Interoperability of Digital Interactive Television Services: Relevance for Parliament's Committee on Culture

NOTE

Content:

This note provides a brief introduction to the issue of the interoperability of digital interactive television services, with reference to the European Commission's 2006 Communication on the same subject. It evaluates the importance of the topic for the work of Parliament's Committee on Culture.
This note was requested by the European Parliament's Committee on Culture and Education.

This paper is published in the following language:
- Original: EN

Author: Gonçalo Macedo
Policy Department Structural and Cohesion Policies
European Parliament
B-1047 Brussels
E-mail: ipoldepb@europarl.europa.eu

Manuscript completed in February 2007.

This note is available on the Internet at:


The opinions expressed in this document are the sole responsibility of the author and do not necessarily represent the official position of the European Parliament.

Reproduction and translation for non-commercial purposes are authorized, provided the source is acknowledged and the publisher is given prior notice and sent a copy.
LIST OF ABBREVIATIONS

API: Applications Program Interface
CA: Conditional Access
DSL: Digital Subscriber Line
DTT: Digital Terrestrial Television
DTV: Digital Television
EPG: Electronic Programming Guides
FTA: Free To Air
IDTV: Interactive Digital Television
IPR: Intellectual Property Rights
IT: Information Technology
MHP: Multimedia Home Program
PCF: Portable Content Format
STB: Set Top Box
# TABLE OF CONTENTS

1. Introduction .......................................................................................................................... 1

1.1. Key Issues and Definitions ................................................................................................. 1

1.1.1. Digital Television ........................................................................................................ 1

1.1.2. Interactive Digital Television ......................................................................................... 1

1.1.3. Analogue "Switch-off" .................................................................................................. 2

1.2. The Development of the Market for Digital Television ..................................................... 2

1.2.1. Past Trends and Consequences of Market Evolution ..................................................... 2

1.3. Legislative Situation ......................................................................................................... 3

1.4. Development of Multimedia Home Platform (MHP) as an Open Standard ................. 3

2. The Current State of the Debate on IDTV ......................................................................... 3


2.2. The Problem: What Is "Interoperability"? ....................................................................... 4

2.3. The Arguments against Mandating Open APIs ............................................................... 4

2.4. The Arguments In Favour of Mandating Open APIs ....................................................... 5

3. Conclusions and Relevance for the Committee on Culture and Education .................... 6
1. INTRODUCTION

1.1. Key Issues and Definitions

1.1.1. Digital Television

The term Digital Television (DTV) usually refers to the way transmission mode of audiovisual programmes, not to their production or to the digital TV sets used in the home. Under DTV, programming is transmitted using a digital signal. The advantages of DTV include:

- a more efficient use of network capacity;
- better picture and audio quality;
- the possibility of creating interactive services, including "Information Society" type services.

The introduction of DTV is therefore expected to liberate considerable spectrum capacity, especially for terrestrial broadcasting, where capacity is most limited. It is estimated that between 5 and 8 digital channels use the same spectrum capacity as one analogue one (assuming similar quality). Extra spectrum capacity can be used in a number of ways, not only for providing more broadcasting channels but also, for example, in the mobile communications sector.

For these reasons, DTV is considered to be the most important development in television technology since the arrival of colour TV.

1.1.2. Interactive Digital Television

Interactive digital TV (IDTV) consists of applications sent in the broadcast transmission alongside the video. These vary from teletext or video games to more sophisticated applications that require the receiver to have a return channel for two-way communication, such as e-commerce and internet services. Some consider that such services could have an important role even for non-commercial purposes, such as in e-Government.

In other words, IDTV can be described as a "half-way house" between the worlds of broadcasting and information technology (IT). For fully interactive services, the receivers used in the home must contain an "applications program interface" (API). An API is a stack of software components which manages interaction between applications sent by the broadcaster and the receiving equipment's operating system. In the world of personal computers, Windows, Mac OS or Linux could be described as APIs.

APIs, also known as "middleware", are at the heart of the debate on interoperability of digital interactive television services. The European Commission's 2004 Impact Assessment points out that in the current EU regulatory framework, general interest objectives such as media pluralism are governed by content regulation whilst communications regulation is more focused on achieving economic goals, i.e. the promotion of competitive markets to stimulate innovation and

---

investment. These two general goals meet at the API, which is why the debate over them is so intense.

1.1.3. Analogue "Switch-off"

DTV has made steady progress in the EU since the 1990s (for market developments see below). The ultimate aim of EU policy is to proceed to analogue "switch-off", i.e. to completely bring to an end analogue broadcasting. That will only be possible when very few homes remain analogue; otherwise people lose access to television services! No common date for analogue switch-off has been established at the EU level, because the speed and timing of the introduction of DTV varies significantly between Member-States. In most countries switch-off will take place in the next decade, between 2010 and 2015, but some have not yet even published a final date.

1.2. The Development of the Market for Digital Television

Market penetration of DTV in the EU-25 in June 2005 was 23.7%.1 Behind this general figure there are huge national variations. In the United Kingdom, penetration had already reached 63.5% in 2005 whilst in other countries DTV was in its infancy. The Czech Republic, for example, had a penetration rate of 2.2%.

DTV, like analogue television, is transmitted on various "platforms". At present the leading platform on the pan EU-level is satellite; next comes terrestrial (the digital signal is received through an antenna on a building for example), closely followed by cable. Lastly, DTV can also be transmitted via DSL.

All interested parties agree that the take-up of IDTV has been slower than expected. Studies indicate that significant IDTV business has only appeared in the UK.

1.2.1. Past Trends and Consequences of Market Evolution

As a general rule pay TV operators, notably satellite operators, were the first actors in the broadcasting world to promote DTV, starting in the 1990s. That fact, far from being a mere historical curiosity, has conditioned the debate, notably on "interoperability", until the present day. Initially there were 5 significant APIs in the EU, none of which was standardised by a European standards body, the prerequisite for being considered an "open standard". The first open standard API, "Multimedia Home Platform" (MHP) was only published in the Official Journal in December 2002.

Therefore when interactive services appeared, pay TV operators mainly used "proprietary" standards for APIs (and many continue to do so). These proprietary APIs, normally integrated in a "set top box" (STB) made available by the operator to the customer, can only receive applications or content transmitted by that same operator. In such cases, the receiving equipment is not in itself "interoperable", i.e. it cannot be used to access programming of different market players. However, today many argue that programming itself can be made "interoperable", regardless of the receiving equipment (see below).

1 Source: Dataxis report for the European Commission.
1.3. Legislative Situation

The market developments described above gave rise to concerns about "interoperability". This expression has different meanings for different protagonists, as we shall see later. The concerns, normally expressed by free-to-air (FTA) broadcasters, were that customers would be "locked into" using receivers containing proprietary APIs, as changing service might require the purchase of a new STB. FTA broadcasters considered that they would face obstacles in developing DITV services as they would have to negotiate with network operators in control of proprietary APIs.

As is well-known, "Framework Directive" 2002/21/EC paid some attention to these concerns, by stipulating in Article 18 that Member States "shall encourage" providers of digital interactive services and equipment to use an open API. Art. 17 (4) allows the Commission to make such standards and specifications compulsory at a future date if interoperability of services cannot be ensured in one or more Member-States.

1.4. Development of Multimedia Home Platform (MHP) as an Open Standard

Parliament has consistently backed the Commission's policy of promoting MHP as the leading open API available in the EU. The little available evidence suggests, however, that the use of MHP has not increased significantly in recent years. Data from Dataxis for 2005 indicate that MHP penetration has increased in the EU, but that is almost entirely due to the situation in Italy, where digital terrestrial television (DTT) has grown quickly, largely because the authorities subsidise consumer buying of MHP receivers, which are expensive.

2. THE CURRENT STATE OF THE DEBATE ON IDTV


Framework Directive 2002/21/EC lay down that the Commission would examine the effects of Article 18 in the summer of 2004. This the Commission duly did, returning to the subject in the Communication published on February 2nd 2006, which is the subject of this note. In essence, these two documents maintain the status quo of the Framework Directive as far as API interoperability is concerned.

In 2006, the Commission again presents a series of arguments for and against making one or more open standards for APIs mandatory and concludes that - on balance - the wisest option is not do so. It has also sought to promote MHP via non-legal methods. The Commission's position is very similar to that of 2004, when it conducted an Extended Impact Assessment and consulted the major interest groups. These participated intensely in the consultation and made their positions known. No real consensus emerged: the issue of IDTV interoperability reveals two opposed groups (see below).

---

1 In Resolution P5_TA (2002) 0454 and Written Question P-1646 for example, both of which focus on MHP.
2.2. The Problem: What Is "Interoperability"?

Before briefly examining the arguments employed by the Commission and interest groups, it is worth noting that Community law does not provide a precise meaning for "interoperability", which means that the word is used with different meanings in mind.

The Commission argues that achieving "simple interoperability" - the ability to buy a single receiver which would be able to work for all platforms - is almost impossible at a time of rapid technological change. According to this argument, the interoperability existing during most of the history of analogue TV, when anyone buying a TV set could be sure of receiving all the channels available in one country, is very difficult to achieve at present.

Interest groups opposed to the imposition of a single open API argue that interoperability can only been achieved within a platform and not between them. The opposed school of thought argues that "interoperability" only makes sense at the level of the consumer. These groups point out that Recital 31 of the Framework Directive explicitly mentions the need to encourage interoperability at the level of the consumer, "in order to ensure the free flow of information, media pluralism and cultural diversity".

2.3. The Arguments against Mandating Open APIs

It is impossible to do justice to the richness of the debate in this section. Only some of the principal arguments shall be mentioned.

As stated above, the Commission continues to consider that mandating API standards at a time when both markets and technologies are dynamic and unpredictable is dangerous. It also wishes to avoid regulatory mistakes it committed in the past. In the 1990s, for example, it had to abandon the attempt to impose the MAC standard for television.

Another major argument is that the goal of interoperability can be pursued in other ways and not only through mandating an open API. Content, for example, can be made interoperable through the development for open standards for Portable Content Format (PCF). Broadcasters could author content in PCF and run it on various platforms. According to the Commission, PCF could cover 80% of needs.

In the 2006 Communication, the Commission also stresses that mandating a standard does not in itself resolve interoperability problems. It points out that "a standard like MHP is a complex specification with a variety of implementation options", arguing that unless broadcasters and industry are directly involved in coming to a voluntary agreement on implementation, the mandating option will not work. In Italy a voluntary agreement of this type has led to the successful introduction of MHP. This argument sums up the Commission's general approach to the issue of interoperability, which is that solutions can only be found based on a consensus between the different market players.

Other arguments are more economic in character. Data from the 2004 Impact Assessment indicated that there were 25 million digital receivers in EU using proprietary APIs. The imposition of an open standard would therefore force TV operators to replace millions of STBs at considerable financial cost, as well as causing disruption to consumers. The Commission also seemed to accept the argument put forward by some TV operators that imposing an open
standard would send a negative message to companies investing in new technology in other areas. Pay TV operators made considerable investments in proprietary systems, contributing to the spread of DTV. Such a decision would deter companies from making similar investments in the future, encouraging them to "wait and see" if open standards would be imposed after an initial phase of allowing proprietary standards.

It is also argued that concerns about pluralism do not need require the mandating of an interoperable API because other legal instruments are available, notably "must carry" rules. Article 31 of Directive 2002/22/EC (the "Universal Service Directive") allows Member States to impose 'must carry' obligations for the transmission of specified radio and television broadcast channels and services, "where they are necessary to meet clearly defined general interest objectives and shall be proportionate and transparent".

In its 2004 Communication, the Commission clearly states that its public consultation "revealed no significant, substantiated threats to the free flow of information, media pluralism and cultural diversity". Since it does not mention such threats in the 2006 Communication, we must assume that the situation has not changed.

Finally, opponents of open standards also argue that the television market in the EU is fragmented for reasons that have little to do with technological standards. Content is often not distributed across borders because of legal issues, notably Intellectual Property Rights (IPR). Such rights, notably for films and sports events, are often marketed on the national level. Therefore interoperability issues are less important than is often argued.

2.4. The Arguments In Favour of Mandating Open APIs

Interest groups in favour of open standards for APIs argue that interoperability as foreseen in Article 18 is not being achieved and that a change of policy is therefore required. To them, "interoperability" is measured by the extent to which the citizen can access the full range of available services, i.e. it must be achieved at the level of the consumer. In some Member-States numerous proprietary platforms exist, which prevents citizens from easily accessing rival services. Equipment bought in one Member-State may not function in another.

Those in favour of open APIs agree with opponents that mandating an open standard is not, in itself, enough to ensure interoperability of IDTV. Other standard technologies are required for conditional access (CA) systems and Electronic Programming Guides (EPGs). The former is the technology that allows a market player to deliver content only to those viewers who have paid for it. EPGs are essential in allowing consumers to keep track of what is on offer on the hundreds of channels available.

Such groups also argue that open standards would help equipment manufacturers to achieve economies of scale. The lack of a pan-EU market for digital receivers currently results in higher prices, discouraging consumers from buying them. The fact that no interoperable receiver exists discourages investment from broadcasters and results in less competition between platforms. In terms of industrial policy, some equipment manufacturers claim that they are being left in a weak competitive situation vis-à-vis Asian or US competitors by the lack of a real EU market.

Interest groups also stress that the business model of pay TV should not depend on proprietary APIs or other technologies. Pay TV operators succeed primarily because they offer "premium" content to consumers. That would not change with the imposition of an open API. Additionally,
"analogue switch-off" changes the context of the debate on proprietary systems, since in the future DTV should service all homes, which will require STBs (although not necessarily a "box" containing an API for interactive use).

Supporters of mandating open standards recognise that it is not feasible to do so in the short-term, given the existence of millions of proprietary STBs. They therefore argue that a standard API could only be mandated after a lengthy transition process, which could come to an end, for instance, with the "analogue switch-off" in each Member-State. They also argue that an open standard should be imposed for nascent DTV markets, to prevent the "problem" of proprietary APIs emerging in new markets.

Some argue that "must-carry" rules are insufficient to protect pluralism, since Article 31 is applicable only when a significant number of users of such networks use them as their principle means to receive radio and television broadcasts. National authorities can only impose these with regard to "specific services". The rules are therefore not very clear about which programmes and services must be carried and why. In part, the issue here is of course more to do with competence than anything else: the EU is responsible for overseeing market liberalisation, but not for ensuring pluralism.

3. CONCLUSIONS AND RELEVANCE FOR THE COMMITTEE ON CULTURE AND EDUCATION

The purpose of this note is not to analyse these arguments in detail, but to summarise the issues at stake and their relevance for the Committee on Culture.

As stated above, APIs are covered by Framework Directive 2002/21 and its associated directives on electronic communications networks. This legislation is currently being revised and will be dealt with by the Industry Committee in Parliament, as before.

Nevertheless, it is clear from the above that APIs and DTV interoperability do have an impact on audiovisual policy, notably on the balance of power between pay and FTA television, including public broadcasters and, consequently, on cultural diversity. Parliament is aware of such issues and in last year's resolution on the switch-over from analogue to digital broadcasting\(^1\) stressed that the "switchover must focus primarily on the interoperability of platforms and standards". The Commission's public consultation revealed no significant threats to media pluralism or cultural diversity, indicating that there is no cause for alarm.

Although much has been written about IDTV in abstract terms, at present it is still too early to judge how much of an impact it will have on society, especially in the case of non-commercial interactive services. As we all know, interactive television is far from being a mass phenomenon, unlike the Internet. "Convergence" is anyway diluting the differences between IT services and broadcasting.

The Commission's 2006 Communication essentially maintains the status quo on APIs, by ruling out the possibility of mandating an open standard for any sector of the EU market. At the same time, the Commission continues to promote MHP as an open standard through more informal means, through the MHP Implementation Group.

Given that most of the concerns over the Commission's current policy are related to "interoperability at the level of the consumer" - the ability of any citizen in the future to have easy access to a range of both paid or free interactive services and programming - i.e. to "cultural diversity", the relevance of the issue to the work of the Committee on Culture is beyond doubt\(^1\). It is however beyond the scope of this note to evaluate the realism of those concerns. In any case, Parliament's vigilance is required, in the spirit of the Weber report.

\(^1\) According to Parliament's Rules of Procedure, the Committee's competences include "the protection and promotion of cultural and linguistic diversity", as well as audiovisual policy and "the cultural and educational aspects of the information society".