

## Chapter 1: Convergence in the Information Age

### Our Information Age

**1.1** The deployment of digital technologies promises to transform the whole range of communications industries, making many more services available and many new kinds of service possible. Digital media will be able to provide a wide range of new opportunities for entertainment, education, research and commerce. Applications such as telemedicine and remote working are well established. Digital and interactive television are about to be introduced, and the number of Internet users is growing apace. The Government is committed to ensuring that the UK is a world leader in the communications sector in the 21st century, and that the new services are available to everyone.

**1.2** The Information Age product and services supply sectors are already making a major contribution to UK growth and competitiveness. The UK's indigenous suppliers of digital technology and services currently contribute some £37 billion per annum in value added (excluding film). Some commentators estimate they could contribute around 10 per cent of UK GDP by 2005.

**1.3** New technologies are also increasing the competitiveness of other sectors of the economy. For example, information processing is crucial to financial services, retailing and travel. The use of electronic data interchange (EDI) and other forms of electronic trading means fewer errors, quicker turnaround and lower costs. The World Wide Web, with its interactivity and multimedia features, provides exciting ways of promoting and selling products.

**1.4** The UK is well placed to benefit from the opportunities of the Information Age. We have world-class content industries in broadcasting, publishing, information and advertising; innovative software creators; a number of world-class centres of innovation, many based on inward investment; and a uniquely favourable regulatory system based on the early liberalisation of telecommunications and the gradual development of competition in broadcasting. The challenge for Government will be to ensure that the regulatory frameworks for telecommunications and broadcasting keep pace with the Information Age.

**1.5** The recent Government statement, 'Our Information Age', sets out the Government's strategy for maximising the benefits offered by new technologies and ensuring they are shared by the whole of society. In this document we focus on one strand of this programme: those elements of the legal and regulatory framework for broadcasting and telecommunications which affect these objectives. We set out the Government's views on the likely implications of convergence for the future regulation of these sectors, and seek views on how regulation should develop over the next few years.

### The impact of the new technologies

**1.6** Digital technologies are already changing the way services are delivered, blurring the boundaries between types of service operation and means of delivery, and eroding the technological distinctions between text, audio and video. This process of change is often referred to as convergence.

**1.7** Convergence is the result of the deployment of common technological components across a wide range of applications involving the processing or transmission of information, and the consumption of services by consumers. The technologies include:

- data capture (eg imaging)
- processing (computing)
- data storage
- encoding/decoding (digital standard formats)
- encryption/scrambling
- transmission (with minor variations for medium)
- compression/decompression
- display.

**1.8** The possible effects of convergence on markets and services are discussed in detail in annex A.

### **Implications for production technology**

**1.9** The falling cost of digital components means that equipment within the reach of the consumer now has much in common with the professional set. This can already be seen in the narrowing price and performance gap between camcorders available in high-street shops and those used in professional news gathering, and in the ability of the private individual to produce high quality content for publication on the World Wide Web.

### **Implications for network technology**

**1.10** By allowing more efficient use of existing bandwidth, digital and compression technology increases capacity. Further, because digital components are largely common it becomes much simpler to connect different network components to augment their capabilities, perhaps most importantly to add interactivity. Ultimately, all electronic networks will be able to have substantially the same capabilities. In network terms, convergence could be said to be substantially complete when all networks can deliver all services.

**1.11** This process is already beginning. The introduction of set top boxes for digital television later this year will provide an interconnection between broadcast and telephone networks. Technology for two-way microwave video transmission is already in advanced development, with asymmetric channel arrangements (broadband forward, wideband back).

**1.12** Fixed versus mobile distinctions may also be resolved by incorporation of multiple technologies in a single handset. The short-term focus for this is likely to be voice communications. However, developments building on mobile Short Message Services to provide mobile data handsets are underway. In the future, mobile multimedia capability is likely to be developed. Indeed, it is very likely that Digital Audio Broadcasting will deliver some mobile multimedia services over the next five years. Thereafter, Universal Mobile Telecommunications Systems are expected to play a major part in mobile multimedia services.

### Implications for consumer technology

**1.13** Much of the speculation about the convergence of consumer equipment focuses on the development of a 'single box' to deliver all the functions (and more) that we currently enjoy from the TV and the PC. But this is a very narrow view. While technologies may be common to a range of applications, consumers may continue to prefer distinct equipment for different applications. Traditional television and radio are likely to retain their strong and distinctive position because of their ubiquity, familiarity, low cost and ease of use.

**1.14** The environments of the living room (the traditional place for the TV) and the work room (the home of the PC) are generally quite distinct. The former is likely to remain dominated in the medium term by a consumer who is passively 'leaning backwards', while the latter very much requires the consumer to 'lean forwards' and interact with the application. The work-oriented application is likely to require more functions and flexibility than the living-oriented one. While a wide range of services will be available through many of the equipment types available, some will be better suited to certain applications than others.

**1.15** Many commentators argue that the PC will be the main vehicle for delivery of interactive services into the home – demonstrated already through the uptake of the Internet. Considering the power and revenue potential of the mass market, however, it seems likely that the focus of convergence in the short term will be the digital set top box, which is closer to the TV than the PC. It is likely, however, that most people will continue to view television in the traditional, passive way for a long time to come.

**1.16** Information-based services are also available in other forms such as the paper-based media. In so far as the same information is likely to be available on both paper and electronic media, there is clearly some scope for them to use common production technology. However, the pattern of consumption of paper-based publications is likely to remain quite distinct. Printed products have their own unique characteristics, such as: independence from power supplies; complete portability; rugged fold-ability – they can be carried conveniently and are resistant to rough treatment; and accessibility – they can be used in places electronic equipment can find testing. This is therefore likely to form another distinct demand segment for the foreseeable future; or at least until it becomes possible to replicate these characteristics economically in electronic form.

### Implications for transaction technology

**1.17** Digital systems enable easier interaction between customers and suppliers. Some provide the ability to input data readily at both ends of the transmission link. Alternatively, in the case of one-way broadcast networks, common technology allows these networks to be linked to others, such as the telephone network, to provide a return path. In both cases it is possible to provide a service on a large scale which is able to initiate and conclude transactions quickly and reliably.

**1.18** The transactional capability of digital technology means that it is immediately possible to carry out a number of familiar activities, such as banking, buying and selling, in new ways. These transactions can be presented in new contexts: for example, in association with traditional products such as broadcast television. This 'electronic commerce' is potentially very important in social and economic terms, reducing transaction costs for both suppliers and consumers and bringing new levels of access, convenience, speed, automation and reliability.

**1.19** Electronic commerce raises issues which are new to the electronic world, while being familiar in respect of traditional transactions. There needs to be trust between the parties to a transaction, ensuring confidentiality, authentication and verification of parties and transactions. Encryption is important for this, while recognising the interests of law enforcement and national security. The recognition of digital signatures is also of key importance. Personal data can be stored, manipulated and used in new ways and consumers need to be protected, for example through the EC Data Protection Directive and the application of general law on-line.

**1.20** All these aspects of electronic commerce – digital transactions – suggest that law and legal convention covering existing, familiar activities may need to be examined to ensure that it accommodates electronic variants. Further means may need to be found to reconcile differences in law in different countries in respect of a core set of issues related to commercial transactions. Additionally, some aspects of electronic commerce may raise genuinely new issues which might require new approaches in law and regulation.

### **The pace of change in broadcasting and telecommunications**

**1.21** The pace of change is not uniform across the sectors, within each sector or between providers and consumers of services. In each case, the practices of some have been – and will continue for some time to be – little affected whereas those of others are being rapidly transformed.

**1.22** The debate on convergence often therefore polarises, with policy-makers asked to choose between two visions:

- a radically new regulatory structure is needed to avoid barriers to competitiveness because convergence is with us
- the status quo will suffice because mass markets have not yet converged to a sufficient extent.

**1.23** The Government considers this a false choice. It would be wrong to seek to mould this market, which is developing rapidly but unpredictably, either to existing regulatory distinctions or to new ones based on a structure reflecting some conjectured future. The regulatory structure should seek to allow markets to develop organically, while providing the necessary protection for consumers and business. The Government will seek to provide a structure which reflects market realities and will seek to distort them as little as possible.

### **Accommodating differing perspectives**

**1.24** Our objective, therefore, is to provide regulators with a framework which is well adapted to deal with this process of transition and the uncertainties involved. Our design must be flexible enough to adapt to developments and reflect the different perspectives of the principal actors: providers of services on the one side, consumers in mass markets on the other.

**1.25** From the *providers' perspective*, digital technology is already widely deployed before services are presented to the consumer. So convergence is already bringing significant opportunities to:

- gain economies of scope and scale across different areas of the business (eg production and distribution)
- gain value by extending services from one medium to another as their technical capabilities become increasingly interchangeable
- undertake alliances, mergers and significant investment to exploit these strategic opportunities.

**1.26** From this perspective, the *core concerns* are *economic and related social issues*:

- to encourage strong competition amongst providers and to deal with bottlenecks where a provider may abuse market power
- where necessary, to supplement this to support the consumer interest in widening access to services and achieving interoperability between systems.

**1.27** The *key response* is to provide greater coherence in economic regulation across all digital delivery media and all parts of the converging value chain. A foundation for this is already being put in place with the new Competition Bill, complemented by appropriate sector-specific regulation and the existing merger control provisions of the Fair Trading Act.

**1.28** From the *consumers' perspective* the picture is far less clear:

- mass markets for converged digital services do not yet exist
- how they develop depends on the behaviour of individuals and communities reacting to new technology and services, and the prices at which they are available
- the behaviour and expectations of consumers will not change overnight.

The pace of development may therefore be slow, and the endpoint uncertain.

**1.29** It seems likely that, while the converging market becomes more homogeneous in terms of providers, a spectrum of distinct segments of consumer demand, reflecting established patterns of consumption, will persist for some considerable time to come. At one end of this spectrum there is likely to be a segment which looks much like the universal broadcast television as consumers know it today. At the other, there is likely to be a segment with many of the characteristics of the Internet as we know it today.

**1.30** From this perspective, the *core concerns* are *cultural and related social issues* responding to consumer expectations about:

- standards of taste, decency and quality
- plurality, diversity and impartiality
- universal service and continued public service provision.

The *key response* is to reassess regulatory distinctions between different media. It is necessary to recognise that services merit different regulatory treatment according to the basis on which they are provided and differences in consumer expectations, for as long as such distinctions exist. For example, a film service might be made available free to air, as a subscription service or on a pay-per-view basis. The degree of control the consumer exercises differs in each case, as do consumers' views of the kind of content which is acceptable. These same film services might be transmitted on analogue cable, on a digital terrestrial television service or, eventually, via the Internet. The aim is to provide consistent regulation which gives adequate consumer protection, whatever the transmission medium.

### The challenge for Government

**1.31** There are three main strands to the work to review the regulatory implications of convergence:

- economic regulation to deal with strong supply-side convergence and socioeconomic objectives
- questions of regulation relating to cultural policy objectives, including content quality and standards, and consumer protection issues, which link strongly to more diverse demand-side considerations
- questions as to how well the wider legal framework is adapted to deal transparently with electronic commerce.

**1.32** We need continued investment in infrastructure, in services and in skills to realise the potential of our Information Age. It will be largely the hard work, skills and innovative talents of those in the communications industry which bring this about. But there is a role for Government in providing a transparent, predictable and proportionate framework of law and regulation to serve the national interest.

**1.33** We are entering a period of dynamic and potentially rapid change driven by the consequences of technological convergence outlined above. However, much depends on the way in which individuals and communities adopt, adapt and react to these new developments. For this reason, it is very difficult to predict with any accuracy the speed and direction of change. It will be important for Government to avoid setting up systems of regulation which could form inappropriate barriers to future developments, or which would prevent us reacting to developments to protect the consumer interest.

**1.34** We need an approach which has enough flexibility to respond to changing circumstances. We will aim to draw a regulatory framework with a light touch, but we will work in the interests of the consumer. This will mean regulating where necessary but, wherever possible, promoting competition and new entry. This Green Paper seeks views on the changes which will be necessary in the short and long term, and how they should be brought about. As a first stage, we seek your views on how the industries are developing.

#### Question 1

**What major developments do you anticipate in the media and telecommunications markets in the short to medium term?**