



Broadband regulation

The OFTEL Consultative Document: beyond the telephone, the television and the PC

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This article reviews the Office of Telecommunications' Consultative Document on the regulation of broadband switched mass market (BSM) services delivered by telecommunications systems. The document aims to stimulate debate on the implications of current and probable future developments of telecoms technology and its use. This paper concentrates on the key principles of the BSM regulatory framework, the practical issues over access, the question of vertical integration through convergence, and transitional regulation.

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Introduction

The Office of Telecommunications' (OFTEL's) discussion document¹ represents a first attempt in the UK to scope the regulatory environment for the 'information age', with telecommunication systems, especially those for the broadband switched mass market (BSM), at its heart. The BSM services will essentially involve the delivery of video quality images over a fully interactive switched system. The technology, and particularly the ability to deliver BSM services on a price competitive basis, has not yet been reached, but OFTEL believes that in order to ensure their fast introduction and smooth evolution thought must be given now to the introduction of an appropriate regulatory system.

OFTEL sets out a number of key principles underpinning regulation of BSM services and analyses the key actors in the market-place. It then outlines a regime for regulation of dominant BSM network operators, with the aim of ensuring fair and open access for competitors and consumers and generally providing an environment suited to the encouragement of competition.

Key principles

OFTEL argues that seven key principles should underpin any BSM regulatory framework. These are:

- the interests of consumers in terms of choice, quality and value for money;
- promotion of service development, as well as—and distinct from—infrastructure;
- encouragement of private sector investment;
- stability and flexibility of the regulatory environment;

¹OFTEL's report is available from OFTEL, 50 Ludgate Hill, London EC4M 7JJ, UK (Tel: +44 171 634 7000; fax: +44 171 634 8943).

- promotion of competition in both infrastructure and services;
- valuing cooperation and collaboration as benefits the consumer; and
- asymmetrical regulation of dominant operators.

Two further goals are identified, which are:

- encouragement of 'any-to-any' connectivity for customers; and
- open access for service providers, where BSM network operators are dominant.

A market model

OFTEL proposes a four-market model for the development of BSM services, each of which differs significantly in their economic characteristics of production and consumption. Interaction between these sectors is likely to be varied and complex, and OFTEL predicts that distribution network owners are likely to seek to migrate up the value chain towards service provision and content creation; the market-place will also become increasingly international. The four markets are described below.

Content creation

Although regulation of content is not a province of OFTEL, it would have a legitimate concern if control of content was employed to distort network competition. OFTEL takes as an example BSKYB's dominance over non-terrestrial programming material and, in particular, sports rights, a theme that recurs throughout the document. Long-term domination by any one organization in content creation is considered unlikely.

Service provision

Service provision is, essentially, the packaging and presentation of services. Service providers may own the servers on which content is stored, control gateways into the home or office, or be responsible for billing and advertising and navigation systems on customer equipment. OFTEL rightly believes this segment to be key to the growth of the BSM market. Service provision is undergoing change; traditional broadcasting service providers, like the BBC, have typically acted as principals, buying and then reselling content to the consumer. Traditional telecom network owners tend to act as a mere agent or provider of capacity.

Distribution networks

In light of convergence, distribution networks are defined widely to include traditional telecommunication networks and terrestrial and satellite broadcast networks—in each case, 'the pipe that conveys the message'. The distribution network market is characterized by dominant operators, like BT or the SES Astra satellites, which are subject only to limited competition through market dominance, and the risk of abuse is therefore a real factor.

Consumer equipment

Customer equipment, or terminal equipment in traditional telecom terms, extends from television sets and PCs to set top boxes and modems. In the consumer equipment market normal levels of competi-

tion are expected, although the risk of market dominance through the aggressive use of proprietary standards may need to be monitored.

Access to distribution networks

The BSM distribution networks are expensive; the investment required for their creation is considerable. Simply running such a network may not offer a return substantial enough to repay this investment, suggesting that distribution networks may need to be tied to another market sector, whether that be content creation, a particular navigation system or type of consumer equipment. OFTEL foresees a position where unique and attractive content or conditions for delivery of content could be exclusively controlled by a dominant operator and used for anti-competitive effect against new entrants to the distribution market.

As guiding principles OFTEL concludes that: non-dominant owners of distribution networks should be able to exclude service providers or content creators from access to their network; owners of dominant distribution networks should be required to offer open access, and their freedom to impose conditions of exclusivity should perhaps be regulated; and access to dominant distribution networks should be non-discriminatory.

Practical issues

OFTEL raises some practical issues regarding access, which are listed in the following section.

Interconnection

The possibility exists to introduce an effective framework for interconnection before BSM services are launched commercially, as to avoid the problems and disputes that plague interconnection in narrowband telephony.

Navigation systems

On-line navigation, which will largely take over the role that telephone numbers, directories and advertising play in narrowband telephony, may provide opportunities for market distortion, calling for additional regulation. OFTEL uses the example of the control of information sequencing in airline computer reservation systems to illustrate this point. OFTEL judges regulation to be necessary where a single or limited number of navigation systems is available on any dominant distribution network and where the owner of the navigation system or the distribution network owner is also a contents owner or service provider.

Numbering

The introduction of a new range of numbers should be used to establish and modify connections of BSM services to customers. This may facilitate the introduction of network-based functions, such as service barring, enabling customers to restrict access to certain services or types of content.

Payment systems

Two payment scenarios are discussed: customers might have one

Table 1. Key players and markets.

	Content creation	Service provision	Distribution network	Consumer equipment
BT	n/a	X	X	X
Cable	X	X	X	X
BBC	X	X	X	n/a
BSKYB	X	X	X	X

contract with one network provider covering transportation, service and content, or alternatively a number of separate contracts with different service providers, analogous to Internet provision. The latter scenario produces a more complex billing system, but the former puts the customer in a weak position in the event of unsatisfactory service or content and is unlikely to be satisfactory with BSM services where content value is likely to be higher than transportation value. If bundling exists, the service provider, or even the content owner, is more likely to bill than the provider of transportation. OFTEL would expect to insist on unbundling for dominant distribution networks.

Network owners might be allowed to act as billing agents for service providers, allowing for cheaper billing than that available on a service-by-service basis. However, if a network owner also offers his own services, this might prejudice the achievement of a level playing field between service providers. Independent low-value transaction systems, such as National Westminster Bank's Mondex, may become viable, and OFTEL expects to see low-risk, low-value transactions taking place instantaneously over the network with separate billing by service providers for high-risk, high-value transactions.

Customer information

Given that service providers will have a commercial need to establish a direct relationship with their customers, information on customer usage will be at a premium. The network owner will have potential access to information, through the monitoring of network usage, and it may be necessary, where the distribution network owner is also a service provider, to ensure that the availability of such information is not used to distort the services market. Similar provisions may be needed in regard to any dominant billing system owners; alternatively, this might be left to fair trading rules.

Conditional access systems development for pay-per-view or subscription-based services may also need to be brought into the regulatory net for dominant distribution networks, particularly as regards access by service providers.

Vertical integration

The convergence of telecommunications, entertainment and information technology will lead to vertical integration, both by common ownership and by contractual arrangements, across the four market segments. Table 1 shows OFTEL's analysis of key players' activities in the four markets.

OFTEL is concerned that vertical integration, when combined with a degree of market dominance, may give an operator an unfair competitive advantage. Again, this fundamentally reduces the question of access, and dominant distribution networks should remain free to run vertically integrated operations across market boundaries, provided that

a fair regulatory framework for access is put in place. OFTEL, however, would require the owner of a dominant distribution network to provide broadband conveyance as a separate network business for accounting purposes, with published disaggregated accounting information. Any service provision operation it runs would be put under a similar obligation.

Transitional regulation

In the transition to BSM services, four transmission mechanisms are currently used to convey services to consumers: traditional PTO networks, cable PTO networks, satellite broadcasting and terrestrial broadcasting networks. All but cable PTOs currently have a dominant operator in their market. An agreement between one or more network owners and a dominant service provider could have an anti-competitive effect in the service provision and content creation markets; and the Director General argues that, even though broadcasting is outside his current remit, he might need to consider whether or not to use powers granted to him under PTO licences to require the distribution networks in question be made open to other service providers on non-discriminatory terms and that OFTEL regulate these distribution networks in the same way as dominant BSM networks, as discussed above.

Market dominance of the current distribution system arises from their limited capacity. As they are not switched broadcast networks, even digital broadcast networks will never be completely open, and the basis for service provision is likely to remain channel ownership or control. OFTEL believes that economic, as opposed to content, regulatory intervention might be necessary: where the need to duplicate conditional access systems hampers the provision of extra channels, for example where one operator has a dominant position in conditional access systems; and to prevent a single service provider from dominating all or most of the unswitched distribution systems.

Basis of regulation

OFTEL's current view is to concentrate BSM regulation on distribution networks, to develop a proactive regime for dominant distribution network owners and a more relaxed system for those with no market dominance, as already successfully applied by them in the narrowband field.

The definition of dominance will be crucial and is complicated by the interrelationship between market segments. OFTEL would determine each case on its merits and publicly account for its decisions.

For dominant distribution network owners the aims of regulation would be proactively to: open access for service providers, including other distribution network owners, on non-discriminatory terms; direct commercial relationships between service providers and individual customers so as to allow the former to set their own retail prices; achieve appropriate accounting separation between network distribution and service provision; and specify and apply technical standards and interfaces at either end of the network in a manner that will promote open access and competition in the supply of customer equipment.

In respect of the owner of a transitional digital distribution network with a dominant conditional access system, the aims of regulation would

be to: open access to the conditional access system by other service providers; achieve freedom for service providers, as opposed to distribution network owners, to set retail prices as they wish; and separate accounting between system ownership and service provision if carried out by the same organization.

Pricing

Transport costs of BSM services will effect the overall service price and the viability of the service itself; pricing based on fully allocated costs could seriously harm the viability of a service. OFTEL's provisional conclusion is to allow dominant distribution network owners to price transport down to incremental cost on a non-discriminatory basis. A second question, whether to oblige operators to price at this level, is left undecided, as indeed it remains under narrowband regulations.

Customers may be willing to pay higher prices for higher quality services or more choice, but the type of network used, and whether it is more expensive, will be immaterial to them. Conveyance costs may be bundled into costs of service, and service providers may be willing to bear transport costs for expensive switched networks as the quid pro quo for access to a larger number of consumers. Customers may be reluctant to pay for services they have traditionally received free of charge, eg shopping catalogues or banking facilities. OFTEL foresees that transport pricing might move from a time basis (duration of call) to a basis of capacity or volume of data (bytes transferred).

A special regulatory regime for pricing might need to be developed, to cover the following: rules on non-discriminatory pricing, but perhaps allowing discrimination based on service type; some form of pricing control for interconnection among BSM networks and for access between service providers to BSM networks; publication of tariff information; and control of bundling and linked sales to ensure customers are able to disentangle transport and service costs.

OFTEL's provisional conclusion is that, while close regulatory supervision of prices may not be required, these types of control over the pricing regime might need to be imposed where a network owner has a dominant position in the market, or is able to cross-subsidize its operation unfairly, or where two or more network owners can act in concert to produce the same effect.

These proposals on access and pricing would require modifications to network owners' licences issued under the Telecommunications Act 1984; and OFTEL would at the same time consider the impact that existing licence conditions might have on any proposed BSM service.

Universal service

Although given the current state of uncertainty, BSM services should not form part of any universal service obligation on operators at this stage. The concept of universal service is dynamic, and OFTEL has already proposed that it be kept under review by a Universal Service Advisory Group. Of particular importance is the need to give broadband access to schools, colleges and libraries.

Technical interfaces and standards

Interoperability is crucial to the development of open access and of 'any-to-any' connectivity, across the field. Analogue and digital set top

connectors that use 'plug-in' boards to interface with different networks should be kept to an absolute minimum through a consistent global regulatory approach. Interfaces between distribution networks and service providers should follow the recommendations of the Digital Audio Visual Council (DAVIC). Dominant distribution network operators should be required to interconnect on equitable terms to ensure interoperability.

Protecting the consumer

Specific consumer protection issues will arise as the BSM services market develops. These include: availability of clear information on pricing; service quality; the individual's ability to control access to different types of services, for reasons of content, cost or privacy; and the need for a clear contractual relationship between the content provider and customer.

The extent of OFTEL's role in these issues will vary, and OFTEL has issued a further document specifically addressed to consumers.

BT and BSM

BT has begun to trial ADSL technology. While OFTEL welcomes the prospective entry of BT into the BSM service market, OFTEL does not propose any change to the ban on BT from conveying or providing entertainment services until 2001. BT's dominant position in narrow-band telephony will remain of concern, given that BT will be active in three of the four market segments identified, which carries the potential for distortion of competition in the BSM network and services market.

OFTEL's preliminary view is that its proposed regulatory package should apply to BT as soon as BT starts to roll out BSM services aimed at a significant portion of the UK or in a specific market. As an alternative, BT might be allowed an initial period after roll-out before any regulatory package comes into effect. In addition, OFTEL would monitor BT's costs and prices for BSM services and introduce a price floor if this becomes appropriate and necessary, based on the pricing principles outlined earlier.

Cable PTOs and BSM

Cable PTOs would become subject to the BSM regime if and when the cable industry becomes dominant, either nationally or in a specific regional market, and able to compete on equal terms with BT and any other BSM services distributor.

Other PTOs

Other PTOs, such as Mercury, Energy and Torch, are likely to concentrate on conveyance. None is yet in a dominant position, nor is likely to be in the short to medium term. Therefore, like Cable PTOs, OFTEL's concern is to encourage continuing investment in infrastructure, and it sees no case for regulation at present.

Ionica and Liberty intend to build widespread local infrastructure based on radio delivery. These networks might be subject to the BSM regulatory regime if and when they become dominant.

Conclusion

The Director General is at pains to point out in his preface to the

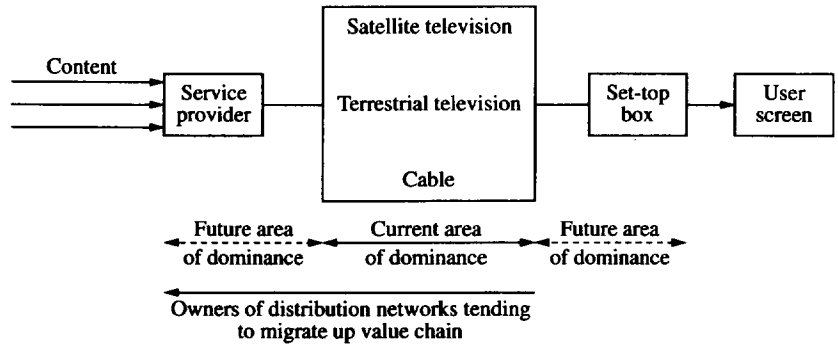


Figure 1. The BSM valve chain.

document that it is very ‘green’. OFTEL is seeking industry views and includes 21 questions arising out of their assumptions, analysis and proposals. Figure 1 may help illustrate the prime issues.

As the report points out, owners of satellite television, terrestrial television and cable television enjoy dominant positions. Distribution network owners have shown an interest in migrating up the value chain towards service provision and content, where there may be greater profitability. The ‘intelligence’ in the system is concentrated at each end of the distribution network: that is, in the systems used by the service provider and in the set top box. The service provider receives, reformats, packages and possibly encrypts content coming into the system, while the supplier of the set top box provides the technology that allows signals to be unscrambled and delivered to those users who are entitled to receive particular programmes.

A recent historical perspective is interesting: in 1988, the European Commission addressed the issue of whether dominant narrowband telecommunication service providers should be allowed to retain monopoly rights over the provision of customer premises equipment, or terminal equipment. The Commission easily reached the conclusion that they should not, because this effectively amounted to an extension of their dominant positions beyond network provisions, which was wholly unjustifiable under Article 90 of the Treaty of Rome. The same issue now arises in the case of broadband networks and regulators; both national and supra-national levels should be concerned to restrain dominance in one area from creeping into neighbouring areas.

Service providers may also enjoy a dominant position through the control of encryption technology. Indeed, as the report itself points out, dominance can arise in a number of ways; control of the way in which messages are sequenced onto the screen in particular directions can direct a user towards one person’s content rather than an other. Devices of this kind could tilt the playing field and deny open access to other content providers, service providers or networks. Open access to networks already has been the subject of a particularly vigorous war in the United States and, as a concept, it is already incorporated into European jurisprudence through competition decisions and notes on open network provision for telecommunications.

OFTEL’s paper may be seen as a bid to stretch its own area of regulation sideways into broadcasting, upwards into the technology used by service providers and downwards into the technologies employed by suppliers of set top boxes. Naturally enough, in the first case, this begins to encroach upon the turf of the Independent Television Commission in the UK, who have already expressed some reservations

about the OFTEL paper. OFTEL appears to have an arguable claim to regulate all forms of transmission paths to the user because of the experience it has gained in regulation of narrowband networks in the UK. Critics may accuse OFTEL of having allowed itself to be too bogged down in esoteric but nonetheless important economic questions arising out of interconnection, but lessons have been learnt and OFTEL is clearly well placed to act as regulator of all forms of broadband network end-to-end, if not to regulate content.

The regulation of content is equally important. A main issue here is the future of the ITC; should it continue to regulate broadcast transmission systems as well as content or, given convergence, should it focus on content, however delivered, and leave networks to OFTEL, leaving regulation technologically neutral? There appears to be a need to adjust regulatory roles in the UK and, in doing so, we believe that the government should look not just at the respective roles of OFTEL and the ITC, but all other statutory and voluntary regulators in the UK, of whom there are some 15 or 20, including two regulators at the BBC, film and video ratings bodies, a body that regulates premium rate telephone calls and a body exercising restraint over computer games. New domestic regulation should also have regard to moves within the European Union towards greater, or more harmonized, pan-European regulations in this field.