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GREEN PAPER ON THE CONVERGENCE OF THE TELECOMMUNICATIONS, MEDIA AND INFORMATION TECHNOLOGY SECTORS, AND THE IMPLICATIONS FOR REGULATION

TOWARDS AN INFORMATION SOCIETY APPROACH

European Commission

Brussels, 3 December 1997

EXECUTIVE SUMMARY

The Background - Convergence

There is widespread agreement that convergence is occurring at the technological level. That is to say that digital technology now allows both traditional and new communication services - whether voice, data, sound or pictures - to be provided over many different networks.

Current activity in the market suggests that operators from the sectors affected by convergence are acting on the opportunities provided by technological advances to enhance their traditional services and to branch out into new activities. Telecommunications, Media and Information Technology sectors are seeking cross-product and cross-platform development as well as cross-sector share-holding. Examples of new products and services being delivered include:

- Home-banking and home-shopping over the Internet,
- Voice over the Internet;
- E-mail, data and World Wide Web access over mobile phone networks, and the use of wireless links to homes and businesses to connect them to the fixed telecommunications networks;
- Data services over digital broadcasting platforms;
- On-line services combined with television via systems such as Web-TV, as well as delivery via digital satellites and cable modems;
- Webcasting of news, sports, concerts and of other audiovisual services.

Such developments represent concrete examples of an Information Society in Europe. They show its potential to touch the lives of every citizen. They also highlight a significant change in the range and diversity of traditional telecommunications and media services.

The Issues - The Stakes for Europe

The implications of these developments are far reaching. Convergence is not just about technology. It is about services and about new ways of doing business and of interacting with society. The changes described in this Green Paper have the potential to substantially improve the quality of life for Europe's citizens; to better integrate Europe's regions into the heart of the European economy, and to make businesses more effective and competitive on global and national markets.

The emergence of new services and the development of existing services are expected to expand the overall information market, providing new routes to the citizen and building on Europe's rich cultural heritage, its potential for innovation and its creative ambitions.

The global nature of communications platforms today, in particular, the Internet, are providing a key which will open the door to the further integration of the world economy. This will open opportunities and challenges not only for the European Union, but also for our neighbours in Central and Eastern Europe, the Mediterranean, and more broadly, in the developing world. At the same time, the low cost of

establishing a presence on the World Wide Web, is making it possible both for businesses of all sizes to develop a regional and global reach, and for consumers to benefit from the wider choice of goods and services on offer. Globalisation will therefore be key theme in future developments, as changes in Europe are mirrored by developments all over the World.

If Europe can embrace these changes by creating an environment which supports rather than holds back the process of change we will have created a powerful motor for job creation and growth, increasing consumer choice and promoting cultural diversity. If Europe fails to do so, or fails to do so rapidly enough, there are real risks that our businesses and citizens will be left to travel in the slow lane of an information revolution which is being embraced by businesses, users and by Governments around the World.

Governments and policy makers will have a key role in ensuring that such an environment is in place. However, beyond the regulatory framework which is the central focus of this Green Paper, efforts will continue to be needed, as recognised at the recent Jobs Summit, to equip Europe's workforce with the skills which the Information Society requires. Continuing support should be given to research and development activities. Governments, regional and local authorities, as well as the European institutions must lead, by example, by fully embracing the technologies and services which the process of convergence is making possible.

Getting the regulatory framework right is of crucial importance

The future regulatory environment will be of crucial importance. The European Union has already developed a comprehensive framework for managing the transition in telecommunications from a monopoly to a fully competitive world from 1 January 1998. We have also put in place a framework supporting an internal market for broadcasting. Getting the right regulatory framework must be firmly placed within these existing achievements. At the same time, this Green Paper represents a milestone in allowing the Community to look beyond the 1998 deadline and to assess the implications for the sectors affected by convergence.

This Green Paper argues that the development of new services could be hindered by the existence of a range of barriers, including regulatory barriers, at different levels of the market. There are, however, differing views on the adequacy of existing regulatory frameworks to deal with the changing environment. One view is that the development of new products and services is being held back by regulatory uncertainty - that existing rules were defined for a national, analogue and mono-media environment, but that services increasingly cut across different traditional sectors and geographical boundaries, and that they may be provided over a variety of platforms. This calls into question the underlying rationale beneath regulatory approaches in the different sectors affected by convergence. Proponents of this view would argue that such regulatory uncertainty holds back investment and damages the prospects for the implementation of the Information Society.

An alternative view would hold that the specific characteristics of the existing separate sectors will limit the scope for service convergence. It further would contend that the role of the media industry as the bearer of social, cultural and ethical values within our society is independent of the technology relied upon to reach the consumer. This would mean that regulation of economic conditions and that of the provision of information services should be separated to ensure efficiency and quality.

These matters need to be debated and resolved. Finding solutions will need to take account of the full range of interests in the various sectors affected by convergence.

At the same time, the potential for change will be felt in different ways and at different levels (e.g. technology, industry, services and markets). Whilst digitalisation means that convergence is well advanced at the level of technology, this Green Paper does not automatically assume that convergence at one level inevitably leads to the same degree of convergence at other levels. Equally, there is no assumption that convergence in technologies, industries, services and/or markets will necessarily imply a need for a uniform regulatory environment.

The Forum for Debate - The Green Paper

This Green Paper responds to the requirement for debate. It is consciously interrogative. It analyses issues, it identifies options and it poses questions for public comment. It does not take positions at this stage nor reach conclusions.

In **Chapters I and II**, the Green Paper analyses the convergence phenomenon - its technological underpinnings, current developments in the market, and their possible impact on the telecommunications, media and information technology sectors.

In **Chapter III**, actual and potential barriers are identified which may hold back these technological and market developments. Some of these reflect current market or industrial issues of the sectors affected by convergence, whilst others arise from current regulatory approaches. Some of these issues are already being dealt with in Community initiatives, (for example, in areas of intellectual property, media ownership, electronic commerce and digital signatures) and where this is the case those initiatives are identified. In other cases, these barriers serve as a basis for considering the need, if any, to adapt current regulatory frameworks in the light of the convergence phenomenon.

Chapter IV provides a detailed discussion of issues associated with existing and possible future regulatory frameworks or approaches. These issues fall into eight broad areas:

- Definitions
- Market entry and licensing
- Access to networks, to conditional access systems and to content
- Access to frequency spectrum
- Standards
- Pricing
- Individual consumer interests.

The chapter concludes with a discussion of public interest objectives, options for possible future regulatory models and issues raised at an international level.

Finally, in **Chapter V**, a set of principles for the future regulatory policy in the sectors affected by convergence are set out, and possible options for future regulatory approaches are identified as a basis for discussion.

The Commission believes that the 5 months public consultation period will allow broad participation and debate around issues which are important for citizens, business and for the further development of the Information Society. Comments can be sent in paper or electronic form, and the debate will be assisted by the creation of

a specific web-site on which electronic comments can be accessed.[1] There will also be public hearings during the course of the consultation. On the basis of the comments received, the Commission intends to produce a Communication by June 1998.

Conclusions - The Way Forward

This Green Paper represents a step on the way to securing the benefits of convergence for European social and economic development. The June Communication, setting out the results of the public consultation, will allow political positions to be taken by the European Parliament, the Council of Ministers, the Economic and Social Committee and the Committee of the Regions, and for clear objectives for future policy to be established.

This Green Paper initiates a new phase in the European Union's policy approach to the communications environment. As such it represents a key element of the overall framework put in place to support the development of an Information Society. It builds on the current strengths of the frameworks for telecommunications (launched by the landmark 1987 Green Paper on telecommunication[2]) and for media (established by various Community legislative initiatives). This Green paper builds on these achievements, and offers all interested parties an opportunity to comment on the future shape of regulation, in the post-1998 communications environment, in the sectors affected by convergence.

This first step is intended to pave the way for the development of an appropriate regulatory environment which will facilitate the full achievement of the opportunities offered by the Information Society, in the interests of Europe and its citizens as the 21st century begins.

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[1] World-wide Web address is *http://www.ispo.cec.be/convergencegp*. Both written and electronic comments will be made available in paper form in parallel with the publication of the Communication on the results of the consultation, subject to any requests made for confidentiality.

[2] COM(87) 290 final

TABLE OF CONTENTS

Introduction

The Information Society is becoming a reality. Its development is fuelled by the rapid technological change which is transforming the information industries. The nature and speed of this transformation may pose new challenges to policy-makers.

One of the most significant factors is the increasing use by different sectors, notably the telecommunications, media and information technology (IT) sectors, of the same technologies. Evidence of such convergence has been mounting in recent years with the emergence of the Internet and with the increasing capability of existing networks to carry both telecommunications and broadcasting services.

The phenomenon of convergence is relatively new and a range of different views exist on what its implications are for society and for economic activity. There is broad agreement that developments in digital electronics and software are creating the technological potential for a new approach to the delivery and consumption of information services. There is less agreement on how much these developments will change existing practices and over what time-scales. Some consider that convergence will lead to the complete and rapid transformation of existing telecommunications, media and information technology services in such a way that these currently separate groups of services will merge into one another, substantially blurring the previously clear distinctions between them.

Others feel that the specificity of the existing separate sectors will limit the scope for service convergence, and that the media industry has a role as the bearer of social, cultural and ethical values within our society, independent of the technology relied upon to reach the consumer. This would mean that regulation of economic conditions and that of the content of information services should be separated to ensure efficiency and quality. Others believe that, if it does occur, it will evolve over an extended time-scale.

It is nevertheless clear that the implications of these developments are potentially far reaching. The emergence of new services and the developments of existing services is expected to expand the overall information market. This will provide new opportunities for economic growth and employment. At the same time the new communication services environment will also provide opportunities to enhance the quality of European citizen's lives, by increasing consumer choice, facilitating access to the benefits of the Information Society and promoting cultural diversity.

These developments are therefore positive for European economic and social development and should be encouraged. Public policy will need to provide a supportive environment for convergence in order to ensure that the potential opportunities are grasped in a timely fashion.

What is needed now is wide ranging and deep debate on the convergence phenomenon and its implications as an input to such policy formulation. The objective of this Green Paper is to start such a debate.

This debate needs to be set into context in respect of other important Commission actions in the telecommunications, media and information technology sectors. In particular, this debate is central to the future communications landscape following the full liberalisation of telecommunications services and infrastructure by 1 January 1998. The process started by the Green Paper should ensure that during the overall review of the effectiveness of the 1998 regulatory package for telecommunications (to take place at the end of 1999), full account can be taken of the impact of convergence on that sector. Furthermore, the Cable Review, carried out in the light of liberalisation and more specifically as a result of the commitment contained within the Cable Directive[3] and the (telecommunications) Full Competition Directive[4] is the subject of a separate Commission communication. The review aims to create an open and pro-competitive market structure in the provision of telecommunications and cable TV networks which may have a significant impact on the markets affected by convergence. In particular, it will encourage competition and prevent the emergence of new anti-competitive gatekeeper positions or bottlenecks. Vigorous competition in these areas will encourage the development of innovative new services which will benefit consumers in the European Community, and will provide European industry and service providers with the expertise to compete on global markets.

Against the background of ensuring a competitive basic market structure, the timeliness of this Green Paper stems from the fact that new

[3] Commission Directive 95/51/EC, OJ L256, 26.11.95

[4] Commission Directive 96/19./EC, OJ L74, 223.96

markets may develop rapidly, and that they will be essentially global in nature. If the applicable regulatory frameworks in individual Member States or, indeed, in Europe are not appropriate to the development of these new markets and even hinder their development, then Europe may find itself at a competitive disadvantage *vis-à-vis* its more flexible global competitors. This could restrict consumer participation by limiting choice and weakening consumer confidence in the new services, and have negative consequences for economic growth and employment creation in Europe.

The Green Paper addresses the nature of the convergence phenomenon, and focuses on the provision of services and the underlying networks over which they are carried. It further deals with the implications for both the shape and substance of regulation which may arise from convergence. Although the Green Paper deals with certain aspects of the regulatory framework for service provision, any future initiatives in this field would be without prejudice to existing on-going work within the Commission or the implementation of existing Community legislation.

The Green Paper does not take definitive positions with respect to new regulatory structures. Indeed, it recognises that convergence may lead to less regulation in telecommunications and media sectors, and should not lead to more regulation in areas such as IT. Rather it analyses the convergence phenomenon as evident in the market; it identifies issues relating to regulation arising from these developments, and it poses questions in relation to these issues.

All interested parties are invited to contribute to the debate by responding to these questions and by making any submission they wish on the subject. The period of such consultation is set for five months from the date of publication of this Green Paper. It is intended to produce a report on the results of the consultation by June 1998.

Submissions may be sent via E-mail, fax or post (4 copies please) to:

European Commission, DG XIII A4
Attn. Mr. E. Lalor
200 rue de la Loi, BU31 0/62
B-1049 BRUSSELS
Belgium

Fax (+32 2) 296 9009

and/or

European Commission, DG X C1
Attn. Mr. G. Paulger
200 rue de la Loi, L-102 5/25
B-1049 BRUSSELS
Belgium

Fax: (+32.2) 299 9201

and/or

E-mail: *convergencegp@cec.be*

Hard copies of all submissions will be made available at the conclusion of the consultation, unless a request for confidentiality is received. A Web site has been opened for the posting of both the Green Paper and submissions received. The web address is:

http://www.ispo.cec.be/convergencegp

Chapter I
Convergence - Definitions and Developments

This Green Paper represents a further step in the realisation of an Information Society in Europe. It examines a key set of policy issues relating to the broad infrastructure of telecommunications, media and information technology sectors, for convenience referred to as the 'relevant' sectors in much of this document.

The Green Paper does not examine policy issues related to the wider set of services which will make the Information Society a reality - services such as Electronic Commerce, which encompasses a range of activities having the potential to revolutionise sectors as diverse as retailing, travel and financial services. The policy issues relating to this wider set of services include those where Community action is already well advanced, for example, in intellectual property rights, copyright and related rights; media pluralism; privacy and data protection; encryption and digital signatures. These are part of the broader framework which is emerging for new services and activities within the Information Society. They are therefore regarded as outside the scope of the Green Paper and are given only passing reference where relevant to the issues at hand.

Instead, the Green Paper concentrates on the underlying infrastructure which will helps create and deliver the services of the Information Society to customers. It is made up of the systems of components, networks and services associated with the relevant sectors. In all three sectors, those systems are undergoing fundamental change, primarily through the application of digital technology. This is likely to have consequences for policy and regulation.

The Paper focuses on the on-line delivery of services, dealing with off-line publishing, for example, only insofar as it represents a potential market for the on-line business.

The Green Paper deals with broad future trends and does not attempt to define markets for the purposes of the application of Community competition law. The positions discussed in this Green Paper cannot prejudge the positions the Commission may take in the assessment of pending or future cases under the competition rules.

From this perspective, Chapter I describes the convergence phenomenon and the technological developments which underpin it. It also identifies current developments in the market - and how suppliers, service providers and consumers are reacting to them - as indicative of the possible direction of future change. As in any consideration of new markets, the activities of suppliers and service providers give the first indication of how things might develop. Their reactions are tempered by those of consumers, who must accept and embrace the new services before the markets can become a reality.

I.1 Convergence - defining its scope

The term convergence eludes precise definition, but it is most commonly expressed as:

- the ability of different network platforms to carry essentially similar kinds of services, or
- the coming together of consumer devices such as the telephone, television and personal computer.

This latter expression of convergence is one most often cited in the popular press - it is easily understood by consumers and has the added interest of reflecting a wider struggle between computer, telecommunications and broadcasting industries for the control of future markets.

Despite this popular image however, any convergence of consumer devices is today much less real than network convergence. Telecommunications operators are already offering audiovisual programming over their networks (albeit on an experimental basis) and have become major players in the provision of Internet access, as well as backbone infrastructure. Broadcasters have provided data services over their networks for some years and these services will be enhanced over the next 12-18 months by the prospect of digital transmission of both radio and television, and by the addition of interactivity.

Cable operators are providing a range of telecommunications services, including voice telephony in some Member States and are starting to deploy cable modems to offer high speed Internet access, in addition to their traditional business of television programming distribution. Beyond the provision of services to the public, both audio and video technologies are also starting to be deployed within corporate 'intranets' as an additional medium for distributing real-time information. Such applications are also starting to appear on web sites targeted at prospective customers.[5]

The network platform and the consumer/user environment constitute two elements of the supply or value chain extending from content

[5] See *Webcasting and convergence : Policy implications.* OECD, DSTI/ICCP/TISP(97)6 - to be published December 1997

creation through content packaging, service provision and final delivery to customers (see Fig.1). The value chain is a useful concept for analysing the behaviour of firms and markets in the light of convergence.

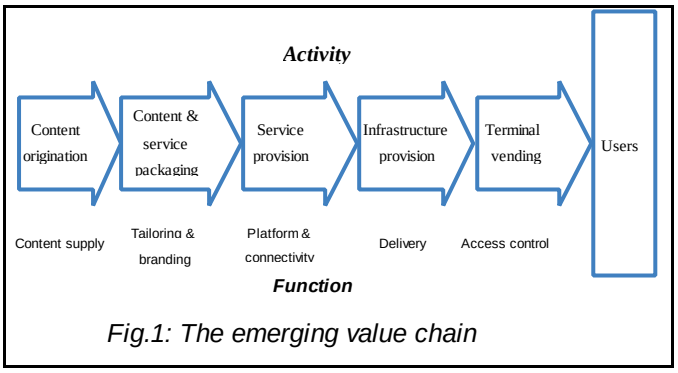

Fig.1: The emerging value chain

Source: Squires Sanders Dempsey LLP and Analysys Ltd.

Today, firms tend to be present in one or more elements of the value chain. Some argue that a shift towards convergence will lead many of today's current players to consider extending their activities beyond their core businesses, and argue that this trend is already visible in some recent mergers and acquisitions (see below).

The potential for change as a result of the phenomenon of convergence can be seen at three different levels (technology, industry, services and markets) (see Fig 2) though there can be no automatic assumption that convergence at one level inevitably leads to the same degree of convergence at other levels, nor that convergence in technologies, industries, services or markets will necessarily lead to a need for a uniform regulatory environment.

Technology convergence, of which the examples cited above are illustrative, is based on the common application of digital technologies to systems and networks associated with the delivery of services. As section I.2 demonstrates, technological convergence is already happening, and continuing advances in technology will further consolidate the process along the different elements of the value chain.

Many commentators identify a trend towards industry convergence, seen in alliances, mergers and joint ventures which build upon the technical and commercial know-how of the partners in order to exploit existing and new markets. Such alliances, mergers and joint ventures will continue to be subject to scrutiny under the Community competition rules. Many such alliances are 'horizontal', that is, between firms operating in the same part of the value chain. Those aimed at addressing the potential opportunities offered by market convergence generally involve companies operating in different parts of the value chain, resulting in increased vertical integration. Some of these alliances have met with early difficulties, illustrating the uncertainty of the markets and the risks involved.

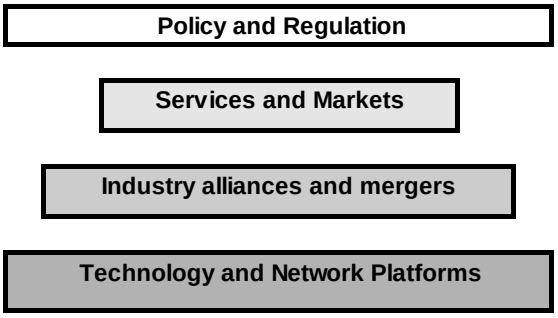

Fig.2: The stages of convergence

It is also difficult to be precise about the services arising from convergence. Many new services will result from technological progress within given sectors, and may not result from cross-sectoral activity at all. Others will be a direct result of cross-fertilisation between sectors, telecommunications and broadcasting for example. Where there is a suggestion of the latter, the term "convergent services" will be used in this document. Where a more general reference is appropriate, the Paper will simply refer to the term "new services", without signifying any precise legal definition.

I.2 The enabling role of technology

This Green Paper is not primarily concerned with technology; rather it addresses the new business and market phenomena which are being enabled by technological developments, and which are altering traditional provider-consumer relationships. An understanding of the nature of these developments can lead to a better appreciation of the potential for change.

Digital technologies underpin convergence

As already stated, the underlying trend is the common adoption of digital technologies by the relevant sectors. Digital technologies cover a range of disciplines generally associated with the computer and telecommunications industries - digital micro-electronics, software and digital transmission. Applied piecemeal within each of the relevant sectors, these technologies have already demonstrated their greater efficiency, flexibility and cost-effectiveness, and have shown how they can enhance creative potential and promote innovation.

Computer technology now plays a key role in content creation and production in both cinema and broadcasting worlds. The ways in which audio-visual material is produced, delivered and consumed are evolving. Content is becoming "scaleable" so that it can be used in different

environments and delivered on different network infrastructures. The basic building block is the MPEG family of standards for the digital encoding of moving images.[6] Once encoded in this format, images may be modified, manipulated, or transmitted in the same way as any other digital information. The systems and networks handling such information are of course indifferent to the nature of the source material, be it image, sound or text. Digital source encoding thus forms the basis of technological convergence.

Digital transmission may be carried over broadcast networks or over terrestrial wired or wireless infrastructure. When applied to broadcasting networks, the most significant impact of digitalisation is the immediate expansion of capacity, effectively removing a scarcity which has limited growth of the sector since its inception. But processing power and software are also helping generalise consumer devices like the set-top box. Implementing functionality in software helps overcome the product life-cycle problems associated with hardware, reducing market inertia and facilitating innovation. It also gives such devices a level of intelligence which allows broadcasting networks to emulate the switching capabilities normally associated with telecommunications. For example, satellite pay-television operators can today address individual customers through conditional access systems, often combined with the terrestrial telecommunications network to provide a 'hybrid' return path for interactive services.

Network technologies for convergence.

As alternative telecommunications infrastructures become more widespread, high-speed networks based on optical fibres will soon be capable, in combination with modern server technology, of operating cost-effectively in a virtual broadcast mode.[7] The high data rates and spectral efficiency achievable through digital transmission open up the possibility of delivering high-quality audio and video signals over a variety of different network infrastructures. Transmission technologies such as narrow-band ISDN[8], xDSL[9] and ATM[10] will ensure that both existing and new infrastructures can play a role in carrying the new services. The capabilities of existing networks are also enhanced by the compression techniques implicit in the MPEG standards, allowing networks of limited transmission capacity to carry services previously considered possible only on sophisticated and more costly wide-band infrastructures.

ATM is of considerable interest as a multimedia transport technology. It is a high-speed cell-relay technology, capable of transporting telecommunications traffic of different characteristics (voice, data, video) over the same network, and has been designated by the ITU as the basis for broadband ISDN, the successor generation of its narrow-band counterpart.

This continuing competition between different technologies can change the fortunes of one approach or another, making it difficult to be prescriptive about tomorrow's network architectures. This may be a relatively minor problem given that today's applications and services are becoming increasingly independent of the underlying infrastructure which carries them.

Internet technology is leading to platform independence

The most relevant example of such platform independence is that of the Internet Protocol (IP). IP has developed into the *de facto* network protocol for the Internet, able to route and transport all the elements of a multimedia service (text, image, motion video and sound). IP is also used in Intranet products, providing an infrastructure for multimedia applications within a company or other closed user group.

The Internet can best be described as a network of networks interconnected on an open basis using IP, usually running over transmission links leased from telecommunications operators (TOs). It has evolved very rapidly over the past decade

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6 MPEG - *Motion Picture Experts Group*. The family of standards extends from MPEG-1 to MPEG-4, of which MPEG-2 (studio-quality television and multiple CD-quality audio channels) is the most widely used.

7 That is, the same content delivered to many consumers, but upon their individual request and not necessarily at the same time.

8 ISDN - *Integrated Services Digital Network*. The narrow-band version was standardised over the last 30 years by Telecommunications Operators wishing to digitise the customer access network. Its long gestation period has caused risks of technical obsolescence which have been mitigated by other technologies (notably data compression) and the emergence of suitable applications (notably Internet access).

9 xDSL - *x-Digital Subscriber Loop* whereas *x* refers to the technology of the moment. These are technologies which exploit the existing telecommunications network copper-pair cable for high-speed data transmission. ADSL (A for Asymmetric) runs typically at 1.5Mbps in the downstream direction and HDSL (H for High-speed) at 6Mbps. These are now being superseded by higher-speed technologies.

10 ATM - *Asynchronous Transfer Mode*, a high-speed switching technology operating at a basic transport level. This contrasts with higher-level application protocols such as IP (Internet Protocol) which may ride on top of transport protocols such as ATM.

from a largely academic- and government-sponsored network with a backbone capacity of 56kbit/s in 1986, increased to 45 Mbit/s in 1993, and to 155Mbit/s in 1996. This huge change in the capacity of the Internet's infrastructure has been in response to the remarkable growth in the number of people using the Internet and the range of applications and software tools developed for it.

The open, non-proprietary approach to standards for the Internet has made it easy for companies to take advantage of, and build on, the advances made by others in the industry. For example, many would argue that the rapid development of the capabilities of the World-Wide Web (WWW) has been enhanced by the open approach to browser development taken by vendors such as *Netscape*, *Microsoft* and *Sun*. The Internet will be further enhanced as a vehicle for multimedia transport by the development of several improved or new protocols which Internet service providers expect to implement within the next three years.

This brief review of the salient technological developments is not meant to be exhaustive, but to illustrate the role of technology as the motor of change. Technology is developing constantly; its application to innovative services and the bringing of those services to market promise even further dramatic change in the future.

I.3 Current market developments

Significant changes are now being realised through the application of new technology to the individual sectors, and these are examined in turn. Such changes are not in themselves evidence of convergence, but as suggested earlier, the commonality of technology applied could provide a basis for that convergence to develop.

Digital television and digital audio broadcasting services are changing today's audiovisual landscape

In the early 1990s it became apparent that digital technology could be efficiently and cost effectively used for the delivery of television and audio signals. Of particular interest was the possibility of delivering many more channels over the same infrastructure (cable TV, satellite transponders, terrestrial spectrum) by using digital compression rather than existing analogue transmission.

In the television area, building on the work of the Digital Video Broadcasting (DVB) project,[11] and against the background of a regulatory framework provided by the Television without Frontiers Directive, the Television Standards Directive and other measures,[12] digital TV services have recently been launched in Europe. Other countries around the world are also making use of DVB technology and European standards. The first commercial services started in France in April 1996. Other digital services rapidly followed and at the time of writing, more than 200 digital TV channels are targeted at viewers in France, Germany, Spain, Italy, the Benelux and the Nordic area. Of the order of one million digital receivers are believed to be currently in operation in Europe - figures which could double by the end of 1998.

Although it is early days in the development of this market a number of interesting phenomena - which are either new to TV or significant developments of past practice - are appearing as digital compression is cost-effectively reducing capacity constraints:

- ***Programme bouquets and thematic channels*** - Broadcasting companies are marketing their digital services in the form of 'bouquets' of programme channels. The "bouquet" complements 'generalist' TV channels with thematic channels concentrating on news, sports, movies etc. offering viewers greater choice and coverage of areas of specific interest to them. Already evident in the analogue era, thematic channels are set to increase in number and to achieve ever finer levels of segmentation with digital technology. Such channels will need to seek wider audiences for economic viability, and pan-European operation could be a way of securing them.
- ***Near Video-on-demand*** - The availability of substantial transmission capacity at reasonable prices will soon make "near video-on-demand" (NVOD) services possible.

> ***Example:*** *With 60 satellite channels, ten 90-minute films could be broadcast simultaneously, each one starting at 15-minute intervals.*

- ***Pay-per-view*** - Similarly, it is possible to market specific events or movie-showings on an individual subscription basis. Such pay-

[11] The DVB is a body comprising more than 200 organisations from 30 countries in Europe and around the world. It includes broadcasters (both public and private), manufacturers (of consumer and professional equipment), operators (of satellite, cable and terrestrial networks) and regulators. It has defined a complete set of specifications for digital TV broadcasting over including: cable, satellite, terrestrial and microwave radio distribution systems. These specifications have since been converted into ETSI standards.

[12] The 1989 *Television without Frontiers* Directive (89/552/EEC) was recently revised and updated as Directive 97/36/EC. The *Television Standards* Directive (95/47/EC) was adopted in October 1995.

per-view services have been provided in the UK on analogue channels (for boxing championships) and Spain in digital format (for football league matches). The greater capacity of digital television allows the simultaneous broadcast of several such events (the most obvious case being matches played in a football league), giving viewers the choice of access to a particular event on a 'pay-per-view' basis.

These phenomena, which constitute a significant departure from classic schedule-based broadcasting, have the potential to improve consumer choice. In addition, and because the "digital channel" is inherently more flexible than an analogue channel, it can deliver other services in the form of data, graphics, moving pictures or combinations of these. Digital television shares these characteristics with digital audio broadcasting, which also offers listeners near CD quality sound. " Multimedia data broadcasting" already provides for the downloading of computer programmes including video games, data files and direct access to the Internet from the TV set or network computer.

***Example**: Hughes Olivetti Telecom launched the DirecPC satellite Internet access service in 1996. It connects some 2000 sites across Europe to the Internet at speeds up to 20 times greater than conventional modems.*

The arrival of digital radio offers exciting possibilities for the combination of radio and images, or links to Internet sites marketing CDs or tickets for band being broadcast[13]. Broadcasters such as CNN and the BBC are starting to make parts of their broadcast content available on the Internet, extending their normal geographical reach, whilst a new breed of webcasters is emerging to broadcast particular live events, such as sports coverage, concerts, major events, etc..

***Example:** Coverage of the recent Irish elections was available to Irish citizens all over the world via a webcast site (www.itv.com)*

Other innovations in the broadcasting field include Widescreen TV using 16:9 format, the technical possibility of higher definition pictures.

Telecommunications liberalisation is widening choice and lowering prices

In less than ten years, the European telecommunications sector has experienced a radical transformation from one characterised by rigid and inefficient monopoly to a sector facing full and vigorous competition, with the total liberalisation of services and infrastructure due to take place in most Member States from January 1998. This transformation owes its beginnings in part to an earlier phase of convergence - that between telecommunications and computing - over a decade ago. Technological convergence rapidly gave rise to market convergence, and to "value-added" services - innovative services which borrowed concepts from both sectors, and which allowed businesses to extend the power of computing beyond the geographical confines of their immediate locations.

The regulatory traditions of the telecommunications sector contrasted sharply with the free-market environment in which the computing industry had developed, and their coming together meant that some rationalisation of these different regulatory philosophies would be needed if the new services were to flourish. The 1987 Green Paper[14] concluded that greater harmonisation and gradual market opening in telecommunications would provide the most fertile environment for such growth. The first measures were initiated in 1988 and culminated in the introduction of full liberalisation of the telecommunications sector by 1 January 1998[15] This step-by-step process of telecommunications liberalisation and global market opening is already bringing substantial benefits to many businesses and consumers, with lower prices, improved customer service and innovative service offerings. Even so, the overall level and structure of prices continue to have a major impact on the take-up of new services.

The mobile communications business is particularly dynamic.

***Example:** Close to one in three people in Scandinavia have a mobile phone and there are more than 37 million mobile telephony users in Europe.*

Increasingly, such mobile systems are adding a multimedia component. One aspect of market convergence occurring within the telecommunications sector is that between fixed and mobile telephony, as in certain Member States and amongst certain groups of the population (e.g. students, small businesses), mobile phones are replacing fixed connections.

However, this practical example of how fixed and mobile networks are converging is only part of a

[13] Radio with Images, Financial Times, 11 November 1997

[14] *Towards a dynamic European economy*, Green Paper on the development of a common market for telecommunications services and equipment, COM(87)290, Brussels, 30.06.1987

[15] Commission Directive 96/19/EC and the body of legislation adopted by the European Parliament and Council. Certain additional transition periods are provided for some Member States.

wider trend towards the full integration of wired and wireless technologies, which is the key goal of the next generation of digital mobile communications systems. This will offer users a platform on which to receive a seamless set of voice, data, multimedia and audio-visual services wherever they are. This vision, which has important implications for all the sectors affected by convergence was first recognised in the 1994 Mobile Green Paper[16] and has most recently been returned to in the Commission's two Communications on Universal Mobile Communications[17].

The Internet is bringing new services to business and the public at large

It is, however, in a third sector, the Internet, that changes have been the most radical. The Internet is both the symbolic and prime driver of convergence. It is a vehicle for the delivery to users of both existing services (electronic mail, video, sound, voice telephony, for example) and completely new services (e.g. World-wide Web). It has rapidly evolved from a government/ academic network to a powerful communication and trading platform. Characterised by an unprecedented growth rate (doubling its number of users every year), the Internet has started to influence a number of economic sectors, with the emergence of a fast-growing electronic-commerce economy.

The Internet is displacing traditional computer networks, and showing the first signs of how it may provide a platform which over time replaces traditional methods of trading. For example, traditional business-to-business trading on closed corporate networks is giving way to multidimensional commerce on global open networks. The Internet is also providing an alternative means of offering the core telecommunications business activity (even if differences in quality still distinguish the two services) through the delivery of Internet telephony, without in some cases either party needing to have a computer. The Internet is also a significant platform for broadcasting services.

Example: *Today, there are 650 Webcast radio stations and 270 "Real-Video" enabled sites on the Internet,[18] offering video material of current European and US broadcasters.*

New Internet techniques, such as multicasting, offers the possibility of delivering audio and visual content to up to 50,000 users at any one time instead of 50,000 individual messages, narrowing the borderlines between previously separate sectors. Many consider that Internet will become a major conduit for video and sound (especially music) distribution.

However, the Internet as a platform has developed differently from traditional broadcasting and telecommunications. It has been essentially user-driven, with user-owned equipment (the routers performing central rather than peripheral network functions) and users themselves continuing to generate a substantial part of the content. The decentralised nature of Internet is seen by many as the single main reason for its success, and as a lesson for the converging environment. A characteristic of the Internet which is indicative of convergence is that it functions simultaneously as a medium for publishing and communication. Unlike traditional media, the Internet simultaneously supports a variety of communication modes, both transactional and broadcast in nature: one-to-one, one-to-many, many-to-many. An Internet user may "speak" or "listen" interchangeably, interweaving public communication (the content of which is - at least in the case of broadcast content - traditionally regulated) with private communication (traditionally unregulated). This constant shift from publishing to private communication modes, each regulated through very different principles, constitutes one of the main challenges of Internet regulation.

Mergers and Alliances are reshaping existing industries

The on-going process of convergence, the opening up of the telecommunications sector to full competition both in Europe and globally, and the rapid growth of the Internet and on-line services, is leading to the creation of new market structures and new roles for market players. In 1996 more than 15% of the total value of world-wide mergers and acquisitions (US $1 trillion) was generated by activity in what can broadly be termed information and communication industries. Such ventures represent a wide-range of transactions, from horizontal alliances which share risk and match complimentary skills, to vertical integration as players in one market segment seek to leverage technological convergence, expand into other higher value segments or develop scale economies. One study being carried out for the European Commission interpreted the motivations behind some the main types of transactions (not all successfully concluded), shown in Tables 1 and 2

[16] Green Paper on a common approach in the field of mobile and personal communications in the European Union, COM(94) 145 final, 27.4.94

[17] COM(97) 217, 29.5.97 and COM(97) 513, 15.10.97

[18] www.timecast.com cited in OECD report op cit note 5.

below.[19] Although they do not necessarily reflect the views of the Commission and cannot be considered as an assessment under the Community competition rules, they are nonetheless useful illustrative pointers to the evolving market situation.

Table 1: Horizontal Mergers and Alliances

Rationale	***Examples***
Increasing market power/gaining minimum efficient scale	Vebacom - Urbana Systemtechnik, Cable and Wireless Communications, Demon - Cityscape
High cost of new (digital) technologies	Canal Plus - Nethold
Uncertain demand for new services	Multimediabetriebsgesellschaf t (Kirch, Bertelsmann, etc.)
Internationalisation	BT-MCI, Global One, UUNet - Unipalm Pipex
Opportunities arising from regulatory reform	MFS/Worldcom, Telenet Flanders, NYNEX/Bell Atlantic

Table 2: Vertical Mergers and Alliances

Rationale	***Examples***
Uncertainty of demand	Hughes Olivetti Telecom (DirecPC), @Home
Market positioning and access to new skills	Bertelsmann - AOL, BBC WorldWide - ICL, STET - IBM
Gaining control of channels to the customer	BT - BSkyB, Disney - ABC - Capital Cities
Moving into higher margin areas of the value chain	Microsoft Network - NBC (MSNBC Internet new channel)
Stave off competition from companies in related markets	US West - Time Warner, Oracle - Sun - Netscape (Network Computer)

The same Study concludes that two trends can be identified in such activity. One towards consolidation of current activities and the other towards diversification in response to new opportunities opened up by liberalisation of EU and World markets, and with a view to the opportunities offered by convergence. Vertical merger activity is seen as more significant indicator of a change in industry structures in response to the convergence phenomenon.

Underlying that analysis is the reality that few, if any of today's market players will have the skills or resources to straddle the whole of the value chain within a converged environment, so that the emergence of major players in the sectors affected by convergence will inevitably rely on partnering to varying degrees. In such a context, the Competition rules will continue to play a key role in assessing new ventures as the emerge.

Competition policy: the need to keep markets competitive

In the past, the Commission has applied the Community competition rules to convergence cases,[20] including some of the cases mentioned in the table above. Global One and BT/MCI are examples of the cases where the Commission, following changes to the arrangements to protect competition, has been able to approve under the competition rules agreements considered likely to promote technical progress. However, the Commission has taken action against other arrangements which unduly foreclosed markets and which were therefore incompatible with Community competition rules. Notable amongst these were the MSG and Nordic Satellite Distribution operations, where the combination of market players in the converging markets and the market positions which they were likely to hold in the future would have led to a foreclosure of the market on a lasting basis. This would have, in turn, been likely to result into excessive pricing as well as a loss of innovation and product variety, to the detriment of the fast development of these markets in Europe. As this could not be remedied with changes to the arrangements, therefore the agreements were prohibited.

In the future, the Commission will continue to favour agreements which promote technical progress, and which promote market entry. On the other hand, the Commission will not allow agreements or mergers which have the effect of foreclosing markets or strengthening or creating dominant positions, or giving the parties the possibility of denying access to new entrants. The Commission will also prevent market actors who enjoy an existing dominant position from abusing that dominant position, such as it did in the Microsoft case, or in the case of telecommunications operators on liberalised markets.

[19] Study on *Adapting the EU Regulatory Framework to the Developing Multimedia Environment*, Squire, Sanders & Dempsey LLP and Analysys Ltd., to be published in December 1997.

[20] For further details, refer to the European Commission's Annual Report on Competition for 1994, 1995 and 1996.

I.4 Summary and questions

This chapter has attempted to define the phenomenon of convergence between telecommunications, media and IT sectors. It described the enabling technologies of convergence and its initial manifestation in the network platforms associated with the on-line distribution and delivery of services. The chapter concluded that while there is general agreement on the notion of technological convergence, there is less certainty regarding the likelihood and/or timing of a full convergence of the services and markets.

Question 1: The nature and impact of convergence today

Chapter I highlights the nature of the convergence phenomenon, the technological and market developments and the underlying political stakes for Europe.

(A) Whilst convergence is occurring at the technology level, to what extent and at what speed is this happening at the industry, service and market levels?

(B) Are the effects of convergence already being felt in the business world and in our everyday lives, and if so, in what way?

Chapter II
The impact of convergence on the relevant sectors

Following a discussion of the social and economic context for convergence, Chapter II examines market trends in order to assess the potential impact of convergence on the relevant sectors. The chapter concludes with a discussion of how consumers may be responding to these developments.

II.1 The social and economic context

Social aspects

The concept of the Information Society provides the political background for convergence. The Information Society permeates current thinking on future economic development and is predicted to have an equivalent impact on society and employment as the industrial revolution did a century before.

Within this context, the new services and activities made possible through the range of technological and market trends identified above have the potential to impact every aspect of our lives, from our homes to our work place; from the way we do business to the way we learn; from access to healthcare to the management and delivery of public services and to the way citizens participate in a democratic society. Today people are already using telephone-based services in some Member States in areas such as banking, insurance and ordering of computers or theatre tickets. It is only a relatively short step before the delivery of such services becomes common place over the television or via a PC. A key issue in that context is ensuring that users are familiar with and comfortable using new technologies and services, whilst as will be seen later the regulatory framework has a role to play in ensuring user confidence in the new environment.

A range of Community initiatives have attempted to give a concrete form to the impact of the social and societal implications of the Information Society following the landmark White Paper in 1993,[21] and the Bangemann Report published the following year.[22] Similar high-profile initiatives were undertaken at the same time in the USA and other parts of the world, and an international dimension was added in 1995 when the G7

[21] *White Paper on growth, competitiveness, and employment - The challenges and ways forward into the 21st century*, COM(93) 700, Brussels, 5 December 1993

[22] *Europe and the global information society*, Recommendations of the Bangemann Group to the European Council, 26 May 1994

countries met in Brussels to devise a global strategy for developing towards the Information society.

Community initiatives for the Information Society

Broad social aspects are being addressed by a number of initiatives in which the Commission is involved. These include the Information Society Forum,[23] the High-Level Group of Experts on the social aspects of the Information Society,[24] the Commission White Paper on Teaching and Learning,[25] the Green Paper on Living and Working in the Information Society[26], and a reconvened Bangemann Group reviewing progress since its 1994 report. At an early stage, the Commission recognised the importance of convergence for the European audiovisual programme industry, a prime vector of social and cultural values.[27] Two recent Commission documents, one a Green Paper and the other a Communication, addressed issues of illegal content and content which could be damaging to minors.[28] The European Parliament[29] and the Council[30] have been active in this area, and a recently-adopted Communication describes how the Information Society must transcend a wide range of EU policies.[31]

The many initiatives now under way in furtherance of the Information Society are being pulled together in a Rolling Action Plan[32] which constitutes the second phase of the Commission's response to the Bangemann Report. The first phase covered the regulatory framework, the network, services and content aspects, and the social and cultural issues.[33] The second phase, an outcome of the Corfu summit,[34,35] is based on a updated set of priorities: the business environment, education and training, protection of the public interest, and the international dimension.

Impact on economic and industrial competitiveness

The convergence debate which this Green Paper raises, is much more than an academic or theoretical exercise. The ability of the European Community to use convergence, whilst tailoring it to the European version of an Information Society, will be at the heart of growth, competitiveness and job creation in the years to come. The danger is that if Europe fails to take advantage of the opportunities provided by convergence, it could be left behind as other major trading blocks reap the benefits of a more positive approach.

The socio-economic and business implications of the Information Society are currently being studied in different fora at a Community level.[36] The impact of the new services resulting from convergence will be felt in the economy as a whole as well as in the relevant sectors themselves.

The most significant example is the emerging field of electronic commerce. It includes both indirect (electronic ordering of tangible goods), and direct (on-line ordering and delivery of services) forms. Electronic commerce makes it possible to trade at low cost across regions and national frontiers.

A recent Commission Communication pointed to the potential opportunities provided by Electronic Commerce for consumers and for businesses in Europe, particularly for SMEs.[37] It estimated that electronic commerce revenues, both direct and indirect, are set to increase to 200 billion ECU

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23 First Annual report of the Information Society Forum to the European Commission, *Networks for people and their Communities* - June 1996

24 *Building the European Information society for us all*, Final report of the High Level Experts Group, April 1997.

25 *Learning in the Information Society - Action Plan for a European Education Initiative*, (96) 471, 2 October 1996

26 *Green Paper on Living and Working in the Information Society: People First,* COM(96) 389, 22 July, 1996

27 Green Paper on *Strategy Options to Strengthen the European Programme Industries in the context of the Audiovisual Policy of the European Union* COM(94)96 of 6 April 1994.

28 See *Green Paper on the protection of minors and human dignity in audiovisual and information services*, COM (96) 483, 16.10.97 and *Communication on the illegal and Harmful content on the Internet*, COM(96) 487, 16.10.97.

29 The Herman Report, 19 September 1996

30 Council Resolution on *New political priorities regarding the information society*, of 21 Nov. 96 OJ C386, 12.12.96, p.1

31 Commission Communication on *The Implications of the Information Society for European Union Policies Preparing the next steps,* COM(96)395, 24.07.1996

32 Commission Communication on *Europe at the Forefront of the Global Information Society: Rolling Action Plan*, COM(96)607 final, 27.11.1996.

33 *Europe' s way to the information society: An Action Plan* COM (94) 347, 19 July 1994

34 Communication of the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions. on *The Information Society: From Corfu to Dublin -The new emerging priorities*, COM(96)395, 24 July 1996.

35 Commission Communication *"The implications of the information society for European Union policies - Preparing the next steps"*. COM (96) 395, 24 July 1996

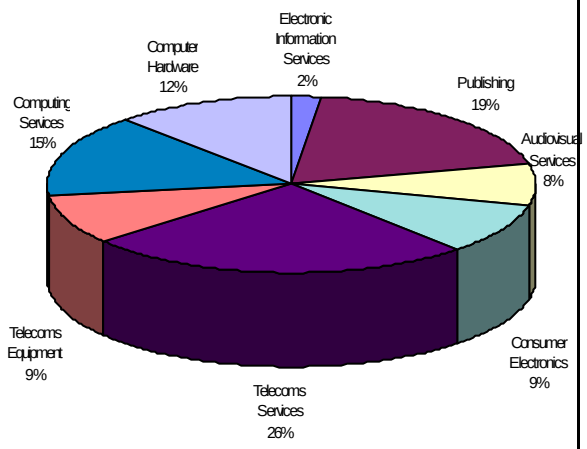
36 See for example, *Action Plan for employment in Europe: A confidence pact,* CSE/1262/96, OJ C56, 24 February 1997 and *Cohesion and the Information Society*, COM(97)7,22 January 1997.

37 Commission Communication, *A European Initiative in Electronic Commerce, COM(97)157*, April 1997

world-wide by the year 2000. It also highlighted the creation of a favourable regulatory framework on both EU and global levels as a prerequisite for further development.

With regard to the impact of convergence on its component sectors, one study indicated that revenues in the relevant sectors could suffer by some 40% by the year 2005 if the market does not develop in a direction which takes full advantage of convergence.[38] To give some idea of scale, Fig. 3 shows that the relevant sectors represented some ECU 1750 billion in 1996, of which ECU 508 billion was attributed to EU markets.[39]

Fig.3: 1996 distribution of global revenues (ECU 1750 billion) for the relevant sectors



(Source IDATE)

Expansion of the market for services and the means of their distribution seems likely to have a knock-on effect in content production, though often as a result of regulatory obligations placed on particular broadcasters. There is evidence, for example, that the success of Canal+ pay television in France has had a positive impact on the French cinema industry. Likewise, in-dependent content producers in the UK were given a boost when Channel 4 arrived on the scene.

Future developments may impact on the fulfilment of the public service mission. First, as the pay-TV market matures, operators may need to increase their investment in local content to maintain quality and product differentiation. For example, British satellite pay-TV operator, BSkyB, is now a major investor in the UK film industry, and Canal+ is acquiring rights in French cinema libraries. Secondly, competition in conveyance (terrestrial, cable, satellite, etc.) is likely, particularly in a digital environment, to shift the bottleneck from delivery to content, with a resulting hike in the prices for content rights.

Employment effects

The signals this sends to the marketplace should lead to greater investment and hence employment in the content business to satisfy the increasing demand. Europe is well-placed to meet this challenge by harnessing its creative capacities to the diversity of cultural environments under its roof. However, EU production is not increasing rapidly and the EU therefore needs to strengthen the competitiveness of its companies so that the public can get the most out of the opportunities offered by the new media, and so that market growth can be transformed into jobs to bring the number of people employed in the industry in Europe (1.8 million) closer to the level in the United States (2.6 million).

Quite apart from the multiplier effects generated by convergence in its role as an enabler of the Information Society, there is likely to be a direct and positive impact on employment in the relevant sectors. Expansion of the market and the attendant demand for new content and services will generate a need for people with the requisite creative talents. This will be felt both in large companies seeking to reorient themselves towards the new markets, and in SMEs seeking to exploit niche markets. SMEs will combine their use of standardised digital platforms such as the Internet with software skills to develop applications and services aimed at both professional users and residential consumers. The task will be to take full advantage of technological convergence by integrating the diverse components of telecommunications, media and IT sectors to produce innovative services.

Staff retraining will be an important requirement, Gearing up for the new markets will need people with the right mix of skills, for which specialised training will be required. The Commission has launched a number of initiatives in the field of education and training, notably the action plan, Teaching and Learning in the Information Society,[40] as well as certain activities in the context of the Leonardo (training) and Socrates (education) programmes.

[38] See KPMG Report, *Public Policy Issues arising from Telecommunications and Audiovisual Convergence,* September 1996

[39] Source: *Market developments in telecommunications and integrated communications services to the year 2010*, Study by IDATE for the Commission, 12/97

[40] Op.cit Note 25

Research and Development

European support for co-operative research and development activity, through the ACTS (Advanced Communications Technologies and Services), Esprit and Telematics programmes, has played an important part in many of the technical developments which has made the convergence phenomenon possible. It has contributed to the strength of European IT, telecommunications and software industries. Much of this work has supported the development of technical standards subsequently adopted by the industry and formalised by European standardisation bodies, and has contributed to the development of technical platforms and tools supporting electronic commerce.

Research and Technological Development (RTD) Programme activities during the Fourth Framework Programme have equally encouraged greater participation by SMEs, who can benefit, for example, from systems and services which stimulate tele-working. A specific example of an integrated approach to systems and services of benefit to SMEs is the Integrated Applications for Digital Sites.[41] Here, on-line and off-line multimedia applications supply integrated services from central/local government - in transport management, tele-medicine, education and training - to local citizens, businesses and other organisations in a cost-effective, user-friendly manner.

Following the adoption of the proposal for the Fifth Framework Programme in April 1997, the Commission has reviewed research activities in IT, telecommunications and telematics with a view to grouping them into a single integrated programme. In the context of convergence, this includes R&D activity in the area of multimedia and audiovisual content.[42]

II.2 Market Trends

This section looks at market trends without however providing an assessment under the Community competition rules. The activities and investment strategies of market players in response to new developments are now becoming evident, and give a good indication of how those players perceive future trends. One indicator of convergence is the willingness of market players to exploit the possibilities provided by new platforms, in particularly, the Internet to expand their activities beyond the confines of their traditional core markets in both a geographical and product sense. Webcasting highlighted above is one such example. The entry of telecoms operators into the area of Internet service provision and Internet voice telephony provision is arguably another. Such services are new only in the sense that they represent an excursion into new areas for the provider in question. But some are new to all-comers.

New services

The flexibility of digital information is creating the possibility for more and enriched conventional services, (such as digital television and radio and better quality mobile communications), as well as a whole range of new services and applications. These new services are as varied as electronic newspapers. on-line supermarkets and catalogues, home-banking, and the use of multimedia web sites for both internal communications, and as a key tool for business.

Examples:

- *Broadcasters who are branching into new areas, such as data broadcast, Internet webcasting and telecommunications transport and services;*
- *Telecommunications operators who are providing audiovisual services, such as video-on-demand and cable television.*
- *Internet service providers who are starting to distribute audiovisual material, and Internet access providers supplying voice telephony capability.*

Despite current limitations a number of applications are closing the gap between *smart television* and *video Internet*. The area where these two areas converge currently constitutes the most fertile ground for innovation and entrepreneurial activity – as well as for creation of entirely new types of content. Innovative forms of graphic-rich "Internet channels" are building on the creativity of previously separate *métiers* of video production, computer imaging and information management. Similarly, high-end networked video-games are building devoted constituencies of players across national borders. In a seamless and scaleable digital environment, innovative hybrid multimedia applications are appearing – such as digital television 'infomercials' with Internet response mechanisms (for immediate ordering), CD-ROM catalogues with Internet

[41] Subject of a Call for proposals in 1997 under the Telematics Applications Programme. Digital sites are physical sites in geographical areas such rural areas, small towns, cities or regions, in which local needs of citizens and businesses can be met through IT and telecommunications multimedia applications.

[42] See COM(97)553final of 5.11.97, *Fifth Framework Programme, Research and Technological Development (1998-2002), Commission Working Paper on the Specific Programmes: Starting points for discussion*.

connections (for content or price updates) and commercial Web sites with local CD-ROM extensions (for memory-intensive multimedia demonstrations).

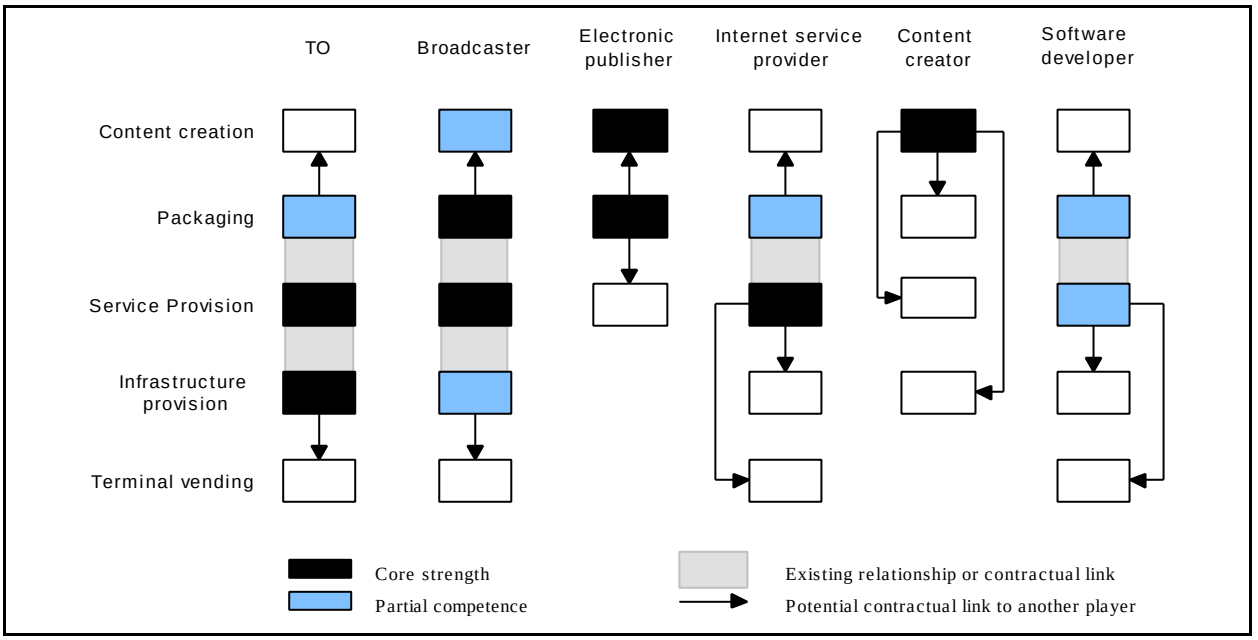
At the delivery end of the value chain, players are moving into what are for them new areas of activity. New features are being added to services on all networks. In addition, the services themselves are changing by combining the features of hitherto separate services. Thus television programmes are 'data-enhanced' by the parallel availability of text and graphics. One pilot project, for example, supplements broadcasts of horse-races with supporting text and facilities for on-line betting. The same possibilities are offered by digital radio.

New players

As convergence enables incumbent players in the telecommunications broadcasting sectors to expand their roles, it also marks the entry of powerful new players from publishing and IT industries. For information providers, such as publishers, database operators and financial information services, the Internet constitutes a crucial extension of their traditional know-how, and an ideal means of recycling and "repurposing" rich stores of information.

Similarly, IT companies are exercising significant influence on shaping the new services market in Europe – as they move towards generalised on-line distribution of software and multimedia content, make substantial investments into cable and television business, and act as integrators of advanced television trials in Europe. Underpinned by the exponential growth of computing power, kept responsive to change by shortened product life-cycles, used to operating in a fiercely competitive environment, and historically unhampered by cumbersome regulation, the contribution and potential of the IT industry to first drive and then benefit from convergence should not be underestimated.

Fig.4: Locations of the Major Players in the Value Chain and Relationships between them



(Source: Squires, Sanders Dempsey LLP and Analysys Ltd.)

New market structures

The significant merger, acquisition and alliance (M&A) activity described in Chapter I are motivated by a range of commercial and strategic factors. The trend towards convergence would be one of these, albeit an important one. Some argue that new market structures reflect a substantial shift in the value chain, with value migrating from simple delivery to the production and packaging of content or the offer of on-line of services and transactions. Liberalisation and competition, coupled with digitisation and significant increases in network capacity of both broadcasting and telecommunications networks, is rendering the transmission and delivery of services a commodity item, converting it into a low-margin high-volume business. Firms currently operating in the lower parts of the value chain are therefore seeking to increase volume on their core activity, through horizontal alliances or organic growth into new geographical markets.

At the same time, they are moving up the value chain to higher margin activities through vertical concentration. Telefónica's purchase of Antena3 TV in Spain, the STET group's creation of Stream in Italy and Microsoft's acquisition of cable television operator Comcast in the USA are all examples of companies moving across sectors as much for strategic as for commercial, profit-motivated reasons. Fig.4 maps out these strategies by type of market player and by element of the value chain brought into play. It also indicates the types of commercial relationship which are emerging between different actors. It should be noted, however, that the representation is schematic and, that neat distinctions between content creation, packaging and service provision are sometimes difficult to establish.

The situation is reinforced by the emergence of new industries filling in the gaps between adjacent sectors; some of the start-up companies pioneering on-line computer networking services a decade ago have grown into multi-billion dollar groups today. CompuServe and American On-line are two cases in point. The recent linking of those two businesses together with Worldcom is a further example of the fluidity of current market structures .

II.3 The consumer perspective

The nature and potential growth of market demand for the new services is the greatest uncertainty facing market players. The signals from the marketplace are conflicting. Supply-side indicators, in terms of M&A activity and investment in new service development, give a positive impression of market potential. On the other hand, although growth rates in Internet services are impressive, only around 8% of European citizens are using the Internet at work, and around 4% at home. This represents a small proportion of the total consumption of audiovisual material, in which TV set penetration exceeds that of the telephone. Moreover, many view the passive consumption of family television viewing to be the mainstay of audiovisual consumption for the foreseeable future.[43]

However, there are some indications of potential change in the patterns of consumption of services and in the home environment. Some of these are taken from market developments in North America, where the use of PCs in homes is currently much greater than in Europe. Parallels drawn from the US market will only be valid therefore to the extent that a similar level of PC use can be achieved in Europe.

The changing patterns of consumption

Consumers are likely to use new products and services offered through convergence only insofar as those services are useful to them. The take-off of new services cannot therefore be simply supply-driven, but must take account of demand and, in particular the consumer viewpoint. This is reflected in consumption trends which are beginning to show the first signs of a convergence in the home:

- in 1998, for the first time more personal computers will be sold in the world than television sets; this must of course be set against the very high penetration of TVs in the home, and the fact that PCs are sold to both businesses and homes;
- in 1995, Americans spent less than half of all screen-viewing time in front of computers; recent US audience measurements indicate that Web users already consume 59% less television than average viewers and it is estimated that the TV set's share of screen time will be half that of the personal computer in 2005; on the other hand, audience figures for 1995/96 show that the average daily viewing time in Europe increased by 4 minutes, compared to a decrease of 2 minutes in the US;
- research into activities displaced by increased personal computer usage shows that watching television loses out rather than reading books and magazines, or playing console video games. According to Price Waterhouse, young adults in the US between 18 and 35 who used to spend 4 hours a day watching TV now spend one of those hours 'surfing the net'.

In terms of available leisure time and expenditure, the youth segments are already opting for interactivity. Video games alone represent nearly 20% of under sixteen year olds' total media consumption in some markets, according to Arthur Andersen.[44]

Changing home environment for consumption

A key factor in the take up of new services will be the penetration of PCs in the home, and particularly multimedia and Internet capable PCs. Here whilst PC penetration levels of up to 30% are common in most Member States, penetration of multimedia PCs is considerably lower and Internet usage in the home as mentioned above is

[43] See *Economic Implications of New Communication Technologies on the audio visual markets*, Study carried out for the European Commission by Norcontel (Ireland) Ltd., March 1997.

[44] " He who hesitates has no audience" , Jolyon Barker, *Broadcast*, 10 May 1996

growing steadily but from a low base. On the other hand, the current average life of a PC is three years suggesting the current stock of PCs will become multimedia capable fairly quickly, whilst increasing familiarity with these technologies at work and in schools will help to boost home take up further.

One major change in the home has been the transition from collective, family viewing of two or three generalist TV channels to individual family members viewing alone, selecting from the much broader range of channels on offer in today's multi-channel environment. The multi-channel broadcast environment itself competes with packaged media, played on video recorders and video-game consoles. All of this will increasingly compete with the computer, particularly with its use on line.

Aware of the changing patterns of consumption, the television and computing industries are vying for viewers' attention. Broadcasters and TV manufacturers are enhancing the interactive capabilities of their services and equipment. Today's digital television set-top boxes already combine television and telecommunication functionality. TV sets can already double as monitors when connected to low cost Internet appliances. Many in the consumer electronics industry predict that TV sets with built-in PC capability, including Internet access, will become an important feature of the consumer market in the near term.

From the other end of the spectrum, the computer industry is already offering multimedia PCs which allow viewing of television channels. Hybrid WebTV set-top boxes combine Internet and digital TV reception with facilities allowing storage and manipulation of video content, enabling applications as diverse as downloading of films and sending of video-clips as E-mail.

Whether the PC/TV or the TV/PC will win this battle is, at the moment, quite unclear. What is certain however is that the consumer's "home platform" is set for significant evolution over the next few years. Yet at the same time and in parallel, consumer demands and needs for better access to information will also allow for convergence of those telecommunications, media and information technology products and services that cater to public interest domains such as education, health, environment and transport.

II.4 Summary and questions

This chapter discussed the overall political and economic context for convergence, placing it against the background of the Information Society, and describing the range of Community-level activity in this area.

It then went on to discuss market trends from both supply and demand perspectives, punctuating optimistic views on the future realisation of convergence with a realistic view of today's patterns of consumption, and the relative starting points of different platforms such as the Internet and free-to-air broadcasting.

Question 2: The socio-economic, business and consumer impact of convergence

Chapter II highlights the potential for convergence to have a significant impact on society, on employment, growth and competitiveness of businesses in Europe, and on the way we access a range of services, information, entertainment and culture.

(A) Will convergence have a significant impact on job creation, as well as on education and training in the European Union? How is convergence likely to impact the way in which we work? Will its effects be spread evenly throughout the European Community?

(B) What effect are current developments likely to have on telecommunications, media and IT sectors, in terms of the underlying economics of those sectors, the services offered and the likely service providers?

(C) What evidence is there of changes in Europe in the way services, information, entertainment and culture is being accessed in the home and in the office? What are the implications of current levels of PC penetration, Internet use and TV penetration for the take up of new services? What action (if any) is needed to overcome low levels of multimedia computer penetration and Internet use?

(D) In the light of the positions put forward in the Commission Working Paper on the Fifth Framework Programme,[45] what kinds of Community RTD projects should be launched in the context of convergence?

[45] Op. Cit. Note 42

Chapter III
Barriers to convergence

Convergence is already showing signs of being a key driver of current developments in telecommunications, media and information technology industries. The range of developments and trends for comment identified in Chapters I and II above have the potential to impact substantially on the take off of the information society in Europe.

In order to formulate an appropriate response to current developments, it is important to launch a broad debate on what, if any, barriers exist - actual or potential - which may hold back the trend towards convergence.

Chapter III attempts to identify such barriers and invites comments on their impact. Not all the barriers identified are regulatory in nature, nor is a regulatory solution the only means of resolving potential problems. Nevertheless, it seems sensible in the overall context of this Paper to invite reflections on a wide range of factors which might impact upon the process of convergence.

Where regulatory barriers are identified therefore, there should not be an automatic assumption that a regulatory response is required. As stated earlier, the application of competition rules to this sector is important, and market solutions which remove barriers to convergence within the context of those solutions will often be more appropriate.

At a Community level, actual or potential barriers must be assessed against the basic objectives of the Treaty, such as the establishment and functioning of an Internal Market; the promotion of a system of undistorted competition; the realisation of trans-European networks, or the maintenance of a high standard of consumer protection. They must also be examined as well as against the specific freedoms envisaged in the Treaty, such as the rules relating to the freedom to provide services or the right of establishment.

Rules creating restrictions need to follow a general public interest objective (as laid down in the EC Treaty or by the ECJ) and must be proportionate to that objective to be acceptable. At the same time, any Community action (including action to harmonise divergent national rules), would pursue these general public interest objectives, and would be subject to the principle of subsidiarity.

III.1 Existing barriers

In the following sections, we attempt to identify key actual and potential barriers to the development of the convergence phenomenon and ultimately to the realisation of the Information Society in Europe.

Access to users. Approaches differ between sectors with regard to the ownership and operation of networks. This means that many services will have a limited choice of routes to the customer. Even where legal monopolies have been abolished, the economics of the local loop may leave current telecommunications and cable TV network owners with a predominant role in connecting customers in many markets. Where bottleneck facilities are controlled by vertically-integrated players, there is the potential to limit competition at the service level.

Regulatory restrictions on use of infrastructure. Current restrictions in some Member States (and not others) regarding what types of services can be carried on different infrastructures could make it difficult for operators to formulate unified strategies addressing pan-European markets. It may also prevent economies of scale being realised. The resulting higher unit costs, and hence tariffs, could hold back the delivery of innovative services.

Prices for telecommunications services. High prices for telecommunication services and for the underlying network infrastructure used to deliver services may impact significantly on the demand for services. Among the reported reasons for Internet's success in North America is the widespread application of a flat-rate tariff structure offering 'free' local telephone calls, and the fact that competition has led to lower charges for leased network capacity. [46] This results in significantly lower costs for access providers.

Availability of content. As mooted in Section II.1, expansion in the means of delivery brought on by improvements in technology and by convergence may shift the bottleneck from delivery to content, and may lead to a shortage of adequate content in the medium term. Premium content is already a key factor for success in both digital and analogue television markets, Continued shortages could inhibit new market entry, and with it competition and innovation.

Fragmentation of EU market. Expansion in the number of broadcast television channels will be likely to be at the expense of the market shares of existing broadcasters. Shrinking market shares could be offset by widening the target audience beyond national frontiers. Similarly, as new services develop, much innovation will come from small players exploiting niche markets, or from large players funding large R&D budgets.

[46] According to a 1997 OECD report, 20 hours of Internet use cost $38 in Finland, $64 in the UK, and $74 in Germany, compared to $29 in the US.

Either way, they will both need larger volumes than can be provided by national markets in order to defray their costs. Whilst TV channels are free to seek larger audiences as a consequence of the *Television without* Frontiers Directive, the principle challenge for them may be one of multilingual, multi-cultural audiences, rather than potential barriers to establishment in countries in which they wish to establish a commercial presence.

Insufficient IPR protection. Content providers will only be willing to make content available if their intellectual property rights are sufficiently protected. Similarly, publishers and operators will only invest in innovative services if they are confident that new means of delivering information and/or services provides an adequate degree of protection for the intellectual and industrial effort of their organisations and those of content providers. Insufficient protection is already a barrier for off-line electronic content, and this could project into the on-line world. Recent WIPO agreements referred to later in the Paper are helping to clarify the current situation.

In view of advanced state of current Community initiatives which adapt the existing legal framework in this area to the digital environment, this Green Paper does not address regulatory issues raised by copyright and related rights. These particular issues have been extensively dealt with in the Green Paper on Copyright and Related Rights in the Information Society and in its follow up Communication,[47] and the resulting approach takes due account of the evolution of technologies towards convergence.

III.2 Potential barriers

Regulatory uncertainty Regulatory uncertainty resulting from the scope of current definitions; the way they are applied or whether they fit changing market structures or service characteristics could constitute an important barrier to investment by market players. Whilst many definitions today (at both a national and Community level), such as those of *telecommunications*, *voice telephony*, *television broadcasting* or *information society services* will continue to remain valid for many activities, the provision of services may be nevertheless be held back where those definitions leave businesses uncertain as to the regulatory treatment which their services will receive.

In some cases, this may simply be a risk that, notwithstanding current definitions at a Community level for both broadcasting and telecommunications activities, regulators in some Member States may place a particular novel service under one regulatory regime, whilst it is considered to fall under another regime in other Member States.[48]

Furthermore, within Member States barriers could result if similar services were regulated differently, for example on the basis of the platform over which they are delivered.

In other cases, the characteristics of services in the future may mean that they straddle more than one regulatory area on the basis of current definitions. This may result in a disproportionate regulatory burden on certain services.

Finally, the technological and market trends identified in Chapters I and II may also challenge the basis on which definitions are currently drawn up.

One example of regulatory uncertainty arose during the recent French election campaign, where rules prohibiting the publication of opinion polls in the week prior to the election applied to off-line media, but not to polls published on the Internet. A number of editors in these circumstances ignored the ban which placed traditional media at a disadvantage[49].

Multiple regulatory bodies. The process of obtaining regulatory clearance in all Member States and potentially from different regulatory bodies for a particular package of services may create substantial overheads for those wanting to operate on a pan-European basis. The provision of services may be held back where market players are subject to a number of regulatory regimes or must deal with multiple regulatory bodies, for example, where a network is required to be licensed both as telecommunications infrastructure and as a broadcasting network (because it is used to offer both services).

Market entry and licensing. There are differences within the telecommunications, media and IT sectors with regard to whether or not market entry is unrestricted, limited or subject to monopoly or special rights. The IT sector is generally free of licensing procedures.

Any use of licensing or any regulatory limitation on market entry represents a potential barrier to the provision of services, to investment and to fair competition and should therefore be limited to

[47] COM(95) 383 19.7.95 and COM(96) 568, 20.11.96, respectively.

[48] One example is Video-on-Demand which according to the Squire Sanders Dempsey Study is considered either treated as a value-added telecommunications service or has not yet been formally categorised in all Member States, except France and the UK, where it falls under the broadcasting framework and Germany, where it falls within the new category of " teleservices" .

[49] OECD op cit note 5

justified cases. In particular, the trend should be towards limiting regulation where potential barriers exist, rather than extending heavier regulation to more lightly regulated sectors in order to equalise market conditions.

Where licensing continues to be important, there is considerable variation between sectors and between Member States in the length of time it takes to obtain licences; the transparency of procedures; the duration of licences and the fees paid. Many telecommunications and broadcast network licences are national in scope, but others - particularly for cable TV delivery are regional or local in scope. All of these factors, whilst acceptable in the context of the specific sectors, may make it harder or more expensive for organisations to offer an integrated package of services, particularly across borders. This may represent a disproportionate burden given that the technology promotes such integration and there is likely to be increasing demand from both business users and consumers for such integration.

Access to networks, conditional access systems and content. The issue of access is principally a matter for commercial negotiation, subject to the overall safeguards provided by competition rules. Nevertheless, there is currently an asymmetry in that access rules are in place only for certain networks (for example, the interconnection and open network rules which apply to telecommunications networks, but not to infrastructure used for broadcasting activities. Similarly, a framework exists for conditional access systems for digital television, but not for all types of digital services. (Note that in the latter case, the UK is currently consulting on the development of common framework for conditional access systems for all digital services).

Where market players control the access to the customers, for example, through ownership of the local loop, or through control of conditional access technologies, the company concerned may be able to discriminate in favour of its own services.

With regard to access issues linked to content, normal commercial principles generally apply, tempered only by applicable competition rules. One exception to this is the treatment of certain "premium" content in Member States, such as national sporting events where the revision to the Television without Frontiers Directive has provided for the mutual recognition across the Community of events reserved by Member States for free-to-air television broadcasting.

Allocation of radio frequency and other resources. The provision of services (and the development of effective competition) will depend on the availability of sufficient network capacity, which for many services means access to radio spectrum. The parallel expansion of television broadcasting, mobile multimedia and voice applications, and the use of wireless technologies within fixed networks will lead to a significant growth in demand. Where there are marked differences in the amount of spectrum available or the way in which it is allocated, potential barriers are likely to arise, impacting the underlying cost-bases of network operation in the different sectors, potentially encouraging competitive entry into one sector rather than another.

Varying approaches to the achievement of public interest objectives. The regulatory frameworks for each of the sectors affected by convergence contain a variety of measures seeking to ensure particular public interest objectives which are specific to those sectors and which are consistent with Community objectives. Indeed the Commission attaches great importance to the delivery of general interest services[50] in particular, in ensuring social and regional cohesion in the Community, whilst in the telecommunications area, the steps taken to ensure universal service at a national level now flow from a framework established at a Community level. Nevertheless, the manner in which such objectives are pursued (rather than the objectives themselves) may represent a potential burden to the organisations subject to obligations in respect of their implementation.. In the context of the cross-border provision of services, tensions between differing approaches between sectors and between Member States, could deter such service provision or investment in innovative services or networks.

Public confidence in new environment. Where the level of protection relating to consumer protection, the legal treatment of electronic transactions, or data protection and privacy vary across sectors, users and consumers may lack confidence in the services and systems made available, holding back the development of converged services.

Lack of standards supporting interoperability and interconnection of converging networks. The goal of ensuring that any user can communicate with any other user will be held back where market action is unable to deliver products and services which are interoperable. Proprietary standards controlled by dominant players could limit such interoperability.

III.3 Question

[50] See COM(96)443

Question 3: Barriers to convergence

Chapter III highlights both actual and potential barriers to convergence.

What is the likely impact of the barriers identified and are there other barriers or factors which may have a significant impact on the convergence process in Europe?

Chapter IV
Regulatory Implications

In examining the impact of barriers identified above, Chapter IV considers first whether certain features of the convergence phenomenon create new and specific challenges for regulation.

Section IV.2 identifies possible approaches towards key regulatory. Section IV.3 looks at meeting public interest objectives and Section IV.4 examines options for a possible future regulatory model. The chapter concludes with an overview of relevant international issues.

IV.1 Challenges to existing regulatory approaches

Areas where the convergence phenomenon could raise difficulties for existing regulatory approaches are identified below. These challenges apply both to the substance of regulation and to its practical implementation. Possible solutions to these issues are discussed in Sections IV.3 to IV.5.

The role of regulation

Regulation is not an end in itself. Instead, it is simply a tool, alongside the use of market forces, for achieving wider social, economic and general policy objectives, such as those highlighted in Chapter II. This has already been recognised in the Commission's Communication on electronic commerce, which proposed the principle of "*no regulation for regulation's sake*".[51] This principle applies equally to all areas of convergence. The fundamental objectives underpinning regulation in the Member States are not undermined by convergence. These objectives are varied and tailored to the specific needs of different sectors, but include national goals such as promoting efficiency, economic welfare, and the public and consumer interest. At a Community level, similar aims are reflected in the provisions and objectives of the EC Treaty.

Nevertheless, the nature and characteristics of convergence which are examined below, as well as the perceived need of industry actors for regulatory intervention to be limited and closely targeted, should lead public authorities at both a national and a European level to re-examine the role and weight of regulation in a converging marketplace. Three key issues can be highlighted:

[51] Op.cit. The three other principles set out in that Communication are also important in the context of convergence. These were that any regulation must be based on Single Market freedoms; must take account of business realities; and, must meet general interest objectives effectively and efficiently.

- *The role of market forces*. Some commentators place particular stress on the need to place greater reliance on the ability of market forces to ensure regulatory objectives. They would argue that this philosophy is reflected in the evolving approach in most Member States to universal service in telecommunications, or in the IT and broadcasting worlds by the industry-led development of interoperable standards and software. Others are doubtful about the ability of market forces to provide adequate *ex ante* guarantees for consumers, and recognise an important role for regulation in safeguarding public interest objectives.
- *The balance between sector-specific regulation and competition rules*. A further key issue is the balance between competition rules and sector-specific regulation, with many arguing for a preference to be given to the application of competition rules to individual cases within a converged environment, rather than the further development of extensive regulation.
- *Finding workable solutions*. Where regulation is in place it must apply in a workable and timely manner. The global nature of the Internet or the regional nature of satellite-delivered services point to the potential difficulties of enforcing the rules of one Member State in other countries; whilst the rapid pace of change in terms of services and products, measured in months and weeks, presents a real challenge for anyone seeking a legislative solution to any particular problem. Such solutions at a Community level tend to be measured in months and years.

The challenge to the consistency of regulation

A key feature of a converged environment is the possibility that any network can be used to deliver a much wider range of services than is currently the case. It does not automatically follow that the delivery of different services over a single network or via a single service platform makes those services the same, nor that the public interest objectives underpinning regulation automatically transpose from one service to another.

For example, whilst a film, a song, a railway timetable and a phone conversation may all be carried in a digital form, this does not result in the user treating these different services/ activities as interchangeable. In the same way, regulatory approaches to each of these services, whilst potentially based on similar general principles, are likely to continue to be tailored to the specific characteristics of these different services.

Nevertheless, as stated in chapter III, regulating essentially similar services differently, particularly, on the basis of the technology used to deliver the service, could represent discriminatory treatment which might hold back competition, investment and the provision of services. One example of the treatment of opinion polls under French election law was already cited. Another example could be the limited scope of the current Interconnection regime in telecommunications which would offer interconnection rights to an organisation operating a public telecommunications network, but not to someone operating a broadcasting network. Interconnection between the two may be of particular importance in the context of services which use broadcast media to download information and services, but rely on the telecoms network to provide a return channel.

In assessing such differences in regulatory treatment both across sectors and between Member States, any analysis at a Community level would need to consider whether continuing differences were consistent with public interest objectives identified in the Treaty and by the Court of Justice and whether the rules in place were proportionate to the objective sought. Where the answer to either question is no, the rules in question could be attacked before the Court of Justice.

Where the barriers resulted from measures which are fully consistent with the Treaty and where principles of mutual recognition could not be applied, Community measures (such as harmonising legislation) might be then justified.

The challenge of globalisation

The globalisation of services is a feature of the new landscape. While satellite television broad-casting represents one example, it is the Internet which constitutes the quintessential global network. The Internet's structure and ubiquity potentially allow it to defy attempts to apply existing regulatory objectives at national level.

In the new global environment, the way in which networks and services are regulated in different regions has the potential to impact substantially on investment in those regions. Excessive or inadequate regulation in one region could result in a migration of economic activity elsewhere, with adverse consequences on the development of the Information Society in the former region.

The challenge of abundance to regulation based on scarcity

Convergence may challenge current regulatory approaches, particularly, with regard to the licensing of networks and allocation of resources,

where such approaches reflect a perceived scarcity of both radio-frequency and of content.

Current market technological trends, such as substantial increases in network capacity; the possibility of content and services to be delivered over a number of platforms; the increase in competing routes to customers and improvements in digital compression suggest that in a fully digital environment, scarcity may over time become a less significant issue, calling for current regulatory approaches to be reassessed.

Nevertheless, the removal of scarcity in the transmission network will not necessarily be accompanied by a corresponding increase in content or services (in particular, "premium" content or services needed to fill those channels.) In any event, pending the complete migration of the broadcasting sector from analogue to digital services, capacity bottlenecks are likely to continue for the foreseeable future.

The challenge to distinctions between public and private activities

Convergence will not prevent the implementation of regulation based on distinctions between what is private or public, but it may shift the boundaries of where lines between the two can be drawn. This could have consequences for the level of regulation applied to a particular service. To the extent that rules have been formulated on the basis that particular networks, services or activities are public rather than private,[52] a reassessment may be required to determine whether current boundaries between what is public and what is private remain valid in the light of technological developments. For example, new means of delivering services, interactivity, and the possibility of per-transaction payments may make it harder to draw those lines in the future.

Another practical example, is reflected in the two recent WIPO treaties which relate, inter alia, to copyright. These have clarified that a "public communication" for the purposes of copyright law includes the situation where a work is made available to the public (for example, via a web site) in an interactive way.

[52] One example in telecommunications, is that whilst public telecommunications networks may be subject to conditions relating to both public interest objectives and to technical requirements, private telecommunications networks may only be subject to technical requirements. In broadcasting, the definitions of broadcasting in a number of Member States specifically include the element of delivery to the public to categorise services falling within the broadcasting regime.

The challenge to regulatory structures

The fragmentation, complexity and diversity of regulatory structures involved in the converging sectors was one of the issues highlighted in Section III.2 above. To the extent that a risk of overlapping regulation exists or the need to deal with multiple regulators within or between Member States, market players may call for a rationalisation of current structures in order to avoid unnecessary administration creating barriers. For example, where services can be offered over a single network, organisations may benefit from dealing with a single regulatory authority in a Member State on questions linked to that network, irrespective of the services offered over the network.

Question 4: The impact of convergence on current regulation

Chapter IV.1 examines the challenges which current developments pose to the balance between regulation, competition rules and reliance on market forces. It also considers how the convergence process may impact on the principles underpinning current regulation in the telecommunications, media and IT sectors.

(A) Do current developments require more or less regulation in the sectors affected by convergence, more or less reliance on competition rules, and more or less reliance on market forces to achieve the objectives identified in earlier Chapters?

(B) Whether and if so, to what extent convergence challenges the principles underpinning existing regulatory approaches in the telecommunications, media and IT sectors?

IV.2 Tackling the barriers - The regulatory issues

This section examines seven broad areas where potential regulatory barriers have been identified:

- Definitions
- Market entry and Licensing
- Access to networks, to conditional access systems and to content
- Access to frequency spectrum
- Standards
- Pricing
- Individual consumer interests

The section does not address a number of issues which are currently the object of separate initiatives within the Commission. These include

areas such as media ownership, digital signatures, and encryption, and as mentioned above, intellectual property rights, copyright and related rights.

IV.2.1 A need for new definitions?

Current definitions delimit the boundaries between different sectoral regulation and different regulators. Regulation is linked to the definitions of activities. Although regulation can be "technology neutral", as in the broadcasting sector (and increasingly in the telecoms sector) it may be linked to the technology used to offer services, as well as between areas which are regulated and those which are largely free from detailed rules.

The convergence process will not remove the need for definitions, but uncertainty about the regulations applicable to activities or different definitions at national level could create barriers to investment or to the provision of services. At the same time, it should be noted that the fact that different services can be delivered over the same network does not in itself alter the character of the services so that they become one and the same service.

In the light of the potential barriers identified above, current approaches to regulatory definitions (and the way in which those definitions are applied by regulatory authorities) should be examined to consider whether they:

- are sustainable in the light of technological developments;
- result in the same service falling under a more than one regulatory regime, and where it does, whether that is justified.
- lead to discrimination by allowing similar networks or services to be regulated differently.

A number of Member States have provided definitions for certain new activities. In Germany, new concepts of "teleservices" and " media services" have been created, focused on the nature of the activity rather than the underlying technology. Audiovisual law in France has also focused on the nature of the service rather than its underlying platform.

Possible options

One option would be to continue to work with existing definitions, recognising that these remain valid for the majority of services offered and to extend, where appropriate, the principles underpinning current regulation, whilst adapting the way in which it is applied to take account of the specific characteristics of the "new" services.

A second option might be the creation of a separate category of "new" services to co-exist with existing definitions.

A third option would be the adaptation of current definitions used in telecommunications, and/or broadcasting to reflect current trends and developments.

IV.2.2 Market entry and Licensing

Among the potential barriers identified in Chapter III were a number resulting from the impact of the differing market entry, licensing and operating conditions in the sectors affected by convergence. This raises a number of issues which are considered below:

Market Entry

The grant of special and exclusive rights by Member States is not incompatible with the Treaty rules, where such rights are justified for the fulfilment of a task of general economic interest assigned to the undertaking concerned and proportionate to the achievement of the objective in question, even if those rights result in a restriction of competition or a barrier to the free movement of services.

In this context, some would advocate that where any network can potentially carry any service, public authorities should ensure that regulation does not stop this happening. They would argue that to allow artificial restrictions on the use of networks, or to maintain monopolies where other parts of the converged environment are fully open to competition, may deny users access to innovative services, and create unjustified discrimination. Such an approach would be seen by them as running counter to the technological and market trends identified earlier in this Paper.

Barriers could occur in a number of ways:

(i) the grant of monopoly or special rights over networks or services to one or a small number of companies, may prevent others from providing the same service;

(ii) limiting the services that can be offered over a given network (for example, preventing a telecoms operator from using its network to offer entertainment services)

(iii) requiring certain services (such as free-to-air broadcast channels) to be carried, which reduces the scope for other services to be provided,

Others would argue that the grant of limited rights or limiting the use of networks to particular purposes are important ways of encouraging investment.

Some also argue that these types of restrictions are particularly important where competition is at an early stage or where a particular player enjoys a very strong position (for example, over a competing network or over "premium" content). In such cases, specific safeguards can ensure that potential competitors are not discriminated against or that there are adequate incentives for them to enter the market. According to this argument, appropriate safeguards might take the form of accounting separation or transparency requirements, structural separation or even full line-of-business restrictions.

Licensing

Many activities and areas in the computing, and IT areas are not subject to licensing requirements. That is likely to continue to be the case in the future and the Commission sees no reason why there should be any change in this practice, providing IPR issues are effectively addressed.

At the same time, licensing is likely to remain a key regulatory tool through which public authorities can exercise control over their national markets, particularly in relation to the provision of telecommunications and broadcasting networks and services.

Any assessment of the justification for, and effectiveness of, licensing procedures must in the first instance be made in the context of the specific sector to which these rules are applied. Nevertheless, the range of potential barriers identified in Chapter III linked to licensing suggests that this issue could need to be examined more closely in the light of technology and market trends.

Some commentators argue that a key aim must be to make it easier to get into the market and to move towards lighter obligations applied in a consistent manner across the converged environment. They are therefore encouraged by examples in the computing, Internet and on-line publishing industries, where a degree of self-regulation, for example, in relation to harmful or illegal content on the Internet, has supplemented the application of general laws, such as competition or consumer protection rules applying across whole range of economic activity. Even so, self-regulation is not without risks for the Internal Market given the greater possibility for divergent approaches in developing self-regulation, unless co-ordinated to some degree at a Community level.

At the same time, even where licensing systems are not needed and self-regulatory solutions are proposed, consumers may still require guarantees that their interests are adequately protected and that the respective responsibilities of service providers and operators are identified with regard to the consumer. Consumers should be fully involved with the development and operation of any self-regulatory approaches.

The global dimension of the Internet and other communications and broadcast services will also impact on approaches to the enforcement of licensing, and call into question the relevance of national licensing of activities carried out either within a Member State or delivered by regional platforms, for example, by satellite.

Encouraging innovation and efficient operation through licensing. Awarding authorities could consider moving away from licensing approaches which prevent innovation or limit efficient operation. One example, in the telecommunications area, would be tying the delivery of services to a particular technological platform - for instance, by requiring separate licensing (beyond frequency assignment procedures) for a fixed network operator wishing to use wireless-based systems in the local loop. A new approach to the licensing of broadcast services may be necessary. At present broadcasters are, generally speaking, licensed or authorised on a channel-by-channel basis by the relevant authorities within each Member State. These systems, which are a product of tradition and the historical development of television broadcasting services may require reviewing in a new multichannel digital environment. Possibilities such as the licensing of broadcasters for a set of services (such as a satellite package or a terrestrial multiplex), rather than for individual channels should be evaluated. The 1996 UK Broadcasting Act, which provides for multiplex services licences for digital terrestrial television, is an example of what is perhaps the beginning of a trend that should be encouraged.

Common principles for the award of licenses As indicated in Chapter III, divergent licensing conditions may deter market entry and act as a barrier to an internal market. Where such barriers are identified, they would have to be justified by a public general interest objective and be proportional to that objective.

To avoid such divergence, there may be scope for applying a common set of principles across the Community. These could include:

- the awarding authorities should be independent from actors in the sector,
- procedures should be transparent and non-discriminatory, set against defined timetables, leading to decisions which should be open to appeal and

- Any fees associated with a licence be in proportion to the level of effort involved in administering the licensing process, and not constitute a discriminatory levy on expected profits.
- Notwithstanding the previous principle, fees may, in the case of licensing of radio-frequency be set at a level which encourages the efficient use of the resources allocated.

IV.2.3 Access to networks, conditional access systems and to content

The question arises as to whether rules for open access currently applied to telecommunications and digital television conditional access infrastructures should be applied more widely in the sectors affected by convergence. If market and technology trends develop as suggested in Chapters I and II of this Green Paper, convergence is likely to see a shift in the value chain, such that content production, packaging and service provision increase in value (though not necessarily as separate business activities), whilst carrying services over a fixed or wireless network may, as reflected in some merger activity, become comparatively low value activities. This trend will be accompanied by attempts on the part of today's network operators to extend their activities into higher value business areas.

Access at either end of the transmission network (i.e. the delivery of the service to the user's phone, PC or television and the ability to access the network in the first place to offer services or content) will be of crucial importance.

In general the terms on which access is granted to networks, to conditional access systems, or to specific content is a matter for commercial agreement between market actors. Competition rules will continue to play a central role in resolving problems which may arise.

This raises the issue of the role for sector specific rules at a Community level alongside the general Treaty provisions promoting undistorted competition and the free movement of services.

EC legislation is now in place supporting commercial agreements for the interconnection and interoperation of telecommunications networks and services. Similar legislation is in place in relation to digital television, in particular regarding Access by third-party broadcasters to conditional access systems.[53]

The emerging market will consist of players of very different sizes, but as indicated above there will also be strong vertically-integrated operators from the telecommunications, audiovisual (principally broadcasting) and IT/software industries building on their traditional strengths and financial resources. Issues which could arise across the different sectors include bundling of content and services, or of network capacity and services, predatory pricing, cross-subsidisation of services or equipment, and discrimination in favour of own activities.

Furthermore, the predominant position of current fixed telecommunications and broadcasting operators in the residential market will mean that for the foreseeable future they will control bottlenecks for accessing customers. Apart from the local subscriber loop, these include conditional access and navigation systems.

Access to networks

As stressed above, as a general rule issues of access to networks or to content, are a matter for commercial agreement, subject to the application of competition rules. Nevertheless, in some areas, regulatory intervention to support the commercial process has been provided for within current frameworks.

In the telecommunications sector, the framework agreed for interconnection ensures that users can contact any other user and that service providers can access those customer on fair, non-discriminatory and proportionate terms. Additionally, powers to intervene and resolve disputes are given to the national regulatory authorities for telecommunications and a number of safeguards are put in place to ensure greater transparency and non-discriminatory behaviour.

As indicated in Chapter III, the fact that an open framework is applied to one set of infrastructure but not to others may create barriers and distort investment, particularly, if convergence of technologies extends over time to the industry and market and service levels. The issue in the context of possible convergence may therefore be whether there is a case for the extension of open access principles such as those applied to telecommunications infrastructure to other networks, or whether there are other principles which might be developed.

Even within the telecommunications sector, the development of the Internet is raising a range of issues connected to the terms on which Internet access providers get access to current fixed and mobile networks. One issue is whether they should enjoy the same interconnection rights as other players and whether they should be able to get access to unbundled service elements, whilst

[53] Directive 95/47/EC on the use of standards for the transmission of television signals, O.J. No. L 281/51, 23.11.95.

another issue is whether such providers in offering a range of telecommunications services should share some of the obligations of providing telecoms services.[54]

The issue of access to conditional access systems may become more significant than the issue of control over the pipe up to the point at which it connects to such a system.

Again, in the telecommunications sector, Community policy does not require a full unbundling of the local loop, or a structural separation of the associated infrastructure, from the provision of services carried over it. This does not exclude appropriate safeguards or requirements being introduced under the competition rules. In reality, the issue of unbundling of the local end of transmission networks is complex and must be closely linked to the degree of overall competition in the market concerned, the availability of viable alternative distribution channels and the starting point for competition in the particular market. Some argue that unbundling may act against the consumer interest in the longer term by removing economic incentives for organisations to put their own wired or wireless networks in place.

Conditional access systems

Conditional access systems are the technical means by which content and service providers can recoup their investment either through subscriptions or charges for individual consumption. The Television Standards Directive provides a regulatory framework for conditional access to digital television services, based on a requirement for those operating such systems to offer broadcasters technical services on a fair, reasonable and non-discriminatory basis. The Directive takes a deliberately balanced position for the start-up phase of this new industry. Its requirements are sufficiently light to encourage innovation and investment in a rapidly evolving technical and commercial environment, and sufficiently strong to protect fair competition and consumer welfare. The Commission is concerned at the pace of implementation of this Directive into national law in the Member States. It is actively employing the powers given to it by the Treaty to ensure timely and correct implementation. Where incorrect implementation has occurred, the Commission has acted vigorously to ensure proper compliance with the Treaty.

Navigation systems have emerged as a tool to help users manage the growth and range of information and services in the Information Society. Examples of navigation systems include Browsers (e.g. Netscape, Microsoft Explorer), search engines (Altavista, Yahoo, etc.) and electronic programme guides (EPGs).

Currently, they form two distinct market segments - Browsers and search engines are tools for exploring Internet web pages, whereas EPGs represent the electronic "zappers" of the future, guiding viewers through a myriad of digital television programmes and channels. Many consider that this new mode of programme selection will lead to the demise of the channel concept as we know it today, to be replaced by strong umbrella brands complemented by *à la carte* choices on the part of consumers.

Browsers and search engines are inherently independent, able to explore the Internet universe without tying themselves to particular sources of information, or to particular operating hardware or software. Recently, however, competition concerns have been raised about the possibility of Browsers being packaged with other software or even becoming fully integrated to the software itself.

Conditional access and Navigation systems depend for their success on the co-operation of market players present in different parts of the value chain, raising the spectre of a gate-keeping role which could be abused, especially by vertically-integrated players, to foreclose market entry by others. An extension of the principles already applied to the digital television field with the object of ensuring that new entrants will not be excluded from access to such systems should be considered.

In contrast to Browsers, *EPGs* are linked to the 'information' accessed via them developing as support devices for specific digital television programme bouquets, or for offerings of television and interactive services. Issues of ensuring listing of third-party services or programming, and the quality of such listings, will be of critical importance.[55] Exclusive arrangements tying particular EPGs to particular service bundles may become a problem requiring regulatory intervention to ensure third-party access on fair, transparent and non-discriminatory terms.

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[54] For further discussion, see the OECD Report Op cit at note 5. A number of the issues linked to the provision of telephony over the Internet are also considered in the Commission's forthcoming Communication on the status of Internet telephony under Directive 90/388/EC

[55] Analogous problems have already been addressed under European competition rules, for example, in relation to computer reservation systems for air travel which are governed by Council Regulations 2299/89, 3089/93, reviewed in COM(97)246 final, Brussels, 9 July 1997.

A new feature of the consumer's home terminal is the Application Programming Interface (API). The API is a set of software in the terminal, resembling the operating system of a PC. It is used to manage interactive applications, including EPGs, carried by the terminal, and to provide a specified interface for the development of applications by third-parties. The PC industry owes its success in a large part to the role of *de facto* standard APIs in facilitating the creation of a wide variety of third-party- developed applications software. At the time of writing there are a number of different APIs used in set-top boxes in Europe, risking fragmentation of the market and problems of interoperation. Furthermore the combined use of proprietary APIs together with EPGs and conditional access leads to increased of risks of abuse by operators controlling access to services.

The market implementation of digital television is occurring in an environment of rapid technological change, the eventual outcome of which is not yet clear. Comments on this issue should therefore assist the Commission in assessing whether the Television Standards Directive is adequate to cope with this technological change and its market consequences.

Access to content

As a general rule, arrangements made between content providers, rights owners and content carriers are a matter for commercial agreement. If exclusivity is granted, this may be an issue for competition rules. Exclusive agreements between content providers and content carriers may limit consumer choice by excluding access to content provided by competitors, especially until there is effective competition in the provision of delivery channels to the user. Possession of rights to key content, such as major sporting events, may give market players particular commercial power.

Although the content industry is heavily scale-dependent, it generally exploits such economies of scale by careful management of distribution windows (e.g. cinema, video rental, video sell-through, pay-per-view, pay television, free-to-air television). Exclusivity of distribution is often a feature which secures this process for content owners. Convergence may impact on the current basis for window management, and could lead to a greater dependence on non-exclusive electronic distribution as a more effective means of maximising revenues.

Likewise, convergence may have the effect of dissolving conveyance bottlenecks. For example, the exclusive distribution rights awarded to cable television companies may no longer translate automatically into monopoly power at the service level. Cable companies are likely to compete with digital satellite and terrestrial television broadcasters, Internet access providers and telecommunications operators.

IV.2.4 Access to the Frequency Spectrum

Despite the fact that the digitisation underlying convergence significantly expands the potential capacity of transmission networks, the growth of demand, both in terms of market players and bandwidth, means that resource issues will continue to be a key regulatory issue; principle amongst these is access to radio-spectrum.

Frequency spectrum remains a key, but finite resource even in the digital age. Whilst significant gains will ultimately result from a switch from analogue to digital technologies, both for mobile telephony and for broadcasting, any transition will remain a slow one. For Internet access and other on-line services, satellite-based delivery offers the possibility of high speed delivery to a PC or television and the use of the fixed telecommunications network as a return path. In addition, the take up of wireless local loops and the arrival of Universal Mobile Telecommunications Services (UMTS) early in the next century all point to a steady growth in demand for spectrum.

Given the importance of spectrum, variations identified in Chapter III between sectors with regard to how much spectrum is available and how much that spectrum will cost may have an important impact on the development of existing and new delivery channels. Whilst overall allocations are determined at an international and regional level, current differences across sectors to the pricing of frequency may create potential competitive distortions. One example could be where a broadcaster offering multimedia or on-line services uses spectrum obtained free or at low cost, competes with operators from the telecommunications sector who have paid a price reflecting the commercial value of the resource allocated.

Many commentators argue that, from an economic standpoint, pricing spectrum may encourage its more efficient use and may help to ensure that frequency is allocated to the areas where it is most needed. They would argue that similar commercial principles should influence frequency policies at the stage that allocation is determined within the World Radio-communications Conferences or at a regional level, so that allocation decisions should seek to make spectrum available to high value users in preference to low value users.

Were all spectrum to be subject to a commercial valuation this might have a knock-on effect of

encouraging existing public users, such as the military or the police, to use more cost-effective technological solutions, freeing up certain frequency bands for new services.

Frequency auctioning is favoured by many economists as the way to best ensure outcomes which are in the consumer's ultimate interest. Although others express concern about the impact of such pricing on prices charged to users.

With regard to efficient use of spectrum, one approach could be to move away from current practices of assigning particular blocks of spectrum to particular services, or to the use of particular technologies to deliver such services. In such a situation, certain minimum technical safeguards would still be required, (e.g. against electro-magnetic interference between different systems). This is one of the issues raised in the context of the introduction of UMTS, but could be of wider application. In practice this might mean that instead of assigning a particular band of spectrum exclusively for the provision of mobile communications or broadcasting, the assignee could be allowed to use the spectrum for the services of its choice.

Finally, increasing demand for spectrum, particularly for UMTS and for satellite-based services puts increasing pressure on existing mechanisms for frequency co-ordination at a regional level.

Chapters I and II have illustrated how each part of the converging sectors are moving from analogue to digital technologies. Member States could play a key role in this process by developing clear timetables for such a switch in order to give clarity to service planning Others argue that this is an issue of user preference and should be left to market forces. Nevertheless, the level of demand for spectrum is likely to outstrip currently available frequency resources, so that Governments may have a key role in reassessing the current balance between telecommunications, broadcasting and civil/ State usage of available resources.

Additionally, consideration might need to be given to whether such a switch over needs to be co-ordinated at a European level. It can be argued that a clear timetable for the complete transition from analogue to digital transmission of services using the frequency spectrum would avoid not only the fragmentation of the Internal Market, but also delays in releasing valuable spectrum used by analogue services today, to other users. Other argue that issues of frequency allocation such as this are governed by the subsidiarity principle and that the Community has no role to play in their resolution.

IV.2.5 Standards

It has been argued in this Paper that one of the most important consequences of the blurring of technological borders between information technology, telecommunications and consumer electronics is the increasing globalisation of services. The inherently global nature of the Information Society calls for any standardisation in support of its development to be similarly global. Users may want access from any terminal to any service, independently of the technology used, or the geographical point of such access, within a multi-vendor environment.

A major objective for standardisation therefore is to achieve interoperability between networks and services. Technological harmonisation is not an objective. However, standardisation is a tool which can reinforce both general policy objectives, such as the creation of an Internal Market for communications services, and the regulatory framework. Encouraging best business practices in areas related to data protection and security of digital signatures may be supported by standardisation and consensus-building within an appropriate regulatory framework.[56]

There is a legitimate public interest in providing industry, users and public authorities with efficient platforms for consensus building both at European and international level. Even though the Information Society is global, standardisation can start at regional level, provided that players from other regions can participate in the activities. The workshop mechanism has the potential to offer the platform for consensus-building while it also allows European players to increase their impact on the international standardisation scene.

IV.2.6 Pricing

The IT and on-line publishing markets operate almost entirely free of specific price controls. In the broadcasting sector, price controls (e.g. on the licence fee), where they exist, are generally motivated by public interest objectives seeking to ensure that service remains affordable for viewers and listeners, so that high penetration is achieved for free-to-air channels. The affordability requirement for universal service in telecommunications is based on the same premise and translates, in a number of Member States, into a price cap mechanisms applying to a basket of retail and/or business services and to subsidised social tariffs for particular groups of users. Pay TV channels including premium services, as well as commercial activities of free to air regulators are not generally subject to price

[56] Op.cit. Note 60

regulation, but are subject to competition from other market operators.

Additionally, under specific telecommunications regulation, as part of the transition to fully competitive markets, controls apply to operators with significant market power to require that the charges for interconnection, voice services and leased infrastructure are cost-oriented. In that situation, price regulation is acting in as a proxy for the effects of competition. There has been no direct analogy in the case of point to multi-point broadcasting, but interconnect issues are now arising where interactive or transactional elements are being introduced - conditional access is the first such area.

Innovative pricing packages will play a key role in promoting services in the Information Society. The take-off of many on-line and transactional services is directly influenced by the cost of the underlying infrastructure. A key commercial message must be that innovative pricing will be central to a much wider take up and use of on-line and other services.

Additionally, an assessment may need to be made as to whether there are potential distortions where differing pricing rules apply to different networks, even though in a converged environment any network may be able to offer any service. At the same time, the existence of competitive delivery channels is likely to limit the possibility to set prices, for example for network access, independently of competitors, so the case for regulatory intervention may not be made.

Finally, convergence may over time expose public broadcasters to commercial pressures. The experience in telecommunications may be illustrative, as operators in this sector have moved over time to price their services in a manner more consistent with the increasingly competitive environment, notwithstanding the regulatory constraints on such pricing.. Such experience demonstrates that such adjustment in pricing structure can occur in a manner which does not affect adversely the overall affordability of the services delivered. The manner in which public broadcasters are currently funded (licence fee, advertising, public subsidy) does not allow a direct analogy with telecommunications to be drawn. Whether this should prevent broadcasters wishing to introduce different pricing structures is a matter for comment, as is the impact that more commercial pricing approaches would have on eligibility for State funding or the ability to access other revenue sources, such as advertising, subscription funding or exploitation of rights.

Question 5:
Overcoming the barriers - Getting the right regulatory framework for business and for consumers

Chapter IV.3 examines in a number of key areas where regulatory solutions may be needed to overcome barriers and to safeguard competition.

(A) Are the definitions in the telecommunications, media and IT sectors in national and/or Community legislation adapted to the convergence process?

(B) Will the convergence phenomenon require adaptation of existing approaches or the adoption of new approaches to be applied to issues of market entry and licensing; access to networks, customers (including conditional access systems), content; and pricing?

(C) Will convergence require changes in the approaches to the award and pricing of frequency spectrum, and in particular what approach should be taken, in the light of convergence, to the issue of completing the transition from analogue to digital services, including the need for a timetable for analogue switch-off?

(D) What should be the objectives of standardisation in the light of convergence and what should be the relationship between regional and international standardisation?

(E) What additional action (if any) is required to ensure that the interests of consumers and of users with disabilities are respected in the light of convergence?

IV.2.7 Individual consumer interests

The objective of maximising benefits and minimising the risks of consumers implies the need for the creation of adequate regulatory instruments to protect the fundamental rights and responsibilities of consumers arising from the wide circulation of information in the sectors affected by convergence. Privacy issues, responsibility for content and the protection of minors, free speech versus libel, appropriate jurisdiction and consumer representation, are some of the issues that need to be addressed in the new environment.

IV.3 Meeting public interest objectives

Rules seeking to ensure the achievement of certain public and general interest objectives are found in all sectors affected by convergence. As highlighted above, this is fully consistent with the importance attached at a European level to the role of services of general economic interest within the Community concept of European Society. The trends identified in Chapters I and II

do not remove the value of universal service regulation for telecommunications, or a public service mission in the broadcasting field. Indeed, the possibilities now offered by technology strengthen the need for clear and effective rules relating to specific objectives such as privacy and data protection; the promotion of cultural diversity or the need for a framework for the protection of minors and public order.

Nevertheless, the impact of convergence may well be on the way such objectives are achieved and by whom. Equally as recognised in Chapter III, the different rules while adapted to the specific characteristics of each sector, may nevertheless create potential barriers to integrated service provision or cross-border operation.

The need for public interest objectives to be clearly defined

Universal service obligations in general ensure the universal availability of defined services at an affordable price, whilst the public service mission of broadcasters extends beyond issues of universal availability and price and lays down conditions relating to the content of the services provided. Against this background the starting point for any analysis of public interest objectives in the light of convergence must be the need to define public interest objectives so that market actors have a clear idea of the obligations with which they must comply. Some consider that such an assessment is also essential in order to gauge whether these objectives remain valid in the face of the evolving communications and media environment, whilst others argue that the objectives remain valid and only the way in which they are satisfied may evolve. In either case, a proper assessment seems to require a clear identification of underlying objectives.

In the case of certain objectives in the different sectors, specific obligations have been placed on one or more operator to guarantee these objectives. This is the case with universal service carriers in the telecommunications sector or broadcasters who have been given a public service mission. In the telecommunications case, the cost of those obligations may, where they represent an unfair burden for the operator concerned, be shared with other market players.

Some argue that given that such a framework exists within telecommunications, the absence of a similar framework for the public service mission in broadcasting will deter companies wishing to operate on an integrated basis or favour the position of those entering the telecommunications market from the media side. Others respond that convergence does not challenge the existence of different approaches, given the underlying objectives are quite different. They further argue that it is simply not possible to cost obligations relating to the public service mission in any meaningful way, and that comparisons with the experience of telecoms are unhelpful in this regard.

A further issue is who might in future be able to fulfil a public service mission or offer universal service? Obligations have traditionally fallen on a single designated organisation, (though that is now changing in the case of universal service in some Member States). However, the possibility of offering voice telephony services over a computer or a television, or the ability to use the Internet to read, watch or listen to broadcasters' programming illustrates the possibility that new platforms may play a role in meeting such obligations. The question arises as to whether this is an additional reason for such obligations to be properly identified.

Additionally, the issue is whether existing frameworks should be changed in order to create a coherent framework for both public and private broadcasting organisations, for example so that different organisations are allowed to bid to undertake such obligations, including organisations from outside the traditional sector. Where specific support in the form of industry or even public funding is available for the provision of such services, the issue arises, *inter alia*, as to whether that mechanism would need to be open to any organisation willing to be designated as fulfilling public interest obligations.

Content-related objectives

Convergence is already leading to a reassessment of approaches to the means of implementing objectives regarding content. This has already been the case with approaches to harmful and illegal content on the Internet (see Section IV.1). At its most basic, the central issue is not the validity of particular rules but whether the impact of technology on particular services requires a reassessment of the means of achieving the objectives in question.

Essentially this is an application of the principle of proportionality which means that current approaches must be assessed in the light of the specific characteristics of the service concerned. This means that there does not have to be a single standard applicable to the same content whatever the channel used for distribution. Instead, different standards might apply. For example, it is likely that the controls applied to advertising on a free-to-air broadcast would be considered inappropriate, if applied to a pay-TV programme or an Internet service, because of the specific characteristics of the service concerned.

The role of public service broadcasting

The public service mission entrusted to public service broadcasters is recognised as of cultural importance and the organisations with responsibilities in this regard are entitled to appropriate funding, subject to compatibility with the rules of the Treaty. The recent Protocol on public broadcasting attached to the Amsterdam Treaty confirms this point.[57]

Convergence may however enable many more sources of audiovisual information to be accessed by viewers. Public authorities will need to monitor on a continuing basis the extent to which desired policy objectives are being achieved by normal market activity, including the impact of other media, and whether, as a consequence, regulatory obligations placed on broadcasters may be lightened.

Traditional public broadcasters will need to reappraise their role in the convergent environment. On the one hand, their market share is likely to diminish as users face an increasing choice in a market already near to saturation in terms of the individual potential for consumption of audiovisual services within a 24-hour day. Moreover, escalating prices for premium content could subject them to budgetary pressures that might outstrip the capabilities of existing funding mechanisms. The issue will be whether public broadcasters can continue to have access to attractive content in the face of fierce competition for the acquisition of programme rights, within the constraints of their existing funding mechanisms. Many are preparing to exploit their reputation and their customers' "brand loyalty" to compete with new pay-television broadcasters.

On the other hand, technological convergence offers public broadcasters a range of new possibilities, in terms of both activities and potential avenues to viewers and listeners. This can enhance their current role and provide valuable new sources of revenue alongside current funding. The regulatory framework should allow broadcasters to take advantage of these new opportunities. It should also permit them to benefit from economies of scale and scope where these also bring benefits for the consumer. However, if state funds intended to support a public broadcaster in fulfilling its public service mission were used to leverage and cross-subsidise these new activities or the use of new technological platforms, such as the Internet, then such practices would be subject to the Treaty rules on competition and on the freedom to provide services..

Other general interest objectives

Ensuring Privacy and Data Protection. In order for convergent services to develop, users need to be assured that their privacy is adequately protected and, in particular, to have confidence in the security of information passed over the networks they use. Legislation has already been agreed at a Community level addressing data protection[58] and this will soon be complemented by specific rules governing data protection and privacy in telecommunications.[59]

Cryptography and digital signatures. A recent Commission Communication on digital signatures and encryption has recommended a number of actions aimed at ensuring security and trust in electronic communications.[60] Given the global character of electronic commerce, emphasis is being given to the need for the international availability of cryptographic products and services corresponding to the various needs of business and individuals.

Cultural diversity. The European Court of Justice, in a landmark case involving the media sector ("TV10" CJEC 23/9 of 9.10.94), has recognised that cultural policy objectives constitute public interest objectives that a Member State may legitimately pursue. Public service broadcasting has historically been one vehicle for achieving this. The Protocol on this subject that will be appended to the EC Treaty, as amended by the Treaty of Amsterdam, highlights the fact that "*the system of public broadcasting in the Member States is directly related to the democratic, social and cultural needs of each society and to the need to preserve media pluralism*".

At Community level, Article 128 of the EC Treaty provides that the Community "*shall contribute to the flowering of the cultures of the Member States*" including in the audiovisual sector, and that the Community shall also "*take cultural aspects into account in its action under other*

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[57] Protocol no 32 on the system of public broadcasting in the Member States, annexed to the EC Treaty.

[58] Directive 95/46/EC of the European Parliament and Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and the free movement of such data, OJ L281, 23.11.95.

[59] Proposed directive on *the processing of personal data and the protection of privacy in the telecommunications sector,....,*Common Position adopted by the Council on 12.9.96, O.J. 96/C 315/06, 24.10.96.

[60] Commission Communication *Towards A European Framework for Digital Signatures And Encryption*, COM(97) 503, October 1997

provisions of the Treaty". The Commission intends to draw up a Green Paper in the course of 1998 specifically focusing on developing the cultural aspects of new audiovisual and information services.

***Protection of minors and public order*.** While public interest objectives relating to the protection of minors and public order have traditionally been recognised at national and Community level (cf., for example, Art. 22 of the "Television without frontiers" Directive), the transactional nature of some convergent services will imply adjustments in the means whereby such objectives are met in order to ensure due respect for the principle of proportionality.

Additionally, the difficulty of enforcing safeguards in the context of harmful and illegal content on the Internet provides another example of how convergence is challenging traditional regulatory approaches to implementation, whilst not invalidating the principle that rules are seeking to protect.[61] The global nature of the platform and the difficulty of exercising control within a given Member State are leading to solutions which draw on self-regulatory practices by industry rather than on formal regulation, accompanied by technological solutions to ensure that parents take greater responsibility. It is against this background that the Commission has adopted a proposal for a Council Recommendation on the Protection of Minors and Human Dignity.[62] This aims to promote common guidelines for the implementation, at national level, of a framework for self-regulation to protect minors and human dignity in audiovisual and information services, whatever the means of conveyance.

Question 6: Securing public interest objectives in the light of convergence

Legislation at Community level meets a range of public interest objectives. This was also examined in Chapter IV.3. Current developments may well result in new ways of achieving such objectives. Where such objectives are achieved today by placing obligations on one or more market actors, (*such as universal service obligations in telecommunications or a public service mission vested in certain broadcasters*) new technologies and services may enrich the services being offered.

(A) Does the convergence phenomenon support or challenge the way in which public interest objectives are achieved in the telecommunications, media and IT sectors?

(B) Should such objectives be more clearly identified and. where they translate into particular obligations, should a wider group of actors be able to take on such obligations?

IV.4 Options for a future regulatory model

Options for the structure of regulation

Chapter III highlighted the potential uncertainty resulting from separate and multiple regulation. Such uncertainty was seen as a barrier to current actors wishing to operate across the sectors affected by convergence, and to the wider delivery of services such as electronic commerce or financial services (banking, insurance, securities, etc.) over converged platforms.

Some commentators accept that there are barriers, but see these as neither insuperable nor inconsistent with the EC Treaty. In practical terms they simply represent normal divisions of activity common with any business operating across a number of sectors of the economy. They would argue that current vertical approaches to regulation are sustainable and provide a high degree of certainty for most market actors.

An alternative view sees these barriers as running counter to the logic of current technological and market trends. According to this view, a single regulatory model for all sectors within a converged environment, based on common principles, but perhaps maintaining certain distinct elements focused on the specific services offered, is required.

Others argue that any horizontal approach should reflect the technological reality of the possibility of any network carrying any service and therefore confine the development of a horizontal approach to issues affecting the underlying infrastructure. This would allow different treatment of the services provided via that network. Roles applied at a service level might perhaps follow current vertical divisions at the service level or perhaps redraw those divisions to reflect changes in technologies and markets.

In both of these cases, the approach is essentially to shift away from a vertical model of sectoral regulation and towards a horizontal approach which seeks to distinguish between the network or transmission layer within converging sectors and the services carried over those networks

[61] Commission Communication, *Action Plan on promoting safe use of the Internet*, COM(97)583, 26.11.97

[62] Proposal for a Council Recommendation on the Protection of Minors and Human Dignity adopted on18 November 1997. COM(97)570.

Two studies carried out for the Commission[63] suggest that the replacement of current vertical structures with horizontal separations between service provision/content and conveyance appears to offer a possible solution to the types of the barriers identified in Chapter III.

Definitional issues of where services may fall will remain, but should be more future proof, being less linked to underlying technologies. The distinction between the two horizontal layers nonetheless permits distinct regulatory criteria to be applied to each layer, but with due recognition of the links between each layer.

Chapter III highlighted the impact on companies of having to deal with a number of different regulatory bodies for different aspects of their integrated activities. Ensuring that these barriers are lowered will be important in creating a climate for innovation and investment.

Were the idea of moving from vertical regulatory divisions to a more horizontal approach accepted, this might make it easier for business to benefit from a one-stop shop approach.

One important question is whether such rationalisation should lead to a single regulator dealing with all aspects - content as well as service provision and delivery, or whether a structure dividing responsibilities between services and transmission activities might be more appropriate, or indeed, multiple regulatory bodies at either of those layers. Some would view a single body as more able to maintain a coherent approach, integrating more seamlessly the public interest and economic efficiency aspects of regulation within one framework. Others would favour a continued separation in order to avoid risks of the public interest being compromised by economic priorities.

Nevertheless, inherent in the idea of convergence is the reality that a strict separation between service provision on the one hand, and transmission and carriage on the other may not be possible and could create difficulties in addressing issues of market power and vertical integration.

Balancing Community and Member State responsibilities

In looking at the options for a possible future regulatory model, account must be taken of the way in which responsibilities will continue to be shared between the Community and Member States and within Member States, between national, regional and sometimes local authorities. From a Community perspective, the EC Treaty defines on the basis of subsidiarity those areas in which the Community has a role to play. Such action may be taken, assuming it is an area for which the Community is competent, "only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can, therefore, by reason of the scale or effects of the proposed action, be better achieved by the Community."

Question 7: The future shape of regulation

Chapter IV.1 raised the challenge of the convergence process to the principles underpinning current regulation, whilst Chapters IV.2 and IV.3 considered a range of substantive regulatory issues.

Chapter IV.4 discusses how those principles may be applied in future, separately to each sector, or "horizontally" across different market sectors. It also raises related issues about the number of regulatory bodies and the balance between Community and national level action.

(A) Do current developments require a reassessment of the way in which rules are applied to the telecommunications, broadcasting and IT sectors?

(B) Does the existence of different regulatory authorities or ministries responsible for different aspects of telecommunications, media and IT activities offer a workable structure for regulatory supervision in the light of convergence?

(C) Will convergence require a reassessment of regulatory responsibilities at a national, Community or international level, and, if so which areas?

Given the regional and global nature of many of the services being delivered, that subsidiarity test may be met. Diverse national approaches may harm rather than promote users' interests, could undermine the diversity which the internal market offers, and may well introduce distortions which favour the establishment of production facilities in regions where a lighter regime applies.

IV.5 Issues at an International level

Globalisation amplifies the international dimension of convergence. One clear example is the continued rapid expansion of the Internet worldwide, which will undoubtedly give rise to further technological and industrial transformations, as well as to exciting social, cultural, and ultimately, commercial opportunities. These effects will not be confined to the European Community and North America only. They are just as likely to

[63] Op.cit. 19

produce fundamental changes among our neighbours in Central and Eastern Europe, and more broadly, in the developing world. The global reach of the Internet has already shown a need for international solutions to a number of key issues such as security, intellectual property rights, customs, privacy, interoperability and cybercrime.

In contrast, many regulatory issues associated with telecommunications and broadcasting have until recently been focused at national or regional levels in the Community, given the national orientation of licensing in those sectors.

Multilateral dialogue on frameworks covering different aspects of telecommunications and information technology, and involving governments and industry, is currently being pursued in many international fora. The Commission, through a series of international summits on the Information Society, has been actively promoting a range of regulatory initiatives in the countries of Central and Eastern Europe.

Existing international organisations, such as the World Intellectual Property Organisation (WIPO), the ITU and the OECD have perceived the need to consider the potential impact of convergence and to launch Internet and electronic commerce related activities. Convergence was the theme of the ITU's Sixth Regulatory Colloquium.[64] In some cases, this has already led to agreement on principles or minimal rules. Examples include the two WIPO Treaties of December 1996 on copyright and certain related rights (the "WIPO Copyright Treaty" and "the WIPO Performance and Phonograms Treaty"), and the Bonn Declaration of July 1997.

The Council of Europe is currently working on aspects of the Information Society relating to human rights, democratic values and the freedom of expression and is expected to adopt Resolutions on these issues at the 5th European Ministerial Conference on Mass Media Policy in Thessaloniki in December 1997

Landmark global agreements such as the Information Technology Agreement (ITA), the Mutual Recognition Agreements on conformity assessment (MRAs), and the WTO/GATS agreement on basic telecommunications services (February 1997) have also contributed to a new global perspective on regulatory issues. The WTO agreement does not apply to broadcasting.

As these efforts are reinforced, it may become apparent that they need to take into account new factors such as convergence and globalisation, as well as the impact of these changes on economies beyond the industrialised world. For example, the Internet could give rise to spill-over between issues dealt with by different organisations and currently involves important new and less conventional actors, such as the Internet Society.[65] Furthermore, any formal principles and rules will most likely need to draw on some element of self-regulation by industry players.

In this context, it might be judged more appropriate to launch a process of international dialogue with the aim of reaching agreed solutions as and when problems arise in conjunction with technological, social and industrial developments. Such a process would be flexible and open. It would have no formally fixed time-frame and would be open to all actors concerned, including international organisations, the various Internet bodies (e.g. the Internet Engineering Task Force and the Internet Advisory Board), and technical experts. Such an international dialogue process could give rise to the creation of specific working groups with a view to focusing on specific issues such as digital signatures or customs and taxation. The overall aim of such a process, once it has been launched, could be to develop an international charter on global communications, though the scope and aims of such a charter remain to be defined.

Question 8: The international aspects of convergence

Chapter IV.5 examines a range of international activities underway which are linked to convergence, as well as to specific aspects impacting on it, such as the Internet, Intellectual Property Rights, and Electronic Commerce. It also highlights the opportunities which convergence offers to our partners in Central and Eastern Europe, and more widely to the world's developing economies.

(A) Is further action required at an international level in light of convergence?

(B) What additional steps (if any) are required to encourage other countries, particularly, in Central and Eastern Europe, to create conditions within which current developments can be exploited?

[64] The Regulatory Implications of Telecommunications Convergence, Chairman's Report of the Sixth Regulatory Colloquium on the changing role of government in an era of Telecom deregulation, ITU, Geneva, 11-13 December 1996.

[65] The Internet society is a non-governmental professional organisation whose aim is to develop a consensus on solutions which promote progress of the Internet.

Chapter V
Principles and options for the future

Whilst the aim of this Green Paper is to invite comment and stimulate debate, rather than take positions at this stage, this Chapter, drawing on the previous analysis, sets out in Section V.1 below a number of principles which could provide a common basis for future approaches in the sectors affected by convergence. In Section V.2, it sets out three options which the Commission believes may stimulate debate regarding the adaptation of current regulatory approaches, where required, in the light of the convergence phenomenon.

V.1 Principles for future regulatory policy in the sectors affected by convergence

Irrespective of whether or not full convergence occurs, the range of technological and market trends, the potential barriers and the regulatory issues identified in this Green Paper, all point to a changing environment against which the policy objectives of these sectors must be judged. Future decisions must therefore not only be derived from regulatory approaches closely tailored to the sectors involved. They should also be able to draw on a common understanding of principles which could underpin future action.

In this section, the Commission tentatively puts forward five such principles for comment.

1. ***Regulation should be limited to what is strictly necessary to achieve clearly identified objectives.***

   Given the speed, dynamism and power of innovation of the sectors impacted by convergence, public authorities must avoid approaches which lead to over-regulation, or which simply seek to extend existing rules in the telecommunications and media sectors to areas and activities which are largely unregulated today.

   Any rules put in place should be tailored to meet clearly identified objectives in a proportionate manner,

2. ***Future regulatory approaches should respond to the needs of users***

   A key priority of any regulatory framework should be to seek to meet the needs of users in terms of offering them more choice, improving levels of service and lower prices, whilst fully guaranteeing consumer rights and the general public interest. Such an approach is fully consistent with wider policy goals which recognise the important role of many of the sectors in bringing the Information Society into citizens' everyday lives.

3. ***Regulatory decisions should be guided by a need for a clear and predictable framework.***

   Regulators should seek to ensure a clear and predictable framework within which business can invest. Where issues can be left to market players, this should be made clear. Where new activities creates uncertainty as to how and if they should be regulated, this should be clarified.

   This does not mean that the framework may not evolve, but it should do so against predetermined criteria, maintaining as far as possible the flexibility to respond to changes in a fast-moving market.

4. ***Ensuring full participation in a converged environment.***

   Building on existing concepts of universal service in telecommunications and the public service mission in broadcasting, public authorities should seek to ensure that everyone is able to participate in the Information Society. Convergence in this context is likely to offer new means of participation.

5. ***Independent and effective regulators will be central to a converging environment.***

   Whilst the general trend is towards lighter regulation, the increased competition brought on by convergence underlines the need for effective and independent regulators. Regulatory independence is particularly important where the state retains a share-holding in any market player.

V.2 Options for regulatory development

If it is established that there is need to consider changes to the overall regulatory approach in the face of the trends towards convergence, there may be many ways of achieving such an adaptation.

In considering possible approaches, a successful formula is likely to require more than just the creation of a flexible framework for new types of services. It would also be essential to provide a road map which allows the existing framework to adapt or be adapted at a pace which continues to ensure fair, non-discriminatory market conditions and which provides that users' interests are well served.

The speed and manner in which change is managed are at the heart of the transitional issues. This Green Paper cannot propose a

specific time table. Nevertheless, the Commission anticipates the debate focusing around three basic options for regulatory developments, though such a list is neither intended to be comprehensive nor closed.

Option 1: Build on current structures

In this situation, current vertical regulatory models would be left in place. This means that different rules apply in telecommunications and audiovisual/broadcasting sectors, and to a lesser extent in publishing and IT. Building on established principles, these existing frameworks at a EC and national level would be extended on an *ad hoc* basis, principally at national level, to meet the demands of a competitive market and the challenges of new technologies and services.

Normal principles of interpretation would be applied on a case by case basis to resolve questions of where particular activities might fall. To the extent necessary, co-ordination might be strengthened at a European level to attempt to minimise the risk of fragmentation through national rules being applied differently in different Member States to emerging services.

The pace of change would be dictated by the speed of innovation and the effectiveness of competition. This would allow the regulatory framework to adapt in response to market forces and the need for a fresh round of deregulation/regulation could be avoided.

Such an approach would minimise the need for change in the near future, and could be effective in providing a predictable regulatory framework for investment, whilst avoiding the creation of unjustified barriers within the internal market. However, it might leave in place certain anomalies which today deter investment.

The pace and scope of change, if not co-ordinated at a European level, could risk creating significant new barriers between Member States and slowing the transition to the Information Society.

Option 2: Develop a separate regulatory model for new activities, to co-exist with telecommunications and broadcasting regulation

This option would mean that Member States would "carve out" new services and activities which cross traditional boundaries, placing them under a distinct set of rules, if rules are needed at all. This would allow a co-ordinated approach to be developed in relation to many of the high value activities which characterise the converging market place, by creating a new category of services alongside existing regulatory models for telecommunications and broadcasting. Essentially, the result would be to move away from technology-based or platform-based market boundaries for a wide-range of services, whilst allowing the framework for traditional core telecommunications and broadcasting activities to be adapted more gradually.

The principle difficulty in such an approach is determining the boundaries of what may be part of a lightly regulated, new service world and what remains subject to traditional regulation. One approach might be to identify certain types of service, e.g. Web-TV or the Internet or the operation of conditional access systems, negatively as neither telecommunications nor broadcasting. Experience in the telecommunic-ations sector with a delimitation of liberalised services, on the basis of defining only what is left in the monopoly area, shows the practical difficulties of such an approach.

Option 3: Progressively introduce a new regulatory model to cover the whole range of existing and new services

This option is the most far-reaching. It calls for a fundamental reassessment and reform of today's regulatory environment.

This does not necessarily imply a whole new set of laws, but rather looking to see how existing frameworks can be adapted to promote flexibility; remove inconsistencies, avoid discrimination within and across sectors and continue to ensure the achievement of public interest objectives. Instead of applying to just some services (as proposed in Option 2), this option would create a framework covering all sectors.

This option would require a broader definition of communication services to supersede those of telecommunications and audiovisual services within Community legislation. Proportionality would be a necessary feature of the new environment given that within such a broad definition, the level of regulation would have to be matched to the nature of the service and the intensity of competition.

Such an option might be considered to be too ambitious. However, it would not necessarily lead to sudden disruptive change. The approach could be graduated, focusing in the first instance on priority areas in which a consistent regulatory approach is required (e.g. network operation or access issues). Another key feature of this approach would be to allow sufficient time for migration from the old to a new regime.

Question 9:Principles and possible approaches in the light of convergence

Chapter V identifies a number of important policy principles which could underpin future regulatory approaches in the light of convergence. It also

proposes three possible ways in which current regulatory approaches in the different sectors might be adapted in order to embrace on-going developments.

(A) What effect will convergence have on the principles for future regulation applied in the telecommunications, media and IT sectors, and should those principles be adapted in the light of convergence?

(B) If convergence requires adaptation of existing regulatory approaches, should that adaptation:

(i) seek to build on, and if appropriate, extend existing frameworks, rather than create new ones;

(ii) create a new framework for many on-line and interactive services, to co-exist with the those currently applied to traditional telecommunic-ations and broadcasting activities, or

(iii) seek to create a comprehensive framework applying similar regulatory approaches to all three sectors.

V.3 Timetable for future action

The following outline schedule of activities is envisaged:

- A five-month public consultation period (December 1997 to April 1998 inclusive).
- A report on this public consultation to be prepared by June 1998.
- The Council and the European Parliament are expected to adopt any Resolutions on this matter in the second quarter of 1998.
- In response to these resolutions, the Commission could prepare a Convergence Action Plan by the end of 1998.
- The already-announced Telecommunications Review will be conducted in 1999.

Interleaved with these milestones will be a number of important activities in the media field. The Oreja High-level Group on audiovisual policy has been convened and is expected to report in September 1998. A major conference on the matter is scheduled to be held in April 1998 in Birmingham, under the joint sponsorship of the British Presidency and the Commission.

V.4 Conclusions

This Green Paper analyses the convergence phenomenon and its implications for the existing regulatory frameworks governing the telecommunications, media and information technology sectors.

The implications of these developments are far reaching. Convergence is not just about technology. It is about services and about new ways of doing business and of interacting with society. The changes described in this Green Paper have the potential to improve substantially the quality of life for Europe's citizens; to integrate Europe's regions better into the heart of the European economy, and to make businesses more effective and competitive on global and national markets.

The emergence of new services and the development of existing services are expected to expand the overall information market, providing new routes to the citizen and building on Europe's rich cultural heritage, its potential for innovation and its creative ambitions.

The global nature of communications platforms today, particularly, the Internet, are providing a key which opens the door to the further integration of the World economy. At the same time, the low cost of establishing a presence on the World Wide Web, is making it possible for businesses of all sizes to develop a regional and global reach. Globalisation will be key theme in future developments, as changes in Europe are mirrored by developments all over the World.

If Europe can embrace these changes by creating an environment which supports rather than holds back the process of change we will have created a powerful motor for job creation and growth, increasing consumer choice and promoting cultural diversity. If Europe fails to do so, or fails to do so rapidly enough, there are real risks that our businesses and citizens will be left to travel in the slow lane of an information revolution which is being embraced by businesses, users and by Governments around the World.

The issue involved are complex and will require much discussion before any new Community initiatives can be proposed. The Green Paper is intended to launch such a discussion and all interested parties are invited to participate. It is hoped that this discussion will be profound and far reaching. The results of this public consultation will be reported in a Commission Communication in June 1998.

This Green Paper represents a step on the way to securing the benefits of convergence for European social and economic development. The June Communication will allow political positions to be taken by the European Parliament, the Council of Ministers, the Economic and Social Committee and the Committee of the Regions, and for clear objectives for future policy to be established.

This Green Paper initiates a new phase in the European Union's policy approach to the communications environment. As such it represents a key element of the overall framework put in place to support the development of an Information Society. It builds on the current strengths of the frameworks for telecommunications (launched by the landmark 1987 Green Paper on telecommunication[66]) and for media (established by various Community legislative initiatives), and offers all interested parties an opportunity to comment on the future shape of regulation, in the post-1998 communications environment, in the sectors affected by convergence.

This first step is intended to pave the way for the development of an appropriate regulatory environment which will facilitate the full achievement of the opportunities offered by the Information Society, in the interests of Europe and it's citizens as the 21st century begins.

[66] COM(87) 290 final

ANNEX
Existing Regulation

This annex describes existing the regulatory environments in the European Union for telecommunications and media sectors. The absence of regulation in the IT field is also noted.

Telecommunications regulation is gearing up for full liberalisation

A clear framework for effective competition throughout the European Community has now been put in place and is at an advanced stage of implementation in national law as the 1998 deadline approaches. In reality the transition from monopoly to effective competition has required a profound reform of regulation in the telecommunications sector, with rules agreed to set the dates for liberalisation of the sector and to provide a common regulatory framework covering, *inter alia:*

- conditions for market entry (e.g. common framework for licensing - procedures, timetable and conditions which may be attached)
- maintenance of public interest (e.g. a framework guaranteeing the delivery of universal service and specifying consumer rights in relation, for example, to the voice telephony service; and rules covering data protection and privacy);
- interconnection and interoperability of services and networks, and fair allocation of resources (e.g. access to numbers, availability of radio-frequency spectrum)

A fundamental consideration has been the need to limit regulation to the minimum required to secure the overall public interest and to enable effective entry and sustainable competition.

The focus of the regulatory framework for telecommunications has been on networks and service provision (including aspects linked to safeguarding the public interest) and not on the regulation of content carried over those networks. Three aspects of this focus on an internal market for telecommunications can be highlighted:

- the removal of barriers to investment and innovation within the internal market;
- ensuring conditions that support pan-European networks and services;
- maintaining a defined level of service for users

The WTO/GATS agreement on basic telecommunications reached on 15 February 1997 is fully in line with the EC regulatory framework for the sector. This applies not only to the dates set for liberalisation, but also with regard to the underlying regulatory principles. The deal does not cover broadcasting and it only applied to telecommunications (transport) services. Thus it does not cover any "content services[67]" which may be transmitted through telecommunications services. .

Audiovisual regulation

At a Community level, current audiovisual regulation aims to achieve the free circulation of services in accordance with Article 59 of the Treaty. It is an example of the application of subsidiarity whereby Community legislation has been adopted solely when absolutely necessary to achieve the aforementioned Treaty objective. National rules have been co-ordinated to the degree necessary to remove barriers resulting from disparities between these regulations, when such rules are justified for legitimate public interest reasons.

Historically, the Court of Justice has recognised that in the absence of harmonisation at a Community level, Member States could impose their national rules on service providers from other Member States, where those rules pursued a general interest objective and were proportional to achieving that objective.[68] This case law led to the adoption of the main Community instrument in this area, the so-called *Television Without Frontiers* Directive (TVWF) which co-ordinates national regulations in a number of fields relating to the provision of broadcast services (jurisdiction criteria, advertising, sponsorship, tele-shopping, protection of minors, public order, right of reply, promotion of European programmes).

This Directive is based on the principle of "home country" control, i.e. control by the authorities in the country of origin under whose jurisdiction the broadcaster falls. It has proved its effectiveness in the current broadcasting environment.[69]. A

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[67] The EC GATS commitments on basic telecommunications services exclude the economic activity consisting of content provision which require telecommunications services for its transport, such content provision being subject to the specific commitments undertaken by the EC in other relevant sectors. The EC has not undertaken any GATS commitments on audiovisual/broadcasting services. There are also some exemptions to the MFN (Most-Favoured-Nation) principle in audiovisual services in order to protect cultural values.

[68] Case n° C52/79 of 18/3/80 Procureur du Roi v. Marc J.V.C. Debauve

[69] See " Second Report on the Application of Directive 89/552/EEC" COM(97)523 final of 24/10/1997

Directive[70] amending the original 1989 text was recently adopted in order to adapt the legal framework to change within the audiovisual landscape. The new Directive must be transposed by the end of 1998; the Commission will ensure that this process is rigorously brought to fruition.

The Directive leaves certain matters to the Member States, one of which is licensing. It was not considered that differences in these areas would create obstacles to the functioning of the Internal Market, i.e. to the free movement of television broadcasts. The Member States are required to ensure that broadcasters within their jurisdiction meet the minimal rules laid down in the Directive, but [in accordance with Article 189(3) of the Treaty] may decide how such obligations are to be implemented at national level.

Two further initiatives have been taken, in part with the purpose of supplementing the TVWF Directive in creating the legal framework for the 'European audiovisual area'. In 1993, the Council adopted a directive on the co-ordination of certain rules concerning copyright and rights related to copyright, applicable to satellite broadcasting and cable retransmission.[71] More recently, the Commission has proposed a directive on the legal protection of conditional access services.[72]

Apart from the above-mentioned Community initiatives, audiovisual regulation is largely national in scope. The typology of regulation of audiovisual services is generally either positive (an obligation to fulfil e.g. provide a balanced range of programming) or negative (regulation to limit certain types of materiel e.g. incitement to racial hatred). Positive obligations are often met in practice, to varying degrees from one Member State to another, by broadcasters vested with a public service mission. Existing regulation is based in part on the widespread availability of television (its "pervasiveness"). It is clear that regulation must meet a proportionality test, and in a digital age it should and indeed is already evolving. This means that a lighter regulatory touch could be appropriate as a function of the nature of the service (e.g. satellite or cable pay-per-view is generally more lightly regulated than terrestrial free-to-air television, arguably the most pervasive of all media).

Publishing and IT

The publishing sector operates within a framework of more limited sector-specific regulation compared to telecommunications and audiovisual/broadcasting sectors, and there are fewer regulatory barriers to entry (in the sense of formal licensing requirements), although there are stringent rules applying to this sector.

At the same time, a range of controls are applicable to the broadcast media (for example, those relating to pluralism, foreign ownership and right-of-reply) also apply in some form to the publishing sector (and, in particular, the press), reflecting public interest objectives common to both sectors. However, the implementation of some of those principles for the publishing sector is through self-regulatory bodies, such as Press or Industry Councils or Codes of Practice, in contrast to the stronger powers for regulatory intervention in the broadcasting field. In addition many of the general rules related to public morals, advertising, libel, privacy, intellectual property protection, access to public documents, also apply to the publishing sector.

The Information Technology and software industries have even less of a tradition of sector-specific regulation, though once again horizontal rules relating to issues such as export controls, electro-magnetic interference; or consumer protection would apply, as would general competition law.

The Internet is more closely associated with IT and software industries than with telecommunications whose infrastructure its uses. Whilst the network over which much of the Internet traffic flows is subject to detailed regulation; the organisation, management and allocation of resources within the Internet has been largely industry and user-led. The Community has actively supported an industry-led approach in its work on harmful and illegal content on the Internet, and more generally in the media.[73]

Whilst approaches may be changing, particularly in key areas such as naming and addressing, there has been little sector-specific regulation of the Internet in Europe.[74]

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[70] Directive 97/36/EC amending Directive 89/552/EEC, the 'Television without Frontiers' Directive, 30.06.1997, JO L 202, 30.07.97, p.60.

[71] Directive 93/83/EEC, OJ L248, 6.10.93

[72] COM(97) 356 final of 9.7.1997

[73] Op cit. note 28 see *Green Paper on the protection of minors and human dignity in audiovisual and information services*, COM (96) 483, 16.10.97 and *Communication on the illegal and Harmful content on the Internet*, COM(96) 487, 16.10.97.

[74] This contrasts with the approach in Singapore, Vietnam, or China, where restrictions have been put in place.