LA SOCIETE DE L'INFORMATION : COREE

Le centre de gravité de la Société de l'Information s'est déplacé vers l'Asie. D'ailleurs, en 2004, la décision a été prise de délocaliser la prochaine édition du salon quadriennal mondial Telecom*, de Genève à Hong-Kong.*

La Corée jouit d'une position exceptionnelle à la fois dans les télécommunications fixes et mobiles, internet et les applications.

Nous sommes très reconnaissants au Prof. Myeong-Cheol Park, (Information and Communications University, Taejon, Corée du Sud), qui effectue en 2004/2005 un séjour sabbatique à l'INT, d'avoir bien voulu tracer un portrait des télécommunications coréennes pour ce chapitre. De brefs encadrés apportent des informations complémentaires sur l'actualité coréenne de 2004.

La Corée du Sud en très bref

Population : 47,9 millions

Superficie : 98000 km^2 Densité : 483 habitants/km^2

PIB : 858 milliards de $ PIB/habitant : 17800 $ (2003)

Taux de croissance économique : de l'ordre de 4 % en 2004

Espérance de vie à la naissance : 75,6 ans

Capitale : Séoul (22,4 millions d'habitants)

1000 won = 0,706 € (1-1-2005)

Source : INSEE, CIA

Telecommunication Service Market in Korea: Current Status and Prospects

Myeong-Cheol Park

Introduction

The landscape of existing industry structures has rapidly changed due to recent IT technology developments. The technology evolution in the worldwide telecom service market has triggered a rapid wave of convergence that has blurred the boundaries between the different market segments: fixed-line versus wireless, voice versus data, and telecom versus broadcasting. Korea is no exception. The fixed-line telecom service market has reached saturation with its voice call market being replaced by mobile phone service. Mobile phone service, once looked promising with its plan of IMT-2000 service and wireless Internet, is now seen as only a new future revenue stream. With its mobile subscribers reaching a plateau at 33.6 million subscribers, however, the new subscription base in mobile telecom service is bound to slow down. Competition is bound to be further intensified among telecom operators in the wave of privatization, the two major fixed-line operators, KT and PowerComm. All indications are emerging as a sign of M&As to take place among operators in an attempt to increase competitiveness. Internet telephony is expected to boost its user base, thanks to its competitive price and improved voice call quality.

The Korean government is set to take steps towards making the nation the world best place to use fixed-line and wireless telecom services, while it has also taken action to enhance the competitiveness of its telecom service operators. First, it plans to improve a system for fair competition to take place effectively among operators. Second, it plans to increase the user conveniences by making services affordable and more convenient to use. Third, to reverse the stagnancy in the fixed-line and wireless service market, it plans to encourage M&As by improving entry and liquidation system and introducing new telecom services. Fourth, it plans to streamline the legacy of laws and institutions for operators to better cope with the changes in the telecommunication market environment[1].

This paper briefly sketches the current status of telecommunication service market in Korea and its prospects. In particular, we describe the classification system of telecommunication service operators and their recent market developments. Also we discuss the major policy issues and emerging services development in the near future.

Current Status of Telecom Service Market

Telecom Operators

Facilities-based telecom operators

As of the end of 2003, there were 33 facilities-based telecom operators who have deployed telecommunication lines and facilities, and provided services using these

[1] Ministry of Information Communications, Republic of Korea,
White Paper 2003 : *Broadband IT Korea*

facilities. In particular, there are 2 local, 4 long distance, and 5 international wireline-service operators. And there are also 1 cellular and 2 PCS operators for wireless telephone service.

Resellers

Since the signing of the basic telecom agreement at WTO in February 1997, resale service has been launched in Korea. Bolstered by the enterprise drive to upgrade in-plant local-area networks (LANs), the resale service has been offered as part of the policy efforts to increase the user conveniences. In Korea, there are three categories of telecom resellers. Some operators are leasing facilities from the facilities-based operators and provide facilities-based telecom services. As noted in Table 1, these operators are classified as category I or category II operators: if these operators own their independent switching equipment within the customer's premise, these operators are classified as category I operators. If they do not own their independent switching equipment, these operators are classified as category II operators. Meanwhile, another group of operators deploy in-plant facilities at the customer premise, and provide telecom services using their own independent in-plant facilities: these operators are classified as category III operators.

Table 1. Classification of reseller operators

Category	Services	Telecom Facilities	Service Items
Category I	Facility-based telecom services	Operators with leased facilities	Voice resale, internet telephony, call-back, resale of international leased line
Category II		Operators without independent facilities	Aggregation, rebilling, internet telephony, resale of international leased line
Category III	Telecom services	Operators with their own in-plant facilities deployed	Premise telecom service, telecom service between inside and outside enterprise

Source : Ministry of Information and Communication (MIC)

Value-added communication operators

Some operators in the value-added communication service market are leasing lines from facility-based operators, while some of them are using a mix of their own lines and leased lines to provide various value-added services. Transmission is the basic function of telecom service. Value-added service operators combine the transmission function with computation functionality to create a variety of value-added services - circuit switched network, code conversion, telecom speed conversion, amassment & transmission of information, media conversion, computation processing, database-based delivery of information, etc. There are few entry barriers, as it takes only reporting to the government for operators to provide such various services as network service, value-added telecom service, online information processing, voice telephone information, fax of high-functionality, etc. Lately, value-added service operators are extending their business territory in the wave of convergence of information, telecom and broadcasting. The number of newcomers into this market is on the rise.

Facilities-based Telecom Service Market

Fixed-line telecom service

As of the end of 2003, the number of fixed-line subscribers in Korea reached 25.59 million, and the fixed-line penetration was 53.4 per 100 persons. KT accounts for 95% of the fixed-line telecom market with the remainder covered by Hanarotelecom. KT controls the largest market share in the long distance call service with the remainder shared by Dacom, Onse Telecom, and Hanarotelecom. In Korea, there are five basic telecom operators competing with one another in the international call market. KT once held a monopoly before Dacom and Onse Telecom joined the market.

Lately, Hanarotelecom and SK Telink entered the market in December 2002, and June 2003, respectively. Telecom resellers have entered the international call market since 1998, and have eroded into the market against the incumbents, although the market erosion by newcomers is limited, due, in large part, to lagging voice quality. By sales revenues, the market share taken by telecom resellers in the international call market has gradually increased from 18.9% in 2001 to 21.2% in 2002 and 26.4% in 2003. Meanwhile, KT saw a reduction of its market share by 6.6% to 39.7% in 2003 year to year. Onse Telecom also saw its market share reduced by 0.1% to 11.9%, and Dacom increased its market share by 2.3% to 18.2% during the same period.

The number of public telephone booths reached its peak at 560,000 in 1999 and has, since, dropped to 370,000 or 7.8% penetration rate in 2003. The rise in the mobile phone subscription must have been cannibalizing the public phone penetration. But the penetration rate itself in the public booth phone market is hovering above the rate of western nations.

The domestic leased line service was dominated by KT and Dacom since 1994, but starting from the entry of Thrunet in 1996, a total of 12 providers were granted a business license. As for the international leased line market, KT and Dacom have maintained a monopolistic position since 1992, but with the entry of Onse Telecom in 1997, all 14 licensed providers are competing with each other. Driven by the growing demand in data communications since 1996, the leased line service market has rapidly grown focusing on high-speed leased lines. As a consequence, its sales revenue recorded an 8% increase year-on-year to 2.2 trillion won in 2003.

As of the end of 1998, the number of subscribers to broadband Internet connection stood at 13,800 following its launch in June 1998. Its subscribers surged to 11.18 million in late 2003 up from 10.4 million over the same period previous year. The explosive growth has slowed from 10.4 million at the end of 2002 to 11.1 million in June 2003 with a slight increase of subscribers in 2003. This is seen as a sign of saturation occurring in the broadband Internet access market. Meanwhile, the value of the broadband Internet access market in Korea has jumped from 36.5 billion won in 1999 to 2.14 trillion won in 2001, to 2.95 trillion won in 2002 and to 3.48 trillion won in 2003.

Wireless Telecom Service

Mobile phone service

As shown in Table 2, the share held by SK Telecom (SKT), the only cellular operator in the mobile phone market once, slipped to a low of 49.7% in June 2001 due to the government regulation that required the biggest operator, SKT, to lower market share to 50% or less as the condition for allowing its merger with former cellular phone operator Shinsegi Telecom. Following the merger, however, the market share of the SKTShinsegi team resumed its upward growth in the mobile phone market. At the end of 2003, SKT's subscribers increased 6.34% to 18.31 million, taking up 54.5% of the total.

Table 2.
Trends of cellular mobile service market in Korea

Year	1999	2000	2001	2002	2003 (P)
Sales revenue (Bn Won)	5,277	7,281	7,794	8,634	8,938
Number of facility lines (1,000 lines)	21,100	23,021	43,869	33,305	33,305
Number of subscribers (1,000)	13,349	14,453	15,179	17,220	18,313

Source: Ministry of Information and Communication (MIC)

As shown in Table 3, the number of PCS phone subscribers in Korea reached 15.28 million at the end of 2003, representing an increase of 10.3% from the previous year, following its launch in October 1997. In June 2000, the subsidy ban became effective, and two cellular operators were consolidated into one. In the wave of these changes, PCS operators improved their profits. In June 2001, the PCS subscribers surpassed the cellular subscribers for the first time with 50.3% of market share for PCS subscribers, but later fell again to less than 50%. As of December 2003, the PCS subscribers accounted for 45.5% of the mobile market.

Table 3. Trends of PCS service market in Korea

Year	1999	2000	2001	2002	2003 (P)
Sales revenue (Bn Won)	33,82	4,825	5,712	6,374	6,960
Number of facility lines (1,000 lines)	11,104	16,204	23,030	23,030	23,030
Number of subscribers (1,000)	10,094	13,088	13,866	15,122	15,277

Source: Ministry of Information and Communication (MIC)

L'année 2004 dans les télécommunications en Corée

Elle a surtout été marquée par de nombreuses difficultés pour les opérateurs mobiles dues à la hausse des coûts d'interconnexion, aux effets significatifs de la portabilité des numéros mobiles et à une attitude dure du régulateur qui a imposé de nombreuses sanctions (amendes, voire même suspensions des offres commerciales pour manquement à la règle de non-subvention des achats de mobiles). Le leader SK, qui célébrait ses 20 ans en 2004, termine l'année avec une part de marché en légère baisse (de l'ordre de 51 %), suivi par KT (filiale de l'opérateur historique) à 32 % et enfin LG, en hausse à 17 %.

SKT-led consortium named SK-IMT and KT-led consortium named KT-icom were designated later in 2000 as the licensed operators of IMT-2000 on W-CDMA technology. In August 2001, LG Telecom was designated as the licensed CDMA2000 operator. So the government has licensed three operators for 3G IMT-2000 service - two operators on the W-CDMA technology and one operator on the CDMA technology. TV programs were edited into a shorter video streaming service available for KT-icom subscribers during the 2002 World Cup. KT-icom offered a video phone mail service, where users could take a snapshot and send it as an email through their mobile phones. Simulation events for IMT-2000 service were held at World Cup stadiums and World Cup plazas in Seoul, Busan, Inchon and Gwangju.

Wireless Internet service

As of the end of 2003, wireless Internet service, which was launched in the second half of 1999, has acquired 31.4 million subscribers, accounting for 93.5% of the total mobile penetration rate. This figures an increase of 31.6% from 23.87 million wireless Internet users in 2001. The increase rate of wireless Internet users doubles that of the mobile subscribers. Among these wireless Internet users, there were 29.8 million Internet users in 2003 who owned WAP/ME/Brew-enabled mobile phones, representing an increase of 14.7%, compared to one year earlier. Meanwhile, there were only 1.63 million Internet users in 2003 who owned the ISMS mobile phones, which allow some basic data telecommunications, compared to 3.1 million ISMS mobile phone users in 2002. So the browser-based mobile subscribers accounted for 94.8% of the total mobile subscribers.

Resale Service Market

As of December 2003, the breakdown of telecom resellers were 47 operators registered under its category I, 340 under its category II, and 44 under its category III, bringing its total to 431 operators (or 384, if some operators who are operating businesses across two categories are excluded or counted singly).

Switched resale service

Telecom resellers under its category I have deployed their independent facilities (switching equipment) within the customer premise, and by using their own facilities, they provide resale service for local calls, long distance calls, and international calls, as well as Internet telephones. The service is offered through the connection of public network with leased lines. As of the end of 2003, there were 47 operators under its category I segment, representing 10.9% of the total number of telecom resellers. These 47 operators break down into 84.3% for voice resales, 10.4% for Internet phones, 0.2% for international callback phones, 5.1% for resales of international private leased lines. Among the voice resales, resale of international call service was the largest revenue generator with its sales revenue of 253.7 billion won, while resale of local calls and long distance calls was the fastest revenue growth with its revenue growth of 239.2% in 2003 year on year.

Switchless resale service

Telecom resellers under its category II are allowed to provide resale service without owning their switching equipment. So the entry barrier is lower for category II operators than it is for their counterparts in category I or category III. As a result, the number of category II operators steadily increased to 340 in 2003,

Information and Communications University (ICU)

La décision a été prise en 1996 dans le cadre du *Plan for a National Information Infrastructure* d'établir une institution d'enseignement supérieur et de recherche dans le domaine des TIC en Corée. ICU a été fondée par le Ministère de l'information et de la communication et ETRI (*Electronics and Telecommunications Research Institute*). En 1998 entre une première promotion de 114 étudiants avancés. En 2001, le cursus “undergraduate” de ICU ouvre à son tour.

ICU comprend deux divisions principales. L'école d'ingénieurs (*School of Engineering*) compte 607 étudiants, dont 139 doctorants. L'école de management (*School of IT business*) a 167 étudiants dont 22 doctorants. Le personnel d'ICU comprend 130 personnes, dont 91 enseignants-chercheurs. Le ratio étudiants/enseignants est donc extrêmement bon, ce qui permet une individualisation de l'enseignement ainsi que le développement de la formation par la recherche.

Par ailleurs, ICU a été doté d'équipements de pointe. ICU a noué des liens avec de nombreuses institutions, du MIT (établissement du Media Lab East) à l'INT…

ICU est situé dans la ville de Taejon, agglomération de 1,2 millions d'habitants à environ 160 km au sud de Séoul.

http://www.icu.ac.kr

representing 78.8% of the total number of special category telecom operators, and their revenues reached 572.9 billion won in 2003, making up 49.2% of total revenues in resale service. By resale categories, the billing service generated 394.1 billion won (68.6% of total), aggregation service generated 148.7 billion won (26.0% of total), and

Internet telephones generated 31.2 billion won (5.4% of total sales revenue generation in the resale service market).

Premise telecom service

Telecommunications operators under its category III deploy switches and LAN telecom facilities in premises, and they provide a comprehensive range of telecom services by using these facilities. As of the end of 2003, there were 44 providers registered as the premise telecom service providers, representing 10.2% of the total number of the resale service providers. The sales revenues of these premise telecom service providers stood at 149.6 billion won, representing 12.9% of total revenues in the resale service market. There is a serious polarization between bigger providers and smaller peers in this category III of the telecom market, compared to the category I and category II. Most of these providers who belong to the category III were running in the red but were facing improved profit prospects given the increasing number of big buildings or apartments that will be laid with broadband Internet access network. On the other hand, the optimism about its profit prospects is seen as elusive, given its high-cost business structure for deploying telecom facilities.

Value-added Communication Service Market

Operators in the value-added communication market are leasing lines from facilities-based operators. Some of these operators are using a mix of their own lines and leased lines to provide various value-added services.

Network service

In 2003, the sales revenue in the network service stood at 462 billion won, representing a decrease of 9.3% from one year earlier. Meanwhile, the sales revenue in data circuit resale has surged by 191.1% to 36.6 billion won in 2003 year-on-year, and the growth of the VPN service market was also noticeable.

Internet access and its management service

The Internet access and its management service market has been stagnant since 2000. And fierce competition among telecom operators led to tariff reduction and no charge for installation As a result, despite an increase in subscribers that amount to 42.84 million, the sales revenue slipped by 8.5% to 822.5 billion won over the previous year. The fall was the steepest, in particular, for personal computer communication service, as its sales revenue plummeted by 80.4% year-on-year to 37.3 billion won in 2003. Sales revenue for ISP service has slightly grown 9.9% to 379.9 billion won in 2003 year-on-year.

Value-added application service

The market size of the value-added telecom application service has almost doubled each year during the period from 1995 through 2003. In 2003, its sales revenue stood at 2.58 trillion won, up 25.9% from the previous year. The information service over the wired network showed a sharp growth of 4.3%, recording approximately 1.46 trillion won while the service over the wireless network reached 186.5 billion won.

Online information processing service

There are online trust computation (data processing) service and computer power delivery service, etc. in the online information processing service that began in 1995. The share of this service in total value-added service is very small, with its 91.3 billion won of sales revenue in 2003, or a decrease of 26.7% from one year earlier.

Prospects: Issues and Emerging Services

Policy Issues

As the telecom market is entering its maturity stage, there arises concern about the competitive market structure in the fixed-line and wireless telecom. The current set of the government policies was designed to fit the growth phase of the telecom market. So the government has become aware of the need to seek a different set of policies for bolstering competition that fits the maturity stage of the telecom market. Hence, the government has established the new policy directions designed to increase the competition as follows.

First, the government improved the system for the local loop unbundling and provision of telecommunication facilities so as to allow newcomer operators to utilize incumbents' telecom facilities. The government introduced the fixed-line number portability as well as mobile number portability in 2004. These measures are aimed at boosting competition by allowing newcomers to share facilities with the existing providers.

Second, the government plans to re-classify the category of the broadband Internet access service from the current category of value added telecom service to the new category of common carrier telecom service. The government seeks measures to increase the effectiveness of the open mobile network. These measures are designed to prevent the incumbent leaders in the fixed-line and wireless telecom market from becoming the leaders in the newly-formed telecom market.

Third, the government plans to apply the differentiated pricing structure for using two different frequencies for mobile telecom service, given the differences in frequency features between 800MHz for cellular service and 1.8GHz for PCS service. The government will consider taking new steps toward increasing the competition in the land-tomobile (LM) market, while also considering the introduction of MVNO (Mobile Virtual Network Operator) system. The government will make a regular assessment on the competition situation in the telecom market and will draw up necessary policies to bolster the competition in the telecom market.

Emerging Services

The government has moved forward with its plan for commercializing the 3G IMT-2000 service on 2GHz, with its launch in 2003 of initial coverage for Seoul. Its coverage is scheduled to extend to major cities nationwide by 2006. There is a growing interest in the wireless broadband access to Internet for people who are using Internet both on the road and at home. Hence the government plans to develop these new services to meet the growing demand, along with its user protection system.

Un champion volontariste

Le ministère de l'Information et de la Communication (MIC) a publié plusieurs plans de développement des TIC dans le pays. Citons parmi les plus récents :

- E-Korea Vision 2006 (2002)
- White paper : Broadband IT Korea
- IT 839 Strategy (2003)

Ce dernier rapport décrit comment atteindre l'ambitieux objectif de doublement du PIB/habitant d'ici à 2010 (20000 $ contre 11000 $ en 2003). 839 fait référence aux 8 services, 3 technologies de réseaux et 9 applications des technologies à développer dans ce cadre. WiBro, DMB, Home Network Service et VoIP sont naturellement les fleurons du plan 839.
http://mic.go.kr

WiBro (Wireless Broadband) Service

Wireless Broadband service refers to portable Internet service which provides Internet connectivity anytime anywhere even when a user is on the move not to mention at standstill. With the wired/wireless telephone and broadband Internet markets reaching a saturation point, portable Internet service is emerging as a next-generation growth engine in the telecommunications market. In line with this, the government announced recently that three operators have been selected for licensing. The commercial service will begin in 2006. The introduction of portable Internet is expected to create 300 trillion won worth of market, 8 million subscribers and jobs for about 40,000 persons by 2010. This service is expected as a new revenue source replacing matured broadband wireline market.

DMB (Digital Multimedia Broadcasting) Service

DMB Service is to provide a clear broadcasting service through mobile TV, PDA and mobile phones based on an excellent mobile reception feature. In other words, it provides various contents including music, text, and pictures through mobile TV, PDA and mobile phones. The government is trying to introduce the commercial service of DMB to cope with the demand of people for multimedia broadcasting, which can provide high quality voice and picture at anytime and anywhere, and to give a boost to digital broadcasting equipment business and contents business. Also it plans to foster this service as the worldwide industry like CDMA terminals by developing and commercializing terrestrial DMB transmitting and receiving technology for the first time in the world. More specifically, it plans to provide satellite DMB and metropolitan area terrestrial DMB broadcasting in 2005, and provide them in 2006 for other areas.

Home Network Service

Home Network is an essential service required in the future home environment which provides various services without the restrictions of equipment, time, and place, by connecting information electronic appliances to the network. Also it's a very big service industry which has a broad effect on creating new demand for related industries by combining telecommunication, broadcasting, construction, electronic appliance, solutions, and etc. The government plans to advance into the world home network market actively, which is estimated to be a $102.6 billion market in 2007, by providing home network for 10 million homes, 60% of the total homes in 2007, starting from 0.5 million homes in 2004.

RFID (Radio Frequency Identification)-based Service

RFID means a sensor technology which detects the surrounding information and checks some data of an object using wireless communication technology after attaching some electronic chip. It's expected to be utilized actively in various areas ranging from groceries, the control of livestock & waste, environment, security, logistics and distribution. Therefore the government plans to allocate additional RFID frequencies and induce the key technology and systems development of active/passive RFID in

2005, sensor type RFID in 2007, and ubiquitous sensor network in 2010. On the other hand, it will support the creation of the environment which can develop semi-conductor chip material, production, process & packaging technology and ultra small sensor convergence technology to lower RFID price and minimize the size. By connecting this kind of technology development to the IPv6 address systems and ISO Standards Identification Code, the service can be used in the ubiquitous environment. At the same time, the government will maximize the synergy effect by connecting the new growth industries like Telematics, home network and etc.

W-CDMA Service

W-CDMA service is an IMT-2000 service which provides not only voice service but also high speed data and picture service using 2GHZ frequency. The government established the base for a full service by supporting unlimited data service, inducing W-CDMA investment of telecommunication operators, etc. after the start of commercial use at the end of 2003 to keep the wireless leader image formed by 2nd generation CDMA. The government plans to stabilize W-CDMA service in Seoul and the metropolitan area until the end of 2004 and develop it balanced with CDMA service from 2005. Also a W-CDMA working group will be organized to strengthen the competitiveness of the domestic W-CDMA industry. The group will discuss domestic and overseas market trends and technological & business issues to cope with these actively. The active advance by domestic companies into the world W-CDMA market, which will be formed mainly in Europe and Japan, is expected.

Internet Telephony (VoIP)

Upon the completion of Internet backbone and the spread of high-speed Internet, Internet telephony which can offer a low priced telephone services emerged. Internet telephony, which changes the voice signals into packets to provide the service on the Internet, is expected to carry out the key role in constructing the convenient telecommunication environment by combining teleconference, multimedia and settlement service, etc. It is emerging as a Killer Application of BcN which is the base of All-IP. The government will make a turning point in terms of systems for All-IP telephone including classification of the service, allocating called numbers, securing phone-level voice quality and etc by 2010. Coupled with this, the government plans to promote Internet telephone development policy including equipment and software-based on the success of the best broadband infrastructure Internet telephony service in the world.

Samsung et LG Electronics

La Corée du Sud abrite deux géants de l'électronique, Samsung et LG qui présentent des profils relativement différents. Si les deux sont présents sur le marché des mobiles et des écrans, Samsung a une très forte implantation dans la micro-électronique alors que LG est opérateur mobile en Corée.

Samsung a connu une année 2004 très faste. Non seulement il a dépassé Motorola pendant un trimestre sur le marché des mobiles, devenant de ce fait provisoirement le numéro 2 mondial, mais ses résultats financiers annuels sont très satisfaisants. Samsung annonce pour 2004 des ventes de l'ordre de 41 milliards d'euros et un profit net de 7,6 milliard d'euros.

LG Electronics est beaucoup plus petit que Samsung, mais l'entreprise a quand même vendu 44 millions de mobiles dans le monde en 2004 ! Le chiffre d'affaires de LG s'est élevé à 17 milliards d'euros pour un profit de 1,1 milliards d'euros en 2004. Fin 2004, LG a annoncé l'installation de son centre de recherche européen sur la téléphonie mobile dans la banlieue parisienne.