

**small screens,
global vision**



the netsize guide



2006 Edition

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Mobile Chasms and Tornadoes

Stanislas Chesnais,
Chairman and CEO, Netsize Group



When you consider that the first ever SMS was sent just thirteen years ago, in December 1992, from a computer to a mobile phone on the Vodafone network in the UK, the transformation of the mobile phone from a brick-like device used for little more than talking to a slick and shiny, pocket-sized global communication tool has come along much more quickly than might otherwise have been expected.

With over two billion phone users worldwide (and this figure rising by the second), mobility has now become an intrinsic part of our personal and working lives for a considerable part of the population of the planet.

However, this transformation has not been entirely painless, and many barriers to entry into this market have had to be systematically rooted out over the years. But it has been helped along by the arrival of handset subsidies, global roaming agreements, the introduction of prepay, SMS, premium billing systems and operator portals.

While the mobile market is complex, the broad diversity of technological standards that exist should be seen as something positive. On the one hand, we have common cellular standards like GSM and CDMA supporting technologies such as Voice, SMS, GPRS and 3G, which together have led the personal communication services revolution. On the other hand, newer technologies such as Wi-Fi, WiMAX, RFID, Bluetooth and VoIP are also contributing towards making wireless business communications fast and seamless, pushing the boundaries of our market beyond the limitations of legacy mobile standards. Competition between technologies, if it helps to grow the market, is good for everyone.

**// Mobility has now
become an intrinsic part
of our personal and
working lives"**

// The wireless market is shaping into four main verticals: Mobile Entertainment, Mobile Business, Mobile Commerce and Mobile Marketing"

In addition to serving the basic need of peer-to-peer communication, it seems clear to us at Netsize that the wireless market is shaping into four main verticals, which we call Mobile Entertainment, Mobile Business, Mobile Commerce and Mobile Marketing.

Mobile Entertainment - led by downloadable music, games, videos, interactive TV, adult services and infotainment - is the fastest-growing service, attracting global brands that are keen to make the most of this opportunity. Consumers are driving this market, using entertainment services as a way of passing the time whether they are on the move or sitting at home in front of the television set.

Mobile Business services are driven by the perennial business needs of improving productivity and reducing costs. More and more people now work remotely and on the move, and it is their wireless laptops, PDAs (personal digital assistants) and mobile phones that allow them to do so. And companies are not only benefiting from this increase in human productivity - machines, vehicles and IT systems also exchange massive amounts of information over wireless channels, saving billions in costs.

Mobile Commerce is another fast-developing area. Currently, m-commerce is driven by low-value transactions carried out over the mobile

phone, but with the arrival of different mobile payment billing solutions such as Premium SMS, WAP billing, m-wallet and micro payments, the market looks set for exponential growth. Some leading online retail sites have recently launched branded mobile portals that allow consumers to book holidays or buy books and CDs on their mobiles, with a variety of different payment mechanisms.

Mobile Marketing has grown beyond on-pack promotions to see the creation of mobile portals where consumers can experience a richer interactive experience with their favourite brands. Mobile shortcodes have become the equivalent of a URL on the Internet, and an essential part of every marketing campaign. On-pack promotions still enjoy a high response rate, with one FMCG brand recently running a record-breaking campaign for which they received millions of responses over a three month period. The arrival of Mobile TV also represents a major new opportunity for this sector.

As all these new opportunities come along, the ecosystem in which mobile applications and services exist is growing at a vertiginous rate. To echo the words of Apple CEO Steve Jobs, who once said that "the Chasm is where many high-tech fortunes have been lost ... the Tornado is where

many have been made", it seems clear that the mobile industry has crossed the chasm and is now slap bang in the middle of the tornado.

Mobile operators, device manufacturers, content publishers, wireless application service providers and many other key players in the mobile industry are all working to carve out the best position for themselves in the value chain, to find the right place from where they can best serve both their own and their customers' needs.

All companies need to discover the best way to develop the market for their products, to capitalise on and sustain their growth. We each need to understand exactly how our markets are changing and make the right decisions to ensure not only that we survive these changes, but that we take advantage of them to increase the value of our brands and ensure their long-term growth.

With this in mind, I hope you enjoy reading The Netsize Guide 2006 and the snapshot it provides of the global mobile market, the changing trends that characterise our industry and the mobile applications and services that are shaping the future. Hopefully, this guide will provide you with insights that will help you take the right decisions to ensure that your organisation benefits from the fantastic opportunities mobile has to offer.

We look forward to hearing from you and discussing ways in which we can help grow the market together.





One of us must know

Mike Short,
Chairman, Mobile Data Association

As Mobile now exceeds 2 billion customers, we are seeing increased capability being added everywhere to mobile phones. En route towards 3 billion phones we will see a major shift in consumer interest from (network) carriage to content, and for customers from a verbal to a growing visual world - it is with regard to Applications and Content that this guide really brings out some fantastic examples alongside the real Mobile enablers that facilitate these mega trends.

With more Mobile Cameras sold in 2005 than digital cameras, with more Music/Video players in Mobile than iPods, with more Messaging reach than PCs, is there any wonder that we are seeing growing interest from the Digital TV, Radio, Music and Entertainment industries? Mobile Marketing and Mobile Business are also generating growing Applications interest too. And Mobile Ticketing and Transport, Machine to Machine (M2M) or Mobile Healthcare have barely scratched the surface of market commencement. The prospects are exciting yet challenging.

In many countries we now have more phones than people, and this just illustrates that the only way to grow is through mobile (data) usage. If Content is King, then Carriage is surely Queen - and Mobile Content a Royal wedding!

This truly requires partnerships to blend the best of all Content on to the relatively small screen of Mobile, whilst also recognising that historically it is the fourth screen, coming in time after the Film, TV and PC screens, but of course with the true attributes of mobility, interactivity, global reach and personalisation. These attrib-

utes could one day make mobile the first screen, if the partnerships work well.

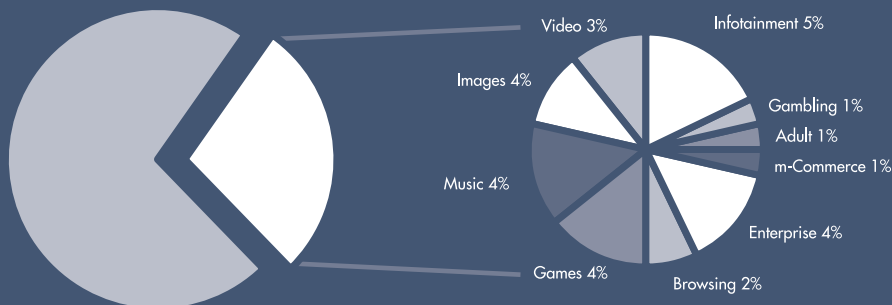
So, in 2005 we have seen close to 2 trillion GSM text messages carried globally. For the UK alone, the MDA has just forecast for 2006 another 15% growth in volumes, which take the totals through to an average of 100 million per day or 36.5 billion for the whole year (in 1999 we only carried 1 billion).

These figures would be meaningless if it were not coupled with a real variety of Applications and even faster rates of growth in the Mobile Internet world (including WAP Push, and Content downloads) and also the wider adoption of GPRS/3G/Wi-Fi and Mobile email.

The figure overleaf illustrates the true diversity of Content that Informa forecast will be downloaded by 2007. A 28% share of Messaging based on Content is a truly remarkable figure compared to 2% little more than 4 years ago. While Informa also predict more than \$42 billion of revenues associated with Mobile Entertainment by 2007, the variety of categories also shown illustrate that Mobile Content is no longer purely in this wide category. While no-one can be precise about actual percentages, it can only highlight a major growth trend towards such a wide adoption and variety of needs.

The second figure from New Street Research illustrates further the need for mobile partnerships with specialists who understand how the various Messaging solutions are rapidly evolving, based on new Mobile and Internet combinations. While the key Messaging focus areas of Push to Talk, Mobile email and Instant mes-

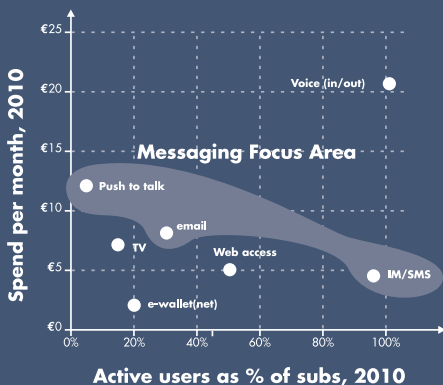
P2P Messaging 72 %



Forecast MNO Revenue by App (2007)¹

P2P messaging will be the biggest contributor to non SMS Data revenue

Messaging solutions are rapidly evolving²



saging are all stressed, it is only the specialists who can match this to actual network capability, handset adoption and country penetration (this is far from uniform internationally), handset capability and real user needs. It also illustrates well the lag in active users against some industry or trade aspirations. This sense of reality is greatly assisted by this guide, with its clear orientation and country-by-country index to the real facts.

A key conclusion for anyone new to this fast-growth industry is that we are witnessing major social change in the use of Mobiles - a world of developments associated with increasing volumes, growing value and a multiplication of variety. Among these trends, the market fog needs to be cleared with real partners, able to show the way forward, towards real solutions and growth. This guide helps demystify in many respects.

Or, as Bob Dylan once sang, "sooner or later, one of us must know". This guide goes quite some way to improving our understanding and the effectiveness of Mobile Content delivery.

Source:

1. Informa Group
2. New Street Research



Market & Technological Evolution

Over the last three years, the mobile phone has changed beyond all recognition. Once a simple tool for voice communication, it transformed first into a sort of toy to be customised and injected with its owner's personality, and more recently into the kind of powerful multimedia devices and personal assistants that we know today.

In this chapter, we will look at how technologies are evolving and how the market is changing with them.

// The more a device can do, the simpler we want it to be to operate"

As we enter the second half of this decade, what exactly we can do with a typical mobile phone? According to Netsize research based on 1,500 devices available on the market:

- 81% of today's mobiles are polyphonic
- 45% can play hi-fi tones
- 52% are Java-enabled
- 23 % have video capabilities
- 7% run the Symbian operating system

It is interesting to note that, according to Telephia, 60% of mobile ringtone revenue in the United States is generated by hi-fi tones. Traditional monophonic and polyphonic ringtones comprise nearly 33% of total revenue, with the remaining 7% resulting from ringback tones.

Devices becoming more complex

Phones are undoubtedly becoming more complex, with today's mobiles increasingly offering enhanced features like web surfing and email, together with the ability to take still and video pictures. As a result, it is no surprise to learn that a 2005 study carried out by J.D. Power and Associates found that the operation and physical design of mobile phones is now becoming more and more important to wireless customers. Paradoxically perhaps, the more a device can do, the simpler we want it to be to operate.

The study measures satisfaction among customers who have owned their phones for less than two years. Overall satisfaction with wire-

less handsets is measured based on performance in five key areas. In order of importance, these are:

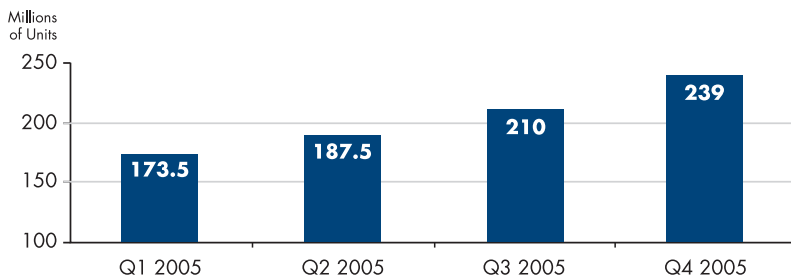
- Physical design (24%)
- Operation (22%)
- Features (20%)
- Handset durability (19%)
- Battery function (15%)

Since 2003, there has been a major shift in importance from the customer's perspective in the areas relating to the operation of the phone (up from 15% in 2003) and the physical design of the handset (up from 19% in 2003).

Although this study only looks at the United States, its findings do seem to accurately reflect common trends across the more advanced mobile markets. The rate at which new devices are being introduced is accelerating, and there is fierce competition between manufacturers to cram more and more advanced features onto each handset. As well as satisfying consumer demand for "improved" devices, this is also designed to meet the needs of an ever more demanding mobile eco-system that is delivering high network bandwidth and advanced multimedia services.

Sales even better than expected

People are buying these new phones too - in large numbers. Robust shipments in the first half of the year, combined with sustained momentum in the third quarter, prompted iSuppli Corporation to boost its mobile-phone unit



2005 quarterly Worldwide Mobile Phone Shipment Forecast

(Source: IDC)

forecast by no less than 9.5%. Global mobile-phone shipments in 2005 are now expected to total 810 million units, up 13.6% from 713 million in 2004.

A mini computer in your pocket

In recent years, mobile phones have more and more begun to resemble mini computers, both for entertainment and for corporate use.

Handset storage can now reach 64MB (built-in flash memory), or even more with removable memory cards, and capacity rises to an impressive 4GB hard-disk on the Nokia N91.

Browsing technologies are starting to converge, moving from a specific mobile protocol (WML [Wireless Markup Language]) to a universal, Internet-based language (XHTML [Extensible Hypertext Markup Language]). Companies can no longer afford to treat mobile-browsing customers as an optional extra when it comes to defining their strategy for the web.

As the 2005 edition of the Netsize Guide showed, the existence of specific mobile operating systems allows any type of application to be developed for mobile handsets. Symbian still leads the market with about 60% of all smartphones running this OS, according to Nokia.

The rise in popularity of smartphones has had

a major impact on the handheld PDA market. The worldwide market for handheld devices experienced its seventh consecutive quarter of year-on-year decline in the third quarter of 2005. This is illustrated by the fact that Palm, whose name was until recently synonymous with handheld devices, saw shipments of converged mobile devices outpace the company's handheld devices for the first time in 2005.

Java has established itself as the de facto standard in the GSM world. The latest version not only enables devices to connect to an external server, but also lets you play games over the network or even share the same application, and the first 3D Java games are already on the market.

Screens are also getting bigger, to facilitate richer gaming and video services, with the average screen size rising from 100 x 80 pixels to 176 x 220 pixels, or even larger for handheld devices.

Where to now?

Convergence with the online world is now very much a reality - the latest mobile handsets are as connected to the world as any computer. Indeed, in the future, mobile devices will offer important additional competitive advantages

// The latest mobile handsets are as connected to the world as any computer

compared to personal computers, over and above the obvious plus that they are portable.

Take localisation, for instance: until now, GPS (Global Positioning System) has pretty much been managed by operators, with the information provided often imprecise and not always easy to access. New handsets could soon feature GPS capabilities, however, that will allow users not only to be connected but also to be located far more accurately than before, opening up a wealth of potential new services.

Rather than continuing the current trend for convergence to become hybrid, Swiss-army-knife devices, mobile handsets may well start to specialise according to specific usages:

- **Game decks:** The Nokia N-gage was the first step towards a fully-fledged gaming device for online multi-player 3D games that can compete with any console.
- **Jukebox:** With SonyEricsson's Walkman phone and the Motorola/Apple collaboration that produced the ROKR, phones designed specifically to play music are already making it onto the market.
- **Video player:** The first Mobile TV offerings are now available and, once storage capacity increases or streaming technology improves, devices will also be produced that are built for watching films.
- **Personal computer:** Mobile phones are already used to access corporate applications and stay connected at all times.

Tomorrow you will also be able to use your mobile to control your home (as an alarm), to pay for goods or even access your hotel room.

As the handset market breaks down into segments in this way, two major challenges will need to be met.

Firstly, any company wishing to enter the mobile space will need to look for a technical partner like Netsize to help manage the sheer complexity of it all: formats, compatibility, coverage and content types.

Secondly, it remains to be seen just how quickly users will start to take advantage of these new technologies. It is important to bear in mind that most mobile phone users hardly even know how to download content onto their phone, and it may well be some time before they learn to accept and appreciate watching TV or buying goods with their mobile. What this means, more than anything, is that successfully managing the user experience will be essential when it comes to enabling the next stage of the mobile revolution.

And, of course, for all these services to be a success, it will take a good, high-bandwidth network ...

NETWORKS: FASTER, FASTER, MORE, MORE

Voice still accounts for the vast majority of GSM traffic, but the increased take up of GSM-based mobile data was finally vindicated in 2005. As networks move towards higher throughput and are extended with M2M-centric technologies, this trend will both be confirmed and increased.

GPRS

GPRS (General Packet Radio Service) is now available to almost every GSM subscriber around the world, offering data connections at tens of kilobytes per second. Surprisingly, EDGE (Enhanced Data rates for GSM Evolution) - with its data rates of hundreds of kilobytes a second - is playing a major role in the GSM world. Originally derided by some operators as an unnecessary step on the road to 3G, EDGE is now proving very popular, even among those who were most bullish about WCDMA (Wideband Code Division Multiple Access). EDGE handsets have turned out to be considerably less expensive than their 3G counterparts, and it has proved easier for operators to cover wider geographic areas more quickly.

As a result, most mobile operators are complementing their 3G networks (mainly used in urban areas and major transportation hubs) with EDGE to reach close to 100% coverage, including in rural areas. Wi-Fi is also used for some specific hotspots, both public (in hotels, airports and exhibition centres) and private ("Wi-Fi in a box" for

companies as an extension of the 3G network).

3G and beyond

While worldwide 3G roll-out is continuing (54 WCDMA networks were commercially live in November 2004, with this figure rising to 82 by mid 2005), even newer technologies focusing on high-speed wireless data capabilities are already emerging and are expected to be rolled out as soon as early 2006.

The WCDMA networks being installed today consist mainly of Release 99 and Release 4 versions. Data speeds of 2 Mbps have been claimed, but peak speeds rarely reach 384 Kbps and more realistically we can expect to see around 150-200 Kbps once 3G usage really takes off.

In order to upgrade data throughput capabilities to up to 900 Kbps, Release 5 (HSPDA [Highspeed Downlink Packet Access]) is starting to be implemented in Europe. Manx Telecom announced its roll-out last November, and major mobile operators in the UK and across continental Europe have announced similar moves for the first half of 2006. It is still unclear, however, whether large numbers of HSDPA handsets will be available to take advantage of all this extra bandwidth.

While HSDPA is seen as a key enabler for video streaming and to enhance the end-user experience in general, the continuing growth of residential fixed broadband services has caught the attention of mobile operators as well, so HSDPA could also compete with ADSL

// Successfully managing the user experience will be essential when it comes to enabling the next stage of the mobile revolution"

(Asymmetric Digital Subscriber Line) service providers in remote and low-density areas.

Mobile TV, looking for a business model

Mobile TV over satellite broadcast technologies (DMB[Digital Multimedia Broadcasting]) have been successfully launched in South Korea and Japan. Thanks in no small part to Nokia's enthusiasm, Europe looks set to opt for DVB-H (Digital Video Broadcasting - Handheld), even if some DMB trials are taking place. Both technologies obviously work, as can be seen from the Asian success story and the results of the first trials in Europe. The next step will be to set up a "win-win" eco-system for the whole value chain, from mobile operators to broadcasters (including content providers and TV channels).

WiMAX, what is it for?

The position (and value proposition) of WiMAX (Worldwide Interoperability for Microwave Access) in this crowded environment is still unclear, despite the increasing number of companies joining the WiMAX forum and proclaiming their interest in launching a WiMAX infrastructure.

While there is growing acceptance of the idea that WiMAX could play an important role for backhaul and provide ADSL-like services in rural areas that are under-served by fixed-line or cable operators ("last mile" carrier-class wireless broadband), the role for WiMAX in mobility is more questionable. By the time

mobile WiMAX becomes available, 3G will already be well-established and we may wonder why mobile operators would want to build and run two networks in parallel after supporting and financing the deployment of HSDPA technology, which can provide similar data rates to WiMAX.

RFID and ZigBee, the last mile for M2M

We could not end this chapter on network bearers without mentioning RFID (Radio Frequency Identification) and ZigBee. These are both protocols for sending wireless data over short distances, making them very important enabling technologies for machine-to-machine communications.

While RFID is a local area network technology (used for tracking the location or status of a physical asset) that operates over a range of a few metres, ZigBee is a personal area network protocol most commonly associated with sensor mesh networks, which are systems of networked devices in which each "node" in the network passes information from one neighbour to the next and eventually to a central server for data analysis. With a stack at 28KB, lower battery consumption and a cost of around €10, ZigBee sensors look set to find their place in the M2M eco-system as the natural extension of GSM networks in tolling, metering and other parking applications.

What walled garden?

Jeremy Flynn,
Head of Commercial Partnerships, Vodafone UK



The only limit to a successful Direct to Consumer business model is imagination

Rumours have been spreading around the mobile industry for years. Whispers that the industry is stymied by 'walled garden' and 'proprietary approaches' have done little to build confidence in a growth market. Fortunately, the reality of the situation is somewhat different, with the Direct to Consumer (D2C) business model for mobile value-added services growing significantly in recent years.

Major brands are recognising the opportunity that mobile presents and are embracing the mobile channel wholeheartedly. In reality, the walls that were the operators' so-called "walled garden" were never there, and brands have been exploiting the D2C business model successfully since 1998.

Bulk and Premium SMS, new WAP payment options such as m-pay, MMS, LBS, wholesale GPRS - there are many network enablers that can be deployed as a foundation to a D2C mobile channel. Imagination is often the only limit.

In the D2C business model, consumer discovery for off-portal content has been predominantly provided by an SMS keyword to short-code - after all, millions use this every weekend to participate in TV voting. However, this mechanism can be used to trigger more than just a vote. It can be used to drive the consumer to hundreds of mobile internet services, or as an internet-style search mechanism. The mobile element of the service highlights some fundamental differences between fixed and mobile internet, and the SMS keyword will remain one of the dominant methods of promoting D2C channels.

But, not all mobile services are concerned with 'selling' mobile content. Increasingly, the mobile channel is being used as a highly-targeted marketing mechanic, integrating into the overall marketing mix. Brands are moving away from basic 'Text 2 Win' promotions to sophisticated programmes with mobile at their heart. Vodafone UK has won a number of awards for its work with Club 18 - 30 and Peugeot on the innovative use of mobile in marketing.

Whatever the use, the fundamental challenge for any D2C content publisher is how to encourage repeat usage. Often, a mix of push and pull techniques is required. To pull repeat customers, the successful mobile channel will deliver more than just a mobile shop front. It will regularly update its content and add quality editorial - one of the few things that will motivate the customer to return, over and over again.

The mobile network infrastructure also lends itself well to Business to Employee (B2E) and Machine to Machine (M2M) applications. The simplicity and reliability of SMS makes it a useful communications technology for short data communication. However, the latest B2E and M2M applications take advantage of the ubiquity and price of GPRS bearer networks. The rise in the use of these services is delivering a truly networked world, with GPRS and 3G extending the corporate LAN to vehicles, EPOS, security and vending applications. There really is little limitation to what can be achieved.

Across Europe the opportunities for mobile exploitation is vast. The only 'walled garden' that exists is in the understanding of the mobile opportunity, not in the technology.



The way forward: Quicker, easier and better

**Laurent Chesnais,
CEO, Netsize Group**

Quicker, easier, better - three little words that seem to me to sum up the goals of the technological changes taking place in the wireless world.

All the legacy problems of low-speed data transmission, clunky interfaces and unreliable standards are well on the road to being dealt with. Solutions and services which seemed fancifully over-ambitious when first thought of just five short years ago are now widely implemented and commercially available, dramatically changing consumer experiences and expectations.

This news is not necessarily good for everyone, of course. With so many messaging, handset and communication bearer standards around, there are bound to be some that fall by the wayside (although given the resurgence of WAP after its somewhat shaky start, perhaps we shouldn't be quick to write off any technology). And if you got a fancy new mobile device for Christmas, you probably won't be pleased to learn that it's already out-of-date, so greatly is the speed of technological change outpacing commercial deployment.

But while the diversity of mobile technologies on offer and the speed with which devices are growing "old", if not obsolete, does bring with

it many challenges, it equally creates a wealth of opportunities. These technological innovations are making the market more competitive and convergence is attracting many new players into the mobile value chain.

At Netsize, we see consumer behaviours as a powerful driver in shaping the wireless market. However, we can also see quite clearly that certain groups of key players exist to serve these consumers' needs, and that they too have an important role to play. Mobile operators, software publishers, equipment and hardware manufacturers, content publishers and wireless application service providers are all driving technological innovation in their own business areas.

Let's look at each of these groups in more detail.

MOBILE OPERATORS

Historically, mobile operators have always been at the forefront of developing the market, and with mobile penetration rates already over 100% in several of the most developed markets, we can safely say that they have been quite successful in doing so. Operators invested in spec-

trum licenses and funded equipment manufacturers, creating an environment that encouraged innovation in network standards, billing, messaging and content provisioning. Now, however, the challenge is not so much to win over new users as to convince existing users to use their mobile phones for more than just voice calls.

Certainly, in terms of technology, the mobile operators' focus in 2005 has largely been on further developing data services, with the launch of 3G networks, WAP portals, i-mode and other high-speed mobile internet browsing standards. SMS continues to be the largest contributor to data ARPU (Average Revenue Per User), however, so building higher capacity SMSCs (Short Message Service Centres) and coming up with more flexible ways of billing for data services remains a priority.

VoIP (Voice Over IP) is a new threat for operators, but the high cost of GPRS connections means that using VoIP on a mobile device is not really viable - at least not yet. But in the fixed-line world, IP-based telephony is very much in the ascendant, with companies such as Skype and Vonage radically shaking up the market. Some operators are already using IP to their advantage, however, with the introduction of Mobile TV/Radio and other value-added services.

The launch of 3G data cards for laptops was an important new development, both technologically and commercially, but it has met with competition from Wi-Fi services. Many operators are choosing to safeguard their position in this area by accepting new technological standards, such as Wi-Fi, and making them part of their product portfolio. In the meantime, the use of GPRS cards for machine-to-machine messaging is growing.

For the near future, technological innovation

on the part of mobile operators looks set to focus on bringing higher-speed and higher-value data services to the market.

SOFTWARE PUBLISHERS

Global software giants like IBM, Microsoft, Oracle, SAP and Siebel are now embracing mobility on a massive scale, building compatibility with wireless standards and applications into their products and offering specific support to developers to help them "wireless-enable" the software they create.

As well as leading the way in encouraging new technologies such as Wi-Fi, RFID and WiMAX, software publishers have also played an important role in supporting mobile-specific processors such as the Intel Centrino and mobile operating systems like Symbian or Windows Mobile.

Among the most commonly-used mobile business applications are PIMs (personal information managers) and tools that enable access to office documents like Word files and spreadsheets. Demand is also increasing for mobile-enabled field service, logistics, CRM, transport and telematics applications.

EQUIPMENT AND HARDWARE MANUFACTURERS

Equipment vendors to mobile operators, who suffered when the dot-com bubble burst, are now seeing a turn-around in their fortunes as they start to win new contracts for the roll-out of 3G networks and base station upgrades, and as legacy billing and CRM systems are being updated to meet the changing demands of the 21st century.

Companies like Alcatel, Cisco, Ericsson,

// Mobile operators, software publishers, equipment and hardware manufacturers, content publishers and wireless application service providers are all driving technological innovation"

Lucent, Motorola, Nokia, Nortel, Qualcomm and Siemens are some of the key innovators in terms of the network equipment supplied to mobile operators, with most of the changes taking place in this area aimed at increasing capacity and bandwidth for 3G services.

As well as being used for voice communications, today's mobile phones also need to take pictures, play music, stream videos, store files, read barcodes, and connect and interact with other communication devices if they are to satisfy consumer requirements.

However, the trend towards convergence is not without its critics. A new breed of mobile devices exist that specialise in one particular task, such as gaming or playing music, and certain sectors of the mobile-using public have even expressed a back-to-basics desire for simpler, easier-to-use handsets.

In any case, it is clear that competition between handset manufacturers has moved beyond size, weight and design to focus on what the device can do and how easy it is to operate.

Opportunities are also being created for computer manufacturers - more and more new products are wireless-enabled, with faster, mobile-optimised processors that consume less battery power, and many of the latest laptops have embedded wireless components that are compatible with WLAN (Wireless Local Area Network), Bluetooth, 3G and other technologies.

The wireless-enabled equipment revolution even goes beyond traditional IT equipment, with wireless modems now embedded in automobiles, utility metering equipment and more.

CONTENT PUBLISHERS

The content publishing market is being led by both traditional media companies and pure mobile players. Mobile music and gaming are two of the most advanced areas in terms of consumer acceptance.

There is still a market for monophonic and polyphonic ringtones, but the greatest technological advances have been in full-track music downloads, videos and mobile radio. The music industry finally seems to have come to terms with the music download market, but DRM (Digital Rights Management) issues and the question of file sharing still remain a threat. Considerable progress has been made in setting mobile copyright standards for phones, but this has been overshadowed by the ability of mobile phone users to share files via Bluetooth.

Video streaming (along with mobile TV and radio) may have an impact on the download business model, since consumers do not pay as much to download content, and this is not helped by the limited storage capacity of today's devices. Mobile versions of all the major Internet streaming media players are now available, competing with embedded players

specific to device manufacturers.

Pure mobile brands are contributing to the growth of the content market with the launch of video ringtones and by porting game titles from other devices over to the mobile environment. This is coupled with the convergence between interactive TV and mobile, which is also an important driver for technology change.

Mainstream media companies have yet to fully embrace mobile, so as a result the main drivers for technological innovation in this area are coming from digital media convergence as mobile devices interact with various channels.

WIRELESS APPLICATION SERVICE PROVIDERS (WASP)

A wireless application service provider like Netsize is the key mobile enabler, the glue that brings all the different technologies and business models together by interacting with the various players in the value chain, working on behalf of content publishers or corporations to deliver an end-to-end mobile solution to consumers.

WASPs provide content management platforms, applications, billing services, messaging and delivery for mobile data services. Recent technological innovations where the involvement of WASPs has been critical include the introduction of new billing solutions above and beyond Premium SMS, such as click-and-buy WAP billing, m-wallet solutions and others.

The many challenges faced when upgrading technology to deliver richer content over different media are augmented by the need to deal with all the various handset standards, content formats, billing processes and network specific codes of conduct, and to integrate different IT systems and applications with a messaging and billing infrastructure that is unique to each

mobile operator. WASPs help deliver seamless cross-network services by keeping pace with developments from all the different mobile operators, handset manufacturers and software publishers, allowing their clients to concentrate on what they do best - providing compelling services to consumers.

Some of the key challenges likely to be faced by WASPs over the coming years include the need to upgrade billing systems to take into account new billing methods, and to extend existing content management platforms as the variety of media on offer grows ever larger.

ENDLESS INNOVATION

With all these changes, one thing is clear - operating in the mobile space is not getting any simpler.

All the players in the value chain need to keep pace with what at times seems like endless innovation in both technology and business models, especially a company like Netsize that has a pivotal role to play in delivering solutions that tie everything together.

It is also clear that all this innovation is not technology-driven - it is not a case of "technology for technology's sake". Rather, these changes have all come about to meet very real customer needs. It is the consumer who is at the heart of the mobile revolution, and we must never lose sight of this fact.

// A wireless application service provider like Netsize is the key mobile enabler"



Mobile Business

Deciding how to deal with wireless technology is one of the main challenges that many businesses have faced in recent years. The deployment of wireless data technology represents an opportunity to reduce costs, grow revenues and increase customer satisfaction. Wireless is also an important enabler of higher employee productivity, tighter collaboration in the supply and delivery chains, improved field service quality and enhanced customer relationship management processes.

In this chapter, we will look at many of the different areas in which businesses are putting wireless technologies to work.

Businesses are adopting mobile technologies in order to increase efficiency and improve business processes and customer satisfaction in four main areas:

- Personal information management: delivering efficiency to employees and managers
- Mobile workforce: empowering staff in the field
- Telematics and machine-to-machine messaging: integrating machines and remote assets into business processes
- Customer relationship management: providing valuable services to clients and business partners

Let's examine each of these areas in turn.

PERSONAL INFORMATION MANAGEMENT

How would you feel without your mobile? Disconnected, to say the least. As we saw in the previous chapter, the latest mobile phones are real Swiss army knives: besides letting you make voice calls, your mobile can be an email client, a calendar system, a contact manager, a web browser and many other things besides (including a multi-purpose entertainment device). The modern business phone is a smartphone, using Symbian, Windows or another similar operating system to power its various functions and provide a platform for other appli-

cations that can be downloaded and installed quickly and easily.

Alternative approaches exist to personal information management with a mobile device. Research in Motion (RIM) has pioneered mobile push email messaging solutions. Operating on Mobitext and GSM GPRS network access, the RIM BlackBerry is a handheld wireless device that provides email, telephone, text messaging and web browsing, and other wireless data access. As it interoperates with most major email applications including Microsoft Exchange and Lotus Notes to enable wireless email forwarding, the BlackBerry has proved a real hit in corporate environments. RIM is market leader for this type of device, with a global base of over 3.5 million users. The BlackBerry is very popular with mobile office workers in management and sales.

PDAs, wireless PDAs and smartphones make up the fastest-growing consumer markets in mobile communications. The wireless PDA, which a few years ago was virtually synonymous with the Palm handheld computer, today includes all the features of a mobile phone, along with the messaging capabilities of a BlackBerry on a Windows Mobile-based platform in the higher-end models. Devices are manufactured by vendors such as Compaq, Qtek, Benq and OEM/ODMs (original equipment / design manufacturers), with operators rebranding and offering the devices under their own brand name.

Support for Windows as a mobile platform is growing quickly now that Palm has embraced it for its new range of devices. The new Treo smartphone, for instance, takes advantage of the Windows Mobile 5.0 platform in multiple ways, offering Outlook Mobile, Office Mobile and Internet Explorer Mobile built-in, as well as

// How would you feel without your mobile? Disconnected, to say the least"

direct access to Exchange Server 2003 for mobile access to information.

ENABLING THE MOBILE WORKFORCE

Building an efficient and agile enterprise that can handle the pressures of ever-increasing global competition and create a sustainable competitive advantage is the goal of many CEOs today. Such enterprises use empowered employees that can act and respond to customer needs better because they are better informed and have access to corporate systems, customer and business process-related data at all times, no matter where they operate from. Wireless technologies enable companies to implement business processes that are geographically "free" and at the same time provide them with better control of the resources deployed.

Field service engineers may use a PDA handheld device for alerts, dispatch information, access to most-recent customer data, job reporting and so on. The device may be a standard PC-like device such as a Compaq iPaq, or it may be a ruggedised device from Symbol with special features such as a barcode scanner and a touchscreen. Other applications are in transport and logistics to access inventory records, manage assets to optimize usage, and to increase worker productivity by automating tasks and eliminating paperwork. In the whole-

sale and manufacturing sectors, rugged mobile computers boost worker productivity by enabling the sales force to receive, put away, pick, pack, confirm and ship orders with full access to accurate production and inventory data, leaving more time for customer relationship management and customer services. In healthcare, no time is wasted re-entering information, ensuring a greater degree of accuracy and improving patient care.

Wireless connectivity may be based on GPRS, EDGE, UMTS (Universal Mobile Telecommunications System) or Wi-Fi WLAN (IEEE 802.11) network standards. The choice depends on the amount of bandwidth required and on geographical coverage. In an office environment, a wireless LAN using Wi-Fi can be a viable option, whereas GSM or UMTS "3G" are likely to be a better choice in rural or urban areas. In many cases, the possibility of using either type of network access is becoming a more important requirement.

MACHINE-TO-MACHINE MESSAGING

Machine-to-machine messaging, or M2M, provides communications between people, devices and systems. M2M enables companies to access and exchange data with assets such as machines and other equipment, for remote monitoring and control. Wireless technologies

IP Mobility

CISCO SYSTEMS



**Patrick Grossetete, Manager,
Product Management - Internet Technologies
Division (ITD), Cisco Systems**

Enabling location-independent access to the Internet, from any device

Convergence is a word that is commonly used today to explain the evolution of audio, video, voice and data applications and appliances that connect end-users through the worldwide Internet. Originally dominated by desktop personal computers, the way to access resources has now shifted to a new generation of equipment such as laptops, tablets, portable gaming devices, digital cameras and mobile phones. One common denominator shared by all these different tools is that they each integrate one or more wireless technologies with which they reach the Internet.

The recent development and deployment of various wireless technologies from licensed bands (GPRS, Edge, 3G, and in the not-too-distant future 4G and WiMAX) to unlicensed band (Wi-Fi) adds networking capability to these devices. But at the heart of this convergence is the Internet Protocol (IP), either in its current version - IPv4 - or the next generation of the Internet Protocol - IPv6.

The basic expectation of end users is to be able to use any kind of device to access the rich information content of the Internet, wherever they may find themselves. While roaming through a single wireless technology - or layer 2 roaming - is already well-mastered since the deployment of GSM, roaming through different wireless access technologies brings new challenges. One key feature from the IP protocol suite is its independence from data link layers. As a result, the IP mobility

concept and its implementation has become a complement to layer 2 roaming.

IP mobility - built on top of Mobile IPv4 or IPv6 protocols - introduces such benefits as session persistence, IP address independence from the interface connection and always-on reachability. This can either apply to a single device, for example a laptop with embedded Wi-Fi and a GPRS/3G PCMCIA card configured with Cisco Mobile Client software, or a full network, for example a public transportation bus equipped with a Cisco Mobile Access Router (MAR) 3200.

Business innovation is an opportunity when considering IP Mobility. The technology allows the Internet and Intranet to be taken to markets that were previously unconnected.

Knowledge workers such as sales staff with laptops can remain connected while they are on the road, switching between access technologies, or across different IP networks (both public and private), enabling them to access and process data while away from their office.

The next generation of public transportation vehicles, such as the public buses in Paris, can be equipped with Cisco MAR3200 to enhance the quality of transport services by introducing real-time passenger information, e-ticketing and video-surveillance. One could envisage cars integrating similar technologies in the future, as demonstrated by the e-vehicle experiment carried out by Cisco and Renault's Prospect & Research division.

Last but not least, Mobile IP enables the creation of "Communities of Interest", which means a collection of devices that are logically part of a



PSA Peugeot Citroën Case Study

group reflecting their ownership or function. Typically, members of a Community of Interest need to communicate within the community but do not want to be exposed to the rest of the world, although they still want the benefits of the connectivity provided by the Internet. One example of this in use would be the community of power meters belonging to the French national power utility company (EdF).

Cisco IP mobility solutions offer a solid foundation to business innovations. But a successful eco-system requires a turn-key environment such as that provided by the collaboration between Cisco and NETSIZE Group, one of the world-wide leaders for mobile business and entertainment solutions.

Gilles Michel, Executive Vice President, Platforms, Engineering and Purchasing: "At PSA Peugeot Citroën we give utmost importance to safety and by incorporating a wireless-enabled emergency hotline to the customer assistance centres we are taking in-car safety to the next level. In case of an emergency or an accident the speed of assistance is essential and can make a big difference for the customer. In fact, more than 2,000 lives a year could be saved in Europe, according to EC statistics"

PSA Peugeot Citroën has taken in-car safety to the next level by incorporating wireless alerting as part of the cars emergency assistance system. In case of an emergency the driver can press an alert button which immediately sends a text message and also initiates a voice call to the Support Centre. Automated alerts are also sent in case of a car crash or opening of airbags.

GPS-positioning location information is also part of the alerts which helps in speeding up on-site emergency assistance if required. The wireless service is currently live in France, Germany and Italy with over 130,000 Citroën and Peugeot cars to date.

The solution was developed and delivered by Netsize in partnership with other PSA Peugeot Citroën partners including Steria (systems integrator), IMA (Inter Mutuelles Assistance), and Magneti Marelli (RT3 / Navidrive telematic platform).

// Wireless technologies enable companies to implement business processes that are geographically "free"

commonly deployed for M2M communications include cellular wide area networking (GSM, CSD [circuit switched data], SMS and GPRS), satellite and data-only messaging networks (notably Mobitex and Reflex). Wired connectivity (dial-up phone connections or Ethernet) is another option. In the process industries, Scada is a well-known method for connectivity. Irrespective of the networking technology, however, the business process with which the data is integrated is at the core of the benefits that M2M can provide.

According to figures published by research company Harbor Research in 2005, the M2M market is estimated to grow to over \$700 billion in 2010, from \$100 billion in 2005. About 50% of this will be from added-value applications and services, just under 10% from enablement, and over 40% from services.

Applications for M2M exist in so many different business sectors that it is impossible to provide an exhaustive list. Typical "mobile" applications include goods and assets monitoring, supply chain solutions, vehicle and people monitoring, while "fixed" applications include monitoring the environment, machines and buildings. Each category contains variants for business and consumers.

M2M can deliver significant benefits. Take a utility company, for instance. Faster and accurate automatic readouts of energy meters enable a utility company to speed up its cash-

collection process, reduce errors and increase customer satisfaction. Once a wireless infrastructure for M2M is in place, the company can then use it for alternative purposes, such as providing additional services. The gas utility company could use it to provide alerts or energy awareness services to its customers, or provide similar metering services for related areas like electricity or water.

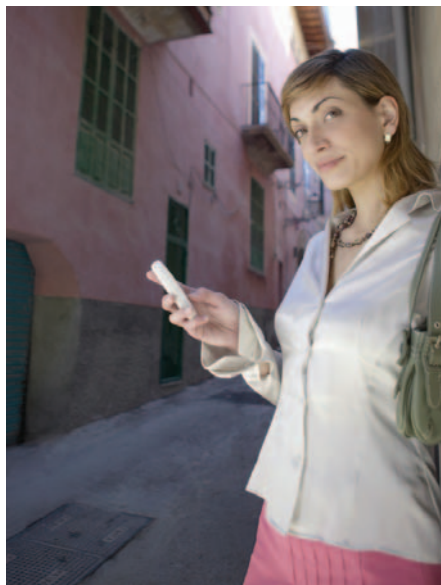
MOBILE CUSTOMER RELATIONSHIP MANAGEMENT

In many Western-European countries, the mobile phone has close to or even over 100% penetration, which means that everyone aged 18 or older has at least one mobile phone. The mobile phone has become a ubiquitous item that we can no longer live without. Businesses can benefit from this, as the phone provides them with a unique opportunity to extend the relationship they have with their consumers. The phone is a tool for interactive mobile customer relationship management.

Banks, brokers and news media use the mobile phone to provide information services such as stock alerts, account deposit level alerts, mobile payment and mobile banking. Since a large audience is reached, services must take into account a wide variety of devices, from simple mobile phones to full-featured phones such as smartphones and PDAs.

SMS is the carrier technology most frequently used for this application. Many examples already exist today. Axa Banque, Boursorama, Crédit Agricole, Fortis Bank and SEB are among the many organisations that are providing mobile marketing and mobile business services.

Additionally, public organisations and governments are also benefiting from wireless technology, for example for surveillance cameras, safety inspection or coordination between services in case of emergencies. Wireless technology can also enable a new kind of "citizen relationship management", where a more customer-oriented public sector provides valuable services via the mobile channel: reminders (about driving tests, hospital appointments and more), tax form information, voting information, energy alerts, traffic updates, tourist services and more. The opportunities are limitless.



Wireless technology has proven its benefits for businesses and is delivering its results for managing personal information and empowering employees on the road. Integrating the management of assets and devices into the core business process is the next step in the deployment of wireless data communications. These three areas provide great opportunities for reducing costs and increasing productivity. In addition, machine-to-machine messaging enables innovation in existing business models in order to generate new streams of revenue. Finally, with mobile phone penetration rates reaching 100% or even higher, companies would do well to investigate the opportunities for customer relationship management and value-added services using the mobile channel.



What applications will be hot in 2006?

**David Hooper, Director,
Mobile & Embedded Devices division, Microsoft**

As the telecommunications industry searches for new sources of revenue, mobile data is increasingly presenting a major opportunity. While consumer applications are starting to take off, the business space is also seeing exciting development. According to a recent study by Jupiter Research, both SMBs and large enterprises are reporting that 17 percent of employees spend more than 50 percent of their time away from their desks—a segment that will increasingly turn to smart mobile devices for mobile working in the coming years and which the industry is referring to as the "mobile information worker."

Mobile information workers need to communicate and collaborate with work colleagues, business partners and customers wherever they are, in a multitude of different ways and from a range of devices. They are eager to be as productive away from the office as they are in the office but also to maintain a good work/life balance. Therefore there is a growing need to access services like the Internet, email, calendar, contacts and task lists. These services need to be consistent with what information workers use in the office but optimised for the mobile environment and easy to use.

Depending on the role of the information worker, they will also need access to more complex line-of-business applications customised to their particular work environment. This presents major benefits for any business but also certain challenges, as they will need to integrate smart mobile devices into their existing IT infrastructure in a cost-effective and secure manner.

Mobile business applications

The market for mobile business applications is maturing fast. Mobile email, in particular, is growing at an immense rate. The Radicati Group predicts that wireless 'push' email services are currently reaching some 4.2 million mobile devices, and this user base may swell to 40 million by 2008. The industry is also seeing an increasing demand for applications that go beyond mobile email. To meet this demand there are now mobile versions of desktop favourites such as Word, Excel and PowerPoint. With the release of Windows Mobile 5.0 these applications have become even more intuitive and easy to use. Word Mobile now supports tables, lists and embedded images, giving workers greater flexibility to create, edit or review documents. Excel provides charting and PowerPoint Mobile allows users to review presentations while on the go. Just a few years ago, people would not have imagined such functionality could be possible on a mobile device.

In combination with Windows Mobile devices, Microsoft Exchange Server 2003 Service Pack 2 (SP2) offers many new mobility features including Microsoft Exchange sync and direct 'push' technology for email, calendar, contacts and tasks, as well as the ability to look up contact details of anyone in a company through remote access to its global address list. This means that the information worker always has the information he or she needs on the move and has an instant email experience.

Aside from mobile messaging, businesses are



mobilising a wide range of line-of-business applications in areas as diverse as retail, logistics and government. Most prominent amongst these are field force automation and customer relationship management applications that have been optimized for devices. Drive Assist, a UK based automotive fleet management company, deployed Windows Mobile-based devices equipped with TaskMaster from TBS and the CoPilot satellite navigation solution, which enabled drivers to receive delivery and inspection details straight from the depot. Once received, CoPilot satellite navigation directed the driver to their job, making map-reading skills a thing of the past. The result was dramatic savings of time, paper and money, Drive Assist were able to free up their fleet by 15 percent, giving the company significant competitive advantages.

Similar examples can be found in a number of vertical sectors where companies are adopting mobile solutions to improve the way they work, for example, the emergency services. Thames Valley Police in the UK used the Smart Beat application on Windows Mobile-based devices, to enable the officers to check people and vehi-

cle records in an accurate and secure manner. The solution enabled officers to do 60 percent more checks during a shift, also cutting down paperwork and allowing them to spend more time on the streets. Other examples include companies such as Kone, a global elevator company, that supplied Windows Mobile-based devices running TBS's TaskMaster field mobility solution to technicians who carry out field maintenance and repairs. This enabled field workers to log information into the device as they completed tasks. Where job status reports for customers could previously take weeks, this information became available to customers in real time. The deployment reduced communications costs by 62 percent.

Presence and mobile location-based services are also gaining ground. A Microsoft application known as Communicator Mobile, soon to be commercially available for the Windows Mobile platform, will enable users to Instant Message on their mobile device in a secure manner and also to display their status (for example, away, idle, busy, do not disturb) to other users and determine who is offline or unavailable. This adds another "real time"

dimension to mobile communication, helping businesses to increase the efficiency of communication between colleagues.

The challenges presented by the uptake of mobile business applications

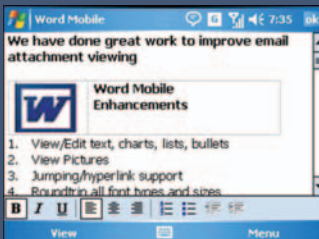
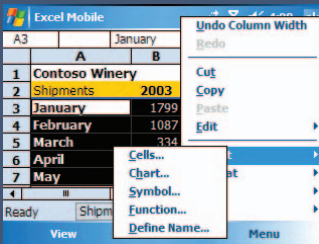
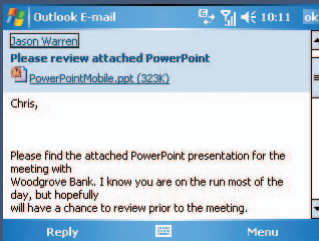
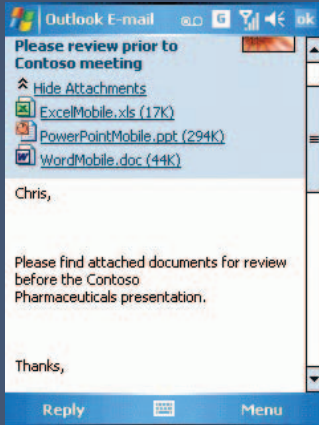
Exciting as these scenarios may be there are certain challenges for businesses in mobilising their workforces. As data-centric devices become increasingly smarter and more connected with Bluetooth, WiFi, 2.5 and 3G networks, security becomes a major issue. There is also the risk that devices can be lost or stolen and company data stored on the device can be compromised. Microsoft, together with the industry, is moving quickly to address this threat with more sophisticated technologies for data routing and encryption. Vendors such as Computer Associates, F-Secure, McAfee and Trend are developing mobile versions of sophisticated anti-virus and encryption software. Furthermore, products such as Windows Mobile 5.0 now enable corporate security policies to be implemented and even allow businesses to remotely lock the device or delete data on a mobile device if lost or stolen.

Companies will also need to manage mobile devices in the same way as they do PCs. This includes configuring devices with specific applications and ensuring these devices comply with the company's IT policies. Products such as Microsoft's Systems Management Server 2003, in conjunction with products like Afaria from iAnywhere will facilitate end-to-end device man-

agement including software inventory, software distribution and device setting policies. Integration with the existing IT infrastructure can be eased by having a consistent Windows software platform from device to server, providing support for common Internet standards and a consistent user experience whilst reducing the need for costly middleware and proprietary solutions.

Furthermore, to ensure the growth of the mobile business applications market, operating system manufacturers need to provide a rich, extensible platform to allow developers to create new applications easily and cost-effectively. A consistent platform will also enable developers to create business applications across the PC and mobile device without having to re-design the application. Microsoft's Visual Studio .NET development platform can now be used by mobile developers using the same tools and resources they would use for desktop applications, thus enabling the world's six million Microsoft developers to develop mobile applications with little additional resource or expenditure. Windows Mobile already has over 18,000 business applications commercially available for Windows Mobile-based devices from third parties such as SAP, Siebel, Salesforce.com, CoPilot and BluePrint.

Permeating all of the above is the issue of cost and return on investment. The examples used above show that when mobile solutions are used to improve processes or workflows the returns are high and very tangible. In addition, analyst house IDC conducted case studies with six com-



panies that have implemented Microsoft's server-based, mobile messaging solution and quantified the productivity returns to end users, as well as the efficiencies and cost savings to IT departments. In this study, IDC found that companies paid back the cost of implementation in 4.3 months and the one-year return on investment (ROI) of implementing the mobile solution was 129 percent.

To conclude, these developments in mobile business applications confirm that the business space will increasingly provide new opportunities for revenue from mobile data, whether it is mobile email, Office applications or line-of-business applications. As Gartner has recently predicted that Smartphones will outnumber laptops by 2008, the future for this source of revenue looks bright.



Mobile Entertainment

In years to come, we will look back on 2005 as a year that marked a turning point in the development of mobile entertainment services. Thanks in no small way to a frog that turned the entertainment world just a little "crazy" ...

Before it shot to the top of the charts all over Europe, Crazy Frog was "just" a ringtone. But as the first example of mobile content crossing over to become a major merchandising hit in other, more traditional fields, Crazy Frog showed that mobile was ready to play with the big boys. It could now compete in the world of large-scale content delivery platforms and was more than capable of creating its own formats and its own agenda, with a global audience and almost-instantaneous delivery that the viral nature of this new medium only served to increase.

In this chapter, we will take a look at each of the different forms of mobile entertainment, and examine how the market is opening up its distribution and billing systems in order to stimulate growth even further.

// Content on mobile phones is starting to more closely resemble the traditional rich-media formats consumers have grown accustomed to"

Without a shadow of a doubt, mobile entertainment has the lion's share of the market when it comes to value-added mobile services, thanks largely to the enduring popularity of personalisation services and TV voting.

Over the last few years, the media, content providers and specialist mobile service providers have turned the mobile phone into a kind of multi-purpose interactive consumer device that lies at the core of their strategy for building and servicing the mobile consumer market.

In doing so, they have three main goals:

- Winning over new customers and encouraging the loyalty of existing customers by extending access to their services (notably through MMS and WAP)
- Raising ARPU by developing a whole range of value-added services from logos and ringtones to chat and micro-payment services
- Increasing audience interactivity with quizzes, votes and blogs.

RICHER CONTENT

With colour multimedia handsets and GPRS subscriptions becoming far more common in the consumer market, the content delivered on mobile phones is starting to more closely resemble the traditional rich-media formats users have grown accustomed to elsewhere.

First came text (SMS), then sound (ringtones) - now the third generation of mobile content is upon us, with Mobile TV and video as its poster children and embedded applications such as Flash helping to turn the mobile into a true multimedia platform. The whole experience is becoming quicker and more "seamless".

Music

Music is definitely the most successful market segment of the mobile entertainment industry. Ringtones for mobile phones are already estimated to account for between 10-15% of the world music market.

As MP3 formats, full-track tones and ringback tones all increase in popularity, broadening the scope of music on the mobile phone, they are sure to complete the "digitalisation" of the sector that began with the explosive growth of downloading music on the Internet.

Indeed, this emergence of different mobile music "products" is one of the important trends in this sector.

Convergence between the Internet and mobile platforms and devices, increasing record company control over the distribution of these new

formats and the addition of images and videos to mobile music products are sure to be among the major developments we look set to see in the coming months.

Images

As far as images are concerned, 2005 has clearly been the year of Mobile TV. The "birth" of this new media is one of the hottest topics in the business, with the mobile operators in the director's chair.

DVB-H, strongly pushed by Nokia, has already overtaken UMTS as the technology supporting the deployment of Mobile TV, at least in Europe. With experiments and pilots taking place all over, and the launch (with all the attendant fanfare) of the first packages of programmes, we can see how quickly these solutions are being rolled out by the industry.

Unlike music, Mobile TV has been highly controlled from the outset, with the key players (producers and distributors) from the audiovisual world taking a very active role. Over and above technology considerations, this is what it really all boils down to: the distribution of roles and the sharing out of power between the telecom world and the audiovisual world - with all the convergence and integration that implies.

Gaming

From the Gameboy onwards, there has been no denying the success of portable gaming devices. Games have been talked of as one of the potential goldmines of mobile entertainment, and to judge from the excitement building up around the different players in the sector, they would seem to be close to striking the mother lode. Two main factors contribute to this: more and more people now own multimedia handsets, and the content distribution system has become more open.

The development of new technologies (such as

Flash or 3D), the arrival of hybrid or dedicated devices like the PSP or the Gameboy, increased interactivity in the games themselves (those famous multi-player games that everyone talks about but no-one has ever played) and the setting-up and running of communities will be just some of the trends to look out for in the year ahead. And all of this will take place against a backdrop of even greater investment in the development and porting of mobile games to all the devices on the market.

Adult content

The world of adult content has benefited greatly from the development of images and video. After years of being limited mainly to chat and dating services, the arrival of multimedia now allows the range of services on offer to grow considerably to include video-chatting, live shows or short video downloads.

The protection of minors is a key issue that needs to be addressed by the entire value chain, however, to ensure that the guaranteed success of mobile adult content will be controlled and secured, especially since the phones owned by teens and even younger children are becoming more advanced all the time.

DISTRIBUTION PLATFORMS AND BILLING SYSTEMS BECOMING MORE OPEN AND FLEXIBLE

Billing for mobile entertainment services is still largely carried out by Premium SMS, especially for services and content paid for on demand.

As a billing method, Premium SMS has ...

// 2005 has clearly been the year of Mobile TV"



The Mobile gaming market: Measuring success

Mike Rawlinson,
Deputy Director General of ELSPA
(Entertainment and Leisure Software
Publishers Association)

How download charts are helping provide a more accurate picture of the market

When a new market is discovered and exploitation begins, the landscape and territory is very much like the gold rush fever that gripped the Wild West back in the 1800s. Everyone rushes to drive stakes in the ground to claim their territory and bold claims are made regarding the riches to be discovered and the fortunes to be made.

And so it was in the early days of computer and video gaming back in the 1980s. But how could these claims be checked and validated by the industry, and how was consumer confidence to be built so that the market could expand and develop? In 1989 ELSPA was formed by all the major publishers in the UK business, with one of its primary aims to create and publish a chart of best-selling games software. Now, more than 15 years later, the ELSPA leisure software reports, compiled by Chart-Track, are the envy of the world for their quality, coverage and accuracy. From the early beginnings of publishing ranking reports of the best-selling games without any values or volumes, we now have full data available, supplied by over 6,000 retailer outlets throughout the UK, and compiled so that no retailer's market share is exposed but full transparency is given on product and publisher performance.

As we look back on 2005, we can see once

again a positive growth in the video games market in volume terms. However, margins and revenues are under pressure as consumers eagerly await the arrival of the latest wave of new consoles, led by Microsoft's Xbox 360 at the end of last year, Sony's soon-to-be-released Playstation 3 and Nintendo's Revolution. The good news is that the market is predicted to double in size from 2005 to 2008 on the back of an expanding consumer demographic and increased availability of hardware at a range of price points. And the growth in Handheld devices in 2005 with Sony's PSP and Nintendo's DS has also led to new consumers entering the market. Something for everyone then?

Well, we should not forget the device that almost everyone already has in his or her pocket - the mobile phone. The growth of this market has been meteoric - who could have predicted 10 years ago that the mobile phone would have become so commonplace? Furthermore, the mobile phone is much more than just a device to talk on; it's becoming an all-purpose entertainment centre, which most people carry around with them all the time. The opportunities to tap into these new consumers are immense and industry estimates of the market value vary wildly, but we need to know what they are downloading and paying for in order to have an accurate picture of the market.

As a result, ELSPA has started the charts process all over again, this time for the mobile

Mobile Games Market

Mobile games market is growing rapidly. The market is still in its infancy, but it is expected to grow significantly in the coming years. The market is still in its infancy, but it is expected to grow significantly in the coming years. The market is still in its infancy, but it is expected to grow significantly in the coming years.

games download market. Progress is slow but steady. Charts of the best-selling downloaded Java games have been published for nearly two years, and we are ready to expand the services in two directions. Firstly, we will begin to publish monthly download volumes for the UK, and secondly we plan to offer the service to other territories throughout Europe in order to assist other countries in developing their market.

As the mobile gold rush gathers speed, it will be fascinating to look at the ELSPA chart information to ascertain who the winners - and the losers - will be in this highly dynamic sector of the market.

Most downloaded Mobile Games 2005 (UK, 2004-2005)

Month	Top three games
December 2004	1) Tetris - Ifone 2) Who wants to be a millionaire - GLU Mobile 3) Tom & Jerry (Cheese Chase) - Macrospace
January 2005	1) Pub Pool - Infospace 2) Connect 4 - Mforma 3) Colin Mcrae Rally 2004 - AMS
February 2005	1) Who wants to be a millionaire - GLU Mobile 2) Pub Dart - Infospace 3) Pub Pool - Infospace
March 2005	1) Who wants to be a millionaire - GLU Mobile 2) Steve Davis Snooker - Iomo 3) Tetris - Ifone
April 2005	1) Lemmings - Ifone 2) Who wants to be a millionaire - GLU Mobile 3) Tetris - Ifone
May 2005	1) LMA Manager - Jamdat 2) Tetris - Ifone 3) Who wants to be a millionaire - GLU Mobile
June 2005	1) Lemmings - Ifone 2) Wallbreaker - Infusio 3) Tetris - Ifone
July 2005	1) Wallbreaker - Infusio 2) Tetris - Jamdat 3) Who wants to be a millionaire - GLU Mobile
August 2005	1) Monopoly Tycoon - Mforma 2) Pacman - Namco 3) Wallbreaker - Infusio
September 2005	1) EA Sports™ Tiger Woods PGA Tour © Golf 2005 - Iplay 2) Pacman - Namco 3) Championship Manager 5: Solo - EIDOS
October 2005	1) EA Sports™ Tiger Woods PGA Tour © Golf 2005 - Iplay 2) Tetris - Jamdat 3) Pacman - Namco
November 2005	1) Tetris - Jamdat 2) EA Sports™ Tiger Woods PGA Tour © Golf 2005 - Iplay 3) Doom RPG - Jamdat



The evolution of the global music market and the Crazy Frog revolution

**Markus Berger-de León,
Managing Director, Jamba! GmbH**

The phenomenon that is the Crazy Frog has highlighted how third party content providers such as Jamster are driving forward the market for mobile entertainment both in the UK and throughout the world.

It is no secret that the world of functionality of the average consumer handset is evolving at an exponential rate and the key to capitalising on these technological advances through expanding the market for data services is to open up the market to allow third party providers direct access to consumers. The growth of the ringtone industry over the past 18 months has been fuelled by the advertising spend of a small number of third party brands such as Jamster, Ringtoneking and TXT82228. In comparison the market for Ringback Tones (allowing the consumer to choose the music anyone calling them will hear) has remained stagnant despite its latent potential due to the network operators refusing to allow the market to be opened up and evolve.

Currently the most valuable part of the mobile entertainment industry is for music. The global market for mobile music is set to generate revenues of around \$4.4 billion by the end of 2005 and this figure is estimated to rise to nearly \$6 billion in 2006 and mobile music now accounts for nearly 15% of the entire global music market. The rate at which this grows will be largely dependent on the way in which network operators resolve the current costs associated with data transfer and the way in which music labels deal with their IP. The initial reaction is to maintain as large a percentage as possible of each transac-

tion but this is counterproductive as it can reduce the viability of third party companies being able to market music effectively. It may seem counter-intuitive but it is a fundamental rule of economics that in many cases sacrificing revenue per unit can lead to a greater overall return as larger volumes are sold.

Regardless of this apparent success the markets for mobile entertainment and services are still very much in their infancy as less than 20% of users with the ability to access data services from their mobile are currently using these services. There is still a cultural shift required to persuade the average user to realise the full potential of their mobile but as the next generation of phones begin to incorporate the same functionality as commercial mp3 players, this shift seems set to accelerate in pace. As streaming music and video services become mainstream on the majority of consumer mobile handsets, the mobile entertainment industry will see itself competing more and more with traditional media such as the Internet and broadcast television.

With the Crazy Frog, Jamster has shown the huge potential of the mobile content industry and more importantly that it is simply not enough to offer intellectual property in mobile format and expect it to be successful. IP has to be molded, transformed and tailored specifically for the unique ways in which consumers interact with mobile entertainment. The Crazy Frog began life operating exclusively in the mobile digital domain but has since moved into mainstream traditional media with a UK Number 1 Single and various merchandising items. Jamster has

shown that the key to exploiting IP is to alter the way in which consumers can access it dependent on the media they are using.

The mobile music industry is at an exciting point in its evolution and as the functionality of the average handset expands and data transfer speeds increase, the full extent of how consumers choose to interact with music through their mobile is still unclear. What is clear however is that mobile music should not be considered as competition to the music industry but instead should be seen as a complementary extension to the music industry as a whole. Consumers will seek to access music regardless of the format and the mobile phone simply offers them another choice in how they choose to do so.

... three important advantages:

- It can be used for billing small amounts, often less than €10 for mobile services.
- It is a universal payment method, accessible to everyone who has a mobile phone.
- It provides a quick and easy user experience.

Nonetheless, the fact that the range of content that consumers pay for with their mobile now includes products which are not necessarily consumed on the phone itself (and are therefore beyond the scope of Premium SMS, which often combines the ordering procedure with the payment) has led to the introduction of new payment methods.

The growth of the mobile Internet (i-mode, WAP and the Web), when coupled with online mobile payment solutions, offers major new opportunities for the development of m-commerce.

These developments go hand-in-hand with an opening up of content distribution, with the appearance outside the operator portals (Orange World, Vodafone Live, O2 Active, T-Mobile TZone, Telefonica Emocion and others) of "kiosks" that are far more open to brands and advertisers (such as i-mode, or Gallery in France).

THE BEGINNING OF A NEW CYCLE?

The mobile industry has come of age. The market in many European countries now brings in annual revenues that top €500 million, and in less than five years telemedia, media, mobile network operators and content applications service providers have succeeded in creating a mass consumer market where ringtones, music, logos, information, games and videos are just some of the products now on offer on our mobile shelves.

The paradox of this mass consumer market is

that it does not have all the usual attributes we have come to expect from other industries. Branding is still marginal, customer loyalty is not always a prime concern, flexibility on pricing is questionable, and retention is just another control ratio for short-term ROI. It could be argued that this is simply the result of the portion of revenue share that mobile operators are willing to give up (although regional and global content providers have had to reach profitability within the tight economic space left by the carriers, and many have managed to do so). In such an environment, would customer loyalty have any real benefit? Whatever the reason, it is now quite clear that in the major markets, slash-and-burn strategies are being sanctioned by both consumers and regulators alike, and are progressively failing to produce expected returns.

The emergence of media and global brands that are going mobile and using "the smallest screen" as both an additional channel through which to monetise their audience or licensed content and a complementary way of acquiring, interacting with and retaining customers is also contributing to a change in the way content and service providers manage their relationships with their customers. It is time for these providers to start considering that end-users are as much their clients as MNOs - and to follow the common rules of mass consumer markets.

CRM is likely to be the cornerstone of this new cycle in mobile services, and it holds the key to long-term profitability. Most of the best practices and codes of conduct adhered to by the industry as a whole set the same basic rules for the foundation of sound customer relationships:

- Permission-based marketing, with an explicit and informed opt-in, resulting in qualified and up-to-date databases

- Clear communication on the nature and price of the service
- Simple and well-publicised opt-out methods
- Cross-marketing capabilities for services of a similar nature (in line with customary regulations for distance selling), aimed at increasing ARPU across all a merchant's services through cross- and up-selling to existing customers, who are identified through unique IDs provided by MNOs (either MSISDNs or permanent x-IDs)
- Adherence to specific professional charters such as those that exist for banks, employment agencies and consulting firms
- Protection of minors, human dignity and other common legal provisions

Fairly managing the one-to-one value proposition pushed to end-users based on their consumption profile promises lower churn, longer retention and a whole new level of ARPU for merchants in a richer multimedia mobile store environment.

In order to last, an industry must deliver fair-value products or services that satisfy created or expected needs. Loyalty or ethics is not a moral issue - it is simple and sound business practice to build long-term relationships between a brand and its customers, based on a business model enabled by mobile carriers, who have to reward and remunerate such practices as they represent an incremental short-term cost for mobile merchants.

It is only by being fairer all round - to consumers, and to all the players in the mobile value chain - that we will be able to successfully surf the new World WAP Wave and take our industry into the next cycle in its growth.



i-mode: Replicating the Japanese success story in France

**Cédric Nicolas,
MMM/i-mode Handset Design
and Development Manager, Bouygues Telecom**

When i-mode was launched in France back in November 2002, who would have thought that just two years later, by December 2004, 1 million customers (some 25% of all post-paid customers at Bouygues Telecom) would already have signed up for the service, with this figure looking set to rise to 2 million during the course of 2006?

If i-mode has been such a success in France, this is largely due to the fact that Bouygues Telecom has put into practice the same rules that NTT Docomo invented when they introduced i-mode to the Japanese market. Bouygues quickly understood that i-mode is not a technology but an end-to-end mobile Internet service, and has taken real care to ensure that the right balance is struck between all the different elements of the eco-system: handset usability and consistency, network coverage, computer infrastructure and quality of service, mobile content design (working closely with content providers, who receive 86% of the fees resulting from content sales), sales training, customer service support, marketing and communication. No single one of these elements is more important than the rest - the combination of all these factors is what has made i-mode such a hit in France.

With the success of France Telecom's Minitel, France was already quite an experienced market when it came to selling content online. Takeshi Natsuno, the inventor of i-mode, was inspired by the Minitel in three ways: firstly, the Minitel service was simple and reliable to use; secondly, you didn't need a user guide to work out how to use the terminal; and thirdly, content providers were able to make a lot of money

with their services.

Today, there are now more than 400 mobile i-mode HTML sites from more than 150 content providers available on the official Bouygues Telecom portal, along with thousands of unofficial voluntary sites. More than 400 Java applications (using the DoJa technology) can be downloaded onto any of the i-mode handsets available in France, as there is much less fragmentation between DoJa handsets than in J2ME MIDP. Moreover, the range of handsets on offer is growing all the time as new manufacturers see the success of i-mode and want to bring out their own devices.

Right from the outset, i-mode has been designed with the customer at the heart of the service, and usability, accessibility and richness of content are all key. The success of i-mode in France has proven that the mobile Internet - with all the services we have come to expect from it, including full-track music downloads and live TV - really is possible outside Japan and Korea, and will help smooth the arrival of such innovations as broadcast TV, 2D bar codes or contactless RFID services that will make the mobile phone the remote control of our daily life.

Gallery: A cross-operator initiative that is driving the French Premium WAP market

Julien Chamussy,
General Secretary, French Multimedia Mobile
Association (AFMM)



In 2002, all three French mobile operators got together to launch SMS+, a kiosk of Premium SMS services that were made available through the same shortcode to all mobile phone users, irrespective of their operator. The immediate success of SMS+ convinced the operators and service providers to adapt this "kiosk" concept to the mobile Internet market as well.

By 2003, all the French operators had already launched their own portals: i-mode (Bouygues Telecom), Vodafone's v-live! (SFR) and Orange World (Orange France). But there was still room for a more open approach that would enable service providers and media to distribute their content and services to the maximum numbers of users, whatever the technology and whatever the operator.

The concept of the Gallery kiosk is based on what Forrester Research calls the "department-store approach". For the operators, this means "providing the access, running the store to ensure quality of service and security, operating the content platform, managing the cash registers that support multiple billing and payment options." Advertising and promotion is left to the service providers themselves, who are also in charge of ensuring content remains fresh and up-to-date.

Basically, Gallery operates as a search engine that enables WAP users (equipped with an appropriate handset) to find a service either by name or by searching for an appropriate key-

word. This search engine, which is accessible from each operator's portal, also features an alphabetical index and a "What's new" section. Searches are only carried out among the services that are listed in the Gallery kiosk; other services on the operator's portal or off-portal services are handled separately.

Operators also manage their own billing platform, offering different options (pay-per-use, pay-per-subscription) and a wide range of prices (between €0.20 and €4.00). They charge end-users (both pre-paid and post-paid) and share all revenues generated with the content provider, who on average receives around 70% of the Premium fee.

While only a limited number of services can be listed on each operator's portal, there are no limits to the number of services that can be distributed through Gallery. Indeed, any service can be listed in the Gallery kiosk as long as it respects the common rules set by the operators (a code of practice and a communications charter).

As a result, more than 700 services are now listed in the Gallery kiosk, with 30 new services being added each month. For certain categories of services (especially ringtones, chat and games), competition is fierce, with numerous content providers all fighting to gain visibility. Well-known brands or those services that are most strongly promoted have an edge, as end-users are more likely to find them in the Gallery search engine.

Traffic and revenues have been building steadily over the past three years, but 2005 was

really the year that Gallery took off. One reason for this rapid growth was the introduction of a simpler and quicker way of accessing Gallery services, through a single SMS.

This SMS-to-WAP access is handled by the operators through a common shortcode, at no additional cost to the service provider. This way of accessing Gallery is much easier to promote: the user sends a standard SMS with the name of the service or a keyword, receives a WAP message with a link, then clicks on this link and is connected either directly to the service or to a WAP page displaying all the services that match the request.

In September 2005, operators successfully ran a major TV advertising campaign to promote this SMS-to-WAP access, and since then many service providers have started to advertise their own services.

Revenues generated by Gallery services are expected to reach € 22 million in 2005. More than 23 million users now own a compatible handset, with more than one million people using Gallery services every month. The outlook for 2006 is bright, as more and more companies are looking to generate revenue and build brand awareness through Gallery services.

*For further information, visit:
www.pro.gallery.fr*



Mobile Marketing

The simple fact that more than one billion consumers can be reached any time, anywhere, on an interactive one-to-one basis, is more than enough to make mobile a unique marketing tool for FMCG brands. The question, therefore, is no longer whether a brand should use mobile as part of its overall marketing strategy, but how to go about doing so in order to make it a success.

In this chapter, we will look at some of the different ways mobile is being added to the marketing mix.

// Take advantage of the opportunities offered by rich media to develop branding and initiate mobile relationships with consumers"

From direct marketing activities to relationship marketing, the mobile channel is already being used - to great effect - by a whole range of companies.

DIRECT MARKETING: FROM INFORMATION TO TRANSACTION

Using SMS as a new direct marketing channel was the first way brands started to make use of the mobile phone for marketing purposes, as an extension of their existing mass emailing campaigns. Going even further than the requirements of EEC regulations and operator codes of conduct, brands immediately adopted a permission-based approach towards this new media, realizing that it was important to avoid negative branding issues with consumers, who often perceived promotions received on their mobile as being as intrusive as they were attractive!

M-mailing campaigns have been developed for both event-based acquisition and customer relationship building campaigns. This latter type of campaign has been becoming more and more important over the years, for a number of reasons:

- Despite what mobile marketing fans may say, starting a relationship with a consumer with an SMS remains a difficult challenge. New technologies may change this, but probably not in the short term.
- Brands have learned to include mobile opt-

in as part of their data collection channels, allowing them to develop a unique database through which they can maintain contact with their consumers.

- Brands are now putting mobile marketing right at the heart of their CRM systems.

It is this third point, a major trend that not surprisingly is taking longer to implement, that will ensure a comprehensive and integrated approach to the inclusion of mobile as a new channel that complements other contact points. Agencies and brands are busy fine-tuning the process, using intelligent rules and consumer profiling data to develop automated m-mailing campaigns that form an integral part of multi-channel marketing activities.

With the introduction of MMS and WAP Push (providing access to a WAP site via a URL that is sent by SMS), brands and agencies have now been freed from the constraints of having to develop mobile direct marketing campaigns that "attract consumers in 160 raw characters". Sound, images, videos, PowerPoint-style presentations and flash animations - a whole range of multimedia content is now available, as more advanced handsets are becoming much more widely distributed in the consumer market. In most developed countries, more than half of the mobile devices in use are WAP colour handsets and a quarter of them can access MMS.

Mobile marketing and the development of campaign measurement standards

Richard Foan,
Managing Director, ABC ELECTRONIC



The emergence of and advancements in mobile marketing technologies have created new opportunities for marketers to reach their target audiences and for mobile providers to generate additional revenue

The evolution of mobile phone technology has made the use of mobile phones not just a 'teenage fad' but an everyday necessity for millions of users. As a result mobile marketing has become an important route to market for businesses around the globe. With the continued development of SMS (Short Message Services) capabilities alongside MMS (Multimedia Messaging Services), marketers can now achieve a wider penetration to target specific audiences using both static and interactive creative.

SMS and MMS campaigns have been used by advertisers as a new medium, particularly effective for targeting a specific market sector. It is a cost-effective method of reaching a target audience through individually tailored messages. However, to continue to invest comfortably, advertisers need the assurance that their spend on SMS or MMS campaigns has been effective and that the intended message has actually been delivered to consumers.

Mobile marketing is now used widely by marketers in all sectors and it is safe to say that the use of these campaigns will continue to rise, as will marketing spend on other mobile marketing channels such as mobile TV. In order to reinforce interest and growth, the sector must be able to demonstrate ROI for these tools, through the adoption of industry agreed metrics for the

measurement of mobile marketing campaigns.

Assurances are now needed by mobile marketers in the same way that the measurement of other electronic media was called for in 1996. Over the past few years we have seen the Internet develop into the fastest growing media channel available to marketers. However, before they commit spend online, advertisers and media buying agencies are increasingly demanding independent assurance and clarification that their budgets are being well spent and that sites may reach the size of the audience they claim.

The mobile marketing sector can now grasp the opportunity to work together on a global scale to develop a single set of industry agreed measurement metrics. As there are currently few standards in place, advertisers and industry experts worldwide will certainly support the concept of industry agreed metrics. Adopting a code of practice through the introduction of an agreed form of measurement will benefit all parties involved and will reinforce the strength of this marketing medium to all stakeholders. This will provide advertisers and media buyers with a common global currency with which to trade, that in turn will secure greater spend through a channel that is accountable and delivers tangible, trusted, independent evidence of ROI.

When all the players work together as a global industry, the entire sector will see increased growth in marketing spend and it will reinforce the message that mobile marketing is a highly effective channel that is rightly an essential component of the marketing mix.

// **The most sought-after advertising space in the world - an icon in the top-level menu on a mobile phone"**

This shift in technology has had a direct impact on the use of mobiles in direct marketing, in two ways:

- **Branding and design:** Consumers can have a seamless branding experience (in terms of the graphical environment) from print to web to TV, and now to mobile as well. This allows campaigns to be more creative, which is important since virality is still a key component - nearly 25% of all mobile messages received are forwarded.
- **Interaction:** Mobile is no longer just an informational channel. With MMS and WAP Push, consumers can react immediately and seamlessly - they can contact your company, or buy your products or services in one click. There's no need to drive traffic to the store when the store is in your hand!

FROM GAMES AND PROMOTIONS TO BRANDING AND RELATIONSHIP MARKETING

In addition to direct marketing, where contact is (even with opt-in) very much brand-driven, SMS games and promotions have also been very successful all over the world. Who among the world's top-ranking FMCG brands hasn't had their own Text-to-Win on-pack promotions?

Here too, brands are taking advantage of the opportunities offered by rich media to develop branding and initiate mobile relationships with consumers. Moving beyond simple SMS interactions, companies are convincing consumers

to start a relationship with the brand, with the challenge being to keep the link active on the mobile as well as moving it on to other media through "seamless" calls to action.

That's why this type of service requires full integration with traditional media like TV, radio, print and billboards. Consumers must be sufficiently enticed to make the first move on the mobile, with other brand contact channels (point-of-sales, call centres, websites and others) then building on and enriching the relationship.

One recent trend currently being developed is to combine merchandising (billboards, POS materials) with short-range connectivity (IR, RFID and Bluetooth) to initiate contact with consumers through their mobile phone.

Another hot topic is the use of bar codes and mobile phones. One approach is to use 2D bar codes in printed media that consumers can "scan" with their cameraphone. This directly connects consumers to the brand's service, typically through a WAP connection. Another approach is to deliver a 2D bar code to the phone (by WAP Push, or MMS) which the consumer can then use as proof of payment for m-ticketing or m-coupon services.

A NEW MASS MEDIA FOR BRANDS?

The Internet is now widely recognised as a valid new media, where brands buy advertising space to create notoriety, generate traffic and sell products. As more and more consumers



start to spend time browsing the mobile Internet, the question of using WAP portals and sites in a similar fashion is already starting to be asked.

A number of mobile-operator-led initiatives have been set up around WAP banners and search engine advertising, using several traditional business models (CPI, pay-per-click and others). So far, this advertising space has mostly been taken by mobile entertainment players looking to drive traffic to their WAP sites, but this will certainly change over time as brands begin to evaluate new media such as mobile TV, mobile radio and podcasting.

Some brands will try to go even further and grab what could become the most sought-after advertising space in the world - having an icon

in the top-level menu on a mobile phone. An icon that provides access to a branded application (Java or Flash) that allows consumers to browse offline and interact online with the brand through SMS or WAP connectivity could definitely live up to the name of the "billion dollar menu".



Mobile marketing lifts off

**Andy Hood, Creative Development Director,
& Matthew Fox, Business Development Manager,
AKQA**

Richer services to take advantage of sophisticated phone capabilities

Mobile phones are fast becoming the most popular connected device on the planet. Fuelled by increasingly robust handsets and network capabilities, mobile marketing is advancing with equal momentum - investment is set to grow more than six-fold over the next five years, from £110m to £688m (Jupiter 2005). Now is the time for marketers to stand up and take notice.

Although still in its infancy the mobile is a powerful device delivering ever richer brand experiences and, as such, is becoming integral to the marketing mix - further boosted by convergence amid hand-held devices and the services they deliver. By 2007 smart phones will constitute 43% of all handset sales, carrying in its wake an equally powerful uplift in services, with 3G networks reaching 50% penetration in the same year (Jupiter 2005). Never further than an arm's length away, the mobile is the ideal channel for sending targeted, personalised, timely messages, which in turn inspire an immediate response. What results is the perfect marriage of off and on-line activity, with mobiles driving calls to action in response to ads seen either on TV, billboards, a website or product packaging.

AKQA and Nike helped stir up a frenzy amid young football fans in Australia with an SMS game where players earned points by finding

and texting in keywords posted on select billboards and banner ads. The campaign was an instant success and revealed that the youth market is incredibly responsive to mobile campaigns - twice as likely to respond as adults (e-consultancy 2004) - and especially open to building mobile-based relationships. But a deep relationship can only be built on meaningful communication. This is where the opportunity lies. Currently there's a gap between sophisticated phone capabilities and lacklustre services. The divide must be bridged by agencies creating rich branded content specifically for mobiles and compelling enough to be passed virally. AKQA and Nike achieved a mobile first when after the Nike Run London event, runners with 3G phones received videos of themselves crossing the finish line. They had the perfect memento of the day and were able to forward the videos and share their moment of victory with friends and family.

When it comes to the future of meaningful mobile communications, one development leads the pack: custom applications built with Macromedia Flashlite. The mobile version of Flash, this software brings the rich interactivity of a website to one's mobile. This is no passing technology. Macromedia has already signed deals with a range of phone manufacturers including Nokia and handsets with built-in Flashlite players will hit the market as soon as Q2 2006. Mobile companies and other top brands

are firmly supporting the technology, including Samsung and Kodak, who have both used Flashlite to create new generation interfaces for their phone and camera products.

Currently AKQA is creating for one of its motoring clients a mobile application that will provide its customers with a fully branded experience. Users download the app from any number of channels, including web, i-mode and Bluetooth. The application then sits on the phone, accessed through an icon on the main menu (providing perfect brand exposure). Much easier to navigate than a WAP site, it provides quick access to personalised content and services (route planner, restaurant finder, hotel booker, finance calculator and registration checker). A 'connected' application, it will pull in data and streaming media, creating a seamless user experience with no frustrating surfing required.

Macromedia will release the latest version of its software in January, enabling Flashlite applications to control built-in phone features, such as volume, video playback and contacts. Imagine, no switching back from one app to the other, no need for multiple clicks to find a contact or activate some other function, all will be accessed within a single, seamless, easy-to-use application. Alongside it will sit a website that customers will use to manage their preferences and profile (mobiles aren't great for entering lots of data)

leaving the mobile application focused on what it's best suited to deliver - timely, personalised value-added information that builds a lasting and meaningful relationship with customers.



Mobile: A response to a marketing requirement rather than a communications objective

**Interview with Olivier Rippe, Managing Director
Proximity Interactif. BBDO Group BBDO**

What are the key characteristics of the mobile phone as a marketing tool?

The first factor, which is actually more of a prerequisite than a characteristic, concerns the high penetration rates that have turned the mobile phone into a consumer medium and attracted the interest of brands.

The second element has to do with the highly personal nature of the mobile phone. This obviously lends itself to the creation of truly one-to-one relationships, as well as ensuring a higher quality of contact in the sense that more messages are opened and read.

The third important attribute is that mobile marketing can spur consumers into action, when used as part of an overall relationship marketing campaign that goes beyond the mobile itself. Whether we're talking about alerts or promotions, the mobile can (and must) incite consumers to do something.

What particular marketing issues is the mobile especially suited for today?

What all brands are looking for can be summed up in three words: Acquisition, Connection and Monetisation.

Acquisition consists of converting the media investment into an audience for the brand. Today, this means going through traditional mass media such as television or billboard advertising - mobile marketing is not quite "stand-alone" yet, and a mobile marketing campaign needs to be backed up by media investment to make it work.

Connection consists of building a relationship with this audience. And that's where mobile really comes into its own, with its interactivity, its availability on the move, and the way it

bounces consumers onto other media. It offers brands a perfect way of enriching and extending the spontaneous contact, something which is essential given the cost of customer acquisition.

The campaign that we created for Gillette Mach3Power is a perfect illustration of this bounce effect between a billboard advertising campaign and the creation of a relationship via the mobile. The mobile phone is certainly the most efficient of all media in this regard.

Monetisation, the third point, lets brands turn these relationships into business. Here too, mobile has a special role to play since it can drive traffic to the point of sale. In the near future, this may be taken a step further with the mobile being used as a means of payment and a way of managing the transaction.

These three factors work perfectly if advertisers respect the consumer and avoid intrusive messages and spam. Each message sent must have prior authorisation from the consumer and/or provide a service or information that is of real added value.

What are the main issues holding back mobile today and preventing it from becoming a fully-integrated part of the marketing mix?

Without a doubt, the lack of business cases and success stories. Today, the main mobile success stories come from the world of personalisation services such as logos and ringtones, something with which brands do not always want to be associated, both for ethical reasons and because the issues faced are not the same.

The second point is that the mobile is often thought of as a young person's medium. This limits the kind of advertisers who might be inter-

ested and curbs the enthusiasm of others, again for ethical reasons. Even if figures now show that the multimedia use of the mobile is much more widespread across all age groups, there's still a lot of evangelising to be done.

Finally, the mobile as it is today is a tool that responds to a marketing requirement rather than a communications requirement. It is about performance, not reputation building.

Advertisers don't want to invest in branding because the media isn't ready for it yet. We'll have to wait a few years, and for the moment few people want to start experimenting.

It's not the technology itself that is holding things back. The issues come later, once the campaign is up and running, but they mustn't be underestimated if we want to avoid disappointment with regard to the client's initial expectations. Not just for branding campaigns, but for marketing campaigns as well, especially in the areas of couponing and LBS.

One final point, which is related to that, is that we need a more clearly-defined value chain in which the role of each of the players is well identified, because advertisers can often be a bit lost and may not always know who they need to deal with.

You mention LBS. Is that still the old dream?

LBS is mobile marketing's trump card. When combined with the one-to-one relationships that mobile can foster, it's unbeatable in terms of targeting and accuracy. But we can often be disappointed when it comes to putting it into practice, as there are still many restraints.

It's starting to work in "Pull" mode, particularly on the Mobile Internet, but for "Push" we face consumer protection concerns, as well as technical issues that require complex solutions. Having said that, the old dream of a customer walking in front of a store and being sent a promotion isn't all that far away from becoming a reality.

Of course, we need to protect consumers, but not to the extent of preventing them from benefiting from services that are of real benefit to

them. Technical solutions and codes of practice must be found that encourage the development of this type of service. But once more, we must take care that consumers "opt in" to receive our messages and that these remain targeted and unintrusive.

That brings me back to the need for advertisers to build their own database, and to make sure it includes mobile. Adding mobile should be a reflex which doesn't cost much today, but which will prove fundamental tomorrow, when it comes to turning the mobile into an effective and fully-integrated marketing channel.

Yes, tomorrow. What's the future for mobile marketing?

We've been through the SMS age. Now we're entering the mobile marketing age, at least in terms of relationship marketing. The third stage will be played out over the next 3 to 5 years, and we're already starting to see it now.

Firstly, there is the development of the mobile as a tool for communication, working to increase reputation and brand image. As bandwidth increases and services such as mobile TV become more common, mobile will become a stand-alone, graphically-rich media in its own right. With the growth of LBS, we will start to see search marketing initiatives like those we've seen on Google.

Next comes the growth of m-commerce. Distributors will certainly make use of the mobile, just as they did with the Internet - particularly for impulse buying. But that will mainly be limited to intellectual goods and services.

I believe more in the mobile as a transaction tool than a sales tool. The mobile can succeed where the French electronic purse system Monéo has failed, particularly with m-wallet solutions. In this area, for instance, Japan is streets ahead of Europe. But as far as mobile relationship marketing is concerned, we're competing on an even keel.



Mobile commerce

Mobile commerce (m-commerce) - the purchasing of goods and services via a mobile phone - is nothing new. Consumers have been buying goods such as ringtones, wallpapers and games for several years and a whole new industry has grown up around mobile content.

In this chapter, we will look at how m-commerce is expanding to embrace new payment methods and how the success of off-portal services is pushing the industry to the next level.

// The next phase of mobile commerce is undoubtedly being driven by WAP Premium billing"

Today, Europe is the largest market in terms of value of mobile transactions and the most mature for mobile payments, with mobile content revenues estimated at \$8 billion in 2004 and expected to increase to around \$14 billion by 2009. The US market is also taking off. With only around 20% of US mobile users having downloaded a ringtone at least once over the past 6 months, the US mobile transactions market remains in its infancy. However, it is expected that within the next four years adoption will reach critical mass in both the ringtones and games markets, with 30-35% and 10-15% penetration respectively.

PREMIUM SMS - STILL GROWING, BUT FOR HOW MUCH LONGER?

Up to now, Premium SMS (PSMS) has been the main method of mobile billing in operation across most countries and regions. Under this model, a subscriber is billed either when originating an SMS to a shortcode requesting the content (Mobile Originated or MO billing) or when receiving the content on their phone (Mobile Terminated or MT billing). MT billing on PSMS is a popular form of charging for content sold via subscription packages, as consumers are not required to send a text message as a condition to receiving content (beyond the initial opt-in). This greatly simplifies the user experience

and enhances the stickiness of the service.

While PSMS continues to show robustness in terms of growth rates and revenue generations, it is reaching its limits in terms of content delivery and ability to charge. Moreover, it is becoming a barrier to the adoption of new content formats. Content providers have little or no control over their customers' purchase process and customers have little knowledge of the Content Providers that they use, since promotion is based around specific content (Text 123 for ringtone X).

THE MOBILE INTERNET, DRIVEN BY WAP PREMIUM BILLING

With large screen handsets (over 128x160 pixels) now representing over 61% of the customer base, the mobile Internet experience is starting to become more similar to what we know from the fixed Internet, thanks to larger downloads and real-time interactions. Enhanced user experience for content discovery combined with the off-portal revolution and new payment mechanisms are what will help enable the Mobile industry to cross the chasm.

The next phase of mobile commerce is undoubtedly being driven by WAP Premium billing and more generally speaking by the separation of billing from content delivery. Under this payment method, which decouples charging

ing from content delivery, an end-user can download an MP3 file on her mobile and charge the content to her mobile phone bill without sending or receiving a Premium SMS. Additionally, WAP Premium also allows greater flexibility in terms of end-user price.

Other initiatives such as credit or debit cards and rechargeable m-wallets are also underway that will play an important role in the growth of mobile commerce.

THE OFF-PORTAL REVOLUTION - AND THE IMPORTANCE OF CUSTOMER RELATIONSHIPS

Another key driver of growth in the mobile content industry over the coming years will be the off-portal revolution and the generalisation of key enablers, such as directories, search engines, recommendation tools and access control tools and their interoperability among all Mobile Operators in a same market.

So far, direct marketing in mobile terms has simply meant SMS push campaigns. The response rate of these campaigns is still impressive, but content publishers must find new ways to promote their services and attract customers.

As happened on the Internet, mobile search engines are sure to grow in importance. On the one hand, there are the search engines that already exist on operator portals, where publishers can buy keywords in order to have their

services listed in a more prominent position. On the other hand, the major search engines like Yahoo and Google already offer mobile versions, and finally, there are mobile-specific search engines like wapitout.com and seek4wap.com.

As we saw in Chapter 4, CRM is also growing in importance as publishers start to understand the importance of encouraging customer loyalty. They may offer personalised content based on consumer behaviour or preferences, or they may offer specific incentives (discounts or even free content, or private member clubs) to build closer relationships with their consumers.

A STORE ON YOUR PHONE

As we predicted in last year's guide, the operating systems that power today's mobile phones are becoming richer and more open to external applications. One area where this has proved important for the growth of m-commerce has been in the development of branded catalogues or even "stores" that are embedded as applets directly on the customer's phone.

In many ways, these catalogues are similar to off-portal sites, both in the way they allow brands to reach mobile consumers directly, and in how it is just as easy (or as hard, if you prefer) to promote an off-portal WAP site as it is a branded applet.

Applets do have some advantages over off-



// Brands can reach mobile consumers directly"

portal sites, however. They encourage greater customer loyalty, since there is no need to bookmark an applet - it's just there. The user interface is greatly improved - 3D, animation, colour - and the user experience is far more interactive. Equally as importantly, it proves cheaper for the customer, since only the content of the page is refreshed.

With these catalogues, consumers can browse through a whole range of products, listen to or watch previews, download demos, order and pay for a product (by SMS or WAP, for instance) and create their own personalised shopping space.

Three main technologies power these catalogues:

- Java is available on the greatest number of phones but is somewhat limited in terms of functionalities and interactivity, especially when it comes to updating the catalogue or personalisation.
- Symbian is a powerful development environment that so far has not met with much mass-market success, with its presence being largely restricted to high-end phones.
- Flash from Macromedia, following its success on the Internet, is now attacking the Mobile market with the FlashCast platform. It enjoys a great reputation and has a strong community of developers behind it.

YOUR MOBILE PHONE AS A BAR-CODE SCANNER

Last but not least, the progressive penetration of barcode-scanning clients embedded in camera-equipped mobile phones and able to convert a Data Matrix code into a URL, an SMS or an MMS, is expected to be a major enabler in the off-portal take-off.

This technology allows consumers to order a product simply by scanning a 2D-barcode with their cameraphone. This barcode will then do one of many things: it may send an SMS, an MMS or an email; it may open a WAP session to visit a site; it may set payment in motion; it may start a voice call. In any case, it is much simpler for consumers to simply scan a barcode than it is to perform on any of those actions themselves.

As with applets, the main issue remains ensuring compatibility between these different technologies and the range of handsets on the market.

WHERE TO NOW?

As mobile starts to converge with the web, more and more elements are being added to the mix that all need to be understood and handled correctly - dealing with the different operators, both commercially and technically; ensuring support for a full range of handsets and content formats; and, as handset capabilities become more advanced, even the different types of content available themselves. But rest assured, the basic principles that underlie the provision of any mobile service or content - managing, publishing and billing - are not about to change overnight.

M-payments: Focus on national solutions for micro-payments

Arthur D Little

**Johan Karisson, Jasper Boessenkool
and Karim Taga,
Arthur D. Little**

In November 2005, Arthur D. Little provided an update on events in m-commerce, following our global survey in 2004. This study provided a framework based on more than 100 interviews across industry in 32 countries and was welcomed as one of the most comprehensive studies on the global development of m-commerce.

In summary, four main trends in m-payments will affect the development of the sector in the near and medium term:

- The disintegration of Simpay will lead to a focus on solutions developed on a national level in each market.
- Micro-payments, such as for parking or public transportation tickets, continue to dominate m-payments.
- Macro-payments are currently focused on event ticketing; in some countries, m-payments are being actively marketed to corporate customers.
- M-payment technology is currently focused on SMS with a growing interest in RFID.

Originally, Simpay (Vodafone, T-Mobile, Telefonica and Orange) was expected to provide a single platform to deal with the routing, clearing and settling of mobile phone payments in as many as 20 European countries. However, at the end of June 2005, Simpay finally announced its decision to close down its global initiative, while allowing the member operators to exploit its intellectual property rights at a national level. The development of global standards will continue to be slow due to the large number of industry bodies that are parochially focused on vested

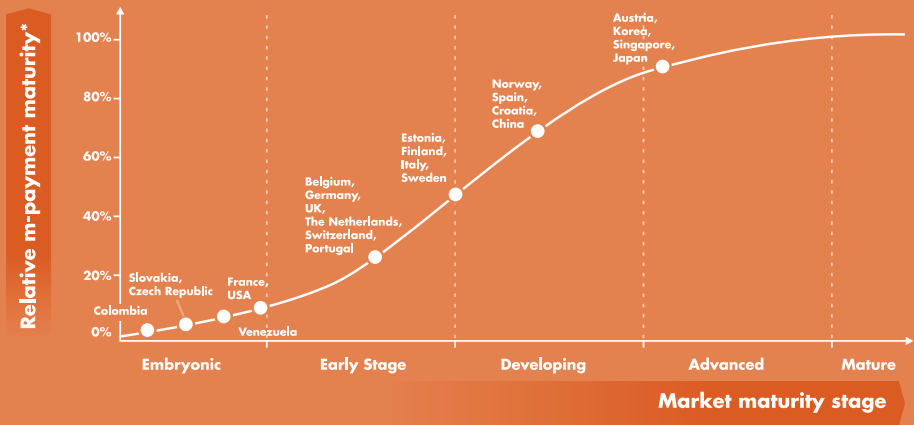
interests. Instead, we believe national solutions will be developed, which are adapted to local needs and payment landscapes.

For mobile operators, the first step into m-payments is usually to offer top-up of pre-paid cards through m-payments, bypassing the need for producing and distributing scratch cards. When m-payment providers are moving into new types of transactions, a major hurdle to be overcome is the high degree of consumer satisfaction with traditional payment methods, such as cash, debit and credit cards. Mobile operators agree that basic m-payment services, in most cases, provide too small margins to make the business viable. Most players have focused thus far on micro-payment applications. Specifically, m-parking solutions have gained interest around the world, and other small payments like m-ticketing for public transportation will continue to make up the vast majority of sales via mobile phones. In Vienna, Austria, the m-parking system is now used by more than 60,000 of the city's 650,000 registered drivers purchasing some 7,500 mobile parking tickets per day. Another interesting opportunity for m-payment is event ticketing, providing cost savings for organisers and allowing for additional revenues through cross marketing. Some operators that are actively developing this segment report a purchase rate of as high as 10 percent for the cross-selling campaigns, e.g. an SMS offer for a CD or DVD after the purchase of an m-ticket.

In the global ranking (see table overleaf), Austria, Korea and Singapore have maintained

m-commerce / m-payment Ranking

Austria, Korea, Singapore and Japan remain ahead of the curve in terms of m-payment market development



their leading positions as the most advanced m-commerce markets; Japan has advanced to join this group due to its strong focus on m-payments. Our ranking of the m-payment sector in each country is based on several parameters: the breadth of m-commerce services offered, how well the services are integrated with all the participants of the value chain, and to what extent the market players have solid and clear strategies for m-commerce.

Source: Arthur D. Little analysis

* Compared to mature markets



Regulation, deregulation and transformation

Historically, telecom regulation or deregulation has been confined to releasing spectrum, monitoring competition, ensuring interoperability and removing barriers to entry - basically, pushing a liberalisation agenda that has resulted in the exponential growth we have seen in global telecommunications uptake. Now, as the mobile market grows ever more complex, new regulations are being put in place to govern the conduct of all members of the industry in order to ensure that consumer interests are protected.

In this chapter, we will look at how the need for these regulations can be balanced with deregulation that encourages market growth.



Marie-Carmen Wartski,
Head of Legal and Human Resources,
Netsize Group

Telecommunication services account for a large part of GDP in many countries, with the 15 EU member states (at that time) contributing €105.6 billion in 2004, according to an Ovum report on the Economic Contribution of Mobile Services in Europe. They create revenue and jobs, and have changed many lives.

Deregulation and releasing spectrum have helped transform the global economy, not least in the fact that there are more than 2 billion mobile phone users around the world today. In developing countries, where the fixed-line infrastructure had not yet reached many remote villages, fixed telephony has been superseded by mobile phones, transforming the lives of communities both locally and globally.

However, while we have undoubtedly benefited from these positive aspects of the telecommunications revolution, we also face challenges resulting from the introduction of high-speed mobile access and richer content and media.

There is nothing wrong with technology itself, but some safeguards do need to be put in place in order to protect consumers. The key challenges faced by the market and the new regulations introduced to protect consumer interests can be grouped into five main areas, which we will look at below.

PROTECTING CONSUMER PRIVACY AND BUILDING CONFIDENCE IN MOBILE SERVICES

Comprehensive EU directives already exist on protecting the privacy and security of personal information and these apply to all forms of electronic communications, including mobile. The importance of consumers opting in to receive services and making it easy for them to subsequently opt out is of utmost importance. Companies are also obliged to protect the personal information of their consumers.

Spamming in the mobile industry is not yet the big problem it is with email, thanks to the role played by mobile operators and service providers in self-regulating and adhering to strict codes of conduct. However, the focus recently has been on further strengthening the rules concerning clarity of advertising, pricing information and making it easy to unsubscribe.

PROTECTING MINORS AND OTHER VULNERABLE CONSUMERS

With the introduction of rich content, including pictures and videos, it has grown even more important to protect minors. Most global mobile operators have implemented age verification systems and have specific guidelines regarding the identification of content that is only suitable for adults.

Contact is something more of an issue than

content where the security of minors is concerned. There are strict rules introduced by operators for moderating live chat services. However, in spite of the legal safeguards and technology, it is still important for parents to monitor their children. For example, it's not a good idea to buy a contract phone (which would imply that the user is over 18) then give it to a child. Regulations are already very strict, but sometimes common sense can help.

IDENTIFYING AND ACTING AGAINST COMPANIES THAT DELIBERATELY BREAK THE RULES

Most countries now have specialist premium rate "regulators", such as SMS+ in France, Regtel in Ireland and ICSTIS in the UK.

These organisations work closely with mobile operators and service providers to identify issues and develop guidelines aimed at safeguarding consumer interests. However, although the vast majority of service providers and content publishers do adhere to the codes of conduct, there can sometimes be a small minority of rogue traders whose short-term business models are based on making money out of loopholes and deliberately taking advantage of consumers.

Mobile operators, regulators and service providers have acted jointly in identifying loopholes and taking steps to close them. This is an ongoing process and remarkable improvements have been made thanks to self-regulation and joint cooperation between the industry and "regulators".

PROTECTING COPYRIGHTED MATERIAL AND REMUNERATING CREATORS OF CONTENT

Today, many kinds of content can be implemented on mobile devices (images, videos, ringtones and more), in a whole range of formats. Often, this value-added content comes with many intellectual property rights.

Consequently, content providers, medias and brands on the one hand, and the people who actually create this content on the other hand, need to feel confident that their copyrighted material is properly protected, which means that an effective digital rights management (DRM) system must be put in place. This is especially true as richer, more valuable content starts to become commonplace.

At the same time, this is a sensitive issue that needs to be handled with care, as many consumers object to overly strict DRM, and a solution will have to be found that satisfies both content owners and consumers alike.

DRM also means managing the right of the people who create the content and ensuring that they are fairly remunerated for the use of their work. As the market grows, the DRM back-end is becoming more structured in order to facilitate the sharing of royalties between all eligible parties. In the music industry, for instance, there may be many different people who all claim for their rights, and mobile content providers need to take care to clear all the rights involved in their musical content and to properly remunerate both music companies and copyright clearing institutions. ...



Balancing regulation with healthy industry growth

Paul Whiteing,
Director of IMCB and Deputy Director of ICSTIS

How regulation is safeguarding the long term growth of the mobile industry and balancing sensible regulation with healthy business

A challenge for operators as they become global in their reach is how to deal with regulation, which remains largely country-based (although there are certain exceptions such as in the EU, where attempts at harmonisation in areas like e-commerce and e-money have met with varied interpretations from different Member States).

Moves from country-based regulation to a more global approach, especially in the area of content, are fraught with difficulties. What underpins regulatory approaches are cultural views and values about certain forms of content and society's expectations about how citizens and consumers, especially children, should be protected; globalisation has not harmonised those cultural views and values and may never do so.

Mobile operators appear to be recognising that some form of regulation of content, tied to a system of age verification, will be culturally and politically essential as richer commercial content becomes part of the mainstream. If that is so, operators must have an interest in shaping regulation rather than having it shaped for them by national governments, as has already been threatened in some jurisdictions.

Self and co-regulatory initiatives to regulate content or provide classification solutions, if provided in a way that can be seen to serve the interests of citizens and the consumer, are likely

to be preferable and more appropriate than those externally imposed. They are also more adaptable to changing circumstances. Operators worldwide have a window of opportunity to shape regulation in a responsible way and in such a manner that serves their interests as well as those of the wider society with which they engage. This is corporate social responsibility in practice.

A demonstration of this can be seen in the UK, where the operators have collectively developed a self-regulatory solution to the issues they face. In the context of the take-up of new content-rich services, and in which operators have a commercial stake in the drive to grow ARPU, UK operators have agreed a joint code of practice for new forms of content. As part of that code, operators agreed that they would appoint an independent body responsible for developing a classification framework for commercial content. This, combined with robust age verification, has as its objective the desire to ensure that those under 18 do not access commercial content only suitable for those 18 or over, whether that be "adult" services or gambling (to name two forms of content that can prove controversial in many markets).

The Independent Mobile Classification Body (IMCB), a subsidiary of the UK's premium rate regulator - ICSTIS - has devised a classification standard for all types of content issues. For consistency this has also been aligned to classification systems in the UK for film, television and games. Content providers are obliged to self-classify their content against IMCB's framework

and where they do not, or if they do it incorrectly, regulatory enforcement is the responsibility of the UK operators, who have commercial control through their contracts with aggregators.

Whilst it is still early days, signs are positive. Initial reports suggest that content providers do not appear to have been unduly hampered by these arrangements. At the same time consumers, and especially children, are being protected in ways expected and demanded. This looks like one model on the way to safeguarding long term mobile growth and balancing sensible regulation with healthy business.

...

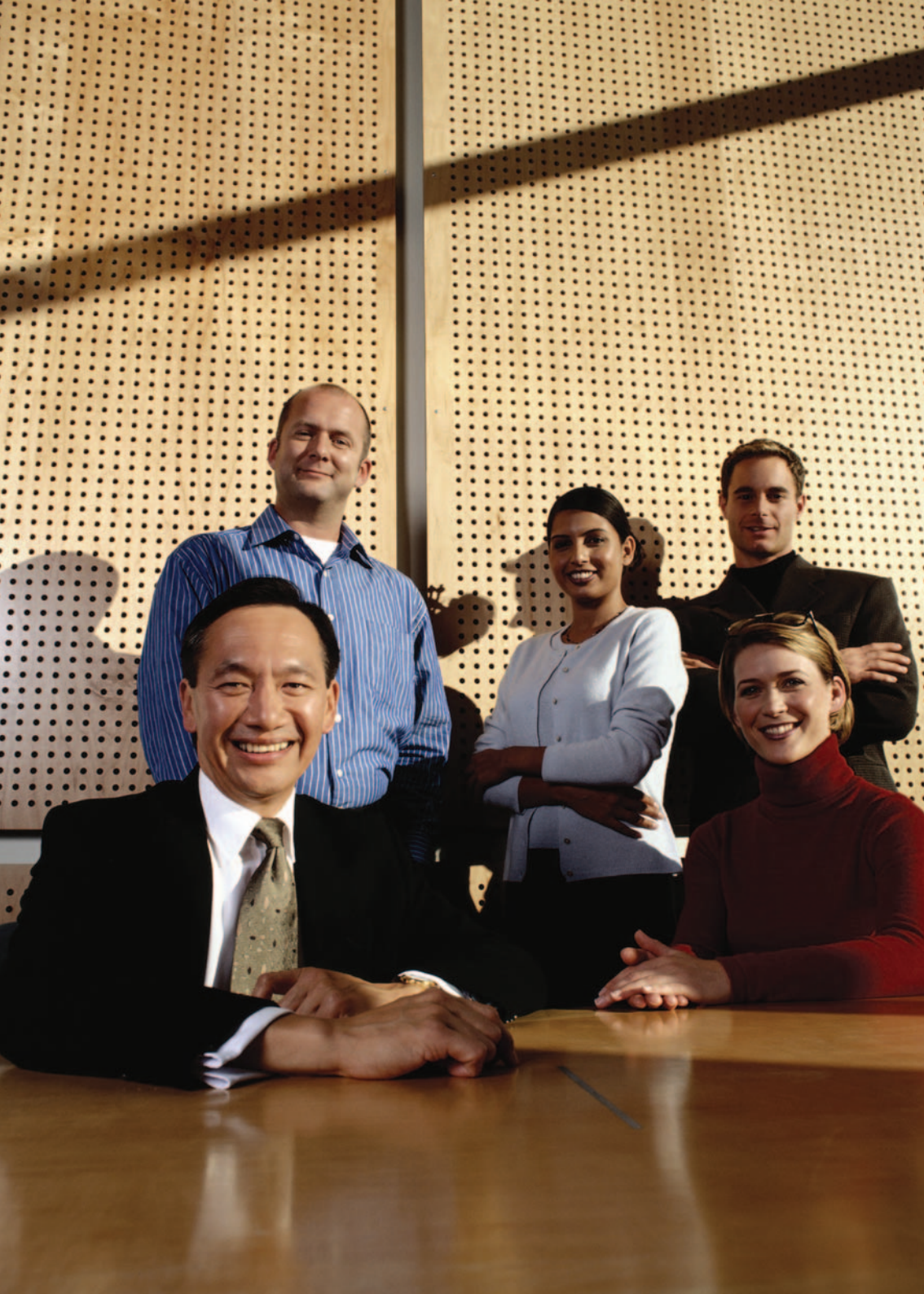
AVOIDING OVER-REGULATION TO LET BUSINESS GROW

Over-regulation has the potential to kill the telecommunications industry and impair the long-term growth of entire economies.

Fortunately, the outlook in this area is very positive, with the general trend being towards deregulating services and making them competitive, while still protecting consumers. However, as always, the risk of over-regulation still looms high in business areas that are in their infancy, such as m-commerce.

There is already enough regulation in place, and we do not have a need for much more. Rather, what is important is that we implement existing regulations properly and sensibly. It is also essential that we avoid duplication (where the same rules or codes of conduct are published and interpreted differently by different mobile operators or regulators). What we need are industry and regulator partnerships that can work together in taking our industry forward.

Mobile services are transforming the way we live and adding real value to our society. The benefits of the mobile are countless, and we need to continue on a track of positive innovation introducing more mobile business, commerce and lifestyle applications. So we still need regulation, yes, but more importantly, we need to continue the good work of deregulation and transformation.



Global Market Report

When looked at in its entirety, the worldwide mobile market can be said to be continuing its march towards maturity. The penetration rate is higher than 100% (which means more mobile phone subscribers than inhabitants) in no fewer than nine of the countries studied in this guide, and the average penetration rate across all the countries examined was 80%.

In such a market, we would expect growth to be driven more by value-added services, and as we have seen in the previous chapters of this guide, these services are indeed being pushed strongly by operators and third parties alike, particularly over 3G networks. This also explains the rise in the importance of CRM and initiatives to encourage customer loyalty that are starting to gain importance in many of the major markets.

However, these figures hide the fact that in many countries, including some which make their first appearance in the Netsize Guide such as India and Morocco, the market is still showing considerable dynamism and impressive numbers of new sign-ups have been registered.

One thing which comes through clearly from our research is that the mobile world is becoming more and more open to third parties, on a global scale, with the development of IP and Internet-like services (WAP, GPRS and Wi-Fi) in the mobile environment. But this worldwide development still differs from country to country, with each operator having its own particularities and specifics that make it unique. With this in mind, in this chapter we will take a look at each of the world's main mobile markets and compare the principle characteristics of each of them.

A MARKET THAT IS STILL GROWING

Over 200 million new subscribers joined the market in the 30 countries studied in this guide during 2005, to reach a total of 1.35 billion subscribers.

The mobile market in Western Europe is a mature market, with a penetration rate that exceeds 80% (even surpassing 100% in some countries) and growth driven mainly by renewal. Eastern Europe and Russia continue to show impressive growth rates, especially in Russia, and the South American markets also demonstrate real growth potential. In North America, the market is still growing and has now started to open up more to third parties.

The penetration rate is increasing in all markets, but in many countries it is doing so much more slowly than in previous years.

Around half the countries we looked at have a penetration rate of over 90%.

The average penetration rate rose from 78% to 80% in 2005: in other words, 8 out of 10 people now own a mobile phone.

A MARKET THAT IS OPEN TO THIRD PARTIES

Flush with the success of their experience with Premium SMS, operators are keen to duplicate the model on other channels in order to generate additional revenue from mobile data services.

The table on page 78 shows which third party mobile data services are available in each of the countries looked at in this guide.

Premium SMS is now available in all the countries that were looked at in this study. Premium Subscription offers are widespread, allowing third parties to develop loyalty and customer retention programs.

Premium MMS is becoming more widely available, but its growth is still slow, illustrating the fact that third parties have still not really got behind the medium. Competition from WAP Push and the cost of MMS delivery go some of the way towards explaining this slow expansion.

The key development of this year has undoubtedly been the growth of Premium Browsing offers. Mobile operator portals like Vodafone v-live!, Orange World, T-Mobile T-Zones and i-mode have really taken off, and importantly they are opening up to third parties with a selection process whose strictness varies from operator to operator. Off-portal Premium Browsing offers are also becoming increasingly popular among operators, providing third parties with a reliable solution when it comes to billing consumers online and providing a fluid end-user experience.

A NEW FOCUS ON BUSINESS CUSTOMERS

In many of the more mature markets, operators are greatly extending the scope and number of services they provide for their business customers as a way of finding new revenue sources. Services offered include numerous machine-to-machine messaging solutions, and tools that enable the mobile workforce by making use of a range of wireless connectivity options including data cards and the provision of Wi-Fi hotspots.

Many operators decided to launch 3G wireless data card services due to the delays in availability of 3G handsets. Over 70% of European operators are now offering wireless data cards, the majority including 3G capability. Increasingly, operators offer cards that incorporate Wi-Fi support, and they have set up and

expanded their networks of Wi-Fi hotspots to address the need of enterprises for always-on wireless access for mobile employees. With wireless cellular data card shipments growing more than 50% in 2005, it is clear that enterprises are recognizing the opportunities. Likewise, the Blackberry subscriber base more than doubled in 2005 to 3 million users, showing that e-mail remains the killer application. The device is now offered by close to 100 mobile operators around the world, attracted by the high ARPU and low churn of business customers that deploy Blackberry.

In comparison with enterprise mobility, the machine-to-machine mobile data market is taking off much more slowly. Whereas a typical ARPU for a business mobile phone subscriber might be around €50, and for a data services user perhaps double this amount, the ARPU for a machine-to-machine user may be as low as a few euros per month. However, as quantities can be several factors higher, contract duration is longer (frequently two or even three years), and support costs low, operators do consider this an attractive business. Close to 50% of European operators now offer data-only SIM cards for M2M applications, with attractive pricing to match the low cost data needs of the telematics and telemetry markets.

END-USER PRICES FOR MULTIMEDIA CONTENT FALLING

Average end-user prices for multimedia content (and in particular colour images and polyphonic ringtones) are falling. This is due to a number of factors: technological developments, fierce competition between global players and the rise in popularity of subscription-based offers that lower the end-user price for each individual item of content.

While there are some small differences between countries in terms of pricing, overall the average prices in the countries looked at in the Netsize Guide 2006 are as shown in the table below.

Most common end-user price (in €)

	2004	2005	Variation
Logos and images			
Colour	2.0	1.59	-
Black and White	1.3	1.2	-
Ringtones			
Truetones	n/a	2.53	n/a
Monophonic	2.4	1.73	-
Polyphonic	1.3	1.27	-
Games			
Colour	4.3	3.49	-
Black and White	3.0	2.84	-
Adult Services			
Content	2.5	2.35	-
Chat	1.2	1.13	-
Others			
Video	n/a	2.73	n/a
Quiz / Contest	0.6	0.6	+/-
Chat	0.6	0.6	+/-
Vote	0.6	0.55	-
Information Services	0.5	0.55	+



CZECH REPUBLIC
AUSTRIA
GERMANY
DENMARK
SWITZERLAND
LUXEMBURG
THE NETHERLANDS
BELGIUM
IRELAND

*Number of mobile end-user
(in millions)*

Country	2004	2005
China	334.00	334.80
USA	168.00	194.00
Russia	60.40	115.76
Japan	83.40	89.10
Germany	67.60	74.00
India	37.00	67.95
Italy	57.10	65.11
UK	56.90	65.00
France	42.90	46.10
Mexico	37.40	41.20
Spain	37.20	39.40
South Korea	37.54	37.90
Poland	19.58	27.73
Australia	16.00	19.97
Netherlands	14.20	16.70
Canada	14.98	15.58
Morocco	7.85	11.50
Portugal	9.35	11.14
Greece	10.03	11.06
Czech Rep	10.15	11.05
Hungary	8.30	9.10
Belgium	8.47	8.66
Sweden	8.19	8.41
Austria	7.44	8.25
Switzerland	6.41	6.58
Ireland	5.10	5.45
Denmark	5.02	5.21
Finland	4.80	5.20
Norway	4.38	4.80
Luxembourg	n/a	0.54
Total	1,170	1,343

*Penetration rate of mobile end-users
(in %)*

Country	2004	2005
Luxembourg	0.00%	120.00%
UK	95.00%	114.20%
Italy	100.00%	114.00%
Czech Rep	99.10%	107.50%
Greece	92.80%	105.80%
Portugal	90.70%	105.80%
Norway	96.00%	104.00%
Netherlands	83.00%	102.00%
Austria	92.80%	100.50%
Finland	92.00%	99.30%
Australia	80.00%	96.85%
Denmark	92.90%	96.20%
Ireland	88.00%	94.00%
Sweden	91.00%	93.00%
Spain	86.51%	91.63%
Hungary	87.00%	90.00%
Germany	81.70%	89.70%
Switzerland	87.00%	88.50%
Belgium	81.50%	82.90%
Russia	51.20%	79.70%
South Korea	78.00%	78.50%
France	71.00%	76.40%
Japan	65.70%	70.16%
Poland	52.00%	66.00%
USA	59.00%	65.00%
Canada	46.90%	48.30%
Mexico	36.00%	38.80%
Morocco	26.50%	35.88%
China	25.90%	25.80%
India	3.00%	6.24%
Average	70.40%	82.00%

CHILE



NETSIZE PREMIUM COVERAGE

Penetration rate of mobile end-user (in 2005)



Available third party mobile data services

Country	Standard SMS			Premium SMS			Standard MMS	
	Toll Free Mo	MO	MT	MOP	MTP	MTP Subs.	MO	MT
Australia	yes	yes	yes	yes	yes	yes	yes	yes
Austria	yes	yes	yes	yes	yes	yes	yes	yes
Belgium	yes	yes	yes	yes	yes	yes	partly	partly
Canada	partly	yes	yes	yes	yes	yes	yes	yes
China	yes	partly	partly	partly	partly	yes	partly	partly
Czech Republic	n/a	yes	yes	yes	yes	yes	yes	yes
Denmark	no	yes	yes	yes	yes	yes	partly	partly
Finland	yes	yes	yes	yes	partly	yes	yes	yes
France	no	yes	yes	yes	no	yes	no	partly
Germany	n/a	yes	yes	yes	partly	partly	yes	yes
Greece	no	yes	yes	yes	no	no	n/a	n/a
Hungary	no	yes	yes	yes	yes	yes	yes	yes
Ireland	yes	yes	yes	yes	yes	partly	yes	yes
Italy	no	partly	partly	no	yes	yes	partly	partly
Luxembourg	yes	yes	yes	yes	yes	yes	no	no
Mexico	yes	yes	n/a	yes	no	no	yes	no
Morocco	no	yes	yes	yes	partly	partly	no	no
The Netherlands	n/a	yes	yes	yes	yes	yes	yes	yes
Norway	no	yes	yes	yes	yes	n/a	partly	partly
Portugal	no	yes	yes	yes	yes	yes	yes	yes
Russia	yes	yes	yes	yes	no	no	n/a	n/a
Spain	partly	partly	yes	yes	yes	no	yes	yes
Sweden	no	yes	yes	yes	yes	yes	partly	partly
Switzerland	n/a	yes	yes	yes	yes	yes	yes	yes
United Kingdom	partly	yes	yes	yes	yes	yes	yes	yes
USA	n/a	yes	yes	no	yes	yes	no	no

Premium MMS				Premium Browsing			Country
MOP	MTP	MTP Subs.	Per use	Content bundle	Subscription	Subscription (with renewal)	
partly	partly	no	yes	partly	yes	partly	Australia
no	partly	partly	yes	n/a	yes	yes	Austria
partly	partly	partly	partly	partly	partly	yes	Belgium
no	no	no	n/a	n/a	n/a	n/a	Canada
n/a	n/a	partly	yes	yes	n/a	n/a	China
no	no	no	yes	n/a	no	no	Czech Republic
partly	partly	partly	yes	yes	yes	n/a	Denmark
yes	yes	yes	yes	yes	yes	n/a	Finland
partly	no	no	yes	yes	yes	partly	France
yes	yes	yes	partly	n/a	partly	partly	Germany
n/a	n/a	n/a	n/a	n/a	n/a	n/a	Greece
no	no	no	yes	no	no	no	Hungary
partly	partly	partly	yes	yes	yes	yes	Ireland
no	partly	partly	partly	partly	partly	partly	Italy
no	partly	partly	yes	yes	yes	yes	Luxembourg
no	no	no	no	no	no	no	Mexico
no	no	no	n/a	n/a	n/a	n/a	Morocco
no	no	no	yes	partly	yes	partly	The Netherlands
yes	yes	yes	yes	yes	yes	n/a	Norway
partly	partly	partly	n/a	n/a	n/a	n/a	Portugal
n/a	n/a	n/a	yes	yes	partly	n/a	Russia
partly	partly	partly	yes	partly	partly	no	Spain
partly	partly	partly	partly	partly	partly	n/a	Sweden
yes	yes	yes	yes	yes	yes	partly	Switzerland
partly	partly	partly	yes	yes	yes	yes	United Kingdom
no	no	no	n/a	n/a	n/a	n/a	USA

	Premium SMS		Premium MMS		Premium Browsing	
	Type of Premium SMS	Range of end-user prices (local currency)	Type of Premium MMS	Range of end-user prices (local currency)	Name (Operator)	Launch date
Australia	MT-P MO-P	0.25 to 10.00	n/a	n/a	i-mode (Telstra) Optus Zoo (Optus) v-live! (Vodafone) Planet 3 (Hutchinson 3) The Vibe (Virgin Mobile)	2004 2004 2002 2003 2004
Austria	MT-P MO-P	0.20 to 10.00	n/a	n/a	v-live! (Vodafone) t-zones (T-Mobile)	May 2004 October 2002
Belgium	MT-P MO-P	0.15 to 4.00	MT-P MO-P	0.50 to 4.00	v-live! (Proximus) Orange World (Mobistar) i-mode (Base)	June 2004 July 2004 2002
Canada	MT-P MO-P	0.15 to 5.00	n/a	n/a	n/a	n/a
China	MT-P MO-P	0.00 to 20.00	n/a	n/a	Monternet (China Mobile) cnuninet (China Unicom)	2001 n/a
Czech Republic	MT-P MO-P	3.00 to 79.00	n/a	n/a	T-Zone (T-Mobile) Eurotel live (Eurotel)	n/a n/a
Denmark	MT-P MO-P	0.50 to 75.00	n/a	n/a	Fly (TDC Mobil) e-go (Sonofon) SurfPort (Telia)	March 2004 October 2003 September 2005
Finland	MT-P MO-P	0.25 to 20.00	MT-P	n/a	Elisa.net (Elisa) SurfPort (Sonera) Oma DNA (DNA Finland) SaunaWAP (Saunalahti)	2000 2005 2003 2005
France	MT-P MO-P	0.00 to 1.50	MMS + P-SMS	0.00 to 1.50	Gallery (all) Orange World (Orange) v-live! (SFR) i-mode (Bouygues)	2003 November 2003 October 2003 November 2002
Germany	MT-P MO-P	0.29 to 4.99	MMS + P-SMS	0.19 to 10.00	t-zones (T-Mobile) v-live! (Vodafone) e-plus unlimited (E-Plus) O2 active (O2)	March 2002 2002 n/a n/a
Greece	MO-P	0.25 to 1.00	n/a	n/a	i-mode (Cosmote) v-live! (Vodafone)	2004 January 2003
Hungary	MO-P	72 to 959	n/a	n/a	t-zones (T-Mobile) PannonW@P djuice (Pannon GSM) v-live! (Vodafone)	September 2000 March 2002 September 2000
India	n/a	2.00 to 99.00	n/a	n/a	Airtel Live (Airtel) R-World (RIM)	July 2004 n/a
Ireland	MT-P MO-P	0.05 to 6.00	MMS + P-SMS	0.20 to 5.00	v-live! Discovery (Vodafone) i-mode (O2)	April 2005 2005 n/a
Italy	MT-P	0.30 to 5.00	n/a	n/a	i-Tim (Tim) v-live! (Vodafone) Mobile wind (Wind) Tre (Tre)	January 2001 November 2002 November 2003 March 2003

	Premium SMS		Premium MMS		Premium Browsing	
	Type of Premium SMS	Range of end-user prices (local currency)	Type of Premium MMS	Range of end-user prices (local currency)	Name (Operator)	Launch date
Luxembourg	MT-P MO-P	0.15 to 3.00	n/a	n/a	WapDoWap (LuxGSM) TangoLive! (Tango) Vox Magic (Vox)	n/a June 2004 n/a
Mexico	MO-P	3.00 to 43.47	n/a	n/a	Ideas Telcel (Telcel) Internet Movil (Movistar) Todo Iusacell (Iusacell) Portal Movil Unefon (Unefon)	2005 2005 2005 2005
Morocco	MO-P	3.00 to 20.00	n/a	n/a	Menara (Maroc Telecom) Imedia (Medi Telecom)	2002 2004
The Netherlands	MT-P MO-P	0.25 to 10.00	n/a	n/a	i-mode (KPN) v-live! (Vodafone) t-zones (T-Mobile) Orange World (Orange) Spot (Telfort)	2002 2002 2003 2003 2005
Norway	MT-P	1.00 to 60.00	MT-P MO-P	4.00 to 60.00	Wap Telenormobil (Telenor) Surfport (Netcom) Go Live (Tele2)	June 2000 2005
Poland	MO-P	0.12 to 30.50	MO-P	0.61 to 30.50	ERA OMNIX (ERA) IDEA'S WORLD (Orange)	November 2002 June 2004
Portugal	MT-P MO-P	0.20 to 4.00	n/a	n/a	I9 (TMN) v-live! (Vodafone Telecel) Optimus Zone (Optimus)	June 2003 November 2002 June 2003
Spain	MT-P MO-P with 1 MT	0.15 to 1.20	n/a	n/a	e-moción (Telefonica) v-live! (Vodafone) Amena (Amena)	June 2003 October 2002 March 2003
Sweden	MT-P MO-P	0.00 to 50.00	MT-P MO-P	3.00 to 50.00	Surfport (Telia) Comviq (Tele2) v-live! (Vodafone) Tre (Tre)	June 2003 December 2003 December 2002 May 2003
Switzerland	MT-P Toll free MO with MT-P	0.25 to 3.00	MT-P (Sunrise)	0.00 to 3.00	v-live! (Swisscom Mobile) sunrise live (Sunrise) Orange World (Orange)	n/a 2003 n/a
UK	MT-P MO-P	0.10 to 5.00	MMS + P-SMS	0.20 to 5.00	Orange World (Orange) v-live! Discovery (Vodafone) t-zones (T-Mobile) i-mode (O2)	October 2003 April 2005 March 2003 2005
USA	MT-P	0.10 to 9.99	n/a	n/a	Media Mall (Cingular) GetItNow! (Verizon) t-zones (T-Mobile)	n/a n/a n/a



Building on solid foundations

Rob Conway,
CEO, GSM Association

The mobile industry has continued to grow at a truly astonishing rate. More than 1.5 billion customers now experience the benefit of GSM-based mobile communications and the industry is growing in both value and prominence. However, in order to maintain that growth and live up to the responsibility that comes with it, we as an industry must ensure that we maximise our potential and do not lead ourselves down blind alleys or put unnecessary hurdles in our path.

The mobile industry is often said to be maturing. Certainly we have a value akin to industries with far longer histories and we most definitely have the customers, yet our ability to communicate the often-complicated foundations of that value and success leaves the industry having to learn many of the same lessons year after year and in every region of the world.

In order to maximise its potential, the mobile industry needs to create a positive environment in which the conditions for growth are encouraged by each and every one of the players. This means ensuring that innovation is targeted at providing services that consumers demand. It means that we develop and deploy systems and services that build on the economies of scale that deliver the interoperability and competitive drivers that underpin GSM and it means that investors should not face unexpected changes that significantly change the rules of engagement for the industry.

Our industry's past development may have been driven more from the labs but its future lies with those that have the strongest links between those labs and the customers in all of the world's markets. Innovation has traditionally been associated with the high-end of developed markets. However, with the introduction of our Emerging Markets Handset programme, the GSMA has helped catalyse an entirely new Ultra-Low Cost segment for mobile handsets. This segment is now attracting a significant amount of attention from major handset and chipset vendors that are looking to apply their innovative skills to pushing down the cost of terminals even further. Indeed, the sub-\$25 handset could be just around the corner.

There is no doubt that the mobile industry has a proud history of innovation but maintaining the access channels for innovators to reach maturing operators is challenging. To increase the profile of some of the best new ideas, the GSM Association announced the introduction of a special Mobile Innovation Award. The Award winner will not only be recognised at the annual GSM Association Awards ceremony to be held during the 3GSM World Congress in Barcelona in February, it will also present its solution in the Congress and receive fast-track access to operators in order to deliver its solution to market.

The continuous launch of innovative products and services to enrich the wireless eco-system and offer imaginative and creative communica-

tion solutions to consumers provides a major contribution to industry growth but it is only the beginning.

Innovation in systems and services need to meet the expectations of our customers. They must meet their expectations in terms of performance, interworking, interoperability and usability. With voice, this was a challenge and one that took the development of the GSM ecosystem to meet it, but with data this challenge is increased exponentially. The solutions that we look to employ must therefore be even better thought out than ever before.

Technology has always developed but today it develops at break-neck speed. This creates confusion as the next three- or four-letter acronym promises ever-greater performance and seemingly casts doubt over the value of the previous new release. The potential for hype is extreme. However, the GSM Association believes that 3GSM has become the technology of choice for operators who wish to deploy 3G services as that technology evolution maximises the benefits to existing and future users and ensures innovation, within a robust and reliable context. This does not mean that other technologies should not be or are not being considered or deployed. It rather reflects the belief that 3GSM with its back and forward compatibility, full mobility and support for roaming, make it a complete mobile system and not just an air interface.

The development of the mobile industry is far

more complicated now than at any time in our short but illustrious history. In order to maximise growth, we must look to ensure that we build on the structures and principles that have driven our success and above all, ensure that our innovation and direction are driven by the demands of the market and our customers.

Global Market Report



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19.37 million subscribers
96.9% penetration rate

Australia

The year 2005 has been a period of further growth in the Australian market, with Premium messaging looking set to strengthen its position still further as Pre-paid users (who make up about 55% of the market) are unable to use Premium Voice/IVR services. Around 75% of new subscribers opted for a pre-paid SIM card, which may be due to the fact that these are available without any credit check.

The Australian market is reaching saturation point, with a mobile penetration rate of just below 97%. The number of mobile users has now overtaken the number of fixed line users.

There are five mobile operators that compete in the Australian market, and several MVNO's. Telstra, with a market share of just over 44%, seems to have been able to stop the fall in market share of previous years and its subscriber numbers remain stable at 8.55 million. Optus saw its market share fall slightly last year to 32.4%, around 6 million subscribers. Vodafone increased its subscriber base to 3.29 million in 2005, ending the year with a market share of 17%. Hutchison 3, the only operator which does not have a GSM network and concentrates instead on CDMA and 3G, doubled its market share to 6.5%, around 1.25 million subscribers.

Telstra has decided to focus on GSM and the evolution path to 3G, aiming to provide equal or better coverage with 3G where current GSM

and CDMA coverage exists. CDMA is expected to cease within 2 years.

New regulations surrounding MTP subscription services are being introduced in Q1 2006.

As in many other markets, 2006 looks set to be the year of the Mobile Internet in Australia, with many off-net portals starting business and WAP API billing expected to be introduced.

Inhabitants	20,000,000
GDP per capita	US\$30,700
Official Language	English
Currency	AUD

Mobile Phone Users	Millions	Penetration Rate %
2004	14.02	83.00%
2005	19.37	96.90%

Data Services

	Telstra	Optus	Vodafone	Hutchison 3	Virgin Mobile
Data ARPU 2005	15%	11%	18%	14%	14%
P TO P SMS					
Average MO retail price					
Prepaid	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25
Postpaid	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25
Premium SMS					
Launch date	2003	2003	2003	2003	2003
Premium Browsing					
Portal name(s)	i-mode	Optus Zoo	v-live!	Planet 3	The Vibe
Launch date	2004	2004	2002	2003	2004
Number of users (in millions)					
2004	0.560	0.400	0.300	n/a	0.250
2005	0.725	1.000	0.340	0.060	0.250

Third Party Data Offers

	Telstra	Optus	Vodafone	Hutchison 3	Virgin Mobile
SMS					
Standard					
MO	yes	yes	yes	yes	yes
MT	yes	yes	yes	yes	yes
Premium					
MO-P	yes	yes	yes	yes	yes
MT-P	yes	yes	yes	yes	yes
Subscription MT-P	yes	yes	yes	yes	yes
MMS					
Standard					
MO	yes	yes	yes	yes	yes
MT	yes	yes	yes	yes	yes
Premium					
MO-P	no	yes	no	no	no
MT-P	no	yes	no	no	no
Subscription MT-P	no	no	no	no	no
Premium Browsing					
Per use/Content	yes	yes	yes	yes	yes
Content Bundle	n/a	yes	n/a	yes	yes
Subscription	yes	yes	yes	yes	yes
Subscription (Automatic Renewal)	yes	no	yes	no	no

Mobile Telecom Operators

	Telstra	Optus	Vodafone	Hutchison 3	Virgin Mobile
General Information					
Corporate Website	www.telstra.com	www.optus.com.au	www.vodafone.com.au	www.hutchison.com.au	www.virginmobile.com.au
Main Shareholders	Australian Government 51%	SingTel 100%	Vodafone 100%	Hutchison Whampoa	SingTel 50% Virgin 50%
End User Market Share (in millions and as %)					
2004	45.50%	35.40%	15.80%	3.10%	2.00%
2005	8.55 (44.10%)	6.28 (32.40%)	3.29 (17.00%)	1.25 (6.5%)	0.6 (3.00%)
Total Turnover (in millions AUD)					
2004	\$20,950	\$9,550	n/a	\$767	n/a
2005	\$22,257	\$9,885	n/a	\$445 (Q1)	n/a
Average monthly ARPU/ end-user (AUD)					
2004	n/a	n/a	\$59.00	n/a	n/a
2005	n/a	n/a	\$50.00	\$61.00	n/a
Network					
GSM Network					
Launch Date	1993	1993	1993	2001	2000
Prepaid Users					
2004	45.00%	67.00%	44.00%	80.00%	80.00%
2005	45.00%	65.00%	47.00%	73.00%	73.00%
GPRS Network					
Launch Date	2000	2002	2001	2001	2000
3G (UMTS) network					
Launch Date	2005 (Focusing on HSDPA)	2005	2005	2003	2006

Mobile Entertainment Services

Most common end-user price (AUD)			
	Min	Average	Max
Logos and images			
Colour	3.00	4.00	6.60
Black and White	3.00	4.00	6.60
Ringtones			
Truetones	4.00	5.00	6.60
Monophonic	3.00	4.00	6.60
Polyphonic	3.00	4.00	6.60
Games			
Colour	5.00	6.60	10.00
Black and White	4.00	4.00	4.00
Video	5.00	6.00	10.00
Quiz / Contest	0.55	2.00	2.00
Chat	2.00	3.00	5.00
Vote	0.55	0.55	0.55
Information Services	0.25	0.55	0.75

8.25 million subscribers
100.5% penetration rate

Austria

Austria is one of the most developed mobile markets in Europe, with more than 8.25 million users in the first half of 2005 and a penetration rate of 100.5%.

There are four main mobile operators in the Austrian market. Mobilkom A1, a subsidiary of Telekom Austria, dominates the market with a share of 40.12%. T-Mobile is the second largest operator in Austria with a market share of 24.85%. In August 2005, T-Mobile acquired Tele.ring (market share 12.12%), in the process creating a serious competitor for Mobilkom A1. One, a subsidiary of the industrial group E.ON, is the fourth operator, with a market share of 18.67%.

Mobilkom A1 was the first operator to launch a GPRS network in Austria. T-Mobile, One and Tele.ring launched their GPRS networks in the first quarter of 2001. Mobilkom A1 launched its UMTS service in September 2002, with T-Mobile and One following suit in December 2003.

B2B services on offer in the Austrian market include standard mobile office and data access services, fleet management and other M2M services.

In the consumer market, customization services such as logos and ringtones are still very successful among Austrian mobile end-users, particularly the young.

Premium SMS, Premium MMS and Premium Browsing services are all available on Austrian operators. Shortcodes (with 3 - 4 digits) are not available, with operators only providing 10-digit codes for Premium SMS.

Inhabitants	8,206,500
GDP per capita	US\$32,962
Official Language	German
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	7.44	92.8%
2005	8.25	100.5%

Data Services

	Mobikkom A1	T-Mobile AT	One	Tele.ring
P TO P SMS				
Average MO retail price				
Prepaid	€0.22	€0.20	n/a	€0.15/0.30
Postpaid	€0.15/0.20	€0.20	€0.20	€0.18
Premium Browsing				
Portal name(s)	v-live!	t-zones	n/a	n/a
Launch date	May 2004	n/a	n/a	n/a

Third Party Data Offers

	Mobikkom A1	T-Mobile AT	One	Tele.ring
SMS				
Standard				
MO	yes	yes	yes	yes
MT	yes	yes	yes	yes
Premium				
MO-P	yes	yes	yes	yes
MT-P	yes	yes	yes	yes
Subscription MT-P	yes	yes	yes	yes
MMS				
Standard				
MO	yes	yes	yes	yes
MT	yes	yes	yes	yes
Premium				
MO-P	no	no	no	no
MT-P	no	yes	no	no
Subscription MT-P	no	yes	no	no
Premium Browsing				
Per use/Content	yes	yes	yes	yes
Content Bundle	n/a	n/a	n/a	n/a
Subscription	yes	yes	yes	yes
Subscription (Automatic Renewal)	yes	yes	yes	yes

Mobile Telecom Operators

	Mobilkom A1	T-Mobile AT	One	Tele.ring
General Information				
Corporate Website	www.a1.net	www.t-mobile.at	www.one.at	www.telering.at
Main Shareholders	Telekom Austria AG	T-Mobile International AG & Co. KG (100%)	E.ON (50.10%) Telenor (17.45%) Orange (17.45%) TDC (15.00%)	T-Mobile AT (100%)
End User Market Share (in millions and as %) 2005 (Q3)	3.31 (40.12%)	2.05 (24.85%)	1.54 (18.67%)	1.00 (12.12%)
Total Turnover (in millions) 2004 2005	€1,678.7 €835.5 (H1)	€883 n/a	€705 n/a	n/a n/a
Average monthly ARPU/ end-user 2004 2005	€39.20 (Q3) €37.70 (Q3)	€36.40 n/a	€38.10 n/a	n/a n/a
Network				
GSM Network				
Launch Date	December 1993	July 1996	October 1998	May 2000
Prepaid Users 2004	49.00%	52.00%	n/a	n/a
GPRS Network				
Launch Date	August 2000	2001	2001	2001
3G (UMTS) network				
Launch Date	September 2002	December 2003	December 2003	n/a

Mobile Entertainment Services

	Average end-user price (€)
Logos and images	
Colour	1.00
Black and White	0.50
Ringtones	
Monophonic	1.00
Polyphonic	2.00
Games	
Colour	5.00
Black and White	3.00
Quiz	0.50
Chat	0.50
Vote	0.50



8.66 million subscribers
82.9% penetration rate

Belgium

There were around 8.6 million mobile end-users in Belgium in 2005, with a penetration rate of more than 82%. Wired fixed lines are on the decrease and around a quarter of Belgian households now own mobile phones but do not have a fixed line.

There are three main mobile operators in Belgium. Belgacom Mobile launched its services under the name Proximus in 1994 and still dominates the Belgian mobile market with a share of about 48%, although this figure has fallen compared to last year. Mobistar has also seen its market share drop slightly, from 33.5% in 2004 to 33.1% in 2005. Base, the third operator, was the only Belgian operator to see its subscriber base grow last year, from 17.1% to 18.3%.

Prepaid users represented around 60% of all Proximus and Mobistar users in 2005. This figure rises to more than 80% for Base.

Proximus was the first Belgian operator to launch its GPRS network, doing so in July 2001. Mobistar and Base followed suit in August 2002 and March 2003 respectively. All three Belgian operators have won a UMTS license, but so far Proximus is the only one to have launched a UMTS offer (for professionals in May 2004 and for the residential market in September 2005).

Mobile data revenue is estimated to have

accounted for around 16% of the total revenue of Belgian operators in 2005.

SMS still drives the mobile market: in 2005, Proximus users sent an average of 47.5 SMS per end user per month, which means nearly 2.4 billion SMS crossed just one network over the whole year.

Belgium was one of the first countries where it was possible to launch a Premium MMS service. The offer is available on two operators, Proximus and Mobistar.

Inhabitants	10,396,421
GDP per capita	US\$29,707
Official Languages	Dutch (Flemish) French German
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	8.47	81.5%
2005	8.66	82.9%

Data Services

	Belgacom Mobile	Mobistar	Base
Data ARPU 2005	17%	15%	15%
P TO P SMS			
Average number of SMS sent per end-user per month			
June 2004	50.9	n/a	n/a
2005	47.5	n/a	n/a
Average MO retail price			
Prepaid / Postpaid	€0.15	€0.15	€0.15
Premium SMS			
Launch date	2001	2001	2002
Premium Browsing			
Portal name(s)	v-live!	Orange World	i-mode
Launch date	June 2004	July 1st 2004	2002

Third Party Data Offers

	Belgacom Mobile	Mobistar	Base
SMS			
Standard			
Toll free MO	yes	yes	yes
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	yes	yes	yes
MMS			
Standard			
MO	yes	yes	no
MT	yes	yes	no
Premium			
MO-P	yes	no	no
MT-P	yes	yes	no
Subscription MT-P	yes	yes	no
Premium Browsing			
Per use/Content	yes	yes	no
Content Bundle	yes	yes	no
Subscription	yes	yes	no
Subscription (Automatic Renewal)	yes	yes	yes

Mobile Telecom Operators

	Belgacom Mobile	Mobistar	Base
General Information			
Corporate Website	www.proximus.be	www.mobistar.be	www.base.be
Main Shareholders	Belgacom (75%) Vodafone (25%)	WSB (50,18%) Telindus Group (4,62%) Treasury Stock (0,02%) Others (45,17%)	KPN Mobile NV (100%)
End User Market Share (%)			
2004	49.40%	33.50%	17.10%
2005	48.60%	33.10%	18.3%
Total Turnover (in millions)			
2004	€2,239	€1,347	€428
2005	€1,085 (end June)	€703.6 (end June)	€399 (ytd)
Average monthly ARPU/ end-user			
2004	€40.90	€36.64 (prepaid €17.86 / postpaid €67.23)	€24
2005	€41.10	€36.87 (prepaid €17.52 / postpaid €62.06)	€24
Network			
GSM Network			
Launch Date	1994	1997	1998
Total Customers (in millions)			
2004	4.20	2.85	1.65
2005	4.21	2.87	1.93
Prepaid Users			
2004	59.00%	65.00%	80.40%
2005	59.00%	60.00%	81.00%
GPRS Network			
Launch Date	July 2001	August 2002	March 2003
3G (UMTS) network			
Launch Date	May 2004	n/a	n/a
Total Numbers of Users			
2005	Network covers 53% of population	n/a	n/a

Mobile Entertainment Services

Most common end-user price (€)			
	Min	Average	Max
Logos and images			
Colour	1.00	1.50	2.00
Black and White	0.50	1.00	1.50
Ringtones			
Truetones	2.50	3.00	4.00
Monophonic	1.00	1.00	2.00
Polyphonic	1.50	2.00	3.00
Games			
Colour	3.00	5.00	5.00
Black and White	2.00	3.00	3.00
Video	2.00	4.00	4.00
Quiz / Contest	n/a	1.00	n/a
Chat	n/a	0.50	n/a
Vote	n/a	0.50	n/a
Information Services	n/a	0.50	n/a

15.58 million subscribers
48.3% penetration rate

Canada

With a national penetration rate of only 50%, the Canadian market represents significant potential for any content provider. There are currently more than 15 million mobile phone users across the country and the number is growing fast. The industry generates more than \$8 billion in revenues each year and has invested more than \$14 billion in Canada's wireless telephone infrastructure.

Following the acquisition of Fido by Rogers Wireless, the market is now dominated by three main operators: Rogers Wireless (with two brands, Rogers Wireless and Fido), Bell Mobility and TELUS Mobility. Additionally, there are a number of carriers that provide service in smaller cities and communities, and MVNO's like Virgin, which offers its services through Bell Mobility's network.

CDMA is the main technology in use in the Canadian market, accounting for about 63% of end-users. Rogers Wireless is the only Canadian operator to offer a GSM/GPRS network.

Rogers Wireless launched its high-speed data offer (EDGE) in 2004 and in May 2005, TELUS Mobility introduced its Multi-Network Data Access (MNDA) solution. Over the coming months, operators are expected to make a move towards more advanced 3G services.

Inhabitants	32,270,000
GDP per capita	US\$41,760
Official Languages	English 59.3% (official) French 23.2% (official) other 17.5%
Currency	Canadian dollar (CAD)

Mobile Phone Users	Millions	Penetration Rate %
2004	14.98	46.9%
2005 (Q2)	15.58	48.3%

Data Services

	Bell Mobility	Rogers Wireless	Telus Mobility
Data ARPU (blended) 2004 (Q2) 2005 (Q2)		5% of total network revenue 7.7% of total network revenue	
P TO P SMS			
Average number of SMS sent per month 2005		115,246,595 (total for all operators)	
Premium SMS			
Launch date	June 2002	June 2002	n/a
P TO P MMS			
Launch date	July 2005	July 2005	July 2005

Third Party Data Offers

	Bell Mobility	Rogers Wireless	Telus Mobility
SMS			
Standard			
Toll free MO	n/a	yes	yes
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	yes	yes	yes
MMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	no	no	no
MT-P	no	no	no
Subscription MT-P	no	no	no

Mobile Telecom Operators

	Bell Mobility	Rogers Wireless	Telus Mobility
General Information	CDMA	GSM-GPRS	CDMA
Corporate Website	www.bce.ca	www.rogers.com	www.telus.com
Main Shareholders	BCE Inc. (80%) SBC Communications Inc. (20%).	AT&T Wireless services (34%) Rogers Communications (56%)	Telus group (100%)
End User Market Share (in millions and as %)			
2004	5.529 (37%)	5.518 (37%)	3.936 (26%)
2005 (Q2)	4.439 (28%)	5.707 (37%)	4.417 (27%)
Total Turnover (in millions CAD)			
2004	9.423	2.783	1.309
2005 (Q2)	4.980	3.314	3.993
Average monthly ARPU/ end-user			
2004 (Q2)	49.72	50.33	59
2005 (Q2)	50	51.46	n/a
Network			
GPRS Network			
Launch Date	2002	2001	n/a
EDGE Network			
Launch Date	n/a	2004	n/a
3G (UMTS) network			
Launch Date	n/a	n/a	2002 (CDMA 2000)
Wi-Fi Network			
Launch Date	2005	2005	2005

Text-messaging is extremely popular. Canadians sent more than 700 million person-to-person text messages in 2004, doubling the previous year's volume of 350 million. According to figures from March 2005, Canadians now send over 115 million text messages per month - more than 3.7 million each day.

Like their counterparts in the United States, Canadian carriers were originally hesitant to allow third parties to deliver and bill for binary messages via Premium SMS, and binary applications (multi-part messages, i.e. content downloadable to mobile phones such as ringtones, images, graphics or games) were generally not allowed. This situation is changing, however, and with content providers and aggregators lobbying hard with all Canadian carriers,

restrictions are starting to be lifted: binary applications may be considered on a case-by-case basis upon project approval by Canadian carriers.

In May 2005, the Canadian Wireless Telecommunications Association (CWTA), in conjunction with all the main national operators, announced the launch of an inter-carrier Wi-Fi service and plans to develop more than 500 new hotspot locations.

Wireless number portability, which will enable customers to transfer phone numbers not only between mobile carriers but also between landlines and wireless services, is planned to be introduced in September 2007.

Mobile Entertainment Services

	Most common end-user price (CAD\$)		
	Min	Average	Max
Logos and images			
Colour	1.00	2.00	3.00
Black and White	1.00	1.50	2.00
Ringtones			
Monophonic	1.00	1.50	2.00
Polyphonic	1.50	2.00	3.00
Games			
Colour	3.00	5.00	5.00
Chat	0.25	0.50	1.00
Vote	0.25	1.00	2.00
Information Services	0.15	0.25	0.25

334.82 million subscribers
25.8% penetration rate

china

China

The mobile penetration rate in China stands at around 25%, with just under 335 million subscribers by the middle of 2005. The rate of new subscriptions has slowed compared to previous years as most urban Chinese are already signed up for mobile services and operators are now having to explore newer markets such as small towns and rural areas.

There are two mobile operators in China, China Mobile and China Unicom, both of which are state-owned. Strong rumours persist of a possible restructuring of the mobile operators in the coming months.

3G has yet to be rolled out in China, but plans are already underway to have a high-speed network in place well in advance of the 2008 Olympics in Beijing.

The Chinese content market is dominated by the presence of massive portals like Tom Online, Hurray, Netease and Sina. These giants are not owned by the mobile operators but are independent, and their markets cover both the Internet and mobile sectors, often grouping together in excess of 200 content providers under a single brand name.

Mobile services are up to ten times cheaper than in Europe, but this is compensated for by the high volumes possible in such a large market, and with the industry still in its infancy, the time to build market share and brand recognition (the

Chinese are real lovers of brands) is now.

Chinese mobile consumers are mostly aged eighteen and above, older than in Europe and North America. Ringtones are popular, but always of Chinese music - the globalisation of content has not yet reached China. Subscription services are far more common than pay-per-download, and adult content is not allowed.

The Ministry of Telecommunications has a major influence on the market, controlling both content and bandwidth. Coupled with the question of language and other cultural issues, this underlines the importance for any foreign firms wishing to enter the Chinese market of having a good local partner.

Inhabitants	1.3 billion
GDP per capita	US\$1,270
Official Language	Mandarin
Currency	RMB

Mobile Phone Users	Millions	Penetration Rate %
2004	334.00	25.9%
2005	334.82	25.8%

Data Services

	China Mobile	China Unicom
% Data ARPU 2005	55.56%	44.44%
P TO P SMS		
Average number of SMS sent per end-user per month		
June 04	20	15
2005	21	16
Average MO retail price (RMB)		
Prepaid	0.15	0.15
Postpaid	0.10	0.10
Premium SMS		
Launch date	June 2002	October 2002
Estimated total cross network Market Value Per Year		
2004		900 million
2005		1 billion
Premium Browsing		
Portal name(s)	Monternet	cnuninet
Launch date	End of 2001	June 24, 2006
Number of users (in millions)		
2004	15	10
2005	20.2	15.8

Third Party Data Offers

	China Mobile	China Unicom
SMS		
Standard		
Toll free MO	yes	yes
MO	yes	no
MT	yes	no
Premium		
MO-P	yes	no
MT-P	yes	no
Subscription MT-P	yes	yes
MMS		
Standard		
MO	yes	no
MT	yes	no
Premium		
Subscription MT-P	yes	no
Premium Browsing		
Per use/Content	yes	yes
Content Bundle	yes	yes

Mobile Telecom Operators

	China Mobile	China Unicom
General Information		
Corporate Website	www.chinamobile.com	www.chinaunicom.com.cn
Main Shareholders	CMCC	China Unicom
End User Market Share (%)		
2004	67%	33%
2005	65%	35%
Total Turnover (in millions RMB)		
2004	192,381	79,300
2005	114,547	43,200
Average monthly ARPU/ end-user (RMB)		
2004	92.00	58.31
2005	90.00	n/a

Mobile Entertainment Services

Most common end-user price (RMB)					
% out of all data services			Min	Average	Max
Logos and images					
Colour	5%	n/a	n/a	n/a	
Black and White		free	1.00	2.00	
Ringtones					
Truetones	5%	n/a	n/a	n/a	
Monophonic		n/a	n/a	n/a	
Polyphonic		free	1.00	2.00	
Games					
Black and White	65%	0.50	2.00	2.00	
Video	0%	free	2.00	2.00	
Quiz	2%	0.50	2.00	2.00	
Chat	5%	0.10	0.10	5.00	
Vote	2%	0.10	0.10	15.00	
Information Services	16%	0.10	0.20	20.00	



11.01 million subscribers
107.5% penetration rate

Czech Republic

There were more than 11 million mobile subscribers in the Czech Republic in the first half of 2005. The penetration rate is 107.5%, with most end-users using prepaid cards. Overall, the Czech Republic is the third largest mobile market in Eastern Europe.

There are three mobile operators in the Czech Republic. Eurotel Praha remains the leading operator, with 41.33% of the market (4.55 million subscribers), but is losing ground to T-Mobile, which now has 40.15% (4.42 million subscribers). This was partly due to Eurotel changing the way it calculates its number of subscribers - previously, all SIM cards that had made a phone call in the last 18 months were counted as active, but this range has now been reduced to 13 months. Oskar, the third operator, has 2.04 million subscribers and a market share of 18.53%.

Eurotel Praha was the first operator to launch GPRS services in October 2000, followed by T-Mobile in August 2001 and Oskar at the end of 2001. T-Mobile is planning to launch a UMTS service in early 2006.

In addition to standard mobile office services, customers in the Czech Republic can also use their mobile phones for m-banking and m-payment, as well as fleet management and faster mobile data access. T-Mobile also offers WLAN access via its range of hotspots.

Inhabitants	10,241,138
GDP per capita	US\$16,800
Official Language	Czech
Currency	Czech Koruna (CZK)

	Millions	Penetration Rate %
Mobile Phone Users		
2004	10.15	99.10%
2005	11.01	107.50%
Estimated WiFi Users		
2005	0.25	

Third Party Data Offers

	Eurotel Praha	T-Mobile	Oskar
SMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	yes	yes	yes
MMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	no	no	no
MT-P	no	no	no
Subscription MT-P	no	no	no
Premium Browsing			
Per use/Content	yes (operator portal)	yes (operator portal)	yes (operator portal)
Subscription	no	no	no
Subscription (Automatic Renewal)	no	no	no

Mobile Telecom Operators

	Eurotel Praha	T-Mobile	Oskar
General Information			
Corporate Website	www.eurotel.cz	www.t-mobile.cz	www.oskarmobil.cz
Main Shareholders	Cesky Telecom (100%)	Cmobil B.V (60.77%) CeskéRadiokomunikace as (39.23%)	Vodafone group (100%)
End User Market Share (in millions and as %)			
2004	4.30 (42.10%)	4.00 (39.40%)	1.85 (18.20%)
2005	4.55 (41.33%)	4.42 (40.15%)	2.04 (18.53%)
Total Turnover (in millions)			
2004	n/a	n/a	€463.239
2005	€767.444	n/a	n/a
Average monthly ARPU/ end-user			
2004	CZK 527	n/a	n/a
2005	CZK 508	n/a	n/a
Network			
GSM Network			
Launch Date	July 1996	1996	2000
Prepaid Users (in millions)			
2005	2.76 (Sept 2005)	n/a	n/a
GPRS Network			
Launch Date	October 2000	August 2001	End of 2001
3G (UMTS) network			
Launch Date	December 2005	Planned by 2007 TDD-UMTS in November 2005	March 2006
Total Number of Users			
2005	1000	n/a	n/a
WiFi Network			
Launch Date	2002	n/a	n/a
Total Numbers of HotSpots			
2005	132 + 59 Cesky Telecom (owner of Eurotel)	92	0

In the consumer market, customization services are still proving a great success among Czech end-users, especially the young.

Premium SMS is available on all operators, and Premium Browsing is available with T-Mobile (T-Zones) and Eurotel (Eurotel live!).

Mobile Entertainment Services

	Average end-user price (CZK)
Logos and images	
Colour	50
Black and White	30
Ringtones	
Truetones	79
Monophonic	30
Polyphonic	50
Games	
Colour	79
Black and White	50
Video	50
Quiz	10
Chat	10
Vote	10
Information Services	10

5.21 million subscribers
96.2% penetration rate

Denmark

Denmark has one of the most fragmented operator markets in Europe with more than six operators. The three largest operators in Denmark account for more than 73% of the market between them.

TDC Mobil leads the market with a share of around 41.5% (this includes the market share for the TDC-owned MVNO Telmore, 10.3%). Sonofon, a subsidiary of the Norwegian mobile operator Telenor, is in second place with 29.2% (including the two Sonofon-owned MVNOs Debitel and CBB Mobil, who together have a market share of 9.1%). In October 2004 Telia (which is owned by TeliaSonera) concluded a deal with France Telecom and bought Orange Denmark. This has made Telia the third largest operator in the Danish market, with a market share of 21.4%. Other operators include 3, with a market share of 1%, and several Danish MVNOs, who together make up about 2.6% of the market.

The penetration rate in Denmark reached 96.2% in the first half of 2005, with 5.21 million mobile users. Four Danish operators obtained UMTS network licenses in September 2001: TDC Mobil, Telia, Orange and HI3G Denmark. HI3G Denmark launched their UMTS service under the brand name 3 in October 2003. In November 2005 TDC launched their UMTS service. Sonofon bought the third and

Inhabitants	5,415,978
GDP per capita	US\$40,488
Official Language	Danish
Currency	DKK

Mobile Phone Users	Millions	Penetration Rate %
2004	5.02	92.9%
2005 (1H)	5.21	96.2%

Data Services

	TDC Mobil	Sonofon	Telia
P TO P SMS			
Average number of SMS sent per end-user per month			
2004 (2H)	71.5	93.9	443
2005 (1H)	83.3	107.5	256.7
Average MO retail price			
Prepaid	DKK 0.25	DKK 0.20	DKK 0.20
Premium SMS			
Launch date	2001	2001	2001
Premium Browsing			
Portal name(s)	Fly	e-go	SurfPort
Launch date	March 2004	October 2003	September 2005

Third Party Data Offers

	TDC Mobil	Sonofon	Telia
SMS			
Standard			
Toll free MO	no	no	no
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	yes	yes	yes
MMS			
Standard			
MO	yes	yes	no
MT	yes	yes	no
Premium			
MO-P	no	yes	yes
MT-P	no	yes	yes
Subscription MT-P	no	yes	yes
Premium Browsing			
Per use/Content	yes*	yes	yes
Content Bundle	yes*	yes	yes
Subscription	yes*	yes	yes

*with MSISDN Forwarding

Mobile Telecom Operators

	TDC Mobil	Sonofon	Telia
General Information			
Corporate Website	www.tdc.dk	www.sonofon.dk	www.telia.dk
Main Shareholders	TDC (100%)	Telenor (100%)	TeliaSonera (100%)
End User Market Share (in millions and as %)			
2004	2.42 (42.1%)	1.25 (24.9%)	0.47 (9.4%)
2005 (1H)	2.43 (41.5%)	1.25 (24%)	1.15 (21.4%)
Total Turnover (in millions DKK)			
2004	8,765	3,621	4,389
2005	6,171 (3Q)	3,566 (1Q-3Q)	4,089 (1Q-3Q)
Average monthly ARPU/ end-user			
2004	180 (3Q)	227	210 (3Q)
2005	194 (3Q)	242 (3Q)	202 (1Q-3Q)

final 3G license in Denmark in December 2005. In the first half of 2005, GPRS and UMTS traffic in Denmark reached around 69,515,57 MB.

Danish end-users exchanged on average 121.6 SMS messages per month in the first half of 2005. The number of MMS sent in Denmark exploded in 2004: From about 500,000 messages, the market reached more than 12 million in 2005. Telia gathered 43.5% of the market whereas they only have a market share of 21.4%.

Premium SMS was introduced in August 2001. In 2002, operators extended the range of tariffs available to up to 30 DKK. TV tie-in

services (such as voting and competitions), ringtones and logos are the most popular Premium SMS services among Danish end-users.

Premium SMS short codes in Denmark are among the most expensive in Europe. As a result, most service providers share one number for many applications and introduce keywords to differentiate them.

Mobile Entertainment Services

Most common end-user price (DKK)			
	Min	Average	Max
Logos and images			
Colour	8	14	20
Black and White	5	10	10
Ringtones			
Truetones	15	25	30
Monophonic	8	9	10
Polyphonic	10	15	20
Games			
Colour	20	35	50
Black and White	30	30	30
Video	20	20	25
Quiz	4	6	10
Chat	3	3	3
Vote	3	6.5	10
Information Services	1	5	10

5.20 million subscribers
99.3% penetration rate

Finland

The number of mobile subscribers in Finland grew in 2005 to reach over 5.2 million mobile users, resulting in a penetration rate of 99.3%.

More than 2.1 billion SMS messages were sent in Finland in 2004, with an average of 38 messages per subscription being sent each month (an increase of 500 million a year). Peer-to-peer messaging represents the bulk of SMS traffic.

Finland was one of the first countries where Premium SMS services were launched. Finland leads Europe in Premium SMS use, in a wide variety of consumer and public services that include purchasing mobile content, products from vending machines, metro tickets and cinema tickets, and even paying car park fees.

TeliaSonera and Elisa have both launched their UMTS networks, deploying the network in the fourth quarter of 2002 and launching commercial offers in late autumn 2004. DNA launched its UMTS network at the end of 2005. Finland was the second European country to have a fully functional 3G network hosted by the largest operators.

There is fierce competition between mobile operators in Finland. Since the availability of number portability (July 2003), end-users have been able to switch from one operator to another while keeping the same number. During 2004 1.2 million mobile telephone subscribers

Inhabitants	5,236,000
GDP per capita	US\$24,357
Official Language	Finnish
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	4.80	92%
2005	5.20	99.3%

Data Services

	Elisa	Sonera	DNA Finland	Saunalahti
P TO P SMS				
Average MO retail price				
Prepaid	€0.15	€0.11	€0.06	€0.10
Postpaid	€0.069	€0.069	€0.069	€0.069
Premium Browsing				
Portal name(s)	Elisa.net	SurfPort	Oma DNA	SaunaWAP
Launch date	n/a	2005	n/a	2005

Third Party Data Offers

	Elisa	Sonera	DNA Finland	Saunalahti
SMS				
Standard				
Toll free MO	yes	yes	yes	yes
MO	yes	yes	yes	yes
MT	yes	yes	yes	yes
Premium				
MO-P	yes	yes	yes	yes
MT-P	yes	no	yes	yes
Subscription MT-P	yes	yes	yes	yes
MMS				
Standard				
MO	yes	yes	yes	yes
MT	yes	yes	yes	yes
Premium				
MO-P	yes	yes	yes	yes
MT-P	yes	yes	yes	yes
Subscription MT-P	yes	yes	yes	yes
Premium Browsing				
Per use/Content	yes	yes	yes	yes
Content Bundle	yes	yes	yes	yes
Subscription	yes	yes	yes	yes

Mobile Telecom Operators

	Elisa	Sonera	DNA Finland	Saunalahti
General Information				
Corporate Website	www.elisa.fi	www.teliasonera.fi	www.dnafinland.fi	www.saunalahti.fi
Main Shareholders	Elisa Communication (100%)	Swedish state (45.3%) Finnish state (19.1%)	Finnet AB	Elisa Communication (100%)
End User Market Share (in millions and as %)				
2004	1.38 (28.8%)	2.27 (47.2%)	0.631 (13.3%)	0.371 (8.0%)
2005	1.48 (25.4%) (Q3)	2.46 (42.3%)	0.755 (12.9%)	0.484 (9.2%)
Total Turnover (in millions)				
2004	€1,356	€1,901	€1,001	€161
2005	€994 (Q1-Q3)	€1,281 (Q1-Q3)	n/a	€162 (Q1-Q3)
Average monthly ARPU/ end-user				
2004	€37.8	€38.3	~€39	€33.3 (MVNO)
2005	€31.2 (Q3)	€30.6 (Q1-Q3)	~€36	€32.5 (Q3)
Network				
GSM Network				
Launch Date	July 1991	1992	2001	MVNO
GPRS Network				
Launch Date	n/a	2000	n/a	MVNO
3G (UMTS) network				
Launch Date	2004	February 2004	October 2004	March 2003
WiFi Network				
Launch Date	none	none	2004	none

ported their mobile number between operators in this way.

TeliaSonera still dominates the market with a market share of more than 42%. This is in large part thanks to TeliaSonera's successful launch of a new "low cost operator" - Tele Finland. In response, Elisa launched Kolombus and has only seen a slight drop in its market share, from 28.8 to 25.4%. Over the same period, Elisa increased their total number of customers from 1.383 million in 2004 to 1.481 million by the third quarter of 2005.

More than ten service operators compete in the Finnish market, with the largest being DNA followed by Saunalahti. Along with the two main operators (Elisa and TeliaSonera), DNA Finland recorded an increase in customers from 631,000 in 2004 to 755,000 in 2005. Saunalahti also increased their market share

from 8% to 9.2% in 2005.

At the end of 2005, the authorities approved the acquisition of Saunalahti Group by Elisa. Swedish-based alternative operator Tele2 withdrew from the Finnish market in 2005.

Mobile Entertainment Services

	Most common end-user price (€)	
	Min	Max
Logos and images		
Colour	0.95	3.00
Black and White	0.85	0.95
Ringtones		
Truetones	1.9	3.00
Monophonic	0.95	0.95
Polyphonic	0.95	1.20
Games		
Colour	3.00	6.00
Black and White	4.00	4.00
Quiz	0.85	0.95
Chat	0.84	0.95
Vote	0.66	1.20
Information Services	0.65	1.20

46.10 million subscribers
76.4% penetration rate

France

With more than 46 million subscribers, France is one of the largest mobile markets in Europe. The mobile penetration rate reached 76.4% in 2005.

There are three mobile operators in France. Orange, a subsidiary of France Telecom, dominates the market with a share of 47.3% and 21.5 million subscribers in June 2005. SFR, a subsidiary of Vivendi Universal (Cegetel), has 35.8% of the market with 16.3 million subscribers. Bouygues Telecom, a subsidiary of the French industrial group Bouygues, currently has 7.7 million subscribers. Additionally, there are nine MVNOs that operate in France.

According to ART Telecom, there were more than 16.89 million (37.2%) French prepaid users in June 2005.

SFR launched the first UMTS offer in France in June 2004. Orange launched its 3G service to the general public in December 2004. Bouygues launched a high-speed data offer via EDGE in 2005, which had attracted 20,000 subscribers by September 2005. All three operators launched their GPRS networks in 2002.

In the second quarter of 2005, French mobile users sent more than 3.1 billion SMS messages, an average of 24.1 SMS per end user per month and an increase of 31.3 % compared to the same quarter in 2004. In addition to the services offered by the mobile operators,

Inhabitants	59,760,000
GDP per capita	US\$29,320
Official Language	French
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	42.87	71.1%
2005	46.10	76.4%

Data Services

	Orange	SFR	Bouygues
P TO P SMS			
Average number of SMS sent per end-user per month			
June 2004			
2005	18 22.8	21.7 26.5	19.7 22.6
Average MO retail price			
Prepaid / Postpaid		€0.13 (for all operators)	
Premium SMS			
Launch date	June 2002	June 2002	June 2002
Estimated total cross network Market Value Per Year in Millions			
2004		135	
2005		134 (Q3)	
Premium Browsing			
Portal name(s)	Orange World Gallery	v-live! Gallery	i-mode Gallery
Launch date	World: Nov. 2003 Gallery: June 2003	v-live!: Oct. 2003 Gallery: Sept. 2003	i-mode: Nov. 2002 Gallery: Oct. 2003
Number of users 2005 (in millions)	World : 4.7 Gallery : 4.9	v-live! : 3.19 Gallery : 3.7	i-mode : 1.23 Gallery : 1.8

Third Party Data Offers

	Orange	SFR	Bouygues
SMS			
Standard			
Toll free MO	no	no	no
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	no	no	no
Subscription MT-P	yes	yes	yes
MMS			
Standard			
MO	no	no	no
MT	pilot	yes	pilot
Premium			
MO-P	pilot	n/a	pilot
MT-P	no	no	no
Subscription MT-P	no	no	no
Premium Browsing			
Per use/Content	yes	yes	yes
Content Bundle	yes	yes	yes
Subscription	yes	yes	yes
Subscription (Automatic Renewal)	yes	no	no

Mobile Telecom Operators

	Orange	SFR	Bouygues
General Information			
Corporate Website	www.orange.fr	www.sfr.fr	www.bouyguetelecom.fr
Main Shareholders	France Telecom	Vivendi universal (56%), Vodafone (44%)	Bouygues (83%) JCDecaux, BNP Paribas
End User Market Share (in millions and as %)			
2004	20.4 (48.3%)	14.9 (35.4%)	6.9 (16.3%)
2005	21.5 (47.3%)	16.3 (35.8%)	7.7(16.9%)
Total Turnover (in millions)			
2004	€4,139	n/a	€1,759
2005 (Q2)	€4,700	€4,239	€2,193
Average monthly ARPU/ end-user			
2004	€32.30	€35.75	€38.40
2005	€35.75	€36.08	n/a
Network			
GSM Network			
Launch Date	1992	1992	1996
Prepaid Users			
2004	40.30%	40.50%	34.70%
2005	38.40%	37.70%	32.30%
GPRS Network			
Launch Date	May 2002	July 2002	Sept 2002
EDGE network			
Launch Date	n/a	2005	2005
Total Numbers of Users			
2005	n/a	n/a	20,000 (Sept)
3G (UMTS) Network			
Launch Date	2004	2004	2005
Total Numbers of Users			
2005	570,000 (Nov)	400,000 (Sept)	n/a
WiFi Network			
Total Numbers of HotSpots			
2005	4300	n/a	n/a

France Telecom also launched a fixed-line SMS service in May 2003, for which the MO retail price is €0.15.

In October 2003, the Gallery portal became the first browsing service to be available on all three operators. Since then, this portal has recorded significant growth. According to Gallery, there are currently 10.4 million active users of multimedia services across all operators (out of a potential audience of 20 million).

Bouygues Telecom launched its i-mode portal in November 2002 and had reached 1.23 million subscribers by the end of July 2005. In October 2003, SFR launched the v-live! service in France, in partnership with Vodafone. SFR announced 3.19 million v-live! subscribers by the end of Q3 2005. In November 2003 Orange launched its own WAP portal Orange World, which had about 4.7 million active

users in April 2005.

The most common use of mobile data services in France is for customisation, with 50% of mobile data traffic being generated by the download of logos and ringtones.

Premium SMS services were first launched in France in June 2002 and were fully available by September the same year.

In Q3 2005 more than 92 million Premium SMS messages were sent, up 49% on the previous year. The sales turnover of Premium SMS recorded in Q2 2005 rose to more than €46 million (VAT excluded, and not counting the cost of sending the SMS), which represents an increase of 33% compared to Q3 2004.

According to figures from Q2 2005, a total of 737 Premium shortcodes had been reserved in France and 461 Premium services were currently active.

Mobile Entertainment Services

% of total data services		Most common end-user price (€)		
		Min	Average	Max
Logos and images				
Colour	18%	2.00	2.50	3.00
Black and White		2.00	2.50	3.00
Ringtones				
Truetones	22%	2.00	2.50	3.00
Monophonic		2.00	2.50	3.00
Polyphonic		2.00	2.50	3.00
Games	4%	3.00	4.00	7.00
Video	5%	2.00	3.00	4.00
Quiz / Contest	10%	0.05	0.35	0.50
Chat	24%	0.05	0.35	0.35
Vote	12%	0.05	0.35	0.50
Information Services	5%	0.05	0.35	0.50

74 million subscribers
89.7% penetration rate

Germany

With more than 74 million mobile subscribers, Germany is the largest mobile market in Western Europe. The mobile penetration rate rose considerably over the last year to reach nearly 89.7% in 2005.

There are four main mobile operators in Germany. The two largest are T-Mobile, a subsidiary of Deutsche Telekom, and Vodafone. Both companies saw a slight fall in their market share over the last year, to 38.1% and 37.4%, while E-Plus and O2 rose to 13.2% and 12.1% respectively.

MVNOs like Debitel and Mobilcom also have an important share of the market, representing around 15 million end users in total. It has been estimated that up to 30% of new T-Mobile and Vodafone customers sign up through one of these service providers.

All four main German operators have launched commercial GPRS offers, and T-Mobile, Vodafone and E-Plus have all launched 3G UMTS networks as well. Additionally, T-Mobile is planning to launch an HSDPA network in 2006.

Data services today generate around 21% of operator revenues (15% from messaging, 6% from other data). Studies predict that these figures will rise to 35% for messaging and 17% for other data by 2010.

The most successful mobile data services in Germany are logos and ringtones. It is estimated that these customisation services represent about 50% of total data SMS services. Games are also popular and account for 20% of total data SMS services.

Inhabitants	82,500,000
GDP per capita	US\$29,328
Official Language	German
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	67.6 (H1)	81.7%
2005	74	89.7%

Data Services

	T-Mobile	Vodafone	E-Plus	O2	Debitel	Mobilcom
Data ARPU 2005	21%					
P TO P SMS						
Average number of SMS sent per end-user per month 2004	31.5*					
Average MO retail price						
Prepaid	€0.19	€0.19	€0.20	€0.19	€0.19	€0.19
Postpaid	€0.19	€0.19	€0.20	€0.19	€0.19	€0.19
Premium SMS						
Estimated total cross network Market Value Per Year in Millions 2004	€2 Billion					
Premium Browsing						
Portal name(s)	t-zones	v-live!	e-plus unlimited	O2 active	no portal	no portal
Launch date	March 2002	2002	n/a	n/a	n/a	n/a

Third Party Data Offers

	T-Mobile	Vodafone	E-Plus	O2	Debitel	Mobilcom
SMS						
Standard MO	yes	yes	yes	yes	yes	yes
MT	yes	yes	yes	yes	yes	yes
Premium MO-P	yes	yes	yes	yes	yes	yes
MT-P	yes	yes	yes	yes	yes	no
Subscription MT-P	yes	yes	yes	yes	yes	no
MMS						
Standard MO	yes	yes	yes	yes	yes	yes
MT	yes	yes	yes	yes	yes	yes
Premium MO-P	yes	yes	yes	yes	yes	yes
MT-P	yes	yes	yes	yes	yes	yes
Subscription MT-P	yes	yes	yes	yes	yes	yes
Premium Browsing						
Per use/Content	yes	yes	yes	yes	n/a	n/a
Content Bundle	n/a	n/a	n/a	n/a	n/a	n/a
Subscription	yes	yes	yes	yes	n/a	n/a
Subscription (Automatic Renewal)	yes	yes	yes	yes	n/a	n/a

Mobile Telecom Operators

	T-Mobile	Vodafone	E-Plus	O2	Debitel	Mobilcom
General Information						
Corporate Website	www.t-mobile.de	www.vodafone.de	www.eplus.de	www.o2online.de www.o2.com/de	www.debitel.de	www.mobilcom.de
Main Shareholders	Deutsche Telekom	Vodafone (99.8%)	KPN (77.5%)	o2 plc (100%)	independent (debitel AG)	Telfort Beheer BV 100%
End User Market Share (in millions and as %)						
2004	40.8%	37.7%	12.9%	9.3%	8.30 (MVNO)	(MVNO)
June 2005	28.2 (38.1%)	27.7 (37.4%)	10.1 (13.2%)	8.94 (12.1%)	n/a	4.65
Total Turnover (in millions)						
2004	€8,700	€7,800 (2003/04)*	€2,751	€2,740	€1,407 (H1)	€1,412 (Q1-Q3)
2005	€4,200 (H1)	€8,300 (2004/05)*	n/a	€1,548 (H1) **	n/a	€1,490 (Q1-Q3)
Average monthly ARPU/ end-user						
2004	€23.00	€25.70	€22.00	€37.10	€28.30	n/a
2005	€24.80	€24.40	€21.00	€34.90	n/a	€35.00

* from 1 April to 31 March

** H1 corresponds to Q2 and Q3 (because business year starts on April 1st)

Mobile Entertainment Services

% of total data services		Most common end-user price (€)	
		Average	Max
Logos and images			
Colour	15%	1.99	4.99
Black and White		1.49	4.99
Ringtones			
Truetones	35%	-	4.99
Monophonic		1.99	4.99
Polyphonic		2.49	4.99
Games			
Colour	20%	3.99	4.99
Black and White		2.99	4.99
Video	30%	-	4.99
Quiz / Contest		0.49	4.99
Chat		1.99	4.99
Vote		0.49	4.99
Information Services		subscription	4.99

11.6 million subscribers
105.8% penetration rate

Greece

With more than 11.66 million mobile users and a penetration rate of 105.8% in June 2005, the Greek market is one of the most active in Europe. Recent estimates put the total value of the telecommunications market in Greece at around €4.5 billion. Greeks also update their handsets more than three times more regularly than the European average.

There are four main operators in Greece. Cosmote and Vodafone dominate the Greek market with a market share of 37.56% (4.38 million users) and 35.76% (4.17 million users) respectively. TIM Hellas, formerly known as Stet Hellas Telecommunications, is the third largest operator with about 19.38% of the market (2.26 million users). Q-Telecom is a virtual mobile operator using the Vodafone network. With 850,000 users and a market share of 7.3%, it has shown significant growth since its launch in 2002.

There are around 7 million prepaid users in Greece, representing over 60% of the total number of end-users.

Tim Hellas was the first operator to launch its GPRS Network in July 2001, with Vodafone and Cosmote following suit in March 2003. The main operators all launched their UMTS offers in 2004: TIM in February, Cosmote in May and Vodafone in November.

In November 2003, Cosmote signed a part-

Inhabitants	11,018,000
GDP per capita	US\$22,000
Official Language	Greek
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	10.3	92.80%
2005	11.6	105.8%

Third Party Data Offers

	Cosmote	Vodafone	TIM Hellas
SMS			
Standard			
Toll free MO	no	no	no
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	no	no	no
Subscription MT-P	no	no	no

Mobile Telecom Operators

	Cosmote	Vodafone	TIM Hellas	Q-Telecom
General Information				
Corporate Website	www.cosmote.gr	www.vodafone.gr	www.tim.com.gr	www.qtelecom.gr
Main Shareholders	OTE (64.37%) Free Float (35.63%)	Vodafone group (99.8 %)	Troy GAC Telecommunications S.A. (80.87%) Free Float (19.13%)	Private
End User Market Share (in millions and as %)				
2004	4.12 (40.90%)	2.47 (28.91%)	2.23 (22.2%)	0.51 (5.1%)
2005	4.38 (37.56%)	4.17 (35.76%)	2.26 (19.38%)	0.85 (7.3%)
Total Turnover (in millions)				
2004	n/a	n/a	€408.4 (2Q04)	€105.6 (3Q04)
2005	€1,138.6 (3Q05)	n/a	€394.7 (2Q05)	n/a
Average monthly ARPU/ end-user				
2004	€32.10	n/a	n/a	€15.00
2005	€30.10	n/a	€14.60	n/a
Network				
GSM Network				
Launch Date	January 1998	July 1993	1992	June 2002
Prepaid Users				
2004	2,700,000	1,940,000	1,600,000	n/a
2005	2,719,980 (3Q05)	2,637,360	1,545,158 (2Q05)	n/a
Total Numbers of Users				
2004	4,120,000	3,170,000	2,230,000	510,000
2005	4,380,000	4,160,000	2,257,312 (2Q05)	n/a
GPRS Network				
Launch Date	March 2003	March 2003	July 2001	n/a
3G (UMTS) network				
Launch Date	May 2004	August 2004	July 2001	n/a

nership agreement with NTTDoCoMo and, just before the Olympic Games in June 2004, launched its i-mode service. One year later, Cosmote announced that 80% of a total of around 170,000 i-mode customers were post-paid subscribers, and that i-mode users made more use of data services than other customers (up to 50% more).

Cosmote and Vodafone both offer WLAN access and mobile Internet services (including via data cards), and fleet management. TIM also offers mobile Internet, over GPRS, and Q-Telecom offers a range of what they call "broad-band wireless business" packages.

The mobile data market remains quite dynamic, with customisation services such as logos and ringtones among the most popular consumer services in Greece.

Mobile Entertainment Services

Average end-user price (€)	
Logos and images	
Colour	2.00
Black and White	2.00
Ringtones	
Monophonic	2.00
Polyphonic	2.50
Games	
Colour	5.00
Black and White	2.50



9.1 million subscribers
96.9% penetration rate

Hungary

With more than 9 million subscribers at the end of Q3 2005, Hungary has recorded yet another dynamic year in which the penetration rate has risen to just over 90%.

There are three operators in the Hungarian mobile market. T-Mobile (formerly known as Westel) dominates the market with 4.1 million subscribers (a share of 45.05% in June 2005). Pannon GSM is the second largest operator with 3.07 million subscribers (33.74% of the market in June 2005), and Vodafone occupies the third position with 1.93 million subscribers (21.21% in June 2005).

T-Mobile started carrying out the first customer tests of its 3G network in Hungary in 2005, initially in Budapest, and launched the service to the public in August. Pannon GSM launched its 3G network in October 2005, and Vodafone launched its 3G service in December 2005. A fourth licence was also put up for auction but was not sold because no bids were received for it.

GPRS is available across all networks (in March 2004 there were 336,000 GPRS users in Hungary, representing a 96% growth compared to Q4 2003), and the first public EDGE call by a mobile operator in Europe was made by Pannon GSM's chief technology officer Jozsef Huszlicska back in May 2003. Pannon also began testing HSDPA services in

November 2005.

All operators offer a range of B2B services, such as mobile internet (including data cards), access via WLAN from dedicated hotspots, and fleet management and tracking services.

The Hungarian mobile data market is more developed than that of neighbouring countries. Customization services have proved very successful among Hungarian mobile users and there are many service providers. T-Mobile, then called Westel, was the first operator to launch Premium SMS in 2000.

Inhabitants	10,006,835
GDP per capita	US\$14,900
Official Language	Hungarian
Currency	HUF

Mobile Phone Users	Millions	Penetration Rate %
2004	8.297	87.00%
2005	9.103	90.30%

Data Services

	T-Mobile	Pannon GSM	Vodafone
Premium SMS			
Launch date	June 2005	2002	June 2005
Premium Browsing			
Portal name(s)	T-zones	PannonW@P djuice	v-live!
Launch date	September 2000	March 2002	September 2000

Third Party Data Offers

	T-Mobile	Pannon GSM	Vodafone
SMS			
Standard			
Toll free MO	no	no	no
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	from Q1 2006
Subscription MT-P	yes	yes	from Q1 2006
MMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	no	no	no
MT-P	no	no	no
Subscription MT-P	no	no	no
Premium Browsing			
Per use/Content	yes (on portal only)	yes (on portal only)	yes (on portal only)
Content Bundle	no	no	no
Subscription	no	no	no
Subscription (Automatic Renewal)	no	no	no

Mobile Telecom Operators

	T-Mobile	Pannon GSM	Vodafone
General Information			
Corporate Website	www.t-mobile.hu	www.pgsm.hu	www.vodafone.hu
Main Shareholders	Matav (100%)	Telenor Mobile Communications (100%)	Vodafone Group (100%)
End User Market Share (in millions and as %)			
2004	3.91 (47.68%)	2.80 (34.19%)	1.49 (18.13%)
2005	4.1 (45.05%)	3.07 (33.74%)	1.93 (21.19%)
Total Turnover (in millions HUF)			
2004	126.887	86.058	n/a
Average monthly ARPU/ end-user (in thousands HUF)			
2004	4.94	5.2	5.1
2005	4.80	5.0	
Network			
GSM Network			
Launch Date	1994	1994	1999
Prepaid Users (in millions)			
2004	2.86	1.99	1.17
2005 (H1)	2.86	~ 70.00% of Total	
GPRS Network			
Launch Date	March 2001	June 2001	July 2002
3G (UMTS) network			
Launch Date	August 2005	October 2005	December 2005
WiFi Network			
Total Numbers of HotSpots			
2004	28	0	0
2005		671 (for all operators)	

Mobile Entertainment Services

Most common end-user price (HUF)			
	Min	Average	Max
Logos and images			
Colour	475	500	999
Ringtones			
Truetones	999	999	999
Monophonic	475	500	500
Polyphonic	475	500	999
Games			
Colour	500	999	999
Black and White	500	999	999
Video	999	999	999
Chat	18	95	300
Vote	60	95	200
Information Services	20	60	400

69.95 million subscribers
6.24% penetration rate

India

India

In October 2005, India had a total of 67,950,000 mobile subscribers, or a penetration rate of 6.24%. Since analysts do not expect ARPU - which currently stands between 208 and 487 INR per month (approximately €3.70-€8.60) - to grow much in the future, both operators and service providers alike expect to make their margins with high volumes. Subscriber numbers look set to rise considerably to around 150 million by 2008.

In India, mobile operators work on a state-by-state level. There are no truly national operators, although most of the major players are present in several states.

The largest operator in India is Airtel, with 14.74 million subscribers and a market share of 21.69%. Its closest competitors are BSNL, RIM and Hutch, with 12.51 million (18.41%), 11.81 million (17.38%) and 10.16 million subscribers (14.95%) respectively. Other large operators include IDEA, which has 6.06 million subscribers (8.92%), Spice (1.52 million subscribers, 2.24%) and MTNL (1.37 million subscribers, 2.02%).

GPRS is available with all the major operators in India, with the exception of RIM, and Airtel and Hutch have also launched EDGE networks.

Mobile Internet usage is still low, with less than 2% of subscribers in the major cities (Delhi, Bombay and Bangalore, and even fewer in

Chennai and Kolkata) making use of these services. SMS-based services form the mainstay of interactive services in India, with polyphonic ringtones and logos among the most popular.

Inhabitants	1,080,264,388
GDP per capita	US\$3600
Official Language	Hindi
Currency	Rs. (INR)

Mobile Phone Users	Millions	Penetration Rate %
2004	37	3.0%
2005	67.95	6.24%

Mobile Telecom Operators

	Airtel	BSNL	RIM	Hutch	IDEA	Spice	MTNL
General Information							
Corporate Website	www.airtel-world.com	www.bsnl.co.in	www.relianceinfo.com	www.hutch.co.in	www.ideacellular.com	www.spiceindia.com	www.mtnl.net.in
Main Shareholders	Bharti Tele-Ventures, Singapore Telecommunications and Vodafone	State-owned	Reliance Industries Limited	Hutchison Whampoa	Birla (Tata Group)	Spicecorp and DISTACOM	State-owned
End User Market Share (in millions and as %) 2005	14.74 (21.69%)	12.51 (18.41%)	11.81 (17.38%)	10.16 (14.95%)	6.06 (8.92%)	1.52 (2.24%)	1.37 (2.02%)

Mobile Entertainment Services

Most common end-user price (Rs)			
	Min	Average	Max
Logos and images			
Colour	9	9.5	10
Black and White	2	5	8
Ringtones			
Truetones	15	17.5	20
Monophonic	7	8.5	10
Polyphonic	9	12	15
Games			
Colour	49	74	99
Black and White	20	27.5	35

5.45 million subscribers
94.00% penetration rate

Ireland

The mobile penetration rate in Ireland has reached a new record of 94%, showing an increase of 6% on last year's figure. There are now around 5.4 million mobile phone users in Ireland.

Historically the Irish mobile market has been dominated by two major players, Vodafone and O2. However, at the end of 2004, Comreg (the Irish regulator) concluded that it needed to inject some much needed competition in the marketplace. As a result, the two previous operators were directed to open up their networks to mobile virtual network operators (MVNOs). This year has also seen the introduction of 3 Ireland as the new entrant to the market.

94% of Irish people own a mobile phone, up from 88% last year. Vodafone has a 51% market share, down 2%; O2 has a 40% market share, unchanged; and Meteor has a 9% market share, up 2%.

3 Ireland, the new video mobile network, announced that it has signed a national roaming agreement with Vodafone Ireland. The agreement between Vodafone Ireland and 3 incorporates Vodafone's GSM (2G) network only. 3 will have its own 3G network, and as such its customers will not need to have access to Vodafone's 3G network. 3's customers will have no contractual relationship with Vodafone Ireland, and all customer matters, including

billing, will be managed by 3.

In 2004/2005, the total Premium market in Ireland was worth nearly €77 million (up from €65 million the previous year), with Premium SMS accounting for 59% of this total. In total, 85 million Premium rate messages were sent, generating revenue of more than €45 million. At the same time, the number of IVR calls dropped by 9% from 19.14 million to 17.38 million.

Inhabitants	5,800,000
GDP per capita	US\$37,493
Official Language	English
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	5.10	88.00%
2005	5.45	94.00%

Data Services

	Vodafone	O ₂	Meteor
Data ARPU 2005	n/a	22	n/a
P TO P SMS			
Average MO retail price			
Prepaid	€0.12	€0.10	€0.10
Postpaid	€0.12	€0.10	€0.10
Premium SMS			
Launch date	2000	2001	2004
Premium Browsing			
Portal name(s)	Vodafone Live! (Discovery)	i-mode	n/a
Launch date	April 2005	2005	n/a
Number of users (in millions) 2005	430,000	n/a	n/a

Third Party Data Offers

	Vodafone	O ₂	Meteor
SMS			
Standard			
Toll free MO	yes	yes	yes
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P			
MMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	no	no
MT-P	yes	no	no
Subscription MT-P	yes	no	no
Premium Browsing			
Per use/Content	yes	yes	yes
Content Bundle	yes	yes	yes
Subscription	yes	yes	yes
Subscription (Automatic Renewal)	yes	yes	yes

Mobile Telecom Operators

	Vodafone	O2	Meteor	3
General Information				
Corporate Website	www.vodafone.ie	www.o2.ie	www.meteor.ie	www.three.ie
Main Shareholders	Vodafone Group (100%)	mno2	Western Wireless Intl (100%)	Hutchinson Whampoa(100%)
End User Market Share (in millions and as %)				
2004	2.90 (53%)	2.18 (40%)	0.38 (7%)	n/a
2005	2.78 (51%)	2.18 (40%)	0.49 (9%)	n/a
Total Turnover (in millions)				
2004	€5,504	€720	n/a	n/a
2005	€5,065	€720	n/a	n/a
Average monthly ARPU/ end-user				
2004	-	€27.50	n/a	n/a
2005	€50.60	€27.50	n/a	n/a
Network				
GSM Network				
Launch Date	1992	1994	1996	1996
GPRS Network				
Launch Date	July 2002	September 2002	September 2002	September 2002
3G (UMTS) network				
Launch Date	November 2004	2005	2005	2005

Mobile Entertainment Services

Most common end-user price (€)			
	Min	Average	Max
Logos and images			
Colour	2.00	2.50	3.00
Black and White	2.00	2.50	3.00
Ringtones			
Truetones	2.00	2.50	3.00
Monophonic	2.00	2.50	3.00
Polyphonic	2.00	2.50	3.00
Games			
Colour	3.00	4.00	5.00
Black and White	4.00	5.00	6.00
Video	2.00	2.50	3.00
Quiz	0.05	0.35	0.50
Chat	0.05	0.35	0.35
Vote	0.05	0.35	0.50
Information Services	0.05	0.35	0.50

65 million subscribers
114% penetration rate

Italy

Italy

According to the latest report from Assinform (the Italian ICT companies association), the telecommunications industry (infrastructure, handsets and services for fixed lines and mobile) generated €41.86 million worth of business in Italy in 2004, a year-on-year increase of 2.4%. In the first half of 2005, telecommunications revenue was €21.81 million, up 2.9% on the same period in 2004.

The rapid growth of the Italian mobile communications market has been confirmed by the fact that the penetration rate for mobile phones currently sits at over 100%. In Italy, over 90% of end users use prepaid SIM cards, with post-paid users being very rare.

Premium services (via SMS and MMS, both on demand and by subscription) and data services (WAP and i-mode portals in particular) are growing in importance for mobile operators. Operators now earn 3% of their total income from Value Added Services, and the market for standard services, such as voice, has become saturated over the past few years.

The mobile market recently overtook the fixed market in terms of total revenue, in part due to the fact that some fixed line users decided to make all their calls using only their mobile phone.

In 2005, mobile operators and the fixed line operator Telecom Italia began offering Premium

Inhabitants	58,462,375
GDP per capita	US\$26,938
Official Language	Italian
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	57	100
2005	65	114

Data Services

	Tim	Vodafone	Wind	Tre
Data ARPU 2005	€4.30	n/a	n/a	€9.3
P TO P SMS				
Average MO retail price				
Prepaid	€0.15	€0.15	€0.15	€0.15
Postpaid	€0.15	€0.15	€0.15	€0.15
Premium SMS				
Launch date	2001	2001	2001	n/a
Premium Browsing				
Portal name(s)	i-Tim	v-live!	Mobile wind	Tre
Launch date	January 2001	November 2002	November 2003	March 2003
Number of users (in millions)				
2004	n/a	1.29	0.20	n/a
2005	n/a	3.31	n/a	n/a

Third Party Data Offers

	Tim	Vodafone	Wind	Tre
SMS				
Standard				
Toll free MO	no	no	no	no
MO	yes	yes	yes	no
MT	yes	yes	yes	no
Premium				
MO-P	no	no	no	no
MT-P	yes	yes	yes	yes
Subscription MT-P	yes	yes	yes	yes
MMS				
Standard				
MO	yes	yes	no	no
MT	yes	yes	no	no
Premium				
MO-P	no	no	no	no
MT-P	no	yes	no	no
Subscription MT-P	no	yes	no	no
Premium Browsing				
Per use/Content	no	yes (operator portal)	yes (operator portal)	yes (operator portal)
Content Bundle	no	no	yes (operator portal)	no
Subscription	no	yes (operator portal)	yes (operator portal)	no
Suscription (Automatic Renewal)	no	yes (operator portal)	yes (operator portal)	no

Mobile Telecom Operators

	Tim	Vodafone	Wind	Tre
General Information				
Corporate Website	www.tim.it	www.vodafone.it	www.wind.it	www.tre.it
Main Shareholders	Telecom Italia	Vodafone (76.6%) Verizon (23.4%)	Weather Investment Fund (62.75%); Enel (37.25%)	Hutchison 3G Italy (91.6%)
End User Market Share (in millions and as %)				
2004	22.6 (43.6%)	21.7 (36.1%)	10.2 (17.0%)	2 (3.3%)
2005	26.3 (40.4%)	22.6 (34.7%)	12.6 (19.4%)	3.6 (5.5%)
Total Turnover (in millions)				
2004	€7,381	€7,596	€2,278	n/a
2005	€2,950 (1H)	€8,159	n/a	€1,800
Average monthly ARPU / end-user				
2004	€29.0	€30.2	€22.2	n/a
2005	€28.1	€29.9	€18.6	€35.8
Network				
GSM Network				
Launch Date	April 1995	December 1995	March 1999	n/a
GPRS Network				
Launch Date	May 2001	January 2002	February 2002	n/a
Total Numbers of Users				
2004		9,000,000 (for all operators)		
2005		15,000,000 (for all operators)		
3G (UMTS) network				
Launch Date	May 2004	February 2004	October 2004	March 2003
Total Numbers of Users				
2004	n/a	n/a	n/a	2,000,000
2005	n/a	1,300,000	n/a	3,600,000

IVR numbers as a complementary channel to Premium MT SMS for requesting mobile content.

Telecom Italia, which merged with TIM in June 2005, launched the first phone (called the super phone) that works as a mobile phone outside the home and a cordless phone inside the home, thus leading their strategy towards fixed-mobile convergence.

In June 2001, TIM, Vodafone, WIND and 3 reached an agreement on number portability, enabling customers to switch operators and keep the same number. By July 2005, 5.4 million such changes had been made, by 3.5 million end users. Several users in fact changed operators more than once, to take advantage of the competitive promotions in place. With an estimated cost of acquisition per user of €350, 3 has always offered their customers the very latest UMTS phones at a very low price, locking the SIM for a set period of time.

Entertainment services (B2C) that are still increasing their importance in the total VAS arena include polyphonic ringtones and true tones (total revenue from ringtones in Italy reached €140 million in 2004, just under half of what was spent on CDs), along with contests like SMS&WIN and charity SMS.

B2B services are now also starting to take off (in particular for mobile banking, transport and logistics) thanks to the continued development of mobile technologies and solutions based on UMTS, Wi-Fi, VoIP and RFID.

Mobile Entertainment Services

Most common end-user price (€)			
	Min	Average	Max
Logos and images			
Colour	2.00	2.00	2.50
Black and White	1.00	2.00	2.00
Wallpapers			
Colour	1.50	2.50	3.00
Picture Messages			
Black and White	1.00	2.00	2.00
Screensaver			
Colour	3.00	3.00	3.00
Ringtones			
Truetones	4.00	4.00	4.00
Monophonic	1.00	2.00	2.00
Polyphonic	1.50	3.00	3.00
Games			
Colour	3.00	5.00	5.00
Black and White	2.00	3.00	3.00
Video	3.00	3.50	4.00
Quiz / Contest	0.30	1.00	1.00
Chat	0.30	0.50	0.50
Vote	0.50	1.00	1.00
Information Services	0.15	0.50	2.00



89.1 million subscribers
70.16% penetration rate

Japan

Japan

Japan remains at the forefront of innovation in wireless communication services. While companies in Europe are just starting to dip their toes in the waters of mobile TV, for instance, a consortium has already been set up in Japan of major public and private broadcasters to launch a free-of-charge specific-to-mobile TV service. This service, called "One Segu", will be available to anyone with a compatible phone from April 2006 onwards.

There has been lots of marketing in 2005 to encourage the use of mobile phones as a payment tool, led by the FeliCa-powered "wallet phones" made by NTT DoCoMo as part of a joint venture with Sony. This system has proved popular in numerous areas, such as paying for public transport and various other low-value transactions, and has now been opened up to the other mobile operators as well. "Keitai credit" looks set to become even more widespread - in April 2005, DoCoMo took a controlling stake in Japan's second largest credit card company, and before the year was out it had already introduced its own mobile credit platform called "iD".

Personalisation services continue to be as popular as ever. The ringtone market is now dominated by truetones and full-track tones, although polyphonic ringtones are also still very successful. 2006 will see the results of the legal

Inhabitants	127,000,000
GDP per capita	US\$34,370
Official Language	Japanese
Currency	Yen

Mobile Phone Users	Millions	Penetration Rate %
2004	83.4	65.70%
2005	89.1	70.16%

Mobile Telecom Operators

	NTT Docomo	KDDI	Vodafone	Tuka
General Information				
Corporate Website	www.nttdocomo.co.jp	www.kddi.com	www.vodafone.jp	n/a
Main Shareholders	NTT, Japan Trustee Services Bank LTD	Kyocera, Toyota	Vodafone International Holdings, Japan Trustee Services Bank LTD,	KDDI
End User Market Share (%)				
2004	56%	21%	18%	4%
2005	56%	23%	17%	4%
Total Turnover (in millions ¥)				
2004	48.45	2.09	1.53	0.018
2005	48.05	2.24	1.47	0.014
Average monthly ARPU / end-user				
2004	7,270	7,190	6,150	n/a
2005	6,770	7,190	5,940	n/a
Network				
PDC & CDMA Network	PDC	CDMA 2000	PDC	n/a
Launch Date	March 1993	June 1994	April 1994	n/a
Total Number of Users (in millions)				
2004	40.85	2.49	14.89	3.59
2005	33.13	1.16	13.24	33.35
CDMA2000x1 Network				
Launch Date	n/a	April 2002	n/a	n/a
Total Number of Users (in millions)				
2004	n/a	15.51	n/a	n/a
2005	n/a	19.55	n/a	n/a
W-CDMA Network				
Launch Date	October 2001	n/a	December 2002	n/a
Total Number of Users (in millions)				
2004	5.90	n/a	0.24	n/a
2005	16.77	n/a	1.75	n/a

action taken against "Label Mobile", the consortium set up by Japan's major record companies, who have been accused of colluding to keep ringtone prices artificially high.

Vodafone, the third largest operator in Japan, lost a large number of subscribers in 2005, mostly to the benefit of KDDI. This historic event - no Japanese operator had ever seen its subscriber numbers fall prior to this - was mainly due to a lack of public acceptance of the operator's "walled garden" approach. The company seems to have learned a lesson from this, and figures were starting to rise again by the end of the year.

Indeed, this move outside the walled garden is an important idea that Japanese companies are starting to export to the rest of the world. The Japanese model is more suited to the mobile Internet than the SMS-based world, and as Japanese companies begin their international expansion - either through partnerships or by directly buying foreign firms - this trend towards a more open model looks set to continue.

Although phones are becoming more complex in Japan as much as elsewhere, niche marketing is also beginning to play an important role, as can be seen in the new market for seniors or for simpler, limited-access phones for kids.

Convergence continues apace, with the triple-play offer from Yahoo Japan and its partner Softbank just one example of how broadband, TV and phone services are being provided for a set monthly rate. Softbank also plans to enter the mobile market, but not as an MVNO; the company has applied for a licence to offer mobile phone services and aims to launch the venture as early as 2007.

Mobile Entertainment Services

	Most common end-user price (¥)	
	Min	Max
Logos and images		
Colour	100	300
Ringtones		
Truetones	200	500
Polyphonic	50	300
Video	300	500
Quiz / Contest	250	300
Information Services	free	200



0.54 million subscribers
120.0% penetration rate

Luxembourg

With more than 500,000 subscribers, Luxembourg is the smallest western European country but the top mobile country in the world with a 120% penetration rate.

Three operators compete in the Luxembourg market. LuxGSM dominates the market with 270,000 subscribers and a market share of 50%. Tango, its principal competitor, has 37% of the market and 200,000 subscribers. With almost 71,000 subscribers by the end of the first quarter of 2005, the third operator Vox had already won a 13% market share and is growing quickly.

Thanks to its small geographic area, 3G networks already cover more than 90% of the territory in Luxembourg, offering full mobile broadband access to users.

A full range of Standard and Premium SMS services are available on all three operators. WAP billing is offered through the operator portals (WapDoWap, TangoLive! and Vox Magic) and this is open to third parties. LuxGSM is also launching v-live!

Inhabitants	470,000
GDP per capita	US\$59,000
Official Languages	French, German, Luxembourgish
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2005	0.54	120.0%

Third Party Data Offers

	LuxGSM	Tango
SMS		
Standard		
Toll free MO	yes	yes
MO	yes	yes
MT	yes	yes
Premium		
MO-P	yes	yes
MT-P	yes	yes
Subscription MT-P	yes	yes
MMS		
Standard		
MO	no	no
MT	no	no
Premium		
MO-P	no	no
MT-P	no	yes
Subscription MT-P	no	yes
Premium Browsing		
Per use/Content	yes	yes
Content Bundle	yes	yes
Subscription	yes	yes
Subscription (Automatic Renewal)	yes	yes

Mobile Telecom Operators

	LuxGSM	Tango	Vox
General Information			
Corporate Website	www.ept.lu	www.tango.lu	www.vox.lu
Main Shareholders	P&T Luxembourg	Tele 2	Audiolux BGL Investment Partners
End User Market Share (in millions and as %)			
2005	0.27 (50.00%)	0.2 (37.00%)	0.07 (13.00%)

Mobile Entertainment Services

	Most common end-user price (€)	
	Min	Max
Logos and images		
Colour	2.00	3.00
Black and White	1.00	1.50
Ringtones		
Truetones	2.50	3.00
Monophonic	1.00	1.50
Polyphonic	2.00	3.00
Games	4.00	5.00
Video	3.00	4.00
Chat	0.84	0.95



41.21 million subscribers
38.80% penetration rate

Mexico

Mexico is one of the most dynamic markets in the world and ranks second in Latin America. Mexico saw a spectacular growth in the number of subscribers in 2004, with the penetration rate rising from just 6.8% to an impressive 36%, a total of 37 million people. VAS also took a larger share of revenues as the Premium market grew considerably.

The Mexican market is still booming, with penetration predicted to reach 40% (up 4%) by the end of 2005. The number of mobile phone users had leapt to 42 million by June 2005 and may reach 45 million when December's figures are released. Analysts predict that Mexico will gain between seven and nine million new users a year for the next four years.

More than 93% of all Mexican users are pre-paid users.

Three different 2G technologies co-exist in Mexico: TDMA (Telcel and Movistar), CDMA (Unefon and Iusacell) and GSM (Movistar and Telcel). GSM subscribers represented 39% of Telcel's users and 72% of Movistar's users at the end of 2004, with these figures likely to rise to 50% and 90% respectively by the end of 2005.

GPRS and EDGE are available in most major cities.

Iusacell and Unefon are working to strengthen their cooperation on the CDMA network. Iusacell launched a CDMA 1X RTT Network in 2005.

Inhabitants	106,202,903
GDP per capita	US\$9,666
Official Language	Spanish
Currency	Peso

Mobile Phone Users	Millions	Penetration Rate %
2004	37.40	36.00%
2005	41.21	38.80%

Data Services

	Telcel	Movistar	Iusacell	Unefon
P TO P SMS				
Average MO retail price (Pesos)				
Prepaid	0.85	0.98	1.00	0.98
Postpaid	0.85	0.98	1.00	0.98
Premium SMS				
Launch date	2004	2004	2004	2004
Premium Browsing				
Portal name(s)	Ideas Telcel	Internet Movil	Todo Iusacell	Portal Movil Unefon
Launch date	2005	2005	2005	2005

Third Party Data Offers

	Telcel	Movistar	Iusacell	Unefon
SMS				
Standard				
Toll free MO	yes	yes	yes	yes
MO	yes	yes	yes	yes
Premium				
MO-P	yes	yes	yes	yes
MT-P	no	no	no	no
Subscription MT-P	no	no	no	no
MMS				
Standard				
MO	yes	yes	yes	yes
MT	no	no	no	no
Premium				
MO-P	no	no	no	no
MT-P	no	no	no	no
Subscription MT-P	no	no	no	no
Premium Browsing				
Per use/Content	no	no	no	no
Content Bundle	no	no	no	no
Subscription	no	no	no	no
Subscription (Automatic Renewal)	no	no	no	no

Mobile Telecom Operators

	Telcel	Movistar	Iusacell	Unefon
General Information				
Corporate Website	www.telcel.com.mx	www.movistar.com.mx	www.iusacell.com.mx	www.unefon.com.mx
Main Shareholders	America Movil (Carso Group)	Telefonica Moviles (92%)	Salinas Group	TV Azteca (Salinas group owns TV Azteca)
End User Market Share (in millions and as %)				
2004	28.9 (77%)	5.6 (15%)	1.4 (4%)	1.4 (4%)
2005	32.3 (78%)	6.0 (15%)	1.6 (3.6%)	1.5 (3.4%)
Total Turnover (in millions Pesos)				
2004	71,000	n/a	4,788	4,300
Average monthly ARPU / end-user				
2004	191	172	293	230
2005	188	n/a	n/a	204
Network				
GSM Network				
Launch Date	2002/2003	2002/2003	n/a	n/a
GPRS Network				
Launch Date	October 2005	June 2004	n/a	n/a
3G (UMTS) network				
Launch Date	n/a	n/a	n/a	2005
WiFi Network				
Launch Date	Q3 2004	Q1 2005	n/a	n/a

There are four main operators in Mexico. Telcel largely dominates the Mexican Market with a share of 78%. Telcel subscribers increased to 33.6 million, with over 4.7 million new subscribers signing up in the first nine months of the year. The operator's data-based revenues are up 55% on 2004.

Movistar comes second with about 6 million end users, and has been extremely active in 2005 with the launch of the Movistar brand.

Iusacell and Unefon have the same shareholders and both use a CDMA Network.

All the operators have launched a WAP portal, with Telcel planning to open its Ideas Telcel portal to third parties before the end of 2005. WAP is a strategic issue for mobile operators in Mexico.

Mobile Entertainment Services

	Average end-user price (Peso)
Logos and images	
Colour	13
Black and White	13
Ringtones	
Truetones	13
Monophonic	13
Polyphonic	13
Games	
Colour	35
Black and White	35
Video	13
Quiz / Contest	3
Chat	4
Vote	3

11.5 million subscribers
35.88% penetration rate

Morocco

Morocco's telecommunications network is among the largest in Africa, with top-class facilities and services. Driven by the exceptional growth of the Internet sector since 2003, demand for fixed lines has started to rise again, after falling steadily following the opening up of the mobile market to competition in 2000. Mobile penetration stood at around 36% in the middle of 2005.

The Moroccan mobile market is currently the second largest in Africa with around 11.5 million subscribers (the largest, South Africa, has more than 22 million). The market is mainly made up of pre-paid users, who account for 95% of all users. The Moroccan Telecommunications Regulatory Authority (ANRT) is responsible for licensing, frequency allocation, numbering, dispute settlement among players in the market and the approval of telecommunications equipment.

There are two mobile telecom operators in Morocco. Incumbent operator Maroc Telecom (Itissalat Al-Maghrib - IAM) was partially privatised in 2001, and its flotation on the Paris and Casablanca stock exchanges in November 2004 was a great success, with the initial share offering being 50 times oversubscribed. Maroc Telecom is now owned by Vivendi Universal (51%) and Kingdom of Morocco (34%). It dominates the market, with a market share of

Inhabitants	32,726,000
GDP per capita	US\$4,113
Official Language	Arabic
Currency	Dirham (MAD)

Mobile Phone Users	Millions	Penetration Rate %
2004	7.85	26.5%
2005	11.5	35.88%

Data Services

	Maroc Telecom (Itissalat Al-Maghrib)	Medi Telecom
Data ARPU 2005		5%
P TO P SMS		
Average number of SMS sent per end-user per month		
2004 (December)		7.8
2005 (June)		11.5
Average MO retail price		
Prepaid	MAD0.80	MAD0.80
Postpaid	MAD0.80	MAD0.80
Premium SMS		
Launch date	2002	2003
Estimated total cross network Market Value Per Year in Millions		
2005		€4
Premium Browsing		
Portal name(s)	Menara	Imedia
Launch date	2002	2004

Third Party Data Offers

	Maroc Telecom (Itissalat Al-Maghrib)	Medi Telecom
SMS		
Standard		
Toll free MO	no	no
MO	yes	yes
MT	yes	yes
Premium		
MO-P	yes	yes
MT-P	yes	no
Subscription MT-P	yes	no
MMS		
Standard		
MO	no	no
MT	no	no
Premium		
MO-P	no	no
MT-P	no	no
Subscription MT-P	no	no

Mobile Telecom Operators

	Maroc Telecom (Itissalat Al-Maghrib)	Medi Telecom
General Information		
Corporate Website	www.iam.ma	www.meditelcom.ma
Main Shareholders	Vivendi Universal (51%) Kingdom of Morocco (34%)	Telefonica (32.18%) Portugal Telecom (32.18%) HOLDCO (17.59%)
End User Market Share (in millions and as %)		
2004	6.30 (67.54%)	3.03 (32.46%)
2005	8.00 (69.50%)	3.20 (30.35%)
Total Turnover (in millions)		
2004	€1,627	€327
2005	€877 (1H)	n/a
Average monthly ARPU/ end-user 2004 (Feb.)		
	MAD389	MAD357
Network		
GSM Network		
Launch Date	1995	2000
Prepaid Users		
2004		95.08%
2005		94.7%
GPRS Network		
Launch Date	2004	2004
Total Numbers of Users 2005		400,000

nearly 70%.

Medi Telecom was the first private telecom operator in Morocco. It is an association between Telefonica (32%), Portugal Telecom (32%) and several large Moroccan companies. It started operations in March, 2000. Medi Telecom has a portfolio of more than 3.5 million customers and a market share of around 30%.

Maroc Telecom launched its GSM network in 1995, and Medi Telecom's GSM network has been live since 2000. GPRS networks were deployed and launched in Morocco in 2004, and MMS services are available. A calendar for the deployment of a UMTS network in Morocco has not yet been defined.

The number of peer-to-peer SMS sent in June 2005 is estimated at 123 million, which represents an average of 11.5 SMS per end user per month. Voting, logos, ringtones and games are the most popular Premium SMS services among

Moroccan end users, with chat starting to take off as well.

Third party Premium SMS services have been available with Maroc Telecom since 2002 and with Medi Telecom since 2003. The range of end-user prices runs from MAD 3 to 9 for both operators, and up to MAD 10 and 20 for Maroc Telecom.

Mobile Entertainment Services

	% of total data services	Average end-user price (MAD)
Logos and images		
Colour	10%	8-10
Black and White		5
Ringtones		
Monophonic	10%	5-10
Polyphonic		8-10
Games		
Colour	2%	10-15
Quiz / Contest	5%	9-10
Chat	3%	5
Vote	70%	9-10

16.7 million subscribers

102.45% penetration rate

Netherlands

The Netherlands

2005 has been a year of reorganisation in the Dutch market, with the main Dutch operators strengthening their position in the market. In October 2005 KPN fully took over the Netherlands' best-value operator Telfort, making KPN by far the biggest operator and strengthening its position within the Dutch market.

The Dutch market is a mature market, with a mobile penetration rate surpassing the 100% milestone with around 16.8 million mobile users. During the first quarter, customer growth rates slowed down as most operators are trying to move away from subsidising handsets for pre-paid customers. Decreasing mobile service revenues and MTA-reduction were the main reasons why the ARPU for all operators except T-mobile dropped in 2005.

The amount of post-paid subscribers compared to pre-paid increased across all operators in 2005. All operators are trying to maintain or build on both their post-paid and pre-paid customer base by offering special bundles and loyalty programs for prepaid users like extra credit and lower pre-paid tariffs.

Mobile cellular broadband services have not really taken off in the Netherlands. Vodafone and KPN were the first to offer UMTS services to consumers with 36% and 40% market coverage respectively. Vodafone started offering Mobile TV services during the summer of 2005.

Inhabitants	16,321,000
GDP per capita	US\$29,580
Official Language	Dutch
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	14.2	83.00
2005	16.7	102.45%

Data Services

	KPN	Vodafone	T-Mobile	Orange	Telfort
Data ARPU 2005	15%	18%	14%	11%	14%
P TO P SMS					
Average MO retail price					
Prepaid	€0.09	€0.22	€0.15	€0.22	€0.08
Postpaid	€0.23	€0.22	€0.20	€0.22	€0.12
Premium SMS					
Launch date	2001	2001	2001	2001	2001
Premium Browsing					
Portal name(s)	i-mode	v-live!	t-zones	orange world	spot
Launch date	2002	2002	2003	2003	2005
Number of users (in millions)					
2004	0.56	0.30	0.25	0.13	
2005	0.72	0.34	0.25	0.15	0.06

Third Party Data Offers

	KPN	Vodafone	T-Mobile	Orange	Telfort
SMS					
Standard					
MO	yes	yes	yes	yes	yes
MT	yes	yes	yes	yes	yes
Premium					
MO-P	yes	yes	yes	yes	yes
MT-P	yes	yes	yes	yes	yes
Subscription MT-P	yes	yes	yes	yes	yes
MMS					
Standard					
MO	yes	yes	yes	yes	yes
MT	yes	yes	yes	yes	yes
Premium					
MO-P	no	no	no	no	no
MT-P	no	no	no	no	no
Subscription MT-P	no	no	no	no	no
Premium Browsing					
Per use/Content	yes	yes	yes	yes	yes
Content Bundle	n/a	n/a	yes	yes	yes
Subscription	yes	yes	yes	yes	yes
Subscription (Automatic Renewal)	yes	yes	no	no	no

Mobile Telecom Operators

	KPN	Vodafone	T-Mobile	Orange	Telfort
General Information					
Corporate Website	www.kpn.nl	www.vodafone.nl	www.tmobile.nl	www.orange.nl	www.telfort.nl
Main Shareholders	KPN N.V. 100%	Vodafone 100%	T-Mobile Netherlands 100%	Orange Nederland N.V. 100%	Telfort Beheer BV 100%
End User Market Share (in millions and as %)					
2004	38.0%	22.9%	14.3%	10.6%	14.2%
2005	5.9 (37%)	3.95 (23.00%)	2.40 (14.3%)	1.85 (10.6%)	2.55 (14.7%)
Total Turnover (in millions)					
2005	1.747 (KPN Mobile NL)	n/a	267 (Q2)	163 (Q3)	509 (Q2)
Average monthly ARPU/ end-user					
2004	€33.50	€35.00	€35.00	€33.00	€25.00
2005	€33.00	€34.00	€36.00	€34.00	€24.00
Network					
GSM Network					
Launch Date	1989	1995	2000	1995	1997
Prepaid Users					
2004	60.00%	65.00%	53.00%	67.00%	80.00%
2005	54.00%	56.00%	51.00%	65.00%	73.00%
GPRS Network					
Launch Date	2000	2001	2001	2002	2001
3G (UMTS) network					
Launch Date	2004	2004	planned for 2006	planned for 2006	planned for 2006 (focusing more on HSPDA)

Of the other three operators, only Telfort offers broadband services using EDGE technology. Telfort announced that it will focus primarily on HSDPA and less on UMTS in 2006.

Premium SMS services continue to do well in the Netherlands, with more and more companies utilizing the mobile channel for their business. Premium MMS on the other hand has still not picked up due to several factors like technical barriers and an absence of appealing business models. P2P MMS increased slightly.

Mobile service revenues fell in 2005, except for KPN i-mode, which saw a huge increase in the number of i-mode users from 430,000 users in 2004 to 725,000 users by the end of 2005.

Most operators saw their user numbers stabilize or grow slightly. Telfort introduced its new WAP portal Telfort Spot, which offers an open mobile portal that is not only restricted to its customers. Vodafone is actively promoting its UMTS services through v-live! and has launched several services like video conferencing and Mobile TV.

Mobile Entertainment Services

	Most common end-user price (€)		
	Min	Average	Max
Logos and images			
Colour	0.90	1.50	3.30
Black and White	0.90	1.50	3.30
Ringtones			
Truetones	2.00	2.20	3.00
Monophonic	1.10	1.50	2.20
Polyphonic	1.10	1.50	2.20
Games			
Colour	3.00	4.00	5.00
Black and White	3.00	4.00	4.40
Video	2.00	2.20	3.00
Quiz	0.55	0.70	1.10
Chat	0.70	0.90	1.10
Vote	0.55	0.90	1.10
Information Services	0.25	0.70	1.10

4.80 million subscribers
104.00% penetration rate

Norway

Norway has a population of about four and a half million and a total of 4.8 million mobile phone subscriptions, a penetration rate of 104%.

Telenor, Netcom and Tele2 are the three main mobile operators currently offering services in the Norwegian market. Telenor and Netcom are the only operators to have their own mobile networks.

Telenor launched its first services five years after the creation of Netcom and today dominates the Norwegian market with a share of 56%.

In October 2005 the Swedish operator TeliaSonera, who owns Netcom, bought the smaller Norwegian operator Chess in order to expand its market share in Norway. Before the purchase Chess had about 405,000 customers, and it continues to function as an independent operator with the same people still on its board.

During the first half of 2005 the share of pre-paid cards remained the same at 43%. This number had actually fallen in 2004, in part due to the arrival of subscriptions that did not require the payment of monthly fees.

Telenor launched its UMTS services in December 2004. Netcom opened its new 3G mobile network for traffic in March 2005. The 3G-only operator 3 (Tre) has not started developing UMTS and has not yet announced when it will launch its services. All three Norwegian operators launched their GPRS net-

Inhabitants	4,500,000
GDP per capita	US\$40,784
Official Language	Norwegian
Currency	NOK

Mobile Phone Users	Millions	Penetration Rate %
2004	4.38	96.00%
2005	4.80	104.00%

Data Services

	Telenor	Netcom	Tele2
P TO P SMS			
Average MO retail price Prepaid	NOK 0.69	NOK 0.69	NOK 0.62
Premium Browsing			
Portal name(s)	wap.telenormobil.no	wap.netcom.no	Go Live
Launch date	June 2000	April 2000	

Third Party Data Offers

	Telenor	Netcom	Tele2
SMS			
Standard			
Toll free MO	no	no	no
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
MMS			
Standard			
MO	yes	yes	no
MT	yes	yes	no
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	yes	yes	yes
Premium Browsing			
Per use/Content	yes	yes	yes
Content Bundle	yes	yes	yes
Subscription	yes	yes	yes

Mobile Telecom Operators

	Telenor	Netcom	Tele2
General Information			
Corporate Website	www.telenor.no	www.netcom.no	www.tele2.no
Main Shareholders	Norwegian State (54%) Investors (46%)	TeliaSonera (100%)	Tele2 AB (100%)
End User Market Share (in millions and as %)			
2004	3.3 (48.3%)	1.30 (29%)	0.6 (13.60%)
2005 (Q3)	2.6 (56%)	1.6 (36%)	0.24 (5.1%) (Q2)
Total Turnover (in millions NOK)			
2004	4,305	5,790	2,081
2005	3,285 (Q1-Q3)	4,363 (Q1-Q3)	n/a
Average monthly ARPU/ end-user			
2004	323	277 (Q1-Q3)	n/a
2005	306	270 (Q1-Q3)	n/a
Network			
GSM Network			
Launch Date	1994	1993	1995
GPRS Network			
Launch Date	2001	2002	n/a
Total Number of Users 2005	n/a	176,000	n/a
3G (UMTS) network			
Launch Date	n/a	n/a	2005

works in 2001 and estimated that there were 176,000 users in 2004.

During the first half of 2005, Norwegian mobile users sent 25% more messages than they did during the same period of 2004. On average, they sent 89 messages per month, of which 79 were SMS and 10 were MMS. In total, Norwegians sent 2.17 billion SMS messages and 88 million MMS (up from 20 million the previous year) during the first half of 2005.

The most popular data services in Norway are customisation services such as logos and ringtones, followed by TV voting. Premium MMS was launched in 2003 by both Telenor and Netcom. It is also possible to launch a Premium MMS service up to 60 NOK, with the business model very similar that for Premium SMS.

Mobile Entertainment Services

Most common end-user price (NOK)			
	Min	Average	Max
Logos and images			
Colour	15	20	25
Black and White	10	10	15
Ringtones			
Truetones	20	20	29
Monophonic	10	10	15
Polyphonic	10	15	20
Games			
Colour	30	40	50
Black and White	30	30	30
Video	25	25	30
Quiz	5	5	5
Chat	3	3	3
Information Services	3	4	5

27.73 million subscribers
66.00% penetration rate

Poland

Poland is one of the largest mobile markets in Eastern Europe (second only to Russia), with about 28 million mobile end-users in 2005 and a penetration rate of 66%.

There are three mobile operators competing in the Polish market (along with one sub-brand Heyah, owned by PTC ERA), and each of them has a significant market share: 38% for PTC ERA, 31.5% for Orange (formerly PTK Centertel) and 30.5% for Polkomtel. Heyah, ERA's sub-brand aimed specifically at teenagers, has revolutionised the market by offering SIM cards and cheap products and services.

Prepaid cards remain very popular and are used by almost 60% of mobile users.

All three Polish mobile operators launched their GPRS offers at the end of 2001, and they now cover about two-thirds of the Polish territory. In September 2004, Polkomtel became the first Polish operator to launch its UMTS offer, mainly for professional users. PTC ERA and Orange launched their own 3G offers in April and May 2005, covering the largest Polish cities.

B2B services available in Poland include telemetry, fleet management and monitoring services, and all operators offer WLAN access at a number of hotspots across the country.

PTC ERA was the first operator to offer brows-

Inhabitants	38,635,144
GDP per capita	US\$13,275
Official Language	Polish
Currency	Zloty (PLN)

Mobile Phone Users	Millions	Penetration Rate %
2004	19.58	52.00%
2005	27.73	66.00%

Data Services

	PTC ERA	Orange	Polkomtel
Number of active users 2005	10.1	9.134	8.5
Premium SMS			
Launch date	Feb/March 2001	Feb/March 2001	Feb/March 2001
MMS			
Launch date	March 2002	March 2002	March 2003
Total volume	0.5	0.5	0.5
Average MO retail price			
Prepaid	0.23	0.23	0.46
Premium MMS			
Launch date	2003	2004	2005
Premium Browsing			
Portal name(s)	ERA OMNIX	IDEA'S WORLD	Any portal
Launch date	November 2002	June 2004	Feb/March 2005
GPRS Offer			
Price - Consumer (End-user)			
Per MB (Local)	0.26	0.25	0.26
Per MB (international roaming)	0.52	0.52	0.52
Monthly Subscription	2.34	2.34	2.34
Price - Professional (Enterprise)			
Per MB (Local)	0.26	0.26	0.26
Per MB (roaming)	0.78	0.78	0.75
Monthly Subscription	2.34	2.34	2.34

Mobile Telecom Operators

	PTC ERA	Orange	Polkomtel
General Information			
Corporate Website	www.era.pl	www.orange.pl	www.plusgsm.pl
Main Shareholders	Elektrim/Vivendi (51%) Deutsche Telekom (49%)	TP S.A (66%) France Telecom Mobiles International (34%)	Vodafone Group, KGHM, PKN ORLEN Telenergo, Tele Damark
End User Market Share (in millions and as %)			
2004	8.1 (38%)	6.4 (31%)	6.5 (31%)
2005	10.1 (38%)	9.1 (31.5%)	8.5 (30.5%)
Total Turnover (in millions PLN)			
2004	4.55	4.143	4.241
2005	2.227	4.212	4.669
Average monthly ARPU/ end-user (PLN)			
2004	79	81.1	84.7
2005	95.1	101.4	110
Network			
GSM Network			
Launch Date	September 1996	March 1998	October 1996
Coverage (%)			
2004	33.3%	33.3%	33.3%
2005 (Q3)	33.3%	33.3%	33.3%
GPRS Network			
Launch Date	September 2001	December 2001	December 2001
Coverage (%)			
2004	33.3%	33.3%	33.3%
2005 (Q3)	33.3%	33.3%	33.3%
EDGE network			
Launch Date	June 2004	June 2004	July 2004
Coverage (%)			
2004	0	0	0
2005 (Q3)	test	test	test
UMTS Network			
Launch Date	September 2004	May 2005	September 2004
Numbers of users			
2005	200,000	100,000	100,000
Coverage (%)			
2004	only Warsaw (1%)	only Warsaw (1%)	only Warsaw (1%)
2005	The biggest cities	The biggest cities	The biggest cities
Wi-Fi Network			
Total Numbers of HotSpots			
2005		64	

ing services. Called ERA OMNIX and launched in November 2002, ERA's browsing service offers 10 main pages and 40 sub-pages, and the number of active users was estimated at 200,000 in the third quarter of 2004. PTK Centertel launched its service, called Orange, in June 2004. This browsing service offers 30 sub-pages, and the number of active users was estimated at 100,000 users.

Polish mobile operators estimated that 700 million SMS per month were sent through their networks in 2005, representing an average of 35-38 SMS messages per end user per month.

Polyphonic and monophonic ringtones, logos, quizzes, information services and Java games are the most popular Premium SMS services among Polish end-users. With a range of end-user prices from around PLN0.50 to PLN10.98, Premium SMS is used for many services, including entertainment, mobile applications, voting, bank account information and traffic reports.

Mobile Entertainment Services

% of total data services		Most common end-user price (€)	
		Min	Max
Logos and images			
Colour	7.50%	0.78	2.09
Black and White	7.50%	0.52	0.7
Ringtones			
Monophonic	12.50%	0.52	0.7
Polyphonic	12.50%	1.04	2.34
Games			
Colour	5%	0.93	2.34
Black and White	3%	0.78	2.34
Adult			
Chat	4%	0.52	2.34
Image	3%	1.04	2.34
Video	3%		
Quiz / Contest	10%	0.26	0.52
Chat	10%	0.56	0.78
Vote	10%	0.52	0.78
Information Services	10%	0.78	2.34

11.14 million subscribers
105.8% penetration rate

Portugal

Portugal is a particularly mature market, with one of the highest penetration rates in Europe (more than 105%) and 11.14 million mobile subscribers as of the third quarter of 2005.

Interestingly, the prepaid market continues to grow. As of the third quarter of 2005, there were just over 9 million prepaid users in Portugal, accounting for 81.4% of the total number of end-users.

There are three mobile operators in Portugal. TMN, a subsidiary of the Portuguese operator PT, dominates the Portuguese mobile market with more than 5 million users. However, Vodafone, its closest competitor, was the company that gained the most new customers in the twelve-month period up to 31 March 2005, attracting 337,816 new users (61% of all new mobile users in Portugal). Over the last year, Vodafone has seen its customer base grow by 12%, compared to 8% growth for the market as a whole. In Q4 2005, Vodafone had more than 4 million customers and a market share of 34%. Optimus, the third operator, remains stable with a market share of 20%.

TMN was the first mobile operator to launch a GPRS network in Portugal, doing so in November 2000. Optimus and Vodafone launched their GPRS networks one year later, at the beginning of 2001. The first UMTS network in Portugal was launched by Vodafone in

Inhabitants	10.566 million
GDP per capita	US\$16,150
Official Language	Portuguese
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	9.34	90.7%
2005	11.14	105.8%

Data Services

	TMN	Vodafone Telecel	Optimus
Premium SMS			
Launch date	2002	2002	2002
Premium Browsing			
Portal name(s)	l9	v-live!	Optimus Zone
Launch date	June 2003	November 2002	June 2003

Third Party Data Offers

	TMN	Vodafone Telecel	Optimus
SMS			
Standard			
Toll free MO	no	no	no
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	yes	yes	yes
MMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	n/a	n/a
MT-P	yes	n/a	n/a
Subscription MT-P	yes	n/a	n/a

Mobile Telecom Operators

	TMN	Vodafone Telecel	Optimus
General Information			
Corporate Website	www.tmn.pt	www.vodafone.pt	www.optimus.pt
Main Shareholders	PT (100%)	Vodafone Group (100%)	SonaeCom (46.3%) Orange (20.2%) O93X (25.7%) IPE T.I. (5%) Maxistar(2.8%)
End User Market Share (in millions and as %)			
2004 (H1)	4.45 (48%)	2.97 (32%)	1.91 (20%)
2005 (Q1)	5.05 (47%)	3.59 (33%)	2.21 (20%)
Average monthly ARPU/ end-user			
2004 (Q3)	€23.8	€27.6	€23.7
2005 (Q3)	€24.4	n/a	€24.3
Network			
GSM Network			
Launch Date	October 1992	October 1992	September 1998
Prepaid Users 2005	9.064 (81.4%) (for all operators)		
GPRS Network			
Launch Date	November 2000	April 2001	2001
3G (UMTS) network			
Launch Date	October 2004	January 2005	May 2005

February 2004, with TMN and Optimus launching their 3G networks in April and July of the same year. There are estimated to be over 600,000 3G users in Portugal, around half of whom are Vodafone customers.

Launched in March 2002, the Premium SMS market is growing rapidly in Portugal, boosted by the introduction of subscription Premium MT services in the course of 2005 across all operators. Access to Premium SMS services is standardised and service providers can choose from a wide range of tariffs.

Portuguese subscribers are very enthusiastic about new value-added services. In particular, SMS-based services like handset personalisation (downloading logos and ringtones) and television voting have proved very popular.

Mobile Entertainment Services

	Most common end-user price (€)		
	Min	Average	Max
Logos and images			
Colour	2.00	2.00	3.00
Black and White	1.50	1.50	2.00
Ringtones			
Monophonic	1.50	1.50	2.00
Polyphonic	2.00	2.00	3.00
Games			
Colour	n/a	4.00	4.00
Black and White	n/a	3.00	3.00
Quiz / Contest	0.20	0.60	1.00
Chat	0.20	0.20	1.00
Vote	0.20	0.20	0.50
Information Services	0.20	0.50	0.50

115.76 million subscribers
79.7% penetration rate

Russia

With a population of 143 million, Russia is the largest territory in the world and represents an enormous potential market. In October 2005, the country had a total of 115 million subscribers, making it the largest mobile market in Europe, and a penetration rate of just below 80%.

According to the Ministry of Telecommunications, there are around 60 mobile operators in Russia. Nonetheless, the three largest operators account for more than 85% of the market between them. The largest operator is Mobile TeleSystems (MTS), with 38.87 million subscribers and a market share of 33.58%. MTS is closely followed by VimpelCom (Beeline), which has 38.4 million subscribers and a market share of 33.17%. The third largest operator is MegaFon, which had 22.22 million subscribers and a market share of 19.19% in November 2005.

As the Russian market approaches maturity, 2005 will undoubtedly be the last year to see such substantial growth in the number of subscribers, and further growth will be dependent on increasing ARPU.

Analysts predict the value of the Russian VAS market could reach \$1.5 billion and account for 14.5% of total operator revenues in 2005. Recently, the largest growth rate has been in data transmission and mobile internet services.

Inhabitants	143,420,309
GDP per capita	US\$11,209
Official Language	Russian
Currency	Rouble (RUB)

Mobile Phone Users	Millions	Penetration Rate %
2004	60.4	51.2%
2005	115.76	79.7%

Third Party Data Offers

	MTS	VimpelCom	MegaFon
SMS			
Standard			
Toll free MO	yes	yes	yes
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	no	no	no
Subscription MT-P	no	no	no
Premium Browsing			
Per use/Content	yes	yes	yes
Content Bundle	yes	yes	yes
Subscription	yes	n/a	n/a

Mobile Telecom Operators

	MTS	VimpelCom	MegaFon
General Information			
Corporate Website	www.mts.ru	www.vimpelcom.com	www.megafon.ru
Main Shareholders	AFK Sistema	Telenor, Alfa	TeliaSonera, Alfa
End User Market Share (in millions and as %)			
2004	44%	44%	11%
2005	38.87 (33.58%)	38.4 (33.17%)	22.22 (19.19%)
Total Turnover (in millions)			
2004	US\$ 3.887	US\$ 2.147	US\$ 1.48
2005			US\$ 1.03
Average monthly ARPU/ end-user			
2004	US\$ 12	US\$ 10.2	n/a

After a short period of slower growth due to a lack of innovative and interactive services (leading to a fall in demand) and the availability of more free content, the Russian mobile content market is once more on the rebound. At the end of 2003, the mobile content market in Russia was worth US\$99 million dollars, and just twelve months later it had tripled to US\$298 million. Already after the first nine months of 2005, it is now worth US\$210 million, with analysts predicting a figure in the region of US\$340 million for the whole year.

Logos and ringtones are still the most popular content, but consumers are now looking for more advanced content, and java games, and chat and dating services are all growing in popularity. Other areas which have seen substantial growth include business information (up 250%) and entertainment (60%) services.

Mobile Entertainment Services

	% of total data services
Logos and images	
Colour	31%
Black and White	
Ringtones	
Truetones	
Monophonic	
Polyphonic	
Games	
Colour	18%
Black and White	
TV Projects	17%
Entertainment	14%
Other	20%



37.9 million subscribers
78.47% penetration rate

South Korea

Korea is one of the most advanced mobile markets in the world, along with Japan, and was one of the first countries to launch 3G services, first in October 2000 using the technology CDMA 1x and then in January 2002 using CDMA 1x EVDO. It is a complex, highly diversified market, with such a wide range of subscriptions on offer that is difficult for consumers to keep track.

There are three mobile operators in Korea: SK Telecom, KTF (a subsidiary of the incumbent Korean Telecom) and LGTelecom. SK Telecom pitches itself as something of a "luxury" operator, and although its prices are slightly higher than its competitors, it manages to account for 51% of the market, with consumers attracted by its brand image and its more extensive network. The second largest operator, KTF (32.4%), offers a range of innovative services and a quality of service that is just as high as SKT, at a lower price. LGTelecom, with 16.6% of the market, is often perceived as offering less interesting content than its competitors, but it was the first operator to offer MP3 downloads and mobile banking.

Ringback tones were invented in Korea and are massively popular here, but other than this the country has not really produced much content for export and is far more focused on the lucrative local market. Korean operators are all

Inhabitants	48,300,000
GDP per capita	US\$19,200
Official Language	Korean
Currency	South Korean Won (KRW)

Mobile Phone Users	Millions	Penetration Rate %
2004	37.54	78.00%
2005	37.9	78.47%

Mobile Telecom Operators

	SKTelecom	KTF	LGTelecom
General Information			
Corporate Website	www.sktelecom.com	www.ktf.com	www.lgtelecom.com
Main Shareholders	SK corp (21.47%) City Bank (19.78%) Treasury Shares (10.53%)	n/a	LG Corp. 37.4% BT 16.6% other 46.6%
End User Market Share (in millions and as %)			
2004	52.57%	32%	16.00%
2005	19.34 (51.00%)	12.28 (32.40%)	6.29 (16.60%)
Total Turnover (KRW in millions)			
2004	9,700	5,831	3,209
2005 (Q3)	2,590	1,572	883
Average monthly ARPU / end-user			
2004	43,542	n/a	38,301
2005	44,921	33,159	39,608
Network			
CDMA Network			
Launch Date	October 2000	May 2001	May 2001
Total Numbers of Users			
2005	n/a	n/a	5,538
CDMA 2000 1x Network			
Launch Date	January 2002	August 2002	n/a
Total Numbers of Users (in millions)			
2004	4	1.2	n/a

pushing to increase their ARPU with highly interactive services like videos, games and music.

Six licences have been granted for mobile TV services using terrestrial DMB technology (rather than a satellite-based system), with four companies launching in December 2005 and the two others preparing to do so soon after. Interestingly, this service completely bypasses the mobile operators, with the broadcaster delivering its signals directly to mobile handsets.

The satellite-based DMB system launched in May 2005 by Tu Media (a subsidiary of SK Telecom), which uses a satellite shared with MBCO of Japan, had already reached around 300,000 subscribers by the end of the year, just seven months after its launch. It currently offers 11 video channels and 27 audio channels.

In October 2005, SK Telecom, the leading mobile operator, received a massive fine for failing to properly open its wireless network to other Internet portals, and the other operators have also been criticised for similar unfair practices. This ruling should lead to the market opening up still further to other content and service providers.

Some of the world's major producers of consumer electronics have their headquarters in Korea, including Samsung and LG, who are estimated to have shipped 100 million and 50 million handsets respectively worldwide in 2005. As a result, many highly advanced mobile phones make their first appearance on the Korean market, such as the 8 megapixel cameraphone unveiled by Samsung in November 2005.

Mobile Entertainment Services

	Most common end-user price (KRW)		
	Min	Average	Max
Logos and images			
Colour	400	300	450
Black and White	250	n/a	n/a
Ringtones			
Monophonic	n/a	100	400
Polyphonic	n/a	200	500
Ringback tones	1200	n/a	n/a
Games			
Colour	2000	n/a	n/a



39.4 million subscribers
91.63% penetration rate

Spain

Spain

The Spanish mobile market is a stable and mature market, with 39.4 million mobile users and a penetration rate of over 91%.

Telefonica, with its Movistar brand, dominates the mobile market in Spain with a 48% market share. Vodafone follows with 31% and the third operator Amena has 21%. France Telecom bought an 80% stake in Amena during the summer of 2005 in a deal that consolidated its position as one of the world's largest mobile operators and now plans to introduce its Orange brand to the Spanish market.

All three Spanish mobile operators launched their GPRS networks in the first half of 2001. Vodafone and Telefonica launched their UMTS services in the first quarter of 2004 and had already signed up around 500,000 customers by the end of the year, while Amena launched its network in November of the same year. The number of 3G subscribers in Spain is now estimated to have risen to more than 1 million, and the development of this market is really starting to take off.

Spanish operators offer a range of B2B services, from standard mobile office offers (including push email) and 3G data cards to more advanced M2M and telematics applications that allow the remote management of many types of machinery and devices.

In the consumer market, demand for personal-

isation services (logos, images and ringtones) is particularly high. Polyphonic ringtones remain popular, and the demand for Java applications, especially games, is growing all the time.

Inhabitants	43,000,000
GDP per capita	US\$24,803
Official Language	Spanish
Currency	Euro

Mobile Phone Users	Millions	Penetration Rate %
2004	37.2	86.51%
2005	39.4	91.63%

Data Services

	Telefónica Móviles	Vodafone	Amena
P TO P SMS			
Average MO retail price			
Prepaid	€0.15	€0.15	€0.15
Postpaid	€0.15	€0.15	€0.15
Premium SMS			
Launch date	April 2001	April 2001	September 2001
Premium Browsing			
Portal name(s)	E-moción	v-live!	Amena
Launch date	June 2003	October 2002	March 2003

Third Party Data Offers

	Telefónica Móviles	Vodafone	Amena
SMS			
Standard			
Toll free MO	yes	no	yes
MO	yes	no	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	no	no	no
MMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	no	yes
MT-P	no	no	yes
Subscription MT-P	no	no	yes
Premium Mobile Internet			
Per use/Content	yes	yes	yes
Content Bundle	yes	no	no
Subscription	yes	no	no
Subscription (Automatic Renewal)	no	no	no

Mobile Telecom Operators

	Telefónica Móviles	Vodafone	Amena
General Information			
Corporate Website	www.movistar.com	www.vodafone.es	www.amena.es
Main Shareholders	LaCaixa BBVA	Vodafone Group (100%)	France Telecom
End User Market Share (in millions and as %)			
2004 (H1)	52%	28%	20%
2005 (Q1)	18.91 (48%)	12.21 (31%)	8.27 (21%)
Average monthly ARPU/ end-user			
2004 (Q3)	€32.4	€35.4	€28
2005 (Q3)	€34.2	€36.0	€29.0
Network			
GSM Network			
Launch Date	1998	1995	1991
Prepaid Users			
2004	n/a	5,531,850	n/a
2005	n/a	6,080,160	n/a
GPRS Network			
Launch Date	May 2002	June 2002	September 2002
Total Numbers of Users (in millions)			
2004	20.5	11.0	7.9
2005	18.9	12.2	8.3
3G (UMTS) network			
Launch Date	October 2004	January 2005	May 2005
Total Numbers of Users 2005	1 million + (for all operators)		

Mobile Entertainment Services

Most common end-user price (€)			
	Min	Average	Max
Logos and images			
Colour	0.90	n/a	1.80
Black and White	0.90	n/a	1.80
Ringtones			
Monophonic	n/a	0.90	n/a
Polyphonic	n/a	1.80	n/a
Games			
Colour	2.70	n/a	3.60
Black and White	2.70	n/a	3.60
Quiz / Contest		0.90	
Chat	0.30	0.60	0.90
Vote	0.30	0.60	0.90
Information Services	n/a	0.20	n/a

9.775 million subscribers
108.50% penetration rate

Sweden

The mobile penetration rate in Sweden is one of the highest in Europe, at 108.5%.

There are three main operators in Sweden. Telia, which is partly owned by the Swedish and Finnish governments, dominates with a market share of around 45%. Tele2Comviq holds second place with a market share of around 35%. Vodafone, formerly Europolitan, has 15% of the market. In the summer of 2003 the 3G operator "Tre" (3) launched its network in the summer of 2003 and now has nearly 3% of the market.

Prepaid users represented more than 70% of the total Swedish market in 2004, but this fell slightly in 2005.

Telia launched its GPRS services in 2001. All operators had a GPRS offer by the end of 2002 and they cover 99% of the population (80% coverage of Sweden's land and water).

In December 2000, PTS (the Swedish National Post and Telecom Agency) granted four licences for the provision of mobile telecommunications services based on UMTS technology. These licences went to Europolitan (Vodafone), Hi3G (3), Orange and Tele2. Orange gave notice that it did not intend to develop a network in Sweden, and attempted to sell its licence to Telia and Tele2, who are collaborating in the construction of their networks because Telia originally did not obtain a licence

Inhabitants	9,041,211
GDP per capita	US\$29,732
Official Language	Swedish
Currency	SEK

Mobile Phone Users	Millions	Penetration Rate %
2004	8.19	91.00%
2005	9.775	108.50%

Data Services

	Telia	Tele2	Vodafone	Tre
Data ARPU 2005				397
P TO P SMS				
Average MO retail price (SEK)				
Prepaid	0.8	1.4	1.4	1.4
Premium SMS				
Launch date	2001	2001	2001	2001
Premium Browsing				
Portal name(s)	Telia SurfPort	Tele2Comviq	v-live!	Tre
Launch date	December 2003	February 2003	October 2002	June 2005

Third Party Data Offers

	Telia	Tele2	Vodafone	Tre
SMS				
Standard				
Toll free MO	no	no	no	no
MO	yes	yes	yes	yes
MT	yes	yes	yes	yes
Premium				
MO-P	yes	yes	yes	yes
MT-P	yes	yes	yes	yes
Subscription MT-P	yes	yes	yes	yes
MMS				
Standard				
MO	yes	yes	yes	no
MT	yes	yes	yes	no
Premium				
MO-P	yes	yes	no	no
MT-P	yes	yes	no	no
Subscription MT-P	yes	yes	no	no
Premium Browsing				
Per use/Content	yes	yes	no	no
Content Bundle	yes	yes	no	no
Subscription	yes	yes	no	no

Mobile Telecom Operators

	Telia	Tele2	Vodafone	Tre
General Information				
Corporate Website	www.Telia.se	www.Tele2.se	www.Vodafone.se	www.Tre.se
Main Shareholders	Swedish Gov't (45%) Finish Gov't (19%) Private and Financial (35.6%)	Investment AB Kinnevik (28,3%) Other shareholders (71,7%)	Vodafone 100%	Hutchison Whampoa Limited (60%) Investor AB (40%)
End User Market Share (in millions and as %)				
2004	4.243 (43%)	3.376 (35%)	1.55 (16%)	0.265 (3%)
2005	4.372 (44.73%) (3Q)	3.5 (35.81%)	1.5 (15.35%) (3Q)	0.29 (2.97%) (2Q)
Total Turnover (in millions SEK)				
2004	5.129	n/a	1.574	n/a
2005	3.865 (1Q-3Q)	2.087 (1Q-3Q)	1.541 (1Q)	n/a
Average monthly ARPU/ end-user				
2004	233	166	354	n/a
2005	214 (1Q-3Q)	166	318 (31 Mar 04 - 31 Mar 05)	397
Network				
GSM Network				
Launch Date	1998	1997	1997	n/a
Prepaid Users				
2004	55.00%	74.40%	41.00%	n/a
2005	n/a	71.00%	38.00%	n/a
GPRS Network				
Launch Date	February 2004	June 2004	February 2004 (Business) July 2004 (Consumer)	n/a
3G (UMTS) network				
Launch Date	March 2004	June 2004	February 2004 (Business) July 2004 (Consumer)	May 2003

from PTS. However, since Telia and Tele2 together control 80% of the Swedish market, the sale was rebuked by PTS for competition reasons.

Although the new networks were required to cover at least 99.98% of the Swedish population by the end of 2003, building permit problems and technical issues mean that the expected coverage has not been achieved. Instead, 80% of the Swedish population, mainly populated areas, had been covered by the end of 2004.

The new operator 3 (Hi3G) has led the market, already opening their network for use in the summer of 2003. Nearly a year later, Telia opened its network (March 2004), Tele2 opened up in June 2004, and Vodafone launched its business 3G network in February 2004 and its private network in July of the same year.

Sweden was the first country in Europe to have a fully operational UMTS network across all major operators.

In December 2003 PTS published a report that revealed a lack of effective competition in the Swedish mobile market. Compared to the other Nordic countries, SMS prices were nearly six times higher in Sweden, which resulted in a much lower usage of SMS. In the report, PTS emphasized the importance of SMS as a first step towards using more advanced mobile services. Following the publication of this report, and the introduction of several new operators, a price war has pushed prices to less than 1 SEK per SMS. At the same time, better MMS pricing has instigated wider use of MMS capabilities.

Premium SMS was launched in Sweden in autumn 2001. Premium MMS has been fully available since the fourth quarter of 2003, at a

range of end-user prices similar to those for Premium SMS, and Premium Browsing is also available across all operators.

A very broad range of B2B services are available in Sweden, including 3G data cards, mobile office solutions and telematics.

In the consumer market, games are the most popular service among Swedish end-users, with chat and customisation services also proving successful.

Mobile Entertainment Services

Most common end-user price (SEK)			
	Min	Average	Max
Logos and images			
Colour	5	15	20
Black and White	5	10	15
Ringtones			
Truetones	15	25	30
Monophonic	5	10	10
Polyphonic	10	15	20
Games			
Colour	25	30	50
Black and White	15	25	30
Video	15	25	50
Quiz / Contest	5	10	15
Chat	5	5	15
Vote	0	5	15
Information Services	0	5	15



6.58 million subscribers
88.5% penetration rate

Switzerland

The mobile penetration rate in Switzerland stood at just under 89% in 2005, with more than 6.58 million mobile end-users.

The Swiss market is unique in Western Europe as there is no country where a single operator has such a large market share - Swisscom Mobile dominates the market with a share of 63.4%. Sunrise, which was created from the merger of DiAx and Sunrise, has 19.1% of the market, and the remaining 17.5% is held by Orange.

Two new operators joined the Swiss market in February 2004, when the Communication Commission granted two GSM 1800 MHz licenses to the Swiss company In&Phone and the Swedish company Tele2. So far, neither operator has gained significant market share.

In 2004, Netsize estimated that there were about 2.5 million prepaid end users, representing 40% of the total Swiss end-user base.

In December 2000, four UMTS licenses were granted in Switzerland. Swisscom Mobile was the first Swiss operator to launch a UMTS service, with exclusive access to the v-live! portal. Orange launched their 3G network in September 2005, and Sunrise did likewise in November.

Customisation services are quite popular in Switzerland. Many content providers now offer colour and animated logos with special branded content.

Premium SMS has been available on all operators since 2002. Since 2003, mobile operators have also offered Premium MMS to third parties.

Inhabitants	7,439,200
GDP per capita	US\$46,853
Official Languages	German, French Italian
Currency	Swiss Franc (CHF)

Mobile Phone Users	Millions	Penetration Rate %
2004	6.41	87.00%
2005	6.58	88.50%

Data Services

	Swisscom Mobile	Sunrise	Orange
Data ARPU 2005	14%	n/a	n/a
P TO P SMS			
Average number of SMS sent per end-user per month 2004	44	n/a	n/a
Average MO retail price Prepaid & Postpaid	CHF 0.20	CHF 0.20	CHF 0.25 (0.15*)
Premium SMS			
Launch date	2002	2002	2002
Premium Browsing			
Portal name(s)	v-live!	sunrise live	Orange World
Launch date	n/a	2003	n/a
Number of users (in millions) 2004	445,000	n/a	n/a

*CHF 0.25 up to 30 SMS a month. After that, option (CHF 3/month) available with the MO at CHF 0.15.

Third Party Data Offers

	Swisscom Mobile	Sunrise	Orange
SMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	yes	yes	yes
MMS			
Standard			
MO	yes	yes	yes
MT	yes	yes	yes
Premium			
MO-P	yes	yes	yes
MT-P	yes	yes	yes
Subscription MT-P	yes	yes	yes
Premium Browsing			
Per use/Content	yes	yes	yes
Content Bundle	yes	yes	yes
Subscription	yes	yes	yes
Subscription (Automatic Renewal)	yes	n/a	n/a

Mobile Telecom Operators

	Swisscom Mobile	Sunrise	Orange
General Information			
Corporate Website	www.swisscom.ch	www.sunrise.ch	www.orange.ch
Main Shareholders	Swisscom Group (75%); Vodafone plc (25%)	TDC Group (100%)	Orange SA
End User Market Share (in millions and as %)			
2004	61.5%	21.2%	17.4%
2005	4.170 (63.4%)	1.259 (19.1%)	1.152 (17.5%)
Total Turnover (in millions CHF)			
2004	4.356	1.230	1.288
2005	3.158 (Q1-Q3)	0.311 (Q3)	0.644 (H1)
Average monthly ARPU / end-user			
2004	CHF 95 (€61.40)	CHF 75 (€48.50)	CHF 94 (€60.70)
2005	CHF 84 (€54.30)	CHF 82 (€53.20)	CHF 93 (€60.00)
Network			
GSM Network			
Launch Date	1990	1999	1999
Prepaid Users			
2004	36.8%	58.2%	n/a
GPRS Network			
Launch Date	2002	n/a	n/a
3G (UMTS) network			
Launch Date	November 2004	November 2005	September 2005

Mobile Entertainment Services

Most common end-user price (CHF)		
	Average	Max
Logos and images		
Colour	3.00	3.00
Black and White	1.50	3.00
Ringtones		
Truetones	1.50	3.00
Monophonic	2.00	3.00
Polyphonic		3.00
Games		
Colour	3.00	3.00
Black and White	3.00	3.00
Quiz / Contest	0.40	3.00
Chat	0.35	3.00
Vote	0.20	3.00
Information Services	0.20	3.00

65.00 million subscribers

114.20% penetration rate

UK

United Kingdom

The mobile penetration rate in the UK broke through the 100% barrier in 2005, reaching 114% and over 65 million subscribers. Total mobile voice and data revenues reached approximately £13 billion, overtaking fixed line voice revenues for the first time, whilst 3G mobile telephony, although still in relative infancy, accounts for nearly 9% of the UK mobile market.

Historically, there have been 4 mobile phone networks operating in the UK. Vodafone and O2 (formerly BT Cellnet) are the oldest and largest, originally operating analogue (1st generation) networks, and these were later joined by Orange and T-Mobile (formerly One 2 One). All of these companies now operate digital (2nd generation) networks. In addition there are now several "virtual" networks that use the T-Mobile network - Virgin Mobile, Value Telecom and Fresh. These virtual networks have different tariffs and charges, but they use the T-Mobile technology. The first operator to provide 3G coverage is 3. 3G offers additional data services such as video calling, entertainment and location-based services (local maps, traffic services, etc).

O2 is the operator of the moment, with a 24% market share and recently launching its i-mode service. In October 2005, Spain's Telefonica agreed to buy O2 for over £18 million, a deal

Inhabitants	60,441,457
GDP per capita	US\$29,000
Official Language	English
Currency	Sterling

Mobile Phone Users	Millions	Penetration Rate %
2004	59.90	95%
2005	65.00	114.2%

Data Services

	Orange	Vodafone	T-Mobile	O ₂	3
Data ARPU 2005				24.2	20
P TO P SMS					
Average MO retail price					
Prepaid	£0.10	£0.12	£0.10	£0.10	£0.10
Postpaid	£0.10	£0.12	£0.10	£0.10	£0.10
Premium SMS					
Launch date	2002	2000	2002	2001	2004
Premium Browsing					
Portal name(s)	OrangeWorld	Vodafone Live - (Discovery)	T-Zones	i-mode	n/a
Launch date	October 2003	April 2005	March 2003	2005	n/a

Third Party Data Offers

	Orange	Vodafone	T-Mobile	O ₂	3
SMS					
Standard					
Toll free MO	yes	yes	yes	no	yes
MO	yes	yes	yes	yes	yes
MT	yes	yes	yes	yes	yes
Premium					
MO-P	yes	yes	yes	yes	yes
MT-P	yes	yes	yes	yes	yes
Subscription MT-P	yes	yes	yes	yes	yes
MMS					
Standard					
MO	yes	yes	yes	yes	yes
MT	yes	yes	yes	yes	yes
Premium					
MO-P	yes	yes	yes	no	yes
MT-P	yes	yes	yes	no	yes
Subscription MT-P	yes	yes	yes	no	yes
Premium Browsing					
Per use/Content	yes	yes	yes	yes	yes
Content Bundle	yes	yes	yes	yes	yes
Subscription	yes	yes	yes	yes	yes
Subscription (Automatic Renewal)	yes	yes	yes	yes	yes

Mobile Telecom Operators

	Orange	Vodafone	T-Mobile	O ₂	3
General Information					
Corporate Website	www.orange.co.uk	www.vodafone.co.uk	www.t-mobile.co.uk	www.o2.co.uk	www.three.co.uk
Main Shareholders	France Telecom (100%)	Vodafone Group (100%)	Deutsche Telekom (100%)	mmo2	Hutchison Whapoa Ltd (100%)
End User Market Share (in millions and as %)					
2004	13.67 (24%)	13.01 (23%)	15.21 (27%)	13.67 (24%)	1.49 (3%)
2005	14.46 (23%)	15.5 (24%)	16.3 (25%)	14.4 (23%)	3.02 (4%)
Total Turnover (in millions)					
2004	£4.139	£5.504	£4.300	£3.120	n/a
2005	£6.137	£5.065	£3.952	£3.627	n/a
Average monthly ARPU/ end-user					
2004	£18.00	£23.00	£13.00	£23.00	£42.30
2005	£22.80	£25.50	£14.00	£23.40	£40.30
Network					
GSM Network					
Launch Date	1994	1992	1993	1994	1996
GPRS Network					
Launch Date	May 2002	July 2002	September 2002	September 2002	September 2002
3G (UMTS) network					
Launch Date	January 2005	November 2004	2005	2005	2005
Total Numbers of Users (in millions)					
2005	n/a	0.25	n/a	n/a	3.02

which positions the company alongside Vodafone in terms of global stature.

Orange UK has 14.22 million customers with a UK annual revenue of over £6000 million, securing its place as one of the leaders in its field.

Vodafone transformed itself into a global giant with two remarkable deals in which it acquired US company Airtouch and German industrial and telecoms company Mannesman. It is considered one of the world's leading mobile operators with more than 130m customers around the globe.

T-Mobile is one of the largest mobile groups in the world. It has over 16 million subscribers in the UK, which is one of the most competitive markets in mobile telecommunications, up from

the 10.75 million it had when the company re-branded in 2002.

3 is a new entrant in the mobile market and yet in the UK its customer base grew by over 13 times during the year and currently totals three million while turnover grew by over nine times. 3 UK has had a number of firsts throughout this year including an exclusive release of Robbie Williams' music video 'Misunderstood' before it premiered on TV or the Web.

Mobile Entertainment Services

Most common end-user price (£)			
	Min	Average	Max
Logos and images			
Colour	1.00	1.50	3.00
Black and White	0.56	1.00	1.50
Ringtones			
Truetones	1.50	3.00	4.50
Monophonic	1.00	1.50	2.00
Polyphonic	1.50	3.00	3.50
Games			
Colour	2.00	3.00	5.00
Black and White	1.50	2.00	3.00
Video	1.00	3.00	4.50
Quiz	0.25	0.25	0.50
Chat	0.25	0.50	1.00
Vote	0.25	0.25	0.35
Information Services	0.25	0.35	0.50

194 million subscribers
65.0% penetration rate

USA

United States

From the outset, the US market has been very fragmented, and even today there are dozens of local and regional operators all competing for a share of the pie. Recently, however, the trend has been towards merger and acquisition, and all the main carriers have bought out, merged with or at the very least formed relationships with the smaller operators that go beyond simple roaming agreements to ensure a much closer level of inter-carrier cooperation. As a result, the market is now dominated by four main carriers: Cingular, Verizon Wireless and Sprint/Nextel, who each have around 25% of the market, and T-Mobile, whose market share is just over 10%.

In the United States different technologies and standards for wireless phones coexist, with some carriers having CDMA/TDMA networks, others GSM, and some both. 3G networks (W-CDMA and 1xEV-DO) are already deployed in the major cities, and are in the process of being rolled out nationwide.

Much has been made in the past of how the US has lagged behind Europe and Asia in the provision of mobile content and services, but this is starting to change and the market is slowly beginning to open up. Two years after the first Premium shortcodes were made available, for instance, only now are they available for 100% of mobile consumers and only now is

Inhabitants	298,000,000
GDP per capita	US\$40,100
Official Language	English
Currency	USD

Mobile Phone Users	Millions	Penetration Rate %
2004	168	59%
2005	194	65%

Data Services

	Cingular Wireless	Verizon Wireless	Sprint/Nextel	T-Mobile	Alltel
Data ARPU 2005	\$4.16	\$3	\$6.50	\$4.10	\$2.16
Premium Browsing					
Portal name(s)	Media Mall	GetItNow!	n/a	t-zones	n/a

Third Party Data Offers

	Cingular Wireless	Verizon Wireless	Sprint/Nextel	T-Mobile	Alltel
SMS					
Standard MO MT	yes yes	yes yes	yes yes	yes yes	yes yes
Premium MO-P MT-P Subscription MT-P	no yes yes	no yes yes	no yes yes	no yes yes	no yes yes
MMS					
Standard MO MT	no no	no no	no no	no no	no no
Premium MO-P MT-P Subscription MT-P	no no no	no no no	no no no	no no no	no no no

Mobile Telecom Operators

	Cingular Wireless	Verizon Wireless	Sprint/Nextel	T-Mobile	Alltel
General Information					
Corporate Website	www.cingular.com	www.verizonwireless.com	www.sprint.com	www.t-mobile.com	www.alltel.com
Main Shareholders	SBC 40% Bell South 60%	Verizon communications (55%), Vodafone(45%)	Sprint Corporation Nextel	Deutsche Telekom	Alltel Corporation
End User Market Share (%)	26.90%	25.30%	23.40%	10.40%	5.30%
Total Turnover (in millions)					
2004	\$12,446 (restated) (Q3)	\$27,662	\$20,498	\$10,030	\$3,538 (Q3)
2005	\$25,584 (Q3)	\$23,615 (Q3)	\$23,384 (Q3)	\$5,900 (Q2)	\$4,252 (Q3)
Average monthly ARPU / end-user					
2004 (2T)	\$50.32	\$50.80	\$62	n/a	n/a
2005 (Q3)	\$50.43	\$50.13	\$65	\$53	\$48

Mobile Entertainment Services

Average end-user price (\$)	
	Min
Logos and images	
Colour	1.99
Black and White	1.99
Ringtones	
Truetones	1.99
Monophonic	1.99
Polyphonic	2.99
Games	
Colour	3.99
Black and White	n/a
Video	1.99
Adult	
Chat	not allowed
Image	not allowed
Video	not allowed
Chat	0.99
Information Services	1.00

it possible to download Premium content other than text. But the market is moving forward.

A considerable amount of all content is only available within the carriers' walled gardens - one recent study put the figure as high as 90% - and as things stand today, the fact that there are only a few aggregators connecting to all the major carriers means that it is sometimes difficult for new content and service providers to enter the market. Here too, however, things are starting to change, as the carriers begin to realise that this is restricting market growth.

As is only to be expected in a country with a history of strong consumer protection like the United States, complex regulations are being put in place governing mobile content and services. This is a slow process, given that it is starting from scratch (there were no regulations at all as recently as 2004), but progress is being made and a more structured system is now being built. Initially, these rules may seem cumbersome, but increasing consumer confidence can only benefit the market as a whole in the long term.

We must bear in mind that the United States remains a market of great potential, not least due to the fact that its citizens enjoy a high standard of living and are already avid consumers of entertainment and information services on the web. As the mobile sector in the US starts to open up, opportunities now exist that some commentators are comparing to the early days of the commercial Internet.





Conclusion



All in Mobile, Mobile in All

**Philippe Bornstein,
Head of Business Development,
Netsize Group**

ALL IN MOBILE

As we look back on the year that has just ended and turn our gaze towards the future of mobile in 2006 and beyond, one thing is clear - the mobile phone has amply proven its effectiveness as a tool for value added services.

From voice onwards, the mobile has progressively integrated a whole host of features to the point where it has now become a truly intimate personal computer - music, imaging, video, messaging (from SMS and MMS to Instant Messaging and email), games and the Internet are now all to be found on these powerful devices that we carry around every day in our pockets and in our handbags.

Admittedly, heavy-duty usage of many of these exciting new functions may still be limited to early adopters, but the services that they enable are beginning to make their way through to the population at large, including even some of the most reluctant mobile users.

Now, mobile business has entered a new phase as it seeps even further into all of our daily lives.

MOBILE IN ALL

That the idea of Mobile in All is now a reality can be seen in the different verticals we have

described in this 2006 edition of the Netsize Guide: mobile business, mobile entertainment, mobile marketing, mobile commerce.

At the same time, this omnipresence of the mobile also applies to geography. As on the Internet, in an extremely short space of time, the key players in the mobile value chain have grown to become global companies, managing mobile services that often span several countries, and sometimes even continents. And this is true for record labels, Internet players, software giants, media conglomerates and more, as well as for many mobile pure players.

For mobile service providers, the entry into this new phase brings with it a need to face up to numerous difficult challenges.

EXPANDING IN NEW TERRITORIES WHERE COMPETITION IS STILL OPEN FOR BASIC SERVICES

Despite the high penetration rates in the more mature markets, the growth in subscriber numbers is far from over. We have now passed the two billion mark and the rate of new sign-ups shows no signs of abating. Major new markets that will see substantial growth over the coming years include China - already the largest market

in the world, and a place of great opportunity for foreign companies - India, Russia and Latin America. And let's not forget the United States.

MANAGING MOBILE CONTENT AND DRM

At the same time, mobile content and services are growing ever more sophisticated. Record labels are now in a position to offer full-track music downloads of a quality comparable to any CD. Hollywood and other media players provide video content, in some cases specifically created for mobile. Half a dozen major software houses around the world compete to bring the latest games to market. And all of this new content now comes with a proper DRM implementation in place to protect the rights of the copyright holder.

Equally importantly, mobile content is at last being considered as a media format in its own right. Along with the Crazy Frog phenomenon, 2005 has also seen pop stars of the stature of Madonna and Robbie Williams launch exclusive content directly on mobile.

LEARNING HOW TO MANAGE THE OPEN GARDEN

When it comes to the marketplaces where this content is sold, one major trend in many countries is that the walls around operators' gardens are gradually being dismantled. Make no mistake, walled gardens were an important stage in the development of the mobile market for the way they helped educate users and encourage consumer confidence, but the time has come to loosen the reins if the market is to prosper and grow.

BRINGING INNOVATIVE PRICING MODELS TO THE MARKET

Business models are changing too. To take the example of mobile content, the pay-per-download model that has so far been prevalent in most countries is now giving way to a subscription model à la i-mode. The market is growing up, you could say. In such a market, customer loyalty takes on a special importance and we will surely see the rise of new CRM strategies and brand-building.

Billing is also evolving, from Premium SMS (which accounts for 95% of all mobile transactions today) to Premium WAP and other payment methods, and new players like credit card companies and PayPal are starting to take an interest in the field of mobile billing. In any case, it is safe to say that m-commerce, which was worth \$5 billion in the EU in 2005, looks set to go from strength to strength.

SEIZING THE OPPORTUNITY OFFERED BY CONVERGENCE

When discussing the future of mobile, it could be argued that there is little reason to talk about convergence. Why? Because convergence is here already, and the coming-together of the Internet and Mobile that it implies is a trend that will undoubtedly mark the future in more ways than we can possibly imagine. With far more mobile phones already in existence than people who have access to the web via a PC, it is not surprising that some of the giants of the Internet world like Yahoo!, Google and MSN are taking their first steps in the world of mobile.



CREATING INNOVATION FOR ADEQUATE LIFESTYLE SERVICES

So, yes, Mobile in All is now upon us. Your mobile phone can now be used for interacting with vending machines, for synchronising with computers and for authentication. It can be used as an m-commerce tool, as a marketing medium, and as an enabler of m-payments. It can even interact with your household appliances and be used as a remote control for your video.

We believe that these services will open up the way to innovative new uses that go beyond the idea of the mobile as a mere entertainment platform. This is a critical stage in the life cycle of mobile value added services. And it is made possible thanks to Mobile and Internet convergence and all the new technologies now supported by mobile devices and networks, including more advanced Internet browsers (the mobile click revolution), 3G, Flash lite and ever-increasing storage capacity to name but a few.

BUT

One thing which hasn't changed is that the mobile market remains a complex place, and there is a real risk that this complexity may limit expansion. Each carrier has a long list of rules and regulations that must be adhered to. Technological diversity, not least between the GSM and CDMA worlds, is still the norm. A whole host of billing mechanisms need to be understood and implemented. And, last but not least, in this increasingly globalised market, we should not underestimate the importance of local cultural differences - put simply, no two markets are alike.

In the face of such complexity, the importance of choosing the right partner is paramount. A partner that understands the shift from All in Mobile to Mobile in All, a partner that can see how the mobile market has become a global market where even the smallest start-up can now rub shoulders with internationally-renowned brands, a partner that has the knowledge, experience and vision to accompany you on your journey in this exciting world. A partner like Netsize.



Serge Subiron
Head of Marketing & Operators relations ,
Netsize Group

Transformation of different aspects of our lives brought about by the development of mobile services is the key message which was reiterated by our research and the views of industry leaders reflected in the Netsize Guide 2006.

Small screens are clearly providing the global vision required to transform economies, industries and consumer lifestyles for the better. Life without mobile phones is virtually unimaginable as their impact stretches beyond peer-to-peer communication. Mobiles phones today provide us with entertainment and information, and also help us in running business operations.

There are several milestones which have been crossed with over 2 billion mobile users worldwide, mobile penetration crossing over 90% in most developed economies and the fastest growth being experienced by newer economic powers in Asia and Latin America. The race to reach the 3 billion global subscribers mark could be faster than we imagine due to the introduction of low cost handsets and services.

At Netsize, we believe that the mobile industry is entering a new phase of exponential growth and also faces challenges to deliver more global and useful services. The Netsize Guide 2006 is aimed at helping in further developing the global mobile applications market by sharing useful market information with our customers and industry stakeholders.

We hope you enjoyed reading the Netsize Guide 2006 and find the information helpful for your business. We look forward to hearing from you and will also be keen to discuss with you if Netsize can be of any help to you in launching global mobile services.

Please don't hesitate to contact us with any comments or feedback on the content of this guide - guide@netsize.com

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