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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**on Barriers to widespread access to new services and applications of the information  
society through open platforms in digital television and third generation mobile  
communications**

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**EXECUTIVE SUMMARY**

This Communication is the Commission's response to the request to examine and report on any remaining barriers to widespread access to Information Society services through open delivery platforms in 3G mobile communications and digital television. In recognition of market realities and expectations, the Communication is not confined to these two platforms but rather presents a multi-platform approach to the delivery of Information Society services, which is more likely to be the market reality in future. This Communication addresses some generic issues common to all digital platforms as well as some platform-specific issues for mobile communications and digital TV. These latter two are expected to complement other delivery platforms that will also offer Information Society and other electronic services.

Achieving widespread access by all citizens, including the disabled and handicapped, to new services and applications of the Information Society is one of the crucial goals of the EU for the coming decade. During that period, multiple access platforms will become available, using different access methods for delivery of services to a wide variety of end user terminals.

Today, personal computers are the most widespread means of accessing Information Society services. Digital TV receivers with set top boxes and mobile phones are currently running a distant second place to PCs, while devices spanning several categories are emerging. In future, once a multi-platform environment is the norm, users are expected to want to access the same digital services and content in a variety of situations and locations, using different devices and network connections. For the multi-platform environment to proliferate and for the platforms themselves to complement each other, the regulatory environment must favour technologically neutral conditions for competition, without giving preference to one platform over others.

The technology and system architectures of these next generation platforms are rather complex and evolve rapidly. No single analysis can be definitive. Converging technology means that new systems and services are under development with inputs, contributions and traditions from multiple industries – including telecoms, broadcasting, cable, Internet service provision, computer and software industries and media and publishing industries – where the significance of standardisation and interoperability differs. As digital technology continues to evolve, the converging markets will face pressure to move towards fully inter-operable services but initial and emerging markets may require time to reach that goal. Typically, technical difficulties with interoperability occur when introducing new and advanced systems. New, state-of-the-art services, networks and technology cannot guarantee seamless interoperability with all networks at the time of launch.

Operators in the value chain, including those in 3G mobile communications and digital television services, recognise the value of interoperability. However, these two particular sectors are not comparable: each technology emerged under different commercial conditions using different business models. Digital terrestrial TV is particularly challenged to update or create viable business models and to manage the switchover from analogue to digital transmission. Ultimately specific measures at national or European level might need to be considered if market forces alone cannot bring about a coherent approach to analogue switchoff and digital switchover.

Interoperability is likely to evolve with technology. The Commission will monitor developments in multi-platform delivery of and access to electronic services with a view to determining if the use of proprietary technology has the effect of depriving users of widespread access to Information Society services in a way that limits their choice unreasonably.

Promoting interoperability within the digital TV platform is an agreed EU objective. Some concrete measures to promote interoperability have already been adopted at EU level. Further public consultation will take place late 2003/early 2004 in pursuit of the Commission's obligation to report by no later than July 2004 on the extent to which interoperability and freedom of choice have been achieved for digital television services in Member States.

For 3G mobile communications, industry is actively pursuing standardisation activities to achieve end-to-end interoperability of services. This Communication concludes that, in light of existing initiatives, the efforts of industry and the lack of actual roll-out of services warrant a 'wait and see' approach before any consideration could be given to whether new policy initiatives might be needed for purposes of ensuring interoperability.

This Communication finds that the "openness" of 3G and DTV platforms is only one –albeit important - factor among several commercial factors that will affect access to Information Society services. Other challenging issues, such as the development of attractive consumer services, the creation of a secure environment to inspire consumer confidence, and an environment of regulatory clarity for new electronic services, are equally important in determining whether widespread access to Information Society services will be available.

Alongside the commercial factors that will drive widespread access to new services, public authorities can have a considerable impact on the creation of an Information Society, in their roles as legislators, regulators, promoters, and public procurement agencies simply by offering their services in electronic form over multiple platforms. Legislative and regulatory conditions should create a favourable environment for business, attracting investment and favouring innovation and economic development, as well as safeguarding the interests of consumers. As a first step, public authorities should offer their public services on-line and follow public procurement policies that favour openness and interoperability.

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## BACKGROUND AND INTRODUCTION

The Barcelona European Council in March 2002 recognised that *digital television and third-generation mobile communications (3G) will play a key role in providing widespread access to interactive services*. The Barcelona Council called upon the Commission and the Member States to foster the use of open platforms to provide freedom of choice to citizens for access to applications and services of the Information Society. It also invited the Commission to present, *inter alia*, a comprehensive analysis of remaining barriers to:

the achievement of widespread access to new services and applications of the information society through open platforms in digital television and 3G mobile communications<sup>1</sup>.

The Seville European Council re-iterated the request to the Commission for a report to the Copenhagen European Council in December 2002 on “*the remaining barriers to open platforms in digital television and third-generation mobile communications*”<sup>2</sup>. This Communication is the Commission’s response to that request, following a public consultation on an earlier Commission services working document that lasted from December 2002 to February 2003. In annex to the present Communication, the Commission describes the public consultation conducted on the earlier working document, the comments received and how these are reflected in the present Communication. It is one of several reports on, and initiatives taken, in relation to the Information Society. These include an eEurope 2005 Action Plan<sup>3</sup>, endorsed by the Seville European Council in June 2002, which recognises the importance of an Information Society for all to achieving the Lisbon objective of making the Union the world’s most competitive, knowledge-based economy; the Communication on roll-out of third generation (3G) mobile communications<sup>4</sup>; and a Communication on the state of the telecoms sector presented ahead of the Spring European Council in March 2003<sup>5</sup>.

The present Communication presents an analysis of the barriers to widespread access to new services and applications of the information society through open platforms in digital television and 3G mobile communications. In order to ensure a proper understanding of the drivers in the creation of an Information Society, it identifies other issues that will affect access to Information Society services. These other issues concern commercial, regulatory and consumer factors that affect the Information Society; they are no less important than open platforms, possibly even more so, and will therefore determine what services can be accessed from what devices.

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<sup>1</sup> See point 41 of Council Presidency conclusions at: <http://ue.eu.int/en/Info/eurocouncil/index.htm>.

<sup>2</sup> See point 54 of Council Presidency conclusions at: <http://ue.eu.int/en/Info/eurocouncil/index.htm>.

<sup>3</sup> eEurope 2005: An information society for all COM(2002) 263 final.

<sup>4</sup> ‘Towards the full roll-out of third-generation mobile communications’ COM(2002) 301 final.

<sup>5</sup> COM (2003) 65 final.

## 1. INTRODUCTION

Digital technologies have revolutionised the transmission of information by allowing information (voice, text, audio and video) to be converted into digital form, generally delivering better quality more efficiently. Different kinds of content can be transmitted through different networks and accessed from different end-user terminals. The result is a convergence and a complementarity of services and markets in an increasingly sophisticated way.

The term “*An Information Society for All*” conveys the idea that sooner or later everyone in society will routinely access and make use of digital (i.e., electronic) services. This transformation of our everyday lives, whether in administrations, or businesses, as citizens, in homes or at schools will be driven by investment and innovation in new digital technologies that will be transformed into everyday services that people want to use. This Communication focuses on the platforms for delivering services, i.e., the means for service delivery throughout the value chain, rather than the variety of services themselves.

### 1.1. A vision of the future: the Information Society infrastructure and multi-platform access

Some commentators have evoked a future vision of the Information Society in which anyone will be able to access any information or communicate with any individual or any appliance for business, family or entertainment purposes, independently of their location, in all modalities they need, only limited by rights, whether commercial or legal, or by the functionality of their system and equipment. In such an ideal situation, all service providers could offer their services to all users and organisations. In practice, the precise capabilities of each platform/end terminal configuration will affect the services provided over them and how consumers will be able to use them.

Communications infrastructures of today are characterised by a number of more or less isolated ‘islands of connectivity’. Some of these islands have a (nearly) global reach, such as the telephone network, but may be limited in functionality (e.g., voice or narrow band data). Others have broadband capacity but are limited in a geographical sense, because the services are only offered locally.

There is a trend towards growing interoperability between these ‘islands’. This evolution is partly of a **technological** nature: the digitalisation of existing networks contributes substantially to the possibility to make them interoperable; partly **market driven**: users want to have the possibility to access services offered by different service providers on several devices in different places and situations; and partly **regulatory**: the new EU regulatory framework aims to create a level playing field with technologically neutral regulation that encourages a competitive multi-platform environment to emerge.

The technology and system architectures of evolving delivery platforms are rather complex and evolve rapidly. Converging markets and industries are coming from different commercial backgrounds. New systems and services are under development by converging industries, including telecoms, broadcasting, cable, Internet service provision, computer and software industries and media and publishing industries, where the role and importance of standardisation and interoperability have not been the same. Digital technological evolution will continue to push converging markets to move

towards fully inter-operable services. However, it should be recognised that initial and emerging markets may require time to reach that goal. Technical difficulties are common when introducing new and advanced systems. New networks, services and technology cannot guarantee seamless interoperability with all services on all networks from launch. Nor would it be beneficial to either consumers or business to delay marketing until full interoperability has been achieved.

## **1.2. ‘Information Society Services’**

The term ‘information society service’ is defined in EU legislation as:

“any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services”<sup>6</sup>.

In consequence, Information Society services span a wide range of economic activities which take place on-line, such as the selling of goods. Information society services are not restricted solely to services concerned with on-line contracting but also, in so far as they represent an economic activity, cover services that are not paid for directly by those who receive them, such as offering on-line information or commercial communications, or providing tools that allow for search, access to and retrieval of data. Information Society services also cover services that consist of the transmission of information via a communications network; providing access to a communication network; and hosting information provided by a recipient of a service. Services that are transmitted point to point, such as video-on-demand or the provision of commercial communications by electronic mail, are also Information Society services<sup>7</sup>. By way of contrast, activities such as the physical delivery of goods, the provision of services off-line, or services which by their very nature cannot be carried out at a distance and by electronic means, such as on-site auditing of company accounts or rendering medical advice that requires the physical examination of a patient, are not Information Society services.

Television broadcasting within the meaning of Directive 89/552/EEC<sup>8</sup> and radio broadcasting are not Information Society services because they are not provided at individual request. As convergent services develop, switching between real and simulated interactivity is increasingly easy, so the distinction between broadcasting services and Information Society services will be increasingly difficult for end-users to

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<sup>6</sup> Article 1 of Directive 98/34/EC as amended by Directive 98/48/EC, OJ L 217, 5.8.1998, p. 18.

<sup>7</sup> See recital 18 of Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market, OJ L 178, 17.7.2000, p. 1. Information Society services, as ‘protected services’, are also covered by Directive 98/84/EC of the European Parliament and of the Council of 20 November 1998 on the legal protection of services based on and consisting of conditional access, OJ L 320, 28.11.1998, p. 54, and also feature in the Directive of the European Parliament and of the Council on the approximation of laws, regulations and administrative provisions of the Member States relating to the advertising and sponsorship of tobacco products (to be published).

<sup>8</sup> Directive 97/36/EC of the European Parliament and of the Council of 30 June 1997 amending Council Directive 89/552/EEC on the co-ordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the pursuit of television broadcasting activities, OJ L 202, 30.7.1997, p. 60.



see<sup>9</sup>. In a multi-platform environment, many service providers will increasingly use broadcasting techniques to distribute their services to their subscribers and customers. This does not render their services television broadcasting services within the meaning of the directive.

Information Society services can therefore cover at least: (1) on-line transactional services, e.g., buying goods on-line; and (2) information, research and other on-line services, such as, travel timetables, catalogues, libraries and interactive games<sup>10</sup>. Consumers today are familiar with many different kinds of public and commercial services both off-line and on-line. The primary focus of this document, as requested by Barcelona and Seville, is access to Information Society services<sup>11</sup> via open platforms but this focus will occasionally be stretched to reflect the blurring caused by converging markets.

### 1.3. Interoperability

The European Telecommunications Standardisation Institute (ETSI) in STF228, defines interoperability (from a supplier's point of view) as *“the capability to provide successful communication between end-users across a mixed environment of different domains, networks, facilities, equipment, etc. from different manufacturers and (or) providers. In this context the communication is meant between end-users or between an end-user and a service provider.”*

For a network operator, this means the ability to inter-work with other networks and provide seamless services to users; to a content provider or service provider, it implies the ability to be able to run an application or service on any suitable delivery platform.

For a consumer, interoperability can mean ideally the ability to acquire the relevant terminal device “and begin to consume and pay for services, without having prior knowledge which services would be consumed, in a simple way”<sup>12</sup>. However, in future interactive service environments, distinctions between supplier and consumer will begin to blur. It is expected that users will begin to enrich and create their own content and services, becoming both suppliers and consumers of services at the same time.

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<sup>9</sup> Since the relevant technology is evolving rapidly, the Commission will continue to monitor technological developments. Periodic regulatory assessments will be undertaken, such as the Fourth Report on the application of Directive 89/552/EEC, where the Commission said that it was not aiming to challenge the distinction made in the *acquis communautaire* between Information Society services and services covered by the TV without frontiers directive, COM (2002) 778 final. As convergence becomes more of a market reality, technological neutrality of regulation should be an important policy principle. This would mean that, ideally, definitions should be service-based (e.g., audio-visual service, datacasting) rather than network/platform-based (e.g., digital television, mobile communications).

<sup>10</sup> eGovernment services, such as eLearning and eHealth, are not provided for remuneration and may therefore fall outside of this definition, but they nonetheless do fulfil the other criteria of Information Society services. See: Cases 263/85 [1988] ECR 5365, 352/85 [1988] ECR 2085.

<sup>11</sup> Although this communication does not address barriers that might hinder free movement of products, Member States should be similarly vigilant to avoid creating barriers to the free movement of technical equipment. The development of the Information Society should take into account not only the opportunity to provide widespread access to Information Society services, but also the need to avoid technical or administrative barriers for technical equipment.

<sup>12</sup> See the charter of the Open Platform Initiative for Multimedia Access (OPIMA), [http://opima.telecomitalialab.com/opima\\_charter.htm](http://opima.telecomitalialab.com/opima_charter.htm).

The interconnection of networks, interoperability of services and technical compatibility of equipment have been the primary tools to liberalise and harmonise the EU telecommunications sector over the last two decades and remain important for achieving a pan-European market. These three factors – affecting networks, services and terminals – will continue to be the primary focus in the context of creating an Information Society for all. Much standardisation work has already been done in the network layer while attention is now focussing on services and applications and on end-user terminals. In a multi-platform environment, new architectures of interoperability will need to be achieved: between the same kind of devices in a single platform, e.g. mobile to mobile, between different devices across platforms, e.g., mobile to PC, digital TV to mobile or Internet; IP data cast to mobile or TV; and between devices and servers with multi-device and multiple access possibilities, e.g., between different end user terminals, using different access methods to a single server or to several servers.

Interoperability and inter-working of networks, services and terminals are desirable, but an Information Society does not depend on total interconnection/interoperability/inter-working between all terminals, services and networks, as long as consumers have choices as to their services and the platforms over which they can access their desired services. Operators in the value chain - including those in 3G mobile communications and digital television services - recognise the value of interoperability of their service offerings with those of other service providers.

Once industry has decided on the need for a common standard or standards in a given area, the Commission can facilitate the standardisation process, for example, by giving mandates to the European standards bodies, but it would be inappropriate for the Commission to try to second guess the optimum market outcome and impose a standard in the absence of consensus among interested parties.

#### **1.4. Economic benefits and costs of interoperability**

Interoperability is highly desirable in a multi-platform environment. It can create economies of scale that allow lower costs of production and distribution and ultimately lead to lower prices for consumers. This in turn can promote rapid deployment of new products and services which can accelerate how quickly critical mass is reached. As is often the case in electronic communications services, complementary services may be as important in promoting the success of the initial service or product as in achieving their own success. Interoperability between all complementary platforms will encourage the deployment of a wider range of services and can contribute to the substitutability as well as the inter-changeability of services. This will ultimately break down product market boundaries and create larger markets. These features result overall in higher levels of competition resulting in greater innovation and lower consumer prices.

On the other hand, standards can lead to a diminished incentive to innovate in the standardised area. It can also result in reduced competition between platforms and service providers seeking to capture the entire market with a vertically integrated product.

Assessing the relative costs and benefits in advance will often be impossible. Fortunately, it may never be necessary to do so. Platform owners and the information communications technology sector often have incentives to adopt open standards, as complementary products may play an important role in the development of these markets. For instance, if we look at the Internet, the ability to access, sell and have content developed over the

Internet overrides any tendency for network specific content development. It is not that platform owners would not like to have a closed standard and control of the market; rather it is a realisation that attempting to do so is likely to result in the exact opposite.

### **1.5. Application Program Interfaces (APIs)**

Interoperability of services provided over networks typically requires access to the interface software of the application – the application program interface (API). Third parties that wish to develop interoperable services require access<sup>13</sup> to (1) the technical specifications of APIs and (2) to the developmental tools needed to design new services and to operate them over the platform. It is also important that once an interoperable application has been developed, the third party has a right to make use of the specifications without undue legal or commercial restrictions. Otherwise the benefits of new developments may not become widely available.

### **1.6. Open Platforms and their Benefits**

The Barcelona Summit endorsed ‘open platforms’ because they are associated with greater freedom of choice for citizens to applications and services of the Information Society. The isolated ‘islands of connectivity’ analogy that was used earlier for communications infrastructures could progressively become more inter-operable, provided that third parties have access to proprietary APIs. However, this may not be the most efficient way forward.

The openness of a service delivery platform is determined by its APIs, which may use open standards, open source software or proprietary technology.

Open standards are consensus-based (involving all stakeholders, including consumer organisation representatives), publicly available, transparently agreed and commercially exploitable on a fair, reasonable and non-discriminatory basis. Open standards are developed by a large grouping of different industry representatives that agree and maintain the standards. Open API standards that have been agreed in such a standardisation process lead to open platforms. The development and implementation of such consensus-based, open, standards rely on market players seeing such an approach as being in their best commercial interest, usually because common standards will in the long term promote and enlarge the market.

APIs may be based on open source software. Open Source Software (OSS) is free to use, change, study, copy and re-distribute, where the code is openly published without fail. It is often developed and exchanged by voluntary efforts<sup>14</sup>. The third party access to the technical specifications of APIs needed to design new services and to operate them over the platform is available with open source software, thus leading to an open service delivery platform.

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<sup>13</sup> Access in this sense means the ability of a commercial party to make use of the technology, network element or platform environment of another undertaking.

<sup>14</sup> DG INFSO has created a dedicated web site on open source software at [http://europa.eu.int/information\\_society/topics/citizens/index\\_en.htm](http://europa.eu.int/information_society/topics/citizens/index_en.htm).

Delivery platforms using proprietary APIs could voluntarily or, if required by law, be obliged to, make available the technical specifications of the APIs to third parties to ensure access and interoperability of services<sup>15</sup>. The proprietary nature of the technology means that the developer remains in control of the evolution of the technical specifications.

A general feature of innovation in networked technologies often involves the re-combination of existing technologies so that new applications and infrastructure are built on top of existing systems in a cumulative fashion. This re-uses existing technologies in innovative and unintended ways. The resulting interdependencies between existing and new networked technologies have made interconnection and interoperability core principles in newly emerging networks and services.

Different market players will emphasise different facets of interoperability and openness. These concepts reflect (1) the degree to which all service providers can exploit the full functionality offered by any service delivery platform; (2) the degree to which they can contribute to its on-going development; and (3) the degree to which consumers can enjoy the greatest possible choice in services and the means by which they are accessed.

Operators currently developing the next generation of services in an anticipated multi-platform environment are expected to achieve acceptable levels of voluntary standardisation, whether in interface technology or in data format technology (described below in Section 3.3), to achieve interoperability of services. Their business models rely on creating a critical mass of demand, that will generate viable new markets which will in turn drive rapid consumer adoption, possibly resulting in competitive service offerings between operators, and at least creating different service offerings between platforms. Thus, the use of specific interface technology in a service delivery platform should normally be a matter of commercial choice.

## **2. AN OVERVIEW OF CURRENT TRENDS**

At present, end-user access to electronic services typically occurs with a personal computer (PC) via the Internet where uptake in the EU continues at about 40% of households<sup>16</sup>. A majority of current home Internet users have a PC with dial-up (narrowband) access over the telephone network, but a growing percentage use xDSL or a cable modem for broadband services<sup>17</sup>. Alternate forms of customer access are

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<sup>15</sup> Access to platforms using proprietary APIs can, where public policy necessitates, be imposed by law, as was the case with Open Network Provision – a Community policy that mandated transparent, cost-oriented and non-discriminatory access to an incumbent telecommunications operator’s networks prior to complete liberalisation of the telecommunications sector in 1998, and is the case in conditional access systems in digital TV and radio in the new regulatory framework. However, such mandated access is not appropriate in all markets and can have the disadvantage of discouraging investment in innovation by a platform operator. In the new regulatory framework, access obligations on networks can be imposed only on undertakings with significant market power.

<sup>16</sup> <http://europa.eu.int/comm/eurostat/Public/datashop/print-product/EN?catalogue=Eurostat&product=1-ir031-EN&mode=download>.

<sup>17</sup> For recent developments in broadband, see the 8<sup>th</sup> Report from the Commission on the Implementation of the Telecoms Regulatory Package, at: [http://europa.eu.int/information\\_society/topics/telecoms/implementation/annual\\_report/8threport/finalreport/com2002\\_0695en01.pdf](http://europa.eu.int/information_society/topics/telecoms/implementation/annual_report/8threport/finalreport/com2002_0695en01.pdf).

possible: internet access via satellite combines a high-speed downlink from the satellite to the PC with a return path provided over the normal telephone or cable network. Television receivers, equipped with a set top box and a connection to the PSTN, can provide Internet access, together with SMS and email services; fixed line telephones with small screens and some extra software can provide email, SMS and basic Internet access. Mobile Internet services currently use the GPRS<sup>18</sup> (2.5G) technology for users to access services such as news, travel info, sports and e-mail on the move, while the 3G technology (UMTS) will offer higher data rates.

PCs allow both the use and creation of Information Society services. Computers – both clients and servers - are likely to remain at the very heart of the Information Society. Separate clusters of PCs and consumer electronics devices will increasingly communicate with each other, creating ‘digital home’ environments. However, consumers are not expected to consume digital content in a passive fashion; they will create, customise and share rich multimedia content with each other. Thus the PC will be a platform for both the creation of, and a major access device for, Information Society services. Ultimately, it is likely to form part of a multi-platform environment that will include mobile communications, digital radio and television services as well as other access technologies, and where interoperability across these different platforms will be important.

Delivery of some Information Society services, particularly the multi-media services, will require a broadband delivery system to the consumer. Digital television networks (satellite, terrestrial and cable) offer one such platform, 3G mobile networks another.<sup>19</sup> With the exception of cable, television networks have traditionally been one-way communications systems, but a return channel is a necessary part of an Information Society service and hybrid systems combining elements of both technologies will appear.

In addition to the 3G and digital television technologies that are the focus of this Communication, other technologies will compete as delivery mechanisms, in particular xDSL, last mile ethernet, fibre to the curb, Internet via cable TV networks and the wireless technologies of ‘W-LANs’ and digital audio broadcasting (DAB).

Internet take-up and mobile telephony have both experienced huge growth in Europe over the past decade. Over the next ten years, high bandwidth wired Internet access – broadband - is likely to be available to most households. Television receivers and mobile handsets, already quite widespread, will continue to have high penetration levels. Because of cost and lack of familiarity for certain groups, PCs are unlikely to reach penetration levels of TV or mobile communications. Other electronic consumer devices which can be connected to networks, such as personal digital assistants or hybrid devices, are likewise unlikely to reach the same levels of penetration as TV receivers or mobile handsets. However, they may form part of a complementary home platform or extended home platform environment using several delivery platforms to different end user terminals.

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<sup>18</sup> ‘General Packet Radio Service’.

<sup>19</sup> See COM(2002) 43 final.

If a return channel is available, digital TV can provide a means of accessing Information Society services. Alongside digital TV, 3G mobile is an alternative to the Internet/PC paradigm for access to Information Society services.

The digital audio broadcasting system (DAB) is an effective means to deliver one-to-many data to a mobile environment providing a robust digital 'container' with as much or more data capacity than 3G mobile. DAB can be used on its own or in combination with other systems, e.g., Internet, mobile phone, to form a hybrid service.

Future devices will combine the power of the PC, especially with respect to management, storage, and processing capabilities, with the convenience and ease-of-use of consumer electronics devices. One important future aspect of interoperability will be the ability of these combined devices to discover, configure, and control the capabilities of peer devices and to negotiate common protocols and media formats for multimedia content distribution.

Other platforms that could play a role in accessing Information Society services are DAB and IP datacasting. DAB is based on an open European standard for digital radio and data broadcasting services and is particularly suitable for reception in moving vehicles. In combination with a return channel, it could be used to access Information Society services. In some AM bands, digital radio could cover the whole of Europe with a single transmitter. IP datacasting allows the diverse content from digital TV, DAB, 3G and others, to be offered over a multi-platform datacasting environment by the use of the Internet Protocol (IP). Both digital TV and mobile communications platforms are expected to make use of IP datacasting. This would give rise to interoperable services and applications on all networks using the protocol.

### **3. TELEVISION SERVICE DELIVERY PLATFORMS**

TV broadcasting is currently offered over both analogue and digital technologies, and both are offered via cable, satellite and terrestrial transmission technologies. These different technologies have reached varying stages of commercial maturity, consumer and commercial acceptance, physical roll-out and household penetration. Since this Communication identifies barriers to widespread access to Information Society services in digital TV, no detailed examination of the complex issues surrounding the evolution of digital television broadcasting can be made. However, the evolution of digital television will affect the ability of the still-nascent (in European-wide terms) digital TV platform to evolve towards a meaningful service delivery platform for interactive services and Information Society services.

Interactive services on digital TV are commonly understood to cover both 'enhanced broadcasting' and 'true interactivity'. 'Enhanced broadcasting' means that applications, data and multimedia services can be incorporated into the video stream (just once or in a continuous loop) and made available either upon a viewer's selection in real time, or stored on the hard disk, thus allowing for 'local interactivity'. This service would not fulfil the 'individual request' criterion of Information Society services. 'True interactivity' refers to a request by an individual transmitted through a 'return channel' to which the service provider replies by supplying individually requested data and services separately from the main video programme. Switching between real and simulated interactivity is increasingly easy, so the distinction will be increasingly difficult for end-

users to see. A consumer's choice to take up digital TV at present is less likely to be linked to accessing interactive services and more likely to be driven by an interest in accessing content (whether premium quality or greater quantity).

### 3.1. Digital TV

Digital television broadcasting technology allows for significant improvement in terms of transmission capacity (number of channels and services), picture quality and information management. While free to air<sup>20</sup> analogue television<sup>21</sup> covers close to 100% of households, the chart below (Figure 1) shows that digital TV penetration is for the moment considerably beneath that level<sup>22</sup>. It also demonstrates that digital TV penetration has achieved 30% or more in three Member States. Digital TV has so far developed in the context of 'traditional' pay-TV, i.e., based on multi-channel and premium content. Experience in the UK suggests that the level of penetration of pay-TV might stabilise once a certain level is reached; however, additional factors, such as enhanced and interactive TV services and improved picture quality, may enlarge it still further.

**Figure 1: Penetration of Digital TV in the EU (estimates for 2002)**

(in millions and in percentage of national households)									
	Total HH	Total Digital TV HH		Cable DTV		Satellite DTV		Terrestrial DTV	
		TV HH	%	TV HH	%	TV HH	%	TV HH	%
Austria	3.3	0.36	10.7%	0.07	2.1%	0.29	8.7%	0.00	0.0%
Belgium	4.3	0.23	5.2%	0.22	5.0%	0.01	0.2%	0.00	0.0%
Denmark	2.4	0.92	38.9%	0.55	23.6%	0.36	15.3%	0.00	0.0%
Finland	2.3	0.22	9.4%	0.04	1.6%	0.17	7.3%	0.01	0.5%
France	25.1	4.97	19.8%	0.95	3.8%	4.02	16.0%	0.01	0.0%
Germany	37.9	4.14	10.9%	1.94	5.1%	2.21	5.8%	0.00	0.0%
Greece	3.6	0.22	6.0%	0.00	0.0%	0.22	6.0%	0.00	0.0%
Ireland	1.3	0.32	24.4%	0.06	4.4%	0.26	20.0%	0.00	0.0%
Italy	20.1	3.13	15.6%	0.02	0.1%	3.11	15.4%	0.00	0.0%
Luxembourg	0.2	0.01	5.3%	0.00	1.0%	0.01	4.2%	0.00	0.0%
Netherlands	7.1	1.16	16.5%	0.45	6.4%	0.69	9.8%	0.02	0.3%
Portugal	3.6	0.34	9.6%	0.04	1.1%	0.29	8.0%	0.02	0.5%
Spain	12.8	3.21	25.1%	0.05	0.4%	2.78	21.8%	0.38	3.0%
Sweden	4.6	1.44	31.6%	0.46	10.0%	0.84	18.4%	0.15	3.2%
UK	26.3	11.51	43.8%	3.23	12.3%	6.22	23.7%	2.06	7.8%
<b>TOTAL EU</b>	<b>154.73</b>	<b>32.2</b>	<b>20.8%</b>	<b>8.1</b>	<b>5.2%</b>	<b>21.5</b>	<b>13.9%</b>	<b>2.6</b>	<b>1.7%</b>
US	118	44.95	38.1%	21.8	18.5%	22.55	19.1%	0.6	0.5%
Japan	41.9	6.7	16.0%	0	0.0%	6.7	16.0%	0	0.0%

Source: *Eighth Report on the Implementation of the Telecommunications Regulatory Package* [COM(2002) 695 final], annex 2 ('regulatory data'), section 11 ('digital television') available at [http://europa.eu.int/information\\_society/topics/telecoms/implementation/annual\\_report/8threport/index\\_en.htm](http://europa.eu.int/information_society/topics/telecoms/implementation/annual_report/8threport/index_en.htm) and *Strategy Analytics*, "Interactive Digital TV market forecast data", October 2002.

For digital terrestrial television reception, most end-users have attached an adapter to their existing analogue TV set. But not every digital terrestrial TV adapter provides a

<sup>20</sup> 'Free to air' television covers transmission by cable, satellite and terrestrial technologies but excludes services to which access is limited by conditional access system such as pay-TV services.

<sup>21</sup> Analogue television receivers are compatible with any analogue technology and are able to receive terrestrial, cable or satellite broadcasting.

<sup>22</sup> Digital television penetration in this context covers households with at least one digital television receiver of any kind (i.e., a set-top box).

return channel. Many adapters do not include a modem and have no provision to attach one. Those households will therefore not have access to Information Society services, (as defined above), despite having access to digital television services. Having the possibility for a return channel will be a matter of consumer choice in most cases but the level of consumer interest will be influenced by the attractiveness of the services on offer.

Digital cable TV has the advantage of an ‘always on’ return channel and therefore can support the provision of Information Society services from roll-out. However, digital cable TV does not represent a significant percentage of the 30 million digital TV receivers currently installed in Europe. The API software in digital cable TV is primarily proprietary.

In satellite digital TV, the end-user will connect a set-top box to his analogue set or will use an integrated digital TV set to receive programming. A ‘return channel’ would still be needed for the provision of interactive services. The API software in digital satellite TV is also primarily proprietary.

### **3.2. Barriers to the roll out of an open digital TV services delivery platform**

Barriers to accessing Information Society services over digital TV service delivery platforms should be distinguished from barriers to the roll-out of digital TV, the latter of which involves largely commercial and regulatory challenges described briefly in chapter 5. Open platforms are desirable because they enhance consumer access and can offer greater user choice. If the interface technologies of digital TV are open, then services and applications are able to inter-work between different service providers and end-users would be able to access more easily the different services and content of the third parties with which the service delivery platform operator contracted.

Digital television was initially offered in Europe as a pay-TV service by vertically integrated service providers using satellite transmission technology and conditional access systems. As no European standard for interactive TV was available at the start of the market, early implementations in Europe used proprietary APIs in the set-top boxes. The roll-out of digital TV using proprietary APIs is not unusual in dynamic and embryonic markets. To create a successful market, pay-TV and cable operators invested considerable sums in services, infrastructure and receivers for broadcasting.

With currently deployed technology, particularly in the digital pay-TV market, in the absence of open APIs between networks and services, it is possible for operators using proprietary technology to bundle all the elements of electronic services and, because the proprietary technology may be unavailable to third parties, it may limit the customer’s choice of services.

Recognising the value of an open API in digital TV services capable of deployment on all digital technologies, the Digital Video Broadcasting Project<sup>23</sup> (DVB) developed the Multi-media Home Platform specifications (‘MHP’) which have been recognised and endorsed by the European Standards Organisation (ETSI). Deployment of this

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<sup>23</sup> The Digital Video Broadcasting Project (DVB) is an industry-led consortium of over 300 broadcasters, manufacturers, network operators, software developers, regulatory bodies and others in over 35 countries committed to designing global standards for the global delivery of digital television and data services.



technology is at an early stage. A business choice to migrate to an open second generation API, such as MHP, from proprietary technology would need to be based on a sustainable business plan which takes into account existing investment and the evolving needs of customers.

Particular concerns about the interoperability of digital TV services prompted the EU to establish policy tools in relation to digital TV services. The Commission has taken action under Article 17 of Directive 2002/21/EC ('the Framework Directive') to promote the interoperability of digital TV services with a view to improving freedom of choice for users by including the 'Multi-media Home Platform' (MHP) standards in the *'list of standards and/or specifications for electronic communications networks, services and associated facilities and services'* published under Article 17<sup>24</sup>. Under article 18 of the Framework Directive, Member States must now encourage the use of an open API by (1) all providers of digital interactive television services and (2) all providers of enhanced digital TV equipment<sup>25</sup>. Industry is therefore encouraged to use open APIs such as MHP. Choosing MHP for 'greenfield' markets would notably avoid the migration and legacy issues of pay-TV systems. Commission follow up action is described in section 6.2.2.

To facilitate a voluntary deployment of MHP, various Memoranda of Understanding and migration plans have been agreed at national and regional level between broadcasters and manufacturers. This may result in the use of the MHP standard in particular for free to view TV for new interactive digital TV services in areas without any current digital television penetration. Broadcasters, mobile operators and consumer equipment manufacturers are actively exploring the possibilities offered by the joint utilisation of their infrastructures and the complementary delivery of new services which could equally benefit from the use of open interoperable standards (as was the case with GSM, the second generation mobile standard) and which include benefits of economies of scale.

Because public authorities control terrestrial spectrum linked to digital terrestrial TV, they have traditionally mandated standards in order to maximise efficient use of a scarce resource. Public authorities retain the ability to impose standards as a condition of spectrum usage under the new regulatory framework<sup>26</sup>. The DVB-T transmission standard<sup>27</sup> provides for full interoperability of transmission and reception of television services. Terrestrial TV has limited capacity available for interactive television and receiving equipment has to be reasonably priced in order to drive economies of scale.

### **3.3. Re-authoring and multi-authoring**

Part of the difficulty in digital TV is related to the provision of the same content over different service delivery platforms. Content that is created for cable, satellite or terrestrial digital TV networks usually will not work on another network without adaptation. Likewise, there is a certain degree of content incompatibility within the same TV network when different APIs are used as sometimes happens. In markets where

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<sup>24</sup> OJ C 331, 31.12.2002, p. 32.

<sup>25</sup> OJ L 108, 24.4.2002, p. 33.

<sup>26</sup> Under the terms of Article 6 and Part B of the Annex, in the Authorisation Directive (Directive 2002/20/EC of 7 March 2002, of the European Parliament and of the Council on the authorisation of electronic communications networks and services, OJ L 108, 24.4.2002, p. 21.

<sup>27</sup> The digital terrestrial television transmission system developed by the DVB Digital Video Broadcasting Project, standardised as ETSI EN 300 744.

different APIs are in use, interactive television applications have to be ‘re-authored’ for each API. This adds costs for service and content providers which is a particular problem for operators in small markets<sup>28</sup>. Using current technology, this approach represents at best only an interim solution to the challenge of interoperability of content over different digital TV platforms.

In the longer term, an alternative to re-authoring may make this costly process superfluous. Improvements in software authoring tools may ultimately make multiple authoring (“multi-authoring”) an attractive and cost effective approach to content creation. Broadcasting content could in future - in the alternative - be created in a standard data format, such as XML, so that a greater degree of interoperability can be achieved. This is the approach used on the Internet to provide interoperable content, which can be read by a browser or a simple API called a presentation engine. By creating content using a standardised data format approach, the costs of re-authoring of applications can be avoided.

#### **3.4. Third-party access to APIs in the new regulatory framework**

The transport or transmission level, i.e., the transmission signal itself, is already standardised in digital TV – whether cable, satellite or terrestrial - and has been from its inception. It is at the level of consumer access to interactive services, i.e., APIs in set-top boxes, that serve as gateways to interactive services, that have created bottlenecks and have been addressed in Community law. These regulatory tools were created for the purposes of achieving openness, interoperability and access by both consumers and third parties to digital TV services.

Access to the API technology in conditional access systems for digital TV and digital radio can be obtained by third parties under the new electronic communications regulatory framework. Article 5(1)(b) of the Access Directive<sup>29</sup> gives NRAs the right to impose obligations on fair, reasonable and non-discriminatory terms where necessary to ensure accessibility for end-users to digital radio and TV broadcasting services. Two complementary provisions in the Framework Directive require Member States (1) to encourage interactive digital TV operators to use an open API for interactive services and (2) independently of the possible action by NRAs under the above provisions of the Access Directive, to encourage access on fair, reasonable and non-discriminatory terms to proprietary APIs when necessary to allow interactive service providers to deliver their services in fully functional form. In the context of digital TV services therefore, Community law provides for access by third parties to all API technology necessary to allow interactive service providers to deliver their services in fully functional form, while promoting interoperability of interactive services via the provisions of Articles 17 and 18 of the Framework Directive, described further below.

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<sup>28</sup> An additional 5-15% was cited by DVB as typical, but some DVB members consider it could be higher, depending *inter alia* on the type of application.

<sup>29</sup> Directive 2002/19/EC of 7 March 2002 of the European Parliament and of the Council on access to, and interconnection of, electronic communications networks and associated facilities, OJ L 108, 24.4.2002, p. 7.

#### 4. THIRD GENERATION MOBILE COMMUNICATIONS

The mobile telecommunications industry is evolving from being primarily voice telephony service providers (with extra features like SMS) to delivering mobile data and multi-media services. Improved network technologies and software in 3G will improve the range of services and applications available, particularly by increasing the speed at which services will run over these networks. This will enhance the usability and interactivity of services, such as sending multi-media messages, booking of tickets, downloading video clips, banking and payment transactions and location-based services, such as finding a local restaurant. Interoperability (device-device) within a given domain, e.g., between a digital mobile phone and another, and interoperability across platforms, e.g., between a Personal Digital Assistant or mobile phone and a PC will be particularly important given the business models and variety of service offerings that are developing.

Additionally, interoperability (device-server) between an application server (regarding software and content) and a multitude of access methods and devices will be a key requirement for the widespread uptake of innovative mobile devices, services and applications. For example, end-users would expect interoperability between any Multi-media Message Service (MMS) enabled GPRS terminals and the servers of any service provider. M-payment models constitute a significant challenge to mobile operators; the systematic use of third party services will require revenue sharing arrangements between providers of network services and content services. In this context, open interoperable solutions are needed across all platforms for security functions, such as authentication and encryption for access control and confidentiality.

The Commission welcomes an industry-led effort to establish interoperability testing (IoT) initiatives aimed at overcoming any interoperability barriers, either at the terminal (device) layer or network layer or service and applications layer. Interoperability testing is essential to ensure an acceptable quality of service and to reap the large-scale benefits created by a critical mass of satisfied users (the 'network effect').

The Commission's Communication on the roll-out of 3G mobile communications noted the importance of an open mobile environment and recognised that industry had already initiated efforts to find solutions for the challenges of openness and interoperability via the creation of the Open Mobile Alliance<sup>30</sup>. The Commission will monitor the value chain surrounding the offer of 3G mobile services and would consider action if the evolution of 3G towards an open and competitive service environment would be jeopardised by proprietary solutions chosen by individual players.

Barriers to accessing Information Society services over 3G platforms are not the same as barriers to the roll out of 3G networks. In general, consumers should be able to access services and applications of the Information Society with full functionality on a single mobile terminal device, if they so choose, within the technical constraints of the device.

The Commission's Communication of June 2002, 'Towards the Full Roll-Out of Third Generation Mobile Communications'<sup>31</sup> reviewed the situation of the 3G sector from the financial, technical, market and regulatory perspectives. It pointed to the rapid growth in

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<sup>30</sup> The Open Mobile Alliance is composed of handset manufacturers, network operators and application developers.

<sup>31</sup> COM(2002) 301 final.

data traffic in the form of short message services (SMS), which points the way towards more sophisticated services making use of 3G. The challenges inherent specifically in the commercial deployment of 3G networks primarily relate to: regulatory hurdles, administrative delays, uncertainties over infrastructure sharing and secondary trading and restrictions on antenna placements usually based on health concerns. The challenge associated with creating successful business models is generic to every service delivery platform.

The attraction of mobile handsets as delivery platforms lies in their already high levels of penetration. The penetration of mobile communications (second generation, GSM standard) is approaching 80% of the population throughout the EU. However the small screen size affects the ability to access and view web content from such a device. Technology is likely to develop in ways to overcome this limitation given the commercial incentives to offer Internet and video content as part of mobile data services.

Each 3G mobile operator is expected to develop and operate its own configuration of network infrastructure and services with a view to creating a distinctive commercial presence and offering. Mobile operators are expected to offer a variety of 'service packages' depending on the type of customer targeted, i.e., a combination of voice, SMS, email, information and multi-media services. Although each bundle of service offerings would limit the services available to each subscriber, access to the Internet and Internet-type services are likely to be a key part of any service offering. Consumers are likely to want access to the Internet and to Information Society services – some of which they will also want to access in the home or office environment - while on the move and travelling. Mobile Internet access (where IPv6 will have an important role in supporting mobile services) is therefore likely to make a significant contribution to a multi-platform service environment of the future.

In practice, attractive service offerings by 3G mobile operators will include access to the services of other service providers, for example, in order to download short video clips from a content provider. To deliver these mobile data services, 3G operators will need to ensure interoperability between the software in the end-user's handset and the third party's services software. APIs will be required in the handset to interface between the third party's service software and the handset. Network operators, handset manufacturers, services developers and other market players may develop their own unique applications and innovative services at the outset, such that new offerings may not initially inter-operate across all networks or between all service providers. To ensure an acceptable standard of service initially, operators are likely to retain tight control over all aspects of the offering from launch, possibly for a transitional period.

In a multi-platform environment, some users may wish to receive public broadcasting services via delivery platforms other than digital TV. This may well include 2G, 2.5G, and 3G mobile communications devices. In that environment, issues relating to open standards and interoperability arise in the use of digital mobile devices to carry multimedia services. Operating systems and programming interfaces are needed, as they are for digital television broadcasting services.

Standardisation activities in mobile communications are taking place at many levels. The Open Mobile Alliance is a focal point of mobile services specifications working with other organisations and industry groups. In the mobile services specification work, four key principles are applied: (1) products and services are based on open, global standards,

protocols and interfaces; (2) the applications layer is bearer agnostic (e.g., GSM, GPRS, EDGE, CDMA, UMTS); (3) the architectural framework and service enablers are independent of operating systems; and (4) applications and platforms are interoperable.

Industry has recognised the need for interoperability and the activities above demonstrate that it is already working together to ensure that 3G services inter-work seamlessly, independent of the network operator or terminal manufacturer, and despite any differences in underlying standards. In a world of multiple equipment vendors, network operators and service providers, interoperability should be achieved while preserving competitive implementation of product and service offerings. The Commission will continue to foster the production of high quality open standards and specifications based upon market requirements, to encourage the widespread conduct of interoperability testing, including multi-standard interoperability to ensure a seamless user experience across terminal devices, mobile network infrastructures (operators) and across Member State boundaries.

## **5. BARRIERS TO WIDESPREAD ACCESS TO NEW SERVICES AND APPLICATIONS OF THE INFORMATION SOCIETY THROUGH OPEN PLATFORMS IN DIGITAL TELEVISION AND 3G MOBILE COMMUNICATIONS**

In the case of digital TV and 3G mobile communications, there are justified restrictions that – while not technical barriers as such – restrict the freedom of undertakings to enter and compete in these markets. They include obligations imposed on undertakings that impact on key inputs at the wholesale level of the value chain, such as licensing conditions for radio frequency, and ‘must carry’ obligations. The Commission has already adopted two Communications on mobile communications<sup>32</sup>. Further guidance on the single market principles and provisions of the new regulatory framework relating to ‘must carry’ rules is foreseen during 2003.

### **5.1. Factors – other than openness and interoperability – affecting access to services**

Factors that could limit widespread access to electronic services in future go beyond those of open interfaces and open platforms. Technology barriers can be overcome wherever there is a strong commercial incentive to do so. But the creation of an Information Society means putting into place a series of measures, both technical and non-technical, to create the conditions necessary for an Information Society to evolve. These are touched upon only briefly below, but they raise wider issues than those of platform openness, and merit a fuller examination than is possible here.

#### *5.1.1. Patents and other intellectual property rights*

As an Information Society gradually becomes more of a reality, the source of economic growth becomes increasingly information and knowledge-based. This shift in the drivers for growth has resulted in a cycle of technological innovation using proprietary technology, that gives way to further efforts towards inter-working and interoperability,

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<sup>32</sup> COM(2002) 301 final - COM(2001) 141 final.

which creates agreed standards. The cycle is frequently repeated in networked technologies.

The terms and conditions for access to information itself are becoming increasingly important for the further development of Information Society services and the economy. For example, the aim of the patent system is to maximise the social benefits of innovation by guaranteeing time-limited monopolies in exchange for the disclosure of a technical invention. It is a policy tool that tries to balance openness, the promotion of innovation, and the encouragement of competition. However, there are some indications that a significant increase in patenting has occurred during the last decade which has been related more to the creation of competitive barriers than to an increase of investment in research and development<sup>33</sup>. Strategic patenting and ‘patent races’ seem to have become particularly important in networked areas that develop interdependent products such as those offered on digital TV and 3G mobile platforms. The impact of patenting on market entry in this area is however unclear.

The Commission’s proposed directive on the patentability of computer-implemented inventions seeks to promote innovation in this area and to harmonise the patent grant practices of the European Patent Office and Member States<sup>34</sup>. In relation to interoperability, the intentions behind this proposed directive are to promote interoperability by preserving the provisions on decompilation and reverse engineering of Directive 91/250/EC (relating to copyright) as well as encourage innovation and competition. This directive is currently under discussion in the Community legislative bodies. Once adopted and implemented, the Commission services intend to examine the extent to which the objectives of the directives are being met, notably - in relation to interoperability - whether the patent rights granted prevent the exploitation of interoperable applications.

A healthy, fair and competitive market is the best guarantee of consumer access to Information Society services. An effective regime for digital rights management systems (DRMS) is undoubtedly an important feature of such a market and interested parties should continue to support the efforts of industry and consumer stakeholders to find internationally workable solutions. Such solutions should provide adequate protection of intellectual property rights as recognised by Directive 2001/29/EC<sup>35</sup> to give effect to the principles and guarantees laid down in law, in the context of new forms of digital exploitation of protected works. DRM systems and services are closely related to consumers’ perception of freedom of choice in accessing information society services. The promotion of open, flexible and interoperable DRMS continues to be a policy priority for the Commission.

#### 5.1.2. *Consumer trust and confidence to create mass market demand*

For both digital television and mobile communications markets, industry, public authorities and consumer organisations play important roles in the areas of promoting user trust and confidence in interactive services, in particular in relation to privacy

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<sup>33</sup> ‘Technology policy in the telecommunications sector’, Enterprise papers 8, Koski, H. (2002).

<sup>34</sup> COM(2002) 92 final – 2002/0047(COD), OJ C 151, 25.6.2002, p. 29.

<sup>35</sup> Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, OJ L 167, 22.6.2001, p. 10.

protection and protection against the disclosure of consumer data, e.g., credit card information. User confidence and use of digital technologies will increase in proportion to the amount of information available to them (particularly when supported by consumer organisations) as to the existence of guarantees of confidentiality and security and in proportion to the effectiveness of the public and private measures adopted to guarantee them. The Data Protection Directive referred to earlier seeks to build the necessary trust and confidence by creating obligations on operators and service providers to: (1) provide a secure environment for all electronic communications (covering 3G, Internet and digital TV); (2) guarantee the confidentiality of communications and the data transmitted therein; and (3) severely restrict their re-use of customer information for purposes other than that for which it was provided<sup>36</sup>.

### 5.1.3. *Business Models*

Digital TV services are marketed mostly on the basis of premium content or number of channels they can offer (e.g., in those countries with low cable TV penetration where many TV channels are not available in analogue) or on the advantages of portability of the TV set (e.g., in those countries with high cable TV penetration). Truly interactive digital TV – whether cable, satellite or terrestrial based - is still in its infancy in most Member States. Having little experience with interactive digital TV, consumers either lack an awareness or have not developed any interest to use these new services so there is as yet little mass market demand. However, experience in particular in the UK demonstrates that interactive digital TV has considerable potential.

The most fundamental barrier to widespread access to interactive services today via digital TV - especially digital terrestrial TV - is not technical, but is linked to the difficulty of constructing acceptable business models for the deployment of the necessary infrastructure (transmitters, terminals) solely based on market dynamics. This translates into economics, investment and the availability of content. Similarly, the real challenge to the development of digital TV as a delivery platform for Information Society services lies in finding viable business models. Solutions to the return channel requirement, whether fixed or wireless, will also be necessary to qualify as an Information Society service. For the successful deployment of digital terrestrial TV a critical mass of demand, combined with attractive content and services, is required, so as to drive the economies of scale necessary for a successful market to develop. Setting up this sustainable cycle is harder in free-to-air than in pay-TV because there are no equipment subsidies to drive initial penetration in horizontal, retail markets.

In the case of 3G, rather than a ‘big bang’ introduction of 3G networks and services, industry will progress gradually towards the full range of 3G multi-media services, initially provided over GPRS networks. This will allow demand to develop progressively. Public authorities can support demand creation by ensuring that their own Information Society services are available over 3G communication platforms.

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<sup>36</sup> Directive 2002/58/EC on privacy and electronic communications, OJ L 201, 31.7.2002, p. 37.

#### 5.1.4. *Digital TV roll-out and exploitation of European cultural diversity*

Market and regulatory differences between Member States are significant in the TV sector, largely for linguistic and cultural reasons<sup>37</sup>. The possibility for digital TV to contribute towards the creation of an Information Society is constrained by the fragmented timing of national digital terrestrial implementations in particular.

#### 5.1.5. *Clarity of regulation*

Given the ability of digital TV and 3G to merge certain features of traditional services and deliver them over a non-traditional infrastructure, such as datacasting services, both the commercial offering and the consumer uptake of these services require clarity with respect to the applicable regulatory treatment of these services.

The new EU regulatory framework for electronic communications to be implemented 25 July 2003 provides a common set of rules for the sector<sup>38</sup>. It covers electronic communications networks and services, as well as associated facilities, which support the provision of services via such networks or services, such as conditional access systems. Experience shows that national measures transposing EU directives can sometimes be different, so the risk exists that some implementations may not provide the clarity and legal certainty that market players require for the development of TV, mobile and convergent Information Society services.

In particular, in light of the different regulatory structures in place for broadcasting and electronic communications, it will be important for Member States to clarify the respective responsibilities of the competent regulator(s). In emerging network architectures, there will be a need for all NRAs involved to work together to ensure that the principles of the new regulatory framework and the general provisions of Community law are applied in a consistent manner to new services and facilities that span the boundary between content and infrastructure.

The Commission services are examining whether clarification or legislative amendment is needed on the legal framework for third party payments, such as payments related to Premium Rate Services, provided by mobile operators. The relevant Community legislation, such as the Second Banking Directive<sup>39</sup> and the Electronic Money Institution (EMI) Directive<sup>40</sup> seem to be implemented in this respect very differently in the Member States. In order to achieve a European level playing field for all payment services, the legal framework may need to be revised; at a minimum it should be clarified. This will be part of the follow-up action proposed for the Commission services in chapter 6.

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<sup>37</sup> Differences concern the market share between types of TV network (terrestrial, cable and satellite) and business models (e.g. pay-TV versus free to view), the level of digitalisation and other aspects.

<sup>38</sup> Directives 2002/19/EC, 2002/20/EC, 2002/21/EC and 2002/22/EC, OJ L 108, 24.4.2002, p. 7-77. Directive 2002/58/EC, op. cit., fn. 53, was adopted on 12 July 2002.

<sup>39</sup> Second Council Directive 89/646/EEC of 15 December 1989 on the coordination of laws, regulations and administrative provisions relating to the taking up and pursuit of the business of credit institutions and amending Directive 77/780/EEC, OJ L 386, 30.12.1989, p. 1.

<sup>40</sup> Directive 2000/46/EC of the European Parliament and of the Council of 18 September 2000 on the taking up, pursuit of and prudential supervision of the business of electronic money institutions, OJ L 275, 27.10.2000, p. 39.



### 5.1.6. Radio frequency: assignment and flexibility

To date, spectrum has generally been assigned on an individual basis, linked to conditions related to specific services, territories and undertakings. Broadcasters generally receive spectrum against little or no payment, in consideration of the general interest objectives with which they are charged (including the remit of public service broadcasting) compliance with which involves substantial costs. There needs to be greater clarity on the value of the spectrum they use. This does not rule out offset against programming obligations, as is currently the case. On the other hand, for some 3G mobile operators, their license and related rights of use of radio frequency were costly. In the long term, new flexible tools may be needed for ensuring effective use of spectrum, possibly including secondary trading or usage charges<sup>41</sup>. Placing a value on spectrum will be important whatever it is used for. The new EU regulatory framework for co-ordinating approaches to spectrum management offers forums for such developments to be addressed.

Spectrum scarcity is a potentially significant barrier, of varying significance in different countries, to the successful roll-out of digital terrestrial services in Europe, which will be made worse by the temporary lack of available frequencies coinciding with the simulcast transmission of both analogue and digital broadcasts during the transition period to digital transmission. The reform of the 1961 Stockholm Frequency Plan will be important for maximising efficient use of terrestrial broadcasting spectrum in a future all-digital environment.

## 6. CONCLUSIONS AND FOLLOW-UP

The objective of an Information Society for all remains despite the recent downturn in the telecommunications sector. The commercial and technical environments of digital TV and 3G are extremely complex. Interoperability linked to open platforms represents only one element in a much wider and more complex set of issues that affect the introduction of new digital services and will have a profound effect on widespread access to services. In 3G mobile communications, industry is seeking to achieve interoperability of services while voluntary industry migration to the MHP standard may be at least in part a likely solution for interoperability across digital TV. The development of services that may be offered across the two platforms may also raise issues of cross-platform interoperability.

Open platforms and interoperability will be very important but not on their own sufficient to produce an Information Society for all. The measures adopted to redress the regulatory, commercial and consumer barriers to the creation of an Information Society already identified by Member States, by the European Parliament, by industry and by the Commission must be systematically evaluated. Industry itself must find solutions to the commercial challenges it faces but must be given a supportive and encouraging environment within which to operate.

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<sup>41</sup> As recommended in the Action Plan *eEurope 2005: an information society for all* and the communication on 3G rollout, op. cit., fn. 4 and 5.

## **6.1. Follow-up - for Member State governments**

Public authorities have important roles to play in creating a favourable environment for business that attracts investment and favours economic development, as well as safeguards the interests of consumers.

### *6.1.1. Government as legislator*

A new regulatory framework for electronic communications networks and services was adopted by the EP and Council during the first half of 2002, and Member States are now in the process of transposing this framework into national law. The full and timely transposition of this legal framework by the deadline of July 2003 will provide a coherent set of rules for all types of electronic communications infrastructure. The new framework is based on separating content regulation from infrastructure regulation but, unlike previous telecommunications regulation, the new framework includes networks used for the distribution of broadcast signals. A critical short term objective is for Member States to ensure that national law implementing the new framework avoids any ambiguity between legislation on 'broadcasting' and legislation on 'electronic communications services', so that the applicable rules for new and innovative services are clear.

### *6.1.2. Governments and regulators*

Independent national regulators have been given considerable discretion in applying the provisions of the new regulatory framework to the electronic communications sector. To avoid fragmenting the single market, several co-ordination mechanisms are foreseen, both between the regulators and with the Commission, as well as public consultation mechanisms on certain measures. Regulation of broadcasting presents a more complicated picture, with regulatory responsibilities split between local, regional and national bodies in some Member States and, in a few, a single body oversees both the broadcasting and electronic communications sectors. Since interactive television services will be delivered alongside digital television broadcasting services, it is vital to have a clear demarcation of responsibility and good co-operation between national regulators responsible for broadcasting and those responsible for electronic communications.

The European Regulators Group, created by the Commission, is an additional mechanism to ensure consistency by Member States in the application of the new framework, and to co-ordinate at EU level. Such co-ordination will avoid inconsistent approaches and prevent new obstacles to the internal market for Information Society services. Moreover, the Group will provide expertise that can guide the application of regulation to Information Society services, identify gaps in national regimes and, ultimately, in co-operation with other relevant regulators, create a regulatory level playing field in the EU.

### *6.1.3. Government as supplier of information and information society services*

Governments are a major supplier of information for the citizen, and the eEurope 2005 Action Plan has identified e-government, e-health and e-learning as major priorities in the programme. Thus far, most activity has been concerned with online publication of government information, rather than provision by government of Information Society services. Nevertheless the government is a major supplier of services, and the development of attractive Information Society services will bring users on-line and stimulate the development of other on-line services. To encourage public authorities to

make their information available in electronic form, the Commission has proposed a directive on the re-use and commercial exploitation of public sector documents<sup>42</sup>. Governments should therefore be leaders in ensuring that their e-services are available in formats suited to delivery over a variety of platforms. The e-Europe 2005 Action Plan calls for Member States to exploit by end 2004 the potential of multi-platform access for basic public services.

E-government services intended for delivery through the television should be designed appropriately, i.e., for both those with and without return channels on their digital TVs. Users without a return channel should have access to alternative, more limited, information. Though not Information Society services as currently defined by EU law, they will nonetheless be of value to citizens. Government portals, as gateways to e-government services, both on digital television and the web, should offer both non-interactive and interactive services.

#### *6.1.4. Government as purchaser*

Innovative new services often face the problem that, while demand is low, mass production, which could bring down unit costs is hard to justify, and so costs remain high thereby inhibiting demand. Governments have significant if often fragmented purchasing power, which in some cases can be used effectively to overcome such problems and thus contribute to the creation of an Information Society for all. Governments could use their procurement activities to help stimulate new markets and services and, just as importantly, to create public trust in new services and markets by favouring openness and interoperability.<sup>43</sup>

Past Commission efforts in supporting interoperable standards have not always delivered their intended results. The experience with such initiatives demonstrates that a key ingredient to success is that of scale, and that the scale of any initiative must be EU-wide. Member States could, for example, in procuring services, target one sector (e.g., electronic medical benefits cards) and adopt a single standard for Europe wide implementation. The result would unquestionably set the industry standard and deliver EU-wide interoperability.

#### *6.1.5. Government as promoter*

Member States are active in promoting the RTD needed for development of open platforms and interoperability. In particular the IST programme plays an important role. Member State governments are also active in promoting the roll-out of digital television and, under the eEurope 2005 Action Plan, they will publish by the end of 2003 their intentions for the possible switchover from analogue to digital television. The eEurope 2005 Action Plan calls upon Member States to offer their content on different

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<sup>42</sup> Proposed directive of the European Parliament and of the Council on the re-use and commercial exploitation of public sector documents, COM(2002) 207 final, 2002/123 (COD).

<sup>43</sup> Open source policy is also a part of the UK e-government interoperability framework, see: <http://www.govtalk.gov.uk/interoperability/egif.asp>, and the German government procurement policy, see: <http://www.bund.de/Service/English/News/Open-Source-for-Administration-.6482.htm>.

technological platforms. Member State governments can also play a co-development role with industry by engaging in public-private partnerships<sup>44</sup>.

#### 6.1.6. *Government as facilitator*

The Commission report on its public consultation on the Green Paper on Convergence in 1999 highlighted the conflicting demands of content providers, who sought the right to have their content delivered over any infrastructure, and infrastructure providers who sought to retain their commercial freedom<sup>45</sup>. The new regulatory framework for electronic communications recognises that such conflicting demands have to be addressed case-by-case, based on actual market conditions, under the control of the national regulatory authority. In situations where the commercial interests of different parties may prevent spontaneous collaboration, government and regulators can facilitate useful discussion.

### 6.2. **Follow-up – the European Commission**

#### 6.2.1. *Some recent actions*

The *eEurope* initiatives, initially launched in 1999, are an attempt to transform us into a knowledge-based society. The most recent *eEurope* initiative, the ‘*eEurope 2005 Action Plan*’, calls for the adoption, by end 2003, of an agreed interoperability framework to support the delivery of pan-European e-government services to citizens and enterprises. This will be an important milestone in the creation of a genuine Information Society for all.

Public and commercial services must be offered on a widespread basis for an Information Society for all to happen. Thus the *eEurope 2005 Action Plan* aims to promote a multi-platform approach as well as widespread broadband capacity as a means of access to the Internet, and as ways of raising productivity in the private and public sectors to generate an inclusive Information Society covering: *eLearning*, *eHealth*, and *eGovernment*. The Commission recognises that the Internet and its widespread use are already a central part of the Information Society and has endorsed the initiative to upgrade the Internet’s capabilities in the next Internet Protocol (IPv6)<sup>46</sup>. To encourage public authorities to make their information available in electronic form, the Commission has proposed a directive on the re-use and commercial exploitation of public sector documents<sup>47</sup>.

Some recent Community initiatives demonstrate the extent to which EU institutions have already addressed issues directly related to creating an Information Society. The Council Resolution of 28 January 2002 on network and information security<sup>48</sup>, the Communication from the Commission on the same subject<sup>49</sup> and the *eEurope Action*

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<sup>44</sup> About 2 billion euros were allocated by the Swedish government for broadband infrastructure roll-out. [http://www.regeringen.se/galactica/service=irnews/action=obj\\_show?c\\_obj\\_id=32477](http://www.regeringen.se/galactica/service=irnews/action=obj_show?c_obj_id=32477).

<sup>45</sup> COM(1999) 108 final.

<sup>46</sup> Communication from the Commission to the Council and the European Parliament, *Next Generation Internet: priorities for action in migrating to the new Internet protocol IPv6*, COM(2002) 96 final.

<sup>47</sup> Op. Cit., fn 43.

<sup>48</sup> OJ C 43, 16.2.2002, p. 2.

<sup>49</sup> [http://www.europa.eu.int/information\\_society/eeurope/action\\_plan/safe/netsecres\\_en.pdf](http://www.europa.eu.int/information_society/eeurope/action_plan/safe/netsecres_en.pdf).

<sup>49</sup> COM(2000) 298 final of 6 June 2001; COM(2000) 890 final.

Plan<sup>50</sup> (inter alia) recognise that consumers and businesses need a secure environment in which to conduct their communications and to transact business. The security of transactions and data has become essential for the supply of electronic services, including e-commerce and online public services. Directive 2002/58/EC ensures the right to privacy and to confidentiality in communications and transactions will be respected<sup>51</sup>. The Commission has adopted a proposed regulation to create a European Network and Information Security Agency that is expected to build on national efforts to enhance network and information security and to increase the ability of Member States and EU Institutions to prevent and respond to network and information security problems<sup>52</sup>.

#### 6.2.2. *Some future actions*

In accordance with Article 18(3) of the Framework Directive, the Commission will examine, by no later than July 2004, the effects of Article 18. If interoperability and freedom of choice for users have not been adequately achieved in one or more Member States, the Commission may take action under the terms of Article 17, wherein a previously published standard may be made compulsory, following a public consultation and with agreement of the Member States<sup>53</sup>.

However, the Commission considers that standardisation should be voluntary and industry-led. Standardisation is not a goal in itself. A balance must be struck in the public interest, between the extent standards are needed to achieve interoperability, with the possible adverse effects of standardisation on competition, innovation, investment and the risk of choosing premature or obsolete technologies. In May 2003, the Commission invited the European Standardisation Organisations to prepare a coherent set of standards, specifications and guidelines to support the effective implementation of Article 18 of the Framework Directive as regards interoperability of interactive digital TV services.

The Guidelines of the eTEN Programme, which addresses validation and deployment of services in the "common interest", were amended in 2002 to re-align the programme to the objectives of the eEurope 2005 Action Plan. A call for proposals for the eTEN work programme is anticipated in May 2003; this work programme addresses issues relating to interoperability as one of a set of the common objectives to be achieved by those responding to the 2003 call. This approach positions interoperability as an integral part of all future eTEN projects and requires that projects take account of the specific contexts in which the services will be offered. Services covered by eTEN projects should be

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<sup>50</sup> COM(2002) 263 final.

<sup>51</sup> Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector, OJ L 201, 31.7.2002, p. 37.

<sup>52</sup> Proposal for a regulation of the European Parliament and of the Council establishing the European Network and Information Security Agency, COM(2003) 63 final.

<sup>53</sup> In a statement to the European Parliament on 12 December 2001, Commissioner Liikanen said: "One year after the date of application of these Directives, the Commission will examine whether interoperability and freedom of choice for users have been adequately achieved in the Member States. If not, the Commission can propose to make implementation of relevant European standards mandatory. The Directive requires the Commission to carry out a public consultation on such a proposal. Following the public consultation, the proposal would be submitted to a regulatory committee procedure (requiring support from a qualified majority of Member States) before being adopted as a formal Commission Decision."

compatible with existing norms and standards. The work programme also foresees the use of open standards, and where appropriate, the use of open source software.

The actions mentioned below reflect the awareness that many factors other than open platforms will determine whether Information Society services will be accessible on a widespread basis; these are listed albeit many consist of several pre-existing initiatives of the Commission:

#### *6.2.3. Regulatory and Research Measures*

- (1) seek adoption of the proposed directives on reuse of public sector information and on patenting of computer-implemented inventions;
- (2) issue by end 2003 an agreed interoperability framework to support the delivery of pan-European e-government services to citizens and enterprises, addressing information content and recommending technical policies and specifications for joining up public administration information systems across the EU, based on open standards and encouraging the use of open source software (Section 3.1.1 of the eEurope 2005 Action Plan);
- (3) work closely with the relevant regulators (e.g., the European Regulators Group, the European Platform Regulatory Authorities) to ensure consistent application of the rules, in particular those concerning interactive digital TV services; by end 2003 revise or clarify the rules applicable to micro-payment services offered by mobile operators;
- (4) continue to support demonstration and research projects aimed at fostering the availability of services and content on different technological platforms, such as interactive digital TV and 3G mobile communications;
- (5) adopt guidelines on the use of public funds for investment in communications infrastructures;
- (6) make a proposal, by end 2003, for a follow-up programme to the eContent programme (Section 3.5 of the eEurope 2005 Action Plan);
- (7) organise a public hearing in June 2003, in the context of the review of the 'TV without frontiers' directive, which will take into account interactive TV services;

#### *6.2.4. Support for private sector measures*

- (8) support the development by the private sector of interoperable e-business solutions for transactions, security, signatures, procurement and payments to facilitate seamless, secure and easy cross-border electronic business and mobile commerce (Section 3.1.2 of the eEurope 2005 Action Plan);
- (9) promote further industry-led standardisation for interoperability in interactive digital TV;

#### 6.2.5. *Measures related to the disabled*

(10) continue to support standardisation efforts regarding accessibility and digital communication (e.g. the CENELEC standardisation working group TV for ALL and the Design for All and Assistive Technology Steering Coordination Group (DATSCG)) in close co-ordination and co-operation with Member States;

(11) in the forum created in the sub-group on disabilities of the Communications Committee, INCOM, address issues linked to users with disabilities to facilitate access by such users to electronic communications services and to propose harmonised actions at national level across Member States to implement the objectives of the Framework and related Directives;

(12) during 2003, the European Year of People with Disabilities, specific follow-up actions will assess the achievements of eEurope 2002 and suggestions will be made for future activities;

#### 6.2.6. *Multi-national measures*

(13) promote the principles of openness and interoperability at the international level in relations with third countries and regions, and in particular in the context of the World Summit on the Information Society to be held at the end of 2003 in Geneva, and in ongoing work in international organisations like the World Trade Organisation, the International Telecommunications Union and the Organisation for Economic Co-operation and Development.

### **6.3. An Ongoing Process**

The Barcelona European Council pointed to the key role that digital television and third-generation mobile communications (3G) will play in providing widespread access to interactive and Information Society services. The analysis presented herein supports these conclusions.

This Communication has described how future development and deployment of new services over the 3G and digital TV platforms could be shaped by the technical, regulatory and commercial features of these platforms, in the context of a multi-platform approach that reflects the way the markets and consumer usage patterns of the future are likely to develop. The major technological barriers inherent in creating open platforms for all the technologies and platforms concerned are actively being addressed by industry and public authorities. Commercial and regulatory barriers, unrelated to open platforms, also need to be tackled and have been addressed in national and Community initiatives.

The successful creation of an Information Society for all will depend on the effectiveness of the technological measures that deliver interoperability of services, as well as the measures that tackle non-technical barriers, such as consumer reluctance, security concerns and commercial challenges in creating attractive services and sound business models. Out of all these barriers, those related to commercial factors, and particularly the creation of viable business models, seem to most observers to be the most significant barrier to successful achievement of an Information Society. The Commission will continue to monitor and report on developments in this critical sector of the economy and

will systematically in future draw upon the input of the public in preparing its reports, as was done for the present Communication.



## ANNEX

### **1. The Barcelona European Council and the Seville Council request**

The Barcelona European Council called upon the Commission and the Member States to foster the use of open platforms to provide freedom of choice to citizens for access to applications and services of the Information Society. It also invited the Commission to present, *inter alia*, a comprehensive analysis of remaining barriers to *the achievement of widespread access to new services and applications of the information society through open platforms in digital television and 3G mobile communications*. The Seville European Council re-iterated the request of the Barcelona Council to the Commission for a report to the Copenhagen European Council in December 2002 on “*the remaining barriers to open platforms in digital television and third-generation mobile communications*”.

In response to this request, the present Communication analyses the barriers to widespread access to information society services, not just through open platforms in digital television and 3G mobile communications, but more broadly, as these two platforms form only part of an emerging multi-platform service delivery environment. This was a key observation made during the public consultation on a Commission services working document.

In order to ensure a proper understanding of the drivers in the creation of an Information Society for All, the Communication also identifies other relevant issues that will have a significant impact on access to Information Society services. These other issues concern commercial, regulatory and consumer factors. They are no less important than open platforms, possibly even more so, and will therefore determine what services can be accessed from what devices.

For purposes of developing policy measures for the Information Society, the major message of this communication is to endorse the conclusions of the Barcelona European Council and the Seville European Council of the importance of open platforms for widespread delivery of electronic services and to note the importance of interoperable services in a future multi-platform environment notwithstanding the dynamic and unpredictable nature of technological developments in this area. An important driver in the successful creation of critical mass to reach an *Information Society for All* will be the combination of public services being offered electronically as well as attractive commercial services and applications on several platforms. Thus, both commercial factors and public sector measures will be crucial to complete the *Information Society for All*.

### **2. Prior Consultation**

The present text is the result of an extensive public consultation that ran from 5 December 2002 through 15 February 2003. A public hearing was held in Brussels on 4 February 2003. During the public consultation, comments were received from national ministries, consumer representatives, a broad variety of undertakings (telecoms, broadcasting, cable, Internet service provision, computer and software industries and media and publishing industries) and from trade associations. The text of the proposed Communication has been amended to take account of comments received during the consultation. The principal changes to the earlier version are described below.

The aims of the consultation were twofold: to validate or correct the Commission services' preliminary analysis of these platforms; and, in view of the large public interests at stake, to open a broad consultation with all interested parties, including all segments of the communications and information technology sector, media, publishing interests, mobile operators and broadcasting interests, as well as consumers and national authorities.

## **2.1. Comments received during the public consultation and public hearing**

Written comments were received for a period of three weeks following official closure of the consultation. The comments received have been published on the DG INFSO web site unless confidentiality was requested. The list of contributors appears at the end of this annex.

Scope: The main comments expressed during the public consultation related to the narrowness of the Commission's preliminary analysis. It was generally thought that the scope of the examination should be broadened to reflect the likely market realities of the future - which were that no one platform would pre-dominate in service delivery and that the various digital platforms would be complementary, rather than substitutable.

Disabled: Several comments noted that e-Inclusion and access for disabled users should be included; this is one of the goals of an Information Society for All.

Definitions: Many comments asked for greater clarity in the definitions of key themes and terms, such as "interoperability" and "openness"; 'true' interactivity and 'simulated' interactivity.

Role of governments: Other comments emphasised how important it is for governments as suppliers of e-government services and in other roles, such as public procurement bodies, to facilitate economies of scale.

Mandating MHP: Some thought it inappropriate to mandate the Multi-media Home Platform Standard (MHP) in a way that prohibits continued use of existing proprietary technology. For those commentators, a progressive migration towards greenfield sites could be appropriate. Others thought that MHP should be encouraged to help overcome current market fragmentation. Some felt that good business models do not yet exist for interactive digital TV other than pay TV/proprietary standards and argued that mandating MHP is not the solution for further digital TV rollout, as that would destroy the digital TV that is already rolled out. But others stressed the importance of free-to-air interactive digital TV services, saying that a single open standard (i.e., MHP) is necessary to overcome market fragmentation and pay TV gate-keeping; they argued that re-authoring is not a real solution, because it is expensive, reduces the quality of service, and puts content providers at the mercy of powerful, vertically integrated, market players.

Article 18 Framework Directive 2002/21/EC: Some broadcasting interests encouraged the publication by the Commission of criteria under Article 18 Framework Directive for how Member States could 'encourage' implementation of standards; they suggested requiring equipment labelling, offering tax exemptions, and consideration of other encouraging measures.

Business models: Many commented on a variety of commercial issues related to horizontal business models, economies of scale and critical mass needed for successful digital TV rollout. Some thought that the EU should ensure that business scenarios can be built with all stakeholders to a final consumer, allowing them to build a profitable model.

Definition of Information Society services: Several broadcasting interests considered that the current definition of Information Society services is too restrictive and artificial, in requiring both: (1) individual request from a final user via a ‘return channel’, thus excluding ‘simulated’ interactivity; they submitted that such a definition is out of touch with the market, because switching between true and simulated interactivity is increasingly easy, so the current definition creates a distinction that is not visible for actual end-users; and (2) remuneration by users, thus excluding free-to-air interactive services which are potentially significant. Other commentators suggested that regulatory definitions should be service-based (e.g. broadcasting, datacasting) rather than network or platform-based (such as, digital TV), so that spectrum allocation can be adapted accordingly, that is, made available for certain services independently of the delivery network or platform.

Linking interoperability and digital switchover: Broadcasters felt that interoperability and openness are needed not only for Information Society services but also for traditional broadcasting. With regard to digital TV, some broadcasters considered that platform interoperability and openness are necessary, but not sufficient, to achieve digital switchover. Therefore, they argued that the link between interoperability and digital switchover should be made more explicit in the Communication. Public measures in other areas (such as, financial incentives and equipment labelling) should be considered if market forces do not deliver switchover by a certain date.

Copyright: Some commentators felt that copyright licensing constitutes a barrier, and that collecting societies tend to request extra fees for any changes in the service (e.g., digitisation). No internal market exists, rather fragmentation. A ‘one-stop-shop’ would be welcome and the Commission should consider action in this area. The Communication should also include a report on digital rights management systems (DRMS) developments in the EU. These DRMS are important, for example, to protect free-to-air digital TV, but some thought that the market is not yet mature enough to impose harmonised solutions.

Guidance on EU law: Several commentators felt that guidance is needed, not only for the provisions of Article 5 of the Access Directive, on the provisions related to electronic programme guides (EPGs), but also on the new regulatory framework provisions on “must-carry”<sup>54</sup>; and on micro-payment systems (financial services rules) for mobile operators, (the latter of which is already foreseen).

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<sup>54</sup> Article 31, Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users’ rights relating to electronic communications networks and services, OJ L 108, 24.4.2002, p. 51.

## **2.2. Changes introduced to working document**

Many of the issues that were the object of comments, such as the definition of Information Society services, the link between digital switchover and interoperability, creating successful business models for the roll-out of digital TV, frequency management, and copyright/DRMS concerns, cannot be addressed in the proposed Communication as commentators called for. However, many of these issues are under examination by the Commission services and will be addressed in separate initiatives and actions. The interoperability issues that are referred to in Article 18 of the Framework directive are not considered in this Communication as it is planned to address the issue of how satisfactorily interoperability has been achieved in digital TV services in a separate Communication on which a public consultation will be held at the end of 2003.

Scope and multi-platform approach: The analysis in the proposed Communication has been widened beyond digital TV and 3G to give a broader picture of access to Information Society services, of technologies, of different service delivery platforms and the impact on inter-platform interoperability. The new text reflects the fact that a variety of services will be delivered, sometimes different and sometimes the same services, in future to users everywhere on different end-user terminals. The potentially significant contribution that digital radio (DAB) can make to the delivery of Information Society services has also been included.

Definitions: Terms used in the Communication have either been defined or, if used in several different ways, explained in context, (for example, interconnection, interoperability and inter-working, 'true' interactivity and 'simulated' interactivity). The definition of Information Society services is unaffected. Since the relevant technology is evolving rapidly, the Commission will monitor technological developments. As convergence becomes more of a market reality, technological neutrality of regulation will continue to be an important policy principle.

New sections and new structure: The proposed Communication has been somewhat re-structured from the working document, and new sections on the economic benefits and costs of interoperability and a contrast between a futuristic vision of an Information Society and the still-emerging multi-platform environment have been included. Also added is an explanation of third party access to the Application Program Interface (API) technology in conditional access systems for digital TV and digital radio under the new electronic communications regulatory framework.

## **3. Final adoption**

To the maximum extent possible, the Commission has taken account of comments expressed during the consultation process and has adapted the earlier draft in light of the comments received from the following organisations:

- AGCOM - Autorità per le garanzie nelle comunicazioni
- Alcatel
- ANEC - European Association for the Co-ordination of Consumer Representation in Standardisation
- ANIEL - National Spanish Association of Electronical Industries and Telecommunications

- ARD & ZDF
- Association Européene des Radios
- Austrian Federal Economic Chamber
- BBC
- Bouygues Telecom
- BSkyB
- Canal +
- CERMI - Comité Español de Representantes de Personas con Discapacidad
- ComReg - Commission for Communications Regulation Ireland
- Confederation of Finnish Industry and Employers
- Consumers' Association
- Deutsche Telekom
- DigiTAG – Digital Terrestrial Television Action Group
- DLM - Direktorenkonferenz der Landesmedienanstalten
- DTG – Digital TV Group
- Dutch Government
- EBU – European Broadcasting Union
- ECCA - European Cable Communications Association
- EDeAN - European Design for All e-Accessibility Network
- EICTA – European Information, Communications and Consumer Electronics Technology Industry Association
- ETNO – European Telecommunication Network Operators' Association
- Finnish Government
- France Telecom
- French Government
- GSM Europe
- H3G Europe
- Hawkins David
- Hellenic Ministry of Transports & Communications
- Intel Corporation
- INTUG - International Telecommunications Users Group
- IPDC Forum – IP Datacast Forum
- ITV
- Kirkham Pete
- Lähteenmäki Timo

- Liberate
- Marshall Peter
- Mediaset
- METIL
- MHP Alliance
- Microsoft
- Mobilkom
- MPA - Motion Picture Association
- Nokia
- OMA – Open Mobile Alliance
- OpenTV
- Orange Group
- QUALCOMM INC
- Retevisión Audiovisual
- RNIB - Royal National Institute of the Blind
- RNID, EFHOH and FEPEDA
- Sonera
- STET Hellas Telecommunications SA
- Swedish Ministry of Industry, Employment and Communications
- Telecom e.V.
- Telecom Italia
- Telefónica
- UK Government
- UPC - United Pan Europe Communications
- Vodafone
- VPRT - Verband Privater Rundfunk und Telekommunikation e.V.
- World DAB Forum