

ANALOGUE SWITCH-OFF VS DIGITAL SWITCH-ON: RETHINKING POLICY STRATEGIES IN THE DIGITAL TELEVISION ERA

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Abstract

In the last few decades, the traditional television landscape came under pressure and the diffusion of digital television (DTV) services became a hot issue. Especially for policymakers, access to DTV is considered to be a key element in the further development of the information society. Facilitating equal access for all to the new possibilities offered by digital television should be the central objective. In this context, policymakers are confronted with different challenges: how can they facilitate a smooth transition from analogue to digital terrestrial television? How should they handle digital dividend issues? For dealing with these topics, this article stresses the importance of a user-oriented approach.

Biographical notes

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Introduction

The traditional television landscape has come under pressure. After several decades of analogue television, technological developments have led to the roll-out of digital television (DTV) in Western countries. This transition process is mainly being pushed by commercial players (both infrastructure and content providers) that were competing to be the first in the digital market. However, developments in this context are not only subject of commercial interest. Also government has – by means of its digital communications policy – an important role to play. As the diffusion of digital television services is a hot issue and access to DTV is considered as a central element in the further development of the information society for all (CEC, 2005b), government authorities are forced to (re)consider their policies to ensure equal access for all to the new possibilities offered by digital television services (van Cuilenburg & McQuail, 2003). In this context, policymakers have to deal with a smooth transition from analogue to digital (terrestrial) television. In addition, at least as important is the question how government should manage digital dividend issues and what role it has to play in the reallocation of spectrum.

This article reflects on the role of government in this broad transition process and in the digitized television landscape. More specifically, the authors make a strong plea for strong user involvement in the development of policies concerning the digitized media landscape. As analogue terrestrial television signals will be replaced by their digital equivalent in all European countries before 2012, this is nowadays a hot topic. The article mainly focuses on the preparation of the analogue switch-

off, which is strongly connected with what is called 'digital dividend'. Hereby, it is important to look for future technological opportunities in terms of innovative broadcast or telecommunications services. Key research findings of projects concerning both the analogue switch-off and the digital dividend in Flanders¹ demonstrate that government has played an important role in the development of the digital television landscape in the past, and should continue to do this in the future. In the last section, the authors argue that not only the market but also the government, users and other stakeholders involved need to take on their role for ensuring a fair digitized media ecosystem in the future.

Digitization of television

In most developed countries television viewers have always had a balanced choice between free-to-air television and pay television, general purpose programs and premium channels. Free-to-air television was offered on platforms such as antenna and standard satellite; pay television channels used to be distributed via cable distribution and enhanced satellite. Whereas general purpose channels were produced by local public or commercial broadcasters, premium programs contained exclusive high-quality content, such as sports, film or entertainment, and created a high-end segment in the market for pay television. In the last decades, however, this choice has been expanded given that new platforms of (pay) television have entered the market. Traditional television has come under pressure from the combination of increasing competition, new distribution modes and the digitization process (Chalaby & Segell, 1999, Dahlgren, 2000).

For a long time, local cable companies were granted a monopoly on both viewers and content providers in the pay television sector (Adda & Ottaviani, 2005). With the introduction of satellite and digital terrestrial television, the market has been turned upside-down. As a consequence, people have the opportunity to choose between a wide array of home delivery platforms, which induces growing competition (Carmichael et al, 2006). Terrestrial transmission is the oldest and most

commonly used technology to distribute television signals. This technology is very suitable for serving remote regions in a cost-efficient way but – due to spectrum issues – only a limited number of channels can be made available. Cable networks, on the other hand, can offer a much wider choice of programmes and services than terrestrial transmission because of their high channel capacity and the low level of noise and electromagnetic interference. In addition, improvements in satellite technology have led to the rise of commercial satellite operators that provided uplink connections to broadcast satellites at a cost that was affordable for a medium-sized television company. They offer a clear alternative for households in region where cable subscription is not possible, although an investment in a satellite dish and a dedicated receiver is required (Tadayoni, 2006).

The transition from the 'old television medium' to the digital era required digital equivalents for each of the 'traditional transmission platforms': digital terrestrial television (DTT/DVB-T), digital cable (DVB-C) and digital satellite (DVB-S) were accepted as European standards (De Grooff, 1999). In addition, digital television is also offered by means of a broadband Digital Subscriber Line (xDSL). And more recently, trials have been set up with digital video broadcast to handheld devices using DVB-H and T-DMB, both standards for mobile broadcasting (Braet & Ballon, 2008).

Digital dividend and the analogue switch-off

The European Commission (CEC, 2005, p. 3) has defined 'switch-off' as 'terminating the terrestrial transmission of analogue television', and 'switchover' as 'the transition from analogue to digital broadcasting of all types of broadcasting'. One of the often recurring concepts in this digitization discourse among policymakers is the notion of a 'digital dividend'. Digital dividend refers to access to frequencies that are released by the analogue television switch-off: 'Digital dividend is to be understood as the spectrum made available over and above that required to accommodate the existing analogue television services in a digital form' (Doeven, 2007, p. 1). This way, new spectrum frequencies may become available for other/innovative services and applications (Fontaine &

Girieud, 2007, Olafsson et al., 2007). As digital dividend is closely related to the analogue switch-off, the concept currently is high on the agenda of media and information society policymakers as well as researchers.

The digital switchover is seen as the natural outcome of technological evolution in the television landscape and should generate advantages for both citizens as well as broadcast companies in terms of (a) more choice, better signal stability and higher picture and sound quality for viewers; (b) lower distribution costs and the possibility of transmitting more channels and services at the same cost; (c) greater efficiency in spectrum use; and (d) the ability to send data that allow interactivity and more customized services (d'Haenens & Bink, 2001, Iosifidis, 2007). In order to benefit from these advantages, national and European regulators have put the transformation of the television landscape on top of their priorities. Digitization has now reached a crucial phase, i.e. the replacement of the analogue terrestrial system by its digital equivalent. All European countries could freely choose their transition strategy, but Europe aims for the end of analogue terrestrial television by 2012. As the existing analogue transmission may suffer quality problems due to signal interference (some countries have already accomplished the switch-off, others are still in the phase of planning), the European Member States have been urged to reveal their national plans concerning the analogue switch-off (date, strategy, commissions, etc.) (Iosifidis, 2007).

Strategies and timing towards the analogue switch-off in Europe vary greatly due to the current penetration of digital television services (in particular digital terrestrial services), spectrum availability and the individual character of the television landscape (Iosifidis, 2007). In about ten countries, the analogue switch-off has already been accomplished (amongst other the Flemish Community in Belgium); other countries have set a fixed date in the near future while others have unfolded their switch-off strategies yet. As the Commission expects that most European countries will start to switch-off analogue terrestrial signals in 2011, the next years turn out to be of crucial

importance for the European television industry. Learning lessons from the experiences of pioneer countries may therefore contribute to the overall success of the analogue switch-off in Europe.

Among the different criteria determining the complexity of the switch-off, usability and compatibility of home equipment may be essential. The switch-off represents a substantial challenge in countries where a majority of the households are exclusively served by analogue terrestrial networks (Burns et al, 2005). In this perspective, three types of countries can be roughly distinguished in Europe: (1) 'cable countries' with more than 90% of the households who watch television via cable (e.g. Belgium, the Netherlands, Luxemburg); (2) 'terrestrial countries' where terrestrial transmission is the dominant delivery platform (e.g. United Kingdom, France, Italy, Spain, Portugal), and, (3) 'hybrid countries' where cable and satellite together serve more than half of the households (e.g. Germany, Ireland, Sweden, Finland, Denmark) (d'Haenens & Bink, 2001; BIPE, 2002). The present coverage and program delivery of digital terrestrial television (DTT) is extremely scattered and often depending on the government and the public service broadcaster for its implementation and further development (Storsul & Schanke Sundet, 2006). This may explain the high difference in the use penetration of DTT, ranging from quasi non-use (Belgium) to a large majority (Italy) (Ofcom, 2008).

Policymaking in the digital television landscape

As the analogue television switch-off is a prerequisite for the release of new frequencies, policymakers should guarantee that this transition process runs smoothly and fair. However, the switch-off success depends on different circumstances (Fontaine & Girieud, 2007) such as (a) DTT technical services and alternative reception solutions; (b) pay television penetration; (c) type of home; (d) existence of free satellite; and (e) homes equipped with integrated digital decoder/televisions. To counterbalance problems in the transition period and to improve the chance of a successful switchover, public authorities have initiated different actions in all of the countries involved: information campaigns, subsidies for purchasing DTT decoders, digital television regulation,

complementary broadcast solutions for shadow zones, upgrades to master antennas and so on (Iosifidis, 2006).

In addition to the analogue switch-off, questions remain about the digital dividend and how its reallocation should be organized. Four main service (broadcast and communications) categories may be interested in using the frequencies released by the switch-off (Fontaine & Girieud, 2007; Burns et al., 2005): (a) fixed or mobile broadcast television services (including additional TV programmes or TV enhancements such as HDTV); (b) mobile telecommunication services (new applications such as 3G and systems beyond); (c) public safety services; and (d) commercial or public PMSE (programme-making & special events) services. From a regulatory point of view, the (re)allocation of these frequencies is the responsibility of each country. Nevertheless, it also implies a regional and worldwide process, required to harmonize frequency usage across borders. Governments can select various approaches to deal efficiently with the reallocation of the digital dividend: while some countries will prefer the development of (extra) television services, others will opt for mobile telecommunication services, and still others are adopting voluntary service neutrality regarding the use of the spectrum (Fontaine & Girieud, 2007).

Particularly at this point, we emphasize the need for user-oriented policy strategies, i.e. based on extensive living lab research which offers profound insights in the real needs and expectations of all stakeholders towards new possibilities offered by technological development. We believe that it should not only be the market 'who should essentially determine how the current broadcast spectrum will be used in the future', as suggested in some European studies (Burns et al, 2005, p. 4). As the European Commission and national governments have previously contributed towards the development of digital television services and technologies (and bearing in mind the information society for all), we are convinced that the market should produce together with government total value to society (sum of private value and broader social value) (Evens et al, 2010). At least as

important of a smooth transition from analogue to digital television are the questions how to exploit the digital dividend and how to deploy the frequencies that become available as a result of the switch-off. In this context, technology development and innovation strategies could profit from bottom-up and in particular user-driven approaches.

Towards an open innovation approach

The successful analogue switch-off and the sustainable development of digital television services require the full and active participation of all stakeholders involved in the transition process and a strong leadership from the government to affirm this process (Iosifidis, 2005). Policymakers should not only make available financial resources to support the communication and marketing budget. In addition, they should also bring together broadcasters and content providers, multiplex and network operators, consumer electronics manufacturers, equipment retailers and consumers to successfully (a) roll-out digital access networks, (b) make the necessary home equipment available and (c) launch new and innovative consumer services. This plea for a holistic approach refers to the 'open innovation' paradigm that stems from a recent body of innovation management literature, considering innovation as a cyclic and open process with cooperation and collaboration of all stakeholders involved. Open innovation can be defined as 'the antithesis of the traditional vertical integration model where internal research and development (R&D) activities lead to internally developed products that are then distributed by the firm' (Chesbrough, Vanhaverbeke & West, 2006, p. 1). It is the central part of the innovation process in which private companies go about organising the search for new ideas that are socially relevant and have commercial potential. External actors and sources can help to achieve and sustain innovation in order to create user-centric added value (Chesbrough, 2003).

The emergence of so-called 'living labs' can also be mentioned in this context. One of the major examples is the European Network of Living Labs (ENoLL) which has been launched in December

2006, assembling hundreds of living labs from twenty-nine different countries. Living labs are experimental platforms in which technology – even in the early stages of the innovation development process – is given shape in real life contexts and provide full-scale test bed possibilities for conceptualising, co-creating and prototyping as well as for the interactive testing and marketing of new (mobile) technology applications and business models (Frissen & van Lieshout, 2004). Most often, test-users get devices ‘for free’ and/or enjoy free access to services; therefore the results in terms of user acceptance and willingness-to-pay should be handled with care. As innovation is perceived as an active and a continuous process, the successful application of living lab environments should be supported by all relevant stakeholders from user, policy and private communities. As a result, living labs contribute to a new innovation ecosystem in which end-users, public organisations, private companies and scholarly institutions cooperate towards the development of innovative technology solutions, products and business models.

Flanders, as well as other European regions and countries, has a strong tradition of open innovation and living lab settings in the field of new media research. The commercial roll-out of digital television was preceded by two government-supported research projects, in which a living lab of a few hundred households was provided with set-top-boxes: the IO-project (2002) and the Flanders Interactive-project (2003). In these research environments the public service broadcaster VRT has collaborated with telecommunication companies and technical and socio-economic researchers from Flemish universities (Van den Broeck, 2008). The main conclusion of the two projects was that – despite the promise of new and revolutionary possibilities – the future television viewing experience would not mean a radical shift. The television would stay the same medium that it has been since a long time: a channel for mainly information and leisure purposes.

In addition to these trial projects, the Flemish government financed several research efforts to support public policy. As the government recognised that the smooth and fair switch from analogue

to digital terrestrial television demanded a certain degree of 'strategic guidance', it commissioned a study (2007) to learn more about the analogue terrestrial television viewer in terms of profile and viewing expectations. The government assumed that a profound insight in the Flemish terrestrial viewer was needed as a starting point for guiding the information campaign (Verdegem et al, 2009). The project aimed at (a) profiling the analogue terrestrial viewers (in terms of socio-demographics and motivations to stick with their analogue television set); (b) gauging their knowledge related to the analogue switch-off and (c) mapping their expectations after the switch-off when it comes to television viewing. The results demonstrated that the antenna viewers are not very demanding viewers and especially watch news and information programmes. Nevertheless, these viewers were rather badly informed about the switch-off process and the possible viewing alternatives, causing negative attitudes towards this evolution. Digital terrestrial television clearly proved to be their most preferred alternative. These results were a first step in the development of a certain strategy towards the analogue switch-off and stressed the need of a communication campaign, which should explain the (rationale behind the) switch-off process and should stress the possible alternatives after the analogue switch-off (including both financial and technical aspects), with a particular focus on DTT.

Simultaneously and in the field of mobile television, the MADUF (Maximizing DVB Usage in Flanders) project was set up in the same tradition. Following the spirit of the open innovation paradigm, the two most important telecommunication service providers were brought together, and cooperated with the public broadcaster and with equipment suppliers such as Nokia Siemens Networks, Option and Cisco. The Flemish government has initiated the research project, as it was one of the projects of the Interdisciplinary Institute for Broadband Technology (IBBT), which is a public funded research institute that has the mission to bring together industrial partners and scholarly researchers. The objective of MADUF was to generate an optimum model of providing mobile television services in Flanders via the DVB-H transmission standard, not only by providing technical solutions but also by

investigating legal, economic and user aspects. Within the broad city perimeter of Ghent, a living lab was installed with full network coverage and users were provided with DVB-H handheld devices. Research results clearly prove that mobile television will not gain mass market uptake in the near future and that market potential is considerably lower compared to other countries such as Finland (Schuurman et al, 2009). Similar results were detected in large-scale consumer interest research in the United Kingdom. Mobile television was perceived by consumers in this study to be a niche, luxury service that had little or no additional value to society (Ofcom, 2006).

With this user-driven research approach the MADUF project served both industry as well as policy needs. As mobile television is one of the possible new services that will become available after the analogue switch-off, this research is closely related with a pending policy issue such as the digital dividend. Regarding the industry, we have a sector being under pressure due to a growing number of failing innovations, making a user-centric approach increasingly important in technology research. As well from the policy as the industry perspective, we thus note a paradigm shift from a technology-driven focus towards a user-driven focus. Technology research gradually becomes more multidisciplinary, affecting policy decisions. The MADUF project is a clear example, as it provides government with useful insights on both technical issues and knowledge about the citizens' preferences towards new services that become available as part of the digital dividend. This is crucial because of the ambivalent position of government in both stimulating innovation (economic policy) as well as inclusion of all citizens into the information society (broader social policy).

Conclusion and discussion

Whether we now have already passed or are still one the threshold of the digital age can be left open for discussion, but there is no doubt that the traditional television landscape will be radically transformed by digitization and convergence. This digitization process entails huge challenges for all stakeholders in the value network. Users are being confronted with an increasing number of delivery

platforms providing a wide array of (niche) channels and interactive applications, and with an enduring trend towards paid access for high-quality content; the industry has to deal with uncertainties regarding increasing competition and the economic potential of all these new technologies, which may affect their business model; and governments are coping with public policy issues such as the digital dividend and the analogue switch-off.

Having the latter challenge as the starting point of this article, policymakers are confronted with a lot of risks and uncertainties in facilitating a smooth and fair transition from analogue to digital television services. However, one thing may be clear: the analogue switch-off will provide opportunities for deploying new consumer services and applications, and the industry is looking forward to claim the liberated frequencies for exploiting this spectrum. Whereas television companies are planning to launch high-definition television or mobile television services, telecommunication operators are willing to provide mobile broadband services over next-generation networks. However, recent user-driven research have not only questioned the commercial potential of some of these services, but – in some cases – also their social potential to extend the information society for all. Especially in this context, the open innovation paradigm gains relevance and a user-driven policy approach becomes necessary.

Earlier experiences with new technologies and prior-to-launch user research have learned that the affordances and potential (economic, social, etc.) for innovative services should be carefully assessed. As a considerable amount of Flemish test users found little added value in mobile television services, user-driven research may qualify the potential of many hyped industry-driven (or pushed) information technology products and services. However, investments in a user-oriented approach need to go beyond traditional market and forecasting research, and should also reflect on the socio-economic and legal environment that shapes information technology consumption. In this article, a plea has been made for continuous user-involvement and feedback to policy strategies and industrial

product design, and for a true open innovation approach. Such a public private partnership allows policymakers to make well thought out decisions for reallocating the released spectrum and avoids that alternatives with little economic and societal added value are being chosen. Following the example of EnoLL, this setting might be an opportunity to build unique living labs that compromise the totality of delivery platforms and technologies (such as DVB-H, 3G, WiMAX, DVB-C, DTT, xDSL etc.) with all stakeholders involved (users, public authorities, network operators, service and content providers, equipment manufacturers, scholarly researcher, etc.). Living labs might be the ideal test bed where industry needs (e.g. cross-media content delivery) meet policy issues (e.g. digital divide, media literacy, media innovation). In addition, such an approach may be the first step towards true user-centric and mutual shaped innovation strategies and policies.

Nevertheless, before exploring the opportunities of the digital dividend and experimenting with new consumption patterns and business models, policymakers should carefully take the hurdle of the analogue switch-off, which may be quite a complex problem in many European countries. Both industry and government should be aware of the fact that end-users can be rather conservative and that traditional media behaviour, which is rooted within everyday practices and routines, is often hard to change. Research has shown that a major part of the terrestrial viewers in Flanders does not want more channels or services; they rather prefer to continue watching television as they do so now. Therefore, government should reallocate the released spectrum in a way these innovative broadcast or telecommunications services provide added value to society. If these innovations fail to provide societal value, consumers will be reluctant to step into the digital era. As the analogue switch-off is a prerequisite for long-term developments within the media ecosystem, government should set up a well-balanced communication plan and action strategy to ensure that every citizen can fully participate in the information society.

Endnotes

1. In Belgium, media is the responsibility of the regions. Flanders is the northern region of Belgium, home to the Dutch speaking community.

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