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Chapter 5

A whole world of services in the consumer's pocket

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Although consumers in developed markets are slowly increasing their purchases of sophisticated handsets such as smartphones, there has been no similar increase in the usage of advanced services, those going beyond voice or SMS services. The gradual decline in profits obtained from voice services in these countries is making operators focus on increasing data services as a means to generate more revenues and increase their market share.

Despite the significant increase in data services in recent years, of between 10% and 20% annually¹⁰⁷, the level of usage is still low and is mostly limited to sending SMS, which in many cases replace other, the more expensive voice services. Using mobile phones to access the Internet, watch TV or connect to social networks is done by very few consumers, and they can be considered niche services. The companies are working on finding a new **killer application** that increases usage exponentially in the way that SMS or ringtones did, with little success so far, despite significant improvements in downloading speeds.

The opening of the mobile market will not be sufficient to boost the demand for data services. New models of cooperation that add value for the customer and reduce the costs of services will be necessary.

The situation in Spain is no different from that in the rest of the world, as seen in Figure 25.

For the FTF experts, the main factor hindering the use of data services, from the consumer's point of view, is the price, followed by technical problems with the device, and the lack of knowledge on rates, as shown in Figure 26.

However, not all the barriers derive from consumers. The consulting firm CSMG¹⁰⁸ identifies other important barriers, such as:

■ **The ecosystem:**

- The variety of standards in the industry, which affects interfaces, invoicing platforms, etc., and makes interoperability between mobile operators and devices difficult.
- Strong control by mobile operators, which has limited involvement and investment by new participants.

■ **Content and applications:**

- Fragmentation of mobile devices, which complicates and delays the development of applications.
- Limited development of specific content specifically for mobile handsets.
- Lack of Internet applications optimized for mobile use.

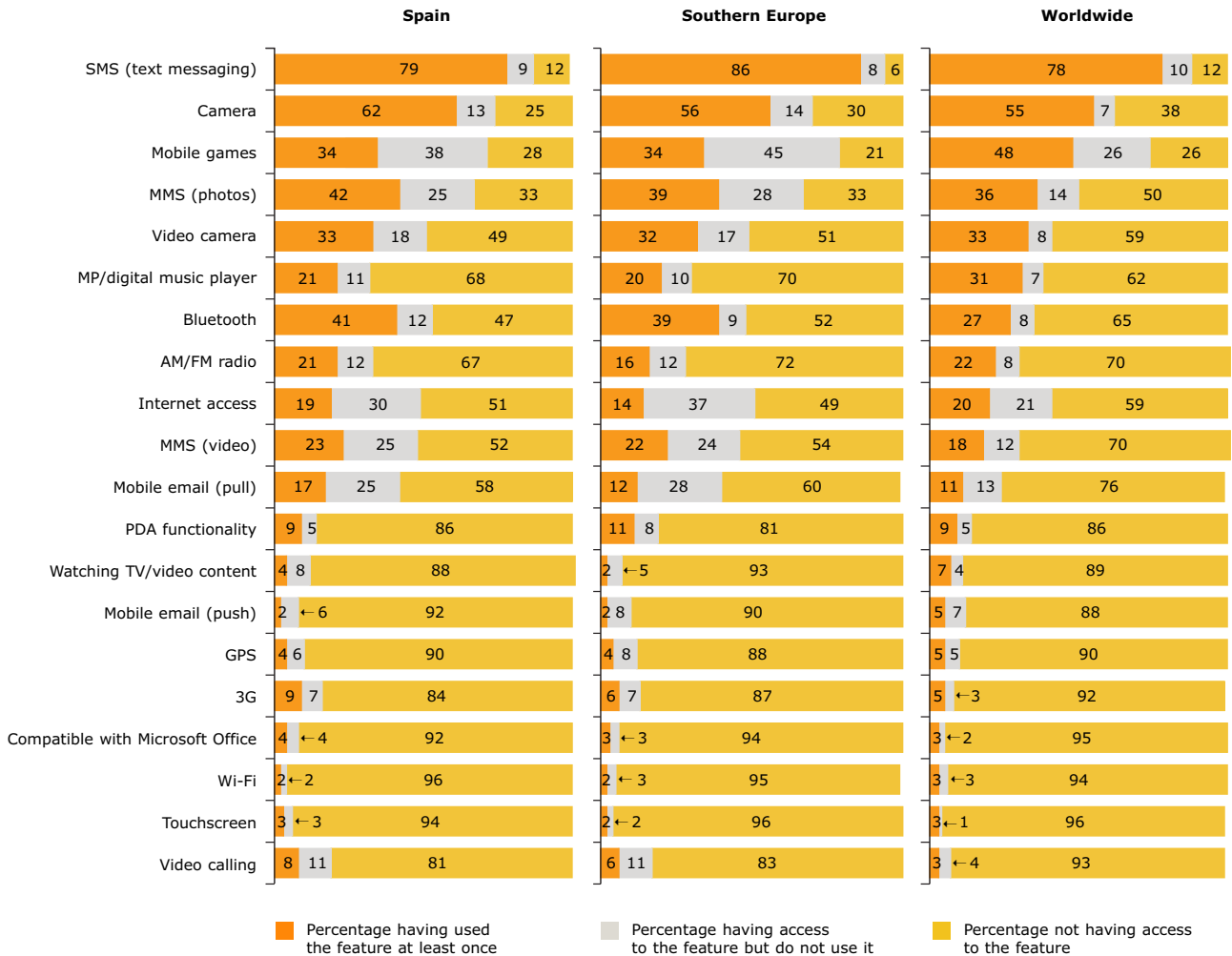
■ **Economies of the mobile operators:**

- Lower profit levels generated by the mobile operators with data services compared to voice services, due to the cooperation necessary with third parties.

¹⁰⁷ Network World. 3/10/2008.
Article:
<http://www.idg.es/comunicaciones/articulo.asp?id=166031>.

¹⁰⁸ *On the Edge: Devices at the Center of Change in Wireless*. CSMG. Spring 2008.

Features used most in Spain: SMS, camera, MMS and Bluetooth



Base: all mobile phone users.

Figure 25. Most commonly used features on mobile phones.
Source: TNS Global Technology Insight 2008.

- High cost and complexity in the development of advanced data services.
- Small target market for data services in comparison with voice and SMS services.

■ **Networks:**

- Limited spectrum, especially for applications intensive in **broadband** use and especially for video or games on mobile handsets.
- Limited coverage of broadband networks (3G and 4G).

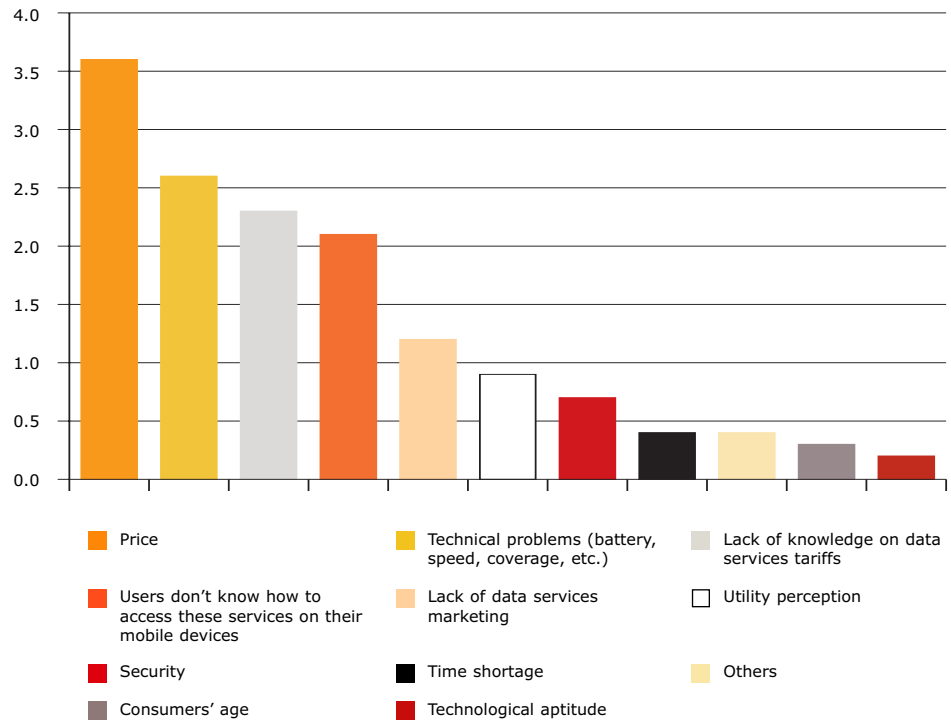


Figure 26. Barriers to data use.
Source: drawn from the conclusions within the Future Trends Forum.

■ **Devices:**

- Devices optimized for voice rather than data services.
- Technical limitations such as size, battery duration, storage and processing capacity, screen, camera and others.
- Capacities yet to be developed: touchscreens, voice recognition, etc.

According to the CSMG study¹⁰⁹, some of these barriers are anticipated to fall gradually over the next five years, although not to the point where they have been completely removed. Despite the technical breakthroughs in handsets and networks, increasing the use of data services will be a challenge for operators and manufacturers.

Once these barriers have been overcome, or at least reduced, the FTF experts expect the services providing the best business opportunities to be mobile location-based services and mobile social networks. In their opinion, films will be the services experiencing the least growth (see Figure 27).

¹⁰⁹ CSMG: *op. cit.*

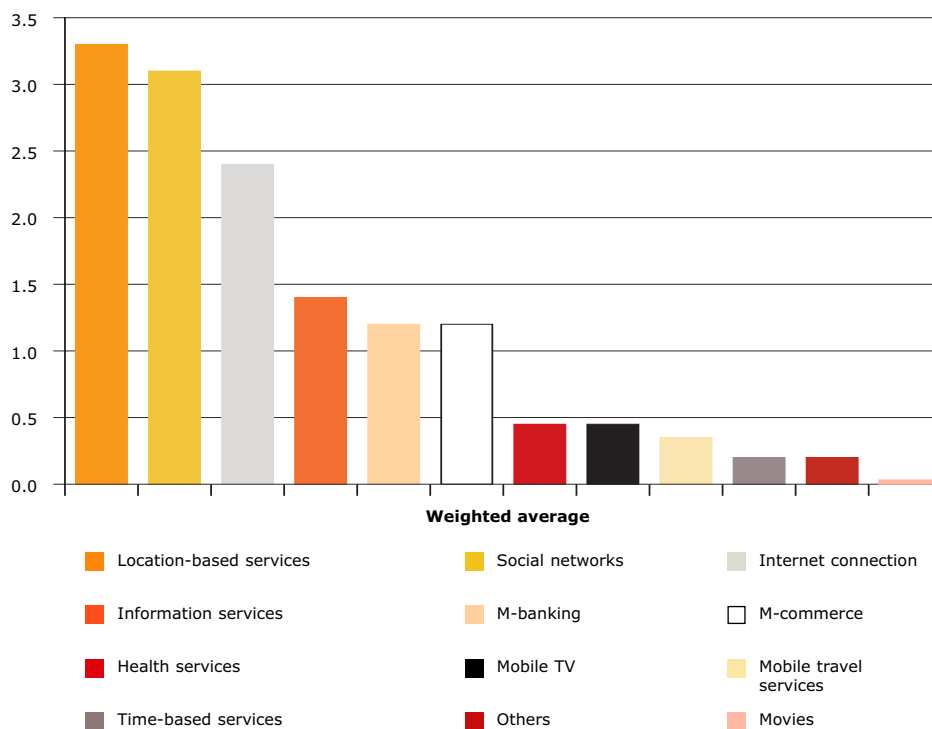


Figure 27. Mobile services with the greatest opportunities for growth.
Source: drawn from the conclusions within the Future Trends Forum.

5.1. SMS, the big winner

A lot has happened in the last 16 years, since December 3, 1992, when Neil Papworth, a young engineer at **Airwide Solutions**¹¹⁰, sent the first text message in history to the director of **Vodafone**¹¹¹, Richard Jarvis. The message was sent from a computer to a bulky mobile handset and said "Merry Xmas." Nobody would have suggested then that it was going to become a cultural phenomenon¹¹².

The level of SMS consumption has not been the same in all geographical areas. SMS use in the United States is much lower than in Europe, where 71% of mobile users send them. 55% send an SMS at least once a week and over half of young people aged 12 to 24 years old send at least one a day. In Spain, an average of 50 text messages per person are sent each month¹¹³.

The SMS has been the clear winner in data services that can be accessed from the mobile handset, a surprise to those in the sector and outside it. Furthermore, it does not appear to be a passing fad, as usage is increasing. The most important thing in terms of the massive take-up of SMS is the fact that it marks **the turning point in the transition of wireless from voice to data services.**

¹¹⁰ Airwide Solutions:
<http://www.airwidesolutions.com/>.

¹¹¹ Vodafone:
http://www.vodafone.com/hub_page.html.

¹¹² Flowme. 14/12/2007. Article: "The SMS celebrated its 15th birthday as a cultural phenomenon."

¹¹³ *Europe's Mobile Consumer*. Christof Herzog Ph.D. Forrester. June 2005.

The latest innovations mean that some mobile handsets (i.e., iPhone, BlackBerry) read text messages "out loud," which is a very useful functionality for people with visual impairment. However, improvements are also taking place in voice messaging, with breakthroughs such as "visual voice mail" like SimulSays for the BlackBerry. With this software, users can move around on the screen, click and hear voice messages, and select any of them to listen again, instead of having to browse between messages.

5.1.1. Uses and opportunities for businesses and society

The high level of SMS use is undoubtedly generating rich profits for the operators. According to the Association of Mobile Services Companies¹¹⁴, both normal and premium short messages account for 12% of the revenues of mobile operators¹¹⁵.

However, SMS do not only generate profits for operators. There are also an increasing number of companies in other sectors that are taking advantage of their consumer appeal. Some of their uses are:

- **Interaction with television.** SMS have enabled the media to combine economic profits with audience participation. These messages create major revenue for both the media and operators alike.
- **Communication and marketing channels.** Traditional businesses are increasingly using the SMS as a channel of communication with their customers, as with **Neck and Neck**¹¹⁶, which notified customers of sales by an SMS (see the "Marketing goes mobile" section in Chapter 6).
- **A new format for passing on news.** Traditional communication companies like **Univision**¹¹⁷ are reaching agreements with companies specializing in mass message delivery, such as **Tapioca Mobile**¹¹⁸, for them to distribute news alerts to mobile handsets using text messages.
- **The SMS and MMS are important first steps in the promotion of social networks.** These messages enable friends to be invited to a party, as in the case of **Tvienes**¹¹⁹, or a request to be sent to the social network for members to recommend restaurants, cinemas, shows, etc., that may be convenient, depending on the member's location.
- **The SMS as a search engine.** For example, in India, **Google**¹²⁰ launched a pilot project in which users sent an SMS to a telephone number and the system responded with local information about the opening hours of cinemas, restaurants, hospitals and taxi services.

The SMS has also started to work for society:

- Many **government bodies**, as part of their m-government policies, are using text messaging to communicate with citizens, to whom they send information

¹¹⁴ AESAM: <http://www.aesam.org/>.

¹¹⁵ Consumer. 24/01/2007. Article: "El fenómeno de los SMS."

¹¹⁶ Neck and Neck: <http://www.neckandneck.com/web07/>.

¹¹⁷ Univision: <http://www.univision.com/>.

¹¹⁸ Tapioca Mobile: <http://www.tapiocamobile.com/>.

¹¹⁹ Tvienes: <http://tvienes.com/>.

¹²⁰ Google: <http://www.google.com/>.

on public transportation, university grades, or to remind patients of their doctor's appointment at the health center (see Chapter 7).

- They are also being used for social purposes, such as for **donating funds to NGOs**. Donors send a message to a number and part or all of the money collected is sent to NGO projects (see Chapter 7).
- Even the Vatican has succumbed to SMS fever. On World Youth Day, Pope Benedict XVI sent text messages to thousands of young pilgrims encouraging them to reaffirm their Catholic faith.

5.1.2. Is the end of the SMS approaching?

Instant messaging on handhelds is now a reality and operators are launching it with mixed results. Several operators, such as **Vodafone** and **Orange**, pioneered this movement in 2004, and interest in it has now been renewed. Companies like **Google**, **Yahoo!**¹²¹ and **Microsoft**¹²² have made contributions in this field.

Because of the success of instant-messaging networks, especially among young people, it is to be expected that the billions of potential users will make this service one of the most popular since its predecessor, the SMS. The growth of instant messaging on handhelds will continue in the next five years, at a constant rate in nearly all markets, with the consequent decline in SMS use.

Demand for MMS services will remain stable. Forrester¹²³ predicts that by the end of 2013, 24% of mobile device users will use instant messaging services. For this to happen, several conditions must be fulfilled:

- Mobile operators must lose their fear of the decline in the profits obtained from SMS, invest in this new type of messaging and **offer more attractive prices**.
- Manufacturers must **ensure the usability** of their handsets and include instant messaging capabilities, without any need for additional applications.
- Developers must **promote their use on mobile social networks**.

Some examples of innovative companies in this area are **Funambol**¹²⁴, a pioneer in mobile messaging 2.0 for open sources and **The Gizmo Project**¹²⁵, a supplier of instant messaging and a call service using voice over IP technology. This type of program enables users to talk to each other completely free of charge or at a very low cost.

Meanwhile, the opportunity **to connect to email** services from mobile handsets is very successful among users. Nomadic citizens need to be connected anywhere and at any time. The fact that many smartphones support this type of service contributes to increasing use, and as the prices of these devices fall and operating systems become compatible with various mail suppliers, the upward

¹²¹ Yahoo: <http://es.yahoo.com/>.

¹²² Microsoft: <http://www.microsoft.com/en/us/default.aspx>.

¹²³ *Mobile IM Adoption Forecast Europe: 2007 to 2013*. Niek van Veen, Michelle de Lussanet, Charles S. Golvin and Lauriane Camus. Forrester. January 2008.

¹²⁴ Funambol: <http://www.funambol.com/>.

¹²⁵ The Gizmo Project: <http://gizmo5.com/pc/>.

trend will continue. In the future, more and more operators will include some type of email access and in many cases, they will sell it with other services in a single package.

One of the possible strategies that should be followed is the sale of telephones configured to use an email account, so that users are encouraged to use this service, and other data-related services offered by the operator, in order to compensate for the decline in profits from sending SMS. This is being done by **Momail**¹²⁶ which offers free email compatible with most mobile handsets.

Applications such as System 7.0 which is a flexible mobile email solution compatible with over 115 operators and 240 handsets all over the world, and supported by most mobile platforms, will contribute to the increase in email on mobile handsets. This solution enables emails to be received immediately, at both workstations (Lotus, Microsoft Exchange) and in private accounts (Google, Hotmail, Yahoo, etc.).

5.2. The future of the Internet is mobile

One of the most widely discussed subjects today in the mobile technology market is Internet connections using these devices. Mobile Internet entails access to a new dimension in customer service, which will have personalized information and services, depending on the location and time of connection, anywhere and at any time. What other channel can compete with that?

The fact that many mobile devices include Internet access is indicative of the trend towards the opening of the market. However, this will not guarantee an increase in connections if the consumer's experience is not a good one. Users are demanding increased freedom of choice, as can be seen by the fact that in 2007, approximately 70% of the traffic generated by **NTT DoCoMo's** data services¹²⁷ in Japan took place using connections to "unofficial" pages outside the operator's portal.

The industry is implementing ideas aimed at achieving **uniformity on the mobile Internet** that are conducive to the opening of the market. The World Wide Web Consortium (W3C) launched the Mobile Web Initiative (MWI) in 2005, supported by highly influential companies in the sector, such as **France Telecom**¹²⁸, **Ericsson**¹²⁹, **Nokia**¹³⁰ and **Hewlett-Packard**¹³¹. The focus was initially on two key areas: first, on identifying best practices for websites and second, on producing descriptions of the telephones to help content developers design for all types of telephones. Another standardization initiative was the Mobile Top Level Domain (mTLD), which was the basis for the .mobi domain. Mobile Internet users know when a website is adapted to their telephone when it ends in .mobi, as owners wanting to register their pages must have applied the mTLD best practices in the development of content.

Mobile Internet is even more important due to the fact that **many of its users live in emerging countries** (see Chapter 7). In fact, their first contact with

¹²⁶ Momail:
<http://www.momail.es/>.

¹²⁷ NTT DoCoMo:
<http://www.nttdocomo.com/>.

¹²⁸ France Telecom:
http://www.francetelecom.com/en_EN/.

¹²⁹ Ericsson:
<http://www.ericsson.com/es/>.

¹³⁰ Nokia: <http://www.nokia.es/>.

¹³¹ Hewlett-Packard:
<http://welcome.hp.com/country/es/es/welcome.html>.

the Internet will not take place on a personal computer, but instead on a mobile phone. For companies participating in the mobile Internet boom, this means access to a market with a portfolio of millions of potential consumers. As mentioned above, the problem in this case is that in emerging countries, most handsets do not have an Internet connection capacity or even have access to the network.

However, **carriers see the mobile Internet as a means of increasing the profits generated by data services** in light of the heavy pressure they are facing due to lower voice and SMS prices, which are the result of enormous competition and strict regulation. **Content providers** have, on the Internet, a new distribution channel that offers huge opportunities.

All the FTF experts agreed that having an Internet connection on mobile handsets will be vital in changing the way that customers currently use their devices.

5.2.1. Mobile Web 2.0

The context could not be more positive. All the agents participating in the mobile technology sector would benefit from the mobile Internet boom. However, **the current level of use in absolute terms is disappointing** for everyone and clearly shows that something has to change. This need for transformation has led to the term **Mobile Web 2.0** being coined to refer to the revolution, which has already started and which will radically change the use of mobile Internet. The idea is based on mobile devices becoming the main means of Internet access in many countries in the world during the next decade, with hybrid devices and more powerful networks. In the same way as Web 2.0 has led to a substantial change in the Internet world, initiatives are being taken to transfer its vague principles to the mobile world. The advocates of this movement emphasize the need for opening and the use of open standards, which have given such good results in the Internet world.

Mobile Web 2.0 also seeks to replicate **the social aspect and creative role of the citizen** which characterized the Web 2.0 movement, with new ways of communication and sharing experiences with other users. In this area, there are already applications that provide access to classic web services (such as MySpace¹³², Flickr¹³³, Wikipedia¹³⁴, etc.), and services especially designed for handsets, like the traditional Dodgeball¹³⁵ and Twitter or Bluepulse¹³⁶.

Although mobile Internet use is currently rather low, the figures for Europe provide grounds for optimism, according to Forrester¹³⁷ (see Figure 28):

- Almost all European users have mobile devices with an Internet connection capacity.
- Less than half of them are aware that they can connect to the Internet from their handset.

¹³² MySpace:
<http://www.myspace.com/>.

¹³³ Flickr: <http://www.flickr.com/>.

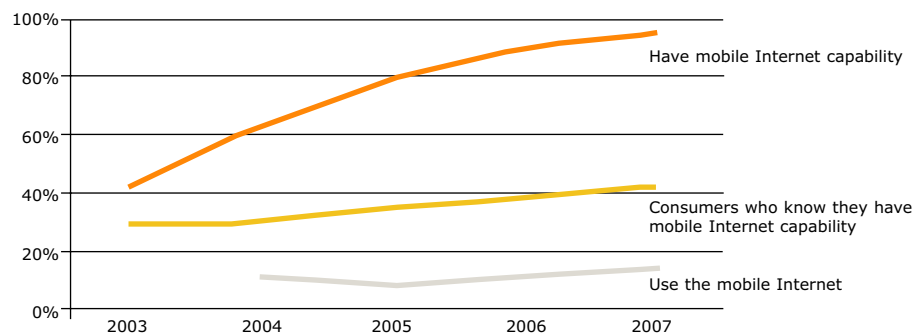
¹³⁴ Wikipedia:
<http://www.wikipedia.org/>.

¹³⁵ Dodgeball:
<http://www.dodgeball.com/>.

¹³⁶ Bluepulse:
<http://www.bluepulse.com/>.

¹³⁷ *Mobile Internet Users Lead In Advanced Mobile Services' Adoption In Europe*. Pete Nuthall with Michelle de Lussanet and Dan Wilkos. Forrester. May 2008.

- Only 14% of mobile users use the Internet regularly. Although this figure does not constitute a substantial increase, Forrester's predictions since 2004 have suggested that use will reach 38% by the end of 2013.



Base: European mobile phone users.

Figure 28. Mobile Internet User Penetration: 2003 To 2007.

Source: Forrester Research, Inc., *European Mobile Forecast: 2008 To 2013*, March 14, 2008.

According to Forrester's figures¹³⁸, the European users that connect to the Internet most are the English (15%), followed by the Germans and the French (9%). Spain ranks fourth (8%), followed by Italy (5%).

5.2.2. What is preventing the mobile Internet boom?

The nature of the factors limiting mobile Internet use is highly varied. Overcoming these barriers will require all those involved (carriers, developers, etc.) to work together:

a) Lack of consumer interest

Consumers do not appear to be interested in using their mobile device to connect to the Internet. As mentioned above, this connection capability is a functionality that few consumers take into consideration when buying a mobile handset. Some alternatives that could change this situation include:

- **Providing users with relevant information according to where they are and when they are connecting.** Operators should promote this type of service if they want to increase connections. For example, **Vodafone**¹³⁹ has announced that it is going to include Google Maps in its Vodafone Live! portal, which will enable users to locate addresses and make reservations.
- Promoting the use of **instant messaging** or **email** on mobile devices, instead of SMS.

¹³⁸ Pete Nuthall with Michelle de Lussanet and Dan Wilkos: op. cit.

¹³⁹ Vodafone: http://www.vodafone.com/hub_page.html.

- Promoting more open models in which the Internet access point is **highly successful search engines** such as **Google**¹⁴⁰ or **JumpTap**¹⁴¹, as well as the content provided from operators' portals (the "walled garden" model). As a result, consumers will find and have access to more websites and more relevant content, and the operators will benefit from new business models based on profits from advertising. For example, **KDDI**¹⁴² added **Google's** search engine to its EZweb portal, which enabled it to increase the portal's traffic, and boost advertising profits by 30%. Furthermore, it encouraged opening, as 78% of searches led users to other pages¹⁴³.
- Capitalizing on the potential of **social networks**. Connection to these networks, which are increasingly popular on the fixed Internet, with examples such as **Bebo**¹⁴⁴ in the U.K. and **StayFriends**¹⁴⁵ and **Aka-aki**¹⁴⁶ in Germany, will entice consumers to use the mobile Internet. Users of **KPN**, **Telfort** and **T-Mobile** can choose to receive a free SMS every time someone makes a comment on their page on the Dutch social network Hyves¹⁴⁷. This message contains a link to the Internet site, where consumers can read the complete contents and have the option to answer.

b) Lack of specific content for mobile devices

Little content is currently being developed specifically for mobile Internet. Indeed, innovation in specific developments is limited by the low level of Internet access on mobile devices. This all means that little content is available, and it is also of poor quality as companies are not interested in investing in a channel with such low demand. This makes for a disappointing experience for users who connect, which in turn leads to reduction in use. It is a vicious circle.

Meanwhile, the closed **Internet portals** ("walled gardens") in which operators relate to content suppliers mean that the number of pages made specifically for mobile devices is very low. Furthermore, the strict control by operators over their content and their excessive share in the profits generated discourage developers and limit innovation.

In order to change this situation, the following objectives should be acted upon:¹⁴⁸

- **Improve the operators' portals:**
 - Internationalize the operators' portals to make them more attractive to content developers. For example, **Vodafone**¹⁴⁹ has increased the presence of its Vodafone Live! portal by means of agreements with **Mobilkom Austria**, **Proximus** in Belgium and **Elisa** in Finland.
 - Cooperation between operators to launch joint portals from where it is possible to browse to their own sites. A successful example is the French operator **Gallery** and Belgium's **Plaza**, which are cooperating to produce one.
- **Increase the content that makes users connect to the Internet.** The operators must encourage the use of applications or services in order to achieve this.

¹⁴⁰ Google: <http://www.google.com/>.

¹⁴¹ Jumptap: <http://www.jumptap.com/>.

¹⁴² KDDI: <http://www.kddi.com/english/in dex.html>.

¹⁴³ *Why Japanese Mobile Internet Is a Success. And What European Operators Should Do to Catch Up.* Niek van Veen, Michelle de Lussanet, Jonathan Browne and Lizet Menke. Forrester. March 2007.

¹⁴⁴ Bebo: <http://www.bebo.com/>.

¹⁴⁵ StayFriends: <http://www.stayfriends.de/>.

¹⁴⁶ Aka-aki: <http://www.aka-aki.com/>.

¹⁴⁷ Hyves: <http://www.hyves.nl/>.

¹⁴⁸ *Breaking The Mobile Internet's Low Adoption Spell.* Niek van Veen. Forrester. December 2006.

¹⁴⁹ Vodafone: http://www.vodafone.com/hub_page.html.

- **Make the model for the distribution of profits** between operators and content developers more flexible. Ideally, any supplier should be able to launch their content without the operators and obtain a high percentage of the profits obtained from the sale, which would clearly lead to their proliferation.
- **Develop specific websites** for connection from mobile handsets. The small screen size and the limited possibilities for interaction and data processing on mobile handsets require specific designs for websites:
 - Adapt not only the design of pages, but also their content and browsing.
 - Design pages that are useful and easy to handle so that users realize the value provided by this new connection channel. Pages that are difficult to find and use may hinder the user's interactions and discourage them from returning.
 - Renew the content on pages on a regular basis. In mature markets like Korea, updates are made several times a day.

An example is that used by some newspapers, such as *The New York Times*¹⁵⁰, which has developed an application that enables access from an iPhone to a high quality edition of the newspaper. The newspaper's website enables sections to be read both online and offline, provides simple browsing, includes photographs along with its articles and allows for the mobile website to be personalized, by selecting favorite news categories.

c) Low presence of traditional companies on mobile Internet

Meanwhile, the amount of **traditional companies** with a presence on mobile Internet is still very low. This is encouraging the use of other channels such as PC-based Internet, to the detriment of connections from handsets. It is important that **traditional companies** include this device among their channels of communication and sales to customers. Girlswalker's Tokyo Girls Collection, for example, combines live fashion events with the PC and a mobile website (see Chapter 6).

d) Technological barriers

In terms of access, the **networks** are often too slow, which lowers the quality of the connection for users, who end up using other, faster channels. For this reason, the operators and large network infrastructure manufacturers must work together to make faster networks that improve the user's experience in each connection. What is much more serious and difficult to resolve is the fact that some users do not even have access to the Internet (see Chapter 7).

As regards content, the **lack of standards** in the sector means a tough task for developers, as they have to adapt the material to the type of telephone and network, as well as the browser, which curbs innovation. For this reason, operators and developers must put pressure on the manufacturers to standardize their products. As we have seen above, this is happening as a result of projects being launched for upmarket devices in particular, which therefore contribute to the opening of the market.

¹⁵⁰ *The New York Times*:
<http://www.nytimes.com/services/mobile/iphone.html>.

e) Lack of business models that promote innovation

It is still widely unknown as to where to focus business models based on the new mobile Internet services. Furthermore, the lack of demand for Internet-related applications offered by mobile handsets renders it difficult to achieve a return on investments. For example, the British operator **3**¹⁵¹ (a subsidiary of Hutchison), which is focusing on the Internet and data services, is having problems obtaining critical mass.

f) Devices must improve their usability and battery capacity

The arrival of the iPhone has shown that the usability of handsets is a very important factor in boosting users' connection to the Internet. Until it was launched, the manufacturers had not succeeded in designing a model that could increase mobile Internet traffic, which clearly reveals a need for **the manufacturers to improve the usability of their phones**. Once again, the **Apple** telephone is the leader in terms of Internet connections (see Figure 29).

¹⁵¹ 3: <http://www.three.co.uk/personal/index.omp>.

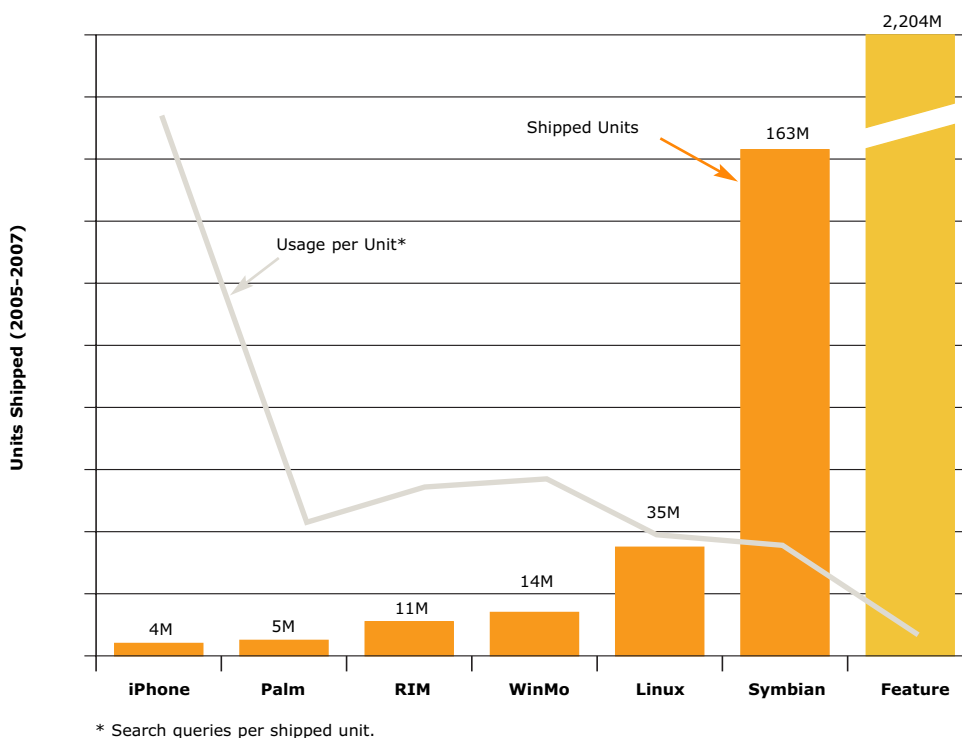


Figure 29. Internet access by technology.
Source: Google.

The increase in **battery capacity** is also vital to increase consumer connection time.

g) High and unclear prices for consumers

The **rate plans** for Internet connections are in many cases not altogether transparent to users (as is the case, for example, with charging for bytes transferred), and on many occasions are even unknown. What is beyond doubt is that users do not want to increase their telephone bills and this is particularly true when the available content does not justify the expense.

In order to change this situation, Internet connection prices should **be made clear to users** (including the differences in price between the content of the operators' portal and external content). Offering flat-rate subscriptions clearly boosts demand when consumers "need" to connect to mobile Internet. However, they are not likely to be willing to pay a monthly fee for a service they have not even tried. For this reason, other launch strategy alternatives must be considered.

For example, **T-Mobile**¹⁵² has launched the "web'n'walk" service, which lets customers surf for less than a penny a kilobyte up to a maximum price of a pound a day, with any additional cost free of charge. Furthermore, there is no restriction on the websites that can be visited and users are not penalized for using the service several times a day. In the Spanish market, **Telefónica** has recently announced a cut of between 46% and 60% in its rates for mobile email access.

Of all these factors that could potentially boost Internet use on mobile devices, the FTF experts feel that flat-rate subscriptions will provide the service with the biggest boost (see Figure 30).

5.2.3. The future of mobile Internet

As mentioned above, the boom in mobile Internet browsing has been slow and some experts have described it as disappointing. Nevertheless, for it to finally happen, greater flexibility in the operators' models, technical improvements, the design of profitable commercial approaches, winning over the consumer, and co-operation between agents are all essential.

5.3. Increasing the scale of financial services

For consumers in developed countries, the opportunity to use their mobile phone to carry out financial transactions means the availability of an additional banking channel, which complements the network of branches and Internet banking. However, for people living in emerging countries, the opportunity of access to banks' financial services using their mobile devices promises to be a great revolution. This will be possible if the technological, commercial and social barriers presently hindering the opening of this market are removed, or at least mitigated.

¹⁵² Canal PDA.com. 5/05/2008.
Article: "T-Mobile and Nokia collaborate on mobile services and personal social networks."

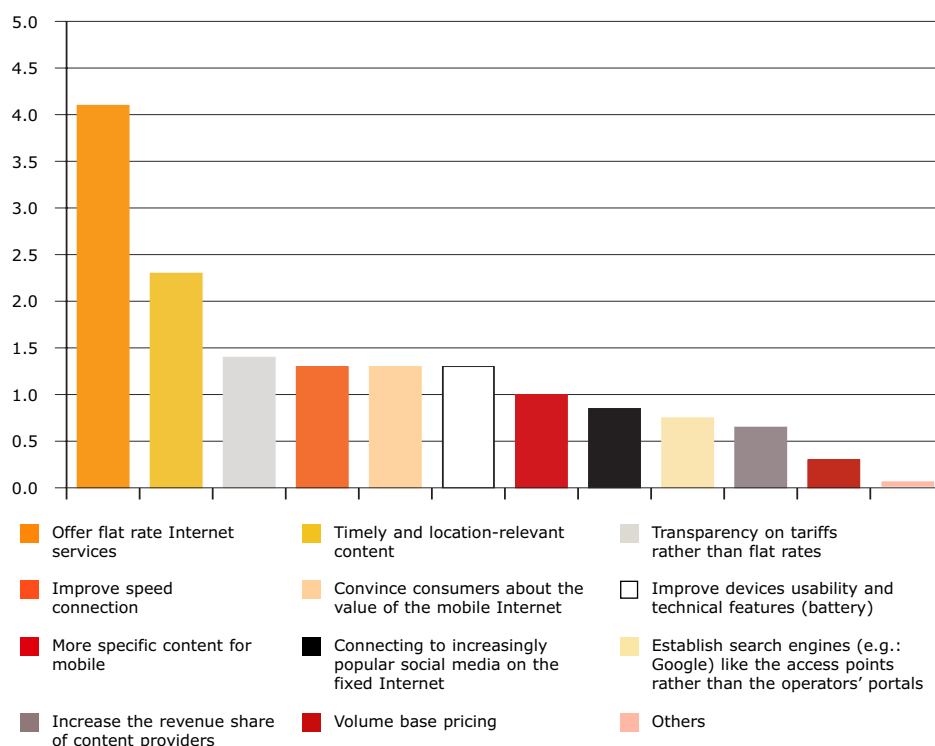


Figure 30. Factors promoting the use of Internet on mobile devices.
Source: drawn from the conclusions within the Future Trends Forum.

It is estimated that transactions using mobile devices will increase from 2.7 billion in 2007 to 37 billion in 2011, with most of this growth taking place in emerging countries, according to data from Juniper Research.¹⁵³ According to this study, China and the Far East will be the regions with the most users of this service, which will reach 250 million in 2011. Therefore m-banking speaks the language of the most disadvantaged, and is shaping up as a tool for improving their level of development (see Chapter 7).

Although the impact of m-banking is not so marked in developed countries, it is not insignificant, as it is contributing to increasing the range of services accessible from mobile handsets and therefore changing user habits. It is also encouraging improvements to the service offered by financial institutions to their customers, which is an extremely important factor in today's climate of economic uncertainty.

5.3.1. m-Banking in the United States and Europe

Although many European banks already offer mobile banking services by means of SMS or mobile Internet, and they are available to anybody with the right type

¹⁵³ Tendencias de las telecomunicaciones. 3/10/2008. Article: "Los jóvenes son los que más usan la banca móvil." http://www.tendencias21.net/Los-jovenes-son-los-que-mas-usan-la-banca-movil_a2224.html.

of phone, only 5% of Internet users access them. The operations performed are usually very simple, such as checking balances, SMS alerts, etc., and users in the **United States and Europe** are generally young men, with a technology background, an above-average income and users of Internet banking.

The low adoption rate for these services is essentially due to customers not seeing the value of connecting using their mobile device, not being willing to pay for these services, being unaware of their existence or being worried about their security.¹⁵⁴

The leading mobile operators in the United States, **AT&T**¹⁵⁵ and **Verizon**¹⁵⁶, have invested a lot of money in trying to convince their customers to use this new medium. They have launched programs in which consumers sign a **contract** with a **financial institution**¹⁵⁷ to link their **bank account** with a **mobile application**.

5.3.2. The range of m-banking services

The range of services that can be offered on mobile handsets is extensive:

- **Deposits, cash withdrawals or transfers**; these transactions can be covered with the development of some products available on mobile phones, such as the electronic wallet, mobile bank accounts, cash deposits, cash withdrawal, remittances and transfers between account holders. **Bankinter** has developed the **Bankinter Aggregation service**¹⁵⁸ which can be used to check balances and account activity, make transfers, and subscribe to, consult or cancel the floating of new stock. Likewise, the **Hal Cash**¹⁵⁹ service by **Bankinter** enables money to be sent from a mobile handset, to be withdrawn from an automatic cash machine, immediately, securely, at any time and anywhere in Spain and/or Ecuador.
- **Access to money loans** by means of consumer and interpersonal loans, microloans or revolving credits.
- **Invest and manage investments using mobile devices** (mobile trading). For example, **Bankinter**¹⁶⁰ offers its customers the Broker Multimodal service, which enables transactions to be carried out and stock price quotations to be given in real time, as well as alerts to be received on mobile handsets, and orders to be checked and cancelled.
- **Access to financial information** (balance sheets, transactions record, etc.). For example, the **Bank of America** mobile banking service¹⁶¹ enables mobile handsets to be used for making transactions, reading account statements, paying bills and even finding the nearest cash machines.
- **Make payments with a mobile phone or a card that is linked to the telephone account** (m-payment): Mobile wallet linked to the card, payment of bills, purchases, etc.

¹⁵⁴ *European Mobile Banking: An Inconvenient Truth. Most Large Banks Offer Mobile Banking But Few Consumers Use It.* Second document in the series "Mobile Financial Services". Benjamin Ensor, Alexander Hesse, Michelle de Lussanet, Niek van Veen and Lizet Menke. Forrester. October 2007.

¹⁵⁵ AT&T:
<http://www.att.com/gen/landing-pages?pid=3308>.

¹⁵⁶ Verizon:
<http://www22.verizon.com/>.

¹⁵⁷ America First Credit Union, Arvest Bank Group, BancorpSouth, FirstBank and Synovus.

¹⁵⁸ Bankinter:
<https://www.bankinter.com/www/es-es/cgi/ebk+smv+bkmovil+descrip>.

¹⁵⁹ Bankinter:
https://www.bankinter.com/www/es-es/cgi/ebk+smv+transf_Acajeros_Desc.

¹⁶⁰ Bankinter:
<https://www.bankinter.com/www/es-es/cgi/ebk+smv+bng+operativavoz>.

¹⁶¹ Bank of America:
http://www.bankofamerica.com/onlin_ebanking/index.cfm?template=mobile_banking&statecheck=KS.

5.3.3. Payments using the mobile (m-payment)

One of the most attractive applications with the greatest potential for wireless services is **payment by mobile devices**, also known as **m-payment**, which is very closely linked to the concept of **m-commerce** (see Chapter 6).

The consultancy Arthur D. Little¹⁶² estimates that the profits from m-payment will increase from 3.2 billion dollars in 2003 to 37.1 billion dollars worldwide in 2008.

In Spain, payments using mobile handsets have grown at a slower rate than anticipated. A few years ago, the predictions for 2008 suggested that four million Spaniards would use this method on a regular basis; however, the figures for use fall far short of this estimate. If we analyze the figures from other countries, the situation is similar. According to a study by Arthur D. Little, Spain is the third-ranking European country in the implementation of this system, behind Austria and Norway (see Figure 31).

¹⁶² *Making M-payments a Reality*. Arthur D. Little. Vienna, 2004.

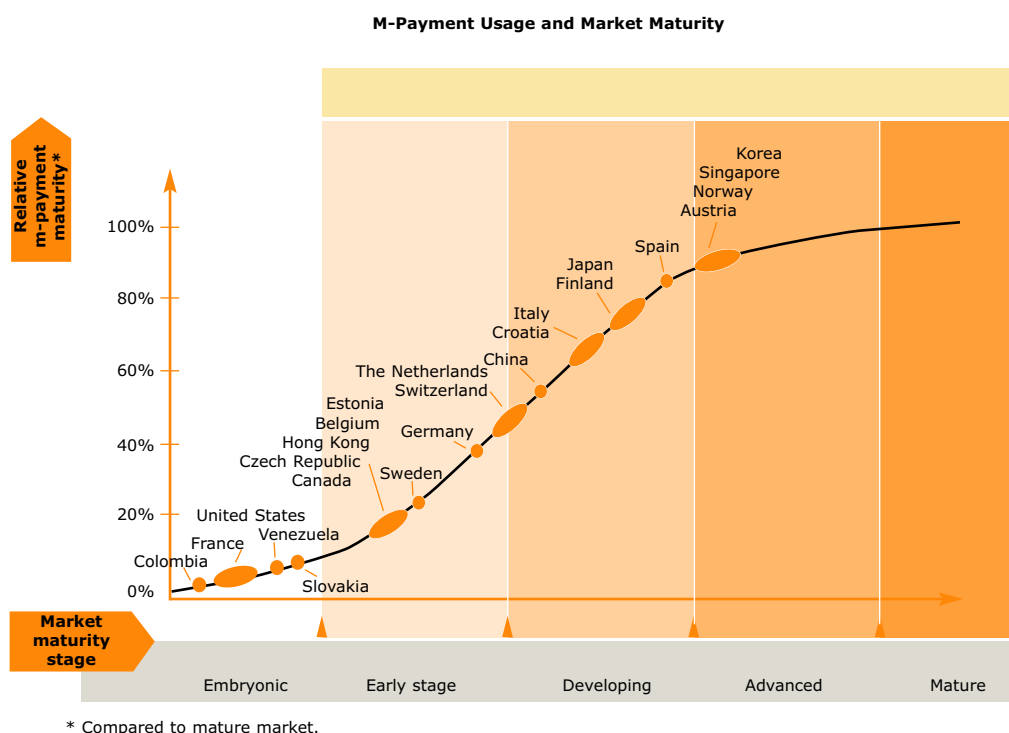


Figure 31. Implementation of m-payment.
Source: Arthur D. Little analysis.

However, until the real boom in payments with mobile handsets takes place, the companies have found a niche in settings that credit cards have yet to reach. This is true of "micropayments." Mobile devices can play a key role in situations where it is not possible to pay using a card, but only in cash, which is often lacking. To give an example, in Tarragona it is possible to purchase passes for the limited parking area, while public transportation users in Málaga can pay with an SMS.

There is still clearly a great deal of potential in technological terms for payment using mobile devices. Companies like **Philips**¹⁶³ and **Sony**¹⁶⁴ are looking at **NFC** (Near Field Communication) chips. Although this system is not new, its novelty lies in its implementation in mobile phones. It is based on radiofrequency data exchange, with no need for physical contact, although the maximum distances are five centimeters. This factor, combined with the need to enter a PIN code to validate the purchase, bolsters its security.

Some companies in the United States are carrying out tests to implement this payment system. For example, **Visa**¹⁶⁵ and **Wells Fargo**¹⁶⁶ measured the interest of consumers in San Francisco in using their mobile handsets to pay in shops that accepted Visa's payWave. Other pilot projects are being carried out in Europe, one of the most important of which was launched in November 2007 in France¹⁶⁷, Payez Mobile, which included 1,000 customers in 200 shops.

¹⁶³ Philips: <http://www.philips.es/>.

¹⁶⁴ Sony:
http://www.sony.es/PageView.do?site=odw_es_ES.

¹⁶⁵ Visa: <http://www.visa.es/>.

¹⁶⁶ Wells Fargo:
<https://www.wellsfargo.com/>.

¹⁶⁷ *NFC Technology Is Revitalizing Mobile Payments. But Mobile Contactless Payments Face Huge Adoption Hurdles*. First document in the "Contactless Payments" series. Benjamin Ensor, Alexander Hesse, Michelle de Lussanet and Lauriane Camus. April 2008.

¹⁶⁸ ABI Research. Article: "2011 NFC-Enabled Cellular Terminal Forecast Downgraded to 450 Million Units." <http://www.abiresearch.com/abiprdisplay.jsp?pressid=719>.

¹⁶⁹ NFC News. February 2008. Article: "Experience Near Field Communication in Action at GSM Mobile World Congress 2008 Luncheon." <http://www.nfcnews.com/2008/02/05/nfc-forum-at-gsm-world-congress>.

¹⁷⁰ Tendencias de las comunicaciones. October 2008. Article: "Los jóvenes son los que más usan la banca móvil." http://www.tendencias21.net/Los-jovenes-son-los-que-mas-usan-la-banca-movil_a2224.html.

However, forecasts suggest that in 2011 there will be 450 million mobile handsets adapted to NFC (Near Field Communication), a figure that will account for 30% of the mobile handsets sold that year (ABI Research)¹⁶⁸. Furthermore, one in three mobile handsets will be equipped with NFC within three to five years (Frost and Sullivan)¹⁶⁹. This means that transactions with an approximate value of 22 billion dollars will be generated in 2011 (Juniper Research)¹⁷⁰.

The barriers faced by this new payment system are the same as those affecting any other: security and the transaction cost remain the issues of greatest concern to the consumer. In short, the operators, banks and payment companies must cooperate to gradually reduce technological and product acceptance barriers, and to design profitable business models.

5.3.4. P2P (person-to-person) payments

A **P2P** (person-to-person) payment is a method of payment by which the user of one mobile phone sends money to another, so that the device acts as a means of performing the transaction. There are three types of mobile P2P payments: **mobile P2P bank transfers**, **mobile P2P top-up transfers** and **virtual mobile P2P transfers**. Many brands in central Europe have recently launched person-to-person payment systems using mobile handsets.

Although the forecasts are not particularly promising, the greatest potential for the use of this type of service could be in sending money to relatives abroad. Cash remittances sent to emerging countries are increasing every day. This is a

great opportunity for intercontinental P2P payment systems, as they are cheaper and simpler operations for emigrants than bank transfers. The GSM association of operators has identified this opportunity and has launched an initiative so that the operators themselves provide this service to their customers¹⁷¹.

5.3.5. The benefits of using a mobile phone for financial operations

Using mobile phones to carry out financial operations leads to benefits of various types. First, it can significantly improve the quality of life of **consumers** in developing countries who do not have access to financial services. Second, in developed countries, m-banking improves the quality of service that they receive from financial institutions. The key factors in winning over consumers are: ease of use, low cost of operations, 24/7 access and security.

From the point of view of the **financial institutions**, the benefits are obvious. While they are able to extend access to financial services to more (unbanked) consumers, they can also improve their relationship with their current customers, reduce their operating costs, free up resources for processes of greater value, provide immediate access to the institution's services (mobile banking), promote self-service and obtain greater control and security for the customer. In the uncertain times currently troubling the financial sector, m-banking may become an alternative that contributes to improving the situation.

The **operators** also have grounds for participating in m-banking, including some that are very sound: the opportunity to attract new customers, diversification of the type of profits (obtaining initial commissions and from transactions), the increase in the average revenue per user, achieving customer loyalty and obtaining profits from cross-selling, by offering content for mobile devices and changing the contract type to prepay.

Finally, **governments** have an ally in improving the economic situation of their countries in this type of use of the mobile phone. An excellent example of this use is in the Philippines, where most of the population does not have access to bank accounts and is obliged to use private moneylenders, which limits its capacity for growth. The Central Bank of the Philippines implemented a microfinancing regime using mobile handsets, cooperating with the operators and making sure that the financial institutions were regulated, which contributed to the country's economic revitalization¹⁷².

5.4. Your handset tells where you are

The FTF experts consider that location-based services on mobile handsets will be those that create the most business opportunities in the short term (see Figure 27). These services provide an estimate of the geographic location of a device, which is possible thanks to various technologies such as location-based services, time of arrival and GPS, which operates via satellite connection. Mobile handset users must give their consent to being located for these systems to work. Once

¹⁷¹ *Person-to-Person Payment Goes Mobile. But P2P Mobile Payment Is a Technology in Search of a Market.* Michelle de Lussanet, Lizet Menke and Benjamin Ensor. April 2007.

¹⁷² Trends in telecommunications. October 2008. Article: "Mobile banking will handle 8 billion dollars in 2012." http://www.tendencias21.net/La-banca-movil-movera-8-000-millones-de-dolares-en-2012_a1918.html.



that consent has been given, this functionality is activated by turning the telephone on.

According to ComScore¹⁷³, the leader in research in the digital world, the use of maps on mobile handsets increased by 8% among American users and 3% among Europeans between February and May 2008. The launch of the iPhone undoubtedly contributed to this upturn. Despite the fact that usage figures are low¹⁷⁴, according to a survey by Netsize from 2008, this trend will increase, as more than 74% of those surveyed said they considered location-based services on mobile devices to be essential.

These services will provide new opportunities for companies from all sectors as they will be able to benefit from:

- **Services that use navigation systems.** This is the case of the system launched by Google Maps, which shows the route on the map and accompanies it with a series of detailed directions. The map is interactive and shows the businesses in the area with their contact details, thereby becoming a fantastic marketing channel.
- **Services that include location of individuals.** This opens up a wide range of possibilities for businesses that provide services covering:
 - **The enormous potential of mobile social networks.** These will contribute a differential value compared to fixed social networks, as they will make it possible to locate friends. The companies that are able to take advantage of their enormous potential will obtain substantial profits, mainly thanks to advertising.
 - **The location of physically or mentally handicapped people.** These systems mean that it is possible to detect the fall of an elderly person or the disappearance of someone suffering from Alzheimer's disease.
 - **The location of emergency calls.** These systems enable the place from where the call was made to an emergency telephone number to be identified, and the units necessary to resolve the situation to be sent to that location. This is the case with the 112 emergency telephone line in the autonomous community of Madrid. In the first six months of 2008, the mobile location system was vital in the management of more than 8,000 incidents, and has proved itself to be particularly useful in rescues and traffic accidents on urban roads¹⁷⁵.
 - **The improvement of traditional services.** As the technology evolves, real-time locations will be possible. As a result, services such as taxis or pizza delivery will be quicker; even the delivery of a newspaper to a user's address can change, if the system detects that the user's location has changed.
- **Services based on location of machines.** The combination of communication (M2M) and location possibilities between machines will provide numerous opportunities. For example, this technology could be useful on toll roads, for lo-

¹⁷³ ComScore:
<http://www.comscore.com/>.

¹⁷⁴ *The Netsize Guide. Mobile 2.0, you are in control.* Netsize. Paris, February 2008.

¹⁷⁵ Europa Press. August 2008. Article: "Sistema de localización de móviles del 112 permitió localizar y resolver 8.000 emergencias."

cating the position of a vehicle, so that personnel costs are reduced, with the creation of "express lanes," which will enable costs in the public sector to be reduced.

- **Personalization of the range of products and services.** The combination of navigation and location systems will make it possible to identify consumer preferences, so that when the user enters a given zone, mechanisms providing advertisements based on the customer's profile will start operating. As a result, the customer will receive advertising for services of interest to him, which are near his current location. Bluetooth is becoming a key ally of vendors in push marketing.

However, one **drawback** in the expansion of these location services is the fact that users of handsets may see them as something that invades their privacy, and they are not always willing to be monitored by members of their community or to receive advertising messages.

5.4.1. The opening of the market and mobile location services

Operators are not indifferent to the potential for growth of these services and as a result, they are particularly interested in standardizing and promoting innovation in this field. Progress towards a greater opening of the market requires the existing barriers to be overcome and the fragmentation arising from the coexistence of three different location technologies to be dealt with. At present, as a consequence of this fragmentation, companies wanting to use this technology as a marketing channel must choose one of them and thereby limit the customers they can target (compatibility with the network or with the device).

As a result of this problem, the Open Mobile Alliance (OMA) has launched a standard for these services. The challenge lies in guaranteeing interoperability and, in an environment where there are many vendors, ensuring that they all use the same language. As part of their opening and standardization strategy, they have developed a test that enables the interoperability of a location system to be checked.

Once technological problems have been overcome, work must be done on the standards and procedures that are suitable for authorizing the distribution of information to other agents in the market, while safeguarding consumers' rights to privacy.

5.4.2. Successful cases in mobile location-based services

Telefónica Movistar has reached a framework agreement with **Google** that enables it to provide its mobile customers with access to the Google Maps for Mobile service (GMM) from its Emoción portal or by the pre-installation of the application¹⁷⁶ on its handsets.

¹⁷⁵ Europa Press: "Sistema de localización de móviles del 112 permitió localizar y resolver 8.000 emergencias", agosto de 2008.

¹⁷⁶ Ojo Buscador. July 2008. Article: "Telefónica añade Google Maps a sus móviles." <http://www.ojobuscador.com/2008/07/30/telefonica-anade-google-maps-a-sus-moviles/>.

¹⁷⁷ Noticiasdot.com: "TomTom y Vodafone desarrollan un servicio antiatacos", <http://www.noticiasdot.com/wp2/2007/06/27/tomtom-y-vodafone-desarrollan-un-servicio-antiatacos/>, junio de 2007.

The maker of the **TomTom** portable navigation system and the mobile operator **Vodafone** have launched a service in the United Kingdom that provides traffic information for the major highways. Basically, what the system does is check how many devices are in a given location and extrapolates the results to the number of drivers who may be in a traffic jam¹⁷⁷.

5.5. Your friends just got even closer: mobile social networks

The FTF experts consider that besides location-based services, mobile social networks will provide important opportunities for businesses (see Figure 27). The mobile handset is threatening to become our most personal, and at the same time, most social electronic device.

Its success seems certain, due to these devices adding a new dimension—location—to the already successful social networks on fixed-line Internet. This will enable users to receive information from the contacts in their social network that are physically near them. However, mobile social networks will not be a substitute for their fixed counterparts, but will instead complement and improve the user's experience.

A survey by Nielsen Mobile¹⁷⁸ (EU data Q1 2008, US data December 2007) rates the Spanish among the most assiduous users of mobile social networks in Europe. Even bearing this in mind, the figures for use are still very low.

| | Percentage of mobile subscribers who access social networks over the mobile Internet | Number of mobile subscribers who access social networks per month, over their phone |
|----------------|--|---|
| United States | 1.6% | 4,079,000 |
| United Kingdom | 1.7% | 812,000 |
| Italy | 0.6% | 293,000 |
| Spain | 0.8% | 291,000 |
| France | 0.6% | 255,000 |
| Germany | 0.2% | 141,000 |

Figure 32. Percentage of users of mobile social networks.
Source: Nielsen Mobile; EU data Q1 2008, US data December 2007.

¹⁷⁷ Noticiasdot.com, June 2007. Article: "TomTom and Vodafone develop an anti-traffic jam service." <http://www.noticiasdot.com/wp2/2007/06/27/tomtom-y-vodafone-desarrollan-un-servicio-antiataascos/>.

¹⁷⁸ "EU data Q1 2008, US data December 2007." Nielsen Mobile. December 2007. <http://www.nielsenmobile.com/html/press%20releases/SocialNetworking.html>.

5.5.1. Types of mobile social networks

In its study *Social Computing Goes Mobile*, Forrester identifies¹⁷⁹ five different types of mobile social networks, which range from the most popular that already

exist on the Internet and are being optimized for mobile devices (Facebook¹⁸⁰ and MySpace), to others that are developing exclusive capabilities for these devices (Veeker¹⁸¹) (see Figure 33).

| | Description | Examples |
|--------------------------|--|---|
| Social networking | Sites where users create profiles for themselves and then connect to and interact with other users in their virtual community. User actions include communicating with real-life social contacts, connecting with friends of friends, and joining interest groups. Interactions may include media sharing, microblogging, social mapping, and tagging. | Facebook MocoSpace MySpace PadPaw Rabble Zingku (Google) |
| Media sharing | Sites where users create, view, organize, and/or share media files, such as photos, videos, music and games. The majority of these sites have desktop equivalents where users host and view their media. The mobile device is mostly used to capture and upload media to these sites. Services like Veeker focus on users exchanging media using multimedia messaging. | Flickr JuiceCaster LocaModa Mosh (Nokia) Veeker YouTube |
| Microblogs | Sites where users create and/or monitor short posts of content to communicate status and share thoughts, links, and media. Most sites allow users to contribute content using SMS messaging. | Jaiku (Google) Tumblr Twitter Zemble |
| Social mapping | Sites where users share their location and view the locations of friends, often with the help of a GPS feature. Updates and alerts may be tailored to the user's locations (e.g., they will receive alerts only when a friend is in their local area). | Buddy Beacon (Helio) Dodgeball (Google) Loopt (Sprint, Boost) MeetMoi StreetHive (Cingular) |
| Tagging | Sites or services that allow users to tag media or physical locations with metatags. Users can search content based on specific tags or have content delivered to them from their network. | Dgm8 LifeBlog (Nokia) Socialight Yellow Arrow project |

Figure 33. Types of mobile social networks.
Source: Forrester Research, Inc.

From the business point of view in general, and the commercial perspective, in particular, this new wave of mobile networks promises to be extremely profitable. For example, when users define their tastes, businesses can identify their target market and send advertising when a potential customer is near the location of a shop, restaurant, etc.

Many businesses—consolidated companies and startups alike—are investing in mobile networks. One example is **Nokia's** acquisition of a social network that uses geolocation to connect people. However, the monetization of these investments is a question that has yet to be resolved, as we will see in Chapter 8.

¹⁷⁹ Mobile Social Computing Adds Trust to Marketing. Social Computing Goes Mobile. Jaap Favier. Forrester. January 2008.

¹⁸⁰ Facebook: www.facebook.com/.

¹⁸¹ Veeker: <http://veeker.com/>.

5.5.2. Some companies operating in the mobile social networks area

In the United States, **Loopt** enables a personal location to be shared with friends and an alert signal to be sent when one of them is nearby.

Newcomers like **Aka-aki** host a social network that not only includes standard features of these communities such as writing blogs, but also offers services such as the geolocation of users.

In order to facilitate access, MySpace has launched MySpace Mobile, an integrated application that allows content to be personalized and photos to be immediately uploaded using the iPhone.

Jaiku¹⁸² is the name of a social network and a microblog based in Finland. It is a completely free service allowing all sorts of comments to be published, from the Internet or a Nokia S60 telephone. It is a similar page to Twitter, which provides continuous contact with friends and is also a way to meet new people. Due to its success after its launch, it was purchased by **Google** in 2007.

ShoZu¹⁸³ is a site that gives users the opportunity to connect from their mobile device in order to publish or edit multimedia content on their favorite social networks from a single site that supports the most important networks such as Facebook, Photobucket, Picasa, Flickr, YouTube, Blogger, LiveJournal, WordPress and Twitter.

GoLoco¹⁸⁴ is a social network that tells users when the members of the social network are going to a specific place. It thus promotes face-to-face meetings and even encourages journeys as a group, with the consequent reduction in transportation costs. For example, establishing a social network of a company's employees would provide information on their routes from their homes to the job site, making it possible to form groups and share travel costs.

Finally, Zipito¹⁸⁵ is a community that enables users to keep up to date with their friends' plans and join them if they want to. Access is offered via Internet or by mobile handset, and automatic responses to plan updates can be generated.

5.5.3. The opening of mobile social networks

Despite the mobile industry moving towards an opening, access to customers is still controlled by the operators and the manufacturers of devices. It is they who determine the features and the applications that handsets will include and the services than can be used. This forces the social networking companies to form alliances and reach agreements with them in order to ensure user awareness. This is true of Kyte¹⁸⁶, a mobile social network that has formed an alliance with **Telefónica**, **NTT DoCoMo Japan** and **Nokia**, in order to launch its mobile network onto the market.

However, the road to a gradual opening does not exclusively involve alliances. Instead, it is necessary to break down the existing technological barriers in or-

¹⁸² Jaiku: <http://www.jaiku.com/>.

¹⁸³ ShoZu: www.shozu.com.

¹⁸⁴ GoLoco:
<http://www.goloco.org/greetings/guest>.

¹⁸⁵ Zipito: Zipito.com.

¹⁸⁶ Kyte:
<http://www.kyte.tv/home/index.html>.

der to create systems that are compatible between all suppliers, devices, applications, operators and networks.

The Open Mobile Alliance (OMA)¹⁸⁷ lists the following **barriers** to opening:

- The existence of multiple networks and devices, as well as different locations, makes standardization and the interoperability of mobile social networks difficult.
- The convergence of fixed and mobile networks also hinders this opening. A social network must be accessible from anywhere and using any device, whether fixed or mobile, making it a unique global network.

The case of **Google**¹⁸⁸ is evidence of the desire for standardization in the market. Google launched an initiative with the aim of making it easier for developers to create applications, by establishing common standards for various social networks: Friendster, Hi5, LinkedIn, Ning, Plaxo, Viadeo and Oracle Friends and its own social network Orkut. This application gives access to the basic functions of a social network, such as information about users, their friends or social network, and their activities.

Once these barriers are overcome, the increased use of mobile networks as a consequence of the opening will have a positive impact on all participants in the sector:

- The **mobile operators** will benefit from the use and movement of data that all the communities generate and manage, even by means of establishing subscriptions with a monthly fee.
- **Companies in all sectors** will be able to sponsor special interest communities related to their brand or services, and identify market niches which guarantee the effectiveness of marketing campaigns.
- **Advertisers will be able to target a larger number of communities at a lower cost, and spending less time.** The definition of single parameters will enable campaigns to be launched in several communities with no need for adaptation. This will lead to savings in terms of finance and time, which can be invested in designing new campaigns.

5.5.4. How to design a successful mobile social network

In order to succeed in this sector, it is necessary to design the service by taking into account the objectives of users and to define the best technology that will help to reach them:

- **Consider the mobile social network strategy.** It is necessary to define what type of mobile network—a blog, wiki, social network, etc.— is the most suitable. Forrester¹⁸⁹ recommends a four-step method, known as POST, for defining a network strategy. POST stands for: people, objectives, strategy and technology.

¹⁸⁷ OMA:
<http://www.openmobilealliance.org/>.

¹⁸⁸ Google: www.google.com/.

¹⁸⁹ *Mobile Social Computing Adds Trust to Marketing. Social Computing Goes Mobile.* Jaap Favier. Forrester. January 2008.

- Include geolocation as a feature that provides value for the user.
- Identify the value proposal for the customer that sets the mobile social network apart from those belonging to competitors.
- Design the application with the user in mind. As the majority of users belong to generation Y, producing a design aimed at young people would be a good idea.
- Link the mobile social network to others that already exist on the fixed Internet. Success does not lie in limiting the network to a single channel, but in combining the Internet and the mobile, so that it is possible to generate a global network.
- Be sparing with the information the user receives on the mobile. Constantly sending updates, notifications and alerts to a mobile may put users off. This means that it is necessary to offer the option to configure and personalize the information they wish to receive.

5.6. Entertainment on the handset

The FTF experts analyzed the type of services that will be most successful in the short term, and concluded that the use of leisure services on mobile devices will be lower than those of information and control, or communication (see Figure 34).

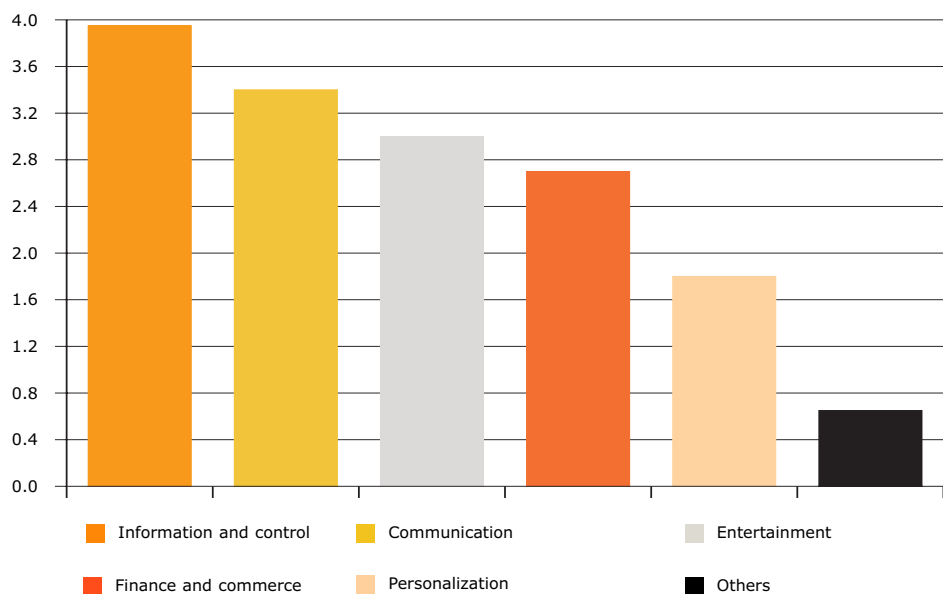


Figure 34. Types of applications that will be most successful in the short term.
Source: drawn from the conclusions within the Future Trends Forum.

We will now look at the current state and trends of the most in-demand services in the mobile leisure area.

5.6.1. Games and entertainment just a thumb tap away

Innovation is transforming the nature of games available on mobile devices. In the near future, games will be played not only with the telephone keyboard, but the latest developments will also include the use of the touchscreen, camera and microphone, mixing the real and the virtual worlds together. The latest devices will make the mobile into a control, like the Wii, with an accelerometer for racing cars or for recording movements. Games like Brain Genius¹⁹⁰, 3D Tilt-a-World¹⁹¹ and Foto Fighter include use of the camera to give them a new dimension.

Games on mobile devices, like other types of content, have so far been used by those that download them onto their devices. The number of downloads on mobile handsets increased by 17% between March 2007 and March 2008 (according to M:Metrics¹⁹²).

However, the nature of this usage is changing and consumers are demanding interrelational games that enable them to come into contact with other players all over the world and which require no additional payment. As devices start to include GPS systems, games will be able to involve hundreds of players located around the user, transforming the real world into a virtual world.

Although these figures seem to indicate an increase in the use of more complex or sophisticated games, the fact is that users' time is limited, which is why industries like **casual gaming** or those promoting well-known games are enjoying a great deal of success.

Market opening and mobile games

In the field of mobile games, the **objective of opening** the market is to guarantee that the highest number of games is available for the highest number of platforms and operators. To do so, it is necessary to guarantee that each platform, game and service meets a range of global standards.

With this in mind, the **OMA** (Open Mobile Alliance) has developed a series of standards, adapted to the characteristics of **portability** and **interoperability** and to the suppliers' certification procedures, which encourage the adoption of standards and guarantee an open environment for the development of games.

The desire of those in the market for its opening and standardization can be seen in initiatives such as the **Mobile Game Interoperability Forum (MGIF)**, a discussion forum created by **Ericsson, Motorola, Nokia** and **Siemens**, which is responsible for defining the interoperability specifications of games for mobile handsets.

¹⁹⁰ Brain Genius:
<http://www.glu.com/noram/pages/product.aspx?pr=Brain+Genius>.

¹⁹¹ 3D Tilt-a-World:
<http://www.tilt-a-world.com/>.

¹⁹² Fierce Development.
28/05/2008. Article: "Mobile gaming: turning enthusiasm into revenues."
<http://www.fiercedev.com/story/mobile-gaming-turning-enthusiasm-revenues/2008-05-28>.

The **operators** must promote affordable prices which make the new advanced and interactive games affordable for consumers. They must also promote land-line-mobile convergence in order to establish networks among users connected to their PC and among those connected to their mobile. The role of the **device manufacturers** is also crucial for handsets being able to support the necessary technology. **Telefónica** has launched the zeemote joystick, which turns the mobile handset into a pocket video console¹⁹³.

The benefits of the opening and standardization of these services for the various industry players will be:

- **Game developers** will immediately benefit from the increase in their customer base and savings on time and development costs, which will help drive innovation.
- **Content distributors** will be able to sell their content directly to users, without having to go through the operators. As progress is made in Internet connection via mobile devices, subscribers will use search engines to access games, which will encourage content distributors to directly target the end consumer instead of going through the operator's portals. An example is the case of **Gameloft**¹⁹⁴, which has created an iTunes-style application for discovering new games, watching demos, carrying out trials and downloading them onto the device. **Nokia** already has its own online platform for selling multimedia files.
- **Service providers** will have more opportunities for choice, as the games will work on any platform.
- The **manufacturers** will be able to include more and better games on their devices, which will increase their commercial appeal.
- **Consumers** will be the main beneficiaries, being able to choose from a wider range of games and more interactive content using any device, regardless of their operator.

Other successful cases in the games area

Digital Legends¹⁹⁵ has been committed to the mobile entertainment industry since 2001. Its team has developed a powerful and varied platform that has enabled it to create 3D video games for mobile devices, adapting both the technology and the processes of the PC and the console to the mobile.

Since 2005, **Nokia** has become a benchmark in the distribution of games thanks to its N-Gage platform which is noted for its high level of quality, its distribution alternatives and its range of casual games.

¹⁹³ Mundo Gamers. 29/09/2008. Article: "Telefónica lanza en exclusiva el nuevo Joystick Zeemote." <http://www.mundogamers.com/ngage/noticia/6847.html>.

¹⁹⁴ Gameloft: <http://www.gameloft.es/>.

¹⁹⁵ Digital Legends: <http://www.digital-legends.com/>.

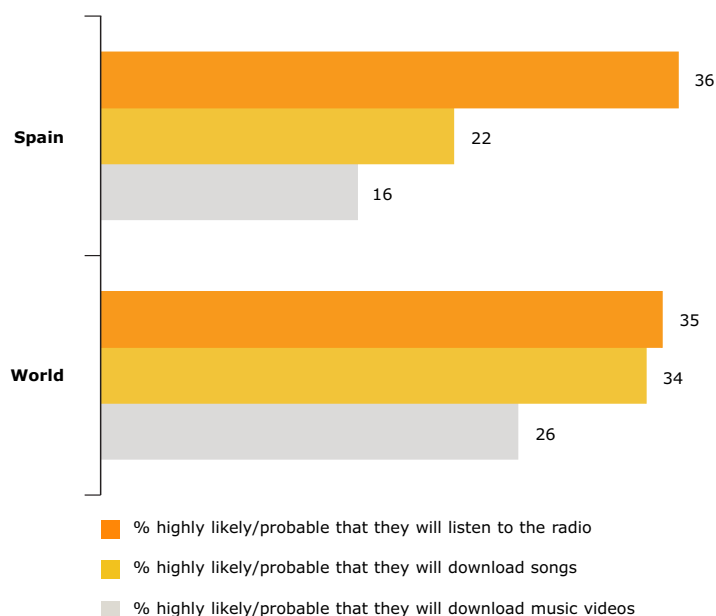
5.6.2. With your headphones on: music on mobile devices

Music is another form of mobile entertainment with a potential appeal. **Music content on mobile devices includes downloading ringtones and music, listening to the radio and watching videos.** The music industry for mobile devices is constantly evolving. Users' opportunities for choice are rapidly increasing, as are the amount of content suppliers and the attempts by companies from other sectors trying to promote and sell music on different platforms and to various consumers.

However, the market has still not experienced all the forecast growth, as there are technological and legal barriers. For this reason, it is necessary to develop adapted devices and establish systems guaranteeing the user's security and content rights.

At present, **live radio and downloading ringtones and songs** are the areas with the highest demand on mobile devices in terms of the number of users, according to the study conducted by TNS Global Technology Insight¹⁹⁶, which also sees the greatest potential for growth in music on mobile devices in FM radio.

¹⁹⁶ Estudio España Consumo Móvil. TNS Global Technology Insight. November 2006.



Based on: Non-users of these services.

Figure 35. The growth of radio on the mobile handset.
Source: TNS Global Technology Insight.



New projects are emerging in this area, such as **Visual Radio**, a service that allows users to listen to any station, as well as providing access to a visual and interactive channel, which offers more information and opportunities to participate and comment.

As regards the use of this type of content in Spain, a study conducted by the consulting firm M:Metrics¹⁹⁷ that analyses the use of mobile devices in the European Union and the United States, reveals the surprising figure that Spain in fact leads the way in terms of number of people who use their mobile phone as an MP3 player.

The main factor **limiting the use of music content is price**, though it is not the only factor. The devices are in many cases not suitable, need to include an MP3 player, have a long enough battery life and be compatible with downloading music.

The opening of the mobile music market

The Open Mobile Alliance (OMA)¹⁹⁸ defines a range of criteria that companies must comply with in order to improve the opening of the mobile musical content area. These criteria can be grouped as follows:

- **Security:** in order to encourage music downloads, it is necessary to have systems that ensure the confidentiality of the purchaser and the device, as well as guaranteeing the rights to the contents downloaded.
- **Rights:** it must be possible to establish rights for any type of musical content. There will therefore be content with no broadcasting limits, and other content that will be restricted to a period of time, amount of downloads or a monetary threshold.
- **Invoicing:** providers of these services must have systems that include different payment alternatives, prepayment or payment by purchase made, and which must in turn be compatible with a subscription by one user on several devices.
- **Compatibility:** content downloaded using mobile devices must be compatible for listening on mobile devices or using any other music player, and transferable by means of a Bluetooth connection, without losing the rights acquired as a result of the purchase.
- **Storage and backup:** in the event of handset loss, the suppliers must have a single system to allow all of the content to be restored, including downloaded music.
- **Content management by the user:** users must have the option to delete downloaded content, without losing the rights acquired, and be able to restore them at any other time.

¹⁹⁷ M:Metrics. Press Release. 15/01/2008. "M:Metrics Reports Growth In Mobile Music Adoption." <http://www.mmetrics.com/press/PressRelease.aspx?article=20080115-reportsgrowth>.

¹⁹⁸ OMA. *DRM Requirements*. Open Mobile Alliance. May 2003.

With these measures in place, **users** will have greater data protection security, will be able to organize the content they have paid for (even if they have lost the device), distribute it according to the rights obtained, and manage it. But that is not all: **content providers** will have a system that guarantees the rights of their content and will even be able to establish their own platforms. Meanwhile, **operators** will have a reliable billing system.

Successful cases in the mobile musical content market

NTT DoCoMo¹⁹⁹ and **Napster Mobile**²⁰⁰ have created a service with a monthly pricing structure that is compatible with PCs and wireless devices, which makes complete songs and ringtones available to users.

Musiwave²⁰¹ is a mobile music supplier that offers its content to more than thirty operators in 25 different countries. The company works with music producers, device manufacturers and mobile operators, which has enabled it to develop its business far beyond music distribution, and to focus on personalization, allowing users to create their own music channels.

Some companies currently offer their customers a whole range of entertainment services on their mobile devices. One of these organizations is **Berggi**²⁰², which provides access to downloading videos, images, music, etc., from mobile handsets. It also offers an email and instant-messaging application, which makes it possible for its customers to remain in constant contact, and an Internet search engine and people locator.

The well-known iPhone allows users to enjoy all the contents of their iPod, including music, audio books, audio and video podcasts, music videos, TV programs and films. The iPhone synchronizes its contents with the user's iTunes library on a PC or Mac computer, and can play any music or video content purchased via the online iTunes store.

5.6.3. Television wherever you are

The development of mobile devices and the leveling of standards have made it possible for television on mobile devices to spread to an increasing number of users. It reached the figure of 300,000 mobile TV subscribers in Spain in 2007, according to the annual report from the national Telecommunications Market Commission²⁰³. Despite this, the figures for mobile TV use remain low.

Telefónica and the main cable content supplier have signed an agreement so that films and football can be viewed on mobile devices, which will make Spain one of the first countries where this will be possible.

However, the FTF experts believe that this option is among the four services that will generate the least business opportunities in the medium term (see Figure 27).

¹⁹⁹ NTT DoCoMo:
<http://www.nttdocomo.com/>.

²⁰⁰ Napster Mobile:
<http://www.napster.com/napstermobile/>.

²⁰¹ Musiwave:
<http://www.musiwave.net/>.

²⁰² Berggi:
<http://corporate.berggi.com/web/index>.

²⁰³ "Annual Report 2007."
Telecommunications Market
Commission (CMT). June 2008.
http://www.cmt.es/cmt_ptl_ext/SelectOption.do.

The programs available on mobile TV have so far been selected by the TV channels from among the programs that they consider most interesting. However, according to the results of a survey by Netsize²⁰⁴ in 2008, users prefer more flexible models that allow them to manage the content. This service, instead of being a television schedule in the real sense, consists of downloading content or streaming videos of programs that have already been broadcast.

According to a study conducted by The Cocktail Analysis²⁰⁵, what consumers are most interested in seeing on mobile TV are news programs (see Figure 36).

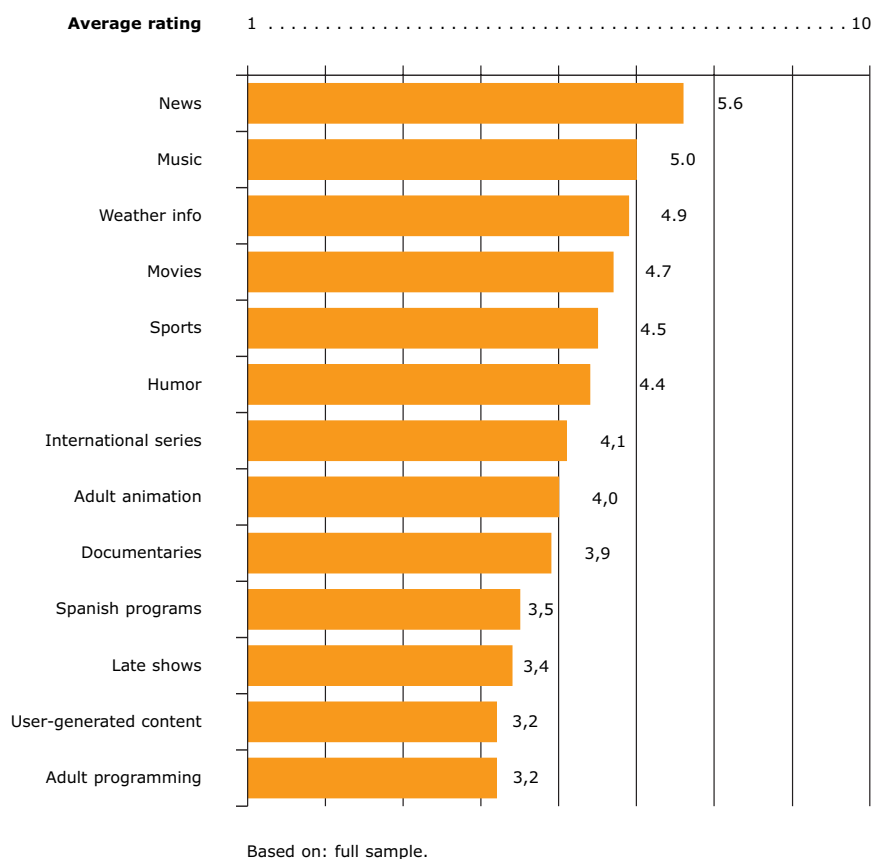


Figure 36. The most interesting content on mobile TV.
Source: The Cocktail Analysis.

²⁰⁴ *The Netsize Guide. Mobile 2.0, you are in control.* Netsize. Paris, February 2008.

²⁰⁵ *Televidente 2.0. Estudio de España sobre consumo de televisión en el móvil.* The Cocktail Analysis. March 2008.

According to the study, only 17% of those surveyed expressed an interest in watching television on their mobile phone when they were at home.

The study concludes that although the operators and content providers want to encourage mobile TV use, the main problem that they face is that users are not interested in it (less than 45% expressed interest).

Despite this, a gradual increase is anticipated internationally during the coming years (see figure 37)²⁰⁶.

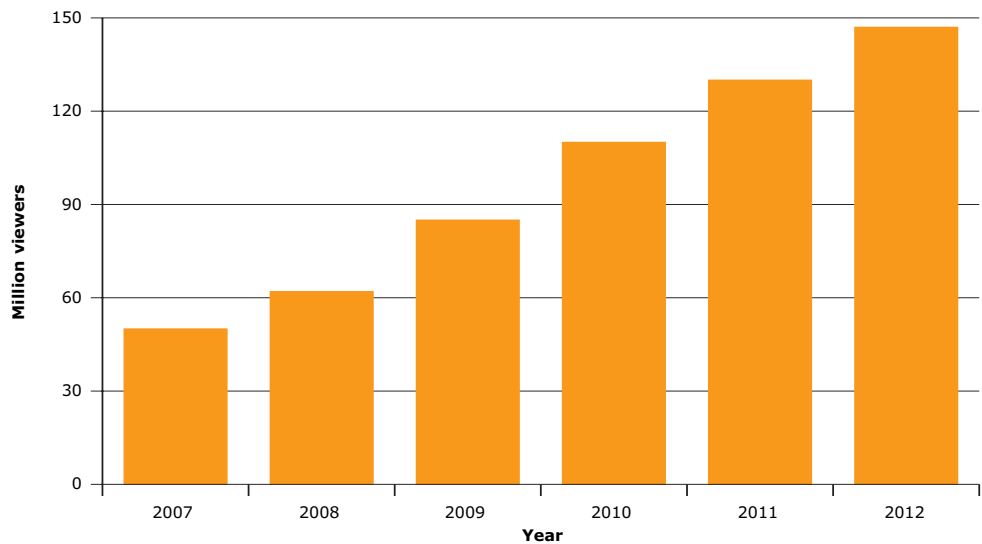


Figure 37. Anticipated increase in mobile TV viewers.
Source: Survey conducted by VAS Research.

In order to open up mobile TV services to the largest number of consumers, all the players in the mobile market must work together to mitigate the negative effects of:

- **Price established by the operators.** Current pricing models will be the main restriction on the use of television on mobile devices, due to users having the feeling of losing control over their expenditure and being unwilling to pay for something that is free at home. The operators must establish flat-rate subscriptions that give back the feeling of control to the consumer.
- **Technology standards.** There are currently nine types of technologies distributed all over the world. The challenge for the sector is to standardize them in order to facilitate visualization of content by all users, with the lowest adaptation cost. In November 2007, the European Union accepted the DVB-A standard for the broadcast of mobile TV, which came into effect in Spain in March 2008, although other technologies may be accepted by each member state. In other regions, such as in China, which has five standards, standardi-

²⁰⁶ *Mobile Television: The Emergence of a Personal-Mass Media Platform.* Sylvia Chan-Olmsted. Professor and Associate Dean for Research Department of Telecommunication College of Journalism and Communication. May 2008.

zation remains a slow process. This is delaying the spread of mobile TV. **NextWave**²⁰⁷ has developed integrated solutions for television using UMTS and WiMAX, which aim to cut costs for operators and improve profitability.

- **Regulation.** Although the television operators will simply require prior administrative authorizations, it will be necessary to distribute the frequencies on which television will be broadcast. Meanwhile, the fact that the service is new means that governments must consider a number of issues that guarantee consumer transparency and security: should mobile TV be regulated in the same way as traditional TV? How will the convergence between the wireless and television sectors be regulated?

Mobile videos

An analysis by the consulting firm Frost & Sullivan²⁰⁸ showed that mobile video services have enormous growth potential, which makes them applications that are certain to create alternative sources of revenue for the operators.

However, for this to happen, an astronomical investment is necessary to adapt the content to mobile format, which could lead to a decline in ARPU (average revenue per user). If operators want to increase the use of mobile video, they should offer more free content, as the limitations of these devices, such as size and duration of content, do not encourage the purchase of films.

An example of an entrepreneurial company in this area is **ComVu**²⁰⁹, which sells a video broadcasting service on the Internet (webcasting) from mobile devices (mobile webcasting). The Livecast software enables videos to be watched while they are downloading, i.e., without waiting, which can be done anywhere and at any time using a mobile device or PC. Livecast provides a simple and straightforward way of recording and sharing videos.

Successful cases in mobile TV

The iPhone, a success in the area of mobile TV use, is going to become an essential device in driving up the use of videos and television on mobile handsets. The factors behind the success of the popular telephone are its technical specifications (more internal memory than other handsets and low battery consumption), access to a wide range of TV and video content via iTunes, and its high-quality panoramic screen.

Hungama Mobile²¹⁰ has developed software that allows films produced in Bollywood to be viewed on a mobile device²¹¹, thanks to a decrease in quality, which allows the contents to be watched without taking up too much space on the device. This alliance will enable agreements to be established to distribute content directly onto the memory cards of device manufacturers. Films are also available on mobile portals such as the one of Hungama (Indianfm.com).

²⁰⁷ NextWave:
<http://www.nextwave.com/>.

²⁰⁸ IHS. 20/08/2008. Article:
"Frost: El Crecimiento de Servicios de Contenido Móvil Aumentará el Ingreso Promedio por Usuario de Operadores Móviles Latinoamericanos."
<http://mexico.ihs.com/news/2008/frost-movil-contenido-ingreso-usuario.htm>.

²⁰⁹ ComVu:
<http://www.comvu.com/>.

²¹⁰ Hungama Mobile:
<http://www.hungamamobile.com/>.

²¹¹ Bollywood:
<http://www.bollywoodworld.com/>.

The international association of mobile operators **GSMA**²¹², and the Company **Mofilm**²¹³, which specializes in distributing short videos and film content for mobile devices, presented a sample of short films at the Barcelona Mobile World Congress (MWC) which included new films from film festivals including Cannes and Sundance. More than 16,000 copies of five short films produced especially for congress visitors' telephones and mobile devices were distributed to those at the MWC, which they were able to download using Bluetooth, memory cards, an SMS service and touchscreens.

5.7. Manage your travels on the go

Organizing a trip for business or pleasure can create many a headache, for both the end user and the company or travel agency hired to do it (purchasing tickets, reserving hotels, coordination of schedules, etc). This could be easier in the near future, as it will allow those making trips to download all the services directly onto their mobile handsets. In the future, this channel will enable **any transport-related procedure** to be dealt with:

- The **airlines** have developed services for mobile devices including: real-time air-traffic information, updated departure and arrival times, flight reservations, automatic check-in, boarding and payment. Some Spanish companies have already started to implement these services: **Spanair**²¹⁴ offers the electronic boarding card, which is sent to mobile handsets, and has installed machines for scanning and printing the code. **Iberia**²¹⁵ confirms the arrival and departure times of its flights by sending SMS. Meanwhile, mobile handsets used as personal flight organizers can also store boarding passes, information for checking on luggage and payment details; in short, air travel without any paper involved. In the future, it is anticipated that mobile devices will be used to store visas and biometric data for identifying passengers.
- Mobile tickets use bar codes that are sent to the handset and which turn the telephone into an **electronic ticket**, giving the user access to various means of transport (trains, ships, airplanes or buses), and to cinemas, gyms, spas, etc. The **EMT** (Málaga Transport Company)²¹⁶, in cooperation with **Telefónica Móviles** and **BBVA**, has pioneered the implementation of the mobile bus pass.
- Thanks to **location-based systems** (see section 4 of this chapter), businesses and families can locate their traveling employees or relatives at any time. Meanwhile, users can receive information about tourism and items of specific interest depending on their location. The Department of Tourism of the Canary Islands Government has launched the Cicerón project, which informs tourists about their holiday destinations via mobile phone. Users have access to information in four languages about 56 sites located in 23 towns on the islands. A similar project has been undertaken in Jerez. It involves a mobile-based guide system, which tourists can download using Bluetooth, to see the city's tourist attractions and hear commentaries about them²¹⁷.

²¹² GSMA (Mobile World Congress): <http://www.mobileworldcongress.com/>.

²¹³ Mofilm: <http://www.mofilm.com/>.

²¹⁴ Spanair: <http://www.spanair.com/web/es-es/spanair-mobi/>.

²¹⁵ Iberia: http://www.iberia.com/OneToOne/v3/program.do?prgOid=536886543&tabId=3&menuId=06050000000000&language=es&country=ES&market=ES&IS_ANONYMOUS=true.

²¹⁶ EMT (Málaga Transport Company): <http://www.emtmalaga.es/portal/pa/ge/portal/EMT/ServiBusMovil>.

²¹⁷ Diario de Jerez. 26/09/2008. Article: "Jerez, más turística gracias al móvil." <http://www.diariodejerez.es/article/jerez/238790/jerez/mas/turistica/gracias/movil.html>.

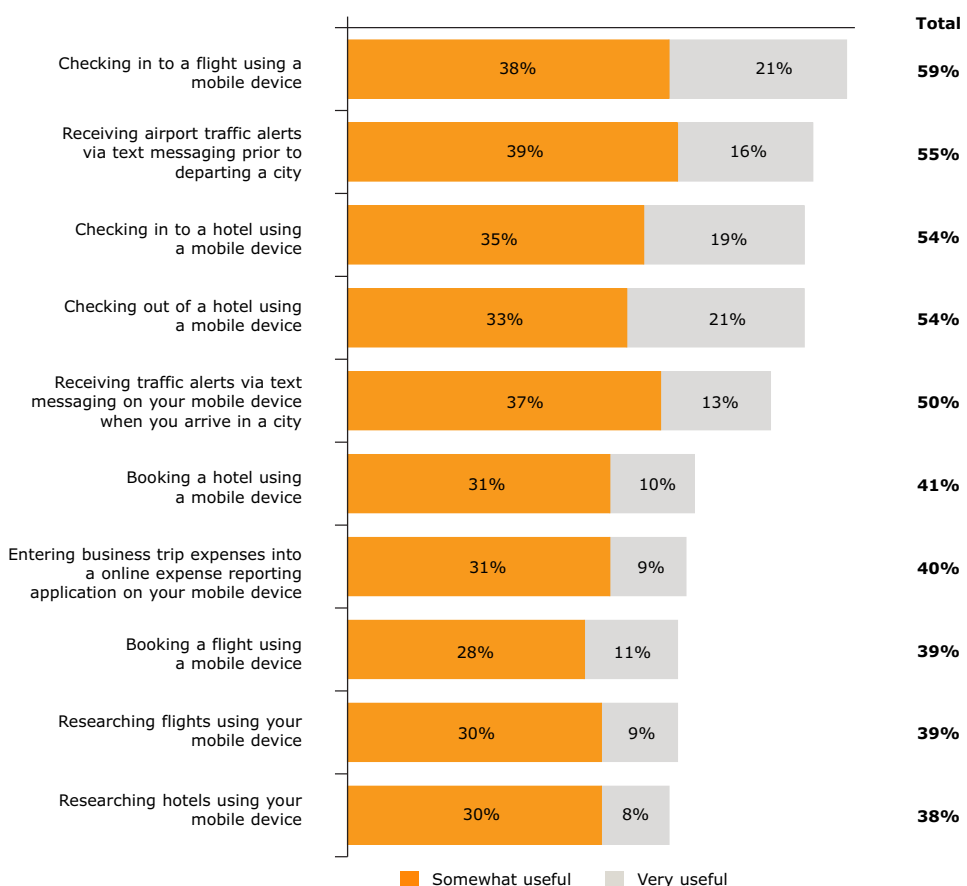
²¹⁸ *What's Holding Back Mobile Services In US Travel?* Sarah Rotman Epps, Henry H. Harteveltdt, Charles S. Golvin and Scott Wright. Forrester. December 2007.

²¹⁹ *Travel eBusiness Execs: Focus on Mobile Data Now. Mobile Data Creates a New Way to Distribute Travel and Engage Travelers.* Henry H. Harteveltdt, Carrie A. Johnson, Charles S. Golvin, Niek van Veen, and Brian Tesch. Forrester. May 2007.

- **Use of mobile handsets as hotel keys or boarding passes:** it is possible to use mobile devices as hotel room keys using bar codes sent by MMS, which improves customer service.

5.7.1. Figures and forecasts for use of travel services on mobile devices

In an environment like mobile data services, which is still taking shape, the development of travel services using these devices has yet to even scratch the surface of its potential. According to the study by Forrester²¹⁸ on Mobile Travel Services in the United States, in September 2007, only 8% of passengers had used a mobile phone for activities related to these services. According to Forrester²¹⁹, users are mainly interested in being able to check in for their flights (see Figure 38).



Base: online North American business travelers who own any type of mobile phone (multiple responses accepted).

Figure 38. Most useful travel applications on mobile phones.
Source: Forrester's NACTAS Q4 2006 Survey.

Barriers to the expansion of these services include users' reluctance to pay from their mobile phone, which is the case nearly 50% of the time, according to the survey conducted by North American Technographics²²⁰. 40% of those surveyed said that their handset screen is not big enough to see this information properly, and 30% said that access to the Internet from their device is slow. Another of the reasons mentioned for not using it is a lack of confidence in security when making payments or unfamiliarity with the mechanism being used.

The **launch of flat-rate subscriptions by the operators and improvement of the devices' usability and data transmission, which will be a result of the opening**, will therefore have a positive effect on the use of this type of services.

The **key factor** in the expansion of travel services for mobile devices is the development of applications and services that the user cannot access from a computer, such as check in/out for airplanes, hotel rooms, etc. It is also extremely important to understand that taking advantage of all these possibilities offered by mobile travel management does not involve optimizing the websites of airlines, hotel chains or travel agencies for mobile handsets, but instead developing "mobile sites" which enable users to carry out new procedures.

5.8. Warning: mobile devices may be seriously beneficial to your health

Mobile devices have always helped people stay in touch. However, their current function is more extensive, as they now play a role in healthcare. Today, devices provide solutions for long-distance monitoring of the progress of at-risk patients (in some cases of asthma, diabetes, heart problems, etc.) or elderly people.

The objective of **telemedicine** is to check on the state of patients once they have left hospital, so that they can live a normal life. The main beneficiaries of this technology will therefore be the elderly or those with chronic diseases.

It is operated by means of sensors that detect possible variations in established parameters (for example, a fall sensor for elderly people, measurement of heart rate, blood sugar levels, etc.), and activate an alarm that sends a signal to the hospital, in order to take the necessary preventive measures. Location-based systems are essential in this field, as they enable the patient's location to be pinpointed exactly, with no need for the patient to provide this information.

The spread of this type of services to a larger number of consumers will provide clear **benefits** for both patients and doctors, and for the healthcare system and the telecommunications sector. The opportunities increase exponentially when developing countries are taken into consideration (see Chapter 7).

Mobile technology will benefit **patients** by automatically sending emergency calls to the hospital and sending the documentation that enables them to be ad-

²²⁰ Forrester's North American Technographics® Consumer Benchmark Survey, 2007. Charles Gorvin. Forrester. October 2007.



mitted immediately, which will lead to enhanced monitoring of their illnesses. It will also allow for payments to be made for medical services using the handset or the Internet.

Healthcare personnel will have easier access to the stored information on the patient's health insurance and medical records thanks to mobile technology, which will also make communication between the patient and doctor possible in real time. It will also facilitate the adoption of new information systems for carrying out new medical studies.

5.8.1. The opening of the market and its impact on telemedicine

The objective in the telemedicine field is to achieve distribution of a single technology that is the same for all patients. To do this, it will be necessary to make systems that are easy to use and mobile, while providing the necessary functionality and the ability for two-way communication between patients and medical centers.

The Center for Cell Phone Applications in Healthcare (C-PAHC) division of **Medical Records**²²¹, has been developing this type of medical system for more than 25 years. They are trying to promote continuous care, supported by a system that contains the patients' records, and information on their health insurance. Another of their objectives is to achieve interoperability between mobile devices, so that they can connect to each other and improve communication between patients and medical centers. In addition, they want to provide patients with a tool that enables them to handle all the aspects related to their illness and to have a mobile documentation system.

However, in order to turn mobile devices into telemedicine devices, a number of conditions are necessary:

- There must be a universal platform that allows any type of mobile phone to be used, and cooperation among all the mobile operators in the geographical area.
- Guaranteeing information security.
- Usability of mobile devices.
- Software developers must design attractive solutions that benefit patients and doctors.

If all these conditions are met, the development of telemedicine is likely to increase significantly. Some forecasts suggest that more than ten million users may have access to basic applications by the end of 2009.

However, for all this to take shape, progress is needed in the development of **sensors** that can measure blood pressure, temperature and heart and respiratory rates, among others. It is also necessary to develop electronic media for data processing and guarantee access to telecommunications networks, using either standard Internet or wireless services.

²²¹ Medical Records:
[http://www.medrecinst.com/cell
phone](http://www.medrecinst.com/cellphone).

5.8.2. Some telemedicine success stories

The **University of California** has developed an application for mobile devices that adds a microscope function and enables them to identify the parasite that causes malaria, send the information over the Internet and provide a diagnosis in real time.

Mobile operator **Verizon**²²² modified the 5200 model of **LG's** mobile handset to provide a service that measures blood sugar levels. The Glucophone performs glycemia analysis and stores the results in a database on the phone as well as an online disease control center.

Nokia²²³ and **Roche Diagnostics**²²⁴ have developed an application for monitoring patients with diabetes using the mobile phones. It is a solution that combines the Internet and wireless services, using software that enables these patients to be connected with healthcare professionals at all times. This application is currently available in around 40 hospitals and more than 150 patients are participating.

Gentag²²⁵ has developed a technology for mobile handsets that uses radiofrequency waves and wireless technology to read the user's sensor information. The company has focused on the development of applications related to healthcare, so that users can use their telephone as a temperature gauge. For example, this enables parents to keep a remote check their child's temperature, or to use it as a sensor to check blood sugar levels, cardiac activity and the ultraviolet rays to which the user is exposed. **Gentag** is developing the technology that will be used in the future to make mobile handsets act as carbon monoxide sensors.

XVivo²²⁶ is an animation company that works in the health sector and anticipates a future in which mobile systems will be used by pharmaceutical companies to show how a medical prescription affects a patient's body. Furthermore, thanks to intelligent robots, it will be possible to detect wounded troops in the army, retrieve them wherever they are, analyze the seriousness of their condition, carry out a scan and compare it with another normal one from the same patient, in order to detect and cure wounds.

The **Xanit International Hospital**²²⁷ has implemented monitoring systems for its patients with pacemakers and defibrillators that can undergo an implant, which consists of a handset that gathers information from these devices at a set time and automatically sends it to the doctor. The doctor receives this data via email, fax or SMS on their mobile handset.

The **MobiHealth** project²²⁸ has developed the teletrauma system based on 3G technologies. Its functions include the possibility of treating pregnant women, thanks to several sensors that register parameters such as the heartbeats of mother and child, intrauterine activity, etc. All of this information is sent to the hospital, which makes remote monitoring possible.

²²² Verizon:
<http://www22.verizon.com/>.

²²³ Nokia: <http://www.nokia.es/>.

²²⁴ Roche Diagnostics:
<http://www.rochediagnostics.es/>.

²²⁵ Gentag:
<http://www.gentag.com/>.

²²⁶ XVivo: <http://www.xvivo.net/>.

²²⁷ Xanit:
[http://www.xanit.net/detallenotas
prensa.php?idNotasPrensa=47](http://www.xanit.net/detallenotas prensa.php?idNotasPrensa=47).

²²⁸ MobiHealth:
<http://www.mobihealth.org/>.

5.9. Conclusions about the range of mobile services for consumers

The declining value of voice services is forcing the sector to focus on **data services**. Of all these, the FTF experts anticipate the greatest success for location-based services, which allow for the identification of users and personalization of the range of services, as well as mobile social networks, which add a new dimension to social relationships. There is a very wide range of existing data services, including m-banking, m-payment, interactive games, music, travel services, medical applications, etc. However, there is still a long way to go in terms of innovation and adaptation to customers' needs.

Indeed, these services are at a very early stage and have yet to take off as anticipated, due to reasons that are highly varied but present across the board, namely: the diversity of standards, the fragmentation of devices and their technical limitations, the reduced spectrum, the underdevelopment of applications and platforms, the shortage of affordable prices enabling users to monitor their expenditure, and the lack of confidence due to the insecurity of mobile networks. These are among the major challenges currently facing the sector.

How this situation evolves will depend to a large extent on the gradual opening of the market. On one hand, users do not perceive any added value in the new services offered by operators. As such, not only is there a need to clarify the value added, but also to offer new personalized services and location-based services and to develop specific content for this field. On the other hand, users are not being offered alluring prices that encourage the use of data services; in fact, they have no clear pricing systems that allow them to keep tabs on their expenditure. Finally, it is necessary to ensure mobile users' security and privacy, in order to win their trust and encourage the progress of services such as m-commerce and m-banking.

For emerging countries, this market opening is crucial as their mobile handsets promise to bridge the digital gap and include them in the Internet revolution. However, many of these countries do not even have access to networks or electricity, which means that the first step must be to create stations with renewable energies (wind power, solar power, etc.) that are able to boost development.