REGIONAL GUIDELINES FOR A/D SWITCHOVER STRATEGIES

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1 INTRODUCTION

The purpose of this document is to provide an overview of the countries of South Eastern Europe, namely Albania, Austria, Bosnia and Herzegovina, Croatia, Hungary, Italy, the former Yugoslav Republic of Macedonia (hereinafter 'Macedonia'), Montenegro, Serbia and Slovenia.

The analysis of the national A/D switchover strategies is essential for further development of digitalization in the region and is as such important for other Work packages of the SEE Digi.TV project too. National A/D switchover strategies are namely providing the information on how the pro-cess will be executed, when, and on the basis of which technologies. All this information is important for executing aligned development of other frameworks - Legal, Technical, Economic and Public awareness.

The most important and key elements of the strategies (such as ASO schedule, Regulatory matters, Financial impacts, Technical details etc.) have been selected and analysed for each country and are summarised in a comparison table where the reader can quickly get an overview of the different national strategies' indication concerning the selected element.

The current document will be the basis of the second deliverable of WP5 (Economic framework) since it will include regional guidelines on how the strategies should/could be further developed and ensure that these strategies become more and more aligned with other countries' strategies.

The second chapter of this document provides an EU level overview on the most important strategic documents while the third chapter concludes the overview.

The most important part of the present deliverable is the comparison table that is a separate Excel table attached to this document. It provides a detailed overview of the national strategies.

2 CONCLUSIONS OF THE ANALYSIS OF THE NATIONAL A/D SWITCH-OVER STRATEGIES

The aim of the analysis was to compare analogue switch-off strategies of the countries of South Eastern Europe (Albania, Austria, Bosnia and Herzegovina, Croatia, Hungary, Italy, Macedonia, Montenegro, Serbia and Slovenia).

The comparison had to goals:

1) give a **comparable and practical overview** on the main aspects of the various activities for the sake of the digital transitions in the countries (see below); in two categories: i) as defined in the national strategy; ii) as realized/planned to be realized in December 2011:

- DTT roll-out: which multiplexes are available, schedule and coverage of roll-out
- ASO schedule: planned ASO dates/areas
- ASO priorities: main principles of the implementation of digital transition
- Regulatory matters: which documents regulate the analogue switch-off
- Institutional framework: a constitutional structure executing the ASO
- Licensing model: how the network operators/broadcasters are licenced as for the digital networks
- Financial impacts: necessary financial resources and calculations
- STB subsidy: how and whom should be subsidized, in which form
- Technical: technological issues (transmission, compression etc.)
- Programs: available free-to-air and pay programs, must carry
- Extra services: interactive, on-demand etc.
- Market shares: distribution of viewers on cable-satellite-terrestrial platforms
- DTT Coordinator: organization co-ordinating/leading the ASO efforts
- Information activities: how the affected people are informed
- Status of DAB, DVB-H and pay TV
- Digital dividend: plans on the future usage

The comparison shows the variations and deviations of concept and the realization thereof in case of each country, and also shows the differences or similarities on how ASO is managed in these 10 countries.

2) Based on the comparison, articulation of **alignment proposals** for each country/group of countries for optimizing the efforts, share the experiences, show the way ahead or the potential outcome for the states that are in earlier phases of implementation.

As for the comparison, Annex 2 of the Communication of the European Commission on the transition from analogue to digital broadcasting (from digital 'switchover' to analogue 'switch-off') – September 17, 2003 COM (2003) 541 suggested a checklist of items that could be included in national switchover plans:

1. Strategic plan for switchover, approved or in preparation, if any; Relevant regulation.
2. Policy objectives for digital broadcasting: social, cultural, political, economic, etc.

3. Spectrum management policy choices and scenarios, before and after switch-off: services, coverage, assignees, conditions of use, spectrum allocation intentions, objectives for 2004 Radio Regional Conference negotiations.
4. Implementation choices to best fulfil policy objectives, trade-offs, justification: types of networks, modalities of service, role of authorities, main players, licensing, etc.
5. Tentative calendar for achieving objectives, including target dates for switch-off, and status.
6. Stakeholders' involvement in switchover strategy design and implementation: mechanisms for consulting and processing feedback, players involved, commitments.
7. Criteria for achievement of policy objectives, mechanism/ indicators for monitoring and retro-feeding into or reviewing strategy.
8. Market assessment (e.g. cost/ benefits analysis) justifying certain modalities of public intervention (rather than others) in and beyond areas of exclusive public competence.
9. Policy obligations and incentives (political, informational, regulatory, financial, other); Implementation modalities; Targeted value-chain segments (transmission, content, reception, consumption, other).
10. Areas for possible EU co-ordinated action, now or in future.

The national switch-over strategies provide a very colourful picture as for length, structure and content, but most of them also show a great deal of similarity on the conceptual level. Except the Italian strategy (that followed the points of the EU Commission's checklist), the countries determined their own format and structure for presenting their concept. As for the content, all countries covered the areas proposed by the communication.

Three general areas could be identified that are covered more or less by the various types of strategies:

- pure **digital switchover policy** focusing on the important issues of analogue switch-off
- overall audio-visual **media policy** involving strategies for the content provision and broadcasting
- **radio-spectrum policy** concentrating on digital dividend and broadband communication

All strategies include elements from these areas, and the majority of the strategies put the main emphasis on the digital switch-over and deals with issues from the other two areas as necessary for providing on a complete picture on analogue switch-off (for another example the Macedonian strategy includes a very detailed and complete media strategy as well).

There are typical parts in all strategies, such as EU-regulation and framework, own national regulatory framework, status of frequencies in the given country, market overview, status of public broadcasting, licencing plans, objectives, implementation plans with more or less details, economic impacts, digital dividend etc.

The strategies are not so homogenous concerning the elaboration of **digital switchover action plans**. A few documents committed to present a detailed and specific action plan (some other documents give annual breakdown of tasks). The addition of detailed actions plans could contribute for a coherent and planned course of actions and would allow the countries to (re)consider the time management of the various activities, so the countries involved should consider the elaboration of such actions plans with the necessary flexibility.

Another excellent possibility for the evaluation of the progress is the comparison of the status of **digitalization in other countries**. Many documents reflect to the progress in the world,

but a few provide an outlook with more details on the status of digitalization in the world and in the surrounding European countries. These strategies give an overview of the digitalization abroad with special attention to the neighbouring countries, which is crucial from strategic point of view, since the realization of digital transition in a given country is also subject to progress in the neighbouring countries due to the necessary co-ordination of frequency management. It is therefore recommended that the countries should overlook the status of digitalization in their neighbouring countries, identify the areas of necessary co-operation in order to boost the progress. This outlook is also a great chance for sharing ideas and experiences in all areas of digital transition, from a small TV advertisement spot to the STB subsidy scheme alternatives.

3 STRATEGY-LEVEL EU DOCUMENTS ON DIGITAL TRANSITION

The process of digital switch-over is a global issue. The mandatory international agreements were made within the International Telecommunications Union (ITU), two Regional Conferences on Radio communication were held in 2004 (RRC-04) and in 2006 (RRC-06) including 120 countries from Europe, Africa, Middle East, Iran and Russia. The agenda of these conference included specifically issues of frequencies planning for DVB-T in all European and African countries and the majority of Asian countries. On RRC-06, the outcome was the approval of a frequency plan for the future digital broadcastings.

Simultaneously, EU member states have concluded that an effective use of the spectrum and the accomplishment of EU policy objectives, such as the development of internal market, competition, change and increase, cannot be achieved by a fragmented spectrum and the EU bodies and the Member States are co-ordinating their efforts with the following – legally non-binding – strategy documents:

'eEurope 2005: An information society for all - An Action Plan to be presented in view of the Sevilla European Council 21/22 June 2002' – May 28, 2002 COM (2002) 263

As for the digital switchover, the Action Plan stated that in order to speed up the transition to digital television, Member States should create transparency as far as the conditions for the envisaged switchover are concerned and *Member States should publish by end 2003 their intentions regarding a possible switchover*. These could include a road map, and an assessment of market conditions, and possibly a date for the closure of analogue terrestrial television broadcasting which would enable the recovery and refarming of frequencies. National switchover plans should also be an opportunity to demonstrate a platform-neutral approach to digital television, taking into account competing delivery mechanisms (primarily satellite, cable and terrestrial).

Communication of the European Commission on the transition from analogue to digital broadcasting (from digital 'switchover' to analogue 'switch-off') – September 17, 2003 COM (2003) 541

The Communication addressed the switchover process, which is a complex process with social and economic **implications going well beyond the pure technical migration** with a special focus on Member States' policies for digital TV migration and suggested the type of information that could be included in national switchover plans (annex 2).

The Communication stated that **Market forces and consumer demand must drive** broadcasting digitisation and it is also crucial that market players inform consumers so that they know when to migrate and what the options are. Successful switchover will be facilitated by co-ordinated action from the numerous players involved – broadcasters, equipment manufacturers, retailers, governments and others.

Member State policy interventions should be transparent, justified, proportionate, and timely to minimise the risks of market distortion that requires careful impact assessment. Trying to force switchover against industry and users' interest may lead to unsustainable out-

comes. Member State policy interventions should also be non-discriminatory and technologically neutral. Any differentiated treatment of market players must be justified. Digital TV switchover should be an inclusive process encompassing various networks, business models and services, including free-to-air TV, better picture quality or data and interactive services. Analogue switch-off should only take place when digital broadcasting has achieved almost universal penetration, taking all the above possibilities into account, to minimise social cost.

Policy intervention should take place at national level first, EU has also a role to play, in particular in view of the internal market aspects. **Possible EU contributions** concern notably: benchmarking, equipment standards, consumer information, facilitating and promoting access to added value services. The Communication also proposed to launch a debate on spectrum aspects of switchover within the new Community spectrum policy framework. The top-level objective was to encourage efficient and flexible spectrum usage, while preserving the service mission of broadcasting.

It was not envisaged to propose a common switch-off date or the prohibition of selling analogue receivers at EU level.

Communication of the European Commission on interoperability of digital interactive television services – July 30, 2004 COM (2004) 541

The Communication set out the Commission's position on the interoperability of digital interactive television services pursuant to the Framework directive (Art. 18). The Communication stated that the benefits of mandating open standards including MHP would include increased consumer choice and legal certainty, leading to lower prices for receivers and acceleration of the switchover from analogue to digital television. The Commission concluded however, that there was no clear case for mandating standards at present; the issue should be reviewed in 2005.

Communication of the European Commission on accelerating the transition from analogue to digital broadcasting – May 24, 2005 COM (2005) 204

The Communication reviewed the status of the digital transition and based on relevant strategic documents (communications, Member States' switchover plans published within the framework of the eEurope action plan, opinion of the Radio Spectrum Policy Group) proposed a deadline for switch off of analogue terrestrial broadcasting throughout the EU.

The Communication stated that switchover will generate benefits for the consumer (improved picture quality, better sound, better portable and mobile reception, more TV and radio channels and enhanced information services) and provides additional spectrum capacity released by terminating analogue terrestrial television ('switch-off') offering a unique opportunity for the re-use of a premium part of the radio frequency spectrum for other electronic communications services. The Communication added that the earlier the transition from analogue to digital broadcasting is started at national level and the shorter the transitional period, the sooner these benefits are realised.

However, the Communication experienced little or no coordination of the switchover plans of Member States and established that Member States that have announced a switch-off date, have two groups: i) planning to switch off by 2010 the latest, ii) switch off by 2012. Economic and social benefits for the EU as a whole will only be fully achieved once all Member States have completed switch off, therefore the Commission proposed that the beginning of 2012 be

agreed for switch-off in all Member States. Those Member States who have not yet announced switch-off dates are encouraged to publish, by the end of 2005, plans to show how they would achieve switch-off by the beginning of 2012.

With regard to the spectrum released by switch-off of analogue terrestrial television, Member States' spectrum plans should be flexible enough to allow the introduction of other electronic communications services. Part of any spectrum dividend should be made available for pan-European services.

'i2010 – A European Information Society for growth and employment' – June 1, 2005 COM (2005) 229

The new policy framework the Commission undertook to examine the rules affecting the digital economy to make their interplay more coherent and oriented to economic and technological realities by – i. a. – actively promoting fast and efficient implementation of the existing and updated acquis governing the information society and media services. It declared the intention to propose a revision of the 'Television without Frontiers' directive to modernise the rules on audiovisual media services. Spectrum access across the EU should be facilitated through market mechanisms, which would be assisted by the planned switching off of analogue terrestrial television by 2012. Commission committed to consolidate its proposals by defining a strategy for efficient spectrum management in 2005 to be implemented in the 2006 review of the electronic communications framework.

Communication of the European Commission on EU spectrum policy priorities for the digital switchover in the context of the upcoming ITU Regional Radiocommunication Conference 2006 (RRC-06) – September 29, 2005 COMM (2005) 461

The Communication aimed at presenting EU priorities concerning radio spectrum availability in the context of the digital switchover and the upcoming ITU Regional Radiocommunication Conference 2006 (RRC-06).

The Communication emphasized that the Commission and the Member States should ensure that the regulatory treatment to be given to the spectrum dividend complies with the EU framework for electronic communication services and is consistently applied across the EU.

The Commission also called on Member States to adopt a common position in the RRC negotiations to ensure that the end of the transition period, namely the end of general legal protection of analogue channels will take place at the earliest proposed date, as close as possible to 2012.

Communication of the European Commission on 'Reaping the full benefits of the digital dividend in Europe: A common approach to the use of the spectrum released by the digital switchover' – November 13, 2007 COMM (2007) 700

The Communication described the benefits of the digital dividend to be freed up by the switchover from analogue to digital terrestrial TV by the end of 2012. The digital dividend may be used for wireless broadband communications services, but also for Additional terrestrial broadcasting services and mobile multimedia, since broadcasters should be able to claim a fair stake in the digital dividend in return for their efforts and investment in the digital switchover.

The most optimal use of the digital dividend is only possible if Member States work together and if the EU dimension of spectrum planning for the digital dividend is reinforced. Accordingly, the Commission is proposing to move towards a common spectrum plan at EU level. Nevertheless, the Commission recognised that the spectrum situation may vary in each Member State depending on the specific broadcasting environment, in particular the extent of reliance on terrestrial TV, notably to support public service obligations. There are also clear differences of timing and strategy in national plans regarding the digital switchover which need to be considered. The common spectrum plan would therefore have to be phased in with sufficient flexibility to accommodate legitimate national specificities, such as local social and market needs.

European Parliament resolution on reaping the full benefits of the digital dividend in Europe: a common approach to the use of the spectrum released by the digital switchover – September 24, 2008 (2008/2099(INI))

The Resolution emphasized the need for digital switchover which, together with the development of new information and communication technologies and the digital dividend, will help to bridge the digital divide and contribute to the achievement of the Lisbon goals and noted the divergence in national regimes relating to spectrum allocation and exploitation; which differences may represent obstacles to the achievement of an effectively functioning internal market. The EP urged the Member States to release their digital dividends as quickly as possible (meaning the accomplishment of the digital switchover), allowing citizens of the Union to benefit from the deployment of new, innovative and competitive services; emphasises that, for this purpose, the active cooperation between Member States to overcome obstacles existing at national level for the efficient (re)allocation of the digital dividend is required.

Communication of the European Commission on transforming the digital dividend into social benefits and economic growth – October 28, 2009 COM (2009) 586

The Communication stated that the digital dividend spectrum will become available throughout Europe within a relatively short space of time, as all Member States should complete the switch-off of analogue TV by 2012 at the latest. The Communication outlined a set of proposals for a common approach to the digital dividend in Europe.

The Communication emphasized that Member States which have not yet completed the digital switchover are requested to reaffirm their commitment to the effective switch-off of analogue TV broadcasting by accepting an EU target date of 1 January 2012, and to complete all the necessary preparatory measures, since the digital dividend will only become fully available after the switch-off of analogue broadcasting.

Communication of the European Commission on "A Digital Agenda for Europe" COM (2010) 245 – August 26, 2010

According to the Communication the Commission intends to coordinate the technical and regulatory conditions applying to spectrum use and, where necessary, harmonise spectrum bands to create economies of scale in equipment markets. As a guiding principle, it is stated that a forward-looking European spectrum policy should, while accommodating broadcasting, promote efficient spectrum management, by mandating the use of certain digital dividend frequencies for wireless broadband by a fixed future date, by ensuring additional flexibility (also allowing spectrum trading) and by supporting competition and innovation. The Commission also will ensure the implementation of the provisions of the Audiovisual Media Services Direc-

tive concerning cultural diversity, where appropriate through co- and self-regulation and request information from Member States on their application.

4 SHORT PRESENTATION OF THE NATIONAL SWITCHOVER STRATEGIES

4.1 Albania

4.1.1 Strategy

The first ASO strategy of the Republic of Albania, 'The Albania Strategy on Digital Switchover' prepared in 2007/2008 provides an overview of the Albanian and European regulatory background, provides an assessment of the Albanian audiovisual landscape, defines the main objectives and principles of the switchover, and the role of the state and the respective state administration structures for creating the necessary conditions for the digital switchover, provides a presentation of the digital network capacity, and defines the steps, procedures and timelines for completing the switchover process till the end of 2012. The strategy was prepared following a wide public consultation organized by the Albanian National Council on Radio and Television (NCRT) with as many involved stakeholders as possible and also in co-operation with the Organization for Security and Co-operation in Europe (OSCE).

The revised strategy, the 'Strategy on digital switchover' was prepared (and already submitted for approval) by the Technical Secretariat of the Ad-hoc Committee on the Switchover Strategy in 2011[1]. The revised strategy outlines the current status of digital broadcasting and the capacities (allotments), the objectives and phases of digitalization with special regard on public broadcaster and national private broadcasters, the licencing models for granting digital broadcasting licences, many details on the technical characteristics of the digital switchover (allotments, compression, transmission, etc.), a complete ASO realization plan (digital islands concept), structures monitoring the digitalisation process (Inter-institutional Task Force), a very detailed calculation on digitalization funding (network roll-out costs, STB subsidy, information, etc.), a detailed description of the establishment of the various MUXs, the financial status of broadcasters and an analysis on digital dividend.

4.1.2 ASO schedule (DTT roll-out)

The Strategy aims at switching from analogue to digital broadcasting by the end of 2012 based on the soft switchover or the digital island concept.

Since July 2004, the DIGITALB company proposes to the majority of the population of the territory a package of digital programs supported on terrestrial digital networks (4 fixed networks and 1 mobile). DIGITALB claims to have over 100,000 subscribers (2008 data).

The revised Strategy states that the realistic scenario is ASO till June 17, 2015 (ITU deadline).

[1] A document called 'Complete digital switchover (final version)' prepared by/for the National Council of Radio and Television was also reviewed, but regarding the preparation date thereof (2010), the newer strategy was integrated. This revised Strategy was also considered as status in November 2011.

4.1.3 ASO priorities

Objectives

1. To switch from analogue to digital broadcasting platforms by 2012;
2. To legalize and implement the law on the existing digital operators, who operate without a license;
3. To provide a variety of programs enabled by enhanced capacities, which would increase the range of public choice;
4. To improve the service quality and increase the number of new services (HD, interactive services);
5. To apply market mechanisms by regulating access to, and inter-connections in the broadcasting networks;
6. To apply most advanced standards, which would enable electronic communication networks and services to converge;
7. To provide a universal service, which would offer services of a predefined quality at reasonable prices despite geographic position.
8. ASO could be implemented when majority of the population (~80 %) has digital decoder

As per the revised Strategy:

Main objectives

- *Digitalization of the terrestrial analogue networks in the Republic of Albania;*
- *Provision of additional capacities in order to increase variety and plurality of programs;*
- *Introduction of new media technologies, (HD TV, DVB-T H) interactive services, etc;*
- *Use of a digital dividend for other telecommunication services.*

Conclusions

1. The transition from analogue to digital broadcasting is a process of national importance, and the most important one in the field of radio television broadcasting.

2. No delays may be allowed in digitalisation of the Albanian television operators (public and private), so that this process is achieved within the final deadline set forth by the GE-06, June 2015.

3. The remaining time does not allow for ART and the licenced private operators to work with different plans or agendas. The work done for a "digital islands" coverage of the territory will require all operators, no one excluded, to coordinate the works in a "synchronic" manner, to be able to achieve the switchover at the time decided by the respective institutions, according to the action plan attached to this document.

4. Even in 2015, due to the rough terrain, no Albanian operator will be able to cover more than 90-95% of the country's territory. For the remaining part it will be needed to foresee satellite coverage, as done in other countries.

5. In order to achieve a successful digital switchover, the engagement of the Government is required, as well as use of state subsidy schemes.

4.1.4 Institutional issues

The role of the state is essential in information campaign, co-operation with all stakeholders, legislation, EU-harmonization, frequency planning, tendering procedures, market monitoring on ASO areas, measuring the public awareness on digitalization, identifying opportunities for support to disabled persons. NCRT has leading role in the preparation and implementation of all digitalization processes.

4.1.5 Licensing model

In Albania a total of eight multiplexes could be launched as part of the DTT platform. The plans for these networks are the following:

- 2 MUXs shall awarded to public broadcasting (role of public media and the number of networks to be decided);
- 3 MUXs shall be awarded in competition tenders (for legalizing the existing networks);
- 1 MUX for regional operators;
- 1 MUX for local operators;
- 1 MUX for operator in Tirana area.

Licensing models:

- Soft switchover: licencing in analogue-free areas + progressive freeing of analogue frequencies

- Digital islands: option A - Switchover of all existing analogue programs into digital platforms (with SF networks and MPEG4); option B - Competition for each digital networks imposing the must carry of certain analogue programs

As per the revised Strategy, the competition tendering should be avoided (in order not to jeopardize the existing networks and the previous investments), the existing operators should be licenced (as beauty contest). The 'gatekeeper' model is inappropriate. Priority should be given to existing analogue broadcasters. The broadcasting licence includes the right for program service and network operation. No change in MUX allocation.

Main criteria of the licenses to national private broadcasters:
1. Free the licences that have been arbitrarily occupied and migrate to the frequencies defined in the National Plan according to the NCRT specifications.
2. Each existing operator shall be licensed for a national digital network, MPEGs-4 compression system should be used
3. Obligations to support the local operators' networks;
4. Ensuring equal access, non-discrimination and transparency for accessing the 40 % capacity by other licensed broadcasters;
5. Standardization of limited access systems, protection of juveniles from harmful programs, etc.;
6. Criteria for applying the new and interactive services (DVB-H, HD, etc.)

4.1.6 STB subsidy

Proper incentives shall be offered for the people, but STB subsidy is necessary. Around 220.000 families (37 %) may need support, and a subvention scheme (support in 100, 50, 37 %) should be selected. A STB is calculated with 40 €, and the total maximum cost is around 25 M €.

As per the revised Strategy, ASO is possible when all households are equipped with decoder, and part of the population should be subsidized. Calculations made for subsidizing 100, 50 and 7 % of population, the costs are from ~30 M € to 2 M €. 7 % of the households is considered as families in need for subsidy and a STB is ~30 €.

4.1.7 DTT co-ordination and information

Establishment of inter-institutional (ITF) and technical Task Forces (TTF). TTF is to be operated by the National Council of Radio and Television and consist of technical experts, economists, representatives of consumer organizations with co-ordinating tasks. ITF would be the decision making body assessing all proposals of TTF. ITF consist of representatives from Assembly of Albania, the Council of Ministers, Minister of Economy, Ministry of Finances, Ministry of Public Works, the Competition Authority, NCRT and national and local media, and the public television.

Order of the Prime Minister in 2009 established an Ad Hoc committee on the switchover strategy, the inter-institutional structure chaired by the Minister of Innovation, Information Technology and Communication. This structure will coordinate, at a state level, all procedures and phases of the digitalisation process until the complete switchover to the digital system. A Technical Secretariat supports the work of the ad hoc committee; with two NCRT experts, two RTSH experts, and one expert from each of the institutions composing the ad hoc committee. Budget is ~88,9 M €.

4.1.8 Country-specific questions and answers – Albania

Q: What was the specific role and direct contribution of OSCE and the EU (based on the SAA) in the digitalization in Albania?

> *A: OSCE office in Tirana has supported organization of some Regional and National Conferences on Digitalisation during Public Consultation Process, through its participation, funding and providing foreign expertise. Also, with the financial contribution of this organization, an expert from French Regulatory Authority (CSA) made an evaluation of current situation in the field of media and presented some of recommendations. OSCE has expressed its willingness to back up the NCRT during the all process of digitalization.*
>
> *According to the Stabilization and Association Agreement between Albania and EU, article 102:*

1. The Parties shall cooperate to promote the audio-visual industry in Europe and encourage co-production in the fields of cinema and television.
2. Cooperation could include inter alia programmes and facilities for the training of journalists and other media professionals, as well as technical assistance to the media, both public and private, so as to reinforce their independence, professionalism and links with the European media.
3. Albania shall align its policies on the regulation of content aspects of cross-border broadcasting with those of the Community and shall harmonize its legislation with the Community acquis. Albania shall pay particular attention to matters relating to the acquisition of intellectual property rights for programmes and broadcasts by satellite, terrestrial frequencies and cable.

To date, EU Commission has provided its assistance in regard to drafting the new media law, which is going to be approved in the weeks to come. There is no any contribution in this area so far.

Q: What is the legal status of DIGITALB and does it have a licence already?

A: DIGITALB has not yet a license to build and operate digital terrestrial networks and to broadcast programs on such a network. DIGITALB has a licence to broadcast digital programs on satellite networks.
TRING and SHIJAK TV have also built digital terrestrial networks and are operating without a licence.

Q: How is the attitude of the existing analogue broadcasters (national and local) towards the digitalization?

A: The existing national analogue broadcasters are hesitating. The first attempt of NCRT to license the existing digital operators (which mainly are the same existing analogue ones) failed due to their unwillingness. The small local analogue operators have no financial means and skills to build and maintain digital networks. The draft strategy suggests to small existing operators three following alternatives:
- *To use the capacities of public broadcaster digital network, against payment;*
- *To build jointly the local digital terrestrial network (1 allotment);*

If two above mentioned alternatives failed, to open a public tender for licensing local digital terrestrial network.

Q: Has the roll-out of the digital networks started? If yes, please describe the technical features (SFNs, MPEG4 etc.).

A: No digital license is granted yet. The strategy approval is expected.

Q: Has any analogue broadcaster been switched over (simulcast) or switched off?

A: As it is known, there are some analogue broadcasters which are simulcasting their programs over unlicensed digital networks of DIGITALB and TRING. (Top Channel, Klan, Vizion+, News 24, Ora News, etc).

Q: Has the state decided which method to be applied (soft switch-over or digital islands)?

A: It is expected the strategy to be approved, but it seems that digital islands approach will be adopted.

Q: Did the state award any digital licence?

A: The regulatory authority has not awarded yet any digital terrestrial license.

Q: How the private broadcasters and program distributors respect the legal regulation and legalize their transmission?

A: The private broadcasters and program distributors in general respect the legal regulation. Beside the unlicensed digital terrestrial broadcastings, there is no other subject which operates without a duly issued license.

Q: What is the current role and activities of the inter-institutional and technical Task Forces?

A: Technical task force (called Technical Secretariat) has already submitted the final draft strategy to the Institutional Task force (called ad hoc Committee) for the approval.

Q: A national or international financial fund was separated for any aspect of the digitalization?

A: No national or international financial fund is identified so far.

Q: Has any information campaign been launched for DTT?

A: No information campaign is launched yet.

4.1.9 Recommendations – Albania

The **legalization** of analogue and digital broadcasting and program distribution (pay TV) is a fundamental issue for a viable media market and for a harmonized digital transition. The enforcement of the applicable legal regulation is the key for the rule of law and stability. The transparent and legitimate television and radio market contribute also to the success of the digitalization, since people are incentivized to buy decoders and change to digital if there are more and more programs that are available for a predictably long term (no chance for losing it due to licence problems).

The determination of key and reasonable **deadlines** for the analogue switch-off may be considered; an accompanied **action plan** helps to identify the tasks and bottlenecks. The strategy

enlists the issues and gives a well-elaborated overview of the situation, but a detailed action plan with tasks and dates could motivate the state and private actors to accelerate and align their efforts. If the final ASO plan is accepted with the involvement of all stakeholders, the state should stick to the plans and be determined to realize it.

ASO is part of an international co-operation within the International Telecommunication Union that is a specialized organ of the United Nations. Accordingly, the ASO is also a **political issue** on international, but on domestic level as well and the political importance is even higher with regard to the number of people using exclusively the analogue transmission for getting access to public and commercial television. In all countries, the politics should find the consensus for the i) equal importance acknowledged to the digitalization by all governments; ii) common principles, resources and steps for the realization of digital switchover, since this process eventually could not be accomplished during one cycle of a given government, so the political parties should elaborate **overarching solutions** for the effective analogue switch-off.

A **DTT coordinator organization** with clear mandate from the possible highest state entity and with the participation of all state agencies is essential for the effective realization of the digitalization. As for the Ad Hoc committee on the switchover strategy, the formal or informal frequent participation of private stakeholders could be an issue to consider.

The national strategy and the corresponding action should not be a rigid document, rules carved into stone. Although the maximum commitment should be ensured for the proper and timely implementation of the action plan, both the strategy and the action plan could be subject to **periodic strategic review** and modification if necessary (as realized during the 2011 revision).

The leading role of the **public broadcasting** may boost the digital market and motive the private broadcasters to change their program into digital. A media strategy for the public broadcasting may also contribute to the success of digital switch-over.

Incentives for national private broadcasters for acquiring digital broadcasting licences should be considered. The hesitation of national analogue private broadcasters may be a result of i) not realizing the additional value of the digital terrestrial platform; ii) having concerns on the extra cost of transmission as for their business plans; iii) having also concerns on the negative effect of the digital platform on their market position. As for the additional value, an information campaign on the values of the digital platform is essential, nevertheless the best presentation could be the free-to-air digital transmission of the public program with some HD programs and other added-value service (like EPG) for showing the potential of the digital terrestrial platform. If the people choose DTT, so the penetration grows, on the one hand the free-to-air digital platform becomes more valuable for the advertisers as well (a simulcast channel gain more ad-revenue than the analogue ones); on the other hand the state will have to spend less for subsidizing the households with decoders, since the boost of penetration reduces the number of analogue-only households and the price of a STB also goes lower. As for DTT costs, beside the local broadcasters, during the simulcast period payment facilitations could be considered for national private broadcasters as well (e.g. lower broadcasting fee, or if not applicable, other benefit), but in return they should actively participate in the DTT information campaign, and show educational and other informative programs on their channels. As for competition, the more effective digital transmission allows more programs in the air meaning enhanced competition. The analogue technology is costly but gives the benefit of exclusive places in the market. The broadcasters may be encouraged to enter this market by a consequential and determined ASO state policy. If the existing and other broadcasters realize that ASO is a i) potential end to their business, ii) potential door to enter the free-to-air broadcasting market, the competition and willingness to join could be higher.

The state could consider using the competition as a tool to increase willingness, if the gatekeeper model (a network operator with or without must contract obligations with broadcasters) is finally decided not to apply. Nevertheless, the decision-makers may consider whether the possibility of the different licensing should be maintained for having a 'B' plan if the national private broadcasters remain reluctant to join.

Incentives may also be provided for the provision of **free-to-air programs** on DTT. If the analogue package simply reproduces itself on digital, the people are not interested in change, since the benefits are not so real. If the digital offer could be significantly more than the analogue (double programs or more), people will migrate more easily.

As for **decoder subsidy**,

- in order to minimize the costs and provide maximum effectiveness, the state should survey the people in need for assistance. Automatic subsidy of all analogue households (100/50 % model) may become counter-productive, since the people will always wait and expect for the subsidy and will not activate themselves, and the prices of the STBs will not decrease, since the distributors could add the value of subsidy to the price. Therefore it is recommended to limit the STB subsidy as for the scope, timing and value thereof. A tool to motivate people is a bigger subsidy (or limited number of coupons) well-before the expected ASO date, which subsidy becomes lower or disappears as the time passes;

- the access to digital public and commercial programs may require the complete change of the program receiver system to be established by the given households. The preparedness and technical skill of the various households are different, in case of certain households it may not be enough just to give a decoder or a coupon to the people and let them take care for the rest, so the responsible body should prepare for more active and direct assistance to these people;

- a wide information campaign should be attached to these subsidy efforts and all stakeholders (broadcasters, network operators, decoder manufacturers and distributors, antenna installers) should contribute to the effective STB subsidy scheme;

- if a coupon system is applied, effective measures should be made for avoiding any misuse of the coupons (forfeit, sale etc.) and the distributors/respective state authorities should prepare for the management of the coupons (reimbursements for the sellers or the people)

- the implementation and logistics of a STB subsidy scheme requires proper planning beforehand and international examples show that majority of people realize the need for a decoder when their regional ASO date is very close or already the ASO happened, so special resources should be allocated for managing these demands around the expected ASO dates;

- only such STBs may be part of subsidy that comply fully with the mandatory technical requirements of the state, and special features may also be required (only MPEG 4 boxes).

The **effective information campaign** to the people is one of the most important elements of a successful digitalization:

- Regarding this special task, a separate action plan is needed for planning the activities.

- Clear messages should be transmitted to the people to avoid any misunderstanding including in the questionnaires. It is also recommended to review the main slogans/messages from common

sense or potential interpretation point of view (Croatian example: *"Get off the rooftops and become part of the digital era"* slogan was interpreted that a rooftop antenna is no longer needed for reception, or in other countries ASO was interpreted as the switch-off of the entire terrestrial platform and only cable/satellite remain).

- Requiring the active participation (including financial or other direct support) of all players of the media market should be considered, since one way or the other, all players have the possibility to reach benefits from the digitalization; broadcasters may reduce their transmission costs, program distributors (pay TV operators) may gain more subscribers, device manufacturers sell their products, mobile-network operators will have access to the digital dividend frequencies, so all stakeholders may share the burdens of the digitalization as well.

- For the effective campaign, beside the means mentioned in the revised strategy, a free or low cost call centre, an informative website and periodic information leaflets (all means should use a common and controlled database that is updated by the state) are recommended (the costs could also be distributed among the various stakeholders). In particular as for older and socially disadvantaged groups of population, the possibility for direct assistance at home should be considered.

- The respective authority should also review the information distributed by other players to filter any misleading or inaccurate information.

In case of application for **EU funds**, EU principles on state aid and STB subsidy should be taken into account (even if Albania is currently not a member state to the EU). The assistance by OSCE and the EU Commission are present in this respect.

It became evident during the recent years that the application of the **advance technology** (DVB-T2, MPEG4) is useful for the countries rolling-out digital networks nowadays. The Albanian plans should also concentrate on using/analysing these technologies, to prevent huge costs in the near future, when a currently cheaper technology become out-of-date and to be replaced. This is the reality in case of digital set-top-boxes, where the prices are decreasing progressively year by year, and MPEG2 boxes are no longer available in many markets. The application is improved technology also gives more capacity for contents (as identified also by the Strategy). The revised strategy has already identified these experiences (transition period for MPEG 4, etc.), a further step could be encouraging the sale of enhanced equipment (mainly MPEG 4 devices) in retail, if the prohibition of MPEG 2 device – regarding the penetration of MPEG 2 STBs – could not be a realistic option for promoting the improved technology.

Regardless of the equipment that may be sold in Albania, a clear, available and mandatory **technical specification of the decoders** to be sold is essential. These technical features should be communicated to the buyers (with a DVB-T compatible label or other efficient way) and frequently controlled by the respective authorities.

Concerning all aspects of the digital transition, there are similarities and solutions that may be used in all countries (with nation-specific modifications if necessary). For accessing these solutions, the presentation and analysis of the **international benchmarks** (experience) with special regard on the processes and status of digitalization in the neighbouring countries is very useful. The contribution of international experts (like the CSA expert) and the experience of countries with similar market conditions are very valuable.

The presentation and promotion of the many extra service that DTT offers (interactive services, EPG etc.) may also motive people and service providers to change to digital.

The **digital dividend** is an extraordinary benefit of the analogue switch-off that may also encourage the state and the service providers to boost the migration. The analysis and related plans are useful for a complete picture. The demand is very serious for mobile wireless services, but during the planning of the use of digital dividend, allocating frequencies for broadcasting should not be totally rejected. The digital transmission in SD merely reproduces the quality of analogue transmission (in a more effective way as for using frequencies) with some added-value services (like EPG), but the real potential of DTT for the viewers is the HD and later the 3D option. The improvement of DTT technology is continuous, but HD/3D and other valuable services will require capacity for their full potential, so when the countries plan the use of digital dividend, some slots should planned for these state-of-the-art and future broadcasting services.

Although DVB-H seems to be a not successful story, more attention should be paid to the digitalization of radio (DAB).

Trials and technical test should be encouraged with regard to any digital service, especially DAB, 3D, HD, interactive services etc.

The main emphasis of digitalization is on the terrestrial platform, the **digitalization of other platforms**, such as cable (DVB-C) and satellite (DVB-S) could also be subject of strategic analysis. From viewers' point of view, the ASO process is detrimental only for the users of the analogue terrestrial platform, since they lose their television and have to migrate (not necessarily to DTT), so other platforms may also contribute to the digitalization by participating in the information campaign or sharing some costs of digitalization efforts.

The Strategy should be a public document and for the use of all parties including the end-users of DTT, namely the viewers. Therefore a list of abbreviations and definition of specific DTT terms are very useful for the non-professional users of the Strategy for increasing the awareness and interest toward DTT (as in the revised strategy).

4.2 Austria

4.2.1 Strategy

The Austrian digital switch-over strategy, the 'Digitisation Strategy for the introduction of digital terrestrial television in accordance with § 21.5 of the Private Television Act (PrTv-G)' was prepared by KommAustria, the Austrian Broadcasting Regulatory Authority in 2003. In this first digitisation strategy the main cornerstones were defined; in 2007 an updated version of the Strategy was prepared, mainly to include local/region TV and DVB-H; currently the third version of the Strategy is applied for the tendering process of MUX D/E.

The 2003 Strategy – elaborated with the support of the "Digital Platform Austria" working group and in co-operation with the Federal Chancellery – contains two parts; in the first part there is a summary of important issues (requirements in the introductory phase, Network development and simulcast phase, time-frame); the second part (Explanatory Background Paper on the digitisation strategy) deals with i) media policy issues (digitalization in international context, terrestrial platform in Austria, media policy objectives, consumers-related issues, separation of broadcasting and infrastructure, scenario for the post-simulcast period, digital radio etc.); ii) technical-frequency issues (spectrum management, transmission in Austria, DVB-T features); and iii) the legal consequences in the coming years (invitation to tender for the multiplex platform(s) to be implemented by the regulatory authority, spectrum regulation, allocation of funds etc.).

4.2.2 ASO schedule (DTT roll-out)

The Strategy envisages four phases: 1) the preparation phase from 2003 to Q4 2005 (intensive spectrum planning and co-ordination activities with the neighbouring states, DVB-T pilots, clarification of the business case, preparation of simulcast islands); 2) the Progressive provision in densely populated areas in Q1 to Q4 2006 (legal authorisation of planning, development and operation of a first Multiplex platform, development of network "islands" in the densely populated areas, objectives, review of the digitisation strategy); 3) Switchover by region and analogue turn off (ATO) from 2007 to 2010 (carried out in the provinces in turn and with a limited Simulcast duration (6 to 12 months)); 4) After the ATO (ASO) from 2010 (five or six possible transmission channels in Austria; call for tender and award of further multiplex platforms; level of provision: multiplex coverage of over 90% (stationary), two or three transmission channels with 70% stationary and 40% portable indoor receivers, further transmission channels in accordance with the digitalisation strategy and economic resources).

Currently no changes for the nationwide multiplex A and B foreseen;
MUX A: around 97% coverage
MUX B: around 90% coverage
Local/regional multiplex C; addition of all local and regional multiplex operators
MUX C: around 35 % coverage

ASO is completed on June 6, 2011.

4.2.3 ASO priorities

General: a quickly reached high level of coverage with digital signals for the population; an excellent technical quality of digital signals; integrating the expert knowledge of broadcasters when building up an operating the digital platform; a plan that is user-friendly for consumers; a plan to promote the dissemination of terminal equipment for receiving digital signals; an offer of digital channels providing a diversity of opinions, with channels including Austria-specific content being disseminated preferentially;

Consumers: Long transition phase with least possible inconvenience to consumers; creation of incentives, but no pressure to switch over; ensuring affordable market proces for STB, promotion of interoperable boxes which are also SAT-compatible; quality and range of programme and additional offers; protection against a move from free TV to pay TV; maintenance of present reception level of 95%

Operators: the separation of broadcasting companies and infrastructure operators; the multiplex operator himself chooses the programmes to transmit by offering a public transparent tender

4.2.4 Institutional issues

Parliament: legislation
Government: drafting primary legislation proposals
NRA: KommAustria; implementation of tenders, supervision of concession contract execution, market analysis, information campaign, implementation rules, frequency issues, support of the Digital Platform Austria working group
Network operator: ORS; roll-out of network, fulfilment of must carry-s, information campaigns, STB distribution
Public broadcaster: FTA presence on DTT, information
Commercial broadcasters: commitment for ASO from the nationwide analogue broadcasters, presence on DTT
Equipment manufacturers and retailers: distribution of STBs with the required technical conditions

4.2.5 Licensing model

Beauty contest on a basis of a ten year licence for a multiplex platform.

4.2.6 STB subsidy

"Digitalisierungsfonds" - subsidy in a technologically neutral form – vouchers to natural persons paying ORF fee (obligatory to all TV or radio set owner).

4.2.7 DTT co-ordination and information

Digital Platform Austria with four core partners (Österreichischer Rundfunk [Austrian Broadcasting], Rundfunk & Telekom Regulierungs-GmbH [Broadcasting and Telecom Regulation Company], Siemens Austria AG and Telekom Austria AG) and with ~300 experts from all field.

4.2.8 Country-specific questions and answers – Austria

Q: Was any STB subsidy scheme applied in Austria? If yes, please provide some details (eligibility, form, implementation etc.); If no, please explain the reasons.

A: A €40 voucher was available to the first 100,000 consumer to use towards the purchase of an MHP set-top box.

Q: How did the stakeholders inform the people?

A: Mainly a letter to all "paying consumers" and via TV Spots.

Q: How long was the information campaign and what were the main forms?

Q: Was there any negative feed-back from the people following the ASO?

A: Probably no such feed-back

Q: Was there particularly big demand for digital decoders and antennas prior and just after the ASO and how did the distribution system handle it?

A: Probably no such demand.

Q: Is there any issue that caused particular difficulties or diversion from plans during the digital switch-over?

Q: If there is any particular issue that you would like to share or deem important, please do not hesitate to raise and discuss it.

4.3 Bosnia and Hercegovina

4.3.1 Strategy

The digitalization strategy of Bosnia and Hercegovina, the 'Strategy on the switch-over from analogue to digital terrestrial broadcasting in the frequency bands of 174-230 MHz and 470-862 MHz in Bosnia and Herzegovina (2009)' was prepared by the DTT Forum and adopted by the Council of Ministers of Bosnia and Herzegovina on June 17, 2009. The Strategy presents and analyses the legal framework, makes recommendations on improving the legal environment, gives a well-selected presentation of the international regulatory environment, defines the general and specific goals, provides a timeline for the analogue switch-off and an implementation plan, deals with content and extra services issues, gives a very detailed technical overview and implementation plan, assesses the socio-economic aspect including the financing the DTT, and adds a promotion plan with an information campaign. The Strategy has also annexes – i. a. – on the DTT Forum, on the international benchmarks of EU/neighbouring countries (which is a significant value of this very complete and coherent Strategy), on the communication market sector.

The Strategy was prepared by DTT Forum, starting the work in June 2007, which organized a series of conferences, workshops, working meetings with the international experts and round table meetings with all the relevant stakeholders within the communications sector in Bosnia and Herzegovina. The Forum also conducted a research with the Communications Regulatory Agency on the communications sector and initiated the page dedicated to the process of DTT introduction in Bosnia and Herzegovina (www.dtt.ba)

4.3.2 ASO schedule (DTT roll-out)

As per the Strategy, ASO shall be completed till December 1, 2011 in UHF band; till December 1, 2012 in VHF band (if 90 % people have DTT reception possibility). From November 1, 2009 experimental transmission shall be started based on temporary licences; Not later than June 1, 2010, the transition period should be started based on final licences; till October 1, 2011 MUX A and B should reach 85 % coverage.

However, as a result of various delays, including the cancellation of the DTT tender in November 2011, it has been seen that Bosnia and Hercegovina cannot complete analogue switch-off by the date set in Strategy, so it has been proposed to move the date to December1, 2014 in the Action Plan.

4.3.3 ASO priorities

Objectives

– primary role of public TV in promoting DTT
– ensuring the effective coordination by DTT Forum
– transition period should be the shortest possible;
– separation and careful regulation of content production, transmission and distribution

– assistance for people with special needs is necessary by defining obligatory services (additional video, subtitling etc.)
– special attention to consumers' protection ("DTT Forum recommends" stickers to suitable STBs)
– optimal distribution of resources and assignment of multiplex, cost-orientated prices of licences, concessions
– proposal for technical equipment specification for digital broadcasting towards
the industry and end users' protection

4.3.4 Institutional issues

The tasks for Strategy realization are divided among the actors as per their primary function:

- The Parliament and the Council of Ministers of Bosnia and Herzegovina are responsible for timely adoption of an adequate legal framework (including the ASO deadlines) and financing or subvention of the part of the process;
- Communications Regulatory Agency is in charge of the timely development of an adequate regulatory framework, license issuing and other related activities;
- Other competent institutions are in charge of fulfilling obligations from Broadcasting Sector Policy and the Strategy;
- Broadcasters (commercial and public) determine its success with the dynamics of their involvement; the public broadcaster should have leading role in informing the people on DTT.

4.3.5 Licensing model

The Strategy envisaged temporary licences for trial DTT transmission before Nov 1, 2009 for MUX A and B; before March 10, 2010 end release procedures for all participants in DTT; till June 1, 2011 licences granted on MUX C and D (available after ASO) and separate licencing for network operators (infrastructure), service providers (multiplexing, pay TV) and content providers.

In November 2011, the Office for Public Appeals has cancelled the outcome of the DTT tender following a complaint from one of the failed bidders. Participants in the DTT tender for the provision and operation of the DTT network and associated digital microwave services included Croatia's Ericsson Nikola Tesla, the local consortium Unis Telekom, Serbia's Nera Beograd and Hungary's Metalcom. The tender had been won by Ericsson Nikola Tesla.

4.3.6 STB subsidy

Subvention for all households paying RTV tax as for the part of the STB price is recommended (as voucher within 6 months from DTT start). People should be motivated to buy STBs to accelerate the transition.

4.3.7 DTT co-ordination and information

DTT Forum – established in 2006, tasks:
- development of the Strategy
- organization of many conferences, workshops and round table meetings
- gathering interested parties in the communications sector
- promotion of the transition to DTT and education of general population and expert audience
- Structure: Council = representatives of Ministry of Communications and Transport and Communications Regulatory Agency), Secretariat, 5 working groups specialized for regulatory, programming, technological and promotion issues and socio-economic aspects.

Well planned and successfully realized informative-educational public promotional campaign is essential; two-month PR campaign near the key events (pilot, start of DTT); Means: mass media (ads, TV shows), educational flyer (attached to telco bills), articles, free call centre, branded bus for road shows, outdoor advertisement, involving municipal administration in the DTT promotion process, Digital info corner. Information website www.dtt.ba

4.3.8 Country-specific questions and answers – Bosnia and Hercegovina

Q: When is the new DTT tender planned to be invited following the cancellation of the DTT tender in November 2011?

A: New tender is ongoing, submission deadline has expired, currently the process is in commission evaluation phase

Q: Beside the delay, is there any plan to modify the principles or implementation of the Strategy?

A: Currently, the modification to DVBT 2 technology is being discussed

Q: When is the new action plan expected to be accepted?

A: Draft has been adopted by DTT Forum on January 30, and forwarded to Council of Ministers of BiH, adoption expected by the end of March

Q: If there is any particular issue that you would like to share or deem important, please do not hesitate to raise and discuss it.

4.3.9 Recommendations – Bosnia and Hercegovina

The determination of key and reasonable **deadlines** for the analogue switch-off may be considered; an accompanied **action plan** helps to identify the tasks and bottlenecks. The strategy enlists the issues and gives a well-elaborated overview of the situation, but a detailed action plan with tasks and dates could motivate the state and private actors to accelerate and align their efforts. If the final ASO plan is accepted with the involvement of all stakeholders, the state should stick to the plans and be determined to realize it (as the Council of Ministers of BiH accepts it, the action plan probably becomes a reality).

ASO is part of an international co-operation within the International Telecommunication Union that is a specialized organ of the United Nations. Accordingly, the ASO is also a **political issue** on international, but on domestic level as well and the political importance is even higher with regard to the number of people using exclusively the analogue transmission for getting access to public and commercial television. In all countries, the politics should find the consensus for the i) equal importance acknowledged to the digitalization by all governments; ii) common principles, resources and steps for the realization of digital switchover, since this process eventually could not be accomplished during one cycle of a given government, so the political parties should elaborate **overarching solutions** for the effective analogue switch-off.

The national strategy and the corresponding action should not be a rigid document, rules carved into stone. Although the maximum commitment should be ensured for the proper and timely implementation of the action plan, both the strategy and the action plan could be subject to **periodic strategic review** and modification if necessary (as realized during the 2011 revision).

The leading role of the **public broadcasting** may boost the digital market and motive the private broadcasters to change their program into digital. A media strategy for the public broadcasting may also contribute to the success of digital switch-over.

Incentives may also be provided for the provision of **free-to-air programs** on DTT. If the analogue package simply reproduces itself on digital, the people are not interested in change, since the benefits are not so real. If the digital offer could be significantly more than the analogue (double programs or more), people will migrate more easily. If applicable (as realized the tender bids are already submitted), in the new DTT tender a joint incentive system could be inserted to motivate the parties to join the digital platform with as much FTA content as possible.

As for **decoder subsidy**,

- in order to minimize the costs and provide maximum effectiveness, the state should survey the people in need for assistance. Automatic subsidy of all analogue households paying the RTV tax may be reconsidered, since the people will always wait and expect for the subsidy and will not activate themselves, and the prices of the STBs will not decrease, since the distributors could add the value of subsidy to the price. Therefore it is recommended to limit the STB subsidy as for the scope, timing and value thereof. A tool to motivate people is a bigger subsidy (or limited number of coupons) well-before the expected ASO date, which subsidy becomes lower or disappears as the time passes;

- the access to digital public and commercial programs may require the complete change of the program receiver system to be established by the given households. The preparedness and technical skill of the various households are different, in case of certain households it may not be enough just to give a decoder or a coupon to the people and let them take care for the rest, so the responsible body should prepare for more active and direct assistance to these people;

- a wide information campaign should be attached to these subsidy efforts and all stakeholders (broadcasters, network operators, decoder manufacturers and distributors, antenna installers) should contribute to the effective STB subsidy scheme;

- if a coupon system is applied, effective measures should be made for avoiding any misuse of the coupons (forfeit, sale etc.) and the distributors/respective state authorities should prepare for the management of the coupons (reimbursements for the sellers or the people)

- the implementation and logistics of a STB subsidy scheme requires proper planning beforehand and international examples show that majority of people realize the need for a decoder when their regional ASO date is very close or already the ASO happened, so special resources should be allocated for managing these demands around the expected ASO dates;

- only such STBs may be part of subsidy that comply fully with the mandatory technical requirements of the state, and special features may also be required (only MPEG 4 boxes).

The **effective information campaign** to the people is one of the most important elements of a successful digitalization:

- Regarding this special task, a separate action plan is needed for planning the activities.

- Clear messages should be transmitted to the people to avoid any misunderstanding including in the questionnaires. It is also recommended to review the main slogans/messages from common sense or potential interpretation point of view (Croatian example: *"Get off the rooftops and become part of the digital era"* slogan was interpreted that a rooftop antenna is no longer needed for reception, or in other countries ASO was interpreted as the switch-off of the entire terrestrial platform and only cable/satellite remain).

- Requiring the active participation (including financial or other direct support) of all players of the media market should be considered, since one way or the other, all players have the possibility to reach benefits from the digitalization; broadcasters may reduce their transmission costs, program distributors (pay TV operators) may gain more subscribers, device manufacturers sell their products, mobile-network operators will have access to the digital dividend frequencies, so all stakeholders may share the burdens of the digitalization as well.

- For the effective campaign, the means mentioned in the strategy should use a common and controlled database that is updated by the state.

- The respective authority should also review the information distributed by other players to filter any misleading or inaccurate information.

Regardless of the equipment that may be sold in Bosnia and Herzegovina, a clear, available and mandatory **technical specification of the decoders** to be sold is essential. These technical features should be communicated to the buyers (with a DVB-T compatible label or other efficient way) and frequently controlled by the respective authorities.

Concerning all aspects of the digital transition, there are similarities and solutions that may be used in all countries (with nation-specific modifications if necessary). For accessing these solutions, the presentation and analysis of the **international benchmarks** (experience) with special regard on the processes and status of digitalization in the neighbouring countries is very useful. The contribution of international experts (like the CSA expert) and the experience of countries with similar market conditions are very valuable.

The presentation and promotion of the many extra service that DTT offers (interactive services, EPG etc.) may also motive people and service providers to change to digital.

The **digital dividend** is an extraordinary benefit of the analogue switch-off that may also encourage the state and the service providers to boost the migration. The analysis and related plans are useful for a complete picture. The demand is very serious for mobile wireless services, but during

the planning of the use of digital dividend, allocating frequencies for broadcasting should not be totally rejected. The digital transmission in SD merely reproduces the quality of analogue transmission (in a more effective way as for using frequencies) with some added-value services (like EPG), but the real potential of DTT for the viewers is the HD and later the 3D option. The improvement of DTT technology is continuous, but HD/3D and other valuable services will require capacity for their full potential, so when the countries plan the use of digital dividend, some slots should planned for these state-of-the-art and future broadcasting services.

Although DVB-H seems to be a not successful story, more attention should be paid to the digitalization of radio (DAB).

Trials and technical test should be encouraged with regard to any digital service, especially DAB, 3D, HD, interactive services etc.

The main emphasis of digitalization is on the terrestrial platform, the **digitalization of other platforms**, such as cable (DVB-C) and satellite (DVB-S) could also be subject of strategic analysis. From viewers' point of view, the ASO process is detrimental only for the users of the analogue terrestrial platform, since they lose their television and have to migrate (not necessarily to DTT), so other platforms may also contribute to the digitalization by participating in the information campaign or sharing some costs of digitalization efforts.

The Strategy should be a public document and for the use of all parties including the end-users of DTT, namely the viewers.

4.4 Croatia

4.4.1 Strategy

Analogue to Digital Television Broadcasting - Switchover Strategy for the Republic of Croatia was elaborated by the Working Group for the Preparation of the Implementation and Application of the DVB Technology and Services in the Republic of Croatia and approved by the Government in July 2008. The Strategy provides the strategic baselines and implementation criteria of digitalization, the institutional, technical and legal framework, deals with content and business framework, campaigns and financial issues, and provides detailed action plans on implementation and information campaign.

4.4.2 ASO schedule (DTT roll-out)

According to the Strategy and Action plan two SFN nationwide networks should be available in parallel with the existing analogue networks, digital transmission shall start on January 1, 2009. According to the Digital regions concept, Croatia is divided into 9 regions/allotments (D1-D9); the digital transmission starts from Jan 1, 2009 and after 6 to 12 months simulcast, the analogue transmission shall be switched-off. Last ASO, according to the updated Action plan was planned on October 5, 2010 (D4 region)

ASO began in Croatia on January 26, 2010. The analogue services were progressively switched off in the 9 regions. The region D04 (the area of Zagreb City and Zagreb County) was the last region to switch-off. ASO was completed on October 5, 2010. Currently the DTT networks are fully operational:
MUX A >98.5% population covered
MUX B >95% population covered
MUX D >90% population covered

4.4.3 ASO priorities

– Full digital transmission from Jan 1, 2011
– MPEG2 for SDTV content nationwide, regional and local networks, MPEG4 for HDTV and PayTV as per the digital islands concept (urbanized areas)
– ensuring the FTA digital transmission of public programs
– optimal use of transmission capacities to meet public interests
– development of content pluralism
– open room for various ways of expressing cultural identity via FTA transmission
– ASO should not cause any negative consequences to the viewers or to the TV broadcasters (i.a. 95 % coverage of one FTA MUX; STB affordability shall be ensured)

4.4.4 Institutional issues

Parliament: legislation
Government: drafting primary legislation proposals, ensuring secondary legislation, effective use of DD, universal access to FTA public programs, co-ordination of efforts, Digital Switchover Help system, SB subsidy, support for socially disadvantaged population, funds for info-campaigns
NRA: frequency management issues, supervision of concession contract execution, ensuring effective competition, ensuring the conformity with international standards of the digital services (MPEG2, MPEG4)
Network operator: full network roll-out, neutrality, same treatment to all content providers, interact with other stakeholders,
Public broadcaster: presence on DTT, information-education, provide higher quality digital programs, provide additional services for handicapped people, multilingual broadcasting for ethnic groupings
Commercial broadcasters: information-education, provide higher quality digital programs
Equipment manufacturers and retailers: advise consumers, ensure variety of STBs, warnings on analogue devices

4.4.5 Licensing model

All existing television broadcasters shall be granted a transitional period of maximum 6 months, with a minimum precondition of guaranteed digital terrestrial television signal coverage of the region covered by the corresponding concession contract as in analogue broadcasting.

During the transitional period, network operators shall be regarded as legal entities that have licences for experimental digital terrestrial television broadcasting effective as of the date of entering into force of the Strategy, but only for the electronic communications networks and services to which the licence refers (SDTV, HDTV, DVB-H, etc.). Selection of one or more best applicants for the use of the radio frequency spectrum for broadcasting shall be prepared.

For granting the license for spectrum usage (choosing network operator) tendering procedure is used.

4.4.6 STB subsidy

Subsidy in a technologically neutral form – vouchers to natural persons paying RTV fee (obligatory to all TV or radio set owner). The Central State Administrative Office for e-Croatia shall plan its budget for that purpose.

Subsidy scheme finalized on 31 December 2010

4.4.7 DTT co-ordination and information

~Central State Administrative Office for e-Croatia

Comprehensive promotion campaign on digital television - including intensive and continuous co-operation with all stakeholders - carried out by the Central State Administrative Office for e-Croatia, as the focal co-ordinating body focusing to:
- inform on the reason to switch-off
- educate on benefits
- provide info and support on the process

Means:
- info TV commercials
- visuals (mascot and logo)
- informative brochure
- website
- TV shows, annual conferences, workshops and round tables
- DTV call centre, road-show

Promotional and educational campaign was successfully finished by the end of ASO, on 31 December 2010.

4.4.8 Country-specific questions and answers – Croatia

Was there any negative feed-back from the people following the ASO?

Was there particularly big demand for digital decoders and antennas prior and just after the ASO and how did the distribution system handle it?

Is there any issue that caused particular difficulties or diversion from plans during the digital switch-over?

Q: What was the experience with the STB subsidy scheme; was it enough for the people to get the voucher or further assistance was necessary for the majority of people?

A: The state subsidy was given in form of 75 HRK vouchers (~10 EUR) to the natural persons paying radio-television fee in order to support purchasing of digital receivers in technologically neutral way. In that time this subsidy covered approximately 50% of price of the average digital terrestrial receiver. All retailers were well informed and instructed how to claim the money for the vouchers from the state subsidies and this worked flawlessly. In addition to the national information campaign the retailers launched their own commercial campaigns which informed consumers that they can use vouchers in their stores. Apart from the informational campaign on purchasing digital receivers, additional educational-informational campaigns were performed by the state and stakeholders in order to inform and educate people on other required equipment such as antennas, as well as how to install properly the equipment. Additionally Digital Switchover Help center was established in order to support consumers in the digital switchover process, in particular older and socially disadvantaged groups of population. For those persons to whom help couldn't be provided via phone calls and e-mails, special teams of technicians and students provided support at their homes.

Q: How did the stakeholders inform the people? How long was the information campaign and what were the main forms?

A: The main objectives of the information campaign were to:

- inform the users about the advantages of digital television broadcasting;
- inform the users about the equipment that they need to obtain and how to use it;
- inform the users about the state subsidies for buying digital television equipment;
- inform the users about the analogue switch off dates in their region.

The information campaign was conducted via all information channels (i.e. television, internet, newspaper, radio…). There were several television and radio commercials informing the users about the analogue to digital switchover. Additionally, there was a call centre that was set up for answering all questions and providing help concerning digital television switchover.

The government of Croatia set up a web site that informed the users and the retailers about the analogue to digital switchover:
http://vlada.hr/hr/aktualne_teme_i_projekti/aktualne_teme/digitalna_televizija

The retailers were instructed how to claim the money from the state subsidies that were given to the users in form of 75 HRK vouchers (~10 EUR).

Croatia had a regional approach to the analogue to digital switchover process (9 regions were switched off separately during the whole year 2010). The general campaign on ASO was held nationwide during the whole year, and approximately one month before the analogue switch-off date in each particular region additional regional campaign was launched.

Q: Was there any negative feed-back from the people following the ASO?

A: In such a complex project there are always expectations of certain problems, in this case, problems with setting up equipment, no signal etc. Due to the very good technical performance of the project, informational and educational campaign and in particular due to the set-up call centre these problems were diminished to the very low level.
The most often inquires to the call centre were related to the general information on DVB-T, assistance on the setting up the equipment, subsidy vouchers, network etc.

Q: Was there particularly big demand for digital decoders and antennas prior and just after the ASO and how did the distribution system handle it?

A: One of the reasons to have regional ASO process approach was also to give the opportunity to the distribution system and retailers to concentrate on one region at a time in order to be well prepared for the increased number of requests for the equipment.
The distribution system was very well prepared and most of the equipment retailers stocked more than enough supplies to cope with the increased demand. The experience from Croatia shows that despite the intensive information campaign people tend to buy the equipment in the last moment prior to the ASO or just after it.

Q: Is there any issue that caused particular difficulties or diversion from plans during the digital switch-over?

A: There was no particular difficulties but slight misunderstanding occurred among the small percentage of the public when the slogan "Get off the rooftops and become part of the digital era" was used during one part of the information campaign. It was understood as there was no more need for the rooftop antennas which was wrong, of course. The slogan and the message it sent should have been better suited in order not to confuse users.

4.5 Hungary

4.5.1 Strategy

The Hungarian 'Digital Switchover Strategy' was elaborated by the Prime Minister's Office (after wide public consultation) and approved by the Government in March 2007. The Strategy defines the objectives, priorities and means of implementation concerning the digitalization, describes the licencing model (strong vs. weak multiplex operator) and tendering issues, deals with the informational activities towards the people, pertains the role of the public broadcaster, details the frequency issues, deals with competition, media and intellectual property issues, describes the distribution of STBs and mentions the STB subsidy scheme, presents the institutional scheme and the financial impacts.

4.5.2 ASO schedule (DTT roll-out)

The Strategy envisaged simulcast with 3 MUXs till ASO; MUX A with 90 %, MUX B with 75 %, MUX C with 52 % coverage. Planned simulcast start was in 2008, and planned final ASO date was in 2012.

Nationwide simulcast started on Dec 1, 2008. The roll-out of the MUXs was as follows:

Dec 1, 2008 - Start with 59 % (MUX A, C)
Dec 1, 2009 - 88 % (MUX A, C)
Dec 1, 2010 - 95 % (MUX A, C)
Dec 1, 2011 - 96 % (MUX A, C); 65 % (MUX B)

Currently, the coverage of the public programs is ~98 %. As per the digital act, ASO shall be realized till Dec 31, 2014.

4.5.3 ASO priorities

– strengthening of media pluralizm
– development of digital services and content
– sustainable and effective competition among program distribution platforms
– effective resource (frequency) management
– amelioration of consumers' awareness on digital service
– support to socially handicapped people

4.5.4 Institutional issues

Parliament: decision on main ASO conditions, legislation
Government: ASO strategy, submission to Parliament
NRA: implementation of tenders, supervision of concession contract execution, market analysis, information campaign, implementation rules, frequency issues

Network operator: roll-out of network, fulfilment of must carry-s, information campaigns, STB distribution,
Public broadcaster: own digital switch-over strategy, FTA presence on DTT, information
Commercial broadcasters: commitment for ASO from the nationwide analogue broadcasters, presence on DTT
Equipment manufacturers and retailers: distribution of STBs with the required technical conditions

Parliament: decision on main ASO conditions, legislation
Government: submission to Parliament
NRA (NMHH): implementation of tenders, supervision of concession contract execution, market analysis, information campaign, implementation rules, frequency issues
Network operator (AH): roll-out of network, fulfilment of must carry-s, information campaigns, STB distribution,
Public broadcaster: FTA presence on DTT, information
Commercial broadcasters: commitment for ASO from the nationwide analogue broadcasters, presence on DTT
Equipment manufacturers and retailers: distribution of STBs with the required technical conditions

4.5.5 Licensing model

Mixed multiplex model was chosen, operator shall be subject to must carry/contract obligations (biggest coverage MUX shall contain all public channels), but programs on the rest of the capacity is its decision. The Operator shall be also subject to a must contact obligation for a 3rd FTA commercial channel. 5 MUXs should be tendered for one winner (=network+multiplex operator)

Exclusive operating licence (multiplexing + transmission) of digital terrestrial TV and radio networks were awarded in Sep 2008 in an international competition tender to one market operator (Antenna Hungária) till 2020 with several obligations (tender fee and annual fee, information, STB distribution, must carry-s, network roll-out, etc.); obligations are supervised by NRA. On programs, network operator shall transmit the public TV and radio programs based on a contract; shall contract with maximum four general-interest nationwide channels (contract executed with the two nationwide commercial broadcasters); and shall transmit two news-related channels; the use of the rest of the capacity is up to the network operator (currently a payTV service is provided).

4.5.6 STB subsidy

For an accelerated switchover, a STB subsidy may be useful:
- only on platform-neutral way
- only for people in need
- only for analogue households

A decree of the NRA will regulate the details.

4.5.7 DTT co-ordination and information

A state body with clear mandate within the Prime Minister's Office with the necessary staff. Tasks:
- representation of switchover aspects within the government and public administration
- co-ordination with market players
- information to people
- co-ordination of STB subsidy

Generally, the Hungarian NRA, the National Media and Info-communications Authority (NMHH) is responsible for the implementation of the digital switchover and for the preparation of the necessary decisions. A non-profit company was also established by the DTT operator (AH) for co-ordinating the efforts of all stakeholders. NMHH is having regular discussion with the network operator and other stakeholders.

The network operator performs various information activities (partly as part of the authority contract executed with NMHH), such as
- *operation of a free call centre and an Information Centre (for personal assistance)*
- *regular distribution of information leaflet*
- *operation of a mobile campaign bus and a website (www.mindigtv.hu)*
- *commitment for fixed information spending (educational films, ads, campaigns)*
- *operation of a system for labelling DVB-T compatible device*
- *operation of official MinDigTV store and service network*

4.6 Italy

4.6.1 Strategy

The Italian Plan for Digital Switchover is the result of a combination of National laws, AGCOM resolutions and Ministerial decrees as: law n. 66/2001, DM defining the regional ASO calendar and AGCOM resolutions (as AGCOM resolution 435/01/CONS and AGCOM resolution 353/11/CONS). Such strategy is in line with the types of information recommended by the Communication of the European Commission on the transition from analogue to digital broadcasting (from digital 'switchover' to analogue 'switch-off') – September 17, 2003 COM (2003) 541 in its annex 2.

Consequently, the Italian strategy for Digital Switchover includes the i) strategic plan for switchover and the relevant regulation; ii) political objectives; iii) spectrum management; iv) implementation choices; v) draft timetable for the switchover and switch-off; vi) involvement of the interested parties; vii) criteria for the pursuit of the political objectives; viii) market Situation – cost/benefit analysis; ix) political obligations and incentives; x) areas for possible EU coordination.

4.6.2 ASO schedule (DTT roll-out)

End 2003 first digital trials by public and commercial broadcasters

Jan 1, 2004 - 50 % DTT coverage
Jan 1, 2005 - 70 % DTT coverage

The digitalization of Italy has been planned gradually by "digital islands" corresponding roughly to Italian regions and according to a calendar which shows the ASO date for each region as in the following table:

2008	Area 16 Sardegna
2009	Area 2 Valle d'Aosta Area 1 Piemonte occidentale Area 4 Trentino e Alto Adige Area 12 Lazio Area 13 Campania
2010	Area 3 Piemonte orientale e Lombardia (incluse le province di Parma e Piacenza) Area 5 Emilia Romagna* Area 6 Veneto (incluse le province di Mantova e Pordenone)* Area 7 Friuli Venezia Giulia
II Semestre 2011	Area 8 Liguria Area 9 Toscana e Umbria (incluse le province di La Spezia e Viterbo) Area 10 Marche

	Area 11 Abruzzo e Molise (inclusa la provincia di Foggia) **
I Semestre 2012	Area 14 Basilicata, Puglia (incluse le province di Cosenza e Crotone)
	Area 15 Sicilia e Calabria

Complete (for all Italian regions) ASO is planned for mid-2012.

4.6.3 ASO priorities

The basic aspects on which the DTT transition plan is based in Italy are:
- technological neutrality with respect to other broadcast platforms;
- attention to the needs of users/citizens/consumers;
- involvement of all the main system players, broadcasters, producers, resellers, consumer associations, etc.
- emphasizing the cooperative aspect in order to ensure a pluralistic, competitive and open market
- availability: whoever can receive analogue TV programmes today must be able to continue to receive them through the digital terrestrial platform;
An efficient utilization of spectrum through DTT planning with emphasis to the use of SFN Networks;
- free-to-air character of the terrestrial platform should be maintained
- cost: the switchover to digital should represent an affordable option for the great majority of citizens and the switchover operation should be economically advantageous for the country;
- pluralism: the advent of the new transmission technology, which expands transmission possibilities and breaks down the highly vertical structures which have prevailed up to now, enables new operators and new electronic mass media to enter into the system, and gives rise to greater pluralism which analogue technology, that had built up a monopoly over time, could no longer guarantee;
Regulatory measures to favour the fragmentation of vertical models;
Regulatory measures for must-carry, etc.;
- development of appealing contents and innovative services, integration of television and other platforms

4.6.4 Institutional issues

Parliament:
Government:
NRA/AGCOM: supervisory role on the:
a) definition of the regulatory framework for DTT;
b) availability of decoders at affordable prices on the market;
c) effective offer to the public also of programmes other than those offered on analogue networks;
d) verification that the offers available have indeed expanded and of pluralism in the TV sector.
Ministry of Economic Development (Communications);
Network operator:
Public broadcaster: leading role, obligation for rolling-out the digital terrestrial networks
Commercial broadcasters: promotion and co-operation

Equipment manufacturers and retailers: promotion and co-operation

4.6.5 Licensing model

- The trading of frequencies (introduced by law n. 66, 2001) between broadcasters of the analogue service is possible, on condition that the buyer of the frequencies uses them for digital terrestrial transmissions.
- AGCOM regulation 353/01/CONS (2001): commercial broadcasters can convert their own authorisation for digital terrestrial trials into a network operator's licence as of March 2004. - Network operator's licence can be issued to operators who can prove that they have achieved a digital coverage of 50% of the population or their own local broadcasting catchment area
- Such AGCOM regulation defines three types of authorization: content provider, network operator and service provider.
- AGCOM resolution 353/11/CONS updates AGCOM resolution 453/01/CONS defining all DTT regulatory aspects for the DTT final phase.

4.6.6 STB subsidy

The Strategy stated that public intervention is needed to promote the purchase, by citizens, of decoders that have interoperability characteristics and are open to various services, such as MHP, so as to promote the supply and demand of new services and to forestall, in a timely manner, a potential stalemate, while observing the principle of technological neutrality and avoiding distortions of competition on the market. The 2004 Financial Law provides for an allocation of €150 for citizens who are in order with their broadcasting licence payments, who acquire or hire a suitable device for unencrypted reception of digital terrestrial TV signals and related interactivity at no cost to the user and the contents provider. The allocation will be granted by way of a discount of €150 on the purchase of a decoder, to be reimbursed by the State. The amount budgeted for 2004 is €110 million.

As realized, some measures have been defined to promote the purchase of DTT decoders for particular class of population and are based on age, income, etc.

4.6.7 DTT co-ordination and information

Establishment of the DGTVi consortium, composed of the Ugo Bordoni Foundation, a research entity under the auspices of the Ministry of Communication, the RAI, and the major commercial broadcasters, to cooperate more during the impending DTT launching stage.

4.6.8 Country-specific questions and answers – Italy

Q: Which organization has prepared the Strategy and was there any modification thereof?

A: The Ministry of the Economic Development and Communications was the controller of the whole digitalization process.

The information and communication activities have been led by a private associations called DGTVi, composed by broadcasters and operators (RAI, Mediaset, Telecom Italia Media, DFree and FRT), whose goals were the promotion and development of the DTT, in collaboration with the Ministry for the Economic Development and Communications and AGCOM.

AGCOM was responsible for the definition of the overall DTT regulation (which included numbering, LCN, Mux must-carry obligations, Mux must-offer, etc.

At regional level, local institutions (Region and Corecom) and consumer associations organized activities and initiatives to facilitate the adoption and transition to the digital.

Q: How is the status of the digital roll-out and analogue switch off?

A: The transition started in 2008 and has been executed region by region. The digitalization should finish by the end of the first semester 2012 (missing regions: Abruzzo, Molise, Basilicata, Puglia, Calabria, Sicilia).

Q: Is there any STB subsidy scheme or other assistance?

Presently, Italy provides a financial contribution (50 euro of reduction in the price of digital decoders) to citizens willing to buy digital decoders and who are living in the areas which will be soon switched-off (Sicily, Calabria, Abruzzo, Molise, Puglia and Basilicata) who payed the PBS fee, whose age is more 65 and who declared less than 10.000 Euro in the last tax declaration.

Q: Please give details on the activity of the DGTVi consortium

A: DGTVi is a private association composed by broadcasters and operators (RAI, Mediaset, Telecom Italia Media, DFree and FRT), whose goals are the promotion and development of the DTT, in collaboration with the Ministry for the Economic Development and Communications and AGCOM.

DGTVi publishes monthly the newsletter DIGITA, freely delivered, whit information regarding the status of the digitalization in Italy and Europe.

DGTVi has created a dedicated website where the users can find the information about the digitalization process in Italy and in each single region.
The website address is www.dgtvi.it (just Italian version) and represents the main communicative tool, where people can find news about:

- *Coverage of the digital in Italy*
- *Switch off dates and places*
- *Rationales and implications of the digital television*
- *New equipment*
- *Newsletter*
- *FAQ*
- *Events*
- *Data and statistics*

Q: If there is any particular issue that you would like to share or deem important, please do not hesitate to raise and discuss it.

4.6.9 Recommendations – Italy

DTT penetration reached 89.5% at the end of January 2012 in Italy, which represents 22.3 million households and ASO is planned to be completed by June 2012. These achievements require a well-elaborated and operational digital TV system, therefore the scope of recommendations is limited to the followings:

It became evident during the recent years that the application of the **advanced technology** (like DVB-T2, MPEG4, HD, 3D) is useful for the countries rolling-out digital networks nowadays. The application is improved technology also gives more capacity for contents Italy should focus on requiring the application of advanced technology or create an estimated timeline for the introduction of these technologies.

The **digital dividend** is an extraordinary benefit of the analogue switch-off that may also encourage the state and the service providers to boost the migration. Italy has already allocated (through an auction for a total of almost 3 billion Euro) the 790-862 MHz frequency band for broadband mobile wireless applications in September 2011. As for the further planning of digital dividend in the future (WRC-15?) the demand is very serious for mobile wireless services, but during the planning of the use of digital dividend 2, allocating frequencies for broadcasting should be also considered. The digital transmission in SD merely reproduces the quality of analogue transmission (in a more effective way as for using frequencies) with some added-value services (like EPG), but the real potential of DTT for the viewers is the HD and later the 3D option. The improvement of DTT technology is continuous, but HD/3D and other valuable services will require capacity for their full potential, so when the countries plan the use of digital dividend, some slots should planned for these state-of-the-art and future broadcasting services.

Although DVB-H seems to be a not successful story, more attention should be paid to the digitalization of radio (DAB+/DMB). **Trials** and technical test should be encouraged with regard to any digital service, especially DAB+/DMB, 3D, HD, interactive services etc. Pilot tests have been conducted by some operators for 3D, HD transmissions on DTT Networks.

4.7 The former Yugoslav Republic of Macedonia

4.7.1 Strategy

The analogue switch-off strategy of Macedonia, the 'Strategy for Development of Broadcasting Activity in the Republic of Macedonia for the period 2007-2012' was prepared by the Macedonian Broadcasting Council in 2007. The Strategy was elaborated in cooperation with competent institutions from the field of broadcasting, electronic communications and information society, and the views and positions of non-governmental organisations and other entities from the area of broadcasting were taken into consideration (a working group was established). International expertize was also used, support received - within the TAIEX Programme of the European Commission - from the French broadcasting authority CSA; from the Italian regulating authority AGCOM; and drafting of the Strategy was also supported by the OSCE Mission to the Republic of Macedonia.

As quite unique in this respect, the Strategy does not treat only the important issues of the digital switch-over, but it represents a comprehensive media strategy that gives the vision for development of the entire broadcasting activity in Macedonia for the period 2007-2012. The Strategy deals with the objectives of public interest in broadcasting, the Development of Broadcasting Industry, the Pluralism and programme content diversity, the Digitisation of the broadcasting and the Audiovisual services via new transmission technologies (strictly speaking these parts are the digital switchover strategy), and the Regulatory framework. Another valuable element is the parts on the digitalization of cable and satellite.

4.7.2 ASO schedule (DTT roll-out)

The Strategy envisaged a trial: a 100W transmitter in Skopje by Public Company Macedonian Broadcasting with 4 programs starting at the end of 2009 and a simulcast till beginning of 2012. As for ASO, complete ASO is scheduled till 1 June 2013. Analogue transmitters used for additional coverage of a specific region, planned to be the first ones to be switched off.

In December 2011 a public Company Macedonian Broadcasting launched DTT with 3 programs in Skopje area. ASO is planned for 1 June 2013 (info as per the Agency for Electronic communications announcing public call for operators of 4G networks and additional public call for selection of operator for broadcasting programme services of the terrestrial broadcasters).

4.7.3 ASO priorities

– providing pluralism in the radio and TV-services, both on national and on local level, and particular attention was paid to the access of the ethnic communities to the media
– improvement of the selection, diversity, innovation and raising the quality of the programme services, both on national and on regional and local level;
– protecting the interests of the users (viewers and listeners), and especially protection of minors;
– protection and fostering of cultural identity and cultural and linguistic diversity in the programmes;

– transformation of the Macedonian Radio and Television to a proper public broadcasting service, in order to be able to accomplish its mission in a successful and quality manner, as well as full respect of its institutional autonomy and editorial independence;
– establishing regulatory prerequisites for functioning of real market relations in the broadcasting activity, reduction of the market defragmentation and strengthening of the media professionalism;
– creating opportunities for development of new technologies and stimulation of the process of convergence between the broadcasting, telecommunications and IT;
– effective implementation of the national strategies and action plans for fast digitisation of the terrestrial broadcasting in the Republic of Macedonia;
– further harmonization of the domestic legislation with the European regulatory framework in the audiovisual area and setting the objectives and instruments of the future regulatory policy;
– further strengthening of the independence of the regulatory authority from the area of broadcasting and provision of independent and stable sources of financing.

4.7.4 Institutional issues

The leading role in the digitalization process is shared among variety of national institutions with their respective responsibilities. The Broadcasting Council is in charge of issuance of licenses for digital broadcast, implementation of the Strategy and content regulation. The Agency for Electronic communications facilitates processes related to the operations of terrestrial broadcasting networks and grants approvals for frequency usage, including DVB-T network operators.

4.7.5 Licensing model

Separation of infrastructure operator-multiplex operator-content provider separate legal entities) was decided. As for the transmission: 2 MUX's have beenallocated for public TV channels (no competition, but other FTA channels may apply for capacity), other MUXs should be awarded in international competition tenders: 2 MUXs for commercial TVs and 1 MUX for regional TV services. On the multiplex tenders: the bidders shall pay annual fee. As for the content licences, existing analogue broadcasting licenses will be directly converted into digital transmission licenses.

In April 2009 the Agency for Electronic Communications has officially granted Digi Plus Multimedia company a 10-year license to the operate DTT platform consisted of three multiplexes for the purposes of pay TV. Digi Plus Multimedia company had been the only license applicant. According to the license conditions, Digi Plus Multimedia company will invest €10 million in the roll-out of 3 DTT multiplexes and offer 30 television programme services. National coverage should be reached within one year of the service launch.

4.7.6 STB subsidy

Population is not prepared for DTT, 21% of the households stated that they are not ready or could not afford to invest in a digital signal receiver, additional 12% do not know whether they would invest in such technique, and 35% stated that they will invest in new digital equipment only

if they do not have sufficient selection of analogue channels[2]. An extensive campaign is necessary during the simulcast to supply people with STBs. Different adequate facilitating measures (tax, customs deductions etc.) are necessary in order to encourage a joint approach of all operators aimed at providing interoperability and affordable prices of the STB-equipment.

Specific measures for STB subsidy were not implemented yet (the pay TV operator Digi Plus Multimedia provides PayTV set-top-boxes only to those who will agree to enter a 2-year subscriber contract).

Ongoing research of the public opinion and number of socially vulnerable groups to be affected. The research will result with information document drafting set of recommendations towards the Government of the country.

4.7.7 DTT co-ordination and information

National Coordination Authority for Digitisation established by the BC and the AEC, including all relevant subjects (public transmitter MB, public broadcaster MRT, Macedonian ICT Chamber of Commerce, independent experts, Organization for protection of consumers, all relevant ministries), which will function as an auxiliary authority in the digitisation process:
- agenda for timeline
- certification of equipment
- promotion
- STB subsidy proposals (volume, dynamics)

All citizens that live on the territory where the analogue TV is being switched off should be informed in a timely and adequate manner (through campaigns) about the forthcoming changes. In addition, the broadcasters should inform their viewers about the method and on which new frequencies they can continue to watch their services.

Ongoing preparatory activities initiated for the educational programme as well other SEE Digi.TV project deliverables planned.

4.7.8 Country-specific questions and answers – Macedonia

Q: What was the specific role and direct contribution of OSCE and the EU in the digitalization in Macedonia?

> *A: Aside the involvement of the Delegation of the European Union within 2011 for the aim of providing support of the Digi.TV project there have been no other actions towards the digitalization initiative. Within the past year, OSCE assisted drafting the media legislation adopted in 2005. Other activities specifically devoted towards the digitalization have not been case in Macedonia.*

Q: What is the status and plan for the DTT roll-out by Telekom Slovenije till June 2013?

[2] Source: Strategy for Development of Broadcasting Activity in the Republic of Macedonia for the period 2007-2012, 2007

A: Telecom Slovenia participates the electronic communications market in Macedonia as of 2009 in a capacity of commercial concessioner of 3 nationwide MUX's. Digital roll-out plan of the public service in Macedonia is facilitated by the PE Macedonian Broadcasting. Government of the country financially supported implementation of the plan by 17 mln. EUR from within 10 mln. EUR aiming digitalization of the services provided by Public Enterprise "Macedonian Broadcasting" and 7 mln EUR aiming digitalization of Public Broadcasting Service " Macedonian Radio Television".

Q: What will be the form of STB subsidy by Telekom Slovenije and is this subsidy available?

A: There have been no subsidies planned within the commercial part of the digitalization market. PE "Macedonian Broadcasting" announced certain measures of subsidy targeting the socially vulnerable portion of the population for the first half of 2013. With regard to this issue the Digi.TV Guidelines for the Funding Framework for the Digital Switchover document has been disseminated by the Broadcasting Council with the national stakeholders.

Q: When is the research on the socially vulnerable groups of population planned to be accomplished?

A: Broadcasting Council throughout a competitive process within December 2011 facilitated development of a Methodology and tools for carrying out wider research of the public awareness for digitalization of the broadcasting. Action resulted with a product of a methodology and questioner to be used for the pool exercise that will be carried out within the March/April 2012.

Q: Is there any ongoing information campaign on DTT?

A: Aside the press releases published by the national stakeholders covering specific activities in the process there is no evidence of any other structure of campaigning. The Broadcasting Council is in process of contracting external contractor to support the development of the Educational Programme that will be used for wider campaigning within 2012.

Q: If there is any particular issue that you would like to share or deem important, please do not hesitate to raise and discuss it.

A: No specific neither thematic cooperation on the digitalization process is maintained between the national stakeholders.

4.7.9 Recommendations – Macedonia

The strategy enlists the issues and gives a well-elaborated overview of the situation, but a detailed action plan with tasks and dates could motivate the state and private actors to accelerate and align their efforts. If the final ASO plan is accepted with the involvement of all stakeholders, the state should stick to the plans and be determined to realize it.

ASO is part of an international co-operation within the International Telecommunication Union that is a specialized organ of the United Nations. Accordingly, the ASO is also a **political issue**

on international, but on domestic level as well and the political importance is even higher with regard to the number of people using exclusively the analogue transmission for getting access to public and commercial television. In all countries, the politics should find the consensus for the i) equal importance acknowledged to the digitalization by all governments; ii) common principles, resources and steps for the realization of digital switchover, since this process eventually could not be accomplished during one cycle of a given government, so the political parties should elaborate **overarching solutions** for the effective analogue switch-off.

The national strategy and the corresponding action should not be a rigid document, rules carved into stone. Although the maximum commitment should be ensured for the proper and timely implementation of the action plan, both the strategy and the action plan could be subject to **periodic strategic review** and modification if necessary, if the events and changes from 2007 justifies it.

The leading role of the **public broadcasting** may boost the digital market and motivate the private broadcasters to change their program into digital (beside the fact that digitalization is mandatory, after ASO no broadcaster shall broadcast in analogue technology). A media strategy for the public broadcasting may also contribute to the success of digital switch-over.

Incentives may also be provided for the provision of **free-to-air programs** on DTT. If the analogue package simply reproduces itself on digital, the people are not interested in change, since the benefits are not so real. If the digital offer could be significantly more than the analogue (double programs or more), people will migrate more easily. Nevertheless the best presentation could be the free-to-air digital transmission of the public program with some HD programs and other added-value service (like EPG) for showing the potential of the digital terrestrial platform. If the people choose DTT, so the penetration grows, on the one hand the free-to-air digital platform becomes more valuable for the advertisers as well (a simulcast channel gain more ad-revenue than the analogue ones); on the other hand the state will have to spend less for subsidizing the households with decoders, since the boost of penetration reduces the number of analogue-only households and the price of a STB also goes lower.

As for **decoder subsidy**,

- in order to minimize the costs and provide maximum effectiveness, the state should survey the people in need for assistance (the ongoing research probably fulfils this need). Automatic subsidy of all analogue households may become counter-productive, since the people will always wait and expect for the subsidy and will not activate themselves, and the prices of the STBs will not decrease, since the distributors could add the value of subsidy to the price. Therefore it is recommended to limit the STB subsidy as for the scope, timing and value thereof. A tool to motivate people is a bigger subsidy (or limited number of coupons) well-before the expected ASO date, which subsidy becomes lower or disappears as the time passes;

- the access to digital public and commercial programs may require the complete change of the program receiver system to be established by the given households. The preparedness and technical skill of the various households are different, in case of certain households it may not be enough just to give a decoder or a coupon to the people and let them take care for the rest, so the responsible body should prepare for more active and direct assistance to these people;

- a wide information campaign should be attached to these subsidy efforts and all stakeholders (broadcasters, network operators, decoder manufacturers and distributors, antenna installers) should contribute to the effective STB subsidy scheme;

- if a coupon system is applied, effective measures should be made for avoiding any misuse of the coupons (forfeit, sale etc.) and the distributors/respective state authorities should prepare for the management of the coupons (reimbursements for the sellers or the people)

- the implementation and logistics of a STB subsidy scheme requires proper planning beforehand and international examples show that majority of people realize the need for a decoder when their regional ASO date is very close or already the ASO happened, so special resources should be allocated for managing these demands around the expected ASO dates;

- only such STBs may be part of subsidy that comply fully with the mandatory technical requirements of the state, and special features may also be required (only MPEG 4 boxes).

The **effective information campaign** to the people is one of the most important elements of a successful digitalization:

- Regarding this special task, a separate action plan is needed for planning the activities.

- Clear messages should be transmitted to the people to avoid any misunderstanding including in the questionnaires. It is also recommended to review the main slogans/messages from common sense or potential interpretation point of view (Croatian example: *"Get off the rooftops and become part of the digital era"* slogan was interpreted that a rooftop antenna is no longer needed for reception, or in other countries ASO was interpreted as the switch-off of the entire terrestrial platform and only cable/satellite remain).

- Requiring the active participation (including financial or other direct support) of all players of the media market should be considered, since one way or the other, all players have the possibility to reach benefits from the digitalization; broadcasters may reduce their transmission costs, program distributors (pay TV operators) may gain more subscribers, device manufacturers sell their products, mobile-network operators will have access to the digital dividend frequencies, so all stakeholders may share the burdens of the digitalization as well.

- For the effective campaign, regular or seasonal information campaigns with marketing ads and educational material, a free or low cost call centre, an informative website and periodic information leaflets (all means should use a common and controlled database that is updated by the state) are recommended (the costs could also be distributed among the various stakeholders). In particular as for older and socially disadvantaged groups of population, the possibility for direct assistance at home should be considered.

- The respective authority should also review the information distributed by other players to filter any misleading or inaccurate information.

In case of application for **EU funds**, EU principles on state aid and STB subsidy should be taken into account (even if Macedonia is currently not a member state to the EU).

It became evident during the recent years that the application of the **advance technology** (DVB-T2, MPEG4) is useful for the countries rolling-out digital networks nowadays. The Strategy has already identified these experiences (MPEG 4, gradual transfer to DVB-T2 etc.).

Clear, available and mandatory **technical specification of the decoders** to be sold is essential. These technical features should be communicated to the buyers (with a DVB-T compatible label or other efficient way) and frequently controlled by the respective authorities.

Concerning all aspects of the digital transition, there are similarities and solutions that may be used in all countries (with nation-specific modifications if necessary). For accessing these solutions, the presentation and analysis of the **international benchmarks** (experience) with special regard on the processes and status of digitalization in the neighbouring countries is very useful. The contribution of international experts (like the CSA expert) and the experience of countries with similar market conditions are very valuable.

The presentation and promotion of the many extra service that DTT offers (interactive services, EPG etc.) may also motive people and service providers to change to digital.

The **digital dividend** is an extraordinary benefit of the analogue switch-off that may also encourage the state and the service providers to boost the migration. The analysis and related plans are useful for a complete picture. The demand is very serious for mobile wireless services, but during the planning of the use of digital dividend, allocating frequencies for broadcasting should not be totally rejected. The digital transmission in SD merely reproduces the quality of analogue transmission (in a more effective way as for using frequencies) with some added-value services (like EPG), but the real potential of DTT for the viewers is the HD and later the 3D option. The improvement of DTT technology is continuous, but HD/3D and other valuable services will require capacity for their full potential, so when the countries plan the use of digital dividend, some slots should planned for these state-of-the-art and future broadcasting services.

Although DVB-H seems to be a not successful story, more attention should be paid to the digitalization of radio (DAB).

Trials and technical test should be encouraged with regard to any digital service, especially DAB, 3D, HD, interactive services etc.

The main emphasis of digitalization is on the terrestrial platform, the **digitalization of other platforms**, such as cable (DVB-C) and satellite (DVB-S) could also be subject of strategic analysis. From viewers' point of view, the ASO process is detrimental only for the users of the analogue terrestrial platform, since they lose their television and have to migrate (not necessarily to DTT), so other platforms may also contribute to the digitalization by participating in the information campaign or sharing some costs of digitalization efforts.

The Strategy should be a public document and for the use of all parties including the end-users of DTT, namely the viewers.

4.8 Montenegro

4.8.1 Strategy

The Digital Switchover Strategy of Montenegro was elaborated by the Council of the Broadcasting Agency in April 2008. The Strategy presents the current stage of the switchover process in the EU and compares the processes, defines the methods and goals, present the regulatory and technical aspects, gives implementation plans, objectives and timeframe, discuss the legal and financial aspects, and gives details on DAB and the digital dividend.

4.8.2 ASO schedule (DTT roll-out)

According to the Strategy, 2 MUXs may be launched; the rest is subject to analogue switch-offs:
2008 - pilot at Podgorica
2009 - launch of MUX 1
2010 - launch of MUX 2
2010-2012 gradual switch-off, the ASO target date was December 31, 2012

In December 2011, none of the two planned multiplexes has been launched yet. Since the ASO process has not started yet it is likely that the target deadline (31 December 2012) will not be met.

4.8.3 ASO priorities

Prompt definition of clear ASO deadlines stimulating the migration, any delay only increases the costs for participants
- set up a sustainable regulatory framework for prompt introduction of digital broadcasting
- until ASO provide the availability of digital broadcasting services to all citizens either by FTA terrestrial transmission network or by satellite digital broadcasting;
- adopt solutions for the specification of transmission and reception equipment to enable the introduction of additional services such as HDTV etc.;
- enable unobstructed development of T-DAB and DRM systems;
- create a reliable, transparent, technology neutral environment, promoting the implementation of digital switchover;
- ensure efficient, objective and transparent planning, administration and management of broadcasting frequency spectrum;
- within the digitalised broadcasting system, stimulate the offer of technologically harmonised electronic communication networks and services towards creating a technologically uniform system
- stimulate efficient shared use of equipment/systems, on non-discriminatory grounds and under acceptable terms, in order to reduce digital switchover costs
- enabling the citizens to exercise their right in the field of information and broadcasting, preservation and promotion of national culture, cultural diversity and media pluralism;
- create and promote possibilities to satisfy the needs of people with disabilities and of vulnerable groups

- ensure a stimulating framework for creating added value services compared to the existing analogue broadcasting systems
- ensure efficient exercise and protection of copyright and related rights using the advantages offered in this field by digital technology

With significant delay only few priorities have been addressed or fulfilled. Shortly after adoption of the Strategy, legislative framework for regulating the electronic communications and electronic media had been completely changed, which caused many changes in the priority list. For example, even after two-year debate and several revisions of the Electronic Communications Law and adoption of the Digital Broadcasting Law, there is still no clear vision how to support specific population target group, what is the best practice in the promotion of this process, etc. Therefore, it might be concluded that there is still lack of a sustainable regulatory framework for prompt introduction of digital broadcasting. With the adoption of the Radio-frequency Allotment and Assignment Plan for Digital Terrestrial Broadcasting Service (Official Gazette of the Montenegro, No. 55/2011) it might be said that there are only some conditions for efficient, objective and transparent planning, administration and management of broadcasting frequency spectrum. The Digital Switchover Law does not ensure conditions for providing the availability of digital broadcasting services to all citizens either by FTA terrestrial transmission network or by satellite digital broadcasting (no mentioning of satellite digital broadcasting as an alternative to fill the gaps of the FTA terrestrial transmission coverage).

4.8.4 Institutional issues

Parliament: legislation, ASO dates, STB subsidy scheme,
Government (ministries): implementation and support, financing the information campaign
NRA: frequency allocation, co-ordination and evaluation of the process, creating MFN network for the needs of national and local public broadcasting services
Network operator (BCM): reconstruction and improvement of the existing infrastructure
Public broadcaster: Using the network and offering new, better-quality services on DTT, evaluation and timely drawing attention to possible problems
Commercial broadcasters: Using the network and offering new, better-quality services on DTT, evaluation and timely drawing attention to possible problems

4.8.5 Licensing model

State-owned Broadcasting Centre of Montenegro (BCM) owns the entire transmission network (125 TV and 18 radio sites) and transmits public service and commercial broadcasters - in order to avoid this dependence, when upgrading the existing legislation the conditions and the procedure for licensing other (network) operators should be envisaged to enable the development and use own facilities and/or leasing out BCM facilities.

Content provider may not be multiplex or network operator. Separate licences shall be provided to a multiplex or network operator and for complimentary services the issuance of separate licences is needed, where both multiplex operators and network operators may be holders of such licences. MUX 1 shall be allocated for the FTA transmission of public programs and operated by BCM. Other multiplexes and national coverage networks will be subject to public tender procedure

AEM awards licenses (authorizations) for broadcasting by using the multiplex capacity and multiplex operators. The tendering terms and conditions have been regulated by the Law on Electronic Media and by-laws adopted by the AEM Council. EKIP planes the broadcasting spectrum in accordance with provisions of the Law on Electronic Communications, allocates multiplex capacities to broadcasting and other services. Within 15 days after their issuing, AEM is obliged to notify EKIP about any issued licenses (authorizations) for the broadcasting frequencies for AVM services (access to multiplex capacity for digital broadcasting or multiplex as a whole). On the basis of this notification, EKIP is obliged to issue the approval for multiplex operator for the use of radio frequencies allocated for broadcasting.

4.8.6 STB subsidy

As per the Strategy, for a rapid switchover process, certain subsidies are necessary for procurement of basic devices for DTT reception for
- low income households, and
- households living in the areas where other systems for transmission and broadcasting of radio and TV signals are not developed making them dependant on the terrestrial systems only, especially if these are sparsely populated or underdeveloped areas, could also be subsidized when purchasing the STB equipment.

It is estimated that the procurement of 100,000 STB is needed for the pilot stage, and that the subsidy needed amounts to 30% of the STB receiver price. Taking €80 as the price of the STB receiver with MPEG-4 compression, the minimum amount of funds to be provided is approximately €2,400,000 for STB procurement.

As in December 2011, The Digital Broadcasting Law does not prescribe any kind of subsidy scheme for set-top boxes either for entire population or for any specific target group.

4.8.7 DTT co-ordination and information

The Strategy states that critical success factor of attaining a successful digitalization is an efficient, clear and timely promotion campaign. Communications campaign financed by the Government are essential to inform the citizens of the importance of the transition to digital broadcast systems, advantages compared to the analogue ones and the schedule of activities so that quite early in the process, based on the information provided, citizens may become active participants.

As December 2011, the Digital Broadcasting Law provides that information campaign guidelines should be done by both ministry in charge of electronic media and electronic communications. Broadcasters authorized to use the first multiplex capacities are obliged to inform public about transition period and switch-off dates in their service area. Operative information campaign has not been started so far.

No coordination mechanisms or framework defined.

4.8.8 Country-specific questions and answers – Montenegro

Q: Does Montenegro plan any STB scheme (or the expressly Digital Broadcasting Law precludes it)? If yes, please provide some details on the concept/plan (eligibility, form, implementation etc.); If no, please explain the reasons.

A: The Digital Broadcasting Law does not prescribe any kind of subsidy scheme for set-top boxes either for entire population or for any specific target group(s).

When referring to transition from analogue to digital broadcasting, technologies to be deployed, media market demands as well as digital dividend, the "Strategy for the Development of Information Society 2012-2016 - Montenegro - Digital Society", adopted in December 2011, addressed several objectives, including mechanisms to subsidize purchase of receiver equipment especially for vulnerable groups of population in Montenegro to be defined by Ministry for Information Society and Telecommunications as well as Ministry of Labor and Social Welfare. These activities have not started yet.

In February 2012, the Government of Montenegro adopted an Action Plan for 2012 for implementation of the Information Society Development Strategy 2012-2016. The plan includes no measures related to the DSO process. If not earlier, this issue should be addressed in the plan for 2013, by reiterating the commitment to the objectives defined in this field by the strategy.

Q: How is the preparation of the digital licensing?

A: Two regulatory authorities share responsibilities in the field of digital switchover:

- *Agency for Electronic Media (hereinafter: AEM)*
- *Agency for Electronic Communications and Postal Services (hereinafter: EKIP).*

EKIP planes the broadcasting spectrum in accordance with provisions of the Law on Electronic Communications (Article 64). In line with that, in accordance with the national Frequency Bands Allocation Plan, after obtaining the consent of the AEM Council, in the third quarter of 2011, EKIP adopted the Frequencies Assignments' Plan for Digital Broadcasting. This document is the basis for allocation of broadcasting spectrum resources for DTT.

In line with the Article 7 of the Digital Broadcasting Law, EKIP is in charge for setting the distribution ratio of the multiplex capacities for either AVM or electronic communication services. This is done with the approval of the AEM Council.

On the basis of public tender, AEM awards licenses (authorizations) for (1) broadcasting by using the multiplex capacity (Articles 98 to 104 of the Law on Electronic Media) and (2) multiplex operators (Articles 116 and 118 of the Law on Electronic Media). The content, conditions, criteria and timeframes for the organization of both tenders have been regulated by the Law on Electronic Media and the by-laws adopted by the AEM Council.

Within 15 days after their issuing, AEM is obliged to notify EKIP about any issued licenses (authorizations) for using the broadcasting frequencies for AVM services (access to multiplex capacity for digital broadcasting or multiplex as a whole). On the basis of this notification,

EKIP is obliged to issue the approval for multiplex operator for the use of radio frequencies allocated for broadcasting.

Approvals for the use of radio frequencies for broadcasting may be issued for the period not longer than fifteen years. The validity of the approval may be, at a request of the holder thereof, extended if all the conditions prescribed for use of such radio frequencies are met. Transfer or assignment of the right to use radio frequencies to another natural person or legal entity is prohibited, unless prior consent of AEM and EKIP is obtained.

Q: Did the information activities launch?

A: Operative information campaign, to be done by both ministry in charge of electronic media and electronic communications, in accordance with Digital Broadcasting Law, has not been started so far.

Q: If there is any particular issue that you would like to share or deem important, please do not hesitate to raise and discuss it.

A: Article 16 of the Digital Broadcasting Law prescribes that the broadcasters that have the licences for the use of frequencies on the day of its coming into effect shall stop broadcasting television programme in analogue technology no later than 31 December 2012. Therefore, after this deadline, no TV broadcasters, either public or commercial, should broadcasted their programme using analogue frequencies. Furthermore, it should be taken into consideration that the broadcasting licences of all commercial broadcasters that have analogue TV channels will expire during 2012. In February 2012, AEM extended the validity of analogue broadcasting licences for all TV broadcasters until the end of 2012.

The Electronic Media Law envisages that, if a licence has been issued in a public tender procedure, the AEM will extend (issue a new) licence after conducting a new public tender, bearing in mind the operation of the licence holder during the validity period of the first licence.

This means that the Agency for Electronic Media should conduct a public tender for analogue TV channels which could not be allocated for a period longer than until 31 December 2012, because of the analogue switch-off deadline prescribed by the Digital Broadcasting Law. Even if such a public tender were carried out, and if the rights awarded in that way were used as a basis for the extension of licences, they would be valid until the end of this year, if all broadcasters were in the same situation.

Therefore, adoption of amendments to the Digital Broadcasting Law has been initiated, enabling the extension of the existing licences for TV broadcasters, without a public tender, at least until the expiry for the digital switchover deadline. In addition, the final deadline should be postponed since is not realistic to expect that the Broadcasting Centre of

Montenegro (1st MUX operator) will succeed in covering 85% of population with digital signal until 1 July 2012 (the final deadline for the beginning of simulcast).

Currently, Ministry for Information Society and Telecommunications has been preparing amendments on Law on Digital Broadcasting, which may include amendments to provisions regarding the DSO date.

The additional period resulting from the postponement of the DSO process in Montenegro should be used to establish good coordination activities necessary for the preparation of both broadcasters and viewers for the switchover. In this process, their economic interest should be taken into account, since they will have to invest in new equipment or resources for the provision of conditions for broadcasting during and after the simulcast period.

4.8.9 Recommendations – Montenegro

The determination of key and reasonable **deadlines** for the analogue switch-off may be considered; an accompanied **action plan** helps to identify the tasks and bottlenecks. The strategy enlists the issues and gives a well-elaborated overview of the situation, but a more detailed action plan with tasks and dates could motivate the state and private actors to accelerate and align their efforts. If the final ASO plan is accepted with the involvement of all stakeholders, the state should stick to the plans and be determined to realize it.

ASO is part of an international co-operation within the International Telecommunication Union that is a specialized organ of the United Nations. Accordingly, the ASO is also a **political issue** on international, but on domestic level as well and the political importance is even higher with regard to the number of people using exclusively the analogue transmission for getting access to public and commercial television. In all countries, the politics should find the consensus for the i) equal importance acknowledged to the digitalization by all governments; ii) common principles, resources and steps for the realization of digital switchover, since this process eventually could not be accomplished during one cycle of a given government, so the political parties should elaborate **overarching solutions** for the effective analogue switch-off.

A newly/temporarily established committee with members from all state stakeholders as **DTT coordinator organization** with clear mandate from the possible highest state entity could be considered for the effective realization of the digitalization. The designation of an entity for managing the digitalization issues (especially a new organization) may facilitate the digital switchover, since a dedicated task inspires that body to active efforts, even if – as understood – there are many agencies involved in the digital switchover process in Montenegro. The formal or informal frequent participation of all other governmental and private stakeholders is necessary. The management of the digitalization issues (even within the competences of the Broadcasting Council) should include regular sessions dedicated for digital switchover, workshops and discussions with all stakeholders on all related issues and regular information provided for the public.

The national strategy and the corresponding action should not be a rigid document, rules carved into stone. Although the maximum commitment should be ensured for the proper and timely implementation of the action plan, both the strategy and the action plan could be subject to **periodic strategic review** and modification if necessary.

The leading role of the **public broadcasting** may boost the digital market and motive the private broadcasters to change their program into digital. A media strategy for the public broadcasting may also contribute to the success of digital switch-over.

Incentives for national private broadcasters for acquiring digital broadcasting licences should be considered. As for showing the additional value of DTT, an information campaign on the values of the digital platform is essential, nevertheless the best presentation could be the free-to-air digital transmission of the public program with some HD programs and other added-value service (like EPG) for showing the potential of the digital terrestrial platform. If the people choose DTT, so the penetration grows, on the one hand the free-to-air digital platform becomes more valuable for the advertisers as well (a simulcast channel gain more ad-revenue than the analogue ones); on the other hand the state will have to spend less for subsidizing the households with decoders, since the boost of penetration reduces the number of analogue-only households and the price of a STB also goes lower. As for DTT costs, during the simulcast period payment facilitations could be considered (e.g. lower broadcasting fee, or if not applicable, other benefit), but in return the preferred broadcasters should actively participate in the DTT information campaign, and show educational and other informative programs on their channels. As for competition, the more effective digital transmission allows more programs in the air meaning enhanced competition. The analogue technology is costly but gives the benefit of exclusive places in the market. The broadcasters may be encouraged to enter this market by a consequential and determined ASO state policy. If the existing and other broadcasters realize that ASO is a i) potential end to their business, ii) potential door to enter the free-to-air broadcasting market, the competition and willingness to join could be higher.

Incentives may also be provided for the provision of **free-to-air programs** on DTT. If the analogue package simply reproduces itself on digital, the people are not interested in change, since the benefits are not so real. If the digital offer could be significantly more than the analogue (double programs or more), people will migrate more easily.

As for **decoder subsidy**,

- although currently the Digital Broadcasting Law does not prescribe any kind of subsidy scheme for set-top boxes either for entire population or for any specific target group(s), it is recommended to re-consider this position, because certain part of the population definitely need some assistance due to the loss of television.

- in order to minimize the costs and provide maximum effectiveness, the state should survey the people in need for assistance. Automatic subsidy of all analogue households may become counter-productive, since the people will always wait and expect for the subsidy and will not activate themselves, and the prices of the STBs will not decrease, since the distributors could add the value of subsidy to the price. Therefore it is recommended to limit the STB subsidy as for the scope, timing and value thereof. A tool to motivate people is a bigger subsidy (or limited number of coupons) well-before the expected ASO date, which subsidy becomes lower or disappears as the time passes;

- the access to digital public and commercial programs may require the complete change of the program receiver system to be established by the given households. The preparedness and technical skill of the various households are different, in case of certain households it may not be enough just to give a decoder or a coupon to the people and let them take care for the rest, so the responsible body should prepare for more active and direct assistance to these people;

- a wide information campaign should be attached to these subsidy efforts and all stakeholders (broadcasters, network operators, decoder manufacturers and distributors, antenna installers) should contribute to the effective STB subsidy scheme;

- if a coupon system is applied, effective measures should be made for avoiding any misuse of the coupons (forfeit, sale etc.) and the distributors/respective state authorities should prepare for the management of the coupons (reimbursements for the sellers or the people)

- the implementation and logistics of a STB subsidy scheme requires proper planning beforehand and international examples show that majority of people realize the need for a decoder when their regional ASO date is very close or already the ASO happened, so special resources should be allocated for managing these demands around the expected ASO dates;

- only such STBs may be part of subsidy that comply fully with the mandatory technical requirements of the state, and special features may also be required (only MPEG 4 boxes).

The **effective information campaign** to the people is one of the most important elements of a successful digitalization:

- Regarding this special task, a separate action plan is needed for planning the activities. Regarding the various state actors in digitalization, a leading role for communication activities should be appointed.

- Clear messages should be transmitted to the people to avoid any misunderstanding including in the questionnaires. It is also recommended to review the main slogans/messages from common sense or potential interpretation point of view (Croatian example: *"Get off the rooftops and become part of the digital era"* slogan was interpreted that a rooftop antenna is no longer needed for reception, or in other countries ASO was interpreted as the switch-off of the entire terrestrial platform and only cable/satellite remain).

- Requiring the active participation (including financial or other direct support) of all players of the media market should be considered, since one way or the other, all players have the possibility to reach benefits from the digitalization; broadcasters may reduce their transmission costs, program distributors (pay TV operators) may gain more subscribers, device manufacturers sell their products, mobile-network operators will have access to the digital dividend frequencies, so all stakeholders may share the burdens of the digitalization as well.

- For the effective campaign, beside the means mentioned in the revised strategy, a free or low cost call centre, an informative website and periodic information leaflets (all means should use a common and controlled database that is updated by the state) are recommended (the costs could also be distributed among the various stakeholders). In particular as for older and socially disadvantaged groups of population, the possibility for direct assistance at home should be considered.

- The respective authority should also review the information distributed by other players to filter any misleading or inaccurate information.

In case of application for **EU funds**, EU principles on state aid and STB subsidy should be taken into account (even if Montenegro is currently not a member state to the EU).

It became evident during the recent years that the application of the **advance technology** (DVB-T2, MPEG4) is useful for the countries rolling-out digital networks nowadays. The application is improved technology also gives more capacity for contents. Regardless of the equipment that may be sold in Montenegro, a clear, available and mandatory **technical specification of the decoders** to be sold is essential. These technical features should be communicated to the buyers (with a DVB-T compatible label or other efficient way) and frequently controlled by the respective authorities.

Concerning all aspects of the digital transition, there are similarities and solutions that may be used in all countries (with nation-specific modifications if necessary). For accessing these solutions, the presentation and analysis of the **international benchmarks** (experience) with special regard on the processes and status of digitalization in the neighbouring countries is very useful. The contribution of international experts and the experience of countries with similar market conditions are very valuable.

The presentation and promotion of the many extra service that DTT offers (interactive services, EPG etc.) may also motive people and service providers to change to digital.

The **digital dividend** is an extraordinary benefit of the analogue switch-off that may also encourage the state and the service providers to boost the migration. The analysis and related plans are useful for a complete picture. The demand is very serious for mobile wireless services, but during the planning of the use of digital dividend, allocating frequencies for broadcasting should not be totally rejected. The digital transmission in SD merely reproduces the quality of analogue transmission (in a more effective way as for using frequencies) with some added-value services (like EPG), but the real potential of DTT for the viewers is the HD and later the 3D option. The improvement of DTT technology is continuous, but HD/3D and other valuable services will require capacity for their full potential, so when the countries plan the use of digital dividend, some slots should planned for these state-of-the-art and future broadcasting services.

Although DVB-H seems to be a not successful story, more attention should be paid to the digitalization of radio (DAB).

Trials and technical test should be encouraged with regard to any digital service, especially DAB, 3D, HD, interactive services etc.

The main emphasis of digitalization is on the terrestrial platform, the **digitalization of other platforms**, such as cable (DVB-C) and satellite (DVB-S) could also be subject of strategic analysis. From viewers' point of view, the ASO process is detrimental only for the users of the analogue terrestrial platform, since they lose their television and have to migrate (not necessarily to DTT), so other platforms may also contribute to the digitalization by participating in the information campaign or sharing some costs of digitalization efforts.

The Strategy should be a public document and for the use of all parties including the end-users of DTT, namely the viewers.

4.9 Serbia

4.9.1 Strategy

The digital transition strategy of Serbia, the 'Strategy for Switchover from Analogue to Digital Broadcasting of Radio and Television Programs in the Republic of Serbia' was adopted by the Government of the Republic of Serbia on July 2, 2009. The Strategy enlists the benefits of DTT and the chain of actors, describes the standardization of digital broadcasting, presents the Serbian and international regulatory environment, determines the regulatory objectives, gives an overview on the technical and technological framework of digital transition in Serbia, provides details on the use of the digital dividend, describes financial means and funds for financing the digitalization and highlights the information and promotion of the process of digitalization.

The Strategy contains a very detailed and complete Action Plan drafted by the Ministry of Telecommunications and Information Society as an integral part that determines the competences of the responsible institutions and important deadlines for the process of digitalization.

4.9.2 ASO schedule (DTT roll-out)

National level simulcast is not possible due to frequency limitations; simulcast will be launched in the beginning of 2012 in North and South regions. Planned final ASO date is April 4, 2012 set with regard to neighbouring countries.

In February 2011, the government has confirmed that analogue switch-off will take place on 4 April 2012.

Due to further coordination, the ASO has been postponed to a later date.

4.9.3 ASO priorities

ASO reasons:
- international commitment applying all international and EU directives
- better and enhanced services to citizens
- adjust the content to the needs of different target groups
- interactivity
- lower broadcasting costs
- more effective use of spectrum
- lawful use of spectrum

Regulatory objectives:
– terms of the licenses for operating a digital broadcasting network, the multiplex and the licences for program contents;
– amount of broadcasting program fee.
– information campaign and promotion of the new digital functions adjusted to certain groups of citizens and coordination among all participants of the process of digitalization;

– terms for purchasing the digital television equipment and enhancing consumer protection;
– achieve protection of the competition on the new market for digital broadcasting;
– the rights and obligations of National Broadcasting Company in the process of digitalization;
– harmonisation and ratification with relevant International and EU legal documents;
– the means and procedure of allotment and usage of digital dividend

4.9.4 Institutional issues

The Parliament adopts the necessary laws for the regulation of the broadcasting sector; the realization of the digital transition is managed by the Government (Ministry of Telecommunications and Information Society), the Republic Broadcasting Agency and the Republic Telecommunication Agency.

4.9.5 Licensing model

Planned establishment of an enterprise (extracted from the Broadcasting Company of the Radio Television of Serbia) which will operate the transmission infrastructure and shall apply non-discriminatory conditions towards all broadcasters. Fees for broadcasting services will be cost-based and the enterprise shall have no influence on content.

In February 2011, a new public company has been set up to manage Serbia's broadcast network infrastructure. It will take over from the national broadcaster Radio-Televizija Srbije (RTS). The new company, led by Vladimir Homan, is responsible for RTS's 250 transmitters which need to be upgraded in preparation for digital switchover. The BBC World Service Trust and its consortium of international partners will provide support for digital switchover as per a contract with the European Union.

4.9.6 STB subsidy

STB subsidy scenarios for 2011 and 2012:
- Subsidy for purchasing one STB per household for all users that receive television programs solely by terrestrial reception (subvention is 25 € per household, altogether 37,5 M €);
- Subsidy for purchasing one STB per household for all users (~1,6M) that pay subscription fee (subvention is 25 € per household, altogether 40 M €);
- Subsidy for purchasing STBs for the socially endangered persons (~300k) in total 15M €

4.9.7 DTT co-ordination and information

Wide information campaign is necessary for all interested parties on the reason of switchover, the nature of digital TV, up-to-date infos on processes through round-table, internet sites and free call centre. National Broadcasting Company will be the carrier of the promotion campaign.

4.9.8 Country-specific questions and answers – Serbia

Please provide a summary on the implementation of the Action Plan and the current status of the digitalization with special regard to the soon target date (April 2012).

If there is any particular issue that you would like to share or deem important, please do not hesitate to raise and discuss it.

4.9.9 Recommendations – Serbia

The determination of key and reasonable **deadlines** for the analogue switch-off may be considered; an accompanied **action plan** helps to identify the tasks and bottlenecks. The strategy enlists the issues, gives a well-elaborated overview of the situation, and also describes a detailed action plan with tasks and dates that should be used as basis and update it as per the new circumstances in order to motivate the state and private actors to accelerate and align their efforts. If the final ASO plan is accepted with the involvement of all stakeholders, the state should stick to the plans and be determined to realize it.

ASO is part of an international co-operation within the International Telecommunication Union that is a specialized organ of the United Nations. Accordingly, the ASO is also a **political issue** on international, but on domestic level as well and the political importance is even higher with regard to the number of people using exclusively the analogue transmission for getting access to public and commercial television. In all countries, the politics should find the consensus for the i) equal importance acknowledged to the digitalization by all governments; ii) common principles, resources and steps for the realization of digital switchover, since this process eventually could not be accomplished during one cycle of a given government, so the political parties should elaborate **overarching solutions** for the effective analogue switch-off.

A newly/temporarily established committee with members from all state stakeholders as **DTT coordinator organization** with clear mandate from the possible highest state entity could be considered for the effective realization of the digitalization. The designation of an entity for managing the digitalization issues (especially a new organization) may facilitate the digital switchover, since a dedicated task inspires that body to active efforts, even if – as understood – there are many agencies involved in the digital switchover process in Montenegro. The formal or informal frequent participation of all other governmental and private stakeholders is necessary. The management of the digitalization issues should include regular sessions dedicated for digital switchover, workshops and discussions with all stakeholders on all related issues and regular information provided for the public.

The national strategy and the corresponding action should not be a rigid document, rules carved into stone. Although the maximum commitment should be ensured for the proper and timely implementation of the action plan, both the strategy and the action plan could be subject to **periodic strategic review** and modification of necessary.

The leading role of the **public broadcasting** may boost the digital market and motive the private broadcasters to change their program into digital. A media strategy for the public broadcasting may also contribute to the success of digital switch-over.

Incentives for national private broadcasters for acquiring digital broadcasting licences should be considered. As for showing the additional value of DTT, an information campaign on the values of the digital platform is essential, nevertheless the best presentation could be the free-to-air digital transmission of the public program with some HD programs and other added-value service (like EPG) for showing the potential of the digital terrestrial platform. If the people choose DTT, so the penetration grows, on the one hand the free-to-air digital platform becomes more valuable for the advertisers as well (a simulcast channel gain more ad-revenue than the analogue ones); on the other hand the state will have to spend less for subsidizing the households with decoders, since the boost of penetration reduces the number of analogue-only households and the price of a STB also goes lower. As for DTT costs, during the simulcast period payment facilitations could be considered (e.g. lower broadcasting fee, or if not applicable, other benefit), but in return the preferred broadcasters should actively participate in the DTT information campaign, and show educational and other informative programs on their channels. As for competition, the more effective digital transmission allows more programs in the air meaning enhanced competition. The analogue technology is costly but gives the benefit of exclusive places in the market. The broadcasters may be encouraged to enter this market by a consequential and determined ASO state policy. If the existing and other broadcasters realize that ASO is a i) potential end to their business, ii) potential door to enter the free-to-air broadcasting market, the competition and willingness to join could be higher.

Incentives may also be provided for the provision of **free-to-air programs** on DTT. If the analogue package simply reproduces itself on digital, the people are not interested in change, since the benefits are not so real. If the digital offer could be significantly more than the analogue (double programs or more), people will migrate more easily.

As for **decoder subsidy**,

- in order to minimize the costs and provide maximum effectiveness, the state should survey the people in need for assistance. Automatic subsidy of all analogue households (or for all paying subscription fee) may become counter-productive, since the people will always wait and expect for the subsidy and will not activate themselves, and the prices of the STBs will not decrease, since the distributors could add the value of subsidy to the price. Therefore it is recommended to limit the STB subsidy as for the scope, timing and value thereof. A tool to motivate people is a bigger subsidy (or limited number of coupons) well-before the expected ASO date, which subsidy becomes lower or disappears as the time passes;

- the access to digital public and commercial programs may require the complete change of the program receiver system to be established by the given households. The preparedness and technical skill of the various households are different, in case of certain households it may not be enough just to give a decoder or a coupon to the people and let them take care for the rest, so the responsible body should prepare for more active and direct assistance to these people;

- a wide information campaign should be attached to these subsidy efforts and all stakeholders (broadcasters, network operators, decoder manufacturers and distributors, antenna installers) should contribute to the effective STB subsidy scheme;

- if a coupon system is applied, effective measures should be made for avoiding any misuse of the coupons (forfeit, sale etc.) and the distributors/respective state authorities should prepare for the management of the coupons (reimbursements for the sellers or the people)

- the implementation and logistics of a STB subsidy scheme requires proper planning beforehand and international examples show that majority of people realize the need for a decoder when their regional ASO date is very close or already the ASO happened, so special resources should be allocated for managing these demands around the expected ASO dates;

- only such STBs may be part of subsidy that comply fully with the mandatory technical requirements of the state, and special features may also be required (only MPEG 4 boxes).

The **effective information campaign** to the people is one of the most important elements of a successful digitalization:

- Regarding this special task, a separate action plan is needed for planning the activities. Beside the National Broadcasting Company, other governmental body should also be involved in campaigns.

- Clear messages should be transmitted to the people to avoid any misunderstanding including in the questionnaires. It is also recommended to review the main slogans/messages from common sense or potential interpretation point of view (Croatian example: *"Get off the rooftops and become part of the digital era"* slogan was interpreted that a rooftop antenna is no longer needed for reception, or in other countries ASO was interpreted as the switch-off of the entire terrestrial platform and only cable/satellite remain).

- Requiring the active participation (including financial or other direct support) of all players of the media market should be considered, since one way or the other, all players have the possibility to reach benefits from the digitalization; broadcasters may reduce their transmission costs, program distributors (pay TV operators) may gain more subscribers, device manufacturers sell their products, mobile-network operators will have access to the digital dividend frequencies, so all stakeholders may share the burdens of the digitalization as well.

- For the effective campaign, beside the means mentioned in the revised strategy, a free or low cost call centre, an informative website and periodic information leaflets (all means should use a common and controlled database that is updated by the state) are recommended (the costs could also be distributed among the various stakeholders). In particular as for older and socially disadvantaged groups of population, the possibility for direct assistance at home should be considered.

- The respective authority should also review the information distributed by other players to filter any misleading or inaccurate information.

In case of application for **EU funds**, EU principles on state aid and STB subsidy should be taken into account (even if Serbia is currently not a member state to the EU).

It became evident during the recent years that the application of the **advance technology** (DVB-T2, MPEG4) is useful for the countries rolling-out digital networks nowadays. The application is improved technology also gives more capacity for contents (as identified also by the Strategy). Nevertheless, the prices of DVB-T2 compatible STBs it is worth considering whether Serbia would start with DVB-T2 right now or implement DVB-T technology first. Financial calculations on the costs should be done in this respect.

Regardless of the equipment that may be sold in Serbia, a clear, available and mandatory **technical specification of the decoders** to be sold is essential. These technical features should be

communicated to the buyers (with a DVB-T compatible label or other efficient way) and frequently controlled by the respective authorities.

Concerning all aspects of the digital transition, there are similarities and solutions that may be used in all countries (with nation-specific modifications if necessary). For accessing these solutions, the presentation and analysis of the **international benchmarks** (experience) with special regard on the processes and status of digitalization in the neighbouring countries is very useful. The contribution of international experts and the experience of countries with similar market conditions are very valuable.

The presentation and promotion of the many extra service that DTT offers (interactive services, EPG etc.) may also motive people and service providers to change to digital.

The **digital dividend** is an extraordinary benefit of the analogue switch-off that may also encourage the state and the service providers to boost the migration. The analysis and related plans are useful for a complete picture. The demand is very serious for mobile wireless services, but during the planning of the use of digital dividend, allocating frequencies for broadcasting should not be totally rejected. The digital transmission in SD merely reproduces the quality of analogue transmission (in a more effective way as for using frequencies) with some added-value services (like EPG), but the real potential of DTT for the viewers is the HD and later the 3D option. The improvement of DTT technology is continuous, but HD/3D and other valuable services will require capacity for their full potential, so when the countries plan the use of digital dividend, some slots should planned for these state-of-the-art and future broadcasting services.

Although DVB-H seems to be a not successful story, more attention should be paid to the digitalization of radio (DAB).

Trials and technical test should be encouraged with regard to any digital service, especially DAB, 3D, HD, interactive services etc.

The main emphasis of digitalization is on the terrestrial platform, the **digitalization of other platforms**, such as cable (DVB-C) and satellite (DVB-S) could also be subject of strategic analysis. From viewers' point of view, the ASO process is detrimental only for the users of the analogue terrestrial platform, since they lose their television and have to migrate (not necessarily to DTT), so other platforms may also contribute to the digitalization by participating in the information campaign or sharing some costs of digitalization efforts.

The Strategy should be a public document and for the use of all parties including the end-users of DTT, namely the viewers.

4.10 Slovenia

4.10.1 Strategy

The Slovenian strategy, the Strategy of the Republic of Slovenia for the switchover from analogue to digital broadcasting (2008) and its Revision (2009) was approved by the Slovenia Government. The Strategy defines the objectives of the digitalization process, envisages a timeline, presents the status of the digital switchover in Europe with special attention to neighbouring countries, evaluates the media market in Slovenia, presents the economic and social aspects, provides a detailed implementation plan with action plan and frequency issues, deals with the role of the actors in the process. The Strategy also includes a description of the digital technologies and an excellent glossary.

4.10.2 ASO schedule (DTT roll-out)

As planned:

Aug 2008 - MUX A should have 80 % coverage
Sept 2009 - Digital transmission of all existing nationwide analogue TV services on at least two multiplexes using the available spectrum
Sept 2009 - Public MUX should reach 90 %, another MUX should reach 80 % coverage
End 2009 - Start of HD transmission
Till 2011 - Launch of 4-5 MUXs and mobile TV

ASO was planned at the end of 2010 with the possibility of shortening the transition period upon the agreement from all stakeholders.

As realized:

ASO has been completed nationwide on 1 December 2010 at 3am. On a single day, all analogue terrestrial television services were switched off. Preparations for analogue switch-off included a 15 minute switch-off on 15 November, 2010.

Viewers are currently able to access DTT services on one national multiplex (Mux A) covering about 98% of population. The second national multiplex (Mux B) that was launched on Sep 1, 2010 and reached ~90 % of population, has been switched off due to the fact that no TV broadcaster had been interested in using this Mux.There are also several local multiplexes.

4.10.3 ASO priorities

Creating new and added value to all participants:
- Consumers: better quality, greater choice of content, new services for people with special need, additional services, mobility, new services;

- Providers: increased content differentiation, lower transmission cost, content on demand, convergence, new sales opportunities, new services;
- State: more efficient use of spectrum, new economic opportunities and jobs, increased competition, media pluralism, new services (DD);
- Digital broadcasting should be an affordable option for the people;
- The shorter the transition period, the sooner the benefits will be realized;
- Switchover may not cause additional and unnecessary environment impact (share of infrastructure shall be encouraged);
- EU rules shall be complied with as for all policies and activities.

4.10.4 Institutional issues

'Classical' task sharing: Parliament provides the legal basis; the Government is responsible for its implementation, legislation-proposals, promotion of DTT, STB subsidy actions; the NRA (Post and Electronic Communications Agency allocates the frequencies, issues the tenders, grants the licenses and promotes DTT. The network operators may tender for MUXes, and are obliged for network-roll-out and operation. The public broadcaster shall be active at providing public information regarding the introduction of DTT and in introduction of DTT. Commercial broadcasters are also tasked to promote the DTT.

4.10.5 Licensing model

By August 2008 MUX A was licensed to public service broadcaster (RTV Slovenia) and has 80 % coverage at that time. MUX B was to be tendered; for local and regional programs, smaller MUXes were to be tendered. Multiplex operator and content provider may be one legal entity, but separate and transparent cost accounting is obligatory. Multiplex operator should apply non-discriminatory conditions towards content providers of that area. Sharing of infrastructure shall be encouraged.

February 2009 - The Norwegian broadcast network operator, Norkring, was selected to operate the country's second DTT multiplex. This multiplex should provide access to 8 television programme services using the MPEG-4 AVC compression format. By 1 September 2009, the multiplex should have a 70% population coverage which should increase to 85% by 1 September 2010. A Slovenian consortium and the Austrian broadcast network operator ORS also submitted a bid for the operation of this multiplex.

September 2010 - The regulator APEK has allowed launching of local DTT multiplexes in regions where local television services were already transmitting in analogue terrestrial mode. The operators for these multiplexes have been selected through public tender. These local multiplexes provide services in the areas of Koper, Ilirska Bistrica, Litija, Muska Sobota, Celje, Dornberk and the area between Koroška and Celje.

By December 2011 MUX A, which carries public and commercial television channels, reached 98 % coverage. MUX B, which was licenced to commercial network operatorNorkring reached89 % coverage.

4.10.6 STB subsidy

Although retail prices of digital receivers decreased considerably, the subsidies for the purchase of digital receivers aimed exclusively to the socially vulnerable people, contributed to a smoother switchover.

More than 4000 households were regarded as materially deprived consumers that required assistance (co-financing the purchase of STB on a technologically neutral way).

4.10.7 DTT co-ordination and information

The ministry competent for electronic communication was responsible to
- organize workshops and forums on DTT
- inform the public on key decisions
- organize consumer incentives for materially deprived part of the population
- co-finance network setting in insufficient commercial interest areas
- promote DTT to the public

The Strategy required effective strategy of consumer information on the availability of digital services and on the necessary equipment. For the information to the viewers, the marking of products on the basis of technical tests is also necessary. The promotion activities shall start in January 2009

In October 2010 a call center was established to help viewers in the run up to analogue switch-off. Viewers will were able to access information via free telephone line. The call center was operated daily from 9.00-21.00. In the remaining hours, the answering machine offered pre-recorded answers to the most typical and frequently asked questions.

4.10.8 Country-specific questions and answers – Slovenia

Q: Was any STB subsidy scheme applied in Slovenia? If yes, please provide some details (eligibility, form, implementation etc.); If no, please explain the reasons.

A: Yes, there was a STB help scheme in Slovenia. It was aimed exclusively to the socially vulnerable people and supported the distribution of free decoders that were technology-neutral and used open standards of interactivity.

In 2010, the competent ministry sent a questionnaire to all country residents that were exempted from paying license fee due to social weakness, in order to determine the number of digital receivers needed. Based on the replies received, the ministry purchased via public tender 4000 set top boxes for (€ 140,000) and distributed them for free to all the eligible persons that applied. Since the disabled persons were also found eligible for co-financing, the amount of set top boxes purchased by the ministry turned out not to be sufficient. Therefore, the ministry reimbursed the remaining eligible persons the costs of buying digital receivers, by up to € 50, on the basis of invoices submitted.

Please see below the help scheme legal basis.

Article 34 (Slovenian Digital Broadcasting Act - ZDRad)
(Consumer incentives)

(1) The ministry shall, with the funds available, encourage the dissemination of digital broadcasting in the form of consumer incentives by co-financing the purchase of digital television receivers by socially disadvantaged consumers.
(2) The receivers co-financed by the ministry shall be technology-neutral and use open standards of interactivity.
(3) In accordance with this article, recipients of incentives shall solely be persons obliged to pay contributions in compliance with the act regulating public broadcasting but who are exempt from the payment of such contributions.
(4) The ministry shall issue a public invitation for entitled persons to apply for co-financing of the purchase of a digital TV receiver and determine the receivers to be co-financed.

For more details and analysis please see the Funding Framework Guidelines within the WP3 http://www.see-digi.tv/documentation/wp3-legal-framework/

Q: How did the stakeholders inform the people? How long was the 'long campaign' and what were the logical steps?

A: The people were informed through the campaign led by the responsible ministry. During the campaign, a uniform visual identity of the switchover communication activities was created and all media channels were used. However, the most intensive campaigning begun half a year before the switch off. In addition to media, the electronic stores were also used for promoting the switchover. The establishment of the call center, dedicated to all questions regarding the switchover, also proved to be very useful. As the skilled operators were able to provide detailed information to all kinds of requests of citizens, the call center turned out to be an important measure for reducing the signs of panic among the population and contributor to the rise of the overall public awareness regarding the transition.

Q: Was there any negative feed-back from the people following the ASO?

A: Yes, some people complained. The main reasons were problems with digital reception; the signal of Mux A was at the time of switchover still not available in some areas. Second most often complaint was related to the then ongoing changes of channels. During the simulcast some temporary channels were used in some areas and they were later changed to the long-term channels according to the GE06 agreement. People had to re-tune their STB's.

Q: Was there particularly big demand for digital decoders and antennas prior and just after the ASO and how did the distribution system handle it?

A: The digital receivers were available years before the ASO date, so there was no problem in getting one. Slovenia has adopted technical specifications for DVB-T receivers and pro-

vided also conformance testing to get the official STB sticker. However, only few larger manufacturers decided to test their receivers and some receivers available on the market were not fully compatible with technical parameters that were in use. After a while the most of the problems were solved.

Q: What are the plans for MUX B? Are there interested broadcasters? Or services other than program distribution are expected?

A: Currently there are no channels interested in using mux B for broadcasting. It remains to be seen what (if any) effect will have the proposed change of the Digital Broadcasting Act, aimed at preventing RTV Slovenija to host commercial channels on its (public) multiplex (Mux A). If approved, this change may change the position of Mux B on the market.

Q: Is there any issue that caused particular difficulties or diversion from plans during the digital switch-over?

A: The strategy envisaged Mux B for commercial channels. However, most commercial channels went on the Mux A, which was according to the strategy intended for services of the public services broadcaster.

For the purpose of the digital dividend, Slovenia had to abandon two nation-wide layers. This caused some difficulties, since the initial plan was relying on the channels above 60.

The public awareness campaign was also launched much later than planned; the coverage of Mux A was way behind the schedule; and Mux B was operational only few months before the ASO.

Anyway, the ASO was not delayed and the switch-off process was successful. At least in terms of making possible the digital terrestrial broadcasting to all the existent and new TV services that were interested in it and in terms of making possible the digital terrestrial reception of TV signal to all the interested viewers. Yet it would be hard to claim that the digital terrestrial platform shows a great development potential at the moment.

5 ALIGNMENT PROPOSALS

The followings reiterate the potential most important elements for a successful digital switchover as recommendations for alignment purposes.

5.1 Set-top box subsidy system

Majority of the countries consider or apply a subsidy scheme for set-top boxes either for entire population, for analogue households, for people in need, since certain part of the population definitely need some assistance due to the loss of analogue television. The STB subsidy requires careful planning since on the one hand i) the possibility of one way for television (and only the analogue terrestrial) disappears, so people may feel deprived of their choice of TV and would request compensation, ii) people need support for the migration to the digital television (which is a complex task for them), iii) certain part of the population due to age, location of living or social status require direct assistance; but on the other i) any subsidy scheme could be very expensive and ii) if the scope is unreasonably wide, it could be counter-productive.

5.1.1 Scope of the subsidy (eligibility)

In order to minimize the costs and provide maximum effectiveness, the state should survey the people in need for assistance. Generally the age (elderly people), location of living (mostly rural areas) or social status (low income) would make any support necessary. The counties should survey the people with questionnaires or by other effective way and identify the groups of people requiring assistance. Financial assistance should be provided for low-income households. Although the analogue terrestrial platform is free-to-air and often called as television for the poor, it is not necessarily true (choosing analogue terrestrial could be a decision not motivated by the subscription fee), especially in case of a country where the penetration of the terrestrial platform is high, so the surveys are necessary to identify the households in real need and not extending to scope to all analogue households automatically.

An automatic subsidy of all analogue households may become counter-productive, since the people will always wait and expect for the subsidy and will not activate themselves, and the prices of the STBs will not decrease, since the distributors could add the value of subsidy to the price. Therefore it is recommended to limit the STB subsidy as for the scope, timing and value thereof. A tool to motivate people is a bigger subsidy (or limited number of coupons) well-before the expected ASO date, which subsidy becomes lower or disappears as the time passes;

5.1.2 Possible forms of subsidy

a) **direct assistance** for the households equipping them with the devices ensuring the access to the chosen television platform (in a limited format a household is given only a decoder device for free). The access to digital public and commercial programs may require the complete change of the program receiver system to be established by the given households. The preparedness and technical skill of the various households are different, in case of certain households it may not be

enough just to give a decoder or a coupon to the people and let them take care for the rest, so the responsible body should prepare for more active and direct assistance to these people. In this structure the eligible households (the criteria should be elaborated) – ensuring the platform neutrality – choose a digital television method (DTT, cable, satellite) and the support organization provides for the install of the reception device and gives a complete solution for that household. This solution requires the most planning, financial resources and logistics, since the state/local authority should decide on the eligible households that should communicate their decision to the support organization, then all equipment should be purchased by the state and the install should be organized and done. The benefit of this solution is its completeness ensuring television for the affected households that could not resolve it on their own.

b) **direct financial support** for purchasing any device ensuring the access to the digital television. The forms could be a coupon/voucher or reimbursement of the full or part of the price of the device that should be electronic equipment (set-top box, antenna or other reception device, integrated TV set etc.) becoming property of the viewer and not the support of any subscription fee. A similar solution is special credit option for purchasing a set-top box. This solution requires decisions on eligibility (if applicable), the management of the coupons (by central state or local authorities), and effective measures should be made for avoiding any misuse of the coupons/vouchers (forfeit, sale etc.). The distributors of the device should also be prepared for handling the coupons and a wide and specific information campaign should be launched with regard to the target group.

Some examples

– USA launched[3] a coupon program which provided viewers access to 2 coupons each worth $40 to use towards the purchase of DTT set-top boxes and was administered by the National Telecommunications and Information Administration ($1.5 billion as spent, 34.4 million households benefited),
– In 2006 Austria launched[4] a subsidy of € 40 as voucher for purchasing MHP-capable boxes within two months from start for the first 100.000 buyers (‘Frühumsteiger-Bonus‘). Austria also launched a € 40 subsidy program for low-income households not having broadcast tax debt,
– at the analogue switch-off in Rome (2009), Italy granted €50 subsidy for the purchase of a DTT receiver for households with members aged 65 and over and an income of less than €10,000 per year,
– the Hungarian DTT network operator was subject to an obligation to provide for a special loan option, where the buyers may pay the price of the decoder in monthly instalments not exceeding 1 % of the minimum wage (~€2,5 per month, but practically there was no need for this scheme, so the scheme was terminated in 2011),
– Portugal grated subsidy[5] in 2011 for certain people (application is necessary); the subsidy amount is 50% the value of the purchased DTT decoder, to a maximum limit of €22, including a cost of €3 for handling the application procedure.

c) **indirect financial support** for purchasing any device ensuring the access to the digital television. The forms could be generally tax-reimbursement of the full or part of the price of the device that should be electronic equipment (set-top box, antenna or other reception device, integrated TV set etc.) becoming property of the viewer and not the support of any subscription fee. This solution does not require necessarily decisions on eligibility if the state would maximize its VAT revenue, but a limitation based on income may be also an option. In this case the tax authority

[3] http://www.digitag.org/ Country info - USA
[4] http://www.dvb-t.at/presse/presseaussendungen/presseaussendung-13072006.html
[5] http://www.anacom.pt/streaming/FinalDecision24March2011.pdf?contentId=1081017&field=ATTACHED_FILE

should elaborate the way for tax-reimbursement. However, this solution supposes that the viewer has revenue that could be basis for tax-reimbursement, which is not surely the case with regard to the people in need. As an example, at the analogue switch-off in Sardinia (2007), Italy granted a subsidy that provides consumers who purchase television sets with integrated tuners and digital decoders with an income tax deduction equal to 20% of the price paid for the equipment, up to a maximum deduction of €200 per decoder. A total of €40 million was available within the government's budget.

d) **reasonable combination** of the aforementioned forms or any other way; as per the dedicated financial and manpower capacities of the given country allow.

It is recommended that the supported device fully complies with the mandatory technical requirements of digital television and the support for all kind of equipment including the reception device (antenna, satellite and necessary cables) is also necessary (not limiting the support to the set-top box or integrated TV set).

5.1.3 Timing of the subsidy

Regarding the habitude of people to act in the very last moment (or even just after), i) they should be informed and motivated to act well-before; ii) the state should prepare for the huge increase of demands around an ASO date. Special benefits may be considered for the people if they use the support well-before an ASO date (higher discount if used X months earlier), the scope could be limited (only the first X thousand people may use a certain subsidy) and massive information campaign could urge the people to act. For motivation the coupons/vouchers should expire after a certain amount of time in order to close the programs and motivate people to use them. A region-by-region analogue switch-off also allows the state and other involved players to concentrate the resources in a given area.

A wide information campaign should be attached to these subsidy efforts and all stakeholders (broadcasters, network operators, decoder manufacturers and distributors, antenna installers) should contribute to the effective STB subsidy scheme even with financial resource as well. If the direct assistance described above is not applicable or the scope is very limited, special emphasis must be given to educational campaigns and material.

5.1.4 Platform-neutrality

If the state applies any STB subsidy, it necessarily intervenes to the market processes and influence the decision of the viewers, especially since it is a preconditions that a device may be supported only if it complies fully with the mandatory technical requirements of digital television. Although from the viewers' point of view the analogue switch-off affects only the analogue terrestrial platform and no other analogue platform (cable, satellite) shall be switched-off, the principle of platform-neutrality became a general guiding principle.

In the case of Berlin-Brandenburg the Commission gave specific indications of acceptable forms of public support for the digital switchover[6]:

[6] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/05/1394&format=HTML&aged=1&language=EN&guiLanguage=en

- funding for the roll-out of a transmission network in areas where otherwise there would be insufficient TV coverage
- financial compensation to public service broadcasters for the cost of broadcasting via all transmission platforms in order to reach the entire population, provided this forms part of the public service mandate

- **subsidies to consumers for the purchase of digital decoders as long as they are technologically neutral, especially if they encourage the use of open standards for interactivity**

- financial compensation to broadcasters which are required to discontinue analogue transmission before the expiry of their licences, provided this takes account of granted digital transmission capacity.

Pursuant to other decisions of the European Commission[7], the Commission recognised that the switchover to digital television may be delayed if left entirely to market forces and that public intervention can be beneficial, through - for example - regulation, financial support to consumers, information campaigns or subsidies to overcome a specific market failure or to ensure social or regional cohesion. The subsidies for equipment for the reception of digital television are in compliance with EC Treaty state aid rules if technology-neutrality and proportionality to the objective of promoting the transition to digital TV and to interoperability are ensured; the subsidy is the most appropriate instrument and it is limited to the minimum necessary; and it does not unduly distort competition.

The principle of technological neutrality is respected if the support is available irrespective of whether the decoder is used for terrestrial, cable or satellite channels. If the digital equipment has interactive features, these must be provided through programme interfaces (APIs) which use open standards, in line with the definition provided in Article 18 of the Framework Directive for electronic communications networks and services and the subsequent Communications of the Commission.

Although it may be concluded that the subsidy provides an indirect advantage to the broadcasters using digital technologies as it allows them to build and develop their digital audience at a faster pace and at reduced costs. However, as the measure respects the principles of transparency, necessity, proportionality and technological neutrality, the Commission considered the aid to be compatible with the Single Market.

The decisions of the EU Commission has no legally binding effect on non-EU countries, but the application of the platform-neutrality principle may enhance the competition on the program distribution market, increases transparency and contribute to the effective digitalization procedure.

5.2 Action plan

The determination of key and reasonable **deadlines** for the analogue switch-off may be considered; an accompanied **action plan** helps to identify the tasks and bottlenecks. The strategies should enlist the issues, gives a well-elaborated overview of the situation, and also describes a detailed action plan with tasks and dates that should be used as basis and update it as per the new circumstances in order to motivate the state and private actors to accelerate and align their

[7] See http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/960

efforts. If the final ASO plan is accepted with the involvement of all stakeholders, the state should stick to the plans and be determined to realize it.

For the deadlines a retrospective planning should be applied analysing in case of each task that how much time is estimated for the implementation calculated from the planned event (regional ASO, launch of a subsidy scheme etc.)

For the action plan the clear and unambiguous description of tasks, responsible bodies and deadline is recommended (example):

Task	Proposal (in co-operation)	Deadline	Adoption	Deadline	Execution (in co-operation)	Deadline	Comment
Act on digital switchover	Government (Media and communications agencies, broadcasters)	Q2 2011	Parliament	Q3 2011	Government (Media and communications agencies	Q1 2012	
Information campaign for subsidy scheme	Ministry for social affairs (local governments, broadcasters)	March 31, 2012	Government	May 1, 2012	Ministry for social affairs	Q3 2012	

5.3 Political consensus

ASO is part of an international co-operation within the International Telecommunication Union that is a specialized organ of the United Nations. Accordingly, the ASO is also a **political issue** on international, but on domestic level as well and the political importance is even higher with regard to the number of people using exclusively the analogue transmission for getting access to public and commercial television. In all countries, the politics should find the consensus for the i) equal importance acknowledged to the digitalization by all governments; ii) common principles, resources and steps for the realization of digital switchover, since this process eventually could not be accomplished during one cycle of a given government, so the political parties should elaborate **overarching solutions** for the effective analogue switch-off.

5.4 DTT organization

A newly/temporarily established committee with members from all state stakeholders as **DTT coordinator organization** with clear mandate from the possible highest state entity could be considered for the effective realization of the digitalization. The designation of an entity for managing the digitalization issues (especially a new organization) may facilitate the digital switchover, since a dedicated task inspires that body to active efforts, especially if there are many agencies involved in the digital switchover process. The tasks in the DTT organization should be clear for all participants, and in case of any dispute a leading and decisive body should be determined. The formal or informal frequent participation of all other governmental and private stakeholders is necessary. The management of the digitalization issues should include regular sessions dedicated for digital switchover, workshops and discussions with all stakeholders on all related issues and regular information provided for the public.

5.5 Information campaign

The **effective information campaign** to the people is one of the most important elements of a successful digitalization:

Regarding this special task, a separate action plan is needed for planning the activities.

Clear messages should be transmitted to the people to avoid any misunderstanding including in the questionnaires. It is also recommended to review the main slogans/messages from common sense or potential interpretation point of view (Croatian example: *"Get off the rooftops and become part of the digital era"* slogan was interpreted that a rooftop antenna is no longer needed for reception, or in other countries ASO was interpreted as the switch-off of the entire terrestrial platform and only cable/satellite remain).

Requiring the active participation (including financial or other direct support) of all players of the media market should be considered, since one way or the other, all players have the possibility to reach benefits from the digitalization; broadcasters may reduce their transmission costs, program distributors (pay TV operators) may gain more subscribers, device manufacturers sell their products, mobile-network operators will have access to the digital dividend frequencies, so all stakeholders may share the burdens of the digitalization as well.

For the effective campaign, various forms of information is recommended (the costs could also be distributed among the various stakeholders):

- information campaign led by the Digital Coordinator using various marketing tools (ads, educative material, special programs etc.)
- a seasonal info-campaign concentrated to an area to be switched-off
- a free or low cost call centre including technical assistance,
- an informative and main website and periodic information leaflets

All means should use a common and controlled database that is updated by the state. The common visual elements also contribute to the increase of awareness on digital television. In particular as for older and socially disadvantaged groups of population, the possibility for direct assistance at home should also be considered.

The respective authority should also review the information distributed by other players to filter any misleading or inaccurate information.

5.6 Technical requirements

Regardless of the equipment that may be sold in the country, a clear, available and mandatory **technical specification of the decoders** to be sold is essential. These requirements should be determined based on the technical characteristics of the digital terrestrial transmission in the given country, adopted and published by a state entity, and should be subject to periodic review

in order to keep in step with the improvements. These technical features should be communicated to the buyers (with a DVB-T compatible label or other efficient way) and frequently controlled by the respective authorities.

A label on the DVB-T compatibility is useful information for the viewers:

5.7 International benchmarks

Concerning all aspects of the digital transition, there are similarities and solutions that may be used in all countries (with nation-specific modifications if necessary). For accessing these solutions, the presentation and analysis of the **international benchmarks** (experience) with special regard on the processes and status of digitalization in the neighbouring countries is very useful. The contribution of international experts and the experience of countries with similar market conditions are very valuable. It is also very useful if the main documents and information on the digitalization in a given country is published also in English on the main website of the digital switchover.

5.8 Digital dividend

The **digital dividend** is an extraordinary benefit of the analogue switch-off that may also encourage the state and the service providers to boost the migration. The analysis and related plans are useful for a complete picture. The demand is very serious for mobile wireless services, but during the planning of the use of digital dividend, allocating frequencies for broadcasting should not be totally rejected. The digital transmission in SD merely reproduces the quality of analogue transmission (in a more effective way as for using frequencies) with some added-value services (like EPG), but the real potential of DTT for the viewers is the HD and later the 3D option. The improvement of DTT technology is continuous, but HD/3D and other valuable services will require capacity for their full potential, so when the countries plan the use of digital dividend, some slots should planned for these state-of-the-art and future broadcasting services.