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Mobile TV in Europe – Regulation and Business Models

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Abstract

The paper discusses regulatory issues affecting business models for mobile TV in Europe. Regulatory issues include: technology neutrality and spectrum management, allocation of spectrum bands, decisions on standards to be implemented, the AVMS Directive, copyright provisions, patent rules, must-carry regulations.

1. Introduction

In Europe, the market for Mobile TV services is still in its infancy. The Italian market achieved a penetration of 500,000 mobile TV users in 2007, but this is the only country in Europe with more than a few thousands subscribers. One of the reasons seems to be lack of the right business model attractive to both suppliers and customers. This paper presents a brief introduction to the regulatory issues shaping the possible business models. The paper is based on research carried out as a part of a project in Converged Advanced Mobile Media Platforms (CAMMP) hosted at CMI Aalborg University Copenhagen [7]. The paper focuses primarily on DVB-H (Digital Video Broadcast Handheld), as this is the standard recommended by the EU Commission [6].

At the national level there are two sets of institutions influencing the decisions regarding deployment of mobile TV. On the one hand, there are the institutions with influence on broadcast content: the ministries of culture, education and so on. On the other hand, there are the institutions with influence on communication infrastructures: the ministries of communication and regulatory authorities such as the telecom watchdogs.

A vital aspect is the importance the national authorities attach to the introduction of mobile TV. There is a diversity of approaches. Finland, for example, assigned a single multiplex to mobile TV (DVB-H) early in the

process. Many countries have only rudimentary plans for the introduction of mobile TV.

The regulatory uncertainty at the national level is a barrier to the development of an investment in mobile TV. The situation of mobile TV today is similar to the situation of digital TV at the end of the 1990s and the beginning of the new millennium, where different countries had different attitudes to the introduction of terrestrial digital TV, which resulted in slow development with profit loss for the equipment manufacturers, and further losses as a result of the inefficient use of spectrum resources.

There are clear signs that different national authorisation regimes in the allocation of frequencies to mobile TV service providers can develop into an obstacle for a pan-European market. These differences are associated with cultural, professional, economic and market presence, and may make it difficult for actors to have a presence in all markets. There is an urgent need for European recommendations on harmonising authorisation schemes to prevent a plethora of national licensing schemes from taking root.

There are other areas of a more generic nature that may prove obstacles to the development of mobile TV. These include, among others, the copyright provisions and rules regarding content regulation in the AVMS Directive (AudioVisual and Media Services Directive). However, we consider these to be less threatening than the incompatibilities in national regulations and contexts.

2. Overview of regulatory issues

There is a wide array of policy factors and regulatory provisions that have a bearing on the development of mobile TV. There are factors and provisions affecting mobile TV as such and factors and provisions with an influence on the choice of specific mobile TV solutions/standards. Furthermore, there are the issues

relating to the organisation of the provision of mobile TV, e.g. whether a single network bearer should be licensed or there should be room for more than one operator.

The most important issues to take into consideration at present are the ones regarding the choice of technology solution (including the implications of technology neutrality) and the related spectrum and standardisation questions, on the one hand, and the issues regarding the organisation of the provision of mobile TV, i.e. the number of operators on the bearer, wholesale and service layers. In the following, there is focus on these two fields, while other regulatory fields are more briefly examined.

The policy factors and regulatory provisions that will be discussed here are:

- technology neutrality and spectrum management;
- allocation of spectrum bands;
- decisions on standards to be implemented;
- the AVMS Directive;
- copyright provisions;
- patent rules;
- must-carry regulations.

2.1 Technology neutrality and spectrum management

One of the main objections to enforcing a common technical standard for mobile TV is that it is not appropriate for regulators to favour particular technologies. According to the Framework Directive, technology neutrality “does not preclude the taking of proportionate steps to promote certain specific services” [3].

The principle of technology neutrality concerns two closely interrelated issues of which the second is of most relevance to the issue of the development of mobile TV in the present phase, where a decision has to be made on whether a specific technology solution can be promoted:

Similar services should be treated equally also if they are provided by the use of different technology platforms.

Any service provider or network operator should be free in their choice of technology.

The present institutional framework for spectrum management conflicts in many ways with the

technology neutrality principle, as it defines how different parts of the radio spectrum should be applied.

The relevant EU provisions are the Framework Directive[3] and the Radio Spectrum Decision 676/2002/EC. The former establishes general rules for competition and non-discrimination, while the latter is concerned with more specific issues regarding spectrum management. Among other things, the Radio Spectrum Decision defines the functions of the Radio Spectrum Committee (RSC) in assisting the Commission on matters concerning spectrum management.

RSC has developed proposals for a market-based approach to spectrum management in Europe, which better corresponds with the principle of technology neutrality. These suggestions are put forward in the 2006 Review. The review includes the following proposals:

- freedom in choice of technology (spectrum neutrality);
- freedom to offer any electronic service (service neutrality);
- trading in rights of use;
- transparency and participation in allocation decisions;
- harmonisation in spectrum management.

The overall philosophy is that licence holders, in principle, should have the right to offer the kinds of services they choose by the use of any technology they prefer. This philosophy conflicts with the idea of having a common technical standard for digital broadcasting as well as the harmonisation of spectrum resources allocated for digital broadcasting. Trading in rights of use may complicate the fulfilment of the objectives further, as licences assigned to broadcasters can be sold to other kinds of spectrum user.

The 2006 Review [3] addresses problems such as differences in obligations imposed on different types of operators, for instance mobile operators and broadcasters, providing similar services. It should still, according to the proposal, be possible to make certain restrictions in order to serve public interests. It is, however, not made explicit which types of public interest can justify restrictions in choice of technology. It is therefore an open question whether for instance the ability to roam will be an argument that is strong enough to justify reservation of spectrum resources for digital broadcasting services using DVB-H.

With regard to service neutrality, audiovisual policy, promotion of cultural and linguistic diversity, media pluralism, establishment of services with a pan-

European coverage and safety of life are listed as examples of public interests justifying restrictions. Presently, particularly young generations use mobile devices to get access to information and entertainment. Mobile TV will in such a case be an efficient source to access broadcast TV, and therefore the public interest aspects will be as valid as with traditional TV regulations.

2.2 Allocation of spectrum bands

The question of which bands to use for mobile TV is very important for the development of mobile TV services. The transmission media for the mobile TV platforms are mainly based on the radio frequency bands that traditionally have been allocated for broadcast services. For example DVB-H relies on the frequencies that are allocated for digital terrestrial TV services (the L-band is also an option. However, the optimal spectrum for DVB-H is part of the UHF band allocated for TV (470–862 MHz)).

Another important aspect is the harmonisation of frequencies across Europe to give consumers more flexibility and to achieve economies of scale. In this case, the success of GSM roaming (even if in another context) can be transferred to mobile TV services, giving consumers the possibility of bringing their TV services along when they travel to different European countries – and even to other countries that use the same standard. This requires, however, the establishment of roaming agreements with the precondition that the same standard is used in different European countries and that the frequencies are harmonised.

It is important to allocate spectrum in frequency bands that are appropriate for mobile TV. If DVB-H is selected as the standard for mobile TV in Europe, it will be optimal to allocate frequencies in the UHF band.

Timing is an important issue in this respect. It is essential that a decision on frequency allocation for mobile TV is reached as soon as possible. From an industrial policy point of view, standardisations will generally only have full positive impact if they are decided at the beginning of the product life cycle, before resources are used on different designs. The design of terminals for pan-European use – especially with regard to the antenna – is very complicated and costly if a wide spread of spectrum will be used, because of different allocations in different countries. This and also the uncertainty around the allocation

decisions will diminish the positive impact of a recommended pan-European standard.

2.3 Decisions on standards

The possibility of delivering mobile TV has played a big role in the justification of digital terrestrial broadcasting in Europe. The argument has been that only the DVB standard in the terrestrial platform (DVB-T) offers mobility, and therefore it can not be replaced by cable and satellite. The possibility of offering mobility has also been seen as a major competitive advantage of the DVB standard compared with other standards like ATSC in the United States.

Even though the European DVB-T standard is designed for mobility support, there are limitations when it comes to the delivery of mobile services to personal handheld devices. It was in this process that the DVB group developed the DVB-H standard which is based on DVB-T. It ‘solves’ problems related to reception of mobile TV services on personal handheld devices (power consumption, multi-path interference, etc.).

In the countries that deploy DVB-T, there are natural arguments for using DVB-H as the mobile TV standard. The most important arguments are that

- DVB-H is backwards compatible with DVB-T, and therefore synergy can be gained in the development process;
- DVB-H uses the same frequency spectrum as DVB-T, and therefore in the post-analogue era the released resources (the digital dividend) can easily be allocated to DVB-H; and
- There is a knowledge and experience base in deploying the DVB standard (DVB-S, DVB-T, DVB-C) in Europe which can be transferred to the DVB-H development.

The fragmented mobile TV picture with respect to standards is by no means optimal for the European industry and consumers. On the supply side, huge resources are tied to the adaptation of the content to these different standards. On the demand side, either the consumers will be locked in to using only certain services as a result of their initial choice of terminal, or there will be considerable costs connected with moving from one service provider to another if they use different standards.

The success of the DVB family of standards is perfect evidence for how important it is to send a clear message to the European industry, creating optimal

conditions for economies of scale. Particularly, it is important to learn the lessons from the rapid switch-over from analogue to digital satellite TV, which involved the deployment of DVB-S as the standard for digital satellite TV in Europe (and many other places in the world). However, when it comes to DVB-H and digital TV it is also important to learn the lessons from the failure of 'interactive TV', which was partly the result of the fragmented picture of standards for the middleware and application programming interfaces (APIs). This again calls for common standards, including at the service level.

2.4 The AVMS Directive

The goal of the AVMS Directive [5] is to modernise the Television without Frontiers Directive (TWF), as the AVMS Directive includes linear as well as non-linear services. The regulation of non-linear services is lighter than that of linear services, but non-linear services are still subject to regulation.

Mobile TV broadcasting is subject the same regulation as other broadcast media, while video on demand is regulated by means of lighter regulatory provisions. In contrast to broadcasting, mobile services have not been subject to content regulation. Therefore, the attitude and reactions of mobile operators and broadcasters will probably differ.

Copyright provisions

In traditional broadcast TV, the broadcasters pay fees to the copyright holders for transmitting their content. These fees are paid from the revenues from licence fees, advertisement or pay-TV fees. In the case of pay-TV, conditional access (CA) systems can be used to restrict access in order to get users to pay. Exactly the same modes of operation can be used on mobile platforms, and it is likely that rights holders will demand payment for the variety of different platforms used for the delivery of their content, and not only for having their content transmitted regardless of the number of different platforms used. Such double or multiple fees may dampen the development of mobile TV. The Oxford mobile TV pilot, for example, was delayed several months because of copyright issues.

The problem of copyright is exacerbated as, due to the fall in memory prices, mobile devices are capable of storing and redistributing content. Another development that will put additional requirements on copyright contracts is the roaming issue. To cope with

these challenges there will be a need for reliable CA and DRM systems.

Patent rules

Another type of intellectual property right (IPR) is patents. Patents on elements in the different mobile TV solutions (DVB-H, DMB, etc.) have recently been the subject of heavy debate. An important argument against MediaFLO, for instance, is the unique position of the company Qualcomm with respect to patent rights. However, there are also a large number of patents in the other systems. Nokia, for instance, has a strong position regarding the DVB-H technology.

One of the ways for companies to circumvent a situation with mutually blocking patents is a mutual exchange of patents. A possible EC action in the field could be to stimulate such exchanges of patents to pave the way for a competitive environment in the production of mobile TV equipment and systems.

Must-carry regulations

Must-carry rules are implemented as part of the national broadcast regulatory system in several Member States. The must-carry principle conflicts in its current form with the discriminatory aspect of the technology-neutrality principle in that it applies to broadcast networks only. The 2006 Review suggests restricting the use of must-carry by demanding inclusion of a justification for must-carry in national laws. The argument is that technological progress has increased transmission capacity and that the transition to digital technology will make such rules redundant. However, to the extent that must-carry rules are in force, this can have implications for mobile broadcast TV solutions with limited allocated frequency resources. The issue of capacity becomes even more important if scarce frequency resources are to be shared among a number of different networks using different incompatible standards. This is an argument for having one common standard.

When it comes to must-carry regulations, the DVB-H standard shows its strengths compared with, for example, DMB because of capacity constraints on DMB. This will be vital if the national governments go for must-carry rules for, for example, public-service and local TV and community programming.

3. Summary and conclusion

In this paper we discuss the main current regulatory obstacles in the mobile TV area. The paper discusses the different regulatory areas that have an influence on the chosen business models for mobile TV – in general

as well as with respect to the choice of technology solutions.

Within this regulatory framework, the chosen business models applied within Europe are mostly based on the use of DVB-H for mobile broadcast [1][7]. The exceptions are UK using MediaFLO and Germany using DMB-T. The bearer service of the mobile TV networks is disintegrated from the service layers, and the business models applied within Europe vary with regard to the levels of vertical integration between content aggregation, operation and distribution of broadcast and mobile networks. The mobile operator '3' uses in Italy the most closed business model. In this model all revenue streams pass through '3' and '3' carries out all functions apart from production of content. The Finnish model is the most open. DIGITA is here appointed as a combined mobile broadcast service provider and distributor, while content and mobile services are provided by separate companies.

The regulatory framework for spectrum management and electronic communications is important for the right business model because of its provisions for technology neutrality, and the implementation of these provisions concerning spectrum allocation.

The general arguments in favour of recommending a specific standard are primarily related to frequency economy, economies of scale in the provision of equipment and in the other parts of the mobile TV value chain, international roaming, speeding up development, and also industrial policy considerations. The arguments against are mainly concerned with technology neutrality and the concern that policy decisions on technology choices are inappropriate, as they may lead to lock-in of technology development, and as the forces of competition are restricted to the service area. Such decisions should be left to the market, is the argument there.

The most important argument in favour of choosing between technologies is the existing technology trajectory in Europe and the decisions regarding spectrum use, which are related to this trajectory. In the countries that deploy DVB-T, there are natural arguments for using DVB-H as the mobile TV standard. The specific reasons are related to, first, backward compatibility; second, the fact that DVB-T and DVB-H are using capacity in the same frequency bands and that resources for DVB-T can therefore be allocated more easily; and third, that there is a wide European experience base in deploying the DVB standard. Even though DVB-H is favoured by the Commission, there is still some uncertainty about,

which standard that will become the dominating one. This has slowed down the development e.g. in Germany.

Copyright rules may impose financial constraints on operators broadcasting on different platforms, as the copyright holders can demand double (or multiple) copyright fees depending on the numbers of platforms used. These rules obviously have no bearing on the choice of technology, but may affect the development of mobile TV in general notwithstanding the technology solutions chosen.

Finally, must-carry regulations will also affect the development of mobile TV. To the extent that must-carry rules are implemented, they can also be relevant for mobile broadcast TV. Must-carry rules obviously have an influence on the use of the capacity of mobile TV systems, and they can therefore also have an impact on the decisions regarding technology choice, as it will require less capacity to ensure that all have access to certain services if a common standard is used. Furthermore, systems with large capacity available will be preferable in such a situation.

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