Sponsored by

Mobile 2009

Markets & Trends | Facts & Figures

enterfie

IDATE
Consulting & Research

Telecom Services & Mobile Trends

Mobile Equipment Dynamics

Mobile Broadband

Mobile Hot Topics

Introduction

The world telecom services market is estimated at 1,365 billion USD in 2008 – a 4.2% increase over the year before – and is expected to be worth over 1,416 billion USD in 2009.

After having increased by an average 6% annually over the past three years, i.e. from 2005 to 2007, the globe's telecommunications services market suffered a downswing in 2008, with growth dropping to 4.2% – generating a total turnover estimated at 1,365 billion USD. The structural pressures that have been weighing on the sector for several years now (decline of the fixed voice market, advanced mobile markets reaching maturity, etc.) are being compounded by the first effects of the global economic crisis and the worsening financial climate.

Mobile services growth decreases by 4 points and the decline of fixed telephony becomes more acute

With a total turnover estimated at 742.2 billion USD in 2008, mobile services account for 54% of the telecom services market and singlehandedly deliver all of the sector's growth. But the annual growth rate has dropped from more than 12% in 2007 to 8% in 2008. The mobile customer base worldwide grew by another 17% in 2008, but is offset by a steady decline in average revenue per user (ARPU) which dropped to 17.50 USD a month in 2008. Meanwhile, fixed network services are stagnating. The revenue generated by data services – whose growth is being spurred chiefly by broadband access – rose by 20 billion USD in 2008, while fixed telephony revenue dropped by as much, even if the impact on the base is still limited: the number of fixed phone lines shrunk by just over 10 million during the year, i.e. by just under 1%. The number of broadband connections grew by close to 20% to 415 million at the end of 2008: with an average density of 6.4 broadband connections per 100 inhabitants, this market still has considerable room to grow, especially in emerging economies. In more advanced markets, broadband density is over 30%, i.e. between 70% and 80% of households are already equipped.

Growth hits a record low in industrialised countries

Accounting for two thirds of the market's value, industrialised countries still dominate the globe's telecom services market by a sizeable margin. But growth in those countries, which has been moderate since the start of the decade, dropped substantially in 2008 – going from 4% in 2007 to 1.4% in North America and from 1.9% to 0.8% in the European Union. The decline was similar in Asia's industrialised nations, due in large part to the -2.7% loss reported in Japan. The demand for new services (VoIP, IPTV, IM, mobile multimedia…) in these countries is only just offsetting the losses in value being posted by traditional services. In 2009, growth in both industrialised and developing economies is expected to drop once again, due to the global economic strain.

In this new edition of our Mobile yearbook, you will find valuable data on the central components of the mobile world, along with analyses from IDATE's experts and a comprehensive round-up of the highlights of the year gone by:

- Mobile Broadband dynamics
- Mobile pricing Innovation
- NFC timelines
- Mobile Handset Dynamics
- Mobile Churn Management
- Radio Spectrum issues
- Mobile TV Solutions
- New Communication trends

Telecom Services & Mobile Trends

Sizeable drop in telecom services sector growth in 2008

The value of the world telecom services market increased by 4.2% in 2008

After a rebound that began in 2005, the telecom services market's growth rate suffered a significant drop in 2008. Totalling 1,365 billion USD, annual growth is estimated at 4.2%: the lowest level for the global market since 2002, just after the dotcom bubble burst. While the financial crisis – which has been deepening since autumn 2008 – is naturally aggravating the current situation, the dropping growth rate is due above all to structural pressures weighing on the global telecommunications market, including the fact that a number of markets that have long sustained the sector are reaching maturity (especially mobile markets in advanced countries), the impact of substituted and/or demonetised applications, competitive and/or regulatory pressure…

In fixed markets, the Internet's ongoing growth is only just offsetting the inexorable decline of landline telephony, while growth in the mobile services market was four points below what it was in 2007.

With a total turnover estimated at 687.5 billion USD in 2007 and 742.2 billion USD in 2008, mobile services nevertheless continue to account for all the growth in the telecom services market, and have exceeded fixed line services in value since 2003. Their weight in the total equation continues to rise: since 2006 mobile services have accounted for more than half of telecom services consolidated turnover worldwide – a proportion estimated at 54% in 2008. The mobile market's growth is sustained by the increase of the subscriber base, which grew by another 17% in 2008. At the same time, average revenue per user (ARPU) has been dropping steadily, totalling 17.50 USD a month in 2008, albeit with extreme variations from region to region.

Fixed telephony continues its decline which began in 2002, and at an ever increasing pace. In 2008, the market lost another 5% of its total value worldwide, due to both a nominal effect (a decrease of between 4% and 7% in the average revenue per line since 2004) and a real effect (slow decline in the number of lines since 2006). In terms of value, fixed telephony's contribution to

the global telecommunications services market has gone from 48% in 2001 to 27% in 2008.

The data and Internet access services markets are playing an increasingly large part in the telecom services market's growth worldwide. In 2008, they generated 20 billion USD more in revenue than the year before, for a total turnover of 256 billion USD. Their weight in the equation is increasing steadily, going from 15% of telecom services revenue in 2001 to close to 19% in 2008, but their contribution to overall growth is only just offsetting the losses being reported in fixed telephony services revenue.

The market for data transmission services in the business segment is growing very slightly, with near zero growth in Western Europe, and even decreasing in some cases (-0.5% in North America in 2008). It is the Internet market, and especially broadband that is enjoying the only remarkable growth trajectory. There are an estimated 415 million broadband connections around the globe at the end of 2008, or 67.5 million more subscribers than the year before – an increase equivalent to what was reported in 2007. The global base has doubled in three years. At the end of 2008, broadband connections accounted for close to three quarters of all the world's Internet connections.

Table 1: Worldwide - Telecom services market
2005-2009

(Million USD)	2005	2006	2007	2008	2009F
Fixed telephony	421 837	405 827	386 447	366 394	349 467
Mobile services	546 365	612 379	687 490	742 241	790 464
Data and Internet	196 066	215 634	236 235	256 130	276 890
TOTAL	1 164 268	1 233 840	1 310 171	1 364 765	1 416 821
Annual Growth Rate	*5.7%*	*6.0%*	*6.2%*	*4.2%*	*3.8%*

Source: IDATE

Growth hits a record low in industrialised countries

From a geographical standpoint, growth trajectories continue to vary a great deal, between mature regions and countries where growth is now virtually nil, and emerging regions and countries which continue to report a combined growth rate of just over 10% – although there are still considerable disparities inside each block.

Growth in North America, for instance, has been higher that in the European Union over the past three years (+4% vs. +1.9% in 2007, +1.4% vs. +0.8% in 2008), while Japan stands out for having suffered negative growth for two years in a row, first moderate in 2007 (-0.2%) and more severe in 2008.

(-2.7%).The gap between the two sides of the Atlantic shrunk in the first half of the decade: in 2001, growth in the European Union was 10 points higher than in North America but, since 2005, the EU has been reporting lower growth rates than Canada and the US. This is due to a combination of two things:

- the decline of fixed telephony, which is picking up speed in Europe even though it is still less marked thank in North America (-5.7% for the EU and -7.3% for North America in 2008).
- mobile services which have enjoyed a steadier growth path in North America, growing at double the rate of the European market: close to +11% in 2006 and 2007, then +5.2% in 2008 for North America; just under +5% in 2006 and 2007, then +2.7% in 2008 for the European Union).

Growth plummeted in industrialised countries in Asia in 2002, going from 10% to 2%, and remained low but above zero in the years that followed, before tumbling into the negatives in 2008 due in large part to a dramatic decline in the Japanese market.

Accounting for two thirds of the market's value, industrialised countries still dominate the globe's telecom services market by a sizeable margin. But growth in those countries, which has been moderate since the start of the decade, dropped substantially in 2008 – going from 4% in 2007 to 1.4% in North America and from 1.9% to

0.8% in the European Union. The decline was similar in Asia's industrialised nations, due in large part to the -2.7% loss reported in Japan. The demand for new services (VoIP, IPTV, IM, mobile multimedia…) in these countries is only just offsetting the losses in value being posted by traditional services. In 2009, growth in both industrialised and developing economies is expected to drop once again, due to the global economic strain.

Our estimates put total world revenue in 2006 at 1.2 billion USD, up 6.2% on the previous year. Growth in 2007 can be expected to be slightly lower at 6.0%.

Table 2: Worldwide - Telecom services markets by region
2007-2008

	Market value (million USD)		Annual growth rate (%)	
	2007	2008F	2007	2008F
North America	332 797	337 389	3.9	1.4
Europe	439 800	448 606	3.7	2.0
Asia-Pacific	341 560	357 167	5.7	4.6
Latin America	115 770	127 355	13.7	10.0
Africa & Middle East	80 244	94 248	23.7	17.5

Source: IDATE

Trends by activity segment

Mobile services

Mobile services growth decreases by 4 points and the decline of fixed telephony becomes more acute

With a total turnover estimated at 742.2 billion USD in 2008, mobile services account for 54% of the telecom services market and singlehandedly deliver all of the sector's growth. But the annual growth rate has dropped from more than 12% in 2007 to 8% in 2008.

The mobile customer base worldwide grew by another 17% in 2008, but is offset by a steady decline in average revenue per user (ARPU) which dropped to 17.50 USD a month in 2008. Meanwhile, fixed network services are stagnating. The revenue generated by data services – whose growth is being spurred chiefly by broadband access – rose by 20 billion USD in 2008, while fixed telephony revenue dropped by as much, even if the impact on the base is still limited: the number of fixed phone lines shrunk by just over 10 million during the year, i.e. by just under 1%.

The number of broadband connections grew by close to 20% to 415 million at the end of 2008: with an average density of 6.4 broadband connections per 100 inhabitants, this market still has considerable room to grow, especially in emerging economies. In more advanced markets, broadband density is over 30%, i.e. between 70% and 80% of households are already equipped ■

Table 3: Worldwide - Mobile customers
2005-2008

	Mobile customers (thousands)				Mobile penetration (% of population)			
	2005	2006	2007	2008F	2005	2006	2007	2008F
North America	224 771	251 529	277 045	294 024	68.4	75.9	82.8	87.1
Europe	691 704	801 825	889 219	938 139	73.1	90.4	100.8	106.0
Asia-Pacific	820 009	1 058 100	1 363 013	1 686 496	22.8	29.1	37.0	45.3
Latin America	232 042	296 117	362 393	425 571	43.1	54.4	65.8	76.3
Africa & Middle East	188 185	271 662	379 907	475 141	18.9	26.7	36.6	44.8
TOTAL	**2 156 711**	**2 679 233**	**3 271 578**	**3 819 371**	**27.6**	**34.3**	**41.3**	**46.5**

Source: **IDATE**

Mobile Equipment Dynamics

Mobile Terminals

Amidst the global economic crisis, the global mobile phone market is facing difficult times and growth that were double digits from 2002, are now experimenting the negative impact of this economic turmoil. With a volume growth stated at 15% in 2007, mobile phone sales should continue to be on the growth in 2008, but at a far lesser extent. IDATE states that volumes have progressed by 5% in 2008 reaching 1200 units sold over the year, a forecast reevaluated to the downside after a negative fourth quarter. If these numbers appear positive taking into account the global crisis and the impact it has on the IT and consumer electronics industry, 2008 was a turning point in the mobile phone industry.

- First, the mobile phone market has been historically one of the fastest growing markets with double digits growth per year, since the Internet 'Bubble burst' of 2001 and its economic downturn. The fact that this year market growth may be limited to 5% is a sign of general slow down of the industry as consumers are either differing their handset replacement or first purchase.
- Second parameter is to be seen in the second half sales of 2008. In the first half of 2008, handset sales were on the same trend as previous years with year on year sales between 13% to 15%. As of 3rd quarter of 2008, sales were down to 7.7% confirming the economic impact of the global crisis; and in the fourth quarter, sales were down by 10% YoY. Historically the third quarter has been a ramp-up time for manufacturers to ship phones in preparation for the holiday season and growth have generally been on a 15% to 30% progression year on year. With these low 3rd and 4th quarter sales figures, market should prepare for low 1st half in 2009 with a inevitable contraction in mature markets.

Starting in the second half of 2008, the economic slow down should continue in 2009 and increase its impact on mobile phone sales. For 2009 perspective, after IDATE first stated that mobile phone market growth should remain positive between 1 to 4%, market warnings by major handset manufacturers and chipset suppliers, indicated that this year will remain extremely tough for every players of the mobile value chain. Sales should therefore be on the downturn reaching 1130 to 1140 units, a 5 to 6% decrease in volume.

Table 4: Mobile Handsets Market Breakdown by Region

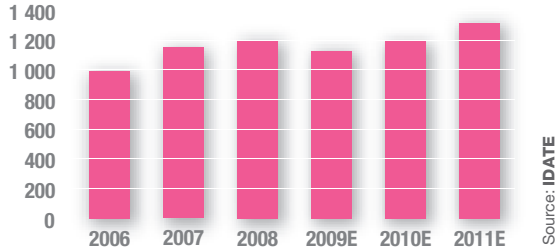
2005-2009

Million EUR	2005	2006	2007	2008	2009F
Asia-Pacific	**43 678**	**44 946**	**46 582**	**47 144**	**48 395**
China	11 860	12 587	14 104	15 515	17 552
India	3 123	5 472	6 582	8 990	11 164
Japan	12 769	12 313	11 645	11 496	11 038
Other countries	15 926	14 574	14 252	11 143	8 641
North America	**22 276**	**22 537**	**22 604**	**22 725**	**23 169**
USA	20 681	20 857	20 863	20 962	21 308
Canada	1 595	1 680	1 742	1 762	1 862
Western Europe	**22 886**	**23 465**	**24 053**	**24 269**	**24 518**
France	3 167	3 256	3 375	3 422	3 463
Germany	3 792	3 890	3 966	4 033	4 078
Italy	3 307	3 322	3 373	3 416	3 444
Spain	2 820	2 929	3 025	3 058	3 095
UK	4 688	4 833	4 963	4 944	4 925
Other countries	5 113	5 236	5 352	5 396	5 513
Central and Eastern Europe	**7 918**	**8 039**	**8 516**	**8 849**	**9 163**
Russia	5 198	5 050	5 249	5 410	5 561

Source: **IDATE**

Figure 1. Worldwide handset shipments

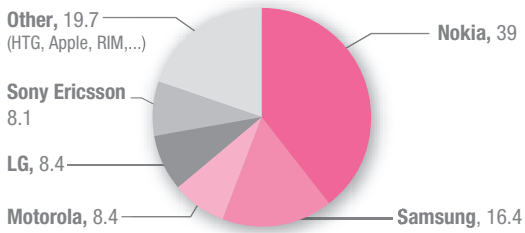
2006-2011, million units



Source: **IDATE**

Figure 2. World handset providers

2008, market share in %



Source: **IDATE**

Mobile Access

In the mobile access equipment market, overall GSM sales led the good evolution of the mobile market despite weaker deployments of WCDMA networks. Market also faced an intense consolidation inducing a fiercer competition between equipment providers. The mobile access infrastructure market includes cellular network access base stations (BTS for GSM/GPRS/EDGE and CDMA, and Nodes B for UMTS networks), associated equipments (BSC, GGSN, SGSN) as well as Public Network WLAN access base stations (hot-spots), based on WiFi, WiMax technologies.

Despite the dynamic investment in mobile networks benefited mobile infrastructure suppliers caused by the intensifying competition in Africa, India, Latin America, and Russia and price erosion for GSM/EDGE/GPRS equipment, there were slowdown in the sector. With the investment reduced from mobile carriers, the mobile market had seen difficulties in 2007 and had created a more considerable/intensive competition between suppliers.

This segment had been the most impacted market with the emergence of Nokia Siemens Networks as a second and Alcatel-Lucent at the third place but finally the companies were not aggressive face to Ericsson which continued to grab market share. The fear for the Swedish company could come from the Chinese manufacturers. Indeed, Huawei and ZTE had displayed the most important growth rates in the industry thanks to their success in emerging countries, where investment remained robust and their ability to come compete in the developed countries as in Western Europe where they won several contracts ■

Table 5: Mobile Access Equipment Market Breakdown by Region

2005-2009

Million EUR	2005	2006	2007	2008	2009F
Asia-Pacific	**6 513**	**6 550**	**7 459**	**8 377**	**9 267**
China	2 318	2 450	3 108	3 715	4 095
India	317	571	986	1 538	2 037
Japan	2 299	2 429	2 227	2 095	2 013
Other countries	1 579	1 101	1 138	1 028	1 121
North America	**5 992**	**6 359**	**4 685**	**4 890**	**4 755**
USA	5 655	6 007	4 283	4 247	4 129
Canada	336	353	402	644	626
Western Europe	**4 942**	**4 658**	**4 554**	**4 664**	**4 772**
France	778	807	759	805	828
Germany	501	496	461	436	434
Italy	763	710	646	630	616
Spain	587	671	643	682	713
UK	1 240	845	851	889	929
Other countries	1 074	1 129	1 195	1 222	1 252
Central and Eastern Europe	**1 591**	**1 472**	**1 585**	**1 631**	**1 693**
Russia	856	728	815	838	870

Source: **IDATE**

Table 6: Mobile Access Equipment Market Breakdown by Region

2008, %

Rank	Fixed Infrastructure Providers	Global Market Share
1	Ericsson	31
2	Nokia Siemens Networks	22
3	Alcatel Lucent	14
4	Nortel	7
5	Huawei	7
6	Motorola	6
7	NEC	5

Source: **IDATE**

Mobile Broadband

Impact on the telecom industry

Telecommunications equipment suppliers and operators see in mobile broadband the growth driver that is indispensable for their expansion. But implementing data services on mobile networks pose a series of both technical and economic problems for players in the ecosystem

- The telecommunications industry is faced with mobile broadband's rapid expansion.
- In a highly competitive environment, equipment suppliers must develop innovative solutions to meet operators' requirements. Among the competing technologies, LTE is consolidating its strong position.
- Operators are facing both technical and economic challenges. They are depending on data services to stabilise their ARPU. But the explosion in traffic and the associated rising costs threaten quality of service and financial stability. Courses of action are gradually appearing: improved technologies, access to more radio spectrum, network densification, operational cost reductions, etc. But none of the planned solutions will be able to provide a definitive response by itself.

Mobile operators are depending on mobile broadband to stabilise ARPU

Voice/SMS services now represent between 90% and 70% of revenue for mobile operators in mature markets. In this environment, the primary short term financial risk for operators is the drop in voice and SMS revenue. Mobile operators see in data services a growth driver that is indispensible for their expansion. And we are actually seeing a veritable take-off in mobile data services. 3G infrastructure has reached significant coverage levels, and the number of 3G subscribers is growing rapidly.

There are two types of mobile data services, the first coming from fixed Internet (messaging and Internet access services, for example), the second being more specific to the mobile ecosystem (services based on geolocalisation, m-payment, enhanced mobile communications services, etc.).

The adoption of data applications is mostly driven by services taken from the fixed Internet.

Operators profit from the success of these offers among users to increase the revenue share generated by data services, but without risking cannibalising their voice and SMS revenue. They are notably expanding mobile broadband subscription offers at increasingly more attractive data rates.

But these services have a significant impact on networks in terms of capacity needs, as well as on the economic conditions of these operators' offers.

Explosion in capacity needs and data traffic

Operators' revenue from data services is growing rapidly. But the growth in capacity needs and data traffic are even stronger. There are several reasons for this:

- Increase in the number of mobile subscribers,
- Increase in the share of 3G subscribers,
- Specific impact of mobile Internet access services for lap top computers.

Operators must provision an average of 40 kbps downstream in peak times for a user who connects using his lap top computer on an HSDPA network, but only 0.3 kbps for a user connecting using a telephone type terminal.

In fact, operators who have developed mobile Internet access offers note that:

- Mobile data traffic is increasing rapidly, even more so when mobile Internet access services for lap tops are expanded.
- Traffic generated from computers represents most of the mobile data traffic when attractive offers are available.
- The traffic profile generated by computers much larger than that generated by mobile telephones or smartphones.

Equipment suppliers and operators expect sustained and consistent growth in mobile data traffic in the years to come.

Resolving mobile broadband's technical-economic equation

The increase in data service revenue generated by new mobile access services does not compensate for the very large increase in traffic noted by operators on their networks.

One of the operators' greatest requirements is to reduce CAPEX and OPEX net-

work costs. Operators increasingly prefer an overall approach consisting of reducing the cost of data transported (cost of an Mb transported).

IDATE has created a model for the specific case of an operator that already has a GSM network, deploying 3G in 2004 and LTE starting in 2012 (in high density areas).

The largest cost elements are shown in the table below. It takes into account investment costs and operational costs associated with the core network, the information system and the radio access portion (including the costs of radio spectrum usage licences).

Improvements in technological performance

Economic conditions will improve as technology moves towards LTE. Nevertheless, the improvement seems less significant that the operators expected, within the NGMN Alliance, for example.

The relatively conservative hypotheses in our model may explain this perception:

- The LTE profile evaluated was not the most efficient of these expected.
- Savings in terms of OPEX are not available yet for LTE network deployments and were not included in our model at this stage.
- The model does not include deployment associated with LTE networks and LTE femtocells.

The model for deploying HSPA and LTE networks developed by IDATE highlighted the limits in terms of capacity available on HSPA networks by 2013. The problems with available capacity will appear in densely populated urban areas and, by 2014 in suburban areas.

Faced with these limits, operators could degrade the quality of their services (restricting available capacity, reducing speeds, etc.) or continue with their deployments.

The schedule for deploying LTE will definitely depend on the availability of radio spectrum and the operators' technical economic trade offs, notably between HSPA and LTE.

More spectrum for greater capacity: a limited medium term solution

The schedule for spectrum allocation and frequency distribution will be decisive, especially in Europe and Asia. Too long of a delay could harm the expansion of the mobile broadband ecosystem, slowing both the technology standardisation process and operators' decisions on new investments.

Nevertheless, access to new frequency bands will quickly reach its limits. Even though circumstances differ, by 2012-2015, most of the frequencies for mobile broadband services will be allocated in the major markets. In addition, refarming GSM bands, and over the longer term, 3G bands, is proving to be difficult.

Network densification

Traditionally, network densification was the operators' preferred solution to handling increased traffic. This movement to increase the number of masts can be pursued in densely populated areas, where the constraints on capacity are the strongest for access technologies such as HSPA and LTE.

Two phenomena will oppose an increase in the number of access points held by operators: the public and local authorities not accepting having the operators' access points and antennae nearby. This reduces the opportunities for new installations.

In addition, the costs of access points and their management have had a tendency to increase over the last few years and heavily impact mobile operators' economic conditions.

Femtocells and convergence between fixed and mobile networks

The femtocell solution lets mobile operators play with two major cost areas: backhaul and energy. Actually, traffic backhaul is provided by the user's DSL line, and the user pays for the energy. In addition, from a perspective of growing capacity needs, both in the amount of radio access as well as backhaul, this solution significantly reduces the amount of traffic load on the operators' mobile network. This provides an inexpensive solution to the operators' problems with indoor coverage for data services, as well as core network and radio access network capacity problems.

Integrated operators, that have both mobile and fixed broadband networks, will benefit the most from femtocell solutions. They can generate significant economies of scale by sharing core networks and backhaul for fixed and mobile broadband users.

Equipment suppliers must meet operators' expectations

Operators expect to weigh in on the technological choices that are made by equipment suppliers for developing mobile broadband access solutions. The major operators' initiative within the NGMN Alliance is an indicator of this strategy. In addition to cost reductions, discussed above, equipment suppliers must meet operators' expectations in terms of performance, equipment availability – especially terminals – and policies for managing intellectual property.

3GPP/LTE ecosystem dominates

Compared to mobile WiMAX and TD SCDMA developed by the Chinese, it seems that LTE is about to become the preferred industry standard for the nextgeneration of access technologies.

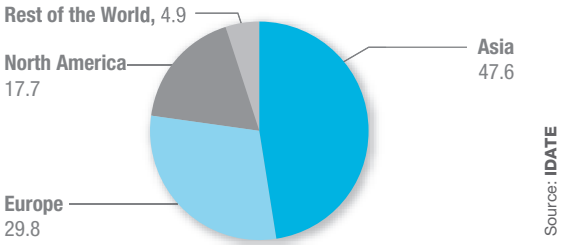
The operators' role appears to us to be central in these choices, due to the importance of services in the entire mobile ecosystem and by the driving effect of operators' investments in the equipment market.

In terms of ecosystem, LTE is overtaking WiMAX. The LTE ecosystem is more diversified, and there are more players.

Above all, several leading global equipment suppliers and operators have announced that they will prefer LTE for their major markets over other standards. This is notably the case will all major European operators as well as AT&T, Verizon Wireless and NTT DoCoMo.

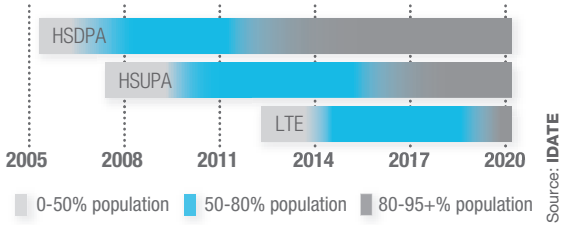
Recently, the NGMN Alliance included LTE technology as the solution for the next generation mobile broadband access network. LTE is the first technology to be recognised ■

Figure 3. 3G subscribers
End 2007, % (subscriber base: 242 million)



Source: IDATE

Figure 4. Deployment schedule and population coverage in Western Europe
HSPA, HSUPA and LTE



Source: IDATE

Figure 5. The LTE Ecosystem

	Network Equipment and Terminal Manufacturers	Telecom operators. LTE as preferred technological path
EUROPE / MIDDLE EAST	• **Alcatel-Lucent:** Standard / Trials / Inter-op tests • **NSN:** Standard / Trials / Inter-op tests • **Ericsson:** Standard / Trials / Inter-op tests • **Nokia:** Terminal • **Sony Ericsson:** Terminal • **ST Microelectronics:** Chipset • **NXP:** Semiconductor	• **Vodafone** • **Telefónica** • **Deutsche Telekom / T-Mobile** • **France Télécom / Orange** • **Telecom Italia** • **Orascom**
US / CANADA	• **Nortel Networks:** Network • **Motorola:** Network • **Qualcomm:** Chipset	• **AT&T** • **Verizon Wireless:** trials, suppliers selected: ALU, Ericsson and Starent Networks. Launch by 2010 • **Rogers Telecom**
ASIA	• **Huawei:** Standard / Trials / Inter-op tests • **ZTE:** Network • **NEC:** Network • **LGE Electronics:** Trials / Terminal • **Samsung:** Chipset / Terminal	• **KT and SK Telecom** • **Docomo** (acceleration of LTE standarisation and market launch) • **Softbank** • **Chinese operators:** interested by UMTS / LTE technological path_depend on industry restructuring and spectrum licenses allocation • **China Mobile:** Trials TDD LTE / FDD LTE • **Indian operators:** interested by UMTS / LTE technological path_depend on spectrum licenses allocation

Source: IDATE

Mobile Hot Topics

Mobile Pricing Innovation

There is a flurry of innovations in the pricing strategies of the mobile phone market, in particular the pricing schemes for the three most commonly used services: voice calls, SMS and data transmission.

Innovation, a way to survive

The mobile market today is fast approaching saturation and, in such a competitive market, pricing plays an important yet delicate role. Players have first to attract – or indeed keep – customers on their own network, whilst at the same time encourage them to increase their spending.

Basics of a mobile subscription

- Charges for voice calls can vary according to the duration, distance or destination of the call to name a few; but today, the tendency is towards charging for duration only. Pricing units range from linear charges such as per second or per minute, to charging a full minute prior to a per second charge.
- For data transmission, the standard is to charge by traffic volume, although some operators also offer to charge by duration. Pricing units vary, Japan having a distinctive unit of 128 bytes called 'packets'.
- Subscribers also have the choice between post-paid and prepaid subscriptions; the former involves a contract where payment is made according to the amount used each month, and the latter involves purchasing credits in advance.

Inclusive bundles, rollovers and top-ups

- This concept has become very much standard in the mobile market; with flexible money bundles in Japan, and fixed service bundles elsewhere. Some operators in other countries also offer the flexible money bundles tariff, notably 3 in the UK. Their packages combine the simplicity of service bundles and the flexibility of money bundles; they are set at 1 minute = 1 SMS.
- Some operators offer to rollover unused inclusive bundles to the next month or beyond to avoid underspending. Conversely, some operators offer hybrid subscriptions,

where top-ups are required after the bundles are used up, to avoid overspending.

Watch an ad, and call for free

Business models centred on advertising exist in the mobile market too. Subscribers can use a certain amount of the network without paying operators anything; in return, they watch advertisements on their mobile. Blyk, in the UK, is a leading operator in this field, enjoying considerable success and planning to expand into other countries in the near future.

Unlimited offers have limits

- Until recently, 'unlimited' voice calls packages came with restrictions such as specific times or destinations only. But 2008 saw a wave of offers without any such restrictions being introduced, notably in the USA and Germany.
- Similar limits apply to unlimited SMS tariffs, but again some operators do offer such tariffs without the restrictions, notably in France, the UK and USA.
- Unlimited offers for data transmission have differing types of restrictions: a fair use policy, where subscribers are often asked not to go over a certain prefixed amount; and usage restrictions, where the use of certain applications or services is not allowed.
- Tariffs for unlimited Internet from mobile handsets are often priced higher than those for use on mobile PCs; the operators see them as having higher risks of cannibalisation of other services.
- Tariffs for unlimited Internet on the mobile PC is seeing a shift of targets from the business to the consumer sector. Most operators now offer USB modems which are much more user-friendly than the traditional data card modems.

Handset subsidies, or discounts

- With iPhone, Apple originally introduced a model which did not allow for handset subsidies, but has reverted to the traditional model for the new 3G iPhones.
- In Japan, subscribers have the option of choosing between receiving handset subsidies or receiving a discount on the monthly invoice.

Three tariff structures

IDATE has identified three main patterns in how operators structure their tariffs:

- Package: where the tariff comes in a ready-made package;
- Pick 'n' mix: where subscribers choose individual tariffs and add them up;
- Adding discounts: where upon subscription to a basic tariff, various discounts can be added to increase the value.

The adding discounts structure is very much a Japanese culture; other countries see an even split between package and pick 'n' mix.

Fine-tuning the tariffs

With growing market saturation and competition, operators are having to tweak their rates to meet subscriber demands. This calls for clear strategies, with clear target segmentation, built around:

- Multi-branding: a strategy used to reach the niche markets by creating multiple brands concentrating solely on those specific niche markets.
- Simplicity: going against the general perception that mobile tariffs are too complicated, operators offer just a few, easy-to-understand tariffs which can be subscribed to without the complications.
- Service bundling: these offers bundle together two or more of fixed line telephony, broadband Internet access, TV and mobile telephony, all in one value-for-money tariff.
- Fixed-mobile convergence: in addition to the mobile network, a convergent mobile phone gives the additional benefits of broadband access from the home via WiFi technology.
- Home zones: subscribers are given both a landline and a mobile number. Calls from inside the home zone are discounted, and subscribers can be called on the landline number on the mobile when inside the home zone.

The price of pricing

IDATE has positioned each of the pricing strategies relative to their segmentation, based on market scale and usage levels.

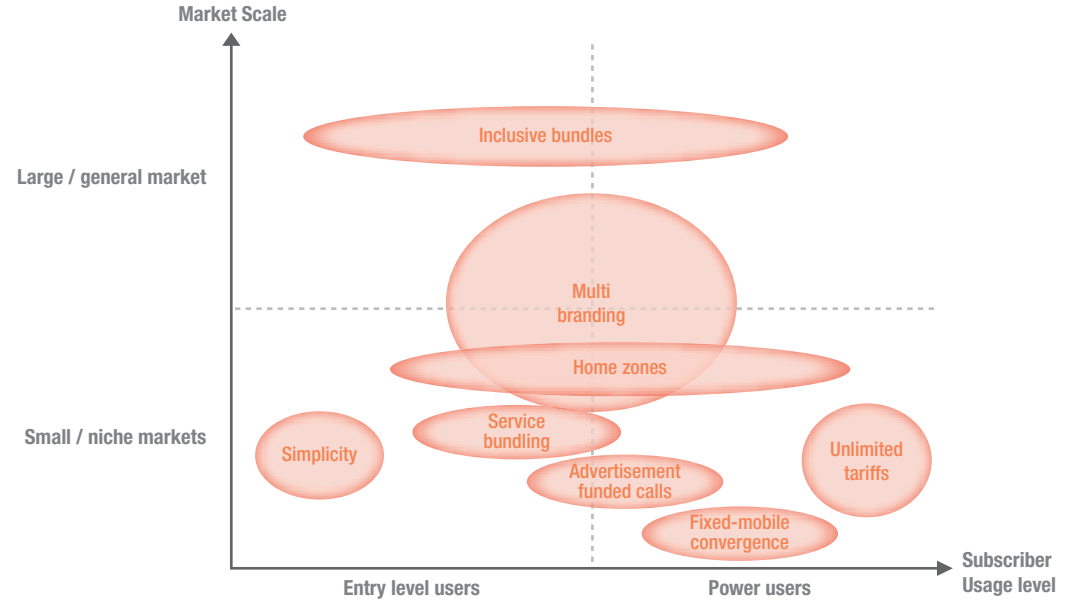
- As a whole, the mobile market is seeing plenty of innovative pricing although,

within any one country, operators generally offer similar tariffs. They would do well to look beyond the borders to garner new ideas for innovation.

- These innovations have contributed to a fragmentation of operator tariffs. With less clarity now for the 'average' subscriber about their relative values, is there a risk of consumer backlash against operators?

Nowadays, online tools in most countries compare all tariffs and calculate the cheapest one. Business models are even evolving around such tools. It seems as if innovative pricing has wrapped such a blanket of fog over the clarity of the tariffs that subscribers can no longer be interested in their variety. A real case of not seeing the wood for the trees?

Figure 6. Positioning of mobile innovative pricing strategies



Near Field Communications

A revolution in the mobile handset market?

The introduction of NFC chipsets within mobile phone could revolutionize how consumers interact with their environment and transform handsets from a voice device to a personal assistant. If the NFC technology is already in use in Asia, especially Japan for mobile wallet application, NFC is slowly ramping up in North America and Europe with major trials on payment and ticketing services taking place on these continents.

Emergence of NFC among wireless connectivity solutions

- For handset players, the growing portion of wireless connectivity modules embedded in handsets constitutes the first step to enter the wireless ecosystem of opportunities. Today as more data transit through mobile phones, development of wireless ecosystems from WLAN to WPAN where information is transmitted thanks to short range technologies (Bluetooth, UWB, Zigbee, NFC) could greatly impact the historic use of operators network as primary data transmitter but also represent a real opportunity to diversify their business.
- Established in 2004 by a group of major players of the wireless ecosystem (Philips, Sony, Nokia), the NFC technology is a short range (~20 cm) point to point wireless connectivity technology. The fact that NFC is based on RFID standards gives a compatibility of NFC with existing RFID applications such as transport ticketing, identification control,…

A slow but promising market

- NFC is a very recent technology and as a new technology, it needs an infrastructure to work, so the global process of adaptation has been slow. There has been non-standard payment and ticketing schemes in public use in Asia, but in North America and Europe the services have more or less only been used in different piloting schemes. It is essential to the adoption and growth of NFC technology that all NFC-enabled devices interoperate seamlessly.
- The NFC-embedded mobile handsets market is emerging and in 2007, ship-

ments reached 32 millions units, i.e. a 3% penetration. However, following the several NFC projects led by European and American carriers, the drop of NFC chipset cost and the increasing number of NFC-enabled handset, the trend of adoption of NFC within handsets should be on the rise from 2010, with a generalization of the technology from 2012. By 2012, penetration should reach around 14% of handsets with North America and Western Europe being heavily equipped with NFC technology.

- Today, Sony and DoCoMo with Felica are among the main players on the NFC market as they were pioneers in this domain. However NXP has a strong position on this market of NFC and RFID solutions, with more than 2 billion ICs shipped to date. A great portion of contactless SmartCards schemes worldwide use NXP MIFARE technology for electronic ticketing in public transport (London, Seattle, Sao Paolo and cities in China).

A Need for standardization

- Standardization has been for now one of the main hurdle to overcome in the development of NFC technology. However today, the fact that more than 130 companies are members of the NFC Forum, in addition to the industry acceptance of the NFC standard by GSMA and ETSI, is giving a strong push forward the general adoption of NFC.
- The NFC Forum and the GSMA are actively pursuing their effort of standardization. For example, the GSMA launched the Pay-Buy-Mobile initiative, introducing requirements that will help handset manufacturers develop NFC-enabled phones that are compatible with operators' planned mobile NFC services.

NFC Applications

- For now, only the Payment and Ticketing applications have been gaining traction in the mobile ecosystem, with major trials being performed worldwide by mobile operators. However numerous other applications can be performed thanks to the NFC technology such as Smart Posters, where NFC is used to 'unlock' another service, such as opening another communication link for data transfer.
- Peer to peer applications are also gaining traction, as the NFC chipset can be used as a set up technology to enable com-

munication between two devices in faster way than current technologies such as Bluetooth. As NFC can be paired with Bluetooth to initiate the connection between devices, the association of the two technologies could give a major boost to the NFC chipset integration within handset.

The question of the Business Models

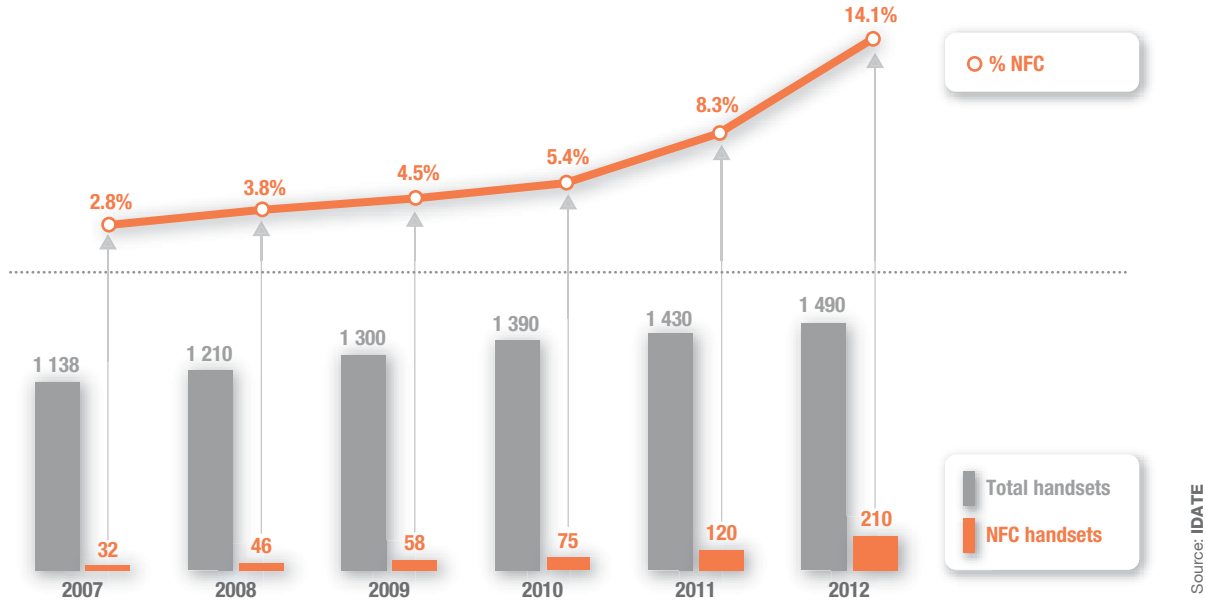
- The main barrier to the integration of NFC technology within mobile phones is the lack of a global business model embracing the views of mobile operators, banks and other players in the mobile value chain. Players have hitherto been developing their best interest model to implement mobile commerce services.
- In this growing NFC market, financial institutions and mobile operators need each to buy a viable ecosystem as they control the major part of the value chain. Without the interest of the operator, the availability of NFC-enabled mobile phones would be low as operators, in most countries, provide the handset to the en user. However these operators need to co-operate with banking institutions, whose expertise is to handle the payment processes and issues and already have a large base of customers.

Which future to NFC?

- The growth of NFC usage has been hindered by the familiar chicken and the egg problem: since there are no NFC-based services, consumers do not demand NFC-equipped phones and the manufacturers do not offer them and thus there is no incentive for infrastructure providers to use NFC.
- The business model is the critical element in the evolution of NFC: all partners must have some interest (or necessity) in adopting the new technology before it can become established. In this sense the NFC adoption will be more a business model question than it is a technical, user acceptance or security issue.
- Although the proliferation of NFC technology will come slower than was initially expected, this does not mean that it will not

have a deep penetration in the market in the longer term. This can be compared to Bluetooth, which took several years (from 1998 to recent years) to win acceptance, first from the manufacturers of digital devices and later from the users.

Figure 7. NFC Handset Market Forecast



Churn Management

The Colour of Money

Retaining customers is one of the most critical challenges in the maturing mobile telecommunications service industry. Customer churn adversely affects mobile telecom operators because they stand to lose a great deal in price premium, decreasing profits levels and a possible loss of referrals from continuing service customers. Figuring how to deal with churn is turning out to be the key to the survival of telecoms organizations.Podcasting gives consumers access to niche market content; to time-shifted, professional content; to technical quality and to mobility.

Varying definitions of churn

- Companies employ varying definitions of churn and also have widely differing policies to determine when to cut off inactive subscribers and to remove them from their reported subscriber base. In essence, operators have different ways of defining subscribers.
- The churn rate measures the number of subscribers that are disconnected from a network in a given month and is expressed as a percentage of a company's average subscriber base for the period.
- A 2% churn rate translates into around a quarter of a mobile operator's customer base churning off the network in the course of the year.
- When mobile operators think about churn it is usually the voluntary kind that comes to mind. Deliberate churn is the most important part of churn when customers decide to leave his/her mobile operator.

Lead to comparison limits and costs

- When considering post-paid churn, the deactivation date, i.e. the date that a customer is disconnected from the network, is equal to the churn date. In the case of prepaid churn however, the deactivation date does not necessarily have to match the churn date. This can be made clearer by the different states a prepaid customer can be in (normal use, no credit, recharge only, and deactivation).

- Comparing churn rates between operators and countries where habits and culture are different is also tricky.
- Basically, low/good rates may hide problems because losses of revenues depend on customer values that have just been lost.
- Churn has a different impact whether the value segment from which the subscriber belongs to is of high or of low value.
- A 1% churn reduction has more impact (and is much more difficult to obtain) when the overall churn is lower.
- Marketing budget for subscriber loyalty should be allocated taking into account subscriber value segmentation. Gain and loss strongly depend on the customer lifetime value or CLV.

Analysis show significant churn performance discrepancies

On a worldwide basis, churn rates are increasing mainly due to higher competition in national markets. Increase in global churn rates is driven by inflating churn rates in emerging regions especially emerging Asia and Latin America.

- Emerging Asian countries show the highest churn rates on a worldwide basis. Across Asia, churn rates vary tremendously.
- Churn levels in advanced Europe or North America are higher than in developed Asia. NTT DoCoMo in Japan, which has a customer base that is almost entirely post-paid, maintains the best churn rate in the industry, with less than 1% of its customers switching to a competitor's network each month.
- Rates analysis shows a certain number of 'rules'. Countries where competition is fierce face higher churn rates. Challengers with low brand power show higher churn rates. Post-paid churn rates are always lower than blended churn rates. As within a given MNO significant discrepancies in churn performance between subsidiaries, local excellence is key.

And helps define the nature of churn

- Churn is pervasive. The churn is part of the entire wireless industry. Statistics from around the world all issue the same message about churn. Even in emerging markets where the market is buoyant, mobile operators have already experienced churn

but do not care because subscriber acquisition is still easy.

- Churn is inevitable. The telecommunication industry has a built-in product obsolescence cycle that guarantees that churn is going to be a continuous problem. Churn could then be considered as an opportunity to evolve.
- Churn is expansive. The biggest consequence of churn is, of course, the loss of revenue assuming that the average customer brings in anywhere from 5 EUR to 80 EUR per month. Despite their best efforts to prevent churn, the company will lose some of its customers to the competition sooner or later and try to win them back by running reacquisition strategies. These campaigns might be successful but entail costs. Customer retention costs are also increasing. In addition, when churn starts, one of the first thing a mobile operator does, is to increase its advertising to have more media face time than the competitor.
- Churn is manageable but often at the expense of inflating subscriber retention costs. In the context of falling ARPU, mobile operators face the challenge to reduce churn and costs. High cost of customer acquisition and customer education require companies to make large upfront investments in customers. Churn leads to higher subscriber acquisition or retention costs (SAC/SRC) and — invariably — cheaper products and services to try and beat off rivals' offers.

Churn drivers

- Deregulation imposed by regulators is increasing the rate at which competitors enter into the market place. Introduced in most industrialised countries, the obligation of number portability is one of the regulatory elements enabling competition within the market to grow.
- Consumers take dozen of factors into account when they churn in a never-ending combination of complex mental and emotional calculations. Customers receive numerous incentives to switch and encounter numerous disincentives to stay. Customer surveys that report the top churn reasons (price, quality…) only provide a rough summary if those churn decisions.

Churn management approaches

Basically, three fundamental strategic approaches are possible for a mobile operator to maintain when it comes to issues to churn. All of them are legitimate with their own strengths and weaknesses, and can be effective in their own way. The objective is to make the optimum investment to reduce the risk of customer churn, especially in the short term.

- The most commonly effected strategy, especially during the early phases of churn problems, is for the company to ignore the loss of customers and try harder to acquire new customers as replacements. Emerging Asian countries currently show this type of strategy.
- The second most common strategy pursued by companies that are loosing customers is to try to steal customers from their competitors to make up from the losses.
- Eventually, most firms come to realize that their acquisition efforts alone are not enough to truly address churn issues. As companies mature and as their analytical and operational capabilities become more sophisticated, they begin to build customer churn management capabilities.

Most operators in advanced markets have come to this approach.

The key is to better know the customer

- Predictive campaigns attempt to identify which customers are able to switch and when and the reasons why. The CRM approach helps the service provider to reduce customer churn by anticipating and addressing customer issues and increasing customer satisfaction. Effective business processes enabled by technology can help reveal customer behavior patterns and aid in assessing the profitability of various customer segments, what is important to them, and how the carrier can build loyalty within the most valued customer sets. The outcome of applying data warehousing, mining, and visualization tools is a set of models that supports predictions of those customers most likely to churn and, possibly, when and why. These models help identify intervention strategies that can reduce churn among particular customer segments.

- Rewarding customers who are loyal seems an obvious way to reduce churn. Based on the market segmentation, different loyalty programs have to be made to respond to the needs and the criteria of those particular markets. Independent of the segment, the sub-segment addressed, the loyalty programs mainly have the same main objectives: reduce churn, increase the emotional link with customers and increase their satisfaction, better know the customers and better respond to their needs stimulate customer development, give the customer the feeling he is unique, make the customer loyal to the mobile operator, use the program as a reference tool for customer acquisition. But depending on the segment and sub-segment, the value of the customer and his particular needs, the characteristics of the program should be different: the beneficiary is different, so should be the reward (fun, money base, dedicated serving…) and the communication (marketing oriented, informative…).

Figure 8. Levels of churn prevention initiatives

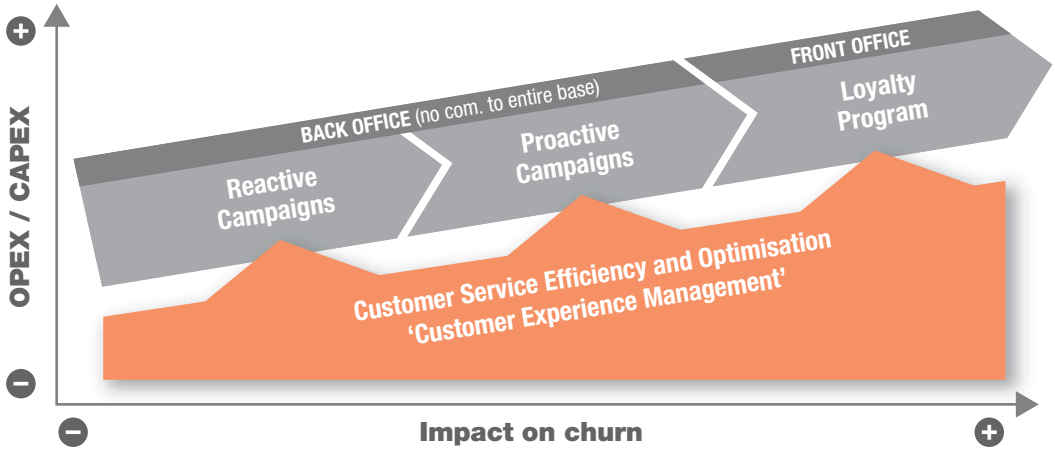
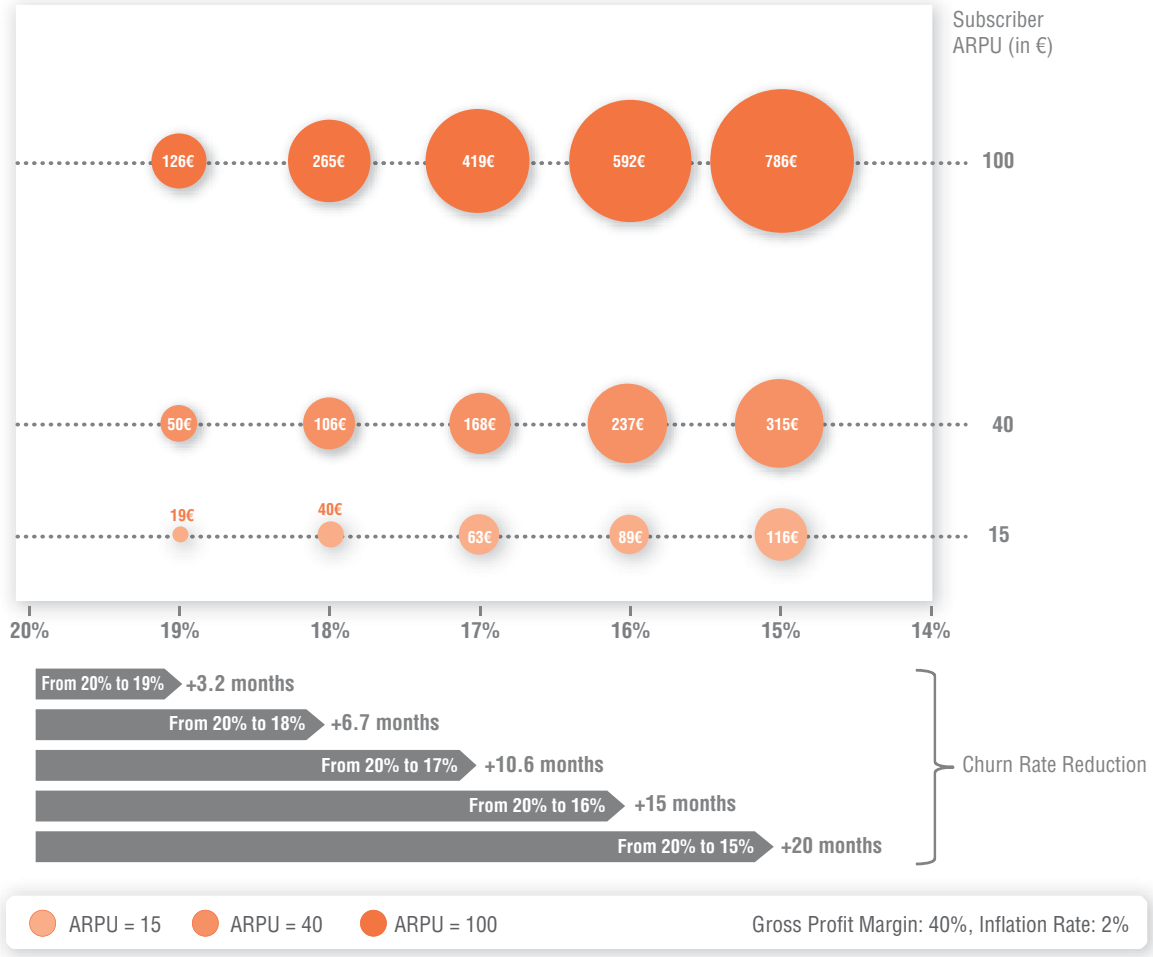


Figure 9. Resultant incremental CLV with different hypotheses of churn reduction and ARPU levels



Source: **IDATE**

Mobile Handset Dynamics

Evolution of mobile phone electronics

With the surge of the wireless communication market, the complexity of handset electronics has grown exponentially, from delivering a basic voice functionality to enabling access to real time videos and data services anytime, anywhere.

With the development of multimedia applications on mobile, speedier and more energy-efficient components are needed, as low-power applications are one of the key features of the wireless communications market.

From very few components embedded on the first voice communication-only handsets models, the electronic layout of the latest phones is becoming increasingly crowded as they take on a growing number of mainstream multimedia tasks.

But, of course, not all phones are created equal, and their embedded components have a decisive effect on the features they deliver and on their performance.

Along with the development of the handset industry, the embedded components that constitute the modern handset or 'electronics building blocks' have evolved into a high potential and fiercely competitive market.

Better, faster, smaller processors

In the early days of mobile telephony, the architecture of a handset was rather simple and consisted of a discrete single microcontroller (MCU) core controlling a number of analogue circuits. At the heart of the mobile phone's electronics lies the core processor, also referred to as the baseband processor, which is dedicated to handling the real time voice features. With GSM technology, there was generally only a single core processor with enough power to cover the main functionalities offered by 2G handsets.

The evolution from 2G to 3G technologies and the development of new applications for handsets, introduced the need for additional components to perform complex

tasks. The switch from analogue to digital technology drove the need for a digital signal processor (DSP) core to be added to the architecture. Dual-core architectures, consisting of an MCU and a DSP, also evolved from several discrete parts to a single ASIC that can be assimilated to the digital baseband chipset and the application media processor.

From an economic perspective, the baseband chipset market is enjoying a steady growth momentum, but it is also having to contend with increasing competition as outside players are making their way onto the scene. In 2007, the volume of baseband chipset sales reached 1,143.5 million units – a 16% rise over 2006. This market is highly concentrated, with the top four vendors accounting for 86% of sales in 2007. Texas Instruments is the leader in this market with a 45% market share in 2006, followed by Qualcomm, Freescale and NXP.

Surge of storage capabilities

Due to the increased number of applications available on mobile phones, a need for greater memory capacity emerged, making it possible to store more user information directly on the handset, along with music, pictures and video files. From only a few kbits on the first generations of handsets, the latest smartphones can now hold up to several Gbits of data in their internal memory component.

Flash technology is currently the most commonly used technology for data storage in handsets, offering a number of properties ideally suited to mobile applications: non volatility, low power consumption, fast access read times…

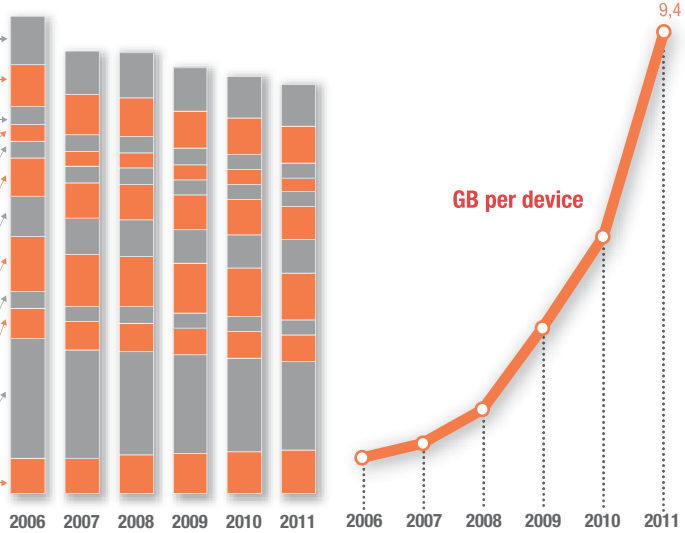
Mobile multimedia spurring the need for powerful and smarter devices

The development of mobile multimedia applications such as gaming, mobile TV and the mobile internet in general are driving the growing need for increased processing power for core components, combined with high storage capacity directly embedded in a handset or in a memory card. The progressive integration of connectivity modules has also become a must-have in the latest phones which are evolving into smart and interactive devices.

If the current battlefield between component suppliers is the development of the most cost-effective solutions for their clients, the players are also steeling themselves for future battles, with chipset suppliers making forays into the next generation of components that will unleash the power of mobile devices. However, as components are reaching atomic-scale dimensions, collaboration will be needed to develop innovative solutions.

Figure 10. Forecast breakdown of building block ASP

	2006	2007	2008	2009	2010	2011
Gross margin	11.9	11.0	10.9	10.6	10.4	10.1
Mechanical	10.7	9.9	9.8	9.5	9.3	9.1
Packaging	4.3	4.0	3.9	3.8	3.7	3.7
Earpiece	4.3	4.0	3.9	3.8	3.7	3.7
Charger	4.3	4.0	3.9	3.8	3.7	3.7
LCD	9.6	8.9	8.9	8.6	8.4	8.2
Keypad	9.6	8.9	8.9	8.6	8.4	8.2
PCB	13.9	12.8	12.8	12.4	12.1	11.9
Battery	4.3	4.0	3.9	3.8	3.7	3.7
RF	7.5	6.9	6.9	6.7	6.5	6.4
Processors	29.9	26.9	26.0	24.4	23.2	22.0
Memory	8.5	8.7	9.4	9.8	10.4	10.8
	118.8	110.0	109.1	105.8	103.5	101.5



Radio Spectrum

Outcome of WRC-07 and its likely consequences

The World Radiocommunication Conference (WRC-07) took place in Geneva in October-November 2007. For the telecommunications sector, the main topic of interest was new frequency allocations and sharing issues for mobile services.

- New spectrum was identified for mobile services which will enable growth of this sector for the 10 years to come
- The new bands for mobile terrestrial systems are: 450-470 MHz, 790-862 MHz, 2300-2400 MHz and 3400-3600 MHz
- Prior to the Conference, the IP-OFDMA standard (also called mobile WiMAX or IEEE 802.16e) was accepted as an IMT radio interface. This can be considered as a real victory for the WiMAX camp which has spent a lot of energy during the past few years to get access to and to harmonise spectrum.
- The removal of the barriers between the generations of mobile systems: spectrum identified as IMT spectrum corresponds to IMT-2000 (3G) and IMT-Advanced (4G)
- Spectrum for mobile services will allow many technologies to develop but the integration into the 4G family of the WiMAX family and the GSM/HSPA family is not likely on the short term
- The identification of the harmonised UHF sub-band and its designation for mobile use is only a first step. Each State now has to take the appropriate measures in order to authorise the use of this frequency band by the mobile operators.
- There is a trend towards more flexibility in spectrum management

Conclusions on the digital dividend

The Digital Dividend is certainly the spectrum 'hot topic' for 2008-2009.

The analogue to digital switch of television and the associated increased spectrum efficiency allow transmitting the same number of TV channels in a more limited chunk of spectrum (approximately 6 TV channels in a DTV multiplex are using the same spectrum as a analogue TV channel). Mobile services

are among the candidates for the use of the Digital Dividend in the upper UHF band.

- The Digital Dividend (harmonised UHF sub-band identified at WRC-07 - 790-862 MHz) has a very high value for mobile operators and for new comers
- USA took the lead and auctioned the second part of its Digital Dividend in early 2008

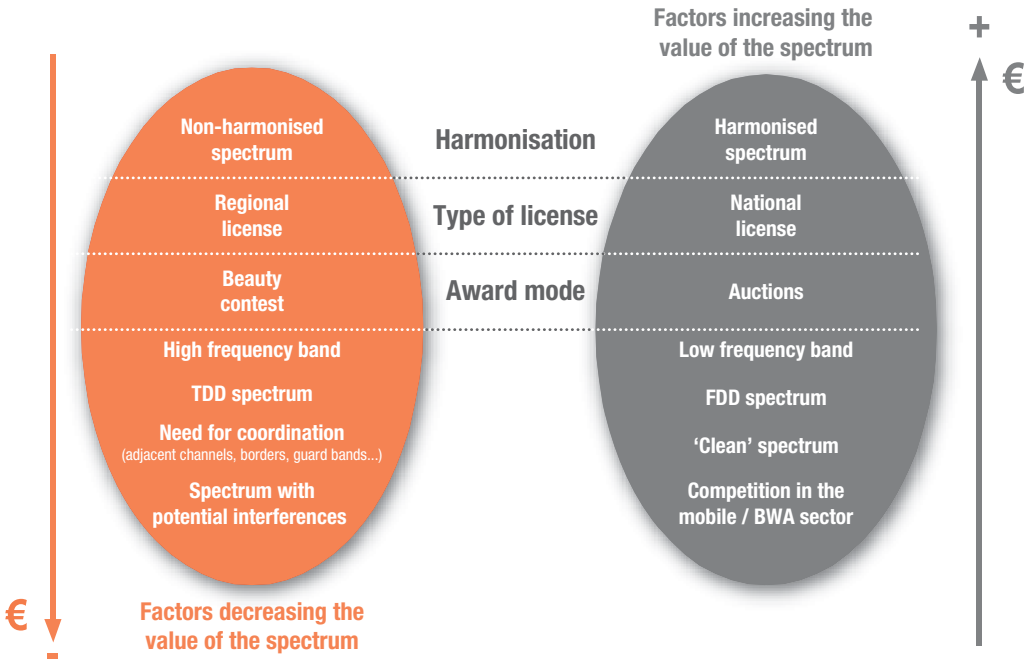
The 700 MHz auctions in the USA were a real success even though the D block was not allocated. The reserve price ($10bn) was largely exceeded as the winning bids reached $18.9bn. This confirms the high interest of the UHF band for mobile operators.

- Situation in Western European countries varies: if Sweden has already identified the UHF sub-band for use by electronic communication services, the situation is not clear at the moment in Italy where the UHF band is heavily used with a lot of local TVs.
- There is a risk for Western Europe if harmonisation is not quickly reached for the sub-band to see the USA take the lead on the 700 MHz band with LTE – equipment manufacturers could develop in priority equipment for the 700 MHz band rather than for the European harmonised sub-band
- Broadcasters and mobile operators are competing in order to get access to the harmonised UHF sub-band. In some countries, the defence sector is still using part of the UHF sub-band. The Program Making and Special Events (PMSE) users of such objects as wireless microphones are also concerned about the likely limitations coming from a more intensive use of the band in the future.
- In countries like the UK, the regulator will auction the spectrum on a technology-neutral and service-neutral basis: the market will select the most appropriate services and technologies
- Japan anticipated the Digital Dividend a long time ago and has already allocated the corresponding resource
- The White Space concept or overlay use of the UHF band is under debate in the USA and in the United Kingdom. This concept refers to using the UHF spectrum, used for TV broadcasting, in places where no TV signal is received and could provide an alternative solution for the provision of Internet access.

What is the value of new frequency bands?

- The value of the spectrum depends on many factors: spectrum below 1 GHz has a very high value, degree of harmonisation of the band, restrictions affecting the band (geographical constraints, duplex mode, channel bandwidth, risks of interference…)
- Many frequency bands will be made available in the coming years (2.6 GHz, digital dividend, 3.5 GHz, L-Band. This will provide opportunities for new comers.
- The 2.6 GHz band in Western Europe will allow to deploy both LTE with large radio channels (up to 20 MHz) and mobile WiMAX
- We anticipate a lower cost of Mobile WiMAX spectrum compared to cellular spectrum
- The WiMAX licenses in Europe were mainly regional licenses in the 3.5 GHz band; licenses in the 2.6 GHz are both national and regional ones
- National licenses are more expensive than regional ones
- The limitation of the 3.5 GHz band to fixed or nomadic services is progressively disappearing in Europe. Mobility will be mandatory in this band from 2012 on. This will give more value to the 3.5 GHz band even though it will only be a complement for a mobile operator
- Technology neutral licenses is becoming the rule for new spectrum allocation even though the distribution between FDD and TDD bands limits the choices for the operators
- Distribution of new frequency bands such as the 2.6 GHz band between the FDD and TDD duplex modes: it is not clear today how many countries will adopt the CEPT scheme for the 2.6 GHz band which favours FDD systems
- Flexibility has a cost: it imposes technical constraints which limit the spectrum efficiency of a given frequency band

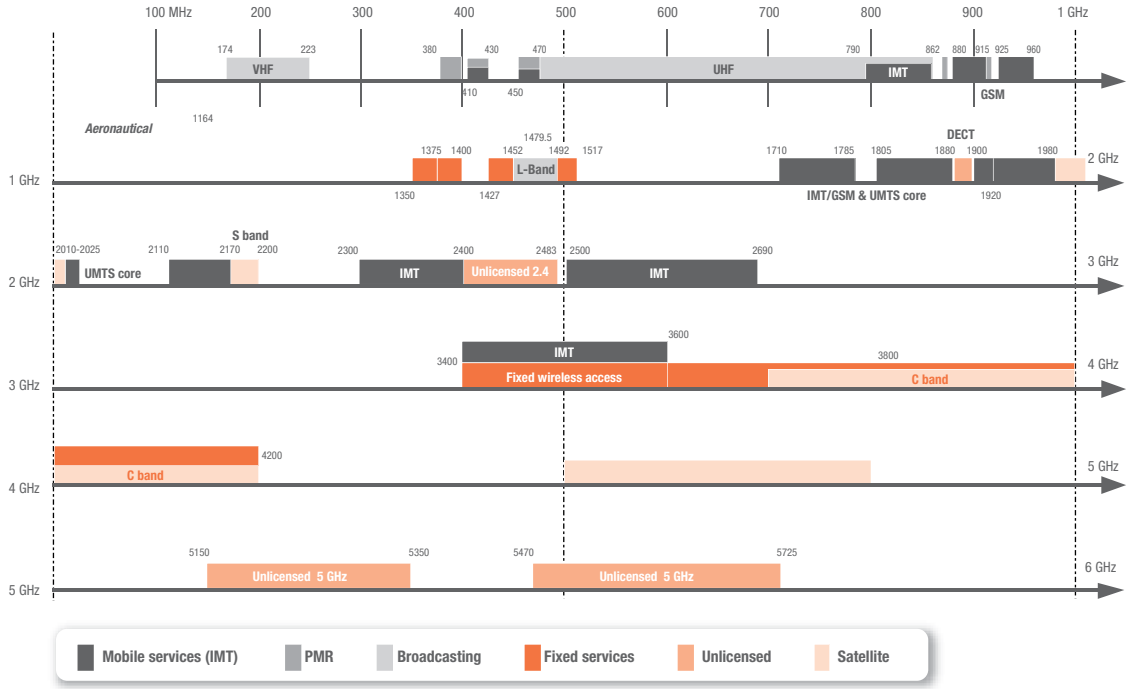
Figure 11. Value of spectrum for mobile / BWA actors



Scenarios and trends 2009-2014

- Broadband mobile services and the explosive growth of data services will impact spectrum usage and valuation in the coming years. It will reinforce the interest of mobile operators for both lower frequency bands (such as the Digital Dividend) for coverage of rural areas and in-building penetration and high frequency bands for capacity
- The strong increase of data traffic on mobile networks will also increase the need for more backhauling using microwave links and point to multipoint systems in various frequency bands (3.5 GHz, 10 GHz, 26 GHz, 38 GHz…). This will also raise the interest for these bands above 5 GHz and their cost on the longer term.
- Resources for 4G: in order to benefit from the high data rates promised by 4G technologies, it will be necessary to allocate large portions of spectrum for large radio channels (up to 20 MHz)
- The allocation processes for new spectrum will enable new comers to become mobile operators
- In Western Europe, more flexibility is introduced by regulatory bodies in spectrum management and in the conditions of new licences: technology neutrality will become more and more common in spectrum auctions/allocations. However, flexibility in spectrum management has a cost: it imposes technical constraints which limit the spectrum efficiency of a given frequency band.
- Refarming the spectrum: most of the GSM and UMTS spectrum will be used by 4G technologies such as LTE (Long Term Evolution) in the medium to long term. The refarming processes are likely to pose challenges for regulators and mobile operators in a number of countries.
- New radio technologies will continue to improve spectrum usage and efficiency and will allow more sharing of the spectrum on the longer term.

Figure 12. Mobile frequency bands in Europe after WRC-07



Source: **IDATE**

Broadcast Mobile TV

Is profitability possible?

While the number of effective launches and announced broadcast mobile TV solutions is multiplying, great uncertainty still surrounds the business model and expectations for profitability from this type of service. Partisans of both free and fee-based solutions are putting up their arguments, while each player's role in the value chain (whether a TV channel or mobile operator, etc.) has yet to be defined.

Broadcast mobile TV in 2008: new service launches and multiple standards

- 2008 will continue to be an important year in the development of broadcast mobile TV, particularly in Europe where four services have been launched in recent months, in Switzerland, the Netherlands, Austria and Germany.
- Different standards and technologies can be used to distribute terrestrial broadcast mobile TV. These solutions require specific frequencies to be used and new networks to be built, either purely terrestrial or hybrid satellite/terrestrial:
  - terrestrial mobile broadcast solutions: DVB-H, ISDB-T, T-DMB and MediaFLO;
  - hybrid satellite/terrestrial mobile broadcast technologies such as S-DMB and DVB-SH.

Such diversity in standards causes a lack of harmony globally: while the United States has opted for MediaFLO, most European countries have adopted DVB-H, while Brazil and Japan prefer ISDB-T.

- Great uncertainty still surrounds the broadcast mobile TV business model and feedback from services already launched has yet to dispel such uncertainty.

Fee-based model structured around mobile operators

- Introduced in Europe (Italy, Netherlands, Switzerland and Germany) and the United States, this model is built around a fee-based solution commercialised exclusively by a mobile telephony operator to

its customer base, for whom it subsidises the purchase of broadcast cell phones in exchange for their signing up for a further twelve or twenty-four months.

- The strength of this business model is clearly its ability to rely on stable and sizable revenues generated by subscriptions.
- The capacity to subsidise compatible handsets is also a key factor in this model's success, encouraging the penetration of each operator's mobile subscriber base.
- The mobile TV solutions launched using this model have failed to achieve the desired success. Their disappointing results can be explained particularly by overly high rates, which are out of step with the actual level of mobile TV usage, which has yet to become a real consumer habit for mobile customers and around which regular and sustainable usage must still be built. Consumption of TV programmes on mobile phones is still in its infancy, practised occasionally by a minority of mobile users for whom such audiovisual 'snacking' does not justify increasing the cost of their monthly subscription by 10 or even 20 EUR per month.
- Furthermore, the programming offered with these broadcast mobile TV services still fails to meet consumer expectations, who primarily want to view the same programmes they watch on their fixed TV set, on their cell phones.

The free-to-air model structured around broadcasters: Japanese and South Korean examples

- In Japan and South Korea, the free terrestrial mobile TV offerings launched there now compete with an existing fee-based satellite mobile TV solution.
- Boosted by a free service and attractive programming (simulcasting of the main free-to-air channels on the fixed network), these services are proving very successful: the package offered by the South Korean channel, T-DMB, registered 10.3 million users in March 2008 (compared with 1.3 million for TU Media, the satellite pay-TV solution), while in Japan, a little over 20 million cell phones were compatible with TNT's mobile solution, One-Seg, in service at end-2007 (while the fee-based satellite service, MobaHO!, announced its closure for March 2009, having attracted just 100 000 users after four years of existence).
- The main weakness with this model is its poor revenue performance. While free ter-

restrial mobile TV solutions in South Korea and Japan have guaranteed the success of such services, they have still been unable to ensure profitability. In both cases, channel editors have chosen advertising as their sole source of revenue which, for the time being, is proving largely insufficient.

- In 2007, the service offered by South Korea's TDM-B generated revenues of just 6 million USD, while its operating costs were approximately 40 million USD.
- In order to offset these poor revenues, equipment manufacturers have been forced to help fund the operating costs of South Korean broadcasters by paying the equivalent of 2 EUR for each T-DMB mobile handset sold.
- The business model for these solutions could soon evolve: in South Korea, mobile TV service operators expect to capitalise on their audience success to develop a fee-based service solution (content downloads, useful services such as weather and road traffic updates, etc.) and thus diversify their sources of revenue in order to no longer depend exclusively on revenue from advertising.

Cooperative model: Austria

- In Austria, the licence to build and operate the DVB-H network was granted via a call for tenders by the regulator KommAustria. Applicants had to follow a very precise set of specifications, notably requiring them to sign commercial agreements with content providers (primarily broadcasters) and content aggregators (primarily mobile operators) before submitting their applications. This cooperative approach imposed by the Austrian regulator helped bring together most key players in the mobile TV sector as part of a common project led by the DVB-H licence holder, namely the broadcast network operator, Media Broadcast, a subsidiary of the French group TDF.
- Launched on 6 June 2008, just in time for the EURO 2008 kick-off, Austria's DVB-H service has the advantage of comprising 15 channels (including the country's main free-to-air TV channels), and of being distributed free of charge by mobile operators for six months, to entice subscribers to try out the solution and encourage its take-up.

- The mobile TV service model adopted by Austria seems to be inspired by the best of those approaches already implemented to develop a commercially-oriented regulatory framework for stimulating cooperation between the different players (content providers, network operators and content aggregators/service distributors).

Main lessons learnt from these models

Among the main lessons drawn from the three models considered above, the following three points are worth noting:

- A free service accompanied by advertising is very favourable for developing usage but does not ensure service profitability in the short term. As witnessed in Japan and South Korea, the success of a free mobile TV service does not guarantee its profitability. The only revenues generated are solely from advertising, and these are still largely insufficient to offset the operating costs.
- The basic package must be commercialised based on a low-cost model. A basic mobile TV solution – with ten or so simulcast channels or ones adapted from fixed TV – should not be billed for more than 5 or 6 EUR a month. This price range regularly recurs in poll results and feedback as an acceptable ceiling rate for a subscription to a mobile TV solution for most consumers.
- Regulators may introduce a regulatory framework that favours market development. The case of Austria proves the important role of the regulator in defining the economic framework of a broadcast mobile TV service. By forcing applicants for a DVB-H licence to negotiate commercial agreements with other players in the value chain, KommAustria has contributed considerably to establishing optimal market conditions for introducing the service and has encouraged its swift launch.
- Agreements between mobile operators and broadcasters are essential. The presence of TV channel editors and mobile operators is a key factor for establishing a balanced and viable broadcast mobile TV value chain. Channel editors supply the content and cover the broadcasting costs, while mobile operators distribute the service to end customers and subsidise compatible handsets.
- The prime appeal of mobile TV today – according to users – resides in service continuity with the fixed network in a nomadic or mobile situation. By simulcasting fixed

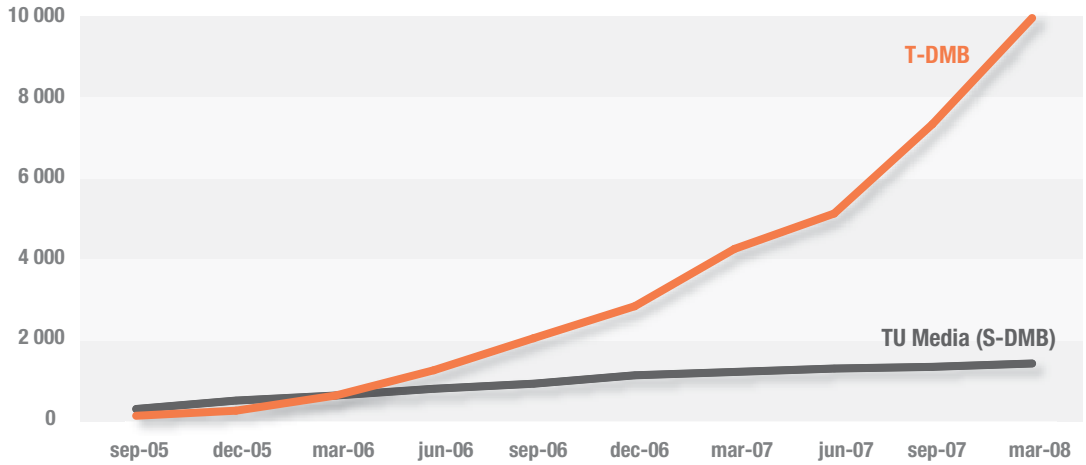
feeds to the mobile broadcast network or picking up a selection of programmes from the major terrestrial channels in the form of 'best-of' mobile channels, mobile TV guarantees viewers ser vice continuity with the content they consume at home.

- Broadcast mobile TV needs 3G: this cellular technology has an important role to play in completing coverage and provides an ideal return link for interactive services to be developed with broadcast mobile TV solutions.

Market forecasts

- IDATE's modelling for the broadcast mobile TV market highlights the main variables that influence the profitability of players in the value chain: the choice of business model, the subscription rate (for a fee-based model), whether or not to subsidise handsets and the extent of coverage (which has a direct impact on channels' broadcasting costs).
- Whatever the player (generalist channel, 'made for mobile' channel or mobile operator), the strategy of free-to-air TV solutions seem difficult to sustain during the market's start-up phase, since the growing audience base generated by free access is unable, with revenues from advertising, to compensate for the subscriptions received from a hypothetical pay-TV solution.
- The key component for a profitable broadcast mobile TV service is its subscription cost: a fair rate should be defined, one which will ensure sufficient revenues for operators and channels, while guaranteeing a sufficiently broad base of subscribers.

Figure 13. Changes in the number of subscribers to the S-DMB mobile TV services in South Korea



Source: IDATE

Figure 14. Broadcast mobile TV value chain in Austria

Source: IDATE

Mobile TV Solutions

Will open solutions compete with 3G & broadcast?

The Mobile TV market is a myriad of consolidation, and solution vendors are running hard to adapt. Their services can be based on linear TV channels, on-demand contents or rich media applications. The delivery vector could be existing cellular mobile networks, dedicated broadcast solutions or alternative provisioning, notably through open systems. And they have to deal with a variety of standards and formats.

No wonder, then, that mobile video delivery solutions often seem closer to best-of breeds than uncluttered end-to-end kits. It is indeed a complex ecosystem, occupied by wary Tier 1 vendors of equipment and solutions along with specialized companies and new entrants.

Choice is not only between managed cellular and dedicated broadcast networks. It's more.

- Broadband cellular-based solutions are by far the core of mobile TV market today. Despite the implementation of multicasting, they are expected to be limited by network capacity for linear TV channels delivery. The three main categories are:
  - Unicast downloads
  - Unicast streaming
  - 3G multicast
- Dedicated broadcast solutions will need new spectrum allocations and a completely new infrastructure. In the roll-out stage, significant investment is needed to create networks that will enable indoor reception. Standards include DVB-(S)H, MediaFLO, T-DMB or DAB-IP.
- Alternative solutions, sometimes seeming closer to nomadism than the classic mobility concept include:
  - Web-based Mobile TV solutions such as WiFi/WiMAX for outdoor reception or place/device shifting.
  - Indoor or sideloading: file transfer via local home networks for indoor or outdoor use, transfer through WLAN, femtocells solutions and sideloading.

A complex technical chain

- The delivery of a mobile video content, with assurance of good quality experience, involves technologies from both the telecom world (for the network) and the content world (for content technology).
- The focus on mobile TV solutions will be on the concept of Content Delivery Solution (CDS) providers, recovering content management segment and eventually the content creation part of the chain. In any case, the CDS links all the elements of the mobile TV delivery system, all along the chain, up to the client software in the terminal.

Market trends by region

- Cellular-based video services, first comers in the market, are the most developed platforms in the world. 3G developments are driving the market.
- Dedicated broadcast is gaining ground in the market with the US market 'captured' by MediaFLO, and DVB-H being the favoured solution in Europe.
- Asia is still dominated by the coexistence of local standards in particular in China, Japan and South Korea.
- Solution vendor contracts show that mobile TV is being launched – or placed high on the agenda – by MNOs worldwide.

Vendor positioning

The technical ecosystem of mobile TV remains very complex, and fragmented. A lot of small specific players operate alongside the major equipment and solution vendors. Moves towards integrated solutions could be managed by the telecom operator/service provider, the major solution vendor or third parties such as consulting companies.

- Solution providers derive from encoding specialists (Envivio), IP encapsulation (UDCast), Web content adaptation on mobile (Mobixell), content delivery platform and equipment providers (RealNetworks, Thomson, Ericsson and Nokia, inter alia), and advanced application providers (such as Expway).
- These providers are not generally active on a single product and they tend to offer solutions for a whole segment (for instance, head-end integration with Vidiator or Globecast) and further to develop an ecosystem of partners to provide end-to-end solutions.
- Tier 1 solution providers, with an eye on their assets, have selected different ap-

proaches, with Nokia and Thomson moving ahead on DVB-H, Ericsson addressing 3G (MBMS) solutions, and Qualcomm focusing on its proprietary solution while Alcatel-Lucent supports DVB-SH solutions in parallel with its cellular-based solutions.

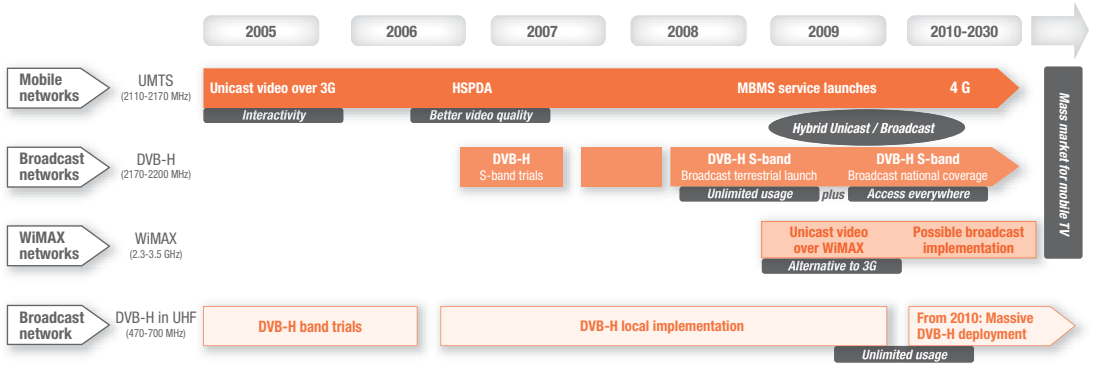
Issues at stake

- Despite some uncertainties about consumer behaviour and relevant business models, mobile TV definitely is following an upward trend. In some cases, the lack of necessary frequencies could hamper mobile TV development and/or limit the scope of corresponding delivery solutions.
- For different levels of services (quality), of delivery modes (broadcast linear or on-demand) and business model, the cost ranking order of mobile delivery networks should, starting from the most CAPEX-intensive, be: dedicated terrestrial broadcast, satellite-based mobile broadcast, 3G cellular and finally alternative solutions using unlimited data plans.
- Despite their apparent appeal, multi-platform video solutions have not been converted into contracts. Solutions are readily available, but there is no demand from MNOs as of today.

Alternative solutions

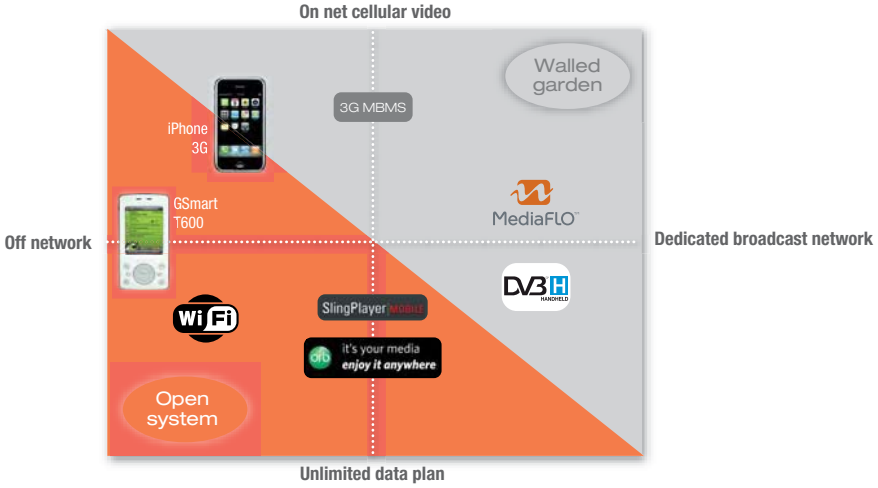
- Web-based Mobile TV solutions include the use of WiFi/WiMAX for outdoor reception. Place-shifting platforms provide very attractive alternative solutions, mainly though open Internet.
- Indoor (WLAN, femtocells) solutions and sideloading could also help to deliver video on mobile devices.
- Mobile network operators could, however, regard these indoor solutions as competitors, while content delivery processes function independently of their networks or as an opportunity to save bandwidth during peak time.
- The openness of cellular-based video delivery will depend on whether MNOs are, strategically speaking, willing or not to free access to Web-based contents on their data network (bandwidth limitation). The trend already started through alternative networks and solutions or sideloading.

Figure 15. Trends in mobile TV distribution



Source: IDATE

Figure 16. New scope of Mobile TV solutions



Source: IDATE

New Communication Trends

The digital home: spurring changes in the TV market

What is the current status of the digital home? Virtually all French households are now equipped with a TV set, a DVD player and a mobile phone. On the computer side of things, PCs and broadband continue to make inroads, gradually becoming commonplace items in every home (45% of households equipped with fixed broadband in 2007, increasing to 57% by 2011). Running parallel to this trend are the swift developments affecting the TV market, starting with digital terrestrial TV (DTT) which, in a matter of years, has been adopted by a quarter of all households. We estimate that it will become the most popular form of free to air TV, and will be competing with traditional premium television access technologies (satellite and cable), with a base of 3.2 million paid subscribers by 2011. IPTV will also continue to make strides, to reach 5.3 million paying households in 2011. On the equipment side of things, the flat screen TV market is in particularly good shape, with prices having dropped enough to create a mass market momentum (10% of households equipped in 2006, 35% in 2007).

Other products are not faring so well, however, including home cinema systems which are still beyond the reach of many budgets; camcorder and PDA sales are growing only slightly and being replaced by other devices; despite the success of the Wii, home consoles have not yet managed to build a larger target market (outside of families with children). Meanwhile, sales of other products such as MP3 players, laptop computers and DVRs are progressing, although their take-up levels still vary.

Although consumers' changing ICT behaviour patterns, particularly in terms of interactivity, are being fuelled by the internet, they are also being affected by the expanding free-to-air TV offer, which includes speciality channels. This is not likely to penalise the premium TV sector which should maintain its value, provided it continues to innovate with exclusive and high value-added content.

Home networks: still being cobbled together

All the elements needed to create a home network are in place:

- Multiplication of devices equipping households: more than eight digital devices, on average, per household, or 3.6 per individual.
- The rise of personal equipment: half of all French people have a personal TV, one in four have their own laptop PC.
- Massive use of content storage capabilities: music, for instance, is being stored on individual computers (17%), the family computer (9%), MP3 players (10%) and mobile phones (5%), in addition to being burned to CD.
- Computers being used as multimedia players, to store and consume content: photos, music, films.
- The end of the all-purpose device: even if most devices tend to offer a broad array of functions, they are generally used only for their primary purpose. For instance, more than half (55%) of all game consoles equipped with a DVD player have never been used to play a DVD.
- The market is not yet ready for online content management. Even if consumers are more open to the idea (one in three internet users in favour), they are not willing to store all their music on a network – still tied to a logic of content ownership: only 7% say they would like to be able to manage all of their music online, while the rest prefer to keep their favourite songs stored on their personal or shared devices.
- The use of home networks is still only fledgling: only 3% of households watch videos stored on their PC on the TV set, and the means of transferring content between devices are still rudimentary: by copying files using an external device (disc or USB key).

That said, the likely changes to DRM, using time limits or subscription systems, along with the growing use of devices with wireless capabilities, could help stimulate the home network momentum.

Internet: the quiet revolution

While the number of internet users continues to grow steadily, so does the average amount of time that users are spending online, going from 10.5 hours a week in 2006 to more than 12 hours in 2007.

Although the spotlight is often trained on innovations rolled out by social networks, the greatest increases are on the practical side

of things: 44% of internet users now shop online, compared to 33% last year and driving itinerary searches, e-banking and e-government are all being used by more and more people. Also worth noting is the gradual rise in the use of instant messaging, which is replacing e-mail to a degree, and currently employed by half of all internet users in France. Ultimately, the internet revolution means incorporation into the everyday life (relations with administrations, retailers, banks, etc.) of the entire population.

Entertainment on the web still youth but not community-centric

- Listening to music online, watching short videos and films, online gaming and even TV viewing on the web are still largely the domain of the younger crowd, and the services are doing little to broaden their appeal. As a result, the size of their audience is changing very little.
- The practice of downloading is not increasing at the same pace as the online population: + 3.3 million internet users between 2006 and 2007, +300,000 users who download content off the web. Many of the latest arrivals to the Net are part of an older generation which devotes less time to music and is no doubt more law-abiding: 49% of internet users between the ages of 15 and 24 download content illegally, compared to only 10% for those over the age of 25. Paid download services are also making strides in all sections of the population: 11% of the 15 to 24 crowd state that they have purchased music online.
- Social networks are cutting increasingly across age lines: while YouTube is especially popular with youngsters (56% of visitors are under the age of 15), sites such as eBay have a much broader appeal: 22% of internet users over the age of 40 have bought or sold an item on eBay.

Online publishing still in the hands of professionals

Online publishing is still by and large a professional affair: only 3% of internet users have a blog that they update more than once a week (10% among 15 to 24-year-olds). Even

if young people are more active participants, which is reflective of a behavioural pattern, the web is still governed by a logic of mainstream content, and UGC (User Generated Content) is not usurping the work of professionals. But this has not stopped the rise of the blog: 9% of internet users created a blog in 2007, compared to 7% in 2006.

The PC has not replaced the TV, but couch potatoes are becoming more interactive

- Despite the growing use of the web, TV is still the most popular mass medium, accounting for three-quarters of the 'average' French person's screen time.
- Watching TV on the computer is still not a widespread phenomenon, and increasing very slowly (6% of web users watch TV on their PC, a percentage that has not budged in a year). Watching short videos online is, however, a popular pastime, particularly with the young crowd.
- The time spent watching TV (live or time-shifted) is similar for all age groups, although young people's viewing patterns do differ, with many of them taking advantage of time-shifting. Use of the web is spurring demand for more control over content, with two out of three young users interested in VoD and three quarters in having PVR features at their disposal.
- The PVR embodies features that are much in demand with consumers, and is expected to become increasingly popular, as it has in the United States where it has made its way into households via pay-TV operators. Growing use of the PVR will naturally have an impact on the live TV audience: viewers equipped with a personal video recorder watch a third of their programmes off the grid, compared to a quarter for the average TV viewer.
- TV has not lost any of its appeal, or its value in mass market ad campaigns. But the time-shifting trend is progressing inexorably. For TV channels, this creates a massive challenge in terms of maintaining ad revenue, especially in this era of multi-tasking (viewers surfing the web and watching TV at the same time).

Senior citizens and pre-teens: partially untapped mobile markets

Although the mobile phone is a ubiquitous device, penetration levels (number of SIM cards compared to the population), and equipment rates (% of the population equipped with a mobile) reveal two market segments that

remain partially untapped: senior citizens (50% of French people over the age of 65 do not have a mobile) and pre-teens (11-14), of which half are also not equipped, in addition to being a prime target for operators working to secure customer loyalty.

Data services market reacting well to unlimited flat rates

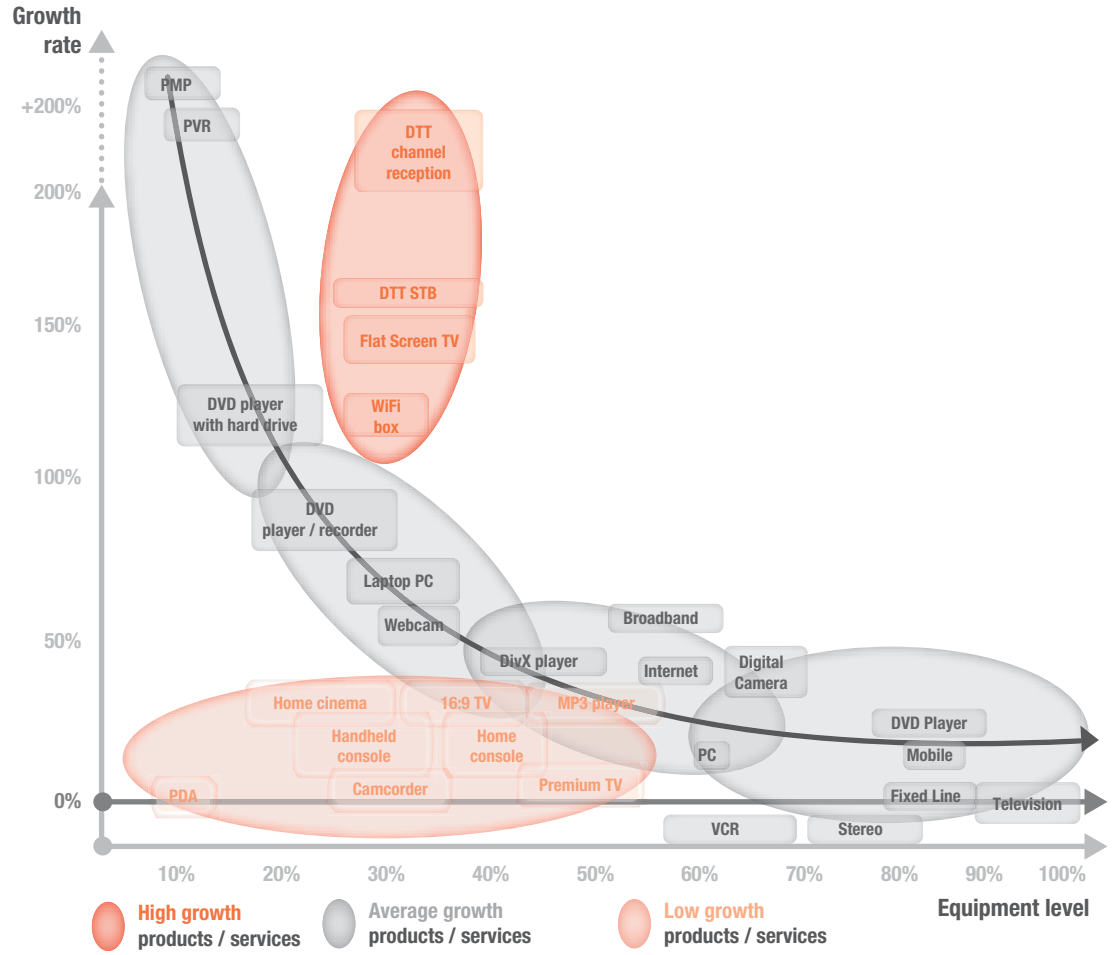
Mobile broadband is progressing apace with equipment replacement, and one in five mobile users (21%) now subscribe to a broadband service. Data service usage is still quite low, however, impeded by high prices that are keeping it confined to the business market. But the market is reacting well to the 'unlimited' data offers launched by SFR, and later by Orange and Bouygues Telecom – offers which are expected to help kick-start the mobile internet market. The most popular services are expected to be mobile versions of the most widely used fixed internet applications, especially messaging, which could get a further boost from low-price notebook computers. Mobiles are also increasing their role as entertainment devices, particularly with young users: combination mobile/MP3 players are a reality, and 72% of consumers between the ages of 15 and 24 listen to music on their cell.

Household ICT budgets stagnating, though vary depending on the service

The average household ICT budget (mobile phone, landline, internet, music, video, video games) is estimated at 113 EUR, including VAT, a month, and not expected to evolve a great deal. Mobiles account for around half the family budget, as many families have more than one mobile – a proportion that is expected to increase slightly as data services become more popular. The other growth markets are pay-TV and internet access, thanks to an expanding customer base. Other markets are on the decline, however, notably fixed calling as VoIP becomes increasingly popular. Video (DVD and VOD) and music markets are still being undermined by illegal downloads, and their share of household budgets is expected to go on shrinking.

The future of these markets will be shaped by changes in distribution models: with new channels (online, on mobiles), new vendors

Figure 17. ICT product and services market momentum. Base: all households



PMP: Portable Multimedia Player PVR: Personal Video Recorder PDA: Personal Digital Assistant

Source: **IDATE**, Use-IT survey

(ISPs, top brands) and new price plans based on z global licensing model.

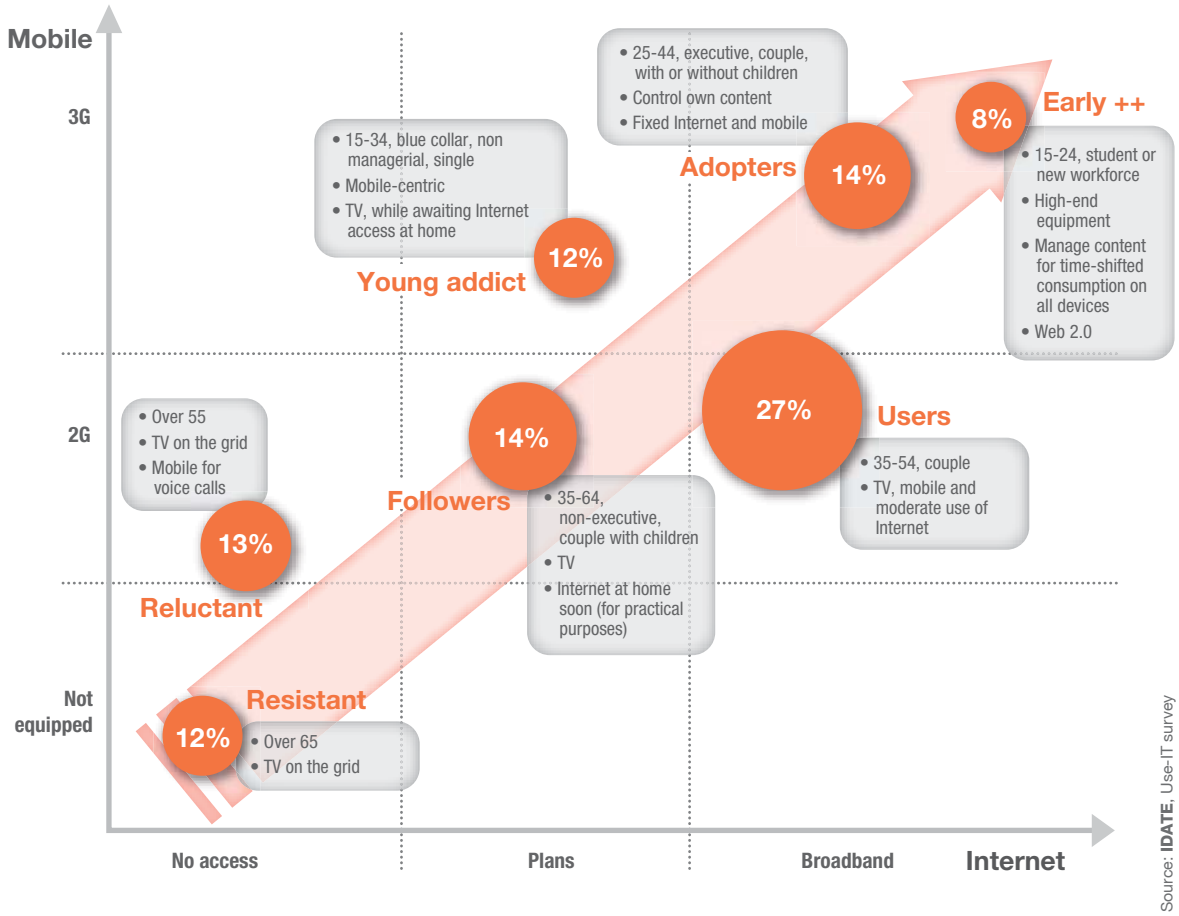
The ICT services market will grow by 1.8% a year, on average, at current prices, to reach 121 EUR per household in 2011, with over half of the budget going to mobile services.

The need for more segmented targeting

In all cases, service vendors will need to consider consumers' various ICT consumption patterns and expectations: French users are not all following the same route when it comes to new technologies. The Use-IT typology reveals persistent disparities in behaviour patterns, ranging from the most and slightly less avid adopters (which include 'Early++', 'Adopters', 'Users'), those which are incorporating the web into their daily life and remain very mobile-centric ('Young addict') or TV centric ('Followers'), to that portion of the French population which remains indifferent and even hostile to new technologies ('Reluctant', 'Resistant'), who will require very simple offers.

While 'early adopters' are hungry for innovation and easier to convert to new services, vendors need to design more tailored offers for each user segment and go beyond the mass market approach ■

Figure 18. Use-IT consumer typology by percentage of the population and ICT behaviour patterns. Base: users over the age of 15



Annex

Mobile Market Data

France

1. Key general indicators

Population	million	(December 2007)	63.7
Mobile subscribers	million	(Start of July 2008)	56.0
Cellular penetration	%	(Start of July 2008)	88.0

Source: IDATE

2. Key market indicators

ARPU [1]	EUR	(December 2007)	34.4
MoU [2]	minutes	(December 2007)	155
Prepaid	%	(December 2007)	34%
3G subscribers	million	(Start of July 2008)	7.6

Source: IDATE

3. Mobile operators market share

Orange France	%	(Start of July 2007)	47%
SFR	%	(Start of July 2007)	36%
Bouygues Telecom	%	(Start of July 2007)	17%

Source: IDATE

4. Mobile customers and penetration rate

MOBILE SERVICES		2004	2005	2006	2007	2008	2009	2010	2011	2012
Mobile subscribers	thousand	44 544	48 088	51 693	55 349	56 878	58 965	60 925	62 758	64 461
Annual change	%	6.8%	8.0%	7.5%	7.1%	2.8%	3.7%	3.3%	3.0%	2.7%
Density	% population	72%	77%	82%	88%	90%	93%	96%	98%	101%

Source: IDATE

[1] net service revenue per user
[2] outgoing call traffic per customer per month

Germany

1. Key general indicators

Population	million	(December 2007)	82.4
Mobile subscribers	million	(December 2007)	103.4
Cellular penetration	%	(December 2007)	125.6

Source: IDATE

2. Key market indicators

ARPU [1]	EUR	(December 2007)	18.9
MoU [2]	minutes	(December 2007)	62
Prepaid	%	(December 2007)	55%
3G subscribers	million	(Start of July 2008)	11.8

Source: IDATE

3. Mobile operators market share

T-Mobile Germany	%	(Start of July 2007)	37%
Vodafone Germany	%	(Start of July 2007)	34%
E-Plus	%	(Start of July 2007)	16%
O_2 Germany	%	(Start of July 2007)	13%

Source: IDATE

4. Mobile customers and penetration rate

MOBILE SERVICES		2004	2005	2006	2007	2008	2009	2010	2011	2012
Mobile subscribers	thousand	71 322	79 271	85 652	97 151	104 609	107 029	111 082	113 476	115 036
Annual change	%	10.1%	11.1%	8.0%	13.4%	7.7%	2.3%	3.8%	2.2%	1.4%
Density	% population	87%	96%	104%	118%	127%	130%	135%	138%	140%

Source: IDATE

1 net service revenue per user
2 outgoing call traffic per customer per month

Italy

1. Key general indicators

Population	million	(December 2007)	58.1
Mobile subscribers	million	(Start of July 2008)	90.2
Cellular penetration	%	(Start of July 2008)	155.2

Source: IDATE

2. Key market indicators

ARPU [1]	EUR	(December 2007)	21.9
MoU [2]	minutes	(December 2007)	86
Prepaid	%	(December 2007)	87%
3G subscribers	million	(Start of July 2008)	25.7

Source: IDATE

3. Mobile operators market share

TIM	%	(Start of July 2008)	40%
Vodafone Italy	%	(Start of July 2008)	33%
Wind	%	(Start of July 2008)	18%
3 Italy	%	(Start of July 2008)	9%

Source: IDATE

4. Mobile customers and penetration rate

MOBILE SERVICES		2004	2005	2006	2007	2008	2009	2010	2011	2012
Mobile subscribers	thousand	62 661	71 514	80 515	89 907	92 451	94 164	95 850	96 925	97 932
Annual change	%	10.6%	14.1%	12.6%	11.7%	2.8%	1.9%	1.8%	1.1%	0.5%
Density	% population	108%	123%	139%	155%	159%	162%	165%	167%	168%

Source: IDATE

[1] net service revenue per user
[2] outgoing call traffic per customer per month

Spain

1. Key general indicators

Population	million	(December 2007)	45.1
Mobile subscribers	million	(Start of July 2008)	51.2
Cellular penetration	%	(Start of July 2008)	113.6

Source: IDATE

2. Key market indicators

ARPU [1]	EUR	(December 2007)	31.6
MoU [2]	minutes	(December 2007)	119.0
Prepaid	%	(December 2007)	43%
3G subscribers	million	(Start of July 2008)	14.5

Source: IDATE

3. Mobile operators market share

Telefónica Moviles Spain	%	(Start of July 2008)	45%
Vodafone Spain	%	(Start of July 2008)	32%
Orange España	%	(Start of July 2008)	22%
Yoigo	%	(Start of July 2008)	1%

Source: IDATE

4. Mobile customers and penetration rate

MOBILE SERVICES		2004	2005	2006	2007	2008	2009	2010	2011	2012
Mobile subscribers	thousand	39 229	43 114	47 023	48 403	52 400	53 773	54 902	56 017	57 119
Annual change	%	4.6%	9.9%	9.1%	2.9%	8.3%	2.6%	2.1%	2.0%	2.0%
Density	% population	91%	99%	106%	107%	115%	116%	117%	117%	118%

Source: IDATE

United Kingdom

1. Key general indicators

Population	million	(December 2007)	60.8
Mobile subscribers	million	(Start of July 2008)	76.0
Cellular penetration	%	(Start of July 2008)	124.6

Source: IDATE

2. Key market indicators

ARPU [1]	EUR	(December 2007)	33.5
MoU [2]	minutes	(December 2007)	116
Prepaid	%	(December 2007)	65%
3G subscribers	million	(Start of July 2008)	16.9

Source: IDATE

3. Mobile operators market share

O_2 UK	%	(Start of July 2008)	27%
Vodafone UK	%	(Start of July 2008)	24%
T-Mobile UK	%	(Start of July 2008)	22%
Orange UK	%	(Start of July 2008)	21%
3 UK	%	(Start of July 2008)	6%

Source: IDATE

4. Mobile customers and penetration rate

MOBILE SERVICES		2004	2005	2006	2007	2008	2009	2010	2011	2012
Mobile subscribers	thousand	62 143	68 754	71 946	75 823	77 100	78 408	79 670	80 818	81 974
Annual change	%	14.0%	10.6%	4.6%	5.4%	1.7%	1.7%	1.6%	1.4%	1.4%
Density	% population	103%	114%	119%	125%	127%	128%	130%	131%	133%

Source: IDATE

1 net service revenue per user
2 outgoing call traffic per customer per month

ENTER

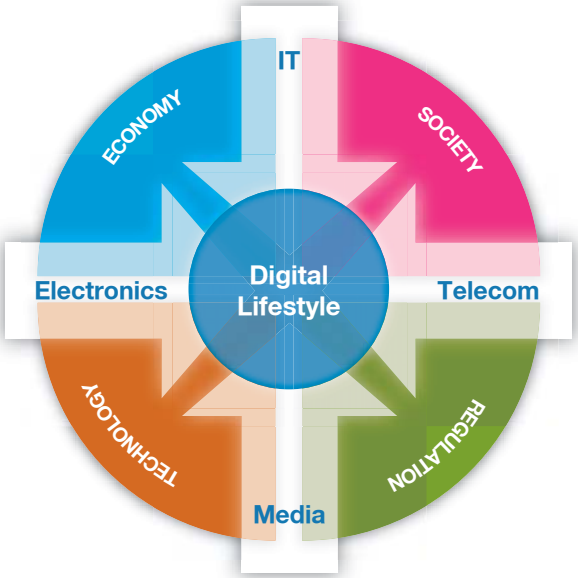
ENTER is IE business school's Center for the Analysis of the Information Society and Telecommunications. It is the leading Spanish think tank on this field, providing information, analysis and forecasting from a digital convergence perspective.

Enter has arrived at a unique positioning in Spain in relation to similar centers by offering the following distinguishing features:

- A multidisciplinary focus, encompassing technological, economic, social and regulatory aspects of the digital convergence process.
- Independence, combining private and public sector entities on its board.
- International outreach, developing a network with some of the most prestigious think tanks and research centers worldwide.
- A future-oriented approach, basing its analyses not only on the current context but also on future scenarios.

Enter's core activities include the dissemination of knowledge, preparation of reports, project development, organization of workshops and consulting services.

Enter enjoys the support of the following companies and organisations:



Abertis Telecom
Accenture
Alcatel-Lucent
AETIC
Intel
Oesia
Orange
Red.es
Telefónica
Vodafone

CONTACT

Patricia López
patricia.lopez@ie.edu
Tel : +34 917 875 107
More info on: www.enter.es

IDATE

Founded in 1977, IDATE is one of Europe's foremost market analysis and consulting firms, whose mission is to provide assistance in strategic decision-making for its clients in the Telecom, Internet and Media industries, through the following two areas of activity:

Consulting & Research

- An independent consultancy - IDATE has established its credibility and independence in conducting consultancy and study assignments on behalf of its clients: market reports (techno-economic monitoring, modelling and forecasts, sector-specific analysis, surveys); international benchmarking (positioning studies, convergence strategies, competition analysis); assistance in the launch of new products (technical Analysis, Competitive Environment, Business planning); public policies (public policy definition and assessment, socio-economic impact, project implementation and management, regulatory benchmarking).
- Analysis reports - IDATE's clients benefit from the knowledge and expertise of its teams of specialists, and from its ongoing investment in its information and strategic monitoring system: publication of reports, databases, online services, analyst hotline…

DigiWorld Programme

IDATE is also instrumental in providing a forum for international debate between the industry's key players through its annual DigiWorld programme, supported by its members representing the sector's most prominent companies:

- DigiWorld Network - a series of monthly meetings in European capitals and international business trips),
- DigiWorld Events - the DigiWorld Summit annual conference and a series of associated seminars devoted to the year's central issues,
- DigiWorld Publishing - the DigiWorld Yearbook and the DigiWorld Economic Journal (Communications & Strategies)

CONTACT

Jean-Dominique Séval
jd.seval@idate.org
Tel : +33 (0)4 67 14 44 07
More info on: www.idate.org

OESIA

OESIA is one the most important Spanish IT multinational companies with presence in South America, USA and Middle East and more than 3.000 professionals around the world. The company has more than 60% of the share capital in the hands of important financial institutions and is among the 15 Spanish and the 500 European companies that most invest in research and development.

Oesia provides a wide range of products and services and is focused in three main business areas:

- Information technology and Communications
- Outsourcing - BPO
- Defence electronics

The main asset of the company resides in the qualified and experienced professionals who work for it around the world and undergo continuous professional training.

Faithful to their roots, Oesia maintain an excellent relationship with the main universities, underscoring a permanent commitment to education and knowledge.

Oesia composes own scores such as Gacela – a leading solution for the health industry - or Altura, which meets all the needs of local and regional administrations.

Hand in hand with Tecnobit, Oesia offers solutions to leading companies in the world electronic defence industry, including the most advanced detection and monitoring infrared sensors, naval systems and combat simulators.

Oesia also offers value added technological solutions in areas such as Mobility, Security and Business Intelligence, and services such as Consultancy, Software Factory and Outsourcing, with a solid commitment to quality, as established under the main quality standards.

Oesia counts on the support of their partners - leading global technology companies - and on the prestige their clients give them, the most important firms in all the sectors in which Oesia operates:

- Telecommunications and Energy
- Defence
- Banking and insurance
- Health
- Public Administration
- Transport and Tourism
- Industry and Services

This is Oesia: a digital symphony of people, skills and technologies.

Oesia.
Symphonic technology.

1	HISTORY	Growth	Among Top 5 technological Services in 7 years
2	TRUST	Large Clients	55% Ibex 35 / 100% Top 10 Ibex
3	SOLID	Shareholders	+60% Capital held by financial institutions
4	STRENGTH	Employees and Entrepreneurs	74% University graduates
5	QUALITY	Best Practice	CMM, CMMI, ITIL, PSP, eSCM, CISA
6	KNOWLEDGE	State of the art technology	Research and Development, Defence, Century XXI
7	PROJECT	Strategic marketing	Alternative technological offer in Spanish
8	ORIENTATION	Results	Fourfold increase in value creation over 3 years

CONTACT

OESIA
comunicacion@oesia.com
Tel : +34 913 098 600
More info on: www.oesia.com

Mobile 2009

Published by
ENTER
Maria de Molina, 6 - 1ª
28006 Madrid (Spain)
www.enter.es

Design, Edition & Layout:
ideas**4**design

Printed by:
OMÁN Impresores

Legal Deposit: M-5424-2007
Printed in Spain

All data and information published in this report are taken from the following IDATE market reports:

'World Telecom Equipment Market'
(IDATE, Watch Service, 2008)

'World Telecom Services Market'
(IDATE, Market & Data Report, 2008)

'Mobile broadband'
(IDATE, Innovation Report, 2008)

'Broadcast Mobile TV'
(IDATE, Market & Data Report, 2008)

'Mobile TV Solutions'
(IDATE, Market & Data Report, 2008)

'New Communication Trends'
(IDATE, Market & Data Report, 2008)

'Emerging issues in radio spectrum'
(IDATE, Innovation Report, 2008)

'Mobile Handset Dynamics'
(IDATE, Innovation Report, 2008)

'Near Field Communications'
(IDATE, Innovation Report, 2008)

'Mobile Churn Management'
(IDATE, Innovation Report, 2008)

'Mobile Pricing Innovation'
(IDATE, Innovation Report, 2008)

Complete catalogue on www.idate.org
Contact: Isabel Jimenez – tel: +33(0) 467 144 404 – i.jimenez@idate.org

enter ie

IDATE
Consulting & Research

www.enter.es

www.idate.org

oesia
symphonic
technology

www.oesia.com