



Mobile Evolution

Ofcom's mobile sector assessment

Statement

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Section 1

Executive summary

- 1.1 Mobile communication has transformed the way almost all of us keep in touch. Ofcom's view is that currently mobile markets are serving UK citizens and consumers well and competition between mobile operators is driving this success.
- 1.2 As a result, the majority of people in the UK use mobile services. Innovation is flourishing: we are using more text and data services; mobile internet access is taking off; and devices can do more while costing less.
- 1.3 Additional indicators of this success are the existence of commercially-derived wholesale contracts to supply MVNOs, robust levels of customers switching service provider, and the existence of self-regulatory schemes to address consumer content concerns.
- 1.4 Our assessment is based on the extent of competition within the current market structure. Any significant change in the market structure may affect competitive pressures in the industry, and we would assess such changes on their own merits.
- 1.5 There are some areas where performance could be improved, or where today's success does not guarantee future success. For example:
 - service availability and quality (particularly of coverage) is not satisfactory for all citizens;
 - future mobile technology trends may bring great benefits to some citizens, while others may be unable to access these benefits; and
 - there are trends and pressures that may change the nature of competition in the future, requiring us to remain vigilant to ensure that competition continues to be effective.
- 1.6 However, in assessing each area of concern in turn, we conclude that our continued **promotion of sector competition**, as a mechanism to address many of these concerns, should remain the primary means of achieving good market outcomes. Specifically, our bias against intervention and our wider telecommunications strategy lead us to continue to prefer to maintain healthy, infrastructure-based competition at the deepest level possible to produce differentiation in mobile services and pricing. We conclude that:
 - regulating wholesale services (as we do in fixed telecoms) is not appropriate (nor do we need a wider market review) at this point;
 - we should put more focus on the enforcement of rules promoting competition;
 - we should continue our spectrum liberalisation programme; and
 - we should use competition law as appropriate to assess future market changes.

- 1.7 There are areas where we need to be prepared to intervene if the market does not deliver **good outcomes for citizens and consumers**. Our current priorities are to ensure: easy and reliable switching; access to information to allow consumers to get a good deal; effective complaints and dispute handling for new market entrants; protection for consumers from misleading or exploitative practices; and ensuring that vulnerable consumers are not disadvantaged.
- 1.8 We also consider **mobile coverage** to be an area of concern. It is not clear whether regulation can play any part in day-to-day coverage issues (although it remains open to government to use coverage obligations to set the framework within which networks are built).
- 1.9 In our *Mostly Mobile* consultation published July 2009 we pointed out that, while mobile network availability is generally good, coverage issues persist.¹ There is still a noticeable difference between 3G coverage in rural and urban areas, and also between different parts of the UK. 2G coverage is unlikely to be extended further on commercial grounds. Despite continuing roll-out of 3G networks, 3G is unlikely to extend beyond the 2G network footprint, which may result in persistent coverage problems for some areas.
- 1.10 We are taking steps to tackle this:
- We are conducting research to determine the causes of not-spots, including those that can occur in areas 'covered' by mobile networks.
 - We are working with industry to gain a better view of the end-user experience delivered by mobile broadband networks.
 - We are liaising with mobile operators and public bodies to explore the contribution we could make to facilitate better coverage.
- 1.11 We also provide links to mobile operators' coverage checkers on our website (<http://www.ofcom.org.uk/consumer/2009/08/mobile-broadband-coverage-checker>).
- 1.12 In regulating the mobile sector in the future, we will build on the consumer and economic benefits that have been driven by the mobile sector, rather than adopt a new regulatory approach. We see the main areas of our regulatory activity as helping to promote competition and innovation, safeguarding consumer interests, and tackling, where appropriate, problems that the market fails to solve adequately (such as coverage not-spots).
- 1.13 This statement concludes our assessment of the mobile sector. However, the mobile sector is highly dynamic and subject to ongoing change. Some recent developments, such as the Independent Spectrum Broker's (ISB) report and the proposed merger between T-Mobile and Orange, may well have significant implications for the conclusions set out in this document and for our future work programme.

¹ <http://www.ofcom.org.uk/consult/condocs/msa/>

Section 2

Mobile sector assessment

- 2.1 This section introduces the background to the mobile sector assessment and provides a summary of the relevant characteristics of, and developments in, the mobile sector that inform our regulatory approach.
- 2.2 It briefly summarises the conclusions from our analysis of the sector, focussing on competition, consumer protection, access and inclusion, coverage and future sector trends. The analysis is set out in more detail in our consultations *Mobile Citizens*, *Mobile Consumers* in 2008 and *Mostly Mobile* in 2009.²

Background

- 2.3 In fulfilling its duties as the regulator of converging communications industries, Ofcom periodically takes stock of the strategic role of regulation in the particular sectors we regulate. In 2008 we commenced an assessment of the UK mobile sector to identify whether and how regulation needs to adapt to a changing market.³
- 2.4 Our principal statutory duties are “(a) to further the interests of citizens in relation to communications matters; and (b) to further the interests of consumers in relevant markets, where appropriate by promoting competition”.⁴ This principal duty, as well as our duty to encourage innovation under Section 3(4)(d) of the Communications Act 2003⁵, is at the heart of the mobile sector assessment process.
- 2.5 Our aim for the mobile sector assessment was to help ensure that the sector contributes fully to the UK economy and society at large. In practice, this means that individual and business consumers have a range of choices offered by competing providers and that consumers find choosing (and switching) between providers easy, quick and safe from scams. For citizens, it means widespread availability of those services needed to participate meaningfully in society, and clear and practical responses by regulators to the changing demands of digital citizenship, in areas like privacy, identity and content. For industry, it means being able to compete and innovate in the context of a clear regulatory framework supported by effective enforcement to protect consumers, where appropriate.
- 2.6 We decided to carry out this assessment in 2008 because we observed that mobile and wireless markets were changing:
- convergence (of services, technology and commercial relationships) was gathering pace;
 - spectrum release and liberalisation were bringing about change;

² *Mobile citizens, mobile consumers*, August 2008, <http://www.ofcom.org.uk/consult/condocs/msa08/> ; *Mostly mobile*, July 2009, <http://www.ofcom.org.uk/consult/condocs/msa/> .

³ <http://www.ofcom.org.uk/research/telecoms/msa/>

⁴ Communications Act 2003 (ref) http://www.opsi.gov.uk/acts/acts2003/ukpga_20030021_en_1

⁵ http://www.opsi.gov.uk/acts/acts2003/ukpga_20030021_en_1

- moves towards infrastructure-sharing were changing the commercial landscape for mobile operators;
 - new entrants and new technologies had the potential to alter the shape of the marketplace; and
 - consumer protection issues were becoming more important.
- 2.7 These issues were being discussed in Europe and indeed globally in ways that had the potential to affect the interests of citizens and consumers in the UK.
- 2.8 We wanted to consider whether we should revise our approach to regulation of the mobile sector, in order to respond to future changes in the market environment while remaining consistent with our well-established regulatory principles. These principles include a bias against intervention and the promotion of competition.
- 2.9 We carried out two phases of assessment, with close stakeholder engagement and consultation at each stage.
- 2.10 In August 2008, we published our first consultation for the mobile sector assessment *Mobile citizens, mobile consumers*. This first consultation focused on taking stock: it mapped the status quo of the sector and its regulation and it identified the market trends and characteristics that we believed would shape the sector, and its regulation, in the future. We did not put forward any policy proposals at the time.
- 2.11 In our second consultation, *Mostly Mobile*, we discussed how well it is functioning for citizens and consumers. Based on our feedback from stakeholders, research evidence, the state of the market, and the trends we identified, we also set out our proposed approach to regulating the mobile sector.
- 2.12 This Statement, *Evolving Mobile*, completes our mobile sector assessment.

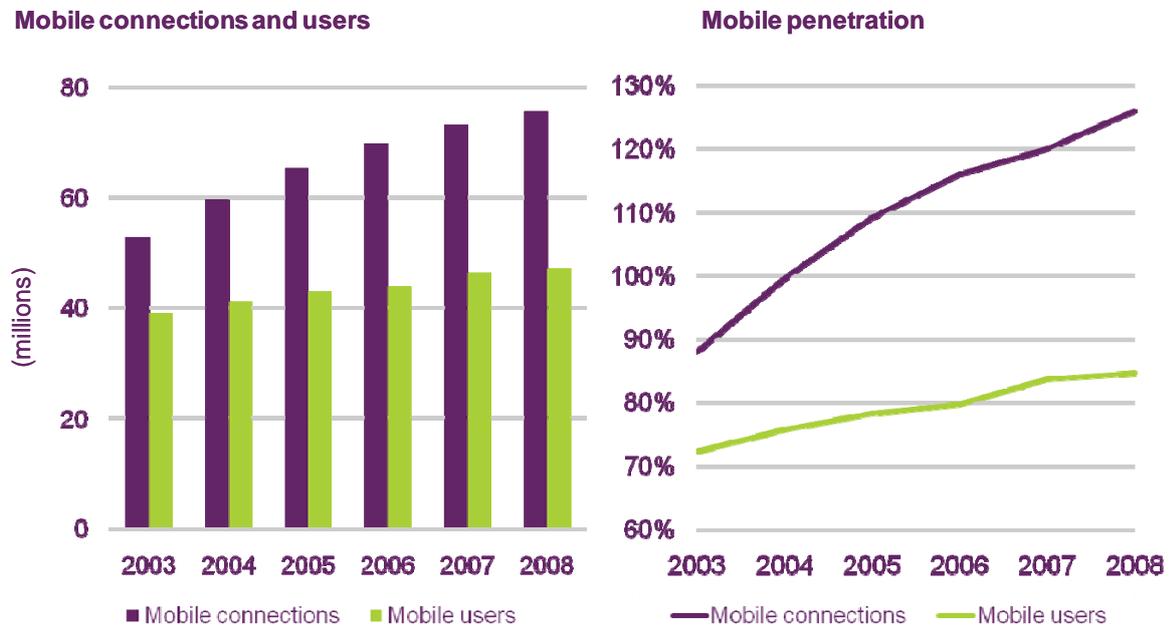
The mobile sector has served most citizens and consumers well

- 2.13 We believe that competition is the most important stimulus for ensuring that consumers benefit from advances in the mobile sector. These benefits include service and technology innovations, fair prices and investment. We discuss our views on, and analysis of, mobile sector competition in the Competition section of this statement.
- 2.14 As the chart below illustrates, take-up of mobile services continues to grow, and has now reached about 89% of the total population. The proportion of households with access to a mobile phone (92%) has already overtaken the proportion of households with a fixed line (87%). We expect the number of mobile call minutes to overtake fixed by mid-2010.⁶

⁶ *The Communications Market 2009*, Ofcom (<http://www.ofcom.org.uk/research/cm/cmr09/>)

2.15 The level of involuntary exclusion from using mobile phones stands at 3% of adults over the age of 15.⁷ This is in line with involuntary exclusion from fixed line services; also 3%.⁸

Figure 1: Mobile connections and users



Note: Penetration based on population 8+
Source: OFCOM

2.16 The real cost of mobile services has continued to fall over the five-year period to 2008 at an average annual rate of 11.9%.⁹ Since consumers have tended to increase their use as the real cost falls, this does not indicate a reduction in average consumer spending, but it does show increasing value for money over the period and indicates that consumer prices are falling.

⁷ By “involuntary exclusion” we mean the people who describe themselves as being excluded from owning or using a mobile phone for reasons other simply choosing not to have a mobile phone. For example, people who cannot afford mobile services or who live or work in those areas where mobile services are not available.

⁸ *The Consumer Experience Report*, Ofcom 2009 (<http://www.ofcom.org.uk/research/tce/ce09/>)

⁹ We analyse the cost of a basket of telecoms services as a means of comparing costs over time. This analysis derives the 'real cost' to the consumer by calculating the average price per minute for access and calls (and price per text message for mobile) in a year, and then defining the basket as the average number of minutes (and messages) used in 2008. Costs are then adjusted for changes in the consumer prices index (CPI) in order to provide a year-on-year comparison.

Figure 2: Real cost of a basket of mobile services

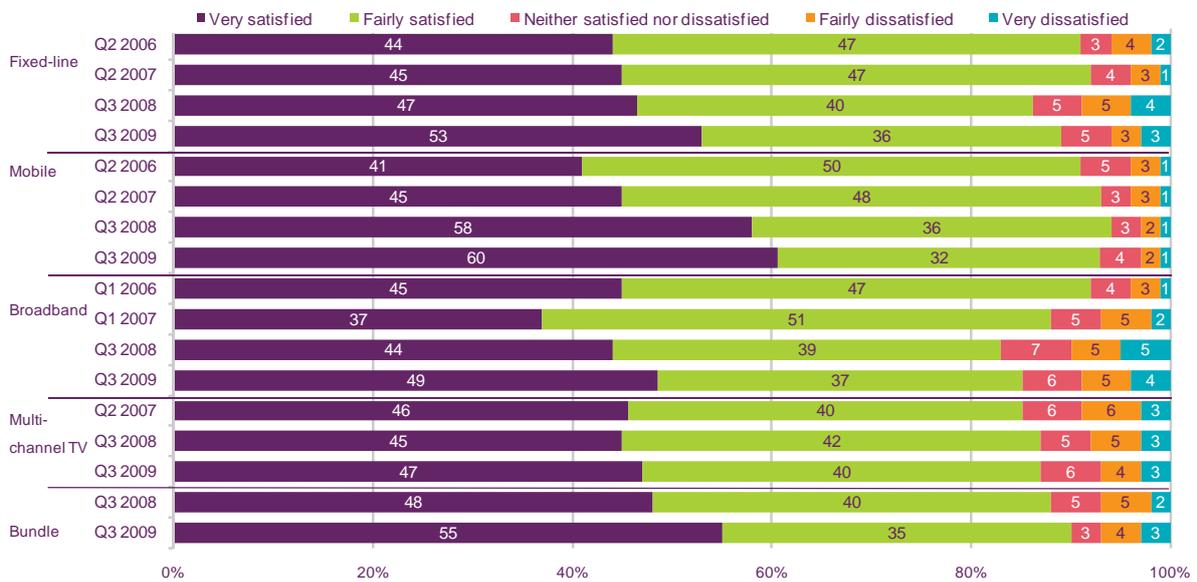


Source: Ofcom / operators

Note: Includes VAT; excludes non-geographic voice calls

2.17 Our consumer research demonstrates that consumer satisfaction with mobile has been continuously high (and improving) over the past three years, above the level observed for other communications services.

Figure 3: Satisfaction with overall services from communications supplier



Source: Ofcom communications tracking survey (2006-2007)/ Ofcom decision making survey (2008-2009)

Base: All adults aged 16+ who are the decision maker and express an opinion on fixed line (Q2 2006, 2198) (Q2 2007, 1329) (July 2008, 928) (July 2009, 779). Mobile (Q2 2006, 1862) (Q2 2007, 1273) (July 2008, 1265) (July 2009, 1224). Broadband (Q1 2006, 830) (Q1, 2007, 727) (July 2008, 454) (July 2009, 384). Multichannel TV (Q2 2007, 1211) (July 2008, 891) (July 2009, 826). Bundled services (July 2008, 534) (July 2009, 631)

- 2.18 The number of complaints Ofcom receives about mobile services has stabilised over the past two years, Consumer Direct¹⁰, reported a reduction of nearly 35% in complaints about mobile services agreements, and a reduction of 18% in complaints about mobile handsets in the first half of 2009, compared to the first half of 2008. However, it is worth noting that mobile services still occupy second place overall in numbers of complaints, after second-hand cars.
- 2.19 Communications markets are complex; some consumers may have difficulty in assessing the available information in order to get the best deal. In particular, communications markets feature many new technologies. Products and services are often supplied as subscription services or bundles, and tariffs can be complex and include a variety of charges and terms and conditions.¹¹

Mobile broadband has triggered a second ‘mobile revolution’

- 2.20 Take-up of mobile data services (including mobile broadband) has been rapid, particularly over the past two years.¹² Although the numbers of consumers using mobile broadband, and the associated revenues, are still relatively small, mobile broadband is having an impact on the mobile sector, both as a result of the new devices and services that it has facilitated, and because of its reliance on networks that can support high bandwidths, such as 3G networks.
- 2.21 The use of ‘smartphones’, and other handsets capable of using sophisticated data services and accessing the internet, is growing. Thirteen per cent of new handsets sold in Q3 2009 worldwide were smartphones, up from 12% in Q3 2008.¹³
- 2.22 The reported use of mobile broadband by households is also increasing. According to our consumer research, by the end of Q3 2009 around 3.9 million households had a mobile broadband connection (approximately 15% of all households).

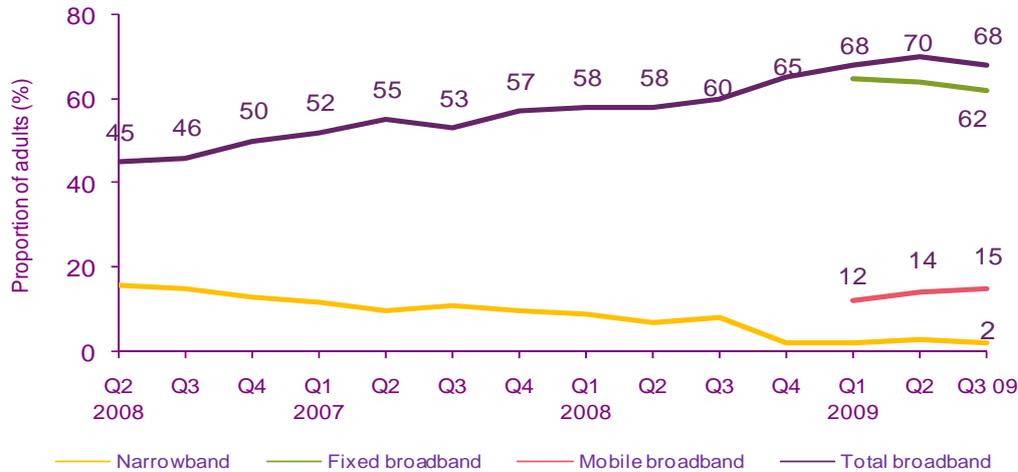
¹⁰ Consumer Direct is the government-funded telephone and online service offering information and advice on consumer issues (<http://www.consumerdirect.gov.uk/about/>)

¹¹ Source: Consumer Direct, “Consumer Direct reveals half-yearly complaints statistics”, 27 July 2009, http://www.consumerdirect.gov.uk/news/press_releases/national/2009/CDhalfyearcomplaint.

¹² When we discuss ‘mobile data’ services, we mean services other than voice calls, although in some contexts (for example, in industry reporting), SMS is sometimes excluded. Examples of mobile data services include email and other applications available on smartphones such as BlackBerrys or iPhones, and accessing the internet using a mobile phone’s web browser. ‘Mobile broadband’ means specifically the service offered using a datacard or dongle, that is plugged into a computer (such as a laptop or netbook) to connect that computer to the internet.

¹³ Source, Gartner <http://www.gartner.com/it/page.jsp?id=1224645>

Figure 4: Household penetration of broadband services



Source: Ofcom

Note: Mobile broadband refers to mobile services providing high data speeds to laptops with modems.

- 2.23 Early consumer experiences of mobile broadband have been mixed; Rapid take-up has been accompanied by lower levels of consumer satisfaction than for other services.¹⁴ At the same time, some operators have seen strong growth in demand for capacity driven by the take-up of mobile broadband, with corresponding impacts in terms of service performance where supply lags behind demand.
- 2.24 Future mobile networks, including 4G¹⁵ technologies, hold the promise of higher network capacity and data rates, reducing the costs of delivering existing services, and enabling new services.
- 2.25 Driven by advancements in mobile technologies, and assuming the continuation of favourable market conditions, the demand for service innovation and service competition is likely to grow. New services and applications are becoming internet-based, which may reduce barriers to entry and give application providers and handset manufacturers the opportunity to seek direct customer relationships.

Consumers increasing use of new mobile data services is an important driver of changes in the mobile sector

- 2.26 Mobile broadband and data services present opportunities for Mobile Network Operators (MNOs) to develop new products and services, and for enhanced consumer experiences.¹⁶

¹⁴ YouGov, Dongle Tracker report 2009

¹⁵ 4G refers to the fourth generation of wireless access technologies and is a successor to the 2G and 3G standards that are currently used by UK mobile operators and includes LTE technologies.

¹⁶ By mobile broadband and data services we refer to services providing high data speeds to laptops with modems.

2.27 Although normally considered alongside current-generation voice services, the most frequently-used mobile data service in the UK is the use of SMS (texts). Growth in SMS has been very significant, with UK consumers sending 49 billion texts in H1 2009.¹⁷

Figure 5: Estimated mobile revenue by service type

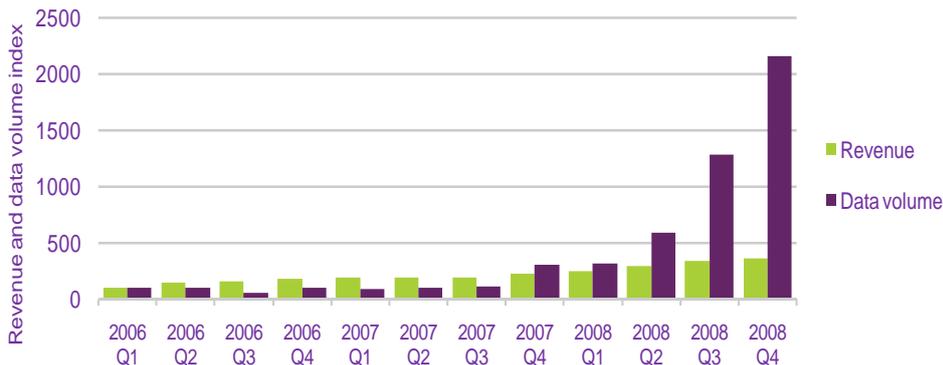


Source: OFCOM

Note: The split between revenue from rental, bundled calls and SMS AND voice revenue (outside bundle) is available only for 2006 to 2008. Pre-2006 revenue from rental, bundled calls and SMS revenue is included in voice (outside bundle) figures.

2.28 However, consumers' increasing use of data services is putting pressure on MNO's profits, as data traffic on mobile networks is increasing faster than the associated revenue.

Figure 6: Data volumes and data revenues across selected UK mobile networks



Source: Ofcom Basis: 100 in Q1 2006

2.29 Responding in part to competitive pressures (in both voice and data markets) and to the need to offer new bandwidth-hungry services, some mobile operators share antenna sites or build shared radio access networks (RAN). In December 2007, T-Mobile and

¹⁷ Ofcom research

H3G announced that they would combine their 3G radio access networks.¹⁸ In March 2009, Vodafone and O2 announced a site-sharing deal in the UK, and in several other European countries.¹⁹

- 2.30 In September 2009, T-Mobile and Orange announced plans to merge their UK operations. A final agreement was signed on 5 November 2009.²⁰ At the time of publishing the parties to this merger had indicated their intention to file a submission with the European Commission, as part of the merger review process.
- 2.31 The next generation of network technologies, such as Long Term Evolution (LTE), has the potential to facilitate the shared use of networks to a greater extent than currently-deployed network technologies.²¹ But spectrum to support bandwidth-hungry services may be scarce, despite the forthcoming spectrum releases.
- 2.32 In their consultation responses to *Mostly Mobile* some stakeholders emphasised the importance of fixed/mobile convergence (FMC) for the overall evolution of the market.²² In particular, some stakeholders suggested that the regulation of fixed and mobile networks should become more similar, as the networks increasingly adopt similar architectures. We agree that network convergence is an important trend for future network developments, but consumer take-up of FMC services (for example, mobile devices that rely on fixed networks for their access connectivity) is currently limited as measured by the consumer take up of these services. We will address the impact of FMC on fixed and mobile networks as they develop.

A minority of citizens and consumers experience problems with mobile services

- 2.33 The mobile sector generally works well for consumers, and many users benefit from choice and innovation. However, it is also complex and some consumers find it difficult to make informed choices and remain protected from misleading or exploitative practices. Even if a given problem affects a low proportion of users, due to the large number of mobile users overall, such problems can cause detriment to a significant number of consumers in absolute terms.

¹⁸ "T-Mobile and 3 create Britain's largest 3G network", 18 December 2007, <http://www.t-mobile.co.uk/services/about-t-mobile/media-centre/media-releases/>

¹⁹ "Telefónica and Vodafone Announce Milestone Pan European Collaboration", 23 March 2009, http://www.vodafone.com/start/media_relations/news/group_press_releases/2009/telefonica_and_vodafone.html

²⁰ "Deutsche Telekom and France Telecom plan to merge T-Mobile UK and Orange UK to create a new mobile champion", 8 September 2009, <http://newsroom.orange.co.uk/2009/09/08/deutsche-telekom-and-france-telecom-plan-to-merge-t-mobile-uk-and-orange-uk-to-create-a-new-mobile-champion-2/>,

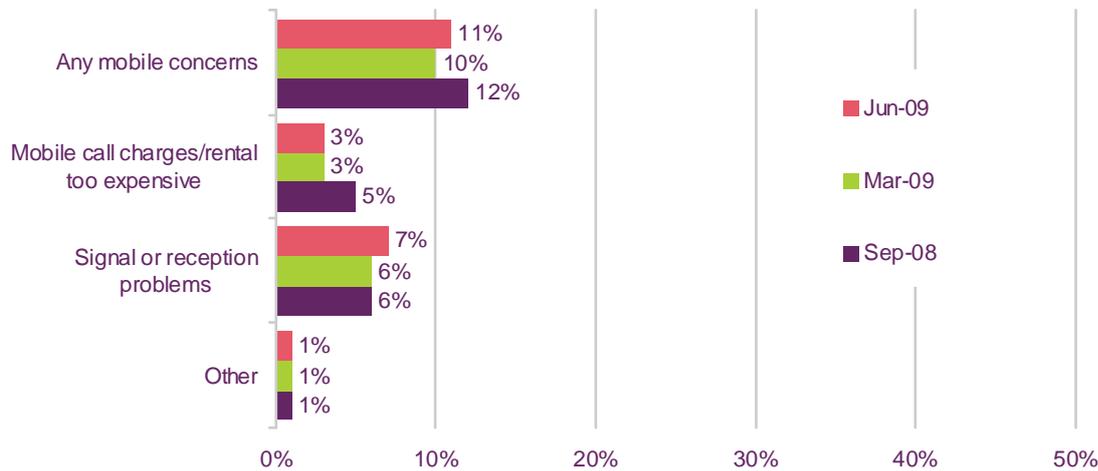
"Deutsche Telekom and France Telecom sign final agreement to combine T-Mobile UK and Orange UK", 5 November 2009, <http://newsroom.orange.co.uk/2009/11/05/final-agreement-to-combine-t-mobile-uk-and-orange-uk/>

²¹ LTE is a set of enhancements to the Universal Mobile Telecommunications System (UMTS) standard. The main advantages with LTE are high throughput, low latency, improved end-user experience and a simple architecture resulting in low operating costs. LTE will also support seamless passing to cell towers with older network technology such as GSM, cdmaOne, W-CDMA (UMTS), and CDMA2000.

²² For example, see consultation responses to *Mostly Mobile* from Virgin Media, David Hall Systems, Oakley Solutions and BT <http://www.ofcom.org.uk/consult/condocs/msa/responses/>

2.34 Consumers' main concerns about mobile services tend to be about charges for calls and subscriptions, as well as coverage problems. Complaints received by the Ofcom Advisory Team (OAT) mainly concern bills received by consumers, as well as operators' customer service and cases of mis-selling.

Figure 7: Specific concerns about mobile phone services²³



Base: All adults 15+ with mobile phone (Sept 08, 937) (Mar 09, 938) (Jun 09, 947)

Source: Ofcom consumer concerns tracking survey Base: All adults 15+ with mobile phone (Sept 08, 937) (Mar 09, 938) (Jun 09, 947)

2.35 Some groups of citizens also find it challenging to access mobile services –disabled people in particular may have difficulty using standard handsets (e.g. due to the size of the buttons, and issues with hearing-aid compatibility). Our communications tracking survey of Q2 2009 showed that 76% of adults with visual, mobility and/or hearing impairments own mobile phones, compared to 89% of the general population.²⁴

Coverage and network quality are an increasing concern for those who represent consumers' interests

2.36 Signal and reception problems are one of consumers' most-mentioned concerns regarding mobile phone services. This is indicated to us through our research (see Figure 7), and is reinforced by comments from our stakeholders, who have emphasised the continued presence of mobile not-spots and the dissatisfaction of a significant proportion of mobile users with coverage and network quality.²⁵ As voice and SMS are supplemented by more complex mobile services, the quality of network services and coverage looks set to remain an issue of importance for many consumers – and a source of concern for those who feel that the available quality and coverage is unable to meet their needs.

²³ These concerns are unprompted

²⁴ *The Consumer Experience* report, Ofcom 2009 (<http://www.ofcom.org.uk/research/tce/ce09/>)

²⁵ See section on coverage for more details

2.37 National maps show that a high percentage of the UK population is covered by mobile services,²⁶ but access for individual users may vary considerably:

- 2G coverage is unlikely to be extended further by the deployment of new networks, leaving a number of 'not-spots' across the UK (however, commercial opportunities for domestic roaming may still drive service improvements);
- there is still a noticeable difference in 3G coverage between rural and urban areas, and also between different parts of the UK. Coverage is a particular issue in the devolved nations;
- some users find that their mobile network provider has coverage in only part of the locations where they would like to access the service; and
- other users experience issues with network quality, such as poor or unreliable coverage in areas where networks are ostensibly available.

2.38 The Communications Consumer Panel published research in October this year which showed that 33% of individual users and 34% of small businesses regularly experienced problems with mobile coverage.²⁷ In their consultation responses to *Mostly Mobile*, other stakeholders, such as Consumer Focus and the Welsh Assembly Government, stated that they consider the resolution of mobile coverage issues a high priority.²⁸

Our future approach to the mobile sector will focus on competition, consumer protection and coverage

2.39 Based on our observations of the current state of the sector and consumer satisfaction and concerns, we will focus on three core areas:

- **Competition.** We will endeavour to ensure that consumers continue to enjoy the benefits of competition.
- **Consumers.** Competition alone is not always sufficient to ensure that consumers are properly protected, and enabled to make well-informed choices. We will monitor emerging consumer concerns and address them as necessary, based on our consumer policy framework.
- **Coverage.** We will look more closely into persistent 'not-spot' problems and work where we can to facilitate better coverage.

2.40 These policy areas will be supported by our work on spectrum policy, to ensure that spectrum is made available in a timely manner to optimise the prospects for continued competition, innovation and better mobile coverage across the UK. In this context we

²⁶ These figures are based on the percentage of total postcode districts, assuming that a post code is 'covered' if it has at least 75 per cent area coverage from one or more mobile networks.

²⁷ The Communication Consumer Panel's research can be found here:

<http://www.communicationsconsumerpanel.org.uk/smartweb/research/mobile-coverage>

²⁸ See responses to the *Mostly Mobile* consultation

<http://www.ofcom.org.uk/consult/condocs/msa/responses/>

await the outcome of the government's *Consultation on a Direction to Ofcom to Implement the Wireless Radio Spectrum Modernisation Programme*.²⁹

2.41 The following sections of this statement describe our policy approach in each of our priority areas.

²⁹ The consultation document can be found here: <http://www.berr.gov.uk/consultations/page53062.html>. The consultation was published on 16 October 2009 and will close on 08 January 2010.

Section 3

Competition

Introduction

- 3.1 Mobile services have become central to UK citizens and consumers. In the future our telecommunication services will be increasingly mobile. An important driving force behind this success is competition, both in the UK and in international markets. In the race to win customers, mobile operators have deployed networks, offered ever-broader services and created new ways to buy and pay for services (such as pre-pay). As a result, the great majority of people in the UK use mobile services and most people report that the market meets their expectations.
- 3.2 Our analysis of the mobile sector indicates that the continued promotion of competition should remain the primary means for achieving good outcomes for citizens and consumers. Our bias against regulation leads to a preference for the maintenance of healthy infrastructure-based competition at the deepest level possible to produce differentiation in mobile services and pricing.

Competition occurs at different levels in the mobile value chain

- 3.3 The delivery of mobile services can be represented as a series of linked activities that starts with spectrum inputs and includes: MNO's antenna sites and infrastructure (including backhaul), the operation of mobile networks; the supply of wholesale services; retail supply of mobile services; supply of handsets; and access to the applications (and content) that consumers use.
- 3.4 In order to ensure competition in mobile services, it is necessary to look at each part of the value chain.

Figure 8: The mobile value chain



Source: Ofcom

Spectrum

- 3.5 The spectrum used today for mobile services by the national MNOs was released by the government in three stages. In 1985 two 2G spectrum licences were awarded to the companies now known as Vodafone and O2. The second round, in 1991, included the release of 2G spectrum bands now held by Orange and T-Mobile, as well as small additional spectrum parcels for Vodafone and O2. In 2000, following a high-profile

auction, all four of the incumbent 2G operators were awarded a licence for 3G spectrum, along with H3G, which was then a new entrant to the mobile sector.³⁰

- 3.6 Historically, the allocation of spectrum has directly influenced the resultant market structures and, therefore, the intensity and nature of competition in the mobile sector. Until 2006, there were only five companies that had been allocated spectrum suitable for mobile services, and each of these deployed one or more national mobile networks. In May 2006, spectrum was awarded for use to support the provision of mobile services using alternative technologies, such as WiMAX and picocell-based networks.³¹
- 3.7 Consumer demand for increasing transmission bandwidth, including the increasing use of mobile broadband, puts pressure on MNOs to roll out new networks that require additional spectrum allotments. The allocation of additional spectrum, and the rules regarding spectrum currently in use, will affect the way competition develops in the future. It is important that spectrum is allocated in ways that ensure it is used efficiently so that consumers receive the greatest benefit, but it is also important that it is allocated in a way that encourages continued competition between MNOs to supply new services.
- 3.8 For this reason we consider the future allocation of spectrum as critical to producing a mobile sector capable of sustaining competition for the future and supplying the services consumers want. We note that the government is currently consulting on proposals for a Direction to be issued to Ofcom to guide the award of additional spectrum; this would address both the current allocation of mobile spectrum and the future award of the 800MHz and 2.6GHz bands.³²
- 3.9 The mobile sector assessment has affirmed the close relationship between competition and spectrum issues in relation to the sector. We expect that future decisions about spectrum allocation and use will continue to be important in determining future market structures and, therefore, the prospects for future competition. We intend to continue to apply our Strategic Framework for Spectrum as the starting point for future policy decisions in relation to spectrum, working within the context of the regulatory regime (including, for example, any future Direction issued by government).³³

³⁰ In the 3G spectrum auction in 2000 the 'new entrant' Wireless Telegraphy Act licence was won by TIW UMTS (UK) Limited. This company was subsequently acquired by Hutchison.

³¹ In March 2006 Ofcom conducted an auction to determine the assignment of wireless telegraphy licences to use the 'DECT guard-band'. These spectrum allocations are well suited to delivering mobile services using technologies such as WiMAX and picocell-based services – and this could include some form of fixed-mobile converged service. Frequency bands 1781.7-1785 MHz paired with 1876.7-1880 MHz (concurrent spectrum access licences). The spectrum bands called 'DECT guard bands' were originally set up to protect cordless phones (Digital Enhanced Cordless Telecommunications) from interference by mobile telecommunication transmission.

³² The Digital Economy Bill can be found on the Parliament website (<http://www.publications.parliament.uk/pa/ld200910/ldbills/001/10001.1-5.html#720>) along with explanatory (<http://www.publications.parliament.uk/pa/ld200910/ldbills/001/en/10001x--.htm>). The Department for Business Innovation and Skills has also published a summary guide to the bill (<http://interactive.bis.gov.uk/digitalbritain/wp-content/uploads/2009/11/Digital-Economy-Bill-A-Summary.pdf>)

³³ <http://www.ofcom.org.uk/radiocomms/sfr/>

Mobile network infrastructure

- 3.10 The UK has five national MNOs, enabling what many see as one of the most competitive and active mobile markets in Europe. The mobile network infrastructure can be segmented into the radio access network (RAN) and the core network.
- 3.11 The competition between national mobile radio access networks constitutes a marked difference between the mobile sector and the fixed-line sector, in which, for the majority of UK residents, there is only one physical fixed telecommunications access network (and for all residents, there is only one ubiquitous fixed access network).³⁴ More than any other feature of the market, the multiplicity of competing networks determines our approach to regulation of the mobile sector.
- 3.12 The core network includes mobile switching, control functions and connectivity to other operators' networks. Competition between core networks is likely to reflect the level of competition in the mobile sector as a whole. For example, control of the core network includes the management of users and equipment approval (determining who the customers of the network are, and the handsets and other equipment they can use).
- 3.13 The access network also has a critical role to play in determining the consumer experience – particularly in relation to coverage. The RAN component of a mobile network includes active and passive elements: the passive elements include the masts, sites and cabinets, and the active elements include the antennae, base station equipment and the circuits used to link base stations to the core network (termed 'backhaul').
- 3.14 Although each MNO currently owns its own core network, in some instances MNOs share elements of their access networks. RAN sharing agreements vary according to the elements covered. Some cover passive elements, such as the sharing agreement announced in March 2009 between Vodafone and O2.³⁵ Others also include some or all active elements of the RAN, such as the December 2007 agreement between T-Mobile and H3G to share 3G access networks.³⁶
- 3.15 RAN sharing can allow lower operational costs and potentially enable greater network coverage in areas of low population density. Technological advancements that simplify the practical implementation of sharing active RAN components may encourage more RAN sharing in the future. RAN sharing involves some level of co-operation between MNOs and may raise related concerns about risks to competition. The first concern is that RAN-sharing enables the coordination of other competitive activities - it may provide the basis for information to flow between the sharing operators that could facilitate the coordination of their businesses and affect competition in other downstream markets (ultimately, including retail markets). The second concern is that, by reducing the extent of competition between the sharing networks, the overall intensity of competition in the market is reduced.

³⁴ 100 per cent of UK residents can access BT's fixed infrastructure. A minority, less than 50 per cent, can also access Virgin Media's fixed cable network.

³⁵ http://www.vodafone.com/start/media_relations/news/local_press_releases/uk_press_releases/2007/net_work_infrastructure.html

³⁶ <http://www.t-mobile.co.uk/services/about-t-mobile/media-centre/media-releases/>

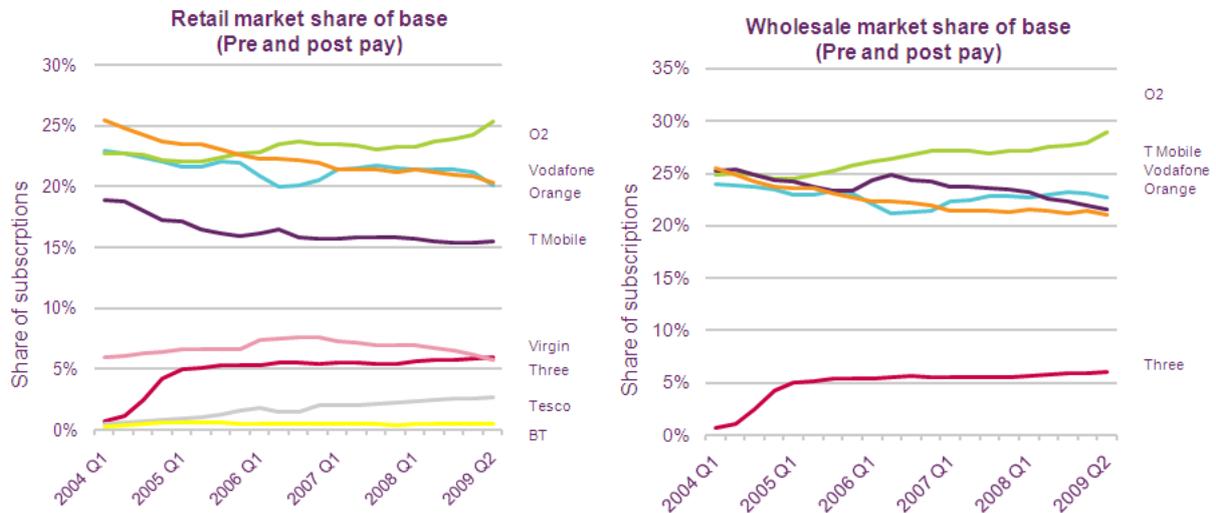
- 3.16 The primary framework for considering the impact of RAN-sharing or network sharing agreements is UK or EU competition law. Under competition law, agreements between undertakings, decisions by associations of undertakings or concerted practices which have as their object or effect the prevention, restriction or distortion of competition are generally prohibited unless an exemption applies. It is for the parties to any of the above forms of agreements to assess whether their agreement is prohibited or exempt. As a concurrent competition authority, Ofcom is empowered to conduct investigations and, where appropriate, to take steps to bring anti-competitive conduct to an end. Investigations may be launched where there is a reason to suspect that an infringement of competition law might have occurred or be occurring.
- 3.17 We will continue to monitor developments in network and RAN-sharing, and will consider each agreement on its own merits.

Retail and wholesale mobile services

- 3.18 The UK has an active wholesale services market, supplying a large number of retailers including the wholly-owned businesses of the network operators themselves and other businesses that buy wholesale mobile services but that do not own or operate a network (mobile virtual network operators or MVNOs).
- 3.19 There is no obligation for MNOs to provide wholesale services, and the depth and range of MVNO relationships in the UK reflects commercial rather than regulatory decisions. Where there is a high degree of competition between wholesale suppliers (that is, networks), we would expect that companies would be able to secure wholesale contracts with MNOs if they are able to offer differentiated retail products and experiences that consumers want.
- 3.20 We consider the existence and viability of MVNOs arrangements as an important indicator of competitive health of the market. In *Mostly Mobile* we observed that MVNOs now represent a significant proportion of the total retail market. In particular, Tesco and Virgin Mobile each have a significant share (see Figure 9). However, this activity is clustered around particular types of services, and particular categories of customers – for example, pre-paid accounts are more likely than monthly contracts to be supplied via an MVNO.
- 3.21 Evidence on the ability of MVNOs to switch their host network is more limited. Switching wholesale relationships is challenging, and the barriers to doing so can be considerable. It is more common to observe MVNOs sourcing services from a new supplier for new customers than switching existing customers. Again, these arrangements are (currently) unregulated, and we see no compelling case today to intervene in this process.³⁷
- 3.22 Consumer survey data indicate that barriers to consumer switching are low. Our most recent data shows that changes in market share are still occurring in the sector (see Figure 9).

³⁷ There is a case for ensuring that, for example, processes like number portability are designed so that bulk migration is at least possible, both for large-volume customers (such as enterprise customers) and, potentially, MVNOs.

Figure 9: Evolution of wholesale and retail market shares

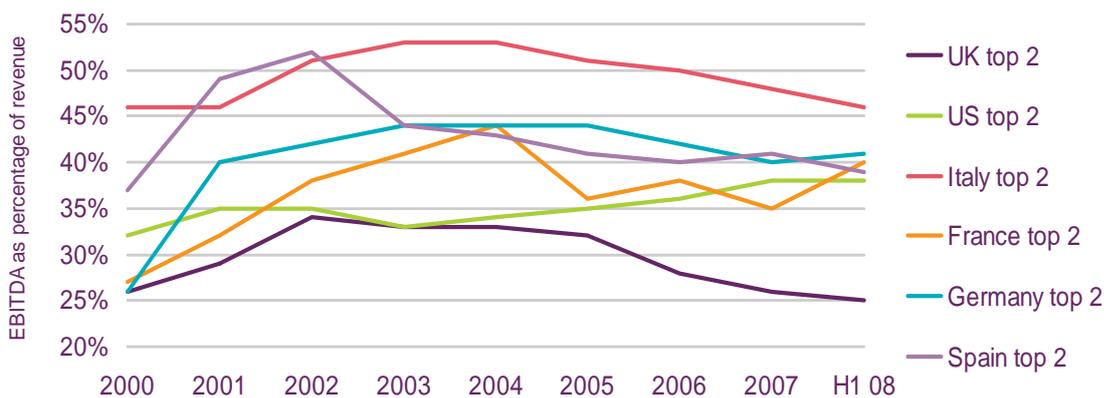


Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators

3.23 We also found that on some measures (such as operating profit), the mobile sector in the UK has exhibited lower profitability than elsewhere in the EU across the period surveyed in Figure 10. This, coupled with evidence that retail pricing is low compared to other EU countries, provides indirect evidence that the market is working in consumers' interests. It implies considerable competitive pressure on operators to find new ways to win customers, and improve margins by bringing new services and devices to market.

Figure 10: EBITDA margins in Europe and the United States



Source: Ofcom

Note: "Top two" refers to the largest two mobile network operators in each country

Mobile applications and devices

- 3.24 Consumers have benefited from the growth in new types of mobile devices and applications over the past few years. Some innovation has been driven by new entrants to the sector (such as Apple's iPhone or online brands like Facebook). Other innovations have emerged from existing players.
- 3.25 Consumers are now able to communicate in a variety of ways using mobile devices. This includes making voice calls and sending text messages, as well sending messages using applications such as Facebook and Google that can be accessed through mobile broadband services.
- 3.26 At first, applications were almost entirely under the control of network operators (and were introduced as new features to existing services). As the architecture of mobile services increasingly resembles the wider internet, applications providers are able to deliver their services with a greater degree of independence from the information that MNOs control. There has been a trend towards platforms that offer a degree of freedom to developers to design their own applications, and this (to a greater or lesser extent) enables innovative applications and services to be offered alongside (and in some cases, compete directly with) those delivered by the MNOs. This may change *how*, and *where*, competition for these services occurs in the value chain, and may encourage innovation and good price outcomes.
- 3.27 Some stakeholders were concerned that MNOs may limit competition by restricting access to, or denying certain applications from, transmitting data via mobile broadband connections.³⁸ For example, it is technically possible for MNOs to restrict access to VoIP applications that provide customers with an alternative to traditional voice calls.³⁹

"It is important that the mobile market subscribes to the principles of net neutrality, open source and open standards and inter-operability, and that these issues are monitored for signs of anti-competitive behaviour.... Consumers need to have freedom of choice and access to use and provide content, to services or applications of the consumer's choice, to attach devices of choice and to be free from discrimination according to source, destination, content and type of application. Traffic should not be managed on a network beyond what is necessary for the network to operate efficiently and users to engage freely with it." – Consumer Focus⁴⁰

- 3.28 Ultimately, there are limits to the competitive pressure that applications can produce. For example, platform operators may elect not to carry certain applications, weighing up the commercial risks and advantages as well as the risks of a successful challenge on regulatory or competition law grounds. In the context of mobile applications, provided there remains healthy competition between platforms, we see little prospect of a need to regulate commercial conduct within a given platform – although of course competition law, and rules relating to consumer protection, continue to apply.

³⁸ See Consumer Focus' consultation response to *Mobile Citizens. Mobile Consumers*: <http://www.ofcom.org.uk/consult/condocs/msa08/responses/focus.pdf>

³⁹ There is evidence of a variety of different strategies being undertaken by different platform operators (for example, H3G appears to have taken a different view on mobile VoIP to other operators).

⁴⁰ See Consumer Focus' consultation response to *Mostly Mobile* http://www.ofcom.org.uk/consult/condocs/msa/responses/Consumer_Focus.pdf

- 3.29 Such restrictions are often called issues of 'net neutrality' or traffic management. In the future, MNOs may face incentives to prioritise the delivery of some services as a pragmatic response to address high-bandwidth demands on their networks and the satisfactory provision of a range of services.
- 3.30 In a competitive market we expect that the degree of traffic management (if any) will be determined by consumer choice and therefore does not require regulation. We therefore believe that our promotion of competition in the mobile sector has the potential to address these concerns to a large degree. However, we see that an area where regulation may be necessary is the transparency of practices about prioritization and access (including blocking). For example, we have welcomed the stronger powers to enforce transparency obligations under the revised Article in the Universal Service and User Rights Directive, which we expect to be published in the Official Journal in February 2010, and will then need to be transposed into UK national law. In light of these additional powers under the revised European Union (EU) Framework, we will be exploring this area further in 2010.
- 3.31 Discussions regarding traffic management are, to some extent, independent of the underlying access technology. Nevertheless it is already apparent that, if traffic management becomes an issue in the future, it is more likely to arise in relation to mobile services, rather than fixed services, due to capacity constraints in mobile.
- 3.32 A different set of issues arises in relation to applications (services or content) that are offered over a voice call (that is, using special dialling codes or 08/09 numbers). The PRS regime has clearly been affected by the increasing role of mobile services – and the use of mobile short codes and services like premium SMS has raised new issues. We do not see any need to go beyond the existing cycles of review for mechanisms to protect consumers from scams and abuses in relation to, for example, premium rate services (PRS).

Investment in mobile infrastructure is important for new services

- 3.33 Given the current challenging economic conditions, we are keen to do all we can to ensure that UK citizens and consumers continue to benefit from efficient investment in networks. This is also consistent with our duties.⁴¹
- 3.34 In *Mostly Mobile*, our second mobile sector consultation, we found that, despite lower profitability, investment in the UK mobile sector in recent years has been comparable to that in other European markets⁴². Capital expenditure (capex) as a percentage of revenue has been consistent with capex in comparable countries⁴³, and new network technologies, handsets and services have generally been launched in the UK around the same time as in other countries. Capex as measured on a per subscriber basis is also broadly similar to that in comparable markets, although MNOs which are present in the UK tend to invest more – relative to market size – in at least some other markets.

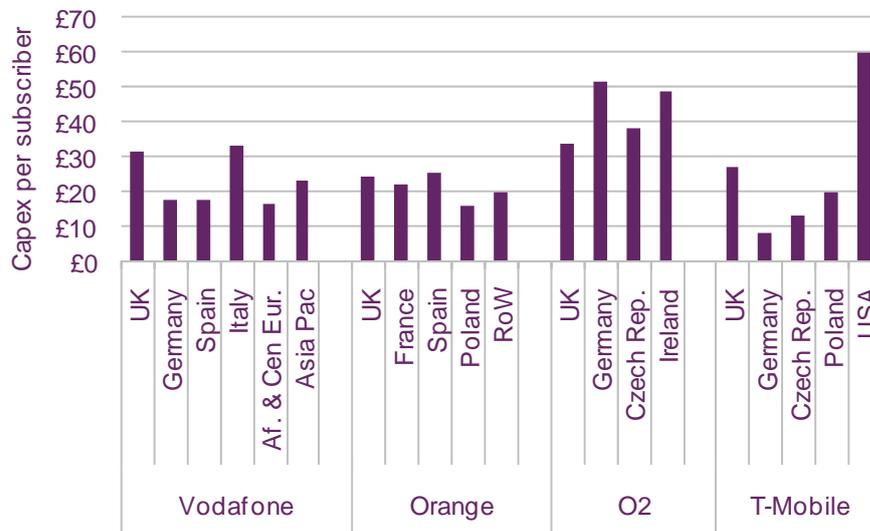
⁴¹ Sections 3 and 4 of the Communications Act 2003. We also acknowledge the proposal in the *Digital Britain* report to give us further duties in this area (*Digital Britain Final Report*, Chapter 3a *A Competitive Digital Communications Infrastructure*, paragraphs 63 – 67), p. 65f.

⁴² See the section on investment in *Mostly Mobile* p. 70-78

<http://www.ofcom.org.uk/consult/condocs/msa/msa.pdf>

⁴³ See *Mostly Mobile*, p.73

Figure 11: Capex per subscriber (2008)



Source: Ofcom, Operator published accounts

3.35 We believe that the best contribution we can make to timely and efficient investment in the mobile market continues to be to promote competition and ensure that any regulation we impose does not hinder or delay investment. We also recognise the important role of regulatory certainty for investment decisions in a sector with long term investment horizons.

Mobile sector competition has produced good outcomes for consumers

3.36 We believe that effective competition is occurring within the mobile sector – over the past few years we have seen: shifts in retail and wholesale market shares between existing players, robust switching levels, new suppliers (such as MVNOs) are entering the market, and service providers are innovating with new product and price options.

3.37 A number of stakeholders asked us to conduct a market review, with a view to introducing wholesale access regulation to the mobile sector.⁴⁴ We found the mobile market to be effectively competitive in 2003; since that time, the number of network operators, retailers and distributors has grown. In the light of the degree of competition in the market and the significant costs that a market review would impose, directly on operators and indirectly on consumers, we do not intend to conduct a market review at this time.

3.38 Some MVNOs stated that there are problems with securing wholesale network access and that Ofcom should consider imposing an ‘access-related condition’ to require MNOs to provide access on a fair reasonable and non-discriminatory (FRND) basis.⁴⁵ Other

⁴⁴ For example, see consultation to *Mostly Mobile* from BT, South Southern Energy, and The Number: <http://www.ofcom.org.uk/consult/condocs/msa/responses/>

⁴⁵ For example, see consultation to *Mostly Mobile* from BT: <http://www.ofcom.org.uk/consult/condocs/msa/responses/BT.pdf>

MVNOs stated that it was difficult for new entrants to gain wholesale contracts due to the difficulty of negotiating wholesale contracts without an existing customer base.⁴⁶ We appreciate that the negotiation of commercial agreements will not produce uniform results, and that it is likely that some attempts to negotiate commercial agreements will not be resolved to the satisfaction of all parties. However, given the current wholesale market structure, we do not consider that there is sufficient evidence to conclude that this form of regulatory intervention would generate a better outcome for consumers than that currently generated by commercially negotiated access.

- 3.39 Most stakeholders agreed that the mobile sector did not require a full market review.⁴⁷ This was qualified by some stakeholders who commented that this conclusion might need to be re-considered if the market structure changed.⁴⁸ We agree that this is an important qualification, and our current view, that a market review is not needed, might change if one or more competitors left the market – particularly at the network level. In particular, we may reconsider our conclusion that a market review, other than the review of Mobile Call Termination (MCT) that is currently underway, is not required if competition and consumer benefit indicators change in a way that indicates a deterioration of competitive conditions.
- 3.40 Other stakeholders thought that, in outlining our approach to potential market developments, we were exhibiting a bias towards regulation.⁴⁹ This is not our intention. However, in a market that is evolving rapidly, it is important that we develop an informed view of market developments, and provide clarity for our stakeholders regarding the processes and indicators we will use to respond to changes in the sector.

The need for regulation of mobile call termination appears persistent

- 3.41 One form of regulation imposed on the mobile sector has been to regulate wholesale mobile call termination rates – that is, the charges mobile operators impose on other network operators to complete calls from one network (fixed or mobile) to a given mobile network. Currently, these rates are limited by a price cap set for four years in March 2007.⁵⁰ Our decision was appealed to the Competition Appeals Tribunal (CAT).
- 3.42 We are currently reviewing whether a further charge control is necessary after March 2011, when the current regime expires. On 20 May 2009, we published a consultation on mobile call termination, which started the 2011 review of mobile call termination.⁵¹
- 3.43 In that consultation, we called for a wide-ranging debate, including on whether, in the future, there would be an opportunity to remove regulation of mobile call termination

⁴⁶ For example, see Mundio Mobile's consultation response to *Mostly Mobile* http://www.ofcom.org.uk/consult/condocs/msa/responses/Mundio_Mobile_Ltd.pdf

⁴⁷ See, for example, Virgin, Vodafone and David Hall Systems consultation responses to 'Mostly Mobile: (<http://www.ofcom.org.uk/consult/condocs/msa/responses/>)

⁴⁸ See, for example, the comment by Which?: "Which? agrees that the current market structure has served consumers relatively well. We are very concerned that any further concentration amongst network operators could substantially lessen competition, especially in light of reports of a joint venture between T-Mobile and Orange" (<http://www.ofcom.org.uk/consult/condocs/msa/responses/Which.pdf>)

⁴⁹ For example, see T-Mobile's consultation response to *Mostly Mobile*: <http://www.ofcom.org.uk/consult/condocs/msa/responses/T-Mobile.pdf>

⁵⁰ http://www.ofcom.org.uk/consult/condocs/mobile_call_term/statement/

⁵¹ http://www.ofcom.org.uk/consult/condocs/mobilecallterm/mobile_call_term.pdf

altogether. Respondents to our consultation agree with our analysis that regulation was required, at least for the period from 2011 to 2015 (which many presumed would be our focus, given that price caps have generally been imposed over four-year terms).

- 3.44 Given this position, our objective is to ensure that if regulation on mobile call termination is required (as all the respondents to our consultation argued) then that regulation should be set in ways that minimise the risk of unintended consequences and deliver clear benefits to consumers. We will also take utmost account of the relevant Commission recommendations, including the Recommendation on future regulation of mobile call termination.⁵²
- 3.45 We are in the process of reviewing the responses to the consultation, gathering more information and undertaking further analysis in order to form firm proposals on the way forward. We intend to issue a second consultation on the MCT review in Q1 2010.

The mobile sector structure may change

- 3.46 The relationship between activities in the mobile value chain, and the degree of competition in each segment, may change over time due to factors such as technology evolution. Mergers and acquisitions also affect the mobile value chain by changing the market structure.
- 3.47 Since the publication of *Mostly Mobile*, Deutsche Telekom and France Telecom have announced plans to merge their UK operations, T-Mobile and Orange. Because this merger meets certain jurisdictional tests, it falls under the EC merger control regulation.⁵³ Under the EU merger control regime, any risks to competition will be assessed by the European Commission (the Commission). The Commission may, under certain circumstances, refer a merger back to the national competition authorities. If the Commission refers the matter to the UK authorities, then the merger will be reviewed by the Office of Fair Trading (the OFT) who could refer it to the Competition Commission (the CC).
- 3.48 Although Ofcom is a concurrent competition authority, it does not have merger control powers under the Enterprise Act 2002. However, when a proposed merger in an area relevant to our remit is considered, as the UK's regulator for the telecommunications sector we often provide evidence and inputs to the process. We expect to occupy this role in relation to the proposed T-Mobile and Orange merger working with the relevant competition authority(ies).

⁵² http://ec.europa.eu/information_society/policy/ecomms/doc/library/public_consult/termination_rates/termination.pdf

⁵³ Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004R0139:EN:NOT>

Our proposed response and work plan

3.49 Currently, we are undertaking a number of specific initiatives to related to competition in the mobile sector and these, along with our approach to market investigation, are summarised here:

- **We do not plan to do a formal market review or market investigation.** As mentioned previously, we do not intend to review the mobile sector at this stage (other than in relation to mobile voice call termination). This position could change if the market changed in ways that alter the nature, or health of competition in the sector – for example, if there were to be a significant change in the structure of the sector, or if the nature of competition in the sector changed.
- **No regulation of third-party access.** In particular, we do not see the need to consider regulating access by third parties (such as MVNOs or application providers) to mobile networks in a competitive market. It might be appropriate to revisit this decision if, for example, we see evidence of anti-competitive behaviour, including limitations in the supply of wholesale services to access seekers, that cannot adequately be addressed using *ex post* intervention.
- **Greater focus on enforcement.** Recognising that new entrants are vulnerable to strategic anti-competitive or unlawful behaviour by established players, we will take an active stance on removing barriers to entry, in particular for new spectrum licensees, to maximise consumer benefit from new services, technologies and innovative business models.
- **Spectrum.** We note that the Government is currently consulting on a Direction to Ofcom to implement the ISB's proposals. We also note that the Digital Economy Bill has been introduced into Parliament, which contains some related provisions. We will act in accordance with any Direction which the Government makes.
- **Number translation services and premium rate services.** We are currently conducting a review on the details of the NTS retail uplift charge and the proposed increase in the PRS bad debt surcharge. We also intend to undertake a wider review of the NTS regulatory regime in 2010.
- **T-Mobile/Orange merger.** We will provide inputs to the merger process as required by the relevant competition authority(ies).

Section 4

Citizens and consumers

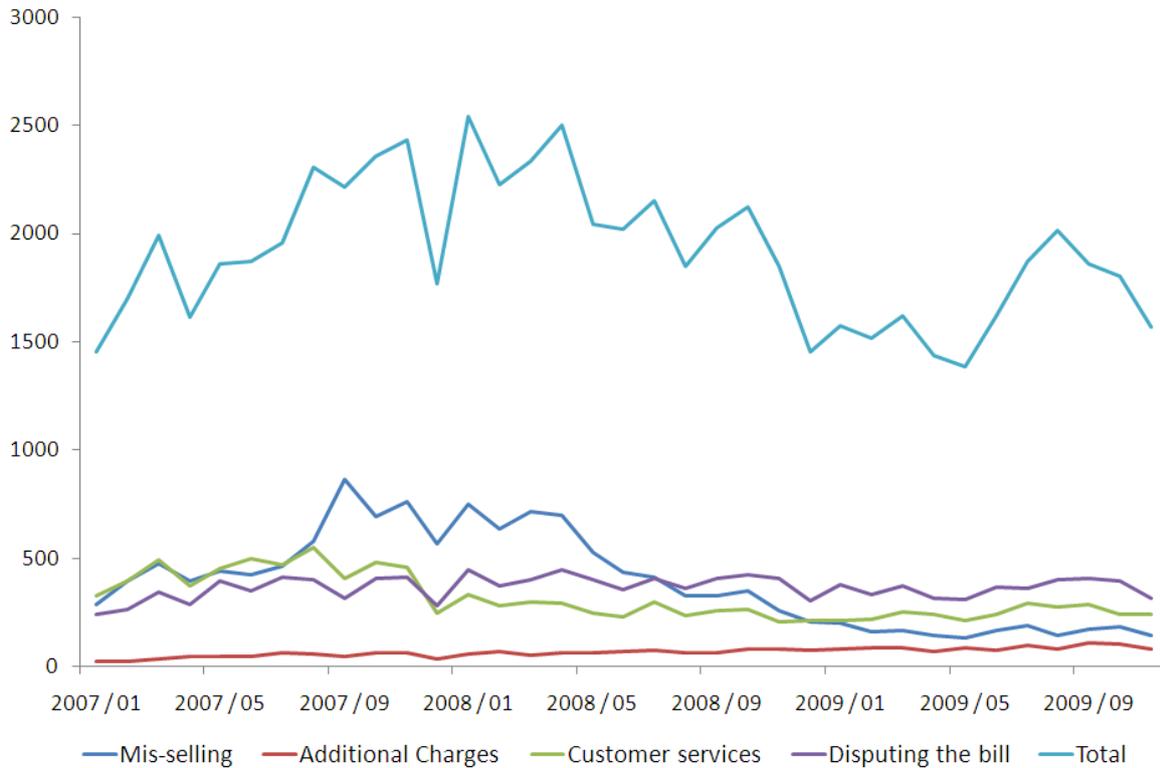
Introduction

- 4.1 In *Mostly Mobile* and *Mobile Citizens, Mobile Consumers* we examined how well the mobile sector had been working for consumers. In *Mostly Mobile*, we also looked at whether people's differing abilities to access mobile communications services may exclude particular groups from the advantages and facilities that most people take for granted.
- 4.2 In this section we draw conclusions on how well the sector has delivered from the consumer and the citizen perspective, and we examine our approach to accessibility issues in the mobile sector, and to consumer policy.

While most consumers are satisfied with their mobile services, we will continue to prioritise areas for improvement

- 4.3 The mobile market has consistently received high satisfaction levels in our consumer research, with improving performance over time and high overall levels of satisfaction. As noted earlier, consumer satisfaction in the mobile sector remains higher than for other communication services and is continuing to improve. We are also receiving fewer complaints related to mobile services, particularly as we work to resolve specific mobile-related consumer issues, including mobile mis-selling.

Figure 12: OAT complaints data for mobile



Source: Ofcom

4.4 However, it is clear from consumer complaints and from our work with stakeholders that competition alone is not always sufficient to protect consumers and to create conditions for them to act with confidence in the market. When things go wrong, consumers can incur significant costs and suffer inconvenience. Stakeholder responses to *Mobile Citizens*, *Mobile Consumers* and *Mostly Mobile* also emphasised consumers’ challenges relating to mobile services.

“Often, information on terms and conditions, pricing and service is not presented in a uniform manner, which would make comparisons easier for consumers. Complex tariffs not only pose challenges for consumers, they also cause difficulties in assessing the impact of price increases over time, particularly on vulnerable consumers” - Consumer Focus⁵⁴

“Ofcom should be cautious and pragmatic about the burden on consumers to achieve a good deal (or at the very least avoid the worst deal). Searching markets and selecting from the tens of thousands of tariffs available is costly. Price offers to consumers should always be clear and not mis-leading, where they are not prompt regulatory action should follow”. – Which?⁵⁵

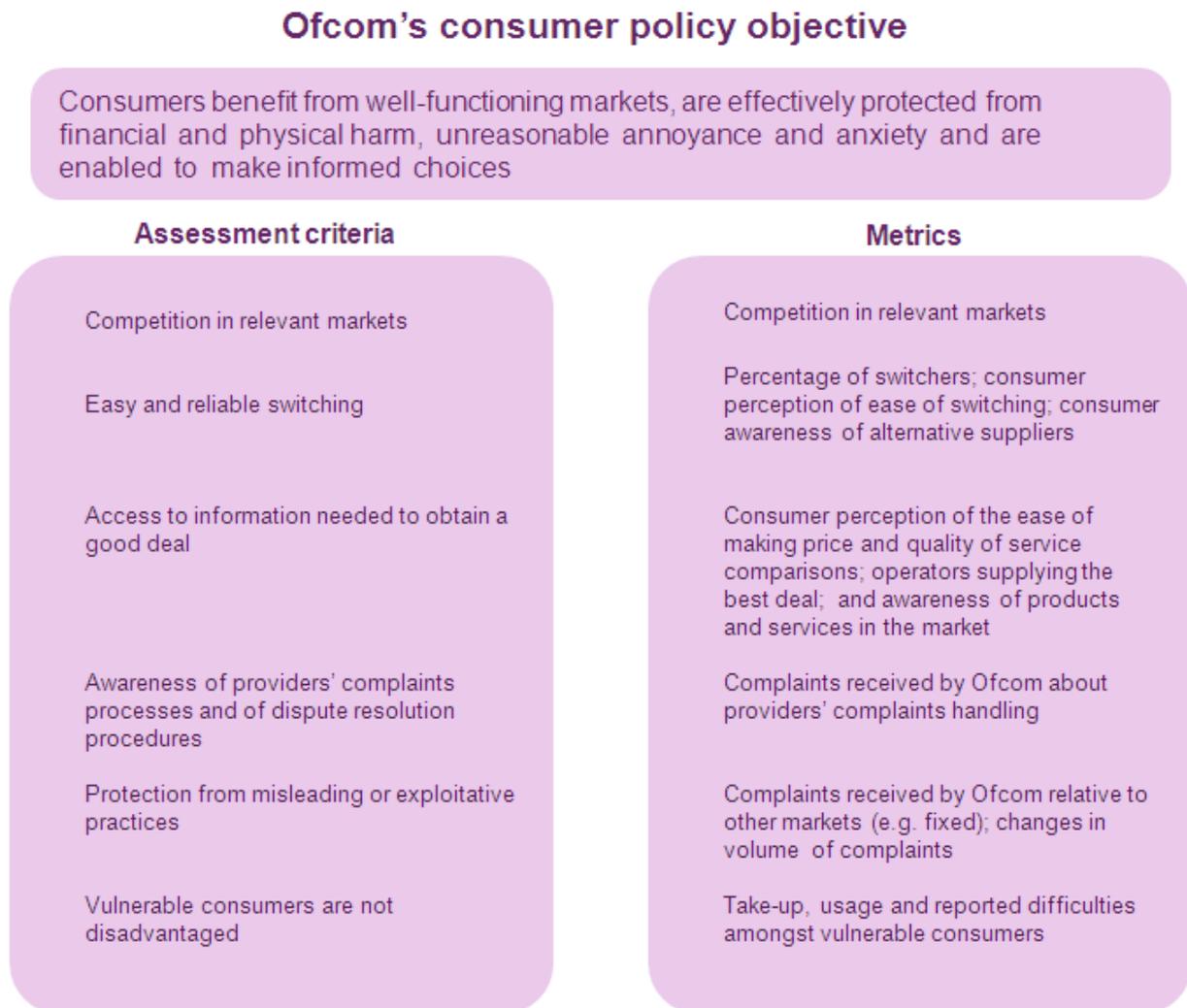
⁵⁴ http://www.ofcom.org.uk/consult/condocs/msa/responses/Consumer_Focus.pdf

⁵⁵ <http://www.ofcom.org.uk/consult/condocs/msa/responses/Which.pdf>

- 4.5 We agree that aspects of the mobile sector's services can be complex, and that some consumers find it difficult to make informed choices. As a result we have taken measures to help consumers make informed choices on mobile services. For example, we have accredited Billmonitor.com and will accredit other price comparison services that meet our criteria⁵⁶, as and when they emerge.
- 4.6 Our consumer policy objective, which applies across all communications markets, is to ensure that consumers benefit from well-functioning markets, are effectively protected from financial and physical harm and from unreasonable annoyance and anxiety, and are able to make informed choices. The approach we take to consumer protection and empowerment in the mobile sector aims to strike the right balance between taking timely action when necessary, and the need to apply regulation only when effective and proportionate. We have summarised our approach to applying our general consumer policy framework to the mobile sector in the figure below. The framework is flexible and adaptable, and should allow us to ensure that mobile consumers are empowered and equipped to get a good deal, and are properly protected when things go wrong.

⁵⁶ Ofcom will consider accrediting price comparison calculators for all communications services that fall within our remit. For details see our website <http://www.ofcom.org.uk/consult/condocs/ocp/statement/guidelines/>

Figure 13: Our consumer policy framework



Source: Ofcom

We continue to engage with industry and consumer groups to identify problems in the sector and to respond proportionately.

4.7 Our approach has effectively addressed a number of consumer concerns in the mobile sector. For example, our work to target mis-selling in mobile has helped contribute to a significant reduction in associated complaints. In 2006 mobile mis-selling became an area of concern, particularly around ‘cash-back’ sales incentives; consumers were unable to receive the cash-back they signed up for. Working with Ofcom, the five MNOs developed and signed up to a voluntary code of practice which set out best practice in sales and marketing for mobile services. The code came into force in July 2007. We made clear that unless the code resulted in a significant and rapid reduction in consumer complaints, formal regulatory intervention would be considered.

- 4.8 By October 2007 there had been no significant improvements in complaint volumes and we began a review to consider the case for further action. On 18 March 2008, we published a consultation document with our initial assessment of mobile mis-selling and cash-back issues and proposed to introduce new mandatory rules – a General Condition (GC) on sales and marketing practices that would apply to all mobile service providers.
- 4.9 We concluded our review in March 2009 and proceeded with the introduction of a new GC (GC23) which requires mobile service providers to ensure that they do not engage in dishonest, misleading or deceptive conduct at the point of sale. GC23 came into force on 16 September 2009. Since Ofcom proposed to introduce new rules in its consultation in March 2008, complaints about cash-backs have now virtually ceased, and mis-selling complaints have fallen from over 600 to fewer than 200 per month.⁵⁷
- 4.10 The consumer policy framework is also relevant to our work on ‘additional charges’ payable by mobile consumers (amongst others). In December 2008 we published guidance on our view of the law and in April 2009 we opened an enforcement programme and conducted an extensive analysis of the terms and conditions of 12 major communications providers, to verify that they are compliant with our guidance. Having extended the enforcement programme for a further six months from 30 September 2009, we are currently in discussion with several communications providers about their early termination charges and their compliance with our guidance.
- 4.11 There has been a significant shift away from complaints about landline PRS to complaints about mobile PRS; since February 2007 complaint volumes have been dominated by complaints about mobile PRS. In October 2009 Ofcom published a statement on its review of the scope of PRS regulation. The statement contained an analytical framework that Ofcom will apply in future assessments of whether the scope of regulation should be widened or narrowed, and also included a number of recommendations for PhonepayPlus to adopt when it revises its Code of Practice.
- 4.12 We are continuing to monitor and report on progress against the consumer policy framework in our annual *Consumer Experience* report. In particular, the latest report published 9 Dec 2009 provides more details on mobile mis-selling, additional charges, and PRS, as described above. It also contains information on switching, reducing the potential for scams on 087 numbers, and the promotion of fair, transparent and effective complaints-handling procedures.⁵⁸
- 4.13 While we see the need to address consumer concerns in the mobile sector, we also recognise the importance of seeking the least intrusive approach to regulation, and we are keen to promote co- and self-regulation where they are shown to be effective in addressing consumer concerns. For example, we have found that the UK code of practice (“the Code”) for the self-regulation of new forms of content on mobiles has worked well.
- 4.14 The Code was formally published in January 2004 and the resulting classification framework (the Framework) was published in February 2005. All the main UK mobile operators subscribe to and support the Code and the Framework, which act as self-

⁵⁷ It should be noted that the decline in complaints numbers coincides with (but is not necessarily caused by) the publication of our proposals.

⁵⁸ *The Consumer Experience* report 2009, Ofcom (<http://www.ofcom.org.uk/research/tce/ce09/>)

regulatory instruments. We reviewed the Code with the support of the Home Office and the Children's Charities' Coalition for Internet Safety (CHIS). Overall, we found that it is effective in restricting young people's access to inappropriate content and is a good example of industry self-regulation.⁵⁹

- 4.15 Some stakeholders expressed concern that our approach to consumer policy, outlined in *Mostly Mobile*, indicated a trend towards a sector-specific approach to regulating the mobile sector, or felt that our proposals did not add to our general consumer policy framework.⁶⁰ Our general approach is to make regulation that is narrowly targeted on a technology-specific basis only in those circumstances where it is clearly necessary; in most cases, technology-neutrality is the norm. In the mobile sector assessment, our aim is not to add to our existing framework, but to clarify how our general framework guides our approach to the mobile sector.
- 4.16 In the future, as the mobile marketplace has more in common with the wider online economy, it is possible that consumer protection measures targeted specifically at players in today's mobile sector may become less effective. This may increase the need for generic, technology-aware enforcement of consumer law. Ofcom is well-placed and suitably empowered to play this role (and in some cases, is already doing so).⁶¹
- 4.17 Specifically, many of the current measures rely on mobile operators at the centre of the value chain and may need to be adapted as circumstances change. For example, the role of self-regulation, protection from mis-selling and scams, the security of purchases made using either the mobile bill or a credit card, and the control of access to adult content may all have to adapt to the realities of technology evolution. As the mobile market develops, we will seek to ensure that the level and type of regulation imposed continues to be effective and appropriate.

Access to mobile services is increasingly important

- 4.18 Our statutory duties mean that we have a significant role to play in ensuring that everyone, irrespective of their age, income, location, education or disability, can access and use digital communications services. In the future, mobile devices will increasingly be used to receive content and applications, including access to public services,⁶² democratic opportunities (such as engaging with political candidates), health opportunities (such as receiving text reminders about appointments), and opportunities to engage with social networks. For this reason, it is increasingly important that everyone who wants to access mobile services is able to do so.
- 4.19 *Mostly Mobile* found that an estimated 7 million people in the UK do not have access to a mobile phone. Of those who do not have a mobile, only 8% (slightly below 600,000 people) appear not to have a mobile for involuntary reasons. This is a small percentage,

⁵⁹ http://www.ofcom.org.uk/advice/media_literacy/medlitpub/ukcode/ukcode.pdf

⁶⁰ For example, see T-Mobile and Vodafone's consultation responses: <http://www.ofcom.org.uk/consult/condocs/msa/responses/T-Mobile.pdf>, <http://www.ofcom.org.uk/consult/condocs/msa/responses/Vodafone.pdf>

⁶¹ See for example our use of the Enterprise Act 2002 in our investigation of Phones4u (http://www.ofcom.org.uk/bulletins/comp_bull_index/comp_bull_ccases/closed_all/cw_985/)

⁶² The trend towards increasing public services delivered online is highlighted in the Digital Britain final report. As described in Section 3 of this consultation, mobile will become increasingly like the internet, and inevitably, as public services move online they will also become mobile.

but the impact of exclusion on this group could be significant, particularly if the market is failing to address the needs of some of the most vulnerable citizens. For example, people with disabilities and groups with specific needs, such as elderly people, have been less likely to take up mobile services than the rest of society. Issues brought to our attention included handsets that interfere with hearing aids, complex pricing, and the lack of special services that meet consumers' needs.⁶³

- 4.20 While Ofcom has no specific powers regarding the usability of consumer equipment (such as telephones and TV remote controls), we are keen to promote and influence activity in this area where we can. This is consistent with Section 10 of the Act that describes our duty to encourage availability of easily usable apparatus.
- 4.21 For example, we welcome the recent Global Accessibility Reporting Initiative (GARI). Under this initiative, detailed information about the accessibility features of mobile handsets is published at www.mobileaccessibility.info. It is possible to search for handsets by feature, for example, whether magnetic coupling is provided for telecoil-equipped hearing aids.⁶⁴
- 4.22 Together with the Ofcom Advisory Committee on Older and Disabled People (ACOD), we helped to promote the trial of SMS-based emergency services. The service is intended for, but not limited to, people who cannot make voice calls due to hearing loss, speech impairment or other disabilities. The trial started on 14 September and aims to increase awareness among potential users. We expect that the service will be made permanent in early 2010. For more information about the trial, including how to register, please see <http://emergencysms.org.uk/>
- 4.23 In *Mostly Mobile* we stated that there may be particular challenges for consumer protection and privacy arising from increasing access to internet content over mobile phones. We are continuing to engage with stakeholders to find appropriate ways of ensuring that the consumers can confidently access the wealth of content and applications available via mobile devices.
- 4.24 Since our *Mostly Mobile* consultation we have published further research into children's and young people's access to online content on mobile devices, games consoles and portable media players.⁶⁵ This report, published in September 2009, presents findings relating to:
- the ownership and use of mobile phones (and other devices) among children and young people;
 - parents'/carers' concerns, rules and restrictions about their children's use of these devices;
 - parent's/carers' awareness of the existence of and use of access controls;

⁶³ Consumer experience report, p 46 – 52 (<http://www.ofcom.org.uk/research/tce/ce08/research.pdf>)

⁶⁴ Telecoil is a feature available on many hearing aids. For more details see

<http://www.nhearingloss.org/telecoil.htm?fromncshh>

⁶⁵ http://www.ofcom.org.uk/advice/media_literacy/medlitpub/medlitpubrss/online_access.pdf

- children's and young people's experience of encountering inappropriate content; and
- children's and young people's sources of information about staying safe online, what information they feel is needed, and any further help that parents/carers think they need to keep their children safe online.

4.25 We have also produced four guides for parents and carers on protecting children in a digital world (video and pdf available)⁶⁶, including a guide on how to use parental controls on mobile phones⁶⁷ and how to help keep children safe when using location-based services.⁶⁸

Our proposals and work plan

4.26 We will use our consumer policy framework to seek to prevent consumer problems with mobile services, rather than merely respond to them. Currently, we are undertaking a number of initiatives to address specific citizen and consumer issues. These include:

- **Access and inclusion.** We will continue to promote, where we can, the interests of citizens, for example of disabled users, who have difficulty accessing particular mobile services..⁶⁹
- **Mobile number portability.** We are looking at the process for porting numbers, in our *Mobile Number Portability* review. We will also consider consumer choice and switching in mobile markets in 2010, as part of a wider review of switching and migration in communications markets.
- **Mobile content.** We continue to engage with stakeholders to find appropriate ways of ensuring that consumers can confidently access the wealth of content and applications available via mobile devices.
- **Mobile mis-selling.** We will monitor closely the application of the newly-introduced GC23.
- **Additional charges.** We have an enforcement programme open under which we are considering all communications providers' compliance with Ofcom Guidance on additional charges (published Dec 2008).

⁶⁶ 'Protecting your children in a digital world' (<http://www.ofcom.org.uk/consumer/2009/10/managing-your-media-protecting-your-children-in-a-digital-world/>).

⁶⁷ 'Parental controls for mobile phones' (<http://www.ofcom.org.uk/files/2009/09/mobiles.pdf>), we have also published a guide on 'Parental controls for games consoles and portable media players' (<http://www.ofcom.org.uk/files/2009/09/consoles.pdf>)

⁶⁸ 'A guide for parents and carers on mobile location based services' (<http://www.ofcom.org.uk/files/2009/10/location.pdf>)

⁶⁹ <http://www.ofcom.org.uk/consult/condocs/access/>

Section 5

Coverage

Introduction

- 5.1 Access to reliable mobile services is a priority for many consumers. While most of the UK has some level of mobile coverage, and most consumers are satisfied with their coverage, a large number of consumers still experience problems.
- 5.2 Mobile coverage is potentially detrimental to citizens and consumers, including businesses. Rural parts of the UK, especially in the devolved Nations, are particularly affected by these issues. Making progress on mobile phone not-spots is therefore proposed as a priority area in our 2010/11 draft annual plan.
- 5.3 This section describes our findings regarding mobile coverage, and details areas in which we will undertake further research and action.

Consumers have experienced problems with coverage

- 5.4 Consumers of mobile services are generally aware that connections between a mobile device and the mobile network can vary in different places, at different times and in ways that affect their experience.
- 5.5 We have identified that different issues can affect 2G networks as compared to 3G networks because they deliver different services (2G networks deliver voice, SMS and low speed data services, while 3G networks are used to deliver additional services such as mobile broadband) and due to factors affecting network deployment. Through feedback from consumers and stakeholders, we have identified a number of different problems that consumers of mobile services may experience. They can be summarised as:
 - **complete ‘not-spots’** – areas where no 2G (or 3G) coverage exists at all, very often in remote locations;
 - **not-spots that affect a specific network** - areas where one network’s customers do not have coverage but customers of another network do;
 - **gaps in 3G coverage** – areas where only 2G is available; and
 - **problems with network quality** – areas with poor or unreliable coverage where networks are ostensibly available.
- 5.6 There are many factors that can cause not-spots, and there is no single, standard solution to these problems. Coverage problems can also affect very small areas, such as a room of a house, or a section of a street, and it is difficult to gain detailed information on the extent of problems.
- 5.7 Completely ubiquitous mobile coverage with consistently high levels of quality (at all times and in all locations) is not technically feasible or economically viable.

The UK's mobile footprint

5.8 Soon after we published *Mostly Mobile* in July, we released our report *The Communications Market Report 2009* (CMR).⁷⁰ The CMR presented our most recent statistics for mobile availability.⁷¹

Figure 14: Mobile population coverage in 2008 across the UK and nations

Platform Availability population coverage in 2008	2G %	3G %
UK-wide	98	87
England	99	91
Wales	92	67
Scotland	89	67
Northern Ireland	92	43

Source: OfcomSource: Ofcom/Europa Technologies; Q1 2009

Note: Figures show the percentage of population within postcode districts where at least one or more operators had at least 90% 2G and 90% area coverage

5.9 The table above shows that mobile coverage for 2G is extensive at 98%, although it varies across nations, with the greatest availability in England at 99%, and the lowest in Scotland at 89%.

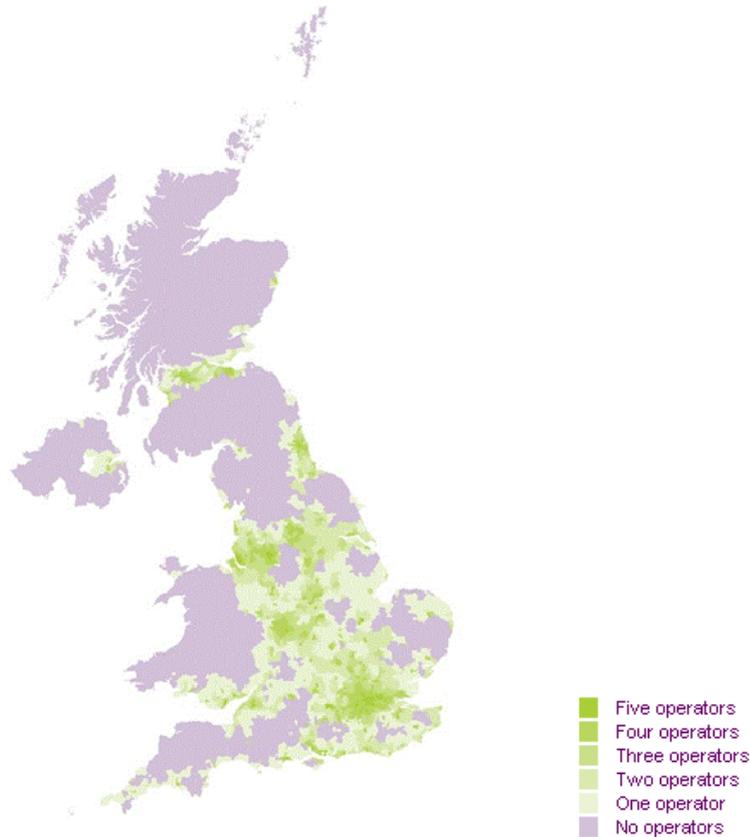
5.10 The picture for 3G coverage is different. Figures are high in England overall, but vary markedly in the nations, with only 43% availability in Northern Ireland. The following map, from the latest CMR, provides an approximate representation of 3G geographic coverage across the UK. It illustrates the lack of 3G access in many rural areas. We also provide links to mobile operators' coverage checkers on our website.⁷²

⁷⁰ <http://www.ofcom.org.uk/research/cm/cmr09/>

⁷¹ Based on data sourced from the GSM Association/Europa Technologies.

⁷² (<http://www.ofcom.org.uk/consumer/2009/08/mobile-broadband-coverage-checker>)

Figure 15: Map of UK 3G geographic coverage by number of operators



Source: Ofcom / GSM Association / Europa Technologies; Q1 2009

- 5.11 The information currently available to Ofcom, and reported in the *The Nations and Regions Communications Market 2009*⁷³, such as the 2G and 3G population statistics in Figure 14, and the 3G coverage map in Figure 15, are useful at a high level. However, since the analysis used for 2G and 3G coverage does not provide granular details, it offers only limited insight into coverage issues experienced at a local level.
- 5.12 Specifically, a postcode district is considered 'covered' if at least one operator reports a threshold coverage level of at least 90%.⁷⁴ Using this approach, the figures and map do not account for the 'up to 10%' of geography or population living within 'covered' postcode districts that do not actually have mobile reception.

⁷³ See <http://www.ofcom.org.uk/research/cm/cmrnr09/>

⁷⁴ The statistics in the table cannot be compared with the mobile coverage figures contained in the 2008 CMR, as those were based on a lower threshold (75%). The change in our methodology for the statistics means that mobile availability is more challenging to prove and consequently, the UK 2G and 3G coverage figures are lower than the ones we presented last year.

5.13 In terms of consumer satisfaction levels with mobile coverage, we can also refer to the recent statistics below, which illustrate that most (88%) consumers are satisfied with access to their network, and over half (59%) of consumers are very satisfied. We are encouraged to see that these figures are high and are being maintained.⁷⁵

Figure 16: Residential consumer satisfaction with mobile services⁷⁶



Source: Ofcom

5.14 However, high-level statistics on mobile availability and satisfaction levels do not reveal the coverage issues that exist at a more local level and that possibly affect a minority (although a large contingent) of consumers. Given the high level of mobile take-up, there may be millions of consumers who face coverage issues, or who are dissatisfied with coverage from their provider. Proportionally more of these consumers will live in certain UK regions and nations and therefore we agree with stakeholders who stated that coverage problems may affect certain communities more than others.

“..problems of poor mobile network coverage and not-spots have a disproportionate effect on consumers in rural communities” - Consumer Focus⁷⁷

Coverage is a concern for many consumers

5.15 Respondents to both phases of the mobile sector assessment raised mobile coverage as an important issue. Many individuals gave feedback, during our first phase of the consultation, based on their individual problems and experience. Additional information

⁷⁵ According to the Communications Consumer Panel’s research findings, consumers, on average, rated their provider for 7.7 out of 10 for coverage, and this score was similar to their rating for the cost of using their phone, customer services and handset choice.

⁷⁶ The *Communications Market* report, p. 256

(http://www.ofcom.org.uk/research/cm/cmr09/CMRMain_4.pdf)

⁷⁷ Consumer Focus consultation response to Mostly Mobile, p.17

(http://www.ofcom.org.uk/consult/condocs/msa/responses/Consumer_Focus.pdf).

on coverage issues was provided in responses to *Mostly Mobile* particularly from consumer organisations:

“...the mobile market, and in particular mobile coverage, is increasingly important to consumers and small businesses...” – Communications Consumer Panel

“...coverage is a key concern for consumers and second only to value for money tariffs...” – Which?

“...poor mobile network coverage [is] one of the most significant causes of consumer detriment in the mobile phone sector...” – Consumer Focus

- 5.16 The Communication Consumer Panel’s response referred to the research on coverage that it had commissioned. The research found that over half (56%) of consumers and 91% of small business respondents reported difficulty with mobile coverage – and a third of all those surveyed said that this was a regular experience.

“... the most common problem people experience is not-spots, where people get no reception at all: 36% of UK mobile users have experienced this, 18% regularly.” – Communications Consumer Panel.

The Communications Consumer Panel suggested a number of action points for Ofcom, including working with operators to improve coverage as well as improving the coverage information available to consumers.⁷⁸

- 5.17 Consumer Focus pointed out that mobile network coverage was the most commonly-raised issue (in more than a quarter of all responses) to their own recent consultation on mobile issues.⁷⁹
- 5.18 Such findings resonate with the results of our consumer tracking survey which found that coverage is the key (unprompted) concern for mobile consumers (see Figure 7 in Section 2). Furthermore, such concerns may well increase as the mobile platform delivers more services to consumers. External reports indicate there may be potential issues with satisfaction levels for mobile broadband services - YouGov’s *Dongle Tracker* surveys illustrate that the network rating of mobile broadband is not only lower than for fixed-line broadband services but, moreover, consumer perceptions of mobile broadband networks seem to be getting worse over time.⁸⁰
- 5.19 Our 2009 CMR report, for the first time, surveyed consumers on their perception of mobile broadband services and found that eight in ten users of mobile broadband were satisfied with the services overall, while seven in ten were satisfied with the speed of the service. These ratings are indeed lower than for fixed broadband services, and may

⁷⁸ <http://www.ofcom.org.uk/consult/condocs/msa/responses/ccp.pdf>. The Communications Consumer Panel also asked the MNOs to develop a ‘try before you buy’ clause for mobile contracts and requested that we work with MNOs to ensure consumers are not locked into contracts if their provider is unable to provide adequate coverage.

⁷⁹ http://www.ofcom.org.uk/consult/condocs/msa/responses/Consumer_Focus.pdf

⁸⁰ YouGov *Dongle tracker* – Wave 5, July 2009. The YouGov report focuses on the satisfaction, activities as well as the behaviour of mobile broadband users.

<http://www.yougov.co.uk/services/services-synd-DongleTrack.asp?submenuheader=4>

reflect a wider variation in the quality of service delivered over a mobile network and/or lower average speeds.⁸¹

- 5.20 Issues with mobile network quality could raise wider issues for mobile operators and consumers. As we noted earlier in our statement, consumer demand (particularly for data and mobile broadband) puts pressure on MNOs to enhance their mobile networks, through securing additional network capacity and spectrum allotments. However, MNOs may also consider other options to deal with network quality issues. These may include prioritising the delivery of certain mobile services and applications over others, as a response to addressing increasing bandwidth demands on their network and to ensure the satisfactory provision of a range of services. These issues are known as net neutrality or traffic management issues and we set out our approach to it in the Competition section of this document.
- 5.21 We are also keen to promote the maintenance of good network quality is during the London 2012 Olympic Games and Paralympic Games ('the Games'). These events will involve many users concentrated in small geographic areas, in the Games venues and at other sites throughout the country, with peak demand putting pressure on the capacity of the networks currently deployed. For this reason, we welcome the measures being taken by operators to anticipate the demand with suitable infrastructure development. However, we think that the issue of network quality and the ability of the networks to deliver a range of high quality services require further discussion and debate to ensure good outcomes for visitors and local consumers during this period.
- 5.22 The *Digital Britain* report⁸² suggested that some notable gaps in mobile coverage of rail links should be addressed, not least in the Central London section of the Underground, and that the government was willing to address any regulatory constraints that might be acting as a barrier. Ofcom is pleased to see the progress that is being made towards this aim in discussions between TfL and the MNOs: we are not aware of any regulatory constraints but will be ready to assist if any are identified. The Games may be a spur to achieving this extension of coverage as early as possible.

Commercial 2G coverage may have reached its limit but 3G rollout could continue

- 5.23 Given the nature of mobile technologies, it is may be difficult, if not impossible, to provide 100 per cent, seamless mobile coverage across the UK.
- 5.24 As we have shown above, while 2G coverage is widespread, it is still not available to 100 per cent of the UK population or geography. We also noted in *Mostly Mobile* that commercially-driven 2G may have reached its limit.
- 5.25 3G coverage is currently less widespread than 2G, but is likely to extend due to commercial network deployments. It is difficult to predict exactly how far the 3G footprint will grow, but it is likely that 3G population or geographic coverage figures will not be greater than those for the 2G network. This means that there could remain some parts of the UK, and a small minority of citizens, without any network coverage.

⁸¹ *The Communications Market 2009*, Ofcom Figure 4.76, p.

257 (<http://www.ofcom.org.uk/research/cm/cmr09/>)

⁸² <http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf>

Operators and the sector structure could influence 3G coverage

- 5.26 There are a number of factors with the potential to extend the availability of 3G and possibly stimulate the deployment of evolutionary mobile networks. Such factors include continuing network deployment by MNOs, potential changes in the sector structure, and government proposals. While this is good news, it does not mean that all areas of the UK will be reached by these mobile networks.
- 5.27 MNOs are still investing in 3G roll-out, so the 3G footprint will probably expand beyond its current reach. This scope for further commercial rollout is important because more consumers are taking up higher-speed services, which means that the relatively smaller footprint of 3G networks (compared to 2G) is becoming a pressing issue.
- 5.28 Network sharing offers the possibility of increasing the commercial viability of providing coverage in some areas. For this reason, we see network sharing as having a potential positive impact on coverage. But it is important to recognise that operators would still have to consider the expansion of the shared network commercially viable.
- 5.29 Structural change in the sector also has the potential to affect coverage. Like network sharing, it may increase the commercial viability of improving coverage. However, it could also negatively impact on coverage in some areas. This is because overlapping cell sites may be decommissioned, possibly leading to degradation in network quality and perhaps creating new not-spots.
- 5.30 In September, T-Mobile and Orange announced a proposed merger.⁸³ Coverage and network quality were mentioned as potential benefits in the press release they issued at that time:

“It will result in expanded network coverage and enhanced indoor and outdoor network quality for 2G and 3G services” – T-Mobile⁸⁴

Government decisions can influence 3G and 4G coverage

- 5.31 The UK government could also affect the mobile coverage over the longer term for 3G and future mobile networks, including 4G networks. The government’s *Digital Britain* report, in June 2009, stated its support for the proposals of the Independent Spectrum Broker relating to the release and use of appropriate spectrum for the next generation of mobile telecommunications services, including some retail service coverage obligations.⁸⁵

⁸³ As indicated in Section 2 of this statement, this merger is currently being examined by the European Commission and it may also be referred to the relevant competition authorities in the UK

⁸⁴ See press release *Deutsche Telekom and France Telecom plan to merge T-Mobile UK and Orange* (<http://www.t-mobile.co.uk/services/about-t-mobile/media-centre/>)

⁸⁵ The Digital Economy bill can be found at <http://www.publications.parliament.uk/pa/ld200910/ldbills/001/10001.1-5.html#j720> and the ISB report at http://www.culture.gov.uk/images/publications/ISB_final_report.pdf

- 5.32 The government is currently consulting on a Direction to Ofcom to implement the ISB's proposals.⁸⁶ These include the proposal that new and revised coverage obligations could be attached to certain spectrum licences in order to extend mobile coverage.
- 5.33 Ofcom will continue to liaise with government to ensure that spectrum is available in a timely manner to optimise the prospects for continued competition, innovation and better mobile coverage across the UK.

Emergency mobile roaming has been launched

- 5.34 Emergency roaming had been raised as an important issue by stakeholders, and several were keen to see a 999 roaming solution enabled. We were therefore pleased to announce that emergency mobile roaming was launched on 14 October 2009, after a successful trial period. This was achieved through a joint effort between Ofcom, the MNOs, the emergency authorities and the fixed operators (who act as call handling agents).
- 5.35 Previously, when mobile customers were out of range of their own network, they could not use other available mobile networks to call emergency services – resulting in potential life and safety issues. As a result of emergency roaming, mobile phone users have the ability to call the emergency services (999 and 112) from another network if their own network is unavailable but there is another network provider in the area with coverage. Their phone should automatically switch over to whichever network operator has the best coverage in that area. We believe this development will bring UK citizens significant benefits by extending their access to emergency services
- 5.36 Emergency mobile roaming is currently supported by four of the five MNOs (O2, Orange, T-Mobile and Vodafone). H3G is likely to join shortly; however, its customers are already able to place emergency calls via any of the other four networks when the H3G network is not available.
- 5.37 There are some limitations on emergency mobile roaming in its current form. Location information is less accurate than with other forms of access to emergency services and, at the moment, it is not possible for the emergency services to make a return call using calling-line identification. Calling the emergency services from a fixed-line phone or a mobile phone with coverage from its own network remains a better option, if possible. Consumers should also ensure that the mobile handset from which they wish to make an emergency call contains a SIM card.⁸⁷

⁸⁶ <http://www.berr.gov.uk/files/file53061.pdf>

⁸⁷ Ofcom considered two ways of introducing the emergency roaming service, access via Limited Service State (LSS); and access via national roaming. We decided to develop a technical solution based on LSS. LSS was chosen on the basis of cost and speed of implementation. A national roaming solution is likely to be significantly more expensive for mobile operators to introduce and would take longer to implement. In addition handsets become 'locked' onto the roamed network as, to preserve the battery life, network scanning only takes place every 30 minutes or so. This could lead to a need for a significant 'clearing' mechanism between operators, to identify non-emergency calls inadvertently made by consumers while on the roamed network. LSS is limited in the sense that less call and caller information is available. However, it is the easier and less costly of the two solutions to introduce. The emergency authorities supported this solution as they were keen for early implementation.

5.38 In addition to emergency roaming for voice calls - and as mentioned in our previous section - we helped to promote a national trial of emergency SMS earlier this year. We expect that this service will be made permanent in early 2010 (see the Competition section of this Statement for more details)⁸⁸.

We are investigating the causes of 2G not-spots and the scope for solutions

5.39 Not-spots were highlighted as a key problem by stakeholders. We are also cognisant that some not-spots could persist, given that commercial mobile network coverage is unlikely to extend to all parts of the UK and to all the population. These not-spots currently relate to 2G networks, as 2G has the widest UK coverage at present.

5.40 We are thus keen to understand the underlying issues causing 2G not-spots and any scope for resolving them. We have commenced a research project to investigate the mobile not-spots, focusing on areas where it has been reported that there is no 2G coverage at all.

5.41 We are looking at locations where there is no mobile coverage by any operator (i.e. complete not-spots) and also not-spots that affect a specific network (areas where one network's customers have coverage, but customers of another network do not). This research can provide valuable information to inform our future activity on not-spot issues.

5.42 Several factors, individually or in combination, can cause not-spots. They may occur because the handset is unable to connect to a mobile network due to, for example, the challenges posed by the particular nature of the local topography or the built landscape. They also occur where mobile operators have not built mobile networks. There are various reasons that MNOs may not have provided network coverage in a given area. For example, they may not see a sufficient business case for the associated network investment, or they may encounter resistance and planning obstacles to their attempts to build mobile infrastructure, such as mobile antennas.

5.43 Coverage on transport routes can present additional coverage challenges. This is because mobile phones (and other mobile devices) in some types of moving vehicles, particularly trains, are not always able to use stationary mobile networks and may require special solutions to be installed. In attempting to solve problems associated with mobile coverage on trains, MNOs must overcome many practical and planning related hurdles. These include the deep cuttings along railway lines necessary to install new networks and timing access to train tunnels to minimise train service disruption.

5.44 Due to the many different causes of coverage problems, there is no 'one-size fits all' solution to not-spots. However, there may be scope for creative solutions to resolve coverage issues in particular contexts. We are keen to play a facilitation role in such solutions, and are currently undertaking research to examine in more detail the underlying issues behind mobile not-spots.

⁸⁸ For more information about the trial and how to register, please see <http://emergencysms.org.uk/>

5.45 There was support from a majority of respondents including the Communications Consumer Panel, Which?, T-Mobile and the Welsh Assembly Government (WAG)⁸⁹ to our proposed facilitation role,

“We would be pleased to work with Ofcom and the mobile industry to maximise the commercial deployment of network infrastructure in such not-spots” – Welsh Assembly Government

“We welcome the fact that Ofcom is planning to conduct research ...and would like them to use the findings from this research as a basis for improving coverage in areas which have poor quality, intermittent or no coverage for people on the move.” – Communications Consumer Panel

“Ofcom’s proposed facilitation role will play a major role in extending coverage to ‘not-spots’ and is something that we have been arguing in favour of for some time.” – T-Mobile

5.46 A few MNOs, such as 3UK and O2, added some caution to this support:

“3UK does support local initiatives to try and improve areas where not-spots persist but we as an operator should not be placed under any regulatory or financial obligation to undertake or help these projects.” – 3UK

“Our concern with Ofcom’s focus on coverage is that regulatory intervention in this area would effectively reduce resources for capacity and quality enhancements.” – O2

5.47 Our research on not-spots aims to investigate and provide more evidence on:

- why coverage issues persist;
- the extent of and impact of not-spots in the case-study areas;
- the factors involved in, as well as the scope for, solutions; and
- how the issues and solutions may vary in different cases.

5.48 We are now examining a number of not-spots case-studies in different parts of the UK (with representation across the nations). Our case studies include two of the UK’s key national rail routes.

5.49 This research should complete in the first half of 2010 and we intend to publish the findings. A potential end-point for the research is to provide guidance on not-spot issues which stakeholders may refer to if they are considering local action/ interventions to improve mobile coverage in their areas.

⁸⁹ <http://www.ofcom.org.uk/consult/condocs/msa/responses/>.

We are considering the scope to derive detailed information on network quality

- 5.50 In *Mostly Mobile*, we noted that there may be concerns with mobile network quality and the potential lack of data on this issue. Such concerns may be expected to increase, given the growth of mobile broadband and the resulting demands being placed on mobile networks. We therefore stated that we would investigate mobile network quality.
- 5.51 Network quality is defined broadly and is concerned with examining how good coverage is where networks do exist i.e. what networks actually deliver in terms of their capability and reliability for voice, data and mobile broadband services. Our stated aim was to establish if, and how, we can obtain an up-to-date understanding of the network quality of UK mobile services in different environments, for example, outdoors, indoors and in transit.
- 5.52 We have therefore been liaising with the MNOs to gain more details on the coverage and network quality information they hold. In addition, we have been examining the case for - and the feasibility of - independently testing mobile networks in order to establish an indicative picture of UK mobile services. Given indications that consumer satisfaction relating to mobile broadband quality may be deteriorating,⁹⁰ it may be increasingly relevant to investigate mobile broadband network quality and speed.
- 5.53 Such testing could, however, be a very challenging, complex and costly task. Moreover, we need to establish whether the outcomes of this work would enable any improvements to coverage information - or whether the current data provided by the MNOs is actually the best available guide to coverage. We will continue develop our thinking on this, particularly as the government has been consulting on an additional reporting duty for Ofcom on the state of the UK's communication networks. If taken forward, this duty could involve collating information, to allow us to regularly report back to government on network coverage, as well as on performance and reliability.

We will consider 4G coverage as part of wider spectrum release issues

- 5.54 As noted in the section on Competition, the government is in the process of considering the release of spectrum as part of the Digital Britain process, in order to promote the availability of the next generation of mobile telecommunications services. We will implement any Direction from government coming out of this process.

Our proposals and work plan

- 5.55 Currently, we are undertaking a number of specific initiatives to address coverage issues. These include:
- **Research into the causes of not-spots.** We have started a case study project to investigate the issue of mobile not-spots – in areas of zero or limited (2G) coverage.

⁹⁰ YouGov Dongle tracker – Wave 5, July 2009. The YouGov report focuses on the satisfaction, activities as well as the behaviour of mobile broadband users.

<http://www.yougov.co.uk/services/services-synd-DongleTrack.asp?submenuheader=4>

- **Continue to monitor the coverage data provided by operators.** We will continue to discuss 2G and 3G coverage information, and whether this information can be presented in more useful ways.