which was setting the goal of the document, the transition from analogue to digital terrestrial television broadcasting is currently taking place in all of the countries participating to the SEE Digi.TV project, but at conditions that are very diverse: in some countries (e.g. Austria, Croatia, Slovenia), the terrestrial switchover process has already been completed and analogue terrestrial broadcasting discontinued, or is about to be switched off (e.g. Italy, Hungary). In other countries, namely the IPA countries, organised transition to digital broadcasting has only been initiated recently (e.g. Albania, Macedonia) and will take some time until it reaches its completion. In some of cases (Bosnia Herzegovina, Montenegro and Serbia), the date for the transition to digital broadcasting has been delayed due to technical difficulties.

What is worth mentioning is that, regardless of the existence of *ad hoc* legal provisions, all countries participating to the SEE Digi.TV project have prepared or are preparing and publishing their **national strategies for the switchover** from analogue to digital broadcasting. The fact that there is a strategy is certainly a good starting point, since it ensures that the transition is planned well ahead and that the process is transparent and predictable, which contributes to legal certainty of all players in the digitalisation process: institutions, companies and consumers. The need for adequate preparation of digitalisation has been pointed out by the European Commission and by international organizations, such as the Council of Europe and the EBU. Recommendation Rec (2003)9 of Council of Europe's Committee of Ministers provides that States should draw up a well-defined strategy that would ensure a carefully thought-out transition from analogue to digital broadcasting. Such a strategy *“should seek to promote co-operation between operators, complementarities between platforms, the interoperability of decoders, the availability of a wide variety of content, including free-to-air radio and television services, and the widest exploitation of the unique opportunities which digital technology can offer following the necessary reallocation of frequencies.”*

However, the analysis of switchover strategies conducted by the report for activity WP3/A1, describing the *“Analysis of existing legal framework in target countries”*, shows that the strategies in the IPA Countries often turn out to be rather abstract: what such strategies typically lack is the operative content adapted to the specific economic and technical conditions in the broadcasting market of a specific country, e.g. concrete tasks of specific national authorities in the digital switchover process and time schedules for the completion of such tasks in order to complete the switchover by a certain date.

Taking stock of the experience made by the EU Member States during their switch-over and switch-off periods, therefore, the **goal of this Chapter** will be to provide a set of practical guidelines that might be useful for IPA countries wishing to make their digitalization strategies more effective and to plan in advance their regulatory activities.

Unfortunately, due to the different conditions of the digitalization process in each Country, it is impossible to draft guidelines that may be relevant for all Countries. Our aim, therefore, will be to provide a checklist of items and features that a good strategy should contain, so that each Government/regulator may check what is missing and possibly decide to update their strategy. This, in turn, will reflect on the **legal/regulatory framework of the Country**, which will have to be updated in accordance to the strategy planned.

#### **4.1.1 The modification of the licensing system: licenses for network operators, content providers and service providers.**

The analysis run in the previous chapters has shown the opportunity for the IPA Countries to update their strategies and –consequently- their legal framework so that it may increase the efficiency of its license scheme, introduce new roles for the new players of the digital television sector and pave the way for the regulation of convergent services.

The provisions of the AVMS Directive, which puts together the service providers and the content providers in the brand new category of “Audiovisual media services providers”, seems to be a little too advanced for the current situation of the audiovisual market of most IPA Countries, whose legal framework is often still referring to the licenses for “broadcasters”. Adopting the AVMS Directive provisions, therefore, might be problematic: the EU Member States needed almost 10 years to fully adapt their internal legislation to the principles required by the digitalization, keep the licenses only for the network operators (who would manage scarce resources such as frequencies) and introduce the general authorizations for the content and service providers. It appears fair to let the institutions of the IPA Countries adapt as well to the evolution of the media sector and update their legal framework step by step.

The first step in order of importance and urgency is the introduction of new types of licenses, for network operators, content providers and service providers, which should replace the old license for “broadcasters”, which has no meaning in the digital television sector. A very detailed description of the roles of each of these operators has been presented in chapter 3.2 (see *infra*). Here it is enough to reaffirm that the identification of specific rights and duties for network operators, content providers and service providers becomes a crucial step of the digitalization process. In Italy such rights and duties were established already in 2001 by the Law 66/2001 and then by the AGCOM Decision 435/01/CONS, well before the “real” start of the digitalization.

The ideal solution to define the roles of the new players of the digital market would be the inclusion of a few articles in the legal framework. Since this is clearly a difficult result to achieve in the short term, a possible alternative would be the inclusion of such articles in the digitalization strategy of the IPA Countries. Later on, the articles might be reaffirmed by a specific regulation of the Government or the national regulator. The articles should be at least 3 and might look like the following:

## **Art. X (Network operator)**

1. "Network operator" is the company holder of the right of installation, operation and provision of an electronic communications network and installations for the transmission, multiplexing, distribution and/or broadcast as well as of frequency resources enabling transmission of broadcasting blocks to users;
2. Whereas applicable, network operator must utilize frequencies defined in the national frequency plan for the broadcasting of digital terrestrial television in accordance with GE'06 plan, with efficient usage of the frequency resources avoiding harmful interferences to other operators in the country and abroad.
3. Whereas applicable, network operator must comply with :
  - a. applicable technical standards on transmission set by the Government or the regulator (e.g. DVB),
  - b. applicable technical standards for receiving equipment (e.g. STB, decoder, etc.);
  - c. health, environment, town-planning and territory regulations for the installation of infrastructures and equipment, as well as with provisions concerning the sharing or the availability of installations or sites;
4. The network operators shall ensure the security of network operation, the preservation of its integrity, the preparation of procedures for control and management of installations and equipment, as well as the recourse to staff duly qualified in order to guarantee the maximum quality of performance offered to users.
5. In principle, network operator must ensure access to their networks to all content providers, unless there are reasonable, objective non discriminatory and transparent reasons.
6. The network operator shall enter into the appropriate technical and trade agreements based on equitable, non discriminatory and transparent conditions with content providers whose programs are broadcast through its network and with service providers operating through its network. The network operator is not allowed to modify or alter television programs, data programs or information society programs supplied by third parties.
7. The Government or the Regulator will ensure that the network operators comply with the provisions of paragraphs 5 and 6. If disputes arise with regards to such paragraphs, the Government/Regulator may try to intervene to resolve the dispute.
8. Whereas applicable, national network operator, when performing content providers and/or service providers activities, shall accomplish structural separation.

## **Art. Y Content provider**

1. "Content provider" is the company editorially responsible for the preparation and scheduling of programs for television broadcasting licensed/authorized by the national regulator.

2. Content providers are required to keep and maintain, for a specified period<sup>19</sup>, a register enlisting the programs in the schedule and to provide it, when needed, to the national regulator for its monitoring activities. The register of programs could contain information concerning the compliance with applicable legislation on copyright.
3. Content providers are responsible for the nature and content of the programs they broadcast and shall be held responsible for any damage caused to third parties in compliance with current laws.
4. Content providers are required to comply with provisions on advertising, sponsorship and teleshopping, applicable to analogue television broadcasting.
5. Content providers may be required to comply with standards concerning broadcasting and production quotas<sup>20</sup> as provided for by current laws applicable to national broadcasters.
6. Content providers are required to comply with provisions on protection of minors stated by law.
7. Content providers cannot broadcast television programs which can harm the psychic and moral development of minors, unless such programs have conditional access and are transmitted in the time period between XX:00 and XX:00.
8. For the protection of minors, content providers shall submit a description of technical measures envisaged for the protection of minors.
9. Content providers shall adopt technical and editorial measures aiming at favouring reception by deaf and hearing-impaired people as to information, cultural and entertainment programs. At the same time of content providers shall submit a description of technical and editorial measures envisaged.

## **Art. Z** **Service provider**

1. "Service provider" is the company providing, by means of the network operator, conditional access services to public through the distribution to users of numeric keys to enable program viewing, service billing, and, where necessary, the provision of equipment, or providing services of the information society or providing an electronic program guide (EPG);
2. Conditional access service providers shall:
  - a) comply with technical standards provided for in current laws;
  - b) adopt a charter of services to be submitted to the national regulator's approval.
3. The service provider is required to have the Charter of Services<sup>21</sup> for the relationship with final users. The charter of services adopted for the provision of conditional access services shall be binding also for the content providers providing programs and the network operators broadcasting them.

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<sup>19</sup> e.g. for 6 months

<sup>20</sup> The content provider may be obliged to reserve a part of its programming schedule to works produced by content producers who are from the same Country

<sup>21</sup> The Charter of Services (or Bill of rights) is a document enlisting the rights of the end users/customers against the service providers. This Charter is very important for the protection of the consumers and has to be as transparent as possible (also available on the operators website)

4. In particular, pay TV service providers must:
  - a) make available copies of the Charter of services to subscribers together with the conclusion of the contract;
  - b) make available copies of the Charter of services regardless of the conclusion of a contract of subscription and on their website;
  - c) provide ways to access the smart cards, including the address of the website;
  - d) inform the national regulator and subscribers, preferably by the billing documentation, of changes and additions to the Charter of services at least thirty days prior to their application.
5. The Charter of Services must contain the following information:
  - a) costs of the services and how they are activated;
  - b) procedures to terminate the contract;
  - c) activation modalities (by phone, on line or at service centers).

Of course, such articles must be strongly supported by the introduction of a clear and effective sanctioning procedure, which should fall among the competences of the national regulator.

In both cases, the provisions should include clear “**must-carry**” obligations, with which the Government or the Regulator ensures that the access to the networks and to the platforms run by the service provider is affordable (ideally cost oriented), non discriminatory and transparent. Most EU countries enforce some form of must-carry regulation: in the European regulatory framework on electronic commerce, for example, article 3(1) of the Universal Service Directive permits Member States to impose proportionate and transparent must carry obligations on cable television network operators, but these obligations may also be imposed on terrestrial and satellite networks. Must carry rules should be limited to a reasonable number of channels, especially public service channels.

In any case, special rules should also be drafted by law or regulation to ensure that the PBS is always present in any platform and to protect the channels bringing forth the view of the minorities.

#### **4.1.2 options for the selection of multiplex operators and content providers**

As already stated several times, the role of multiplex operators differs significantly from the role of traditional analogue broadcasters, since multiplex operators provide the network (e.g. the infrastructure and the frequency) on which several content providers depend for transmitting their programme to the audience. Therefore, specific provisions should regulate the **selection and role of multiplex operators**, separating it clearly from the role of programme providers.

Chapters 3.3 and 3.3.1 have already explained in detail how this regulatory issue has been tackled by the EU Member states: usually the multiplexes are assigned to network operators through

beauty contests<sup>22</sup>, although many EU Countries provided special rules to the public service broadcasters, who obtained the right to operate a multiplex *ex lege*, without a public tender. Such an exception is reasonable, due to the special public interest role of such institutions, and as a means of speeding up the switchover process. However, this solution should not be extended to the operation of further multiplexes, especially when they are intended mainly for broadcasting commercial programmes.

Beauty contest procedures tend to be preferable when assigning the rights to use the frequencies (and therefore the right to run the multiplex) because they allow the national regulator to allocate the licences on the basis of the detailed plans submitted by the applicants. However, a recent debate that took place in Italy in the last months shows that also other aspects may be taken into account: in times of recession, critics say, the auction process would ensure significantly higher licence fees than the beauty contest.

Once again, assessing which option (beauty contest or “traditional” auction) is better for a given Country as regards the selection of the multiplex operators it is out of the scope of this report. It is however crucial that the choice made by each IPA Country is well reflected in the strategy adopted for the digitalization and, consequently, in the activities put in place by the national regulator to run the selection process: the criteria for the selection of multiplex operators should be determined by the digital switchover strategy and stipulated in the law to ensure that the procedure is conducted in an objective, transparent and non-discriminatory manner.

As regards the **selection of content providers**, chapter 3.3.1 explained that there are 2 main approaches adopted by the EU Countries:

- a. a group of Countries (France, Belgium (French Community), Germany, Sweden, Finland, Slovenia) chose to select directly the line-up of channels via a beauty contest or public procedures similar to those used in the analogue environment – or also via the direct allocation of frequencies to the broadcasters. In other words the regulator chooses, through separate but parallel public procedures, the network operators who will manage the frequency and run the MUX and the content providers who will provide the channels/content to the MUX. No agreements between the network operators and content providers are needed.
- b. another group of Countries (Czech Republic, Latvia, Slovakia, Denmark, Italy, UK, Norway, Portugal) allowed the multiplex/network operator to manage the capacity and hence play a role in selecting channels for the line-up and behave as gate-keeper. In this case content licensees must however still negotiate with the network operator for access and distribution, and public policy measures such as “must carry” have to be adopted in order to protect pluralism, diversity and fair access to the network or to reserve capacity for special categories of broadcasters

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<sup>22</sup> Under a beauty contest, or comparative selection, applicants set out their cases for being awarded licences on the basis of the criteria set out in the conditions for a licensing bid. A beauty contest allows the allocation of licences based on detailed plans submitted by applicants. On the contrary, the essential feature of a normal auction is that licences are awarded to those that bid the highest price

It is worth mentioning that the selection of content providers to be included into a certain multiplex is generally not a problem in IPA Countries, since there are initially not so many domestic channels to fill the new broadcasting capacities of new multiplexes. However, for the sake of transparency, the policy that will be adopted by the Country should be mentioned in the digitalization strategy and the regulator should be prepared to act consequently, as it will be explained in the next paragraph.

#### **4.1.3 the role of National Regulators as arbiter of the disputes between multiplex operators and content providers: must carry provisions and access to the network**

Especially in the first phase of the digital switchover, when the market is still being formed, the role of the regulator is crucial for at least 2 reasons:

- I. avoiding that existing broadcasters start airing their programme in digital format without any required authorisations or frequency rights at all (as it reportedly happened in Albania, Macedonia and Serbia).
- II. promoting competition, preventing concentration of property in broadcasting and increasing pluralism of content.

The latter task is clearly the most difficult: digitalisation leads to initial risks of concentration, since usually only few transmission facilities exist, due to their cost and complexity, and the network operators, as well as the existing broadcasters, will try to create obstacles to new entrants.

The national regulator will therefore have to take on the responsibility for the selection of content providers that will use a specific multiplex or for the adoption of public policy measures such as “must carry” and access conditions, acting then as an arbiter to resolve the disputes between multiplex operators and content providers.

As regards “**must carry**” provisions, the Italian approach may be considered a very good model: since the Italian Government decided to grant multiplexes to existing broadcasters, in order to protect pluralism and prevent concentration the Italian regulator (AGCOM) created a very effective set of “must carry” provisions, which are updated regularly. The provisions are explained in detail in chapter 3.3.1 and are summarized hereunder:

- 1/3 of the capacity must be reserved for local channels
- Nobody may control more than 20% of the channels available in the national territory
- Nobody may be assigned authorizations to run at the same time national and local channels
- Operators owning licenses or authorization of different types are obliged to keep their accounts separated
- Agreements between network operators and content providers must be fair, non discriminatory and transparent. AGCOM will monitor the agreements and intervenes to solve possible disputes

- After the switch-off, national network operators who are assigned 5 must handover 40% of the transmission capacity of the fifth multiplex to independent content providers. The price of the capacity must be cost-oriented. Similarly, local network operators must handover at least 2 channels (min. capacity 6 Mps) in their MUX to local broadcasters who have not been awarded the MUX. Also in this case, the price for the capacity must be cost-oriented
- The PBS must be assigned at least a MUX for audiovisual broadcasting and 1 MUX for audio broadcasting

As regards **access to the network**, as already explained in detail in chapter 2, the EU legal framework, in particular the Access Directive, stresses that in an open and competitive market there should be no restrictions that prevent companies from negotiating access and interconnection agreements. However, in a market that is being created and that is characterized by significant differences in negotiating power, the national regulators should do whatever is in their power to ensure that companies controlling access to end-users provide such access to content providers through interconnection to their networks in a fair, transparent and non-discriminatory manner. The tool adopted by the EU Countries to make sure that access is offered in a fair manner is cost orientation, which has been described in detail in chapter 3.11 and will be only summarized hereunder: the regulator should estimate the cost of each element composing the digital network (Mux) and then place a value on the operator's assets, or the capital cost base. This cost base then has to be spread over its useful life, i.e. annualized. A reasonable return on the capital base (cost of capital) has to be determined and added to the depreciation charge to bring about the total necessary capital charge or cost to be recovered in that period. Finally, allocating relevant operating and general overhead costs to the regulated products or services and adding them to the capital charge produces the total revenue requirement.

Once these computations are completed, it is easy to define a reasonable price to apply to all content providers willing to be carried on a Mux. Such price is usually expressed in eurocent per Mbps per inhabitant and it is a solid basis to ensure non-discriminatory or predatory behaviour from the network operators against content providers.

The cost orientation tool is very effective to ensure that access is granted at fair price. In order to be implemented efficiently, however, the principle of cost-orientation should be clearly stated in the strategy of Countries approximating to digitalization and then the national regulators should define the procedure with an *ad hoc* regulation.

In particular, the national regulators should be given adequate power to resolve disputes between multiplex operators and content providers.

#### **4.1.4 the role of the PBS**

The importance of public broadcasting services for the development of the whole audiovisual sector has been described in detail in chapter 3.10.

Nowadays, the rapid proliferation of commercial and other forms of broadcasting is posing a new and dynamic challenge to publicly-funded broadcasters. Technological developments have com-

pletely altered the nature of broadcasting with households in many Countries now having access to tens, if not hundreds, of channels, while Internet promises even more exciting and profound changes and virtually everyone who has access to fairly basic equipment will effectively be in a position to operate as a broadcaster in the near future.

Despite the growing importance of these alternative models, and the new challenges described above, however, the vast majority of countries world-wide still rely heavily on a national publicly-funded broadcaster or broadcasters to satisfy the public's needs in this area. Support for such broadcasters remains strong where they are able to produce quality programming which complements that provided by the private sector. This seems to be the case in the IPA Countries, where the viewership statistics of the Public Broadcasting Service providers are still very high.

For this reasons, it seems logical and useful, in order to ensure the development of the digital network and to preserve the public goals achieved by the public broadcasting services in general, to specify a number of "must-carry" provisions obliging the network operators in the IPA Countries to carry PBS channels or to assign a MUX to them. This may be achieved by must-carry rules laid down in the strategy (and then in the law) or additionally imposed in the multiplex licence. Such provisions are justified since they permit a faster transition towards analogue switch-off and may be counterbalanced by the explicit obligation for the PBS to cover progressively the whole population and then the whole national territory.

#### **4.1.5 opportunity to introduce the general authorization regime**

The difference between the individual licensing regime and the general authorization regime has been explained in detail in chapters 2.1 and 3.1 (see *infra*).

With the adoption of the 2002 electronic communication package and –in particular- with the Authorization Directive, the EU abolished the system under which Member States issued individual licences to network and service providers as a means of regulating the communications sector. Member States can no longer demand that a service provider obtain explicit administrative authorisation before starting business. Authorities may ask to be notified of a company's intention to start business, in order to keep a register, but the service provider does not have to wait for a reply to this notification, nor should they be asked to provide more information than necessary for the identification of the company. The Directive stipulates that all relevant information on rights, conditions, procedures, charges, fees and decisions is to be published in a way that makes it easily accessible for all interested parties. Any changes should also involve prior consultation with interested parties. The general authorisation for the provision of electronic communications networks or services may be subject only to the specific conditions listed in part A of the Annex of the Authorisation Directive.

The possibility to release an individual license still exists, but only if there are scarce resources involved (numbers and frequencies). In practical terms, referring to the digital terrestrial television, the network operators, i.e. the operators who are assigned the right to use a frequency,

should obtain a license, but the content provider and the service providers, whose activity has little to do with the frequency, may start their activity immediately after applying for the general authorization.

Now, the idea of an operator starting its activity without express and formal permission by the Government is difficult to accept for Countries who is not part of the EU. For this reason, even though the adoption of the general authorization regime would be a perfect example of harmonization to the EU framework, it is hard to imagine that this will happen in the short term. A well planned strategy for the digitalization process in any IPA Country, however, should mention this opportunity for the medium-long term, and should foresee the release of general authorizations for content and service providers.

#### **4.1.6 regulatory issues arising from the practical experience of the EU Member States: LCN, EPG/IPG, Common interface and compression standards, digital dividend**

In addition to the provisions harmonizing the legal framework of IPA Countries to the EU *Acquis Communautaire* and to the EU Directives in particular, an effective strategy for the switch-over period should also contain some provisions related to some regulatory issues whose solution has been critical for the development of the digital terrestrial television all around Europe. Although they are not specifically included in any EU Directive or Communication, and therefore are not formally part of the EU *Acquis Communautaire*, such issues have posed a serious challenge for the National Regulators who managed to find solutions after months of discussions, public consultations and –of course- regulation.

We are referring to the provisions on LCN, EPG/IPG, Common interface standards, compression standards, digital dividend, and so on, that have been duly presented in Chapter 3. Such issues, as said in the introduction to this report, have not been included in the report “Analysis of existing legal framework in target countries” drafted by APEK (WP3/A1); nevertheless, since they posed problems for the EU regulators that required months (if not years) to be solved, and since time constraints for the digitalization are pretty tight for the IPA Countries, it would be unwise not to use this opportunity to update the digitalization strategies in order to anticipate the problems and adopt a solution that might make the digitalization process faster. After describing the problems faced by the EU regulators, Chapter 3 has suggested the solution that they adopted:

- for LCN the suggested solution is to divide the channels into 9 ranges (0-99, 100-199, 200-299 and so on, each linked to a specific theme or type of channel (sport, movies, documentaries, local channels, generalist channels and so on)
- the compression standards suggested are DVB-T2 and MPEG-4
- the cost orientation tool has been presented with the formula used by most EU regulators
- for the common interface, the suggested solution was to adopt the obligation to insert a DVB-CI interface in the TV-sets, as the EU is actually requiring.

The inclusion of such provisions in the strategies (and consequently in the legal or regulatory framework) of the IPA Countries would therefore be very simple and it is highly recommended, since they would specify the standards that will have to be followed by the operators when they start planning their moves in a digitalized environment.

#### **4.1.7 content regulation**

The issue of content regulation has already been highlighted by the report “Analysis of existing legal framework in target countries” drafted by APEK (WP3/A1): the obligations stemming out from the Television Without Frontiers Directive, the Audio-Visual Media services Directive or, for the non-EU Countries, the Convention on Transfrontier Television, remain valid also during the switch-over period and after the switch-off.

The abovementioned content obligations are very well-known and there is no need to present them in detail in this report. They may be found in all the websites of the national regulators and most SEE countries have included in their digital broadcasting legislation provisions imposing the same content obligations. It would be therefore useful that the digitalization strategy explicitly referred to the obligations set by these parts of the EU framework as well.

#### **4.1.8 Draft of a detailed and realistic agenda and target dates**

One of the most incisive comments made by the report “Analysis of existing legal framework in target countries” (WP3/A1) about the strategies developed in the IPA Countries is that they often turn out to be rather abstract and somewhat remote from specific problems that may be foreseen in the specific Country. This comment may not be disagreed with.

The problem is not whether the strategies set dates and then fail to comply with it, but rather the fact that the strategy documents themselves lack the operative content adapted to the specific economic and technical conditions in the broadcasting market of a specific country.

An effective strategy should of course include a target date for analogue switch-off, but also a number of action points which are step by step moving towards the switch-off itself, identifying precisely which institution is in charge of which task. In addition, since it is impossible to foresee perfectly all events and delays, a mechanism for monitoring the progress of the digitalization should be adopted, and the switch-off dates should be flexible enough to be modifiable in case the progress does not proceed as steadily as planned. In particular, the progress of the digitalization process should be monitored every 3 or 6 months, and the strategy should be updated (if needed) at the same intervals. This is why, in this report, it is advised to update the strategy taking into account all the comments and suggestions of Chapter 4.

A few additional comments on the agenda:

- i. In order for the migration process to begin, the DTT planners need to prepare a timetable detailing when analogue transmitters will be shut-off. Migration can be planned in two ways: one-shot migration, where a date will be set to switch-off the analogue television broadcast signal throughout the Countries and the phased approach (the so-called “**Digital islands**” approach, i.e. proceeding region after region) where the migration is gradual with a period of simulcast of analogue and digital signals.  
The phased approach provides several benefits over the one-shot migration. With the phased approach the lessons learned in one region could be used to improve the process in another region and if something goes wrong, the problem is limited to a single area. Secondly, the released frequencies can be re-used in a neighboring region in order to increase its DTT coverage and expand the DTT service offering. Finally, this approach allows DTT planners to spread the cost and make the effort of digitalization more manageable. Therefore, the phased approach is recommended for the Countries where the process has not been initiated, like Serbia, Bosnia Herzegovina and Montenegro.
  
- ii. the strategy should plan an effective **Consumer awareness** campaign. Setting an Action plan is a useful step to raise awareness among the television viewers about what is going to happen. Nevertheless, the digitalization of the terrestrial television may have such an impact on the population, especially among the elderly people, that a specific awareness campaign should be planned. The digitalization strategy focuses on TV spot to increase consumer awareness for DTT migration. According to European experience some other means can be utilized to increase consumer awareness. For example call centres are particularly useful during the switch-off. They can be used to get practical information such as switch-off dates and solving of specific reception problems.  
Direct mail sent to households is a further mean to inform viewers about the impending switch-off. Another important source of information about the transition can be the equipment distributors and antenna installers themselves, as they are in direct contact with end-users. Viewers who experience problems in receiving digital signals will try to get assistance directly from installers. This is the reason why installers should be included as a strategic tool for achieving smooth digitalization.  
Finally, Websites with information on digital switchover can be set up to provide answers to questions such as switch-off calendar, accurate coverage maps, contents, Mux structure etc.  
An information and communication campaign is a useful tool to reach out to the population and to convey the right message about the switch-over process. Print and TV advertising are best used at an earlier stage to announce the coming of DTT, whereas events, brochures and direct mail are more suitable to bring more detail once the transition starts. Assistance through the Internet, call centers and support from installers and technicians should be available when switch starts and long after it has been completed.  
In order to be effective, the consumer awareness campaign should be conducted at national level, but then have a local follow up few days before the switch-off in any given city or area.

- iii. the strategy (and the consequent legislative/regulatory framework) should be drafted under the constant scrutiny of the public. The aforementioned Council of Europe's Recommendation (2003)<sup>9</sup> states that digital broadcasting strategies should be drawn up *"in consultation with the various industries involved and the public"*. The **Public consultation** tool should be used extensively, so that the general public becomes more aware of what will take place and will try to give his contribution to the development of the process.
- iv. a particularly useful tool, widely adopted by the EU Countries during their switch-over phases, is the **DTT Forum**, a special body bringing together the representatives of public authorities, regulatory authorities, broadcasters multiplex and network operators, in order to oversee the execution of the digital switchover process and assist in making further policy decisions. Such a body can work very closely with the independent regulator and also have an important role in spreading information and publicly discussing the issues of digital switchover relevant to the consumers

To sum up, a realistic agenda should contain at least the following **action points** (not necessarily in this chronological order):

- 1) Adoption of the digital frequency plan (beg. – end );
- 2) Update of the national digitalization strategy (ideally after a public consultation)
- 3) Update of the DTT regulatory framework (ideally after a public consultation):
  - a) Adoption of Regulations governing the licensing/authorization schemes and procedures, differentiating the provisions for content providers, service providers and network operators;
  - b) Adoption of Regulations on technical standards, such as numbering plan, common interface and standard electronic guide (EPG). Mpeg 4/DVB-T2 techniques;
  - c) adoption of provisions on must carry or access to the platforms;
- 4) Creation of the DTT Forum;
- 5) Nationwide consumer awareness campaign (beg. – end );
- 6) Adoption of the procedures to assign the first wave of frequencies (in the first digital islands): selection of multiplex operators
- 7) Start of switch over in the first digital island. Kick-off of the specific information campaign for the first digital island - (beg. – end );
- 8) Adoption of the procedure to assign the second (and maybe third?) wave of frequencies - (beg. – end );
- 9) Completion of analogue switch-off in the first digital island;
- 10) Deadlines for the following digital islands - (beg. – end );

## 5 CONCLUSIONS AND RECOMMENDATIONS

The goal of this report, as explained in its introduction, is to present –in form of guidelines- the common legal or regulatory issues that were part of the experience made by the EU Member States during their switch-over and switch-off phases and explain the solutions that they have adopted, so that the IPA Countries -that are still at the early stages of their digitalization process- may benefit from such experience.

The report is based on the findings of the report “*Analysis of existing legal framework in target countries*” drafted by APEK (WP3/A1), which compared the legal frameworks of 10 Countries of South Eastern Europe<sup>23</sup> part of the transnational Digi.TV SEE project. This report came to the conclusion that the characteristics of national legal frameworks are very diverse in SEE region and that it was not possible to present any general findings that would apply in the same way to all countries included, or to formulate such recommendations that would be relevant for all countries in the region. For this reason, it provided a number of interesting suggestions that have constituted the starting point for this work. *Inter alia*, specific attention was reserved to the strategies drafted by the IPA Countries, which often turn out to be rather abstract and somewhat remote from specific problems that may be foreseen in the specific Country. After analysing the strategies and the documents related to the implementation of the digitalization process in the IPA Countries, we came to the same conclusions as the report of activity WP3/A1: the problem is not whether the strategies set dates and targets and then fail to comply with them, but rather the fact that the strategy documents themselves lack the operative content adapted to the specific economic and technical conditions in the broadcasting market of a specific country.

For this reason, we decided to give the present report a very practical and operative focus: in Chapter 1 we went through the EU *Acquis Communautaire* once again, but solely to pick and comment some provisions that might prove useful for the guidelines (the introduction of the general authorization regime, the principles of fair and non-discriminatory access to the network and so on). Then in Chapter 2, we moved to the analysis of a number of technical regulations that should be adopted in order to set the standards that will have to be followed by the operators when they start planning their moves in a digitalized environment: the numbering plan (LCN), the adoption of a common interface standard, the regulation for an electronic guide (EPG), the digital dividend and so on. In addition, we focused the analysis on very important principles, not stated directly by the EU regulatory framework, that should be clearly highlighted in the strategy of the IPA Countries in view of the digitalization process and that should consequently be adopted through a set of regulations: the selection criteria for the multiplex operator and the channel provider, the role of the public Broadcasting service, the tools to ensure a fair and non-discriminatory access to the network and so on.

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<sup>23</sup> Slovenia, Austria, Hungary, Italy, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Macedonia and Albania

The aforementioned principles and provisions, in our view, are the operative issues that are missing in the digitalization strategies that we could examine. Of course it was not possible to tailor each of these issues to the needs and the specific conditions of each IPA Country, but they will be a very good benchmark to which the strategies may be compared.

In Chapter 4 the guidelines are drafted. The starting point is that in some case the whole digitalization procedure might need some fine-tuning. This has been clearly explained in chapter 4.1.8, when discussing how to proceed with a detailed and realistic agenda. In particular, it might be useful to refine the strategies and update them, in order to make them more practical and tailored to the specificities of the Countries. In fact, it would be extremely difficult to draft all necessary legal regulations/provisions if the general picture were not included in the strategy. Chapter 4, therefore, reviews the principles already discussed in chapter 2 and 3, providing possible solutions that might be suitable for the IPA Countries and that might be immediately taken onboard in the strategy:

- 1) draft a detailed Digitalization Action plan, with realistic dates and agenda;
- 2) update the legal and regulatory framework:
  - modification of the licensing procedures, where the network operators, content providers and service providers should replace the “broadcasters”
  - empowerment of the national regulators;
  - start paving up the way for the transition from individual licenses to general authorizations
  - review the procedure to assign the frequencies: beauty contest, historical channels or “traditional” auction?
  - review the criteria to give a license/authorization to channel providers
  - draft provisions for access to the network/multiplex for content or service providers Such provisions should possibly introduce the principle of cost orientation
- 3) draft the regulations setting the technical standards that will have to be applied by the operators in view of the digitalization: digital dividend, single or multi frequency networks, numbering plan (LCN), electronic programming guide (EPG), common interface standards, compression standards (Mpeg 4 in combination with DVB-T2).

Even though these provisions concern technical standards, it is worth mentioning that they have to be adopted with legally binding regulations; as such, they are a crucial part of these guidelines and –if adopted quickly by the IPA Countries- might contribute very much to a more effective digitalization process;
- 4) plan the role of the Public Broadcasting service
- 5) reinforce the content regulation
- 6) set realistic dates for the switch-over and switch-off periods, according to a phased approach (so called Digital Islands)
- 7) plan/run the consumer awareness campaigns
- 8) involve the general public into the procedure, through public consultation and the creation of a DTT Forum

- 9) Eventually, a set of provisions of the strategy should bring forth in the longer term, additional steps aimed at the adoption of special provisions ensuring the presence of local channels in the digital networks, fostering pluralism and promoting cultural diversity, and a greater approximation to the EU Acquis Communautaire, through the introduction of the new rules of the AVMS Directive on audiovisual media services, linear and non linear broadcasting and so on.

Of course all the aforementioned regulations and provisions will need to be backed up by serious enforcement activities and, if needed, by the adoption of penalties for those who don't comply with the regulations themselves. Ideally, national regulators should be supported by strong legal provision specifying their competences in the digitalization process.

It is clear that an update of the strategy (and consequently of the legal/regulatory framework) will not be easy, especially in those Countries where the digitalization has already started. However, even in these cases, the check-list drafted above might prove beneficial to avoid all the problems and the difficulties that the EU regulators faced in the last years while running the switch-over phase. In addition, a greater harmonization of the legal framework related to digitalization will be highly needed in view of the new transformation of the audiovisual sector: it is clear to everybody that the new technological developments and the new services (the Smart-TVs, the so-called Over-the-top providers and so on) that start appearing into the market are creating new challenges for the EU regulators and are going to require a new modification of the provisions regarding content and electronic communications. But maybe this time also the regulators of the SEE area will be ready to tackle the challenge.