



INTERNATIONAL TELECOMMUNICATION UNION

**ITU NEW INITIATIVES WORKSHOP ON
THE REGULATORY ENVIRONMENT
FOR FUTURE MOBILE MULTIMEDIA
SERVICES**

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**THE REGULATORY ENVIRONMENT FOR FUTURE
MOBILE MULTIMEDIA SERVICES**

ISSUES PAPER

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The opinions expressed in this document are those of the authors and do not necessarily reflect the views of the International Telecommunication Union or its membership.

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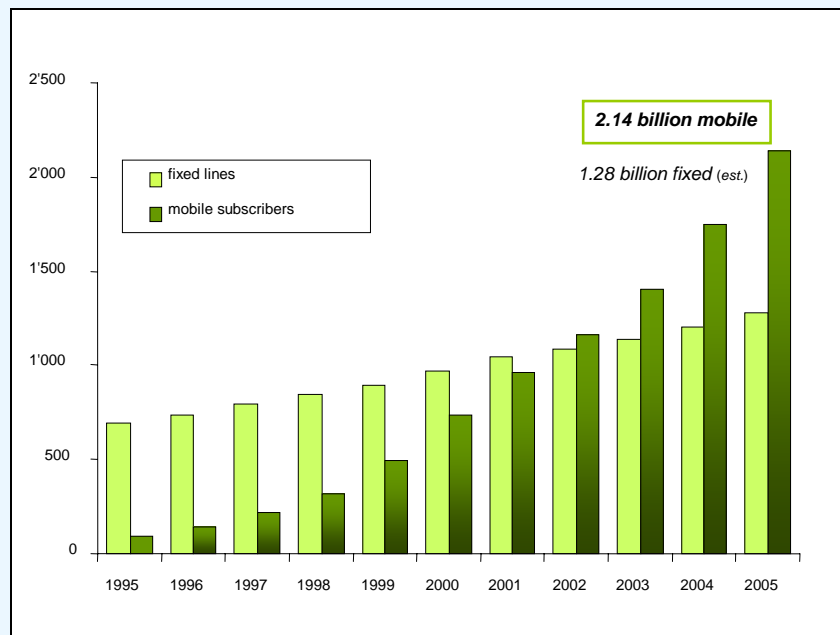
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1 INTRODUCTION

The telecommunications sector is undergoing a period of rapid change and transition. Fast-paced innovation in technology and services is affecting the way business, and daily life, is conducted. As such, the telecommunications industry is being re-shaped and re-invented. Nowhere is this more apparent than in the case of mobile and wireless communications.

Mobile phones overtook fixed lines in 2002 on a global scale (Figure 1.1), when the strategic importance of mobile phones had become clear not only in the developed world, but also in the developing world. Indeed, Africa was the first continent where mobile phones overtook fixed line telephones. In many developing countries, mobile phones not only provide a complementary form of access, but opened up entirely new channels for communication that were hitherto virtually non-existent. Moreover, the boom in the mobile industry has stimulated employment and contributed to overall economic growth¹. Mobile communications have grown at a faster rate than even the internet, and the mobile handset is now increasingly being used as a means to access information networks (Figure 1.2). At the end of 2005, there was around one mobile phone for every three inhabitants on the planet, with the total number reaching 2.14 billion (Figure 1.1). The number of mobile phones in the world is 67 per cent higher than the number of fixed lines, and, despite the downturn of the economy over the past few years and the burst of the dot com bubble, mobile communications continue to grow rapidly.

Figure 1.1: Mobile subscribers grow to overtake fixed lines
Mobile subscribers and fixed lines (1995-2005)



Source: ITU World Information Society Report.

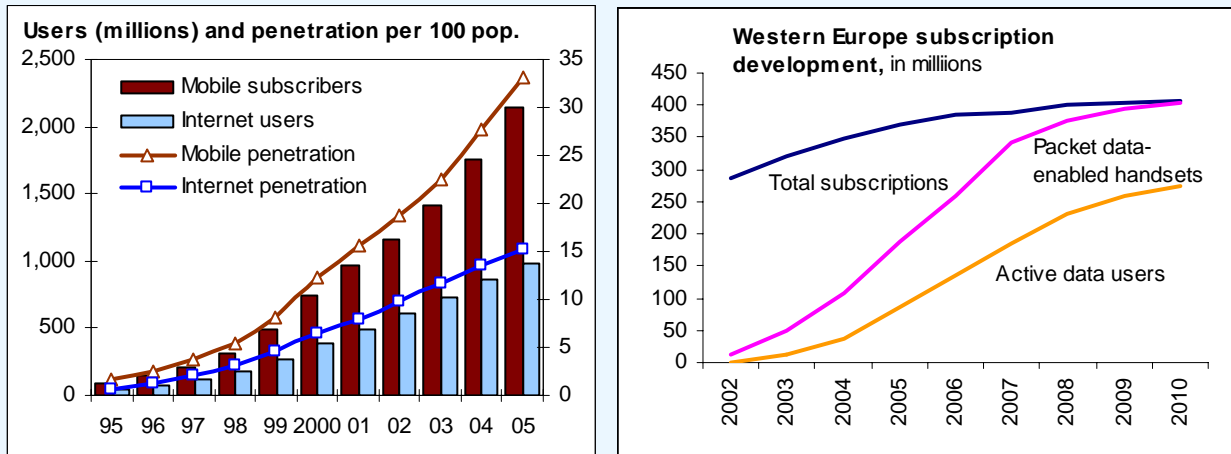
The Asian region boasts the largest proportion of mobile subscribers, accounting for just under 40 per cent of global mobile users. It is home to both the largest single market (China, with 393 million users at the end of 2005) and the economy with the highest penetration (Hong Kong SAR, with 123 mobile phones per 100 inhabitants on 1 March 2006). Asia was also the first region to launch next generation mobile services in the form of CDMA2000 and W-CDMA (in the Republic of Korea and Japan, respectively). Mobile TV services and diverse multimedia services were made available in these markets ahead of other markets around the

world. The region is home to developments in TD-SCDMA, the third principal 3G (IMT-2000) mobile standard, the use of which is expected in China.

The top five leading economies in mobile teledensity (mobile subscribers per 100 inhabitants) are Hong Kong, China, Italy, Luxembourg, the Czech Republic and Israel. The top five economies in terms of the total number of subscribers are China, United States, Japan, Russia and Germany. There are only two countries that rank in the top ten for both mobile teledensity and mobile population: the United Kingdom and Italy (Figure 1.3). The largest growth markets are China and India, with India approaching China's growth rate in 2006, following the introduction of the popular "One nation, one rupee" mobile tariff.

Figure 1.2: Data goes mobile

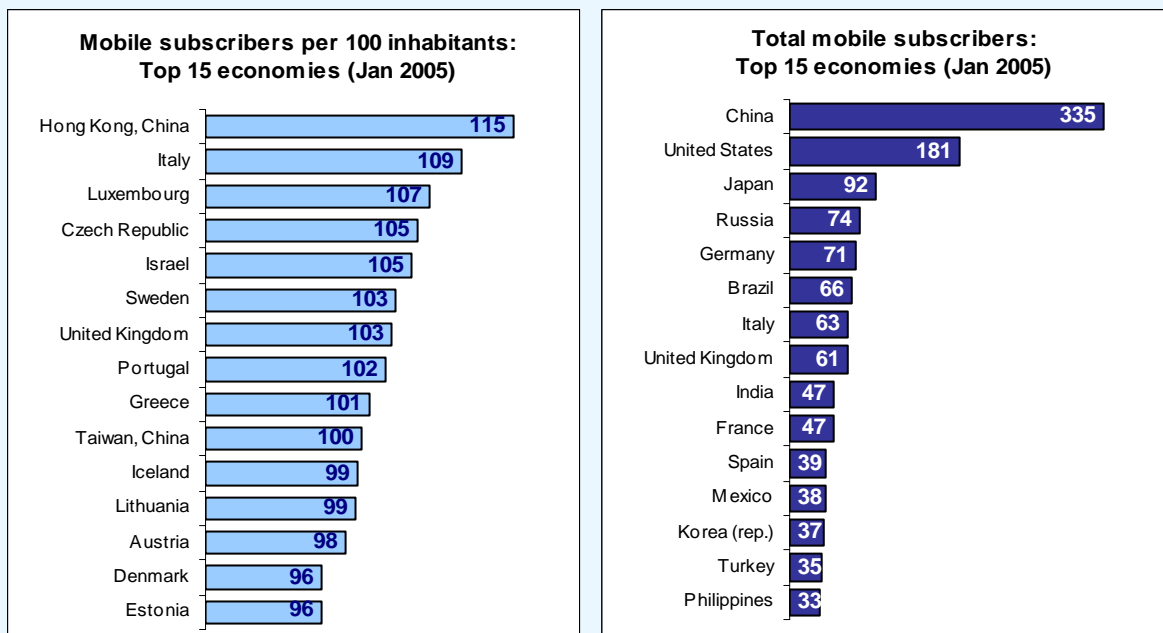
Mobile and internet growth (1995-2005) and forecast Western Europe mobile data subscriptions (2002-2010)



Source: ITU (left chart). Forrester Research (right chart) as cited in ITU Internet Report 2005: *The Internet of Things*

Figure 1.3: Mobile leaders

Top 15 countries by mobile teledensity and total mobile subscribers (January 2005)



Source: ITU World Telecommunication Indicators Database. For preliminary January 2006 figures, see: http://www.itu.int/ITU-D/ict/statistics/at_glance/cellular05.pdf.

Though mobile services began as purely voice services for business users, they have now diversified in both consumer and corporate markets, but so, too, have other complementary propositions, such as wireless local area networks (WLAN). The range of options for wireless networking continues to expand, from IMT-2000 (3G), to Ultra Wide Band (UWB), to Worldwide Interoperability for Microwave Access (WiMAX) and Orthogonal Frequency Division Multiplexing (OFDM). This has served to place additional burdens on spectrum use, as well as stimulate an increasingly demanding appetite for data among consumers. Moreover, with the advent of ubiquitous networking through technologies such as Radio-Frequency Identification (RFID) and wireless sensor networks, users will have a wide plethora of always-on multimedia applications available to them, at any time of day or night, be it in their public or private spheres. This raises a number of important consumer concerns, ranging from service affordability to data protection and privacy. Policy-makers and regulators, too, should be cognizant of these issues and work actively to resolve them, together with other regulatory concerns such as spectrum flexibility, competition and healthy content development.

1.1 About this paper

This paper aims to outline some of the key issues encountered by policy-makers and consumers alike, as we move towards an increasingly pervasive mobile multimedia environment. The next chapter presents a brief overview of the key trends in the mobile multimedia market. Chapter three examines consumer protection concerns (including privacy) and chapter four discusses mechanisms for ensuring a level playing field. Finally, chapter five explores the complex issue of content regulation. This paper, together with a background paper on spectrum management in a multimedia environment and country case study of China and Hong Kong SAR, have been specially prepared for the ITU New Initiatives Workshop on “The Regulatory Environment for Future Mobile Multimedia Services” held from 21-23 June 2006 in Mainz, Germany².

2 TOWARDS MOBILE MULTIMEDIA

As mature markets reach saturation, operators are expanding and diversifying their services. The advent of technologies offering a combination of mobile functionality, internet accessibility and multimedia capabilities are fostering this trend, e.g. IMT-2000 or 3G technologies, fixed wireless access technologies, GPS, mobile TV and radio and so on.

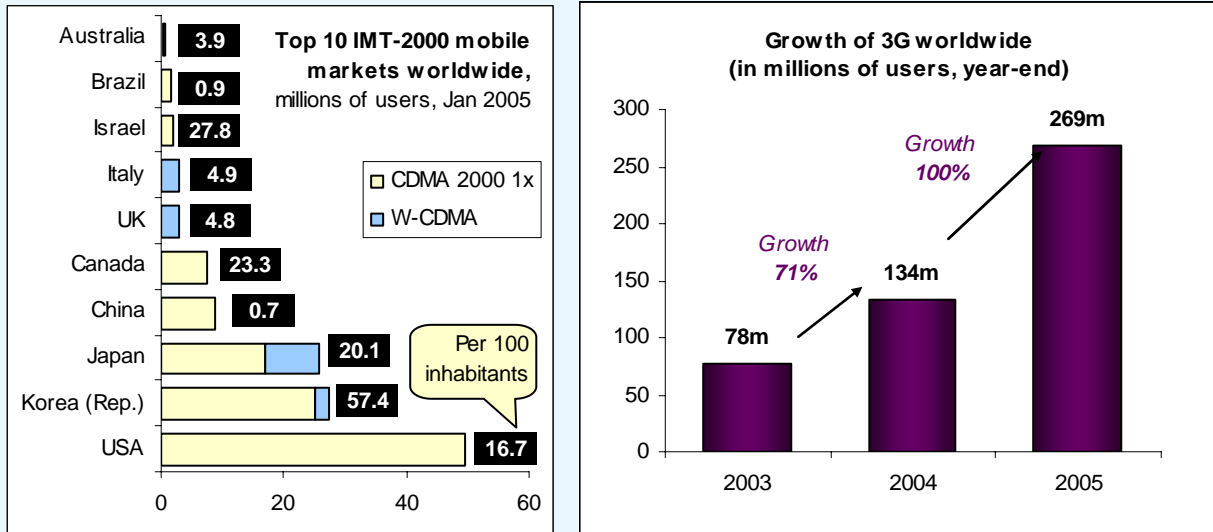
The first IMT-2000 networks (defined by the ITU as including commercially deployed CDMA20001x as well as W-CDMA) were launched in the Republic of Korea and Japan in 2000 and 2001 respectively. After a sluggish start (not unlike the GSM scenario a decade earlier), these higher-speed networks are now beginning to spread. There were 134 million users in the world at the end of 2004 and 166 commercial networks in operation. The United States has the largest potential subscriber base with over 48 million handsets sold with access to its CDMA2000 1x networks (i.e. 16.7 per cent handset penetration). Given their head start, the countries with the highest penetration rate per capita of active 3G services are Korea and Japan, with 53 and 21 per cent respectively. Due to the sheer size of its market, China is in fourth place, with 8.7 million CDMA2000 1x handsets, but has the lowest mobile penetration of the top 3G economies (Figure 2.1, left chart).

IMT-2000 (3G) networks overall have grown 71 per cent between 2003 and 2004, and 100 per cent between 2004 and 2005 to reach 269 million (Figure 2.1, right chart) As of March 2006, 18 HSPDA³ (high-speed downlink packet access) networks were deployed in 14 countries, offering a cost efficient and smooth upgrade to existing W-CDMA networks. HSPDA offers peak downlink data rates of up to 14 Mbit/s, compared to the 384 kbit/s of traditional 3G networks. At such, it could compete with existing wide area networks.

The trajectories followed by the internet or information technology world (fixed broadband) and the mobile world are now converging: cellular technologies are moving towards HSPDA and 3G LTE (long-term evolution) while fixed-line broadband is moving towards WiMax and other fixed wireless solutions. Their final objective remains the same: to provide ubiquitous broadband mobile connectivity (Figure 2.2).

Figure 2.1: Next generation mobile

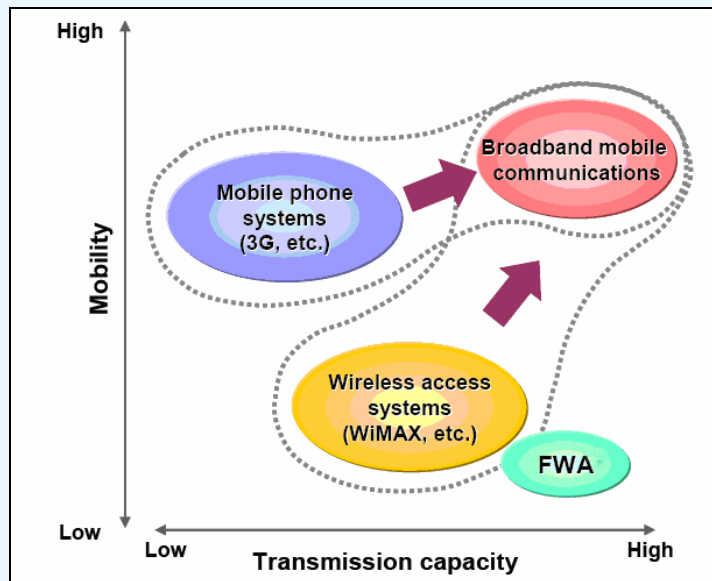
Top 10 3G mobile markets, and growth of W-CDMA and CDMA 20001x worldwide between December 2003 and December 2005



Source: Compiled from ITU, CDG and 3G Today

Figure 2.2: Converging objectives

Mobility and bandwidth towards broadband mobile communications

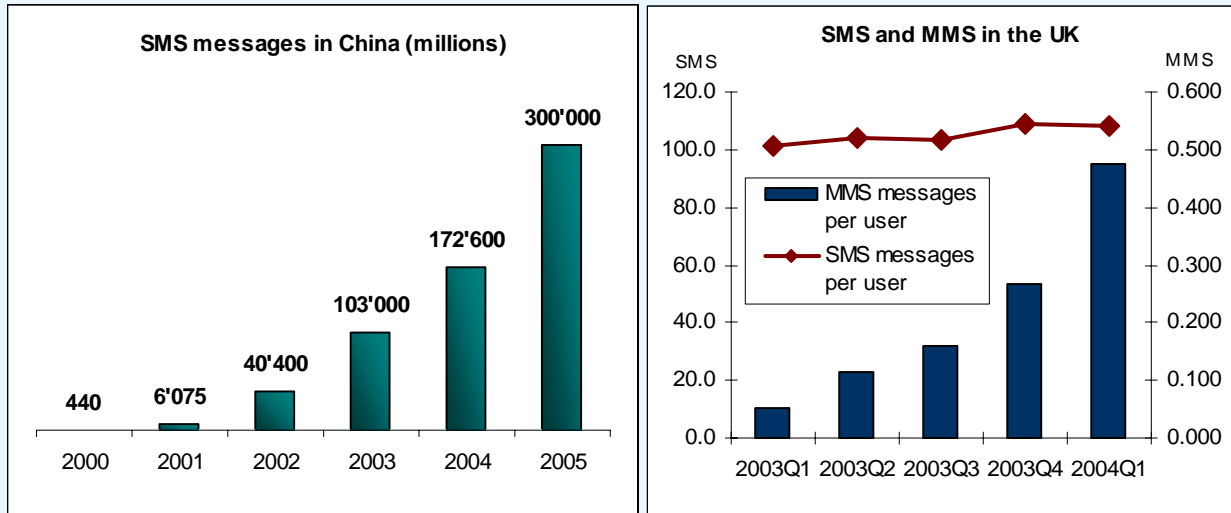


Source: MIC, Final Report by the Study Group for Wireless Broadband Promotion, December 2005

Higher speeds for data transmission have led to the development of a plethora of new services, as operators and service providers scramble to expand their average revenues per user (ARPU). SMS was a great boon to operators the world over (Figure 2.3). Most operators did not expect that such a simple, low-cost service would become such a lucrative channel for ARPU. For this reason, many service providers, particularly in Europe, unilaterally increased their retail prices for SMS as usage rose (see also Figure 3.3, left chart). Despite the high prices, users continue to use messaging services with the same fervour, but pricing models that are significantly above cost are coming under increasing scrutiny by consumer protection agencies and regulatory bodies.

Figure 2.3: The power of messaging

Growth of SMS in China, and SMS and MMS per day per user per month in the UK



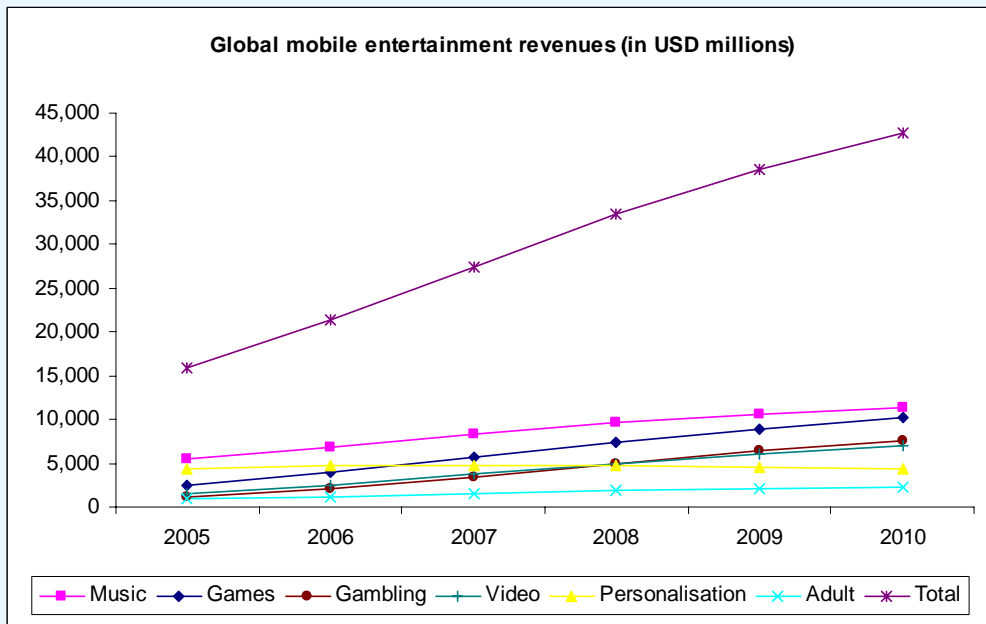
Source: China Mobile Annual Report (left graph), OFCOM (right graph)

Box 2.1: Multimedia – the answer to declining ARPU?

Global mobile entertainment revenues, 2005-2010 (USD millions)

In the mobile phone industry, a large proportion of content revenues still stem from personalization services (e.g. ringtones and wallpapers). Moreover, mobile content continues to be driven by events or brands unrelated to the phone operator, such as popular TV series. This is likely to change over time. By 2010, content over mobiles will diversify, with the growth of audio and video services. Analysts predict that the market will cover more widespread mobile media consumption, while the shares of personalization revenues will decrease.

Total mobile entertainment revenues are set to rise from around 15.8 billion to 42.8 billion between 2005 and 2010. It is no wonder that operators are seeking to diversify their mobile entertainment portfolios, particularly in saturated markets. After digital music, games and gambling are predicted to be the big drivers.

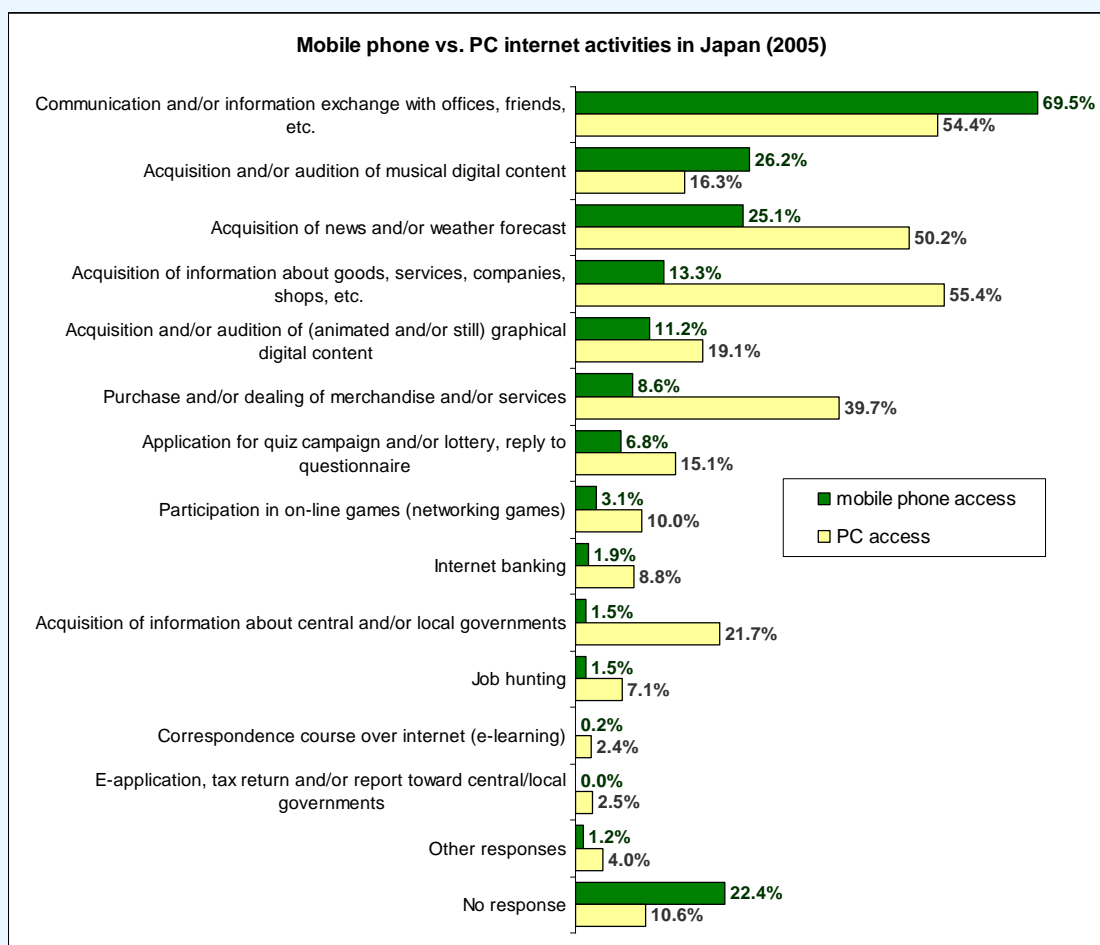


Source: Informa Telecoms & Media

By some estimates, the global mobile entertainment market reached revenues in 2005 between some 16 billion and 17 billion USD (Box 2.1), representing a 71 per cent increase compared to 2004⁴. Though SMS and messaging services are still growing, their proportion of total multimedia content is declining in some of the more mobile nations. In the more tech-savvy first movers, such as Japan and Korea, wireless messaging and email, though still dominant, are joined by digital music content and news information alerts (Figure 2.4). In fact, the downloading of digital music in Japan is now more prevalent on mobiles than on personal computers (26.2 per cent of users surveyed download digital music over their mobiles compared with 16.3 per cent using PCs). Japan and Korea continue to lead in terms of mobile internet usage, at 94 per cent and 89 per cent penetration respectively (Figure 2.5). The next country in line is the United States, which has substantially fewer internet-enabled mobile phones than the top two economies, at 33 per cent. The two European countries in the top five are Austria and Finland.

Figure 2.4: Mobile music Japanese-style

Internet activities over personal computers vs. mobiles in Japan (2005)



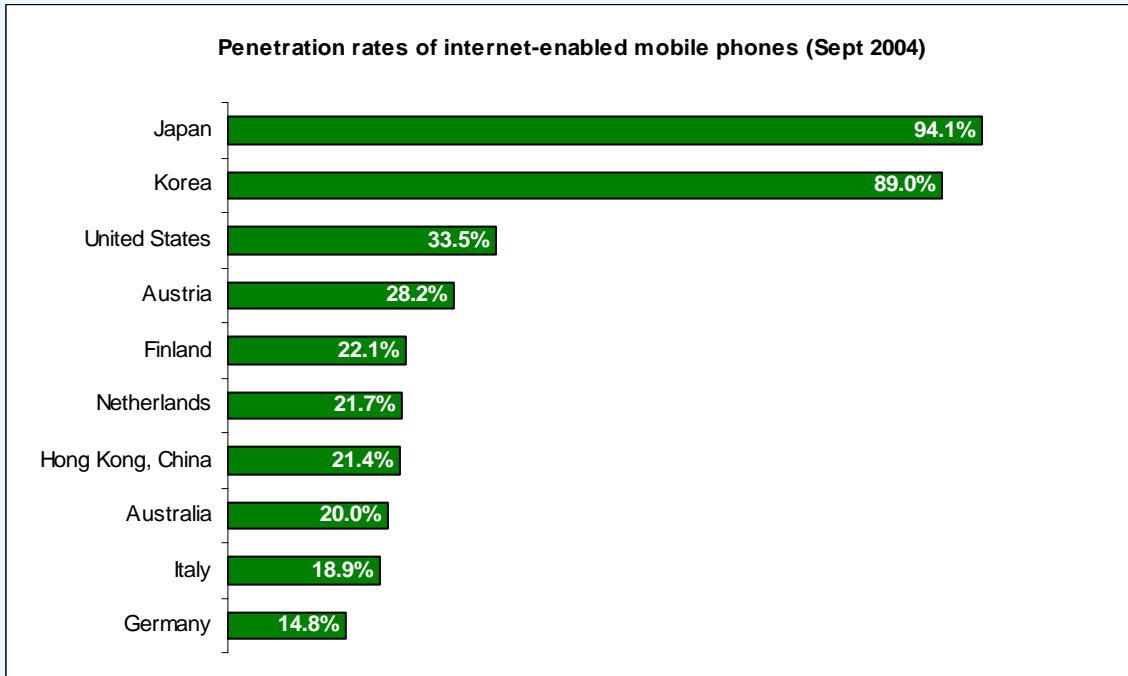
Source: MIC Communications Usage Trend Survey, 2005

On the European handset market, one of the latest releases (in April 2006) is the new Nokia N73 3G phone, which comes equipped with a camera (3.2 megapixel) capable of still and moving images, and integrated stereo speakers with 3D sound. It is, not surprisingly, advertised as a “multimedia computer”, and includes a Symbian operating system. Users can enjoy entertainment, messaging, video calling, and internet access combined with plain old voice communications. Features on many wireless handsets around the world now include large colour displays, graphic displays, email clients, instant messaging, and push-to-talk services. Mobile phones have become essential devices for users to help manage their lives better (through calendar, alarm functions and contact lists). Some mobile devices can even act as biorhythm aids (Box 2.2) or essential fashion accessories (Box 2.3). The intimate nature of mobile phones is being taken even further, through biometric recognition (e.g. fingerprints) or handwriting recognition, but also through additional functionality

such as perfume sprays (Box 2.4). Mobile phones have truly entered the personal sphere of a user's life, and in many cases from a very young age. Consequently, it has become even more important to ensure that the content and applications delivered to these user devices are appropriate and in line with user choice and convenience.

Figure 2.5: Mobile internet leaders

Penetration rates of internet-enabled mobile phones

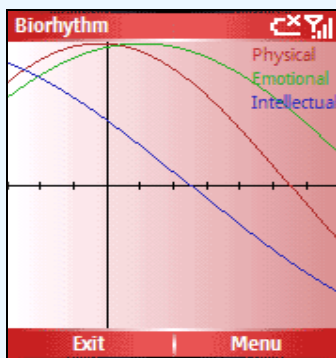


Source: MIC, 3G Mobile

Emerging mobile multimedia services are geared towards providing customized user-centric services, ranging from entertainment and lifestyle applications (such as mobile TV or mobile payments) to professional services such as video conferencing and real-time data exchange. Suitable platforms and gateways are under development to enable the provision of a wide array of new services to meet user demands (Figure 2.6).

Box 2.2: A mobile to tell you how you feel?

Mobile phones get even more intimate with biorhythm detection



The mobile industry is coming up with increasingly personal applications for handsets, in an effort to secure consumer loyalty and encourage emotional attachment to their devices. News, weather and music are only the beginning. Ornetia Biorhythm for Windows-based Smartphones can now tell a user everything they need to know about their daily emotional, intellectual and physical states. The system is based on the premise that lifetime developments are cyclical, and that each person is influenced by three principal biological cycles: physical, emotional and intellectual. The cycles begin at birth and continue throughout life. The mobile phone simply requests a user's date of birth, makes the correct mathematical calculations, and can release graphical information on a user's personal biorhythm for any given day.

Image Source: www.clickapps.com

Source: Clickapps

Box 2.3: Mobiles for the fashion-conscious

The Nokia 7380 – mobile phone or chocolate bar?

Nokia's 7380 model looks more like a chocolate bar than a mobile phone. The mobile keypad is replaced by a scroll wheel. The side of the phone is adorned with a fabric logo, similar to the ones seen on high-end hand bags. The phone features a mirrored face for a discreet powdering of the nose. A colour co-ordinated carry pouch is also available. The reverse side of the phone consists of different textures, with a tangible fabric panel taking up most of the item.

It may take users some time to get used to the lack of a number pad, especially when writing SMS messages. However, the phone has improved its voice dialling system to compensate for the problem. Voice-activated SMS systems may also gain in popularity.

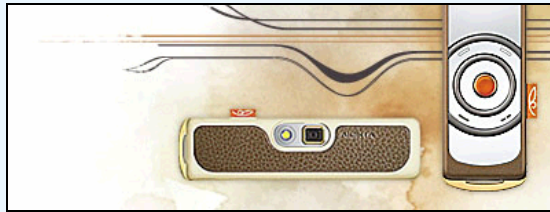


Image Source: <http://www.nokia.de>

Source: <http://www.cnet.com.au>

User demand in a future mobile multimedia environment can be said to consist of three principal dimensions: mobility, ubiquity and identity. The first dimension, mobility, liberates the user from a specific location, through portable access methods. The second dimension, ubiquity, liberates the user from a dedicated device for access, and the third dimension liberates the user from the manual communication of identity (e.g. through passwords). It is the combination of these dimensions that will drive the future mobile multimedia market. It is also the characteristics of mobility, ubiquity and identity which will raise a number of important challenges and concerns for regulators, policy-makers and consumers alike.

Box 2.4: Mobile recognition

The touch, feel and smell of the phone



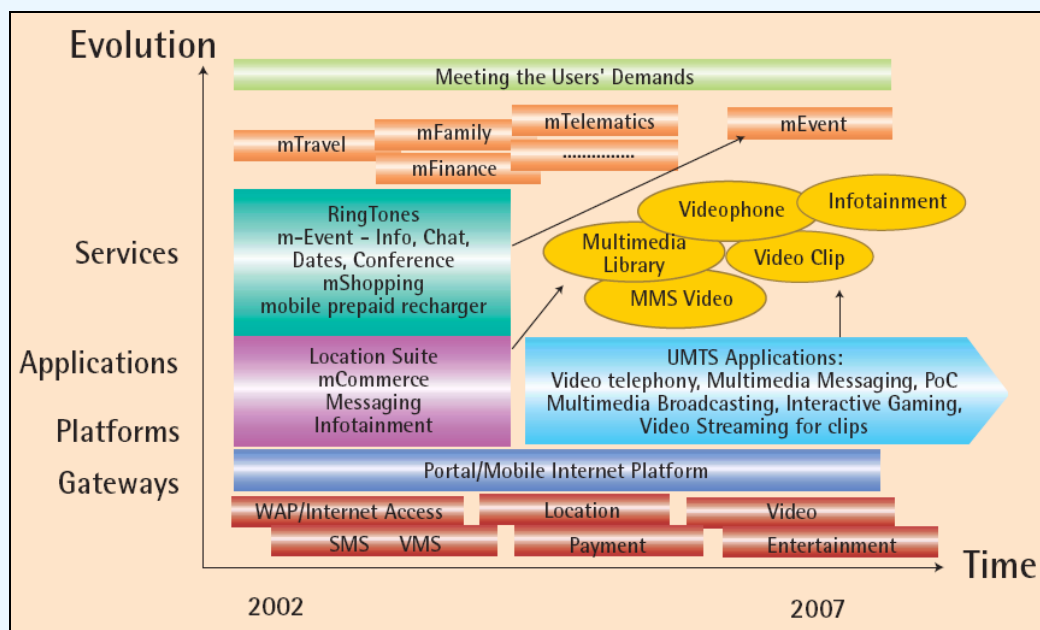
Japan's NTT DoCoMo was one of the first service providers to release a fingerprint-enabled mobile phone in 2004, in an effort to create more secure and personalized functions. Fingerprint recognition prevents unauthorized access to the content stored on the mobile phone and its various functions. In a similar vein, in 2006, Pantech released a mobile phone (PG-2800) which recognizes "finger writing", i.e. the way a user writes text messages. Consumers will continue to have the choice between using individual keys or writing letters with their fingers on the keypad. The 'finger writing recognition' function can be especially useful for inputting text in Russian or Chinese characters. Also, the "motion setting" functionality of the phone means that when the user moves the phone in a specific way, it can automatically dial a pre-programmed number.

Handset manufacturer Samsung has gone even further. The company has recently applied for a patent for its "perfume spraying" mobile phone function. The perfume-spraying mobile phone is designed to release "smell tones" (rather than ring tones) when incoming calls are received or when particular buttons are pressed. A pressurized heating chamber is used to store the scents and an ultrasonic controller triggers the release of the perfume into the air.

Image Source: ITU

Source: <http://www.3g.co.uk>; <http://www.oreillynet.com>

Figure 2.6: The evolution of multimedia services
Services, Applications, Platforms and Gateways



Source: ITU, as cited by UMTS Forum.

3 PROTECTING THE CONSUMER IN A PERVASIVE MULTIMEDIA ENVIRONMENT

3.1 Affordability and transparency

3.1.1 Notions of affordability

There is no universal definition of what is meant by "affordability" in the context of mobile services. In general terms, one might expect affordability to mean that services are priced so most people can afford them. As a general rule of thumb, ICT (information and communication) services can account for up to five per cent of household income, but the threshold that this sets varies greatly between countries and within countries.

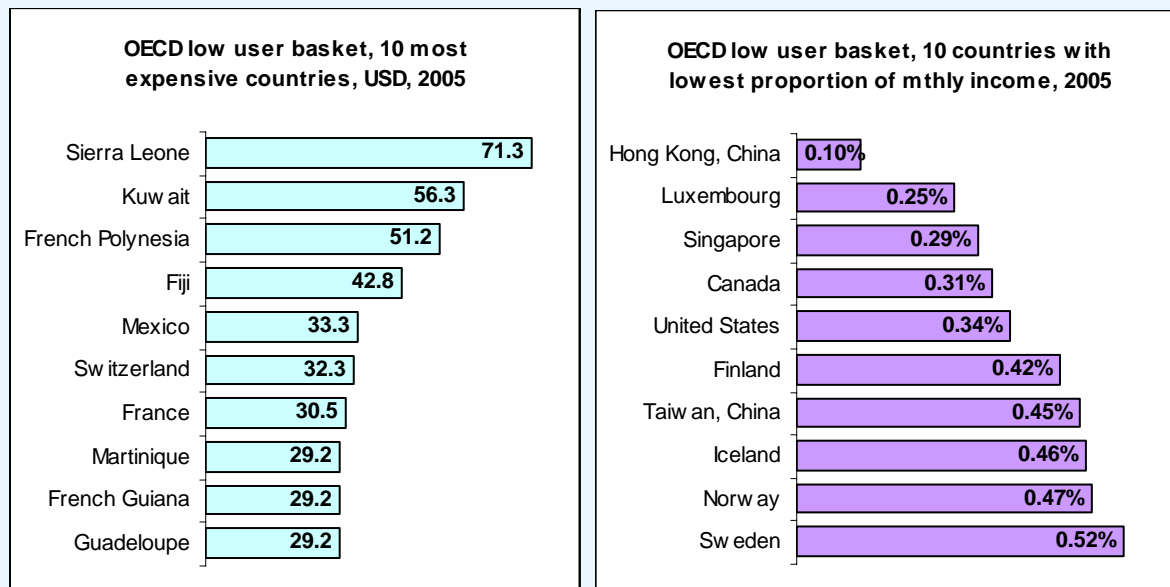
As a consequence, there is little consensus about how affordability should be measured. Approaches include the use of market penetration and household spending on mobile services compared to household income. According to the most recent ITU data, the most expensive countries, in US dollar terms, for mobile services at the end of 2005 include Sierra Leone, Kuwait and French Polynesia. The most expensive countries list includes only two industrialized countries, both in Europe: Switzerland and France (Figure 3.1, left chart). At the other end of the spectrum, the five least expensive economies for mobile services, as a proportion of monthly income, are Hong Kong SAR, Luxembourg, Singapore, Canada and the United States. The European representatives in the top 10 cheapest countries are principally the Nordic economies (Figure 3.1, right chart), who have traditionally been lead users of mobile communications in Europe.

Operators need to consider the notion of affordability for several reasons. In developing countries, achieving a critical level of affordability is essential to gaining a foothold in the market, and increasing the addressable market. The population size of many such developing countries means they will become strategically important as the take-up of mobile multimedia services increases. Moreover, affordability is especially significant to ensuring take up of value-added services, such as mobile multimedia, given that such applications may be seen by consumers as more of a luxury item, and less of a necessity than basic voice

services. Markets that promote affordable services are more likely to witness a greater use of emerging mobile data communications.

Figure 3.1: Affordable and not so affordable

10 most expensive countries and 10 cheapest countries by proportion of monthly income (2005)



Note: Analysis is based on the OECD “low-user” basket, which includes a mix of 25 mobile calls (peak rate/off-peak, on-net/off-net, of different duration) and 30 SMS messages, per month. The lowest rate available in each economy is sampled, which may be either pre-paid or subscription-based. The price data was sampled in September 2005.

Source: ITU World Information Society Report.

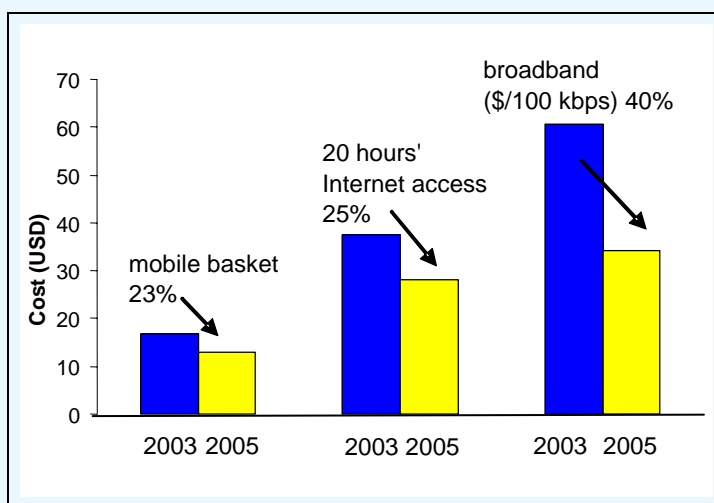
3.1.2 Affordability trends

Affordability is viewed as more of a concern for service development in less developed nations, but is still an obstacle to take-up in many industrialized countries. For example research produced by Ipsos for the European Commission in 2004 showed that in the 19 per cent of households in the EU15⁵ which did not have a mobile phone, affordability was an obstacle for 16 per cent of these households overall. Percentages were higher in some countries such as Portugal (40%) and Greece (26%).

In general terms, advances in technology, especially but not only digital services and pre-paid cards, have reduced the cost of providing mobile services. New commercial techniques, such as managed service or outsourcing contracts, are also being used to bring down network operating expense costs. Lower costs mean that mobile services can be provided profitably even in rural areas of developing countries.

However, lower cost technologies can only improve affordability if savings are reflected in the retail price paid by consumers. There is evidence that the price of mobile services has not decreased at the same rate as other communications platforms such as internet and broadband (Figure 3.2). Furthermore, services that are very inexpensive to provide, such as SMS, are being priced significantly above cost. In Europe, for example, the average cost of an SMS in 2005 was 0.14 USD (Figure 3.3, left chart). The region is also home to the highest prices for an average low-user mobile basket (Figure 3.3 right chart). This is, at least in part, due to the very high level of mobile termination rates in Europe.⁶

Figure 3.2: Cost of mobile, internet and broadband
Average cost of ICT usage worldwide, 2003-2005



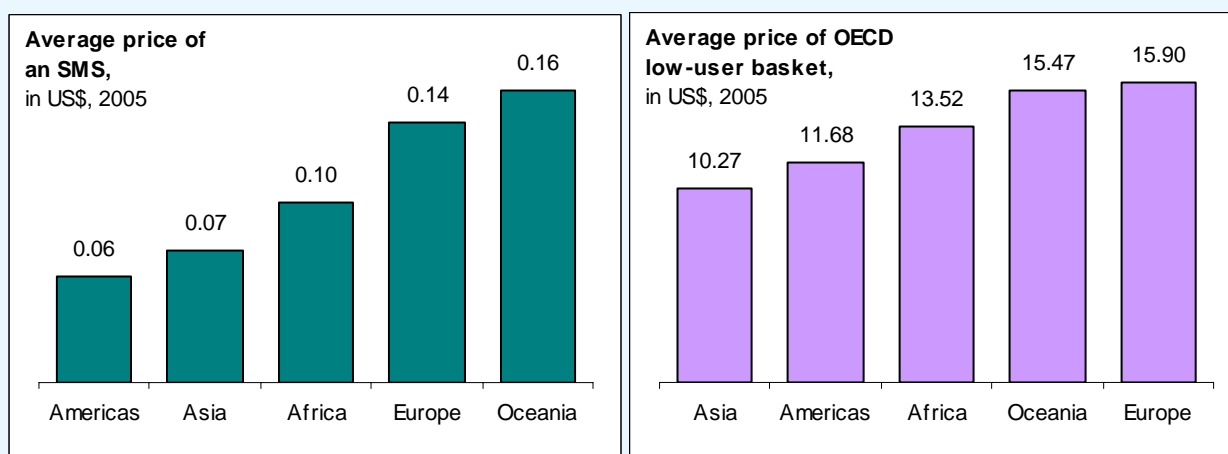
Note: The analysis is based on change over time in a series of monthly baskets. For mobile communications, the OECD lower-user basket is used (see description in Figure 3.1). For internet access, the basket is based on 20 hours use per month, using dial-up access, including charges levied by both the telephone network operator and the internet service provider. For broadband, the price is based on the price per 100 kbit/s of always-on service per month (in this context, broadband means speeds greater than 256 kbit/s). The data sampled for mobile and dial-up internet is based on 180 economies. For broadband, it is based on 76 economies that had broadband service available as early as 2003.

Source: ITU World Information Society Report, 2006

Studies have also shown that affordability in the mobile phone industry is only loosely linked to the actual published price of a particular service⁷. Cross-subsidisation is common, with classes of users contributing to revenue and costs in different ways and at different times.

Figure 3.3: Average mobile prices

Average price of an SMS in US\$ across regions, and average price of OECD low-user basket in US\$, 2005



Note: For the definition of the OECD low-user mobile basket, see Figure 3.1.

Source: ITU

The prepaid model accounts for a large majority of mobile users worldwide and has been a key driver in the take-up of mobile services and of significant benefit to lower income populations. In developing world markets, such as the Philippines and much of Africa, low transaction costs and tiny re-charge values have allowed large portions of the population to use mobile services. Although prepaid services are hardly innovative as a billing model, "micro-prepay" (i.e. adding small levels of credit to a prepaid account) is an important development in increasing affordability, as it enables people on low incomes to tailor their spending more precisely.

3.1.3 Pricing transparency

The notion of affordability is closely related to that of pricing transparency. On the demand side, transparency has three principal facets:

- providing consumers with information about the price of mobile services to enable them to compare the price of like services;
- providing consumers with the ability to be able to control their expenses, for instance through pre-payment schemes or packaged bundles of services;
- providing competitors and regulators with information about operators' costs in providing mobile services.

With regards to the first of these facets, tariff structures are often complex and opaque, making it difficult for consumers to perform a meaningful price comparison with other service providers. Ensuring that consumers are fully aware of the costs of different mobile multimedia services and packages is vital to facilitating consumer choice and ensuring competitive pricing structures.

Transparency in the cost of providing mobile services is also relevant to competitor operators and regulators. Operators can compete more effectively if they know how much their competitors are charging for similar services. It is difficult for regulators to intervene to control excessive pricing if they are wholly ignorant of the margins achieved by the operators on the market. Finally, if consumers were aware of the large margins achieved by operators from some services (for example SMS messages), there might be consumer resistance to paying a price which bears no similarity to the cost of providing the service.

Effective regulatory intervention to promote price transparency includes the following: cost-oriented price controls; licence conditions imposing disclosure obligations on network operators; regulator-approved interconnect agreements, standardization of non-price terms, and price comparisons. Regulators also rely on general consumer protection legislation to ensure that basic levels of information about products and pricing are communicated during the sale and supply of communication services. An example of an innovative regulatory action is the European Commission's tariff comparison website for roaming services (see section 5.2)⁸.

3.1.4 Specific challenges

One of the more specific affordability concerns relates to the cost of buying a handset. The good news is that mobile handset prices are falling, and as such, the overall cost of mobile ownership is decreasing. (Box 3.1). However, analysts argue that the steep cost of high-end handsets, in particular for 3G services, has served to delay take-up of new services. Moreover, in developing countries, the cost of buying a handset remains a major barrier, especially where levels of import taxes or sales taxes remain high. Initiatives such as the *GSMA Emerging Markets Low Cost Handset Initiative* are facilitating the supply of new handsets at lower prices. For example, a basic Motorola model is now available at a wholesale price of under USD 30. In addition, schemes to re-use and recycle handsets are beginning to be set up. For example in the UK, Foneback receives returned handsets from various sources (including network operators in the UK), which it repairs, refurbishes and repackages for users in developing countries. However, it has been estimated that no more than 5 per cent of discarded handsets from high-income markets find their way to developing country markets, so there is ample room for growth in this area.

Another challenge worth mentioning is the need for operators to recoup the high cost of building networks (e.g. in developing countries where there is minimal existing infrastructure and reluctance to invest). For social and economic reasons, consumers in those countries may be poorly placed to bear the cost of rolling

out such infrastructure through higher tariffs. Operators will therefore be looking to cross-subsidise the roll out of networks from other areas of their businesses. In both developed and developing countries, operators face the problem of having to upgrade network in order to keep up with new technologies like 3G. Developing markets are also faced with poor competition and a dominance of large incumbent players, which has traditionally had an important bearing on consumer prices.

Specific affordability concerns related to roaming, mobile termination and prepayment are covered in further detail in sections 4.2, 4.4 and 5.3.

Box 3.1: Handsets – from low-cost to high-end

Worldwide mobile phone production expected to decline as handset costs level out

As many mobile markets across the globe near saturation, the growth in mobile-phone manufacturing is being driven by replacement sales, rather than by new subscribers. This will have an impact on total mobile phone production, which is forecast to level out from 2007 onwards. The rate at which subscribers upgrade their handsets is also likely to dictate the speed at which 3G mobile networks supersede 2G ones.

There has also been a steep decline in the Average Selling Price (ASP) of the mobile handset. The global mobile handset ASP is expected to drop to USD 129 in 2006, down 9.2% from USD 142 in 2005. They decreased by 2.7% during 2004.

Several factors are contributing to the fast decline in ASPs. Low-end, ultra-low-cost mobile phones are being targeted at fast-growing markets in large numbers. In the meantime, at the high-end, wireless communications service providers continue to demand lower-cost 3G mobile phones in order to encourage greater consumer adoption of 3G services. These two factors have cut down the overall ASP in 2005 and 2006.

In 2007 the erosion of ASP is expected to stabilize. The rising production of high-end 3G phones will make up for continuing pricing erosion in low-end models, leading to a slower decline in the average selling price.

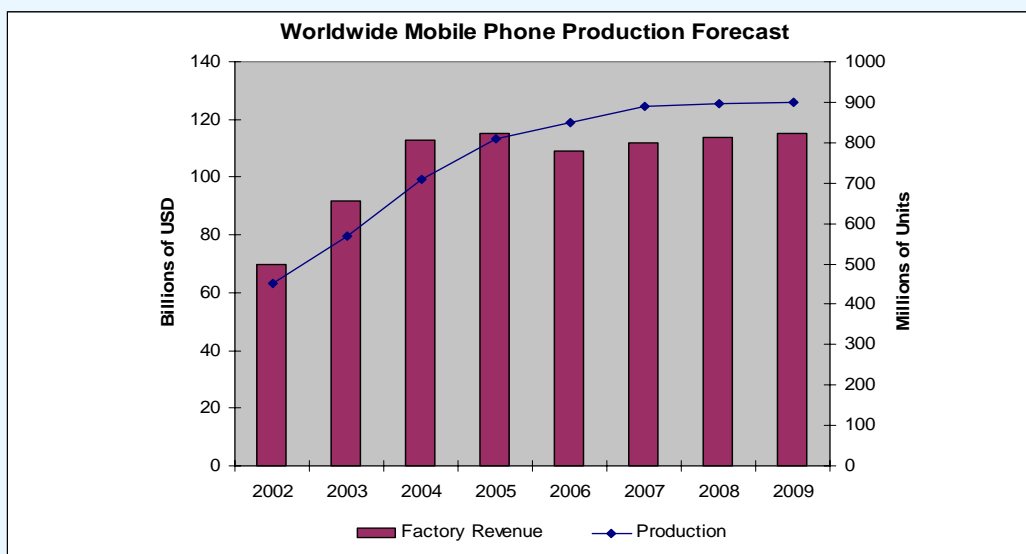


Figure Source: iSuppli Corp.
Source: <http://www.mobilemonday.net>, iSuppli Corp.

3.1.5 Novel solutions

There are several measures available to market players and governments that might wish to improve affordability. Operators could foster affordability by simplifying tariff structures and introducing shorter charging units (for example, per second charging). A more radical suggestion that has been put forward is the introduction of special tariffs with limited eligibility, for instance through the distribution of airtime credit free of charge or at subsidised rates. Handset manufacturers, working with operators, could move towards making handsets that are compatible with multiple SIM cards to allow optimum network and tariff

selection. More complete consumer information on the unlocking of SIM cards would also help in achieving this goal.

At the governmental level, lower levels of taxation on handsets and services in developing countries (e.g. India) have been used either in combination with, or as an alternative to, direct intervention to regulate prices at the consumer level.

Finally, mobile virtual network operators (MVNOs) can serve to enhance affordability by entering markets and stimulating competition, while avoiding the cost of building their own network. In some instances, they can target specific affordability needs, e.g. low cost roaming such as easyMobile in Europe.

3.2 Mobile multimedia and privacy

3.2.1 Principles of data protection and privacy

Data protection and privacy laws vary around the world. This section focuses on those principles laid down at the European level. In Europe, the key legislative provisions are the *Data Protection Directive* and the *Directive on Privacy and Electronic Communications* (DPEC), which are incorporated into the domestic laws of the EU Member States.

The *Data Protection Directive* lays down key principles relating to the processing of personal data. These principles stipulate, *inter alia*, that data:

- should be processed fairly and lawfully;
- is to be collected for specified and legitimate purposes;
- is relevant and not excessive in relation to the purpose for which it is collected; and
- is accurate, kept up to date, and kept for no longer than is necessary.

In addition, personal data may only be processed where, for example, the data subject has given their consent. Mobile multimedia service providers, which might manipulate complex levels of personal data, will need to consider these principles in relation to the operation of new services and marketing activities. Stricter rules apply to sensitive information, such as medical records. It is noteworthy that the Directive restricts the onward transmission of personal data outside of the EU unless the disclosing party enters a data transfer agreement with the recipient, in order to ensure that EU-levels of data protection apply to the transferred information. This may have an adverse impact on the evolution and proliferation of applications such as location-based services (see section 3.2.2 below).

Under the DPEC, there is a duty imposed on publicly-available electronic communications services to ensure the security of their networks. As mobile multimedia services take off, there is ostensibly a heightened risk of security breaches due to the increase in sensitive information being wirelessly transmitted. Moreover, with the development of m-commerce and mobile payment systems, the potential for fraud intensifies. The DPEC further forbids the interception or surveillance of communications, except in specific circumstances, for example in cases of national security or crime prevention. This raises issues for countries who have (or plan to introduce) stricter anti-terrorist legislation. Such legislation gives law enforcement authorities more extensive powers in the acquisition, use and retention of data arising from surveillance operations. The DPEC also contains anti-spamming provisions which are discussed further in section 3.2.4.

3.2.2 Location-based services

Location-based services (LBS) provide users of mobile phones with personalised services tailored to their current location, for example advising users of current traffic locations, providing navigation support, helping users find nearby restaurants, and mobile tracking services.

The first location-based services were launched in the late 1990s. However, implementation and take-up remains at a nascent stage: LBS have yet to develop from a niche product to a mass market service. With the increased use of 3G networks, both the accuracy of LBS and the bandwidth available for connected information services are increasing. This is likely to stimulate the take-up of such services.

There are three basic types of location-based services:

- *pull* services (where the request for LBS originates from the end-user);
- *push* services (where LBS are "pushed" to the end-user by the service provider, e.g. a customer might register to receive regular traffic updates in their locality, but the service provider initiates those individual updates); and
- *tracking* services (e.g. a mobile phone tracking service which enables a parent to pinpoint their child's mobile).

There are several technologies for determining the position of a particular user. These include the following: the use of the cell ID to identify the Base Transceiver Station that the mobile is communicating with, the use of GPS, or the use of short-range positioning beacons (which Bluetooth services use). GPS technology is present in most mobile phones but is obscured for use on most handsets, except in emergency scenarios. Disney Mobile will be the first mobile phone service to turn GPS into a tool controlled by the consumer, by enabling parents to use the technology to locate their children either via their own Disney Mobile phones or by logging on to a protected Disney site. There are, of course, limits to the extent of the protection provided by such techniques. GPS technology is only active when the phone is turned on, and if a child forgets their phone, parents will only be able to locate the phone rather than the child.

Location information constitutes sensitive data for many users. Such information might potentially be used to harass or attack users, or it could potentially lead to embarrassing situations. It must therefore be handled with caution. Because location-based services are newly emerging, many countries may not have legislation which deals specifically with these services. However, even in such cases, service providers must examine the general data protection and privacy rules which may apply.

In the European Union, the DPEC specifically allows the provision of value-added services based on location, subject to the consent of subscribers, i.e. the end user must give permission for the service provider to send the information to his or her mobile. Unsolicited SMS to mobiles is caught by the anti-spamming provisions of the Directive (section 3.2.4). The result of such regulation has been a focus on user-centric LBS and applications which give the user control of the experience (e.g. by opting in via a website). As mentioned, the DPEC restricts the onward transmission of personal data outside the European Union, unless the disclosing party enters a data transfer agreement with the recipient to ensure EU-levels of data protection for the transferred information. This may have an impact on roaming location services which extend outside the EU and use personal data for service provision (for example about the end-users' preferences).

Ultimately, although laws differ from country to country, service providers can and must still turn to general data protection and privacy principles as a starting point. General principles include informing end-users as to the type of information which is being collected and how it will be used, and providing users with the choice of what location information to disclose. Other general principles might involve allowing users to review their permission profiles, and protecting location information so that it cannot be accessed by unauthorised persons.

3.2.3 The growing use of camera phones

The inclusion of digital cameras in handsets is now commonplace. This phenomenon has, for instance, propelled Nokia to become the largest manufacturer of digital cameras in the world. High resolution camera phones coupled with broadband mobile services are allowing instant publication and distribution of photos and video clips across the globe. This has led to novel developments such as "citizen journalism", e.g. the capture of images during the immediate aftermath of the 7 July 2005 bombings in the United Kingdom which were spread instantaneously to news organizations worldwide. Camera phones have also aided in the fight against crime, by capturing criminal activity and facilitating police investigations (Box 3.2). Video cameras in handsets have further enabled users to take video footage on the street (often on a discreet basis, without the knowledge of the subject(s) involved). This footage can then be saved in a user's movie clip folder, to be potentially shared via the web, or with other phone users via MMS.

Camera phones have stimulated the development of new media services which rely on user-generated content, i.e. where users are invited to submit their own photos and movie clips to make them publicly available. Services such as "Flickr"⁹ invite users to upload their photos for viewing by anyone with an

internet connection. Users are also able to download clips from online video websites to their phones and share them with their friends, through MMS or Bluetooth technologies.

Box 3.2: Hands up – I’ve got a camera phone

Camera phones and the war against crime



Camera phones are not only handy for the easy snapping of tourist sites. They have also been useful for personal protection and public whistle-blowing.

In 2005, in New York City, a schoolgirl used her camera phone to take a picture of a man who ‘flashed’ her on the subway. The NY Police Department was able to identify and arrest the suspect. A blog, Hollaback NYC (www.hollabacknyc.blogspot.com), specializes in posting camera phone pictures of men who have acted in an obviously disgusting or offensive manner toward women on the streets.

On the other hand, this form of cyber-vigilantism might also lead to concerns of a socio-ethical nature. An incident in South Korea shows the potential punishment, which can in some cases outweigh the crime: a woman, who was snapped refusing to clean her dog’s mess from the subway floor, was identified and harassed to such an extent that she abandoned going to school and threatened suicide publicly. Furthermore, does the use of camera phones mean that all of our actions, no matter how insignificant or harmless, will be recorded and subject to public scrutiny?

Image Source: <http://www.hollabacknyc.blogspot.com>

Source: BBC News, Information Week

Protecting consumer privacy: Battling the surveillance environment

The use of internet-enabled camera phones must be considered from the perspective of the subject of the photo or movie footage, who may or may not have consented to the publication of their image (s). Their use may be a blatant invasion of privacy or amount to a negative portrayal, e.g. of a celebrity.

How far can a person exercise control over their personal image? Although image rights exist in some jurisdictions, such as the United States, in other countries image subjects have no formal legal right to control the exploitation of their image. Under English law, aggrieved image subjects have traditionally had to rely on the law of confidentiality to protect their privacy, which only extends to limited circumstances. It is significant, however, that in the United Kingdom, courts have held that taking a digital photo of a living person involves "processing" of personal data under the *Data Protection Act* (the UK legislation which implements the EU Data Protection Directive). Although there are exceptions, the processing of such data requires consent in order to be lawful. Under this legislation, Naomi Campbell was able to obtain damages in a recent high profile case, in which her photo was taken leaving a drug rehabilitation clinic. Even though the pictures had been taken in a public place, the courts deemed them to be of a private nature¹⁰. Of course, camera phones threaten the privacy of both ordinary persons and celebrities (Box 3.3).

The United Kingdom has not been the only country to consider the issue of digital photos and privacy. The Italian Data Protection Authority was one of the first data protection authorities to issue guidelines on camera phone use in 2003. The Italian guidelines allow images of people to be snapped for personal use only. They also require that the images be kept safe, and put the onus on users to tell people if the images they have taken of them will appear online. The guidelines have been criticized due to the difficulty of implementing them in any practical way. In the United States, measures taken with respect to camera phones focus on indecency and obscenity. Following concerns over camera phone use, the *Video Voyeurism Prevention Act of 2004* was amended to prohibit photographing or videotaping the “private area” of a person without his or her consent in any place where there can be "a reasonable expectation of privacy". The punishment includes fines of up to USD 100,000 or up to a year in prison, or both¹¹. Saudia Arabia’s “Commission for Promoting Virtue and Preventing Vice” has banned camera phones completely and their use is discouraged in other countries in the region. An increasing number of private sector organizations are also banning camera phones. Studios in Hollywood are concerned over piracy, and camera phones are being excluded from more and more preview events. Fitness centres, such as Japan’s Tipness Fitness and Edinburgh’s David Lloyd Gym have banned the use of phones in their changing rooms. Some lap dancing and erotic clubs are preventing people from using the camera phones not just to protect the identity of their female staff but also to respect the privacy of their male clientele¹².

The increasing proliferation of camera phones has meant that the digital capture of an individual's location and activities are an easy click away. The number of public surveillance cameras is dwarfed in comparison with those on mobiles. One of the fears arising from this scenario is the creation of a growing atmosphere of surveillance. Surveillance can exist in different forms, but the most prevalent today are technologically mediated. As discussed above, these include not only still image and video capture, but also location and navigation data, and increasingly, biometric data. It is important to note that these various forms of data capture do not occur in isolation, but can act as part of larger systems of surveillance (e.g. security systems, government systems, media systems). It is vital, in an increasingly ubiquitous technological landscape, to strike a balance between the interest of governance and social order, and that of the individual citizen. It must be recalled that an environment of surveillance, whether real or perceived, can cause distrust and fear in human populations. This will cause greater anxiety in the exercise of choice and the making of decisions, no matter how small. Decision-making is essential to individual self-fulfilment and self-expression, and, as such, it is also crucial to societal advancement as a whole¹³.

Box 3.3: Big Brother Watching?

Camera phones as a threat to privacy

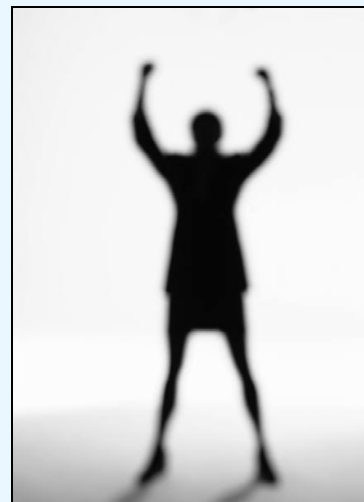
The popularity and instant availability of camera phones has made it much easier to take digital photos without consent.

Different governments and organizations have expressed concerns over the use of camera mobile phones. Governments in South Korea and Japan, two of the most highly developed mobile phones markets in the world, suggested that mobiles phones should produce a loud sound when taking a picture. Both governments also took into account the use of a default flash, but plans were abandoned after concerns from manufacturers. In Ireland, discussions are underway on the passing of legislation which would ban the use of camera phones in all Irish leisure centres and swimming pools, following a voluntary prohibition already imposed by some industry operators. Fitness clubs in the United Kingdom and Hong Kong are banning them in locker rooms (and in some cases throughout their premises) in order to prevent camera phones from being used to take indecent pictures. Some U.K. nightclubs have also started banning the use of camera phones. In Japan, retailers are worried about teenagers snapping some of the most interesting pictures from fashion magazines and then leaving without buying anything.

Italy has gone one step further. The Information Commissioner, who oversees adherence to data-protection legislation, has announced regulations on the correct use of camera phones. A problem of particular concern to the Italians is that camera phones may become a tool with which organized crime can influence election results - voters could be instructed to send images from inside the voting booth in order to verify that they had voted for the 'right' candidate.

The challenge in many of these cases is distinguishing between the use of a phone for simply making a call/SMS and the sneaky use of a camera. New technologies such as camera phone jammers, which can jam only the camera function of handsets, may go some way in addressing the problem.

Source: BBC News, Information Week.



3.2.4 Mobile spam

Spam is a growing problem not only for email users worldwide, but increasingly for the mobile industry. The 2005 mobile spam survey "Insights into Mobile Spam" (released by ITU, University of St-Gallen and bmd wireless) reveals that 80 per cent of mobile users received spam in 2004¹⁴. Spam volumes are likely to rise as more applications and services are developed.

Consumers view spam as a nuisance and an intrusion on privacy. The presence of spam therefore has a negative impact on the brands and reputation of mobile network operators. Indeed the survey cited above showed that subscribers are more likely to change their operator than apply for a new phone if spamming

exceeds their tolerance level. In the multimedia context, spam which results in users unwittingly downloading material represents an economic cost to the consumer (for example the cost incurred in being connected to the internet for the download). Picture or video spamming also has the potential to be increasingly offensive because of the inclusion of audiovisual elements.

Spamming also takes up valuable network capacity, and is seen as an increasing threat to legitimate business messaging opportunities. A further threat is that spam might carry viruses which infect mobile phones. The first mobile viruses have already appeared through downloads or Bluetooth connections, and even via SMS.

Regulatory initiatives

In the European Union, the DPEC forbids mobile spamming for direct marketing. It provides that "the use of...electronic mail for the purposes of direct marketing may only be allowed in respect of subscribers who have given their prior consent". Electronic mail includes the use of SMS and MMS messages.

European Member States are under a duty to incorporate the DPEC into their respective national laws. Interestingly, the Directive gives Member States discretion to decide whether the consent of the subscriber should be on an "opt-in" or "opt-out" basis. The United Kingdom has adopted a "soft opt-in" scheme, whereby unsolicited mail is outlawed, subject to the qualification that unsolicited messages may be sent to existing customers in limited circumstances¹⁵.

There are similar initiatives in other jurisdictions. In the United States, the *CAN-SPAM Act 2003* required the Federal Communications Commission to adopt rules protecting consumers from receiving unsolicited messages on their wireless devices, such as mobiles. These rules are now in effect and forbid the sending of commercial messages to wireless devices unless the sender has received explicit permission. However, the rules are far from comprehensive. For example, SMS text messages are only caught within the rules if they are addressed to email addresses or domain names; they are not caught when addressed only to telephone numbers.

In Japan, the *Law on Regulation on Transmission of Specified Electronic Mail* forbids and provides for the flagging of unsolicited messages sent to mobiles via randomly produced email addresses.

Effectiveness of regulation

Although there are examples of spam regulations being used to take enforcement action against spammers (for example a Danish firm was fined around 55'000 Euros for sending up to 1,500 spam email messages in January 2004), there are doubts about how successful regulatory measures will ultimately be in controlling the spread of spam. Spammers who pedal illegal or disreputable products are unlikely to pay heed to anti-spamming laws.

Part of the problem with spam is that it may originate from territories outside the countries which have anti-spamming measures, or from a country which does have its own anti-spamming rules but where taking enforcement measures is problematic. Therefore, concerted international co-operation is vital in the fight against spam. The need for international co-operation was identified in the *Declaration of Principles and Plan of Action* adopted at the *World Summit on the Information Society* (for which the ITU is the leading agency).

Additionally, authorities in the United States, United Kingdom and Australia signed a Memorandum of Understanding on Spam¹⁶ in 2004. Under the Memorandum, enforcement authorities in all three countries will work together to investigate spammers in those countries, and to allow cross-border enforcement against spammers to take effect.

The ITU's "Insights into Mobile Spam" study shows, however, that both consumers and corporations see operator self-regulation as the most important action against spam. Recent years have seen several initiatives, including consumer complaint mechanisms and new filtering techniques. There are a number of examples of the latter, although such techniques are still in their infancy. The GSM Association's code of practice on mobile spam¹⁷, released in 2006, is seen as an important development in this regard. In Spain and the Netherlands, Vodafone has introduced a spam filter to protect users from unsolicited messages. In Japan, NTT DoCoMo has launched a service enabling mobile users to provide a list of ten domain names from

which they would like to block email, and has introduced a system to block emails sent to unknown addresses.

The case of missed call marketing

Missed call marketing poses similar problems to that of mobile spam: it involves the sending of unsolicited texts or calls to mobiles inviting users to call back premium numbers to win non-existent prizes. The ITU's "Insights into Mobile Spam" study shows that over 63 per cent of users in the European Union had received misleading messages inviting users to call a premium number in 2004.

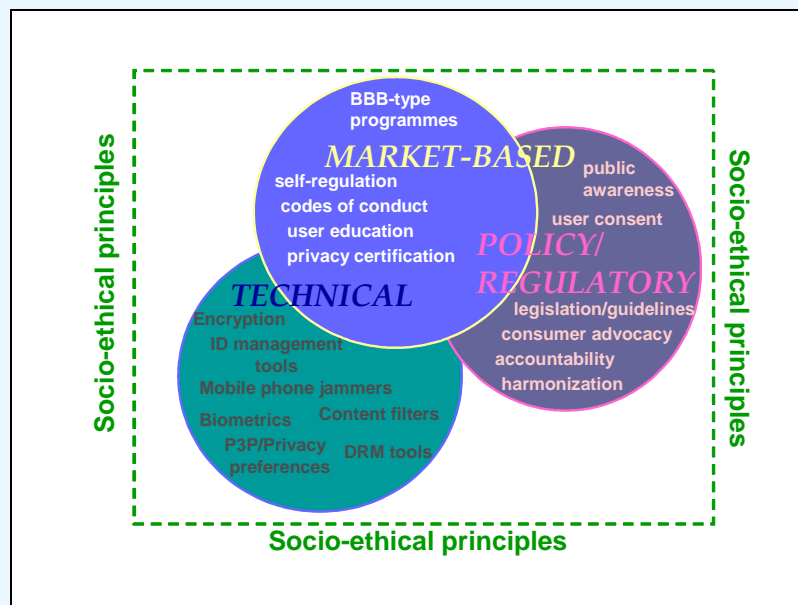
The phenomenon first became a serious problem in Japan, prompting Vodafone KK to set up an email address to which customers could forward any spam and promised to bar anyone caught spamming from using the network. It has recently been a particular problem in the UK where several companies have been fined in relation to such practices by ICSTIS¹⁸, the regulator for premium rate telephone services in the UK.

3.2.5 A multi-faceted approach

As seen above, the protection of data and consumer privacy is a complex issue. These notions are historically and culturally bounded, and as such, solutions must be flexible. Technical solutions alone do not suffice. A combination of approaches must be used: from market-based and self-regulatory initiatives to regulatory guidelines and legislative harmonization (Figure 3.4). Moreover, over-arching socio-ethical principles should underscore all technical, market and policy initiatives. Technical development cannot occur in a vacuum. Technology must above all else remain a tool in the service of humanity, rather than a mere result of innovation for the sake of innovation. Indeed, socio-ethical considerations must form an important part of the design process of technology, and not be disregarded during the initial fever that accompanies fast-paced processes of innovation. Only then can user-centric services be assured. Such services are not only in the public interest but also in the corporate interest, as they will no doubt stimulate the rapid take-up of emerging services and serve to satisfy the bottom lines of producers and providers.

Figure 3.4: Overlapping considerations

A combination of approaches for the protection of data and consumer privacy



Source: ITU

4 ENSURING A LEVEL PLAYING FIELD

Competition policy, both in its international and national dimensions, is critical in shaping the regulatory environment for mobile multimedia services. Competition concerns affect how network services are priced, the availability of content over networks, and access to the necessary infrastructure. This section broadly outlines the competition framework in which mobile multimedia services operate before examining a number of recent and important developments in this area.

4.1 General principles of competition policy

There are a number of tiers of competition policy which impact on mobile services:

- global competition policy, e.g. under the 1997 World Trade Organisation (WTO) Reference Paper on basic telecommunications services;
- regional competition policy, e.g. in the European context, European Union competition policy; and
- competition regulation by national authorities.

National competition policy differs from country to country, but in the European context, legislation in the Member States is modelled on European competition law. In broad terms, mobile services have traditionally been less regulated than fixed line services.

4.1.1 At a global level

The *WTO Reference Paper* lays down principles in a number of key areas for telecommunications markets generally. These include the prevention of anti-competitive practices by major suppliers (such as anti-competitive cross-subsidisation), interconnection, universal service, the independence of regulators and the allocation of use of scarce resources (such as radio spectrum). These have been adopted (wholly or partially) by several countries as part of their commitments to the WTO. Although the *Reference Paper* applies to basic rather than value-added services (like mobile multimedia), some countries have nonetheless committed to applying pro-competitive principles also to their value-added markets. The significance of such commitments is that other WTO Member States can complain to the WTO of alleged violations, such as in the landmark *Telmex* decision in 2004. In that case, the United States lodged a complaint that Mexico had breached its commitments under the Reference Paper by granting Telmex exclusive authority to negotiate interconnection charges for calls into Mexico from US carriers. Mexico was ordered to ensure that US carriers could connect their international calls to Telmex at cost-based rates.

It has been argued that some of the provisions in the *Reference Paper* militate against governments regulating to ensure access to services by the poor, particularly in developing countries (for example the prohibition on cross-subsidisation by major suppliers and requirements relating to the unbundling of network access). On a broader level, the significance of the *Telmex* decision is perhaps the WTO Panel's rejection of Mexico's arguments that development objectives have to be considered in weighing up whether a developing country is meeting its WTO commitments.

4.1.2 At the European level

At the European level, competition policy is founded on Articles 81 and 82 of the *Treaty of Rome*. Article 81 forbids "all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention restriction or distortion of competition within the common market". Article 82 forbids "any abuse by one or more undertakings of a dominant position within the common market or in a substantial part of it in so far as it may affect trade between Member States". These are supplemented by a regulatory framework specific to the telecommunications sector.

In general, several important trends are occurring in European competition policy, including:

- a move away from *ex ante* regulation to *ex post* regulation (i.e. a shift from regulation based on predicting how the market will develop and imposing a competition framework to which the market is to conform, to regulation aimed at correcting existing market failures);

- increased reliance on competition law for electronic communications (e.g. redefining "significant market power" to mirror "dominance" in EU competition law, and introducing appeal rights from national regulatory authorities to national competition authorities); and
- rolling back sector specific regulation for communications services, as markets become more competitive, in favour of the application of general principles of competition law.

This section examines four issues of competition policy in the mobile industry that are of particular significance: roaming, mobile sports content, SMS termination pricing and the case of mobile virtual network operators.

4.2 The problem with roaming

It is estimated that in 2004, roaming generated USD 78.6 billion in revenues, representing over 15 per cent of global mobile revenues. At the current rate, this is predicted to rise by 2010 to USD 211.8 billion (28 per cent of global revenues)¹⁹. About 13 per cent of the global GSM base uses roaming, and this number is steadily growing. While consumers are outraged by high roaming charges but have little alternative; operators are keen on sustaining the status quo in this lucrative market.

In 2006, the European Commission began work on tackling the thorny question of international roaming charges. The question has long been problematic for the Commission, which first looked into roaming charges in 2000 and subsequently staged several investigations. In 2005, the Commission set up a comparative tariff website in the hope that greater transparency would lead to lower charges (Box 4.1). However, the proposed regulation suggests that even this form of transparency has done little to drive prices down.

It seems that the Commission has finally lost patience with the market, which it alleges had failed to substantially reduce roaming charges. It is interesting to note that the Commission's decision on the *Vodafone/Mannesmann* merger in 2000 was widely criticized as being an "own-goal" in the battle for reduced roaming charges. This was because it imposed access undertakings on a merger which would otherwise have led to lower roaming prices.

Recent research by the Commission reveals that the price for a standard four-minute roaming call has remained at the same high level across Europe since September 2005, and in some cases it has even gone up (Box 4.1). This runs counter to the global average of an average 10 per cent per year reduction in mobile prices (see Figure 3.2).

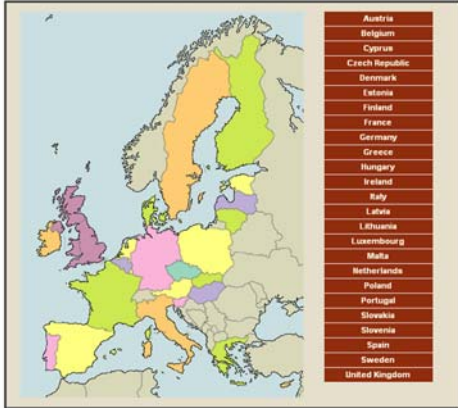
The key features of the regulation proposed by the Commission to address the problem of roaming include:

- a consideration of wholesale prices (inter-operator tariffs) to ensure that operators do not charge operators from other countries substantially more than the actual cost of providing roaming services;
- regulation at the retail level to ensure that operator savings at the wholesale level are passed on to the consumer; and
- a "home pricing principle" whereby customers travelling abroad within the EU will be charged no more than the cost of a cross-network call in their home country, when making or receiving a call.

The consultation period on the proposals ended in May 2006, and the Commission is expected to decide whether to adopt the proposal shortly. The regulation would then need to go through the European Parliament and Council of Ministers, and it is estimated that the earliest effective date for this Regulation would be summer 2007 (although delays are likely). Once the regulation comes into force, it would need to be incorporated into national legislation at the Member State level. The European Regulators Group²⁰ has pledged to support the proposals, but operators in Europe are firmly opposed, with the GSM Association describing the initiative as "unprecedented, unnecessary and heavy-handed"²¹. This is hardly surprising given the high proportion of revenues that roaming represents for mobile operators.

Box 4.1: Not so free to roam

Roaming tariffs and the European Commission



The European Commission is carrying out an intensive review of roaming charges in Europe. A website has now been set up, through which consumers can compare charges across operators and countries: http://europa.eu.int/information_society/activities/roaming/tariffs/index_en.htm.

Roaming charges vary widely across the European Union. The highest rate found by the Commission was €13.08 a minute charged to a Maltese consumer for four minutes roaming in Latvia. Charges in Finland are the lowest, with a Finnish customer paying €0.20 to call home from Sweden.

The new EU regulation will address inter-operator tariffs (wholesale prices) and ensure that operator savings at the wholesale level are passed on to the consumer. There will also be a need for regulation at the retail level.

Source: European Commission.

4.3 The case of mobile sports content

In September 2005, the European Commission released the findings of its Sector Inquiry into the provision of sports content over 3G mobile networks, e.g. football matches (Box 4.2). The Commission's approach to this issue is of particular significance given the increasing array of mobile sports applications now available and the fact that sports content is seen as a key driver for the take-up of mobile multimedia services.

One objective of the Sector Inquiry was to identify the scope of the relevant markets, which in turn enables the Commission and national authorities to assess whether commercial practices raise competition law concerns. The Inquiry concluded that sports services offered over mobile platforms and non-mobile platforms (such as traditional TV) were distinct markets, due to the lack of substitutability²². Regarding mobile sports services offered through 3G (as opposed to alternative technologies), the Inquiry found that "although market players are exploring new technologies, the commercialisation of other mobile content platforms is not foreseen in the near future and is still dependent on the outcome of pilot projects". However, it noted the need to keep this question under review as technologies such as fixed wireless networking and DVB-H develop. The Commission also stated that the market for 3G sports services may form an entirely different market compared to other types of 3G content, which would need to be evaluated on a case-by-case basis.

In terms of commercial practices, the Inquiry identified four areas of particular concern, namely cross-platform bundling of rights, excessively restrictive conditions on exploiting rights (i.e. in terms of transmission length and timing), joint selling and exclusivity. Although the Inquiry did not lay down any hard and fast rules about when such activities would be judged to be anti-competitive, it sent out a clear message that such practices would be targeted where the result was failure to exploit (or the under-exploitation) of 3G sports rights. This would include the case of cross-platform bundling resulting in warehousing of rights by operators in neighbouring markets, notably TV operators. It would also include a situation in which mobile rights remain unsold by a joint selling body but individual rights owners remain unable to market their own rights, thereby restricting output. Similarly, the Commission underscored its aim to target cases where serious time embargoes limit the availability of 3G sports content. The Inquiry was careful to note, however, that in some circumstances such practices may have a pro-competitive effect. Given the substantial investment that may be required for innovation and service deployment, many players may be reluctant to fund development unless they are able to secure attractive and exclusive content that is unavailable on competitors' platforms. As such, the provision of exclusive rights may in some cases serve to stimulate the market and have a pro-competitive effect.

Looking into the future, the Inquiry suggests that, by such measures, the Commission will ensure that critical sports content is not held back by anti-competitive conduct during the years to come, particularly in light of the take-up of new mobile technologies. The Inquiry also calls on market players to "address possible anti-competitive conduct and effects resulting from their business practices". This is undoubtedly an area which the Commission will continue to monitor closely.

Box 4.2: The World Cup on the go around the world

Sports highlights go mobile



Developers of mobile phone applications don't want to miss out on the biggest marketing opportunity of 2006: football. A number of applications offering match results already exist, but for the FIFA World Cup 2006, a special package is on offer.

In the UK, mobile company 3 is offering a programming package including three mobile TV channels: extended match highlights, 'today's best of...' content and a special daily magazine show. This is the first of its kind in made-for-mobile programming. Highlights from each match will be made available five minutes after the final whistle ending the game.

For all 64 matches of the 2006 FIFA World Cup™ from 9 June to 9 July, 3 has been awarded non-exclusive mobile broadcast rights in the UK and Ireland.

The 2006 FIFA World Cup™ is expected to be the first mainstream event where video mobile will play a key role as a media platform.

Image Source: <http://www.germany-tourism.de>

Source: <http://www.3g.co.uk>

4.4 SMS termination and future multimedia pricing

The massive success of SMS services is evidenced by the fact that in many European markets SMS volumes exceed the number of voice calls. For example in the UK the number of SMS messages sent daily is estimated to be 100 million. However, whereas cost-based pricing is becoming more common in Europe for voice termination, SMS termination charges continue to remain well above cost. This is translated into extraordinarily high SMS prices at the retail level (see Figure 3.3).

The problem stems in part from the phenomenal revenue streams created by SMS services. SMS has become a "cash cow" for mobile operators, who now have little to gain (and much to lose) from lowering their SMS termination or retail charges. This has resulted in network operators in many European countries adopting similar above-cost SMS termination prices. Given that SMS messages are carried in the signalling channel, the actual cost of interconnection is close to zero. Profits, therefore, are very high.

As mobile multimedia services grow in terms of market penetration, it is predicted that they will become less price sensitive. This leaves open the possibility that patterns in the SMS market may be reproduced in the future market for multimedia services. Although SMS termination charges have not previously been subject to regulation, there are now signs of regulators stirring into life to address this issue. For example last year the French telecoms regulator, ARCEP²³, proposed to introduce an initial price cap of 2.5 euro cents per message on SMS termination. It remains to be seen, however, whether imposing cost-based or capped SMS termination pricing will filter down to the retail level. The market for the provision of SMS services is contested almost exclusively by network operators who have reciprocal charging arrangements and a balanced flow of SMS traffic. This means that, in practical terms, the SMS termination fees changing hands between operators are very low.

Given the interest of operators in sustaining high SMS pricing at the retail level, regulation might be required at the retail (rather than the wholesale) level. There are added sensitivities to consider in terms of consumer protection, given that SMS use is especially prevalent among younger users.

4.5 The role of mobile virtual network operators

A large majority of the world's mobile markets are dominated in the retail sector by a small number of players. In Europe, for example, the incumbent carrier has an almost 40 per cent market share in most economies, with the exception of the United Kingdom (Figure 4.1). Competition is increasing of late, given the emergence of mobile virtual network operators (MVNOs) and changing regulations addressing this phenomenon. An MVNO is a mobile operator that does not own spectrum and typically does not have its own network infrastructure. Instead, it piggybacks on another operator's physical network and re-sells minutes bought from that operator under its own brand. Mobile number portability (MNP) is an important regulatory initiative that has given consumers more choice of service providers. That being said, new entrants, at least in Europe, have enjoyed limited success. The only exception is 3, the Hutchison Whampoa subsidiary, which is the main new entrant in the 3G market in Europe.

4.5.1 An evolving phenomenon

Historically, MVNOs are a European phenomenon, closely associated with GSM. Indeed, the first MVNO was Virgin Mobile, which launched in the UK in 1999. They are now rapidly gaining in popularity worldwide with subscriber numbers on the rise. Indeed research firm IDC predicts the number of MVNO subscribers will jump from 13 million in 2005 to more than 47 million in 2009²⁴. The arrival of MVNOs on the mobile market, particularly the 2G market, has been used to stimulate competition and drive prices down (Box 4.3).

It should be noted, however, that most MVNOs on the market are either operating at a loss or just about breaking even²⁵. The large majority of MVNOs are in fact simple resellers of low-overhead voice minutes. Many of them have been working on extending their brand, but at the lowest possible cost. However, a new generation of MVNOs is beginning to emerge. Disney Mobile²⁶ and Mobile ESPN²⁷ are part of this group, as is Amp'd Mobile²⁸, which launched in 2006 to target the 18-25 year old market. These players are distinguishing themselves from previous MVNOs by focusing on a niche market, and also focusing more on content creation and distribution, rather than the mere resale of voice minutes. New partnerships are also forming, with Helio (the new MVNO to be launched by Earthlink and SK Telecom) joining forces with the online social networking site MySpace.com. Another advantage of this new generation MVNO is that the content strategy they have adopted is typically an open one, rather than the walled garden approach that some mobile carriers have adopted in the past²⁹.

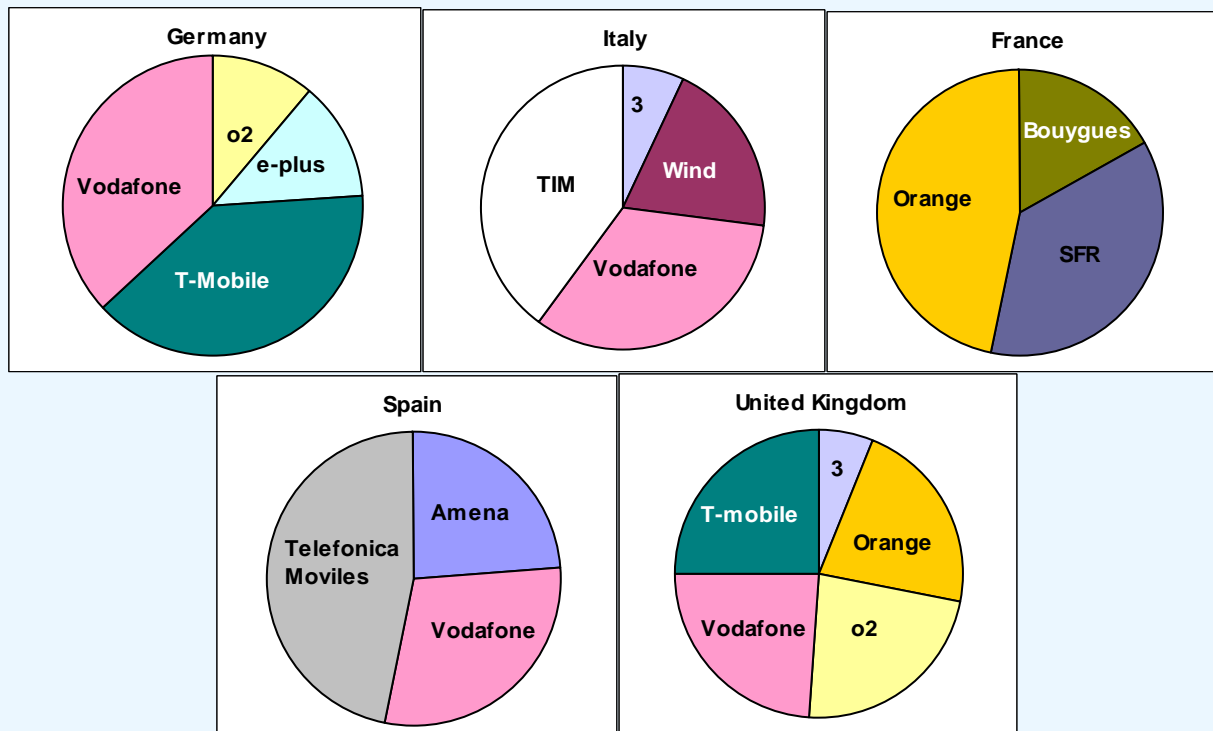
MVNOs can promote competition as follows:

- they enable new entrants to enter the market minus large network-building costs;
- they bring down prices and keep traditional network operators (MNOs) honest by expanding consumer choice; and
- they promote the use of excess network capacity (and thereby more efficient use of scarce spectrum).

In terms of their role within the market, MVNOs produce opportunities to add brand value to services which may otherwise be perceived by consumers as homogenous. Additionally, MVNOs are able to target niche markets which traditional operators might find difficult to cater for, for example lifestyle-targeted MVNOs such as Disney Mobile, mentioned above.

MVNOs are especially relevant to the mobile multimedia services market because they often offer value-added services to distinguish themselves from the incumbent mobile network operator. For example Vivendi's Universal Music Mobile service offers speciality music applications (including previews of new releases, music news, music event invitations and CD buying capabilities) as well as voice and SMS to French mobile phone users over the SFR network.

Figure 4.1: Market concentration in European mobile markets persists
 Market shares of network operators in mid-2005



Source: IDATE

Box 4.3: A virtual battle on price

Talking MVNOs

There are now over 100 Mobile Virtual Network Operators (MVNOs) in Western Europe and over 30 in the United States. At this rate, traditional mobile operators cannot afford to overlook the impact that MVNOs have on market structure and market share. In Denmark, MVNOs account for 25% of total customers. Since most MVNOs have focused on offering low-priced voice services, they have served to increase price competition, while decreasing ARPU.



Even non-traditional players are setting their sights on the mobile market. Record label Universal Music has launched an MVNO in France. TV and sports content provider ESPN (indirectly owned by Disney) is planning an MVNO in the USA. Several data-only MVNOs have also appeared, e.g. Earthlink MVNO in the USA, which supports mobile PC and data devices such as Blackberry.

The joint venture between French TV station M6-Metropole and Orange France, M6 mobile, reached 201'137 subscribers as of 21 December 2005. M6 Mobile launched its services in June 2005 and had originally planned to reach 100'000 subscribers by the end of the year. It was particularly well adopted by users in the 15-25 age range (accounting for almost 70% of all users). In this particular case, the incumbent has set up an MVNO to gain greater penetration of the youth market.

Source: Analysys. Global Insight.

4.5.2 The regulatory treatment of MVNOs

Given the potential of MVNOs, the question has been raised as to whether regulators should step in to foster their development. The growth in popularity of MVNOs has occurred despite the fact that the dominant regulatory position worldwide was to allow MVNOs without requiring open access. This regulatory position

has been evolving. For example, in Hong Kong³⁰, the government has required each 3G licence holder to open 30% of its network capacity to rival operators without a 3G licence under a MVNO arrangement. Similarly, a 2003 European Commission recommendation has prompted regulators in several European countries, including Ireland and France, to force mobile network operators to open their network to MVNOs.

Still, there may be a need for greater regulatory intervention where there are instances of market failure. For example, in Spain there are three mobile network operators: Telefónica, Vodafone and Amena (the latter having recently been taken over by the France Telecom group). According to the Spanish regulator, CMT³¹, these network operators hold a position of collective dominance in the market for mobile access and call origination, and tacitly agree not to grant access to MVNOs. In January 2006, the regulator's measure to require the three operators to grant MVNOs network access was found by the European Commission to be compatible with European competition law.

4.5.3 The future of MVNOs

Will the MVNO phenomenon last? It is predicted that as MVNOs become increasingly prevalent, market saturation will pose an obstacle for new MVNO entrants and consolidation will occur with mobile network operators buying out their virtual rivals. If the number of market players is reduced accordingly, the increased market power of the merged entities is likely to draw competition issues to the attention of the merger authorities. Moreover, telecoms regulators may need to introduce further regulatory support for virtual operators to underpin their survival, for instance by applying an airtime interconnection obligation to mobile network operators. The MVNO space will certainly continue to be an interesting and dynamic one to watch for some time to come.

5 REGULATING CONTENT IN A CONVERGING ENVIRONMENT

The past few years have witnessed rapid growth in the mobile content industry. Growth has been driven by a number of factors. The first of these is the increased take-up of handsets supporting higher data rates such as third-generation (IMT-2000) protocols, which enable higher-speed access to multimedia content, and the increasing use of digital cameras (for still and moving images). In addition, an increasing amount of spectrum is being allocated for use by multimedia mobile applications, resulting in commercial players introducing multimedia offerings in their service packages. A third factor is the recognition by industry players of the business need to give consumers content where and when they want it. This has resulted in challenges to traditional content platforms.

Many countries, including Canada, Australia and the Member States of the European Union, are considering whether their existing policy and regulatory arrangements for managing potentially offensive or harmful broadcast content provide satisfactory safeguards given emerging content services delivered to mobile phones. Countries need to put in place mechanisms to ensure that mobile content is legal, decent and honest, to protect children and prevent hate speech, as well as address issues such as spam.

Attitudes to mobile content have been shaped, in part, by the experience of internet service providers (ISPs). ISPs have had to address similar issues over internet content to those now being faced by mobile operators and mobile content providers. In many countries, internet service providers have developed codes of conduct based on self-regulatory initiatives, which, to some extent, have been viewed as successful.

5.1 Protecting content: concerns over copyright

One of the factors that will have a huge impact on the ability of content providers and mobile phone operators to monetise multimedia content is the prevention of piracy and the payment of appropriate royalties for the use of the content. As a result, industry players have recognised the importance of investing in digital rights management (DRM) tools to ensure that content is protected and properly monetised.

The growing use of camera phones poses specific concerns in this context. Some user-generated content uploaded on to websites violates copyright and encourages piracy. Although some sites, such as YouTube, have strict policies on removing clips when they are notified that they infringe copyright, this does not thwart

the spread of copyrighted content downloaded to a mobile phone prior to the removal of the content from the website.

An important question raised is whether a user who uploads an image or a clip to a website owns its copyright. In the United Kingdom, copyright over a photograph generally vests in the photographer. It will often be difficult to ascertain who took the photograph, and therefore whether another person's copyright is being infringed. The situation becomes even more complex if the clip involved a collaborative effort. The owner of a site hosting the content may not be aware, for example, if the clip uses music or visual effects that are not the work of the person submitting it. This leaves the site open to an action for copyright infringement by the original owners of such elements. DRM tools will need to be tailored to address this type of user-generated content.

Further concerns arise if a photo or clip is obscene, indecent or offensive. If such photos or clips are uploaded to a website, both the website that publishes it and the person who submits it may be potentially liable for breaches of obscenity or indecency laws worldwide. Peer-to-peer exchange of content on mobile phones is difficult to regulate. In addition, determining what is obscene, indecent or offensive is a subjective decision – it is often very difficult to determine with any degree of certainty. Laws and standards will vary from country to country, making an evaluation of the legal risks for material which is being shared globally extremely problematic. Similarly, statements made in mobile video clips may result in liability under defamation laws.

The Open Mobile Alliance (OMA), a global body focusing on interoperability and representing mobile operators, device/network suppliers, information technology companies and content providers, has developed standards to ease the global adoption of mobile content services, including developing a DRM specification. DRM versions developed by OMA include forward-locking mechanisms, to prevent content downloaded on a mobile phone from being sent on to other phones (i.e. peer-to-peer distribution). The DRM versions also contain control of content use (for example allowing material downloaded only to be played back a specified number of times) as well as content encryption mechanisms. As mobile multimedia services develop further, these OMA standards must evolve in parallel, ensuring that intellectual property issues are properly respected. Failing to do so will hinder the availability and distribution of copyright material, or open mobile multimedia content up to piracy and copyright infringement.

5.2 Changing models for regulating content in a converged environment

Traditionally, telecoms and broadcasting have been separately regulated, but increasing media convergence has resulted in changing models of regulation. In some instances, a single regulator is now responsible for both broadcast media and telecoms services. For example in the UK, the Office of Communications (Ofcom), set up in 2003, has statutory responsibility for television, radio, telecoms and wireless communications services.

In the European Union, the regulation of telecommunications is contained in the Telecommunications Package, consisting of a Framework Directive³² and four other directives³³, implemented in 2002. However, no rules relevant to content are contained in the Framework Directive and its related directives and communications. Unless covered by other terms of European law, mobile phone content has been a matter for individual member states to regulate.

On the other hand, regulation of television broadcasting in the EU is contained in the *Television Without Frontiers Directive*³⁴ (hereinafter referred to as the TWF Directive). The TWF Directive, adopted in 1989 and revised in 1997, applies to traditional television scheduled broadcast services; it does not extend to services such as on-demand mobile content services. As the same content is now becoming available on an increasing number of platforms, the European Commission has recognised the need for a harmonised regulatory framework applicable to all audiovisual media services providing both linear and on-demand content. In December 2005, the European Commission published a draft proposal, in the form of a series of amendments to the TWF Directive, which will in future be known as the *Audiovisual Media Services Directive*³⁵ (hereinafter referred to as AMS Directive).

The AMS Directive will cover all audiovisual media services offered over the internet, mobile networks, telecoms networks, broadcasting networks, or over "any other electronic network whose principal purpose is the provision of moving images to the general public", whether scheduled or on-demand.

Under the proposed amendments, services including mobile content services will be subject to a minimum standard of protection relating to issues such as incitement to hatred, protection of minors and advertising. The aim is to create a level playing field for all television-like services, irrespective of the technology used to deliver them. The AMS Directive will therefore extend regulation to control audiovisual media services that have, until now, been untouched by specific regulatory intervention. These services have on the whole been left to Member States' general laws, and self-regulation has been the norm.

Models adopted in different countries show that there is scope for self-regulatory and so-called co-regulatory models. In the United Kingdom, the five mobile operators developed a code of practice³⁶ in 2004 for commercial mobile picture-based content (as opposed to text, audio and voice-only services delivered as premium rate services which are regulated by ICSTIS). The code includes strategies to deal with concerns over minors accessing unsuitable content, such as content rating, filtering and reporting procedures. In Singapore, three of the mobile operators have developed a self-regulatory code of conduct, the "Voluntary Code for Self-regulation of Mobile Content in Singapore", which deals with similar issues³⁷.

On the other hand, Germany has adopted a co-regulatory framework, which is part of the "Interstate Treaty on the Protection of Minors and Human Dignity in the Media"³⁸. Under this framework, an independent supervisory body for broadcasting, the internet and other forms of digital media (including 3G/IMT-2000) oversees the implementation of rules contained in the Treaty. This independent body, namely the Kommission für Jugendmedienschutz or "KJM", is responsible for the recognition and licensing of self-regulatory bodies, the approval of content filtering and rating systems, as well as the compliance with norms for protecting minors as set out in the Treaty.

5.2.1 Concerns over specific forms of content

It is widely believed that the so-called "three Gs" (girls, games and gambling) will be important drivers in the take-up of mobile content services (Box 2.1), but they also represent areas with important regulatory concerns. The prevention of access to such services by children is vital, and there are also related societal concerns such as gambling addiction and identity verification. It is helpful, as above, to consider how this content is being dealt with in the internet world. It must be noted, however, that one of the main differences between content in the internet and mobile worlds is that viewing content on mobile phones is much more unsupervised, given that younger and younger children (particularly in the developed world) now have their own personal mobile phones, available to them twenty-four hours a day.

Many of the mobile operators have developed access control mechanisms to ensure that inappropriate content is barred from phones unless the user verifies their age. For example, Vodafone in the UK, one of the first operators in the world to set up such a mechanism, applies a filter that aims to block all "adult" internet content unless the user verifies that they are over 18 and opts in to be able to access adult material. The proof of age required consists merely of credit card details, and it is questionable whether this is a fail-safe method of proof of age.

Mobile operators in other countries initially barred all adult-oriented services when this form of multimedia services first became technically available. In Australia and the USA, mobile operators would not allow any adult service to be provided to users' mobile phones until satisfactory restricted access systems were developed and codes of conduct restricting various types of content were drawn up. The lack of sufficient safeguards relating to adult content may even thwart the development of content services as a whole. In Cambodia, for instance, the Prime Minister banned 3G phones after his wife received pornography on them³⁹.

There is a difference between content that is available "on-net", in other words, accessed via the mobile internet, and content that is shared between phone users. In some countries, codes of practice contain rules for regulation of "on-net" content by mobile operators. The greater difficulty lies in regulating peer-to-peer (P2P) exchanges of user-produced content, and this is an area where adult content will inevitably grow. Key issues which will need to be addressed are safety, security and child protection. P2P exchange is likely to be a concern in gambling too, with P2P betting at sports events predicted to be an important growth area. Many of the existing codes, including mobile operator codes in the UK, do not regulate P2P data. As such services proliferate, it will be vital to develop schemes to keep some level of control over P2P exchanges of adult material and betting, notably when there is a risk of distribution to children.

5.3 M-commerce

As mentioned earlier in this paper, prepayment models have been a key driver in the take-up of mobile services, particularly in the developing world. In a similar vein, prepayment can be used to drive take-up of multimedia content such as ring tones and audiovisual content. Prepayment via mobiles has also been extended to other services. For example, in the United Kingdom, Logica CMG and Iskraemeco ECL have developed an electricity and gas prepayment metering service based on SMS messaging and a pay-as-you-go scheme. With the growth of mobile payment transactions, known as m-commerce, governments will have to consider whether to impose more detailed regulation in this area.

In several countries, including the United Kingdom (where one of the first m-ticketing services in the world was developed for the Ministry of Sound Nightclub in 2001), Australia, the Netherlands and Japan (where railway tickets can be bought and redeemed using mobile phones), various mobile ticketing schemes have been developed and used. These include ticketing via SMS, mobile barcodes and radio frequency identification (RFID) systems (Box 5.1). The sheer convenience of buying and using a ticket through a mobile phone is stimulating growth in this area. Regulatory issues that arise include m-commerce security and more general issues relating to consumer protection in distance-selling.

Mobile operators are increasingly developing mobile technology to provide financial services, which enable transactions that would ordinarily fall outside of normal banking systems (generally for reasons of poverty or location). Such m-commerce systems may be subject to banking regulatory requirements and money laundering concerns will be an important issue. Money laundering might seem unlikely to arise in cases of m-commerce, as typically the sums of money and risks involved are small. However, the possibility of hiding the origin of small amounts of cash can be attractive if it is done on the basis of many thousands of transactions. There is therefore a need to adapt current money laundering and "know your client" requirements to take account of the growing number of e-money and m-commerce transactions.

Box 5.1: Just wave and buy

Transactions made easy via mobiles, RFID and NFC⁴⁰

In the Normandy town of Caen (France), a frequently asked question on the high street is "how would you like to pay for that: cash, card or phone?". In October 2005, a major multi-application NFC (Near Field Communications) trial began, during which 200 Caen residents used Samsung D500 mobile phones with Philips NFC chips embedded as means of secure payment in selected retail stores, parking facilities and for the downloading of information about famous tourist sites, movie trailers and bus schedules. The highlights of the user experience included: the "trend-setting" nature of mobile transactions, the rapidity and ease of the transactions, the automatic nature of the transaction, and the need for clear and consistent notices of available services. There are currently several similar trials under way around the world, e.g. Philips Arena Atlanta (United States), Taiwan Proximity Mobile Service and RMV (Germany).



NFC technology uses short-range RFID (radio-frequency identification) transmissions that provide easy and secure communications between various devices. For example, making a reservation could be as simple as holding the mobile phone close (less than 20 cm) to a poster or museum information card. Without dialing a number or sending an SMS, the user could purchase concert tickets, download information, book hotel rooms and make other types of reservations and have these transactions charged to a credit card using account information stored in the mobile phone or handheld device.

In order to address concerns about data transparency and privacy caused by RFID, IBM introduced a new kind of wireless identification tag in May 2006. The so-called "clipped tag" has a small antenna that consumers can tear off whenever they want. Removing this panel significantly reduces the readable range of the device, from about 10 metres to less than 5 centimetres. There are other privacy-enhancing technologies (PETs) for RFID available today and many others in development (e.g. encrypted tags, blocker tags, tag killing, privacy bit etc.).

Image Source: Contactlessnews.com

Source: Wired. <http://www.corporate.visa.com>

A recent report funded by the Information for Development Program (InfoDev)⁴¹ looked at what it describes as the most successful and largest m-commerce applications, run by two major networks in the Philippines. Smart Communications and Globe Telecom developed competing mobile money products, both linking a customer's phone to a "cash" account. The products provide cash deposits for credits in small units, transfers of credits between phones, and allow for the phone account to be credited directly by an employer. In addition, consumers can pay bills and can even receive money conveniently from friends or family working outside the Philippines.

Because these services are based on SMS technology and do not involve new or extraordinary telecommunication systems, some argue that regulators should not be concerned by these services. Service providers believe that such services are valuable to both themselves (given that they benefit from increased usage) and financial institutions (which gain access to a traditionally inaccessible market).

In Europe, the *e-Money Directive*⁴² regulates the use of electronic money (e-money) to protect consumers in m-commerce transactions and prevent e-money being used for money laundering. The e-Money Directive aims to establish a level playing field between issuers of e-money, whether they be financial institutions such as banks, or other entities. It is unclear whether e-money issued by mobile phone operators in circumstances where prepay customers use some of their prepaid credit to buy services from third parties (for example ring tones and other downloads) falls within the ambit of e-money in the e-Money Directive. Lobbying by mobile phone operators has resulted in the Commission issuing a guidance note⁴³ on the application of the e-Money Directive, pointing out that a flexible approach should be taken, and that prepay cards need not be classified as e-money. However, with the increasing avenues for mobile prepayment, the Commission has said that it may revisit the issue of mobile e-money and the e-Money Directive at a later date.

5.4 Mobile multimedia and advertising

The popularity of SMS messaging has encouraged advertisers to focus on this new medium, which is viewed as far more successful than direct mailing. Issues which need to be addressed include not only the content of such advertisements, but how they can be distinguished from spam. One of the key questions is whether content requested by a user, which is then sent to a mobile phone, should be regulated. Moreover, with the growth of multimedia services, 3G mobile phone companies, such as 3 in the UK, have started selling advertising, enabling advertisers to focus on targeting particular groups of individuals.

As mentioned earlier in this paper, members of the GSM Association have signed a code of practice⁴⁴ committing them to minimize unsolicited advertising sent via SMS and MMS. The key commitments contained in the code are as follows:

- providing a mechanism that ensures customer consent and control in relation to the operators' own marketing communications;
- including anti-spam conditions in all new contracts with third party suppliers;
- co-operating with other operators; and
- providing customers with information and resources to help them minimise the levels and impact of mobile spam.

In Europe, the proposed revision of the TWF Directive will mean that advertising via mobile phone services will be subject to minimum Europe-wide standards. Under the text of the proposed AMS Directive, such commercial communications must not use subliminal techniques, must not include any discrimination on the grounds of race or sex or nationality, or be offensive to religious or political beliefs. They must also be clearly identifiable. Commercial communications for tobacco products would be prohibited entirely, and the AMS Directive would also include provisions about advertising and minors.

An important challenge in developing regulation for advertising on mobiles (whether in the form of SMS, MMS or other multimedia content) is the fact that mobile advertising is, at this stage, still in its infancy. For example, advertisers and the mobile phone industry have yet to come up with a successful mobile advertising model, and consumer reaction to mobile advertising has not yet been gauged. There is uncertainty about the appropriateness of existing models and, although advertisers have recognized the tremendous potential of

targeted mobile advertising, it is an area which is likely to undergo some experimentation. For this reason, the creation of flexible regulatory approaches should be encouraged.

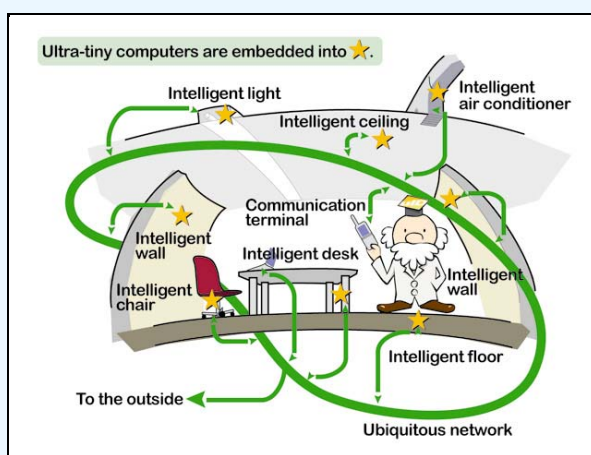
6 CONCLUSION

The staggering growth of mobile networks and services has been one of the great success stories of the telecommunication industry. As many markets reach saturation, operators and service providers alike are scrambling to provide innovative and more diverse multimedia services to the increasingly demanding user. Always-on connectivity and availability of multimedia holds great potential for user convenience and quality of life, and are important future sources of revenue for network operators. There are, however, a number of factors that might delay development and take-up of new services, e.g. the creation of appropriate business models and mechanisms for affordability. Moreover, a number of policy and regulatory challenges arise from the use of mobile multimedia at any time and by anyone.

The delivery of content needs to be monitored, in order to ensure that illegal or harmful content is not made available, particularly to children, and that controls and restrictions on unsolicited marketing (e.g. spam) are put into place and strictly enforced. Regulators and policy-makers must strive to ensure that a level playing field for network services as well as content services exists, to stimulate the market. Protection mechanisms for intellectual property rights should be tailored for the digital age, particularly in light of the rise of peer-to-peer exchanges. Data protection and privacy is another important area that will require some form of regulatory intervention and strict consumer protection safeguards. If these issues are not tackled in these early stages, there is the risk of consumer backlash and technical developments that go against the public interest. In this context, appropriate digital identity management tools will have to be elaborated.

Figure 6.1: From smart mobiles to ambient networking

The ubiquitous network of the future



Source: Ubiquitous ID Centre (Japan) as cited in *ITU Internet Reports 2005: The Internet of Things*

The concerns cited above will only be exacerbated as mobile communications begin to converge with truly “ubiquitous” technologies such as wireless sensor networks and radio-frequency identification (RFID). Mobile phones, and so called “smart phones”, will soon become gateways to information not only on the World Wide Web, but information contained on all types of things, from appliances to everyday consumer items⁴⁵. Mobile communications, in combination with ubiquitous computing, will create ambient networking environments in private homes, offices and public spaces (Figure 6.1 above). In this respect, global dialogue between the public and the private sectors, between service providers and consumers, is vital in fostering a healthy and user-centric mobile multimedia future.

Endnotes

- ¹ See, for example, Waverman, Meschi and Fuss “The impact of telecoms on economic growth” (2005), pages 10-23 in “Africa: The impact of mobile phones”, Vodafone Policy Paper Series #3, available at: <http://www.vodafone.com/assets/files/en/GPP%20SIM%20paper.pdf>.
- ² All of the background research is available on the website of the ITU New Initiatives Workshop on “The Regulatory Environment for Future Mobile Multimedia Services” at <http://www.itu.int/multimobile>
- ³ Data on HSPDA from the Global Mobile Suppliers Association
- ⁴ Juniper Research (2005)
- ⁵ The EU 15 are the 15 countries in the EU before 2004
- ⁶ See, for example, research carried out in 2000 on fixed-mobile interconnection, available at: <http://www.itu.int/osg/spu/ni/fmi/index.html>
- ⁷ See, for example, the study by World Dialogue on Regulation for Network Economies (WDR): “Telecoms demand: measures for improving affordability in developing countries” (2006), available at: <http://www.regulateonline.org/content/view/619/31/>
- ⁸ See http://europa.eu.int/information_society/activities/roaming/tariffs/index_en.htm
- ⁹ See <http://www.flickr.com/>
- ¹⁰ The Times Online, “A ‘lucky’ camera-phone snap can lead to a lot of legal bother” (22 November 2005), available at: <http://www.timesonline.co.uk/article/0,,8163-1878599,00.html>
- ¹¹ BBC News, “US moves to ban to furtive photos” (13 May 2004), available at: <http://news.bbc.co.uk/1/hi/technology/3711415.stm>
- ¹² BBC News, “Furtive phone photography spurs ban” (4 April 2003), available at: <http://news.bbc.co.uk/1/hi/technology/2916353.stm>
- ¹³ See ITU Internet Report 2005: The Internet of Things, page 94, available at: <http://www.itu.int/internetofthings/>
- ¹⁴ The ITU, the University of St.Gallen and bmd wireless launched the world's first collaborative empirical study about the effects of mobile spam on consumer behaviour and the actions of mobile network operators in 2005. The final report, “Insights into mobile spam”, available at: <http://www.mobilespam.org/>
- ¹⁵ See the European Parliament and Council Directive Privacy and Electronic Communications (EC Directive) Regulations 2003, available at: <http://www.opsi.gov.uk/si/si2003/20032426.htm>
- ¹⁶ See the Memorandum of Understanding on Mutual Enforcement Assistance in Commercial Email Matters, available at: <http://www.ftc.gov/os/2005/02/050224memounderstanding.pdf>
- ¹⁷ See the GSM Association's Mobile Spam Code of Practice: http://www.gsmworld.com/documents/public_policy/digital_divide/mobile_spam.pdf
- ¹⁸ ICSTIS stands for The Independent Committee for the Supervision of Standards of Telephone Information Services – see <http://www.icstis.org.uk/>
- ¹⁹ See Star Home's roaming site at <http://www.starhome.com/roaming/>
- ²⁰ The European Regulators Group (ERG) is a body representing the telecoms regulators in each EU Member State
- ²¹ GSM Association Press Release, “EU Proposals to regulate roaming are heavy handed” (28 March 2006), available at: http://www.gsmworld.com/news/press_2006/press06_23.shtml
- ²² Taking into account distinguishing characteristics such as screen size, quality of images and sound, comfort of viewing and ability to watch in a group, mobility of viewing, cost of usage, battery/power capacity, content currently available over 3G, and the ability to personalise the viewing experience.
- ²³ ARCEP stands for "Autorité de Régulation des Communications Electroniques et des Postes". See <http://www.arcep.fr/>
- ²⁴ IDC, "Opportunities for MVNOs in Western Europe" (2005)
- ²⁵ Pyramid Research, "MVNOs and MVNEs: Analyzing the Potential of Virtual Mobile Players" (February 2006)
- ²⁶ Disney has teamed up with Sprint in the United States and O2 in the United Kingdom to create "Disney Mobile". The UK launch will be in late 2006. Targeted at 8-14 year-olds, the service will offer Disney-branded handsets together with restricted calling and internet access as determined by parents. See <http://www.disney.go.com/disneymobile/>
- ²⁷ See <http://mobile.espn.go.com/>
- ²⁸ See <http://get.ampd.com/>
- ²⁹ Telephony Online, “The brand vs. the bottom line” (3 April 2006), available at: http://telephonyonline.com/mag/telecom_brand_vs_bottom/
- ³⁰ See also ITU, “The Regulatory Environment for Future Mobile Multimedia Services: The Case of China and Hong Kong SAR, China” (June 2006), available at <http://www.itu.int/multimobile/>
- ³¹ See Spain's Telecommunications Market Commission website at <http://www.cmt.es/cmt/index.htm>
- ³² Directive 2002/21/EC
- ³³ Directive 2002/20/EC (The Authorisation Directive), Directive 2002/19/EC (The Access Directive), Directive 2002/22/EC (The Universal Service Directive) and Directive 2002/58/EC (The Directive on Privacy and Electronic Communications)
- ³⁴ Directive 89/552/EEC as amended by Directive 97/36/EC
- ³⁵ See "Legislative Proposal for an Audiovisual Media Services Directive: Towards a modern framework for audiovisual content", available at: http://ec.europa.eu/comm/avpolicy/reg/tvwf/modernisation/proposal_2005/index_en.htm

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- ³⁶ See “The UK code of practice for the self-regulation of new forms of content on mobiles”, (19 January 2004), available at <http://www.imcb.org.uk/assets/documents/10000109Codeofpractice.pdf> . The Code of Practice was developed by Orange, O2, T-Mobile, Virgin Mobile, Vodafone and 3 for use in the UK market.
- ³⁷ See the “Voluntary Code for Self-regulation of Mobile Content In Singapore”, available at: http://home.singtel.com/terms/self-regulation_code.pdf
- ³⁸ See “Staatsvertrag über den Schutz der Menschenwürde und den Jugendschutz in Rundfunk und Telemedien” (Jugendmedienschutz-Staatsvertrag - JMStV), available at: <http://www.kjm-online.de/public/kjm/downloads/JMStV.pdf>
- ³⁹ CNET News, “Cambodia bans 3G phones”, 26 May 2006, available at: <http://www.dailypayload.com/cgi-bin/news?n=2155>
- ⁴⁰ For more information on RFID, see also the ITU’s background paper on "Ubiquitous Network Societies: The case of RFID", April 2005, available at <http://www.itu.int/ubiquitous/>, and "ITU Internet Report 2005: The Internet of Things" available at <http://www.itu.int/internetofthings/>
- ⁴¹ See “Micro-payment systems and their application to mobile networks” (January 2006), funded by the Information for Development Program in partnership with the International Finance Corporation and the GSM Association and prepared by Neville A. Wishart, available at: http://www.infodev.org/files/3014_file_infoDev.Report_m_Commerce_January.2006.pdf
- ⁴² Directive 2000/46/EC
- ⁴³ See the Commission Services Guidance Note “Application of the e-Money Directive to Mobile Operators” (18 January 2005), available at: http://ec.europa.eu/internal_market/bank/docs/e-money/guidance_en.pdf
- ⁴⁴ See the GSM Association’s Mobile Spam Code of Practice, available at: http://www.gsmworld.com/documents/public_policy/digital_divide/mobile_spam.pdf
- ⁴⁵ Nokia has already released an RFID-enabled mobile phone for businesses and plans to issue a consumer RFID phone by 2007.