

REPORT

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# ARCEP Mission in South Korea



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*The quality of the speeches and discussions, the diversity of the contacts made and the warm atmosphere made this mission pleasant and a resounding success...*

*We thank the French Embassy in Seoul, as well as well as the economic department of the Korean Embassy in Paris for their support.*

*This report summarises information received on the Korean experience in multimedia services, most of which are currently available on all communication platforms. Whenever possible, it provides a comparison with France.*



*ARCEP keynote speech at the Seoul Digital Forum, 29 May 2007*

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*Ms. Gabrielle Gauthey 29 to 31 May 2007, a Member of the Board of France's Regulatory Authority, ARCEP (Autorité de Régulation des communications électroniques et des Postes (ARCEP)), accompanied by Mr. Joël Voisin-Ratelle, Head of International Bureau,, travelled to South Korea from May 29 to 31, 2007 to take part to the Seoul Digital Forum (SDF2007), and to discuss the issues and evolution of regulation of electronic communications in South Korea.*

*The visit confirmed the growing importance of content in the structure of the telecommunications market in South Korea... A main goal of this mission was to discuss with the Korean regulators, particularly in the area of fixed and mobile broadband.*

*Mr. KANG Dai-Young, Deputy Minister of the MIC and Mr. CHO Chang Hyun, Chairman of the KBC, were both welcoming and highly informative. Discussions focused on the issues and challenges of electronic communications regulation in South Korea and in France.*

*The mission was carried out in a climate of warm and frank exchange, and confirmed the vitality of the interaction between ARCEP and the different industry players in South Korea. It coincided with the institutional reform process that is currently underway in South Korea, devoted to adapting the sector's regulation to the growing convergence between audiovisual and telecommunications.*

*The information collected during the visit of ARCEP to Seoul shows an internal market situation comparable to that seen on European and French market, namely a convergent multimedia offer on audiovisual and telecommunications platforms.*

*ARCEP representatives were somewhat surprised by the attitude of different contacts made, who were critical of the electronic communications market's performance in Korea, not dynamic enough, according to them.*

*In spite of this, in December 2006 South Korea was among the globe's top five fixed broadband markets, with more than 14 million subscribers and a penetration rate of 29% of the population, of which 11.4% over ADSL, 10.7% over cable and 7% over optical fibre to the home – a take-up rate that is still 5 to 10 points above any other OECD country, including Japan, France and the United States.*

*The offer is currently confined to Internet access, telephony and Video on Demand (VoD), with triple play bundles and VoIP being less developed than in France. KT and Hanarotelecom, for instance, are still awaiting authorisations from the KBC for their triple play offers, hoping for the swift adoption of the law on Internet Protocol Television (IPTV). Telecom operators, meanwhile, are still having trouble obtaining media content transport licences, and concerns are now growing over their ability to earn a return on their investments in new optic fibre and mobile broadband networks.*

*The difficulties in outfitting buildings with fibre are comparable to those encountered in France, even if the issue is not posed in entirely the same terms. The leading operators each have their own indoor network, but some property owners are wishing to install fibre themselves in order to avoid multiple deployments in their buildings.*

*Mobile penetration has reached levels comparable to those seen on the French market: at the end of 2006, there were roughly 40 million mobile subscribers in South Korea, (or a penetration rate of 83.2%). SK Telecom's market share at the time was 50.4%, compared to 32.1% for KTF, the incumbent carrier's mobile arm, and 17.4% for LG Telecom.*

*3G is growing at a tremendous pace, with KTF making particularly good strides. One surprise has been operators' switch to UMTS (Universal Mobile Telephone System) since KTF's landmark*

decision in April 2006 to deploy its networks in HSDPA (High Speed Downlink Packet Access – very high-speed UMTS) despite the growing use of CDMA 1 EV-DO (Code Division Multiple Access - Evolution Data Only) at the time. Its market performance does seem to point to a promising future, albeit not guaranteeing sufficient profit levels due to the ongoing sharp decrease in prices.

By marketing primarily single mode handsets, KTF forged itself a solid foothold in the 3G segment – acquiring more than 610,000 new subscribers since the launch of its videophony service in March 2007, chiefly at the expense of LG Telecom which does not yet have a 3G licence and which is focused on developing a CDMA 2G network.

Discussions also revealed the importance given to mobile payment systems, to which the various operators are devoting increasing efforts – as they are to mobile TV with a view to commercial conquest. The ability to subsidise handsets, which the authorities had banned between 2003 and 2006, appears to have revived the mobile market.

All mobile operators have signed agreements with key players in the banking sector to develop “Mobile Touch” mobile payment equipment which is used by a great many retailers. These devices can also read bankcards.

Since the KBC awarded licences to the channels, Mobile TV has given acceleration in the success of the service. Two systems currently co-exist: Satellite-DMB (Digital Multimedia Broadcasting) pay-TV and free to air Terrestrial-DMB.

The KBC awarded a single S-DMB licence to TU-Media Corp which launched its services in May 2005, in the form of a pay-TV offer via SKT, South Korea’s number one mobile operator. Serving a base of 1.12 million subscribers, the package includes 37 channels, including 11 video channels and 26 radio stations.

T-DMB, meanwhile, uses the VHF (174~216 MHz) band; six free to air operators were authorised to launch a service financed by advertising in December 2005, and have already managed to attract 4.2 million viewers, despite the ongoing struggle to turn a profit.

Finally, the MIC recalled its intentions to open the mobile market to MVNOs by the end of 2007, in a bid to stimulate competition by encouraging a decrease in prices and the creation of innovative services.

Despite the apparent growth of the Korean market, the contacts, notably the representatives of the Korea Information Society Development Institute (KISDI), felt that the market was losing momentum – pointing to regulatory restrictions on content.

Some economic players in Korea who are achieving the highest possible level of performance in their internal market are starting to focus on achieving results overseas. Operators appear not to be contenting themselves with serving only the Korean market, and are targeting emerging countries through partnerships with foreign operators.

A good example is WiBro, the Korean equivalent to WiMAX in Europe. The licences that the MIC awarded to KT, the leading proponent of WiBro technology, and to SK Telecom, which has yet to deploy its network – Hanarotelecom having returned its licence – do not appear to have achieved the hoped-for results.

One common point that emerged from all of the meetings was Korean players’ tendency to invest in several technologies in parallel, even potentially competing technologies. Although costly, this strategy does allow them to be at the leading edge of the market. Examples here include KT and SK Telecom which have invested in both WiBro (Korea’s version of WiMAX) and in the HSDPA mobile system.

*From a regulatory perspective, the Korean market is working to evolve towards convergence of telecommunications and media, pursuing a goal of greater fluidity.*

*The MIC is the Korean government body in charge of regulating the telecommunications sector, much in the same way as ARCEP in France, and is responsible for managing radio spectrum.*

*As concerns broadcasting, the MIC shares its regulatory powers with the KBC which is in charge of regulating the TV broadcasting market and awarding licences to content operators, referred to as Multi-System Operators (MSO) such as the Educational Broadcasting System (EBS), Korea Broadcasting System (KBS), Munhwa Broadcasting Company (MBC) and Seoul Broadcasting System (SBS). The licences that TU-Media obtained to develop satellite mobile TV channels (S-DMB) were awarded by the KBC and the frequency bands by the MIC.*

*Cable coverage in South Korea is higher than it is in France, but cable operators are struggling to sustain their business. More than 14 million households in South Korea were connected via cable at end 2006 (or 90% of households), although this form of pay-TV is suffering from relatively modest incomes.*

*Consequently to the difficulties encountered when implementing mobile TV projects, along with current debates over IPTV, the South Korean government created a high commission on regulation in July 2006, the Convergence Promotion Consultative Committee, under the aegis of the Prime Minister. This Committee is responsible for making proposals regarding the convergence.*

*Our discussions revealed common views, such as the need to adapt regulation to promote, in a more competitive environment, the development of multimedia offers by telecom operators, and by mobile operators in particular. Korean authorities decided that the digital switch-off should occur on 2012.*

*The people we met with queried ARCEP on the progress being made by broadband in France, and particularly on fibre optics deployment in access networks, as well as telecom operators' ability to access content. They were particularly interested in the changes being brought to regulation in view of the growing convergence of broadcasting and telecommunications.*

*Discussions with ARCEP showed that the MIC is in favour of the British regulatory model, and of the creation of a Communication Commission (CC) in charge of regulating competition in the communications sector, including the Internet, and encompassing the responsibilities assigned to the Fair Trade Commission (FTC), the MIC and the KBC. The KBC would be more in favour of the French model, which would increase its powers, particularly in the area of radio spectrum management.*

*Reforms of institutional mechanisms are underway, working to achieve a better adaptation to the convergence of telecommunications and audiovisual which, by the end of the year, is expected to result in a merger of the country's regulators.*

*The visit of the Member of the ARCEP Board helped further consolidate the already strong ties between the French regulator and Korean authorities, through regular exchanges of information and experiences.*

*The open and frank discussions with Korean representatives have led to a mutual understanding, namely regulation concerning broadband development in the two countries, and to anticipate the challenges posed by audiovisual convergence for both fixed and mobile networks, at a time when institutional regulatory reforms appear both imminent and urgent in South Korea.*

## I - BROADBAND IN SOUTH KOREA DOMINATED BY FIBRE

### Fixed market competition

The meetings between ARCEP and the country's top two fixed telecommunications operators – incumbent carrier, *Korea Telecom corporation (KT)*, and its leading rival in the Korean market, *Hanarotelecom incorporated (Hanarotelecom)* – revealed a market structure dominated by KT. All operators are looking for new growth outlets enabled by ultra-broadband.

Growth of fixed telephony subscribers in South Korea						Incumbent carrier, <b>KT</b> , controls 21 M, or 90% of subscribers, in a Korean fixed voice market that seems saturated.
Year	2002	2003	2004	2005	2006	
Fixed subscribers (million)	23.49	22.94	22.87	23,09	23.20	
Growth		-2.34%	-0.31%	0.96%	0.48%	

*Source: MIC, KISDI*

<http://www.kt.co.kr/eng/main.jsp>

Korea Telecom was established as a state-owned incumbent in 1981 because of the Korea Telecom Act. The company officially took over the telecommunications business being operated by the government through the Korean Ministry of Information & Communication (MIC) in 1982. It was renamed **KT Corporation (KT)** in 2002.

It owns of several subsidiaries.

Incumbent carrier Korea Telecom subsidiaries			
Company name	Business areas	Creation date	KT share (%)
KT	Fixed operator, Internet access	Dec. 1981	-
KT Freetel (KTF)	Mobile operator	Jan. 1997	44.6
KT Hitel (KTH)	Internet portal, online gaming	Dec. 1991	65.9
KT Powertel	TRS communications, airport radio communications	Dec. 1985	44.8
KT Linkus	Public payphone, security services installation and operation	August 1988	93.8
KT Technologies	Production and sale of mobile handsets	Oct. 2001	73.1
KT Submarine	Undersea cable installation and maintenance	April 1995	36.9
K Fst Data System	Data communication services	March 2007	n/a

KT provides both local and long distance telephone services, including Internet access, and mobile services, including IMT-2000.

**KT controls over 90% of the voice calling market.**

KT has a market cap of 11 billion euros, of which 94% floating, with employees controlling 5.5% of equity. The company's capital is open to foreign investors. KT has a staff of 38,000 and generated a turnover of 9.4 billion euros in 2006: 85.6% generated by long distance calls, of which 40% international communications.

**More than 14 M broadband subscribers in South Korea, or 90% of households**

KT has an over 90% share of the fixed voice market, compared to only 5% for its chief competitor, LG Dacom. LG Dacom is preparing to launch a VoIP service for KRW8,000 (roughly €9) a month, including international calls, in other words 40% below current prices. The goal is to acquire 300,000 subscribers by the end of the year.

KT serves 21 million customers on its fixed network. The operator estimates that it has lost 1.2 million voice subscribers since 2003, of which 300,000 to mobile and 900,000 to its rival, *Hanarotelecom*, South Korea's number two Internet access provider.



South Korea is considered one of the best developed in the globe on Broadband. According to the *National Internet Development Agency (NIDA)*, the number of lines connected to broadband rose from less than 10 million in 2001 to more than 14 million in 2006, with a broadband service that can be accessed by 90% of households (39% to xDSL, 36% to cable, 24% to fibre optics).

<http://www.nic.or.kr/english/>

<b>Broadband in South Korea</b>						
<b>Number of broadband Internet subscribers in December 2006 (x1000)</b>						
	XDSL	Cable modem	Internal network	FTTH	Satellite	Total
<b>KT</b>	4,747	-	1,513	92	1	6,353
<b>Hanarotelecom</b>	631	2,072	878	33	-	3,613
<b>Onse Telecom</b>	1	190	30	-	-	220
<b>Dreamline</b>	15	12	1	-	-	28
<b>LG Dacom</b>	5	38	69	-	-	112
<b>LG Powercom</b>	-	652	552	-	-	1,204
<b>USON</b>	51	2,138	73	-	-	2,262
<b>Other ISPs</b>	9	52	10	-	-	71
<b>Resellers</b>	30	-	150	-	-	180
<b>Total</b>	<b>5,489</b>	<b>5,153</b>	<b>3,275</b>	<b>125</b>	<b>1</b>	<b>14,043</b>

*Source: NIDA (National Internet Development Agency Korea)*

**Stabilised tariffs** Tariffs have levelled off at around €25 a month, on average, with all services delivering speeds of over 10 Mbps and some in excess of 50 Mbps. The most widely used applications are search, e-mail, VoD, multimedia blogging, video chats, multimedia messaging, online gaming and file management.

Although bitrates are high, TV over ADSL and VoIP are still fledgling, as telecom operators are required to obtain a broadcasting licence from the *Korea Broadcasting Commission (KBC)*.

**KT's chief competitor in the broadband market is Hanarotelecom.**

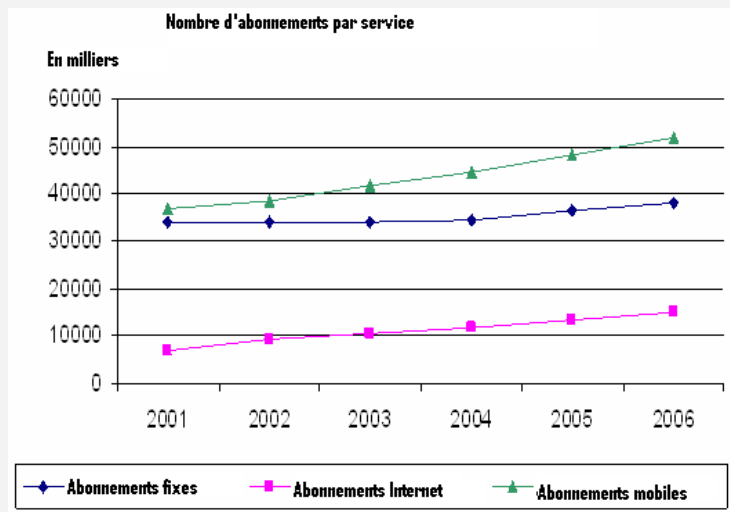
Market competition is between the two main players with incumbent carrier, KT, enjoying dominance of the broadband market. According to the NIDA, at end 2006, KT had an over 45% share of the market, serving a base of around 6.4 million broadband subscribers (4.7 million are connected to xDSL and 92,000 to FTTH).

South Korea's number two broadband provider is *Hanarotelecom*, a company that was created in 1997. In addition to broadband access, the operator provides local, long distance and international telephone services, and television services.

Hanaro has a base of over 3.6 million broadband subscribers, of which more than 2 million via cable, or a roughly 25% share of the market.

The broadband offer as a whole is geared towards the installation of an increasing number of internal fibre optics networks. At end 2006, 3.4 million subscribers were connected to an internal network, including FTTH.

In France, the number of subscriptions to high-speed Internet has been growing strongly since the early 2003. Since mid-2005 growth is 20% per half year. This is almost exclusively SL access: of the 12.7 million access lines at end 2006, representing 45% of households, 12 million were DSL and 0.7 million were cable.



Source: ARCEP

### December 2006 in France

**51.7 M mobile subscribers**

**38.1 M fixed subscribers**

**15.2 M Internet subscribers, of which  
12.7 M broadband**

## Content Access Modes

### Operators still struggling to access content

As operators gear their business more and more to high definition multimedia services and IPTV, gaining access to content becomes crucial. *Hanarotelecom*, for instance, is working to aggregate content composed of Korean and foreign films, and programmes from the country's three terrestrial channels – *Korean Broadcasting System (KBS)*, *Pusan Broadcasting Corp. (PSB)* and *Munhwa Broadcasting Company (MBC)* – along with educational programmes via *User-Created Content (UCC)* and programmes produced by Hanaro for *Digital Multimedia Broadcasting (DMB)*.

The company has signed agreements with more than 150 content producers for the supply of programmes, including foreign heavyweights such as *Walt Disney Television*, *Sony Pictures Television International*, *CJ Entertainment*, *BBC Worldwide*, *National Geographic Channel* and *20th Century Fox*, and others with more of an educational or regional leaning, including the *Educational Broadcasting System (EBS)* and the *Seoul Broadcasting System (SBS)*.

[http://www.hanaro.com/eng/pr/press\\_info\\_view.asp?keynum=89](http://www.hanaro.com/eng/pr/press_info_view.asp?keynum=89)

<http://www.hanaro.com/eng/>

Along the way, *Hanarotelecom* has had to contend with ISPs that were blocking access to its TV service. In October 2006, cable operators and *Multiple System Operators (MSO)*, *Curix*, *Cable&Multimedia (C&M)* and *Hyundai Communications and Network (HCN)*, as well as ISP *LG Powercomm* sought to block the *Hanarotelecom* service by cutting back the bandwidth to the HanaTV site.

Hanaro estimates that, as a result of the traffic restrictions imposed by the ISPs, 3 million broadband subscribers were prevented from accessing its service.

**Telecom  
operators’  
nascent VoD  
services**

In December 2006, the *Korea Communication Commission (KCC)*, the regulator under the aegis of the MIC, ruled that LG Powercomm should allow access to the service while, at the same time, Hanaro should fulfil its commitment to consult with Powercomm before introducing a pay-TV service.

In a bid to regain market share, KT is preparing to launch a new VoD service in high definition streaming called *Megapass TV*, over *FTTH-GPON (Fibre to the home – Gigabit passive optical network)* with bitrates of 50 Mbps or more, which comes to flesh out the basic offer.

To subscribe, KT customers need to pay an installation fee of between €20 and €50, depending on the option chosen, as well as a basic flat rate of €8 for the service and €4 for renting the basic STB.

KT will be able to launch its new service once the law on *Internet Protocol Television (IPTV)* has been passed through Parliament, and following the approval of the *Ministry of Information and Communication (MIC)*.

To be profitable, the operator needs to generate higher *average revenue per user (ARPU)* than current pay-TV offers. Of the 17 million households connected to TV, 14 million pay a minimal price for TV programmes: around €5 to €10 euros a month, depending on the region. KT will also need to overcome the disincentive of the very high price of the initial outlay for the PVR (over €1,000).

To succeed, MegaPass TV needs to be more competitive than the rival HanaTV portal launched by *Hanarotelecom* in July 2006, which allows users to receive and download VoD services using an IP set-top box. HanaTV has managed to attract more than 430,000 subscribers in 10 months, with a target of reaching one million subscribers by the end of 2007.

### **Growing prominence of fibre optic**

The success of broadband in South Korea dates back to the 1990s, when the government not only stated its political desire to develop infrastructure, but also stimulated the creation of applications and content on these networks.

Fiscal incentives were added to the process to encourage households to adopt FTTx technology by increasing the value of flats equipped with fibre. The high density of Korea’s population did the rest by enabling a reduction in broadband costs and an increase in efficiency.

By reducing the revenue generated by voice, the sector’s liberalisation at that same time drove operators to explore the advantages of the broadband market.

Competition in the broadband market increased, which led to a drop in prices as new services became increasingly available. This trend spurred the development of Internet cafés, called *PC Bangs* in South Korea, which helped familiarise the public with broadband, particularly during the financial crisis when a great many Koreans used the PC Bangs to look for work online.

Despite the growing availability of fibre to the home, PC Bangs continue to thrive, as the Koreans have built a powerful community spirit around online gaming.

The last component in the success of fibre is the fact that a great many Koreans

access user-generated content. This content requires a high-speed connection, both upstream and downstream, and high bandwidth.

And, naturally, consumers interact with one another and want the same ultra-broadband capabilities as their neighbours.

**KT has announced a \$1.3 billion investment over 4 years in FTTH, and Hanarotelecom \$300 million in 2007.**

Operators have made massive efforts to meet the growing demand. In late February 2007, KT announced that it would be investing \$1.3 billion over four years to extend its FTTH connections into new residential zones. Up until now, KT's service running at 100 Mbps has been confined to certain major complexes in a few large cities.

The FTTH project now aims to deploy 1.14 million FTTH lines and to upgrade 670,000 existing lines. With the encouragement of the MIC, there are explicit plans for the work not to be confined to Seoul and its surrounding area, nor to only large building complexes.

**Alcatel will supply Hanarotelecom with a pilot GPON.**

*Hanarotelecom* has announced that it would be investing \$300 million in its network in 2007, and \$50 million to roll out FTTH in certain residential neighbourhoods. This increased capacity is geared to IPTV and VoIP services, which are perceived as the two main growth outlets for ISPs. Hanaro's prime objective is to increase the bitrates for some of its subscribers (outside of major complexes) to 100 Mbps, using hybrid fibre-coax (HFC).

*Hanarotelecom* has chosen Alcatel for its broadband network, with the French manufacturer set to deploy an ultra-broadband GPON pilot project. *Hanarotelecom* has also launched Hana Set, which combines broadband access, a fixed phone line and HanaTV, the operator's IPTV portal which, for now, is confined to VoD. On the average monthly price of around €30, subscribers are offered a 20% discount if they subscribe to all three services and a 10% discount if they subscribe to only two. The operator has also cut its local calling tariffs by 10% to 30%.

As it did with copper pair networks, the MIC has opted not to impose sharing of the last mile, thus requiring all operators to roll out their own network to the building. Some buildings have taken the initiative of cabling their premises themselves to avoid multiple infrastructures, which concerns KT as it creates uncertainty over access conditions.

*Korean telecom operators are struggling to obtain licences for transporting media content, in order to enhance the return on their fibre networks. In France, the triple play on fixed networks enjoys a relative advantage over South Korea, where services are confined to a VoD offer and very little VoIP. All of the players in France are working to adapt to the market, wanting to share civil engineering infrastructure and access to buildings, which is not the case in South Korea where each building can be equipped with four or five different access networks, including cable.*

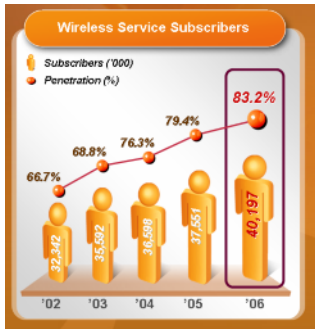
## II - MOBILE BROADBAND MULTIMEDIA

### Mobile market competition

The mobile penetration rate in South Korea exceeds 83%, for a population of roughly 48 million inhabitants. The number of cellular subscribers rose from 6 million in 1998 to over 40 million in December 2006, with a base that doubled every year between 1998 and 2000. Since 2001, the

market appears to have reached maturity, with annual growth having slowed to around 2% to 3% over the past six years.

**Over 40M mobile subscribers in South Korea**



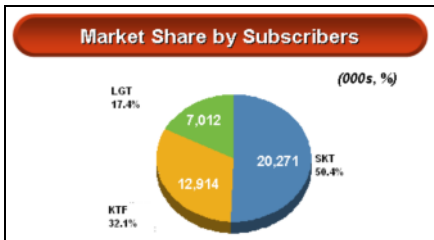
Mobile handsets can once again be subsidised, as the ban imposed by the MIC between April 2003 and March 2006 has been lifted. Prepaid is virtually non-existent.

South Korea uses CDMA on 2G networks and has kept up with the standard's evolution. Three operators are vying for market share.

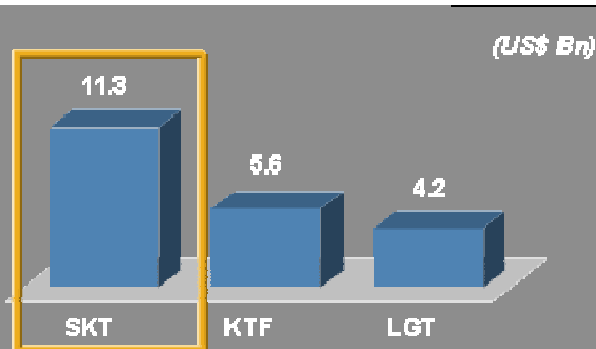
With a 50.4% share of the market and 20.2 million subscribers at the end of 2006, SK Telecom is the most dynamic operator. Reinvigorated by its merger with *Shinsegi Telecom*, then the sale of its handset production business, SK Telecom has become the country's leading 3G operator.

KT subsidiary, KTF, ranks number two with a 32.1% share of the market, followed by LG subsidiary, LG Telecom, with a roughly 17.4% share.

In terms of revenue, the three operators' market share at the end of 2006 was as follows: 53% for SK Telecom, 27% for KTF and 20% for LG Telecom.



Source: Mobile operators



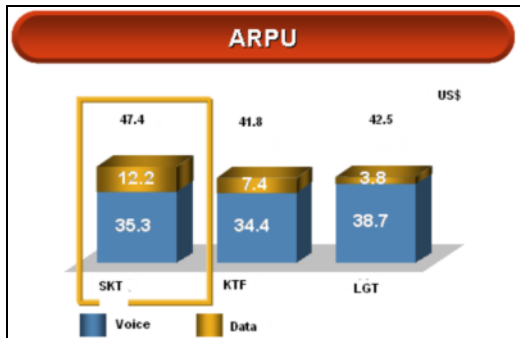
Mobile Revenue

Source: operators

SKT reporting the highest TO: \$11.3 bn at the end of 2006.



Mobile revenue growth spurred chiefly by data, at the expense of voice: +35.7% in 5 years.



With its range of customers, SKT has the highest ARPU in the Korean market: close to \$50, compared to \$42 for its competitors.

SK Telecom subscribers generate the highest ARPU. Thanks to the quality of its mobile portals, Nate and June, the operator is reporting ARPU of \$47.40, of which 25% from data services, compared to around \$42 for its two competitors, with mobile data services accounting for 18% of KTF revenue and 9% for LGT which does not yet have a 3G licence and markets a classic, voice-centric offer.

SK Telecom offers an array of multimedia services: music downloads (MelOn), trailer downloads (Cizle), a range of news broken down by topic, multiplayer mobile gaming, the Cyworld social network and mobile banking.

**Cellular telephony in South Korea (December 2006)**

Technologies	Dates	Maximum theoretical bitrate	Number of subscribers (x 1000)			
			KTF	SKT	LGT	Total
CDMA One	Jan. 1996	DL: 64kbps	344	608	641	1,593
CDMA 2000 1x	Oct. 2000	DL: 144kbps	7,200	9,625	6,371	23,196
CDMA 2000 1x EV-DO	Feb. 2002	UL: 2.4Mbps DL: 2Mbps / 384 kbps (roaming)	5,370	10,038		15,408
WCDMA	Dec. 2003	UL: 64kbps DL: 14.4Mbps/2 to 6 Mbps (roaming)				
HSDPA	May 2006	UL: 11Mbps DL: 20Mbps		145		145
WiBro	June 2007	UL: 6Mbps				
<b>Total</b>			<b>12,914</b>	<b>20,271</b>	<b>7,012</b>	<b>40,197</b>

Source: operators

A central player in the business market (leased lines, integration), SKT is also endeavouring to become ubiquitous: intelligent home, communicating cars, *Radio Frequency Identification (RFID)*. SK Telecom is also the only operator in the world to offer mobile satellite TV over *Satellite Digital Multimedia Broadcasting (S-DMB)*. Lastly, the operator is very involved in mobile broadband, particularly with HSDPA, but is more reserved in its forays into WiBro.



SK Telecom headquarters in Seoul

SK Telecom's strategy, which consists in investing in several eventually competing technologies, is a costly one but one that consistently ensures a first entrant advantage.

This strategy has been challenged to a large degree by KT which is concentrating a set of offers using different technologies in its home market, with the hope of then conquering foreign markets, particularly in emerging economies via partnerships with foreign operators. During the meeting, KT expressed a clear interest for partnerships for France Telecom. SK Telecom, meanwhile, is developing direct partnerships in places such as China and Vietnam.

*Mobile penetration in South Korea is comparable to the level found in France: over 83% in both countries. There are more than 40 million mobile subscribers in South Korea, compared to 52 million in France.*

## Strategic choice of HSDPA and the early days of mobile TV

South Korea has been the pioneer in third generation mobile, with the introduction of the *CDMA EV-DO* standard and later HSDPA. A quarter of subscribers are equipped with 3G, with maximum theoretical downlink speed of 28 Mbps and 11 Mbps uplink in the 2.5 GHz frequency band.

**South Korea switched from CDMA to HSDPA in April 2006 after KT's decision to adopt the new standard.**



**Mobile touch for mobile payment launched by SKT and now offered by all operators.**

**Two mobile TV systems co-exist in South Korea: S-DMB pay-TV and free to air T-DMB.**

### HSDPA

The MIC has awarded two *UMTS* licences. This political decision was aimed at giving Korean manufacturers a leg up to support their GSM equipment export capacity, particularly in Europe. The reality is that, although initially undertaken with reluctance, the deployment of these UMTS networks and their associated services has shifted to a considerable degree to systems based on European mobile standards.

This new strategic direction follows the April 2006 decision from KTF which, having been unable to wrestle the leadership back from SK Telecom with CDMA, chose to convert its network from *CDMA-1-EVDO* to *HSDPA* (ultra-fast version of UMTS).

The new generations of HSDPA mobile equipment appear to be reviving market momentum, as has been the case for KTF whose 3G operations have just reported the highest growth rate in the world by marketing primarily single mode handsets. KTF has gained a solid foothold in the 3G market, acquiring 610,000 new subscribers since the launch of its 3G videophony service in March 2007.

The acquisition of these new customers has been primarily at the expense of LG Telecom which does not yet have a 3G licence and is developing a 2G network in CDMA. KTF has announced that 50% of its subscribers will have switched to HSDPA by the end of 2008 and 100% by 2012.

### Mobile TV

Mobile TV has been developing since the KBC awarded licences to the channels. Two systems co-exist in South Korea: *Satellite-DMB* pay-TV and free to air *Terrestrial-DMB*.

The KBC awarded a single S-DMB satellite transmission licence to TU-Media Corp., an SK Telecom subsidiary which launched commercial services in May 2005 with a pay-TV offer marketed by the mobile operator. The service currently has a base of 1.12 million subscribers, and includes 37 channels, of which 11 video channels and 26 radio stations.

Traditional broadcasters using T-DMB terrestrial relays in the VHF (174~216 MHz) frequency bands followed in December 2005. Six free to air operators were authorised to launch a commercial service financed by advertising. These services have attracted 4.2 million Koreans, allowing them to watch TV on their mobile, their laptop computer or in their cars, for an average one to two hours a day.

Although the technology itself is a success (Korean DMB is exported to China), the services have difficulties to find the road to profitability. TU Media

exceeded the one million subscriber mark at the end of 2006, at the cost of a series of adjustments, but its T-DMB service is struggling to turn a profit.

### Emerging Wireless local loop: WiBro

In January 2005, the MIC awarded two, 7-year *Wireless Broadband (WiBro)* licences. WiBro is a point-to-point wireless technology, and the Korean equivalent of the 802.16<sup>e</sup> standard; it is WiMAX compatible and enables a theoretical bitrate of 30 Mbps over a distance of between one and five kilometres.



**The Samsung Deluxe MITs, the first WiBro device in South Korea equipped with Bluetooth. The screen measures 12.7 cm diagonally, and pivots 270°. It is equipped with a 1 GHz CPU (Central Processing Unit) graphic microprocessor and a 30 Gb HDD (Hard Disk Drive) with Microsoft Windows XP installed.**

The licences were awarded to KT and SK Telecom, with the aim of encouraging the deployment of mobile broadband on the local loop. Hanaro was also awarded a licence but the operator put an end to its projects and handed back its licence in April 2005.

KT began developing its infrastructure by installing gap fillers in *Time Division Duplexing (TDD)* mode back in 2002. Since the accreditation of the WiBro system of standards by the *Telecommunication Technology Association (TTA)* in June 2004, and by the *Institute of Electrical and Electronics Engineers (IEEE)* which recognised it as a mobile system in December 2005, KT has been banking on this third technology to strengthen its presence in the broadband market.

The system supports *Orthogonal Frequency Division Multiplexing (OFDM)* and *Multi-Input Multi-Output (MIMO)*, which are planned for new generation mobiles. The first WiBro mobile Internet prototype appeared in January 2005 and the first trials were conducted in November of that year in Busan, South Korea's second largest city after Seoul. KT's WiBro service was launched in June 2006 and, by April 2007, had been widely deployed in Seoul.

Commercial success thus far has been modest, accounting for only 5,000 subscribers, but KT predicts that its popularity will grow thanks to an unlimited offer with a monthly subscription at a promotional rate of 19,800 KRW (roughly €16).

According to KT, WiBro network capacities exceed those of mobile networks, while enabling better coverage and the use of longer range and less costly base stations. The service offers Internet data transmission speeds of between 1 and 3 Mbps on a mobile that can be travelling at speeds of up to 120 km/h, for multimedia applications, online gaming and file management.

A first series of three million devices called *Deluxe MITs*, which are equipped with a *Personal Computer Memory Card International Association (PCMCIA)*, will be supplied by Samsung by the end of the year. These devices will be sold for 1.8 million KRW (€1,455) and will be compatible with a separate KT WiBro mobile which supplies voice and message functions.

An intensive marketing campaign for KT WiBro is being conducted from June to August 2007.



### III - MARKET REGULATION AND CONVERGENCE

#### Complex regulation

The four main texts that rule the telecommunications sector in South Korea are:

- the *Framework Act on Telecommunications* concerning the role of the State;
- the *Telecommunications Business Act* on licences and their terms;
- the *Promotion of Utilization of Information and Communications Network Act*;
- and the *Radio Waves Act* concerning the radio spectrum.

**FBO licences awarded**

Type of licence	Operators
Local	KT, Hanaro Telecom
Long distance	KT, Dacom, Onse Telecom
International	KT, Dacom, Onse Telecom
Mobile	KTF, SK Telecom, LG Telecom

Two ministries are responsible for regulating South Korea's electronic communications sector, the *Ministry of Information and Communication (MIC)* for the networks, and the *Ministry of Culture and Tourism (MCT)* for content. The Korean competition authority, the *Fair Trade Commission (KTC)* and the *Korean Communication Commission (KCC)* are the other two institutions involved in market regulation. The MIC is in charge of the majority of the telecommunications sector's regulation – issuing the licences, negotiating and controlling SMP operator tariffs and managing telecommunications and audiovisual spectrum.

**Top Korean ISPs:**

- **Korea Telecom (KT)**
- **Hanaro-Thrunet**
- **Onse**
- **Dacom-Powercomm**

Korean regulation distinguishes three categories of telecommunications service providers, namely:

1. *Facilities-based telecom service providers (FBO)*. This category is composed of operators that own their infrastructure and provide basic services. They are the equivalent of network operators in France.
2. *Special telecom service providers (ST)*. They are the intermediates between the FBO and all other firms that offer telecommunications services.
3. *Value-added telecom service providers (VAS)*. These are the providers of services not included in categories 1 and 2, and are only required to make a declaration to the MIC.

The *Telecommunication Business Act* was amended in 2000 to clarify the respective roles of the FTC and the MIC. The amendment specifies the role of the FTC, which must not impose penalties or additional restrictions on operators for the same transgression, regardless of the penalties imposed by the MIC.

On the other hand, the FTC does have the power to impose penalties on operators for a given transgression, if the reasons raised for the penalty are different from those raised by the MIC.

The two regulators have signed a *Memorandum of Understanding (MOU)* stating that application of the *Telecommunication Business Act* prevails over the *Fair Trade Act*, to enable equal access to essential network infrastructure based on procedures which have been defined jointly by the two regulators.

Should a conflict between the two agencies and operators arise, the two regulators can intervene.

## Regulatory experience and the search for greater consistency

**A high commission under the aegis of the Prime Minister for mandated to make proposals regarding new regulation**

The application of regulation in South Korea has revealed its limitations, and has led the government to seek greater consistency in the regulation governing a sector that is evolving rapidly towards the convergence of telecommunications and audiovisual media.

The overlap of several regulators that are basing their respective decisions on different acts of legislation, such as the *relevant communications acts* and the *market competition acts*, raises a problem – hence which the Korean government’s drive to reform the institutional mechanisms.

In the media sector, the MIC shares its powers with the *Korean Broadcast Commission (KBC)*, which is in charge of regulating the broadcasters and content with the MCT. The KBC awards licences to content operators, referred to as *Multi-System Operators (MSO)*, such as the *Educational Broadcasting System (EBS)*, *Korean Broadcasting System (KBS)*, *Munhwa Broadcasting Company (MBC)* and the *Seoul Broadcasting System (SBS)*. The licences awarded to TU-Media for developing mobile satellite TV channels (S-DMB) were thus issued by the KBC, and the spectrum by the MIC.

The KBC’s refusal to award licences to develop IPTV services – in order to protect cable operators which were deemed too weak to compete effectively – at a time when services are crucial to the development of FTTH networks, has been widely criticised by the operators.

The difficulties encountered when implementing mobile TV projects, the debates over IPTV, and the frequent overlaps in the past between the different regulators, drove the South Korean government to mandate a high commission on regulation in July 2006: the *Convergence Promotion Consultative Committee*, under the aegis of the Prime Minister.

The Committee in charge of making proposals regarding the institutional organization of regulation in a context of convergence. A collegial organisation, which would bring together the various regulatory bodies of the KBC, the KCC and the FTC in the communications sector, could be created by the end of the year if the Korean government and Parliament ratify the Committee’s proposal.

## CONCLUSION

The visit of the member of the ARCEP Board helped further consolidate the already strong ties between the French regulator and Korean authorities, with a real desire expressed to maintain regular interaction.

The open and frank discussions with Korean representatives helped deepen understanding on both sides of the table concerning broadband development in the two countries. It also helped anticipate the challenges posed to regulation media convergence for both fixed and mobile markets, at a time when institutional regulatory reforms appear both imminent and urgent in South Korea.



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