



2012

# Korea Internet White Paper



# Notice

- The feature story and the Top 10 News on the Internet contained in this White Paper have been selected through discussion by the editing committee, which is composed of experts drawn from the industry, academia, research institutes, and the government.
- The numbers in the statistical tables and diagrams have been rounded off for the sake of convenience, and thus the sum of specific items may not always correspond with the total.

## Message from the Chairman of KCC



Chairman of the KCC  
**Kyecheol Lee**

It is now thirty years since the Internet was introduced in Korea. With the catchphrase of “We lead the Informatization Age despite having been late in industrialization,” Korea has developed into an Internet power, having quickly passed through the PC communication era in the 1990s and the Broadband Internet era in the 2000s.

Now, some 40 million people, the great majority of the Korean population, are using the Internet. Furthermore, the Smartphone has achieved the most rapid penetration rate in the world, with 6 out of every 10 Koreans now using a Smartphone. Notably, Korea has established a world-class network, and has been ranked 1st in the ITU’s ICT Development Index for two consecutive years.

‘Gangnam Style’ has gained international popularity through YouTube, showing the power of the open market of the Internet. In the future, everything around us will be connected to the Internet and each and every person will hold the Internet in their hands in what will be a totally new world. To exploit such change as an opportunity, we must not spare any policy efforts to lead the market.

We will establish an advanced network capable of providing commercial services at Giga Internet speed, i.e., ten times faster than now, and focus on fostering new ‘smart’ industries including Cloud, M2M and NFC. In addition, we aim to widely promote the next-generation Web standardization technology HTML5 to enable everyone to access the Internet with any device, and provide every possible support for small and medium-sized venture companies with innovative ideas so they can establish themselves easily and advance into the global market.

Now is a time to take one step forward from simply understanding the Smart Revolution to envisioning what will come after that, and thus I sincerely hope that the ‘2012 Korea Internet White Paper’ will serve as a precious resource that shows the latest domestic and overseas trends of the Internet and points the way for future development of the Internet. Lastly, I would like to extend my gratitude to all those who have worked so hard for the publication of this White Paper.

October 2012

Korea Communications Commission, Chairman

Kyecheol Lee

*Kye Cheol Lee*

## Publisher's Message



President of the KISA

**Kijoo Lee**

It has been thirty years since the introduction of the Internet, and 78% of the Koreans are now using the Internet through the world's best Internet infrastructure. Furthermore, Korea has consolidated its status as an 'Internet Power' by taking 1<sup>st</sup> place in the household penetration rate of the Broadband Internet and the penetration rate of mobile broadband as announced by the OECD.

Now the world is entering the new 'Smart Age' in earnest, and Internet-based fusion is being accelerated. The Korean government is implementing diverse policies aimed at enhancing the status of Korea and its well-arranged infrastructure, and KISA (Korea Internet & Security Agency) is making every effort to create a future society with the Internet by promoting the Internet industry and the related culture, dealing with Internet infringements, protecting private and public information, and promoting international cooperation.

As the 13th White Paper, the 2012 Korea Internet White Paper includes 'The 30-Year History of the Internet', which looks back at the Internet's existence in Korea over the last thirty years, and a feature story on Big Data, International Ethics, Mobile Instant Messenger, and HTML5, reflecting the latest changes in the Internet environment. In addition, 'Part 1: Infrastructure' deals with the infrastructure, resources, and technological trends of the Internet. 'Part 2: Service' addresses Internet services, businesses, fusion services, and so forth and 'Part 3: Utilization' presents data on the Internet industry, domestic and overseas usage of the Internet, activities designed to promote the Internet, and the related laws.

I hope that this White Paper will serve as a basic material for policy establishment and an aid to the research being conducted by various people who are making efforts to promote and develop the Internet in Korea. Finally, I would like to express my heartfelt gratitude to the writers, editors, and proofreaders in each area who have participated in the publication of the 2012 Korea Internet White Paper.

October 2012

Korea Internet & Security Agency, President

**Kijoo Lee**

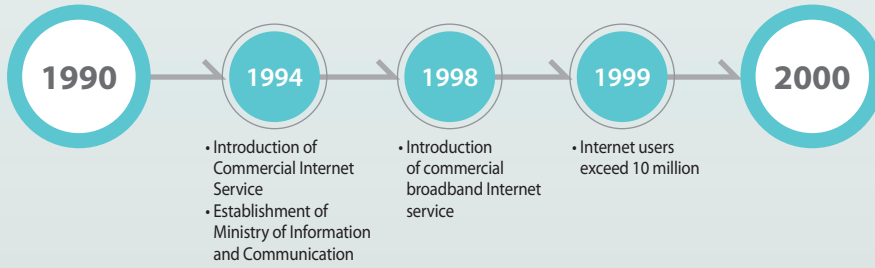
A handwritten signature in black ink, appearing to read 'K. J. Lee', written in a cursive style.

# Korea Internet History

Since establishing the SDN (System Development Network) in 1982, Korea Internet started off on its miraculous growth with commercialization of services in 1994 and opened up an era of 10 million broadband connections in 2002.

Thereafter, Korea's status as an Internet power was reconfirmed with the launch of the world's first commercial WiBro and HSDPA services, and Korea is now making efforts to realize the World's best smart advanced nation with LTE services and such like.





## 1990~1993

1990

- Connect SDN-HANA to USA IP based Internet

1993

- Open administration information network (NATISNET)

## 1994~1996

1994

- Introduction of Commercial ISP (KT, Dacom, iNet)

1995

- Establishment of PC-Internet connection
- Implementation of KIX Service

1996

- Open ISDN public network

## 1997~2000

1997

- Start leased line service
- Start high speed national network Internet service
- PC communication subscribers exceeds 3 million

1999

- **Internet users exceed 10 million**
- First assignment of IPv6 address

2000

- Open commercial ATM exchange network
- Establishment of Korea ISP Association (KISPA)

1991

- Start online issue service of resident registration documents

1994

- **Introduction of commercial Internet service (KT)**

- Start text based MUD game service
- Open government authorities websites (Blue House, etc.)

1995

- Start 'WWW' service
- Start Internet café (Netscafé)
- Open Internet news & broadcasting sites (JOINS, KBS)

1996

- Start ISDN Internet service
- Start e-Commerce and First webzine service
- Introduction of first graphic based MUG game
- Hold Information EXPO

1997

- Start online stock trading service
- First free Internet services for Email and search, etc.
- Introduction of portal sites (Netsgo)

1998

- **Introduction of commercial broadband Internet service (Thrunet)**
- Offer e-Government service

1999

- Start ADSL service (Hanaro Telecom)
- Start online banking service

1990

- Prepare Master plan Information Society

1992

- Prepare 2<sup>nd</sup> National Backbone Network Basic Plan
- Enactment of Act on Promotion of Information and Communications Network Utilization, etc.

1993

- Prepare National Information Super Highway Basic plan

1994

- **Establishment of Ministry of Information and Communication (MIC)**

1995

- Prepare National Information super highway master plan
- Enactment of Framework Act on Informatization Promotion
- Establishment of Korea Internet Safety Commission (KISCOM)



1996

- **Prepare 1<sup>st</sup> Informatization Promotion Basic Plan**
- Organization of Informatization Promotion Committee
- Establishment of Korea Information Security Agency (KISA)

1998

- Prepare Information and Communications Network Improvement Plan
- Prepare PC Communication and Internet Utilization Promotion Plan

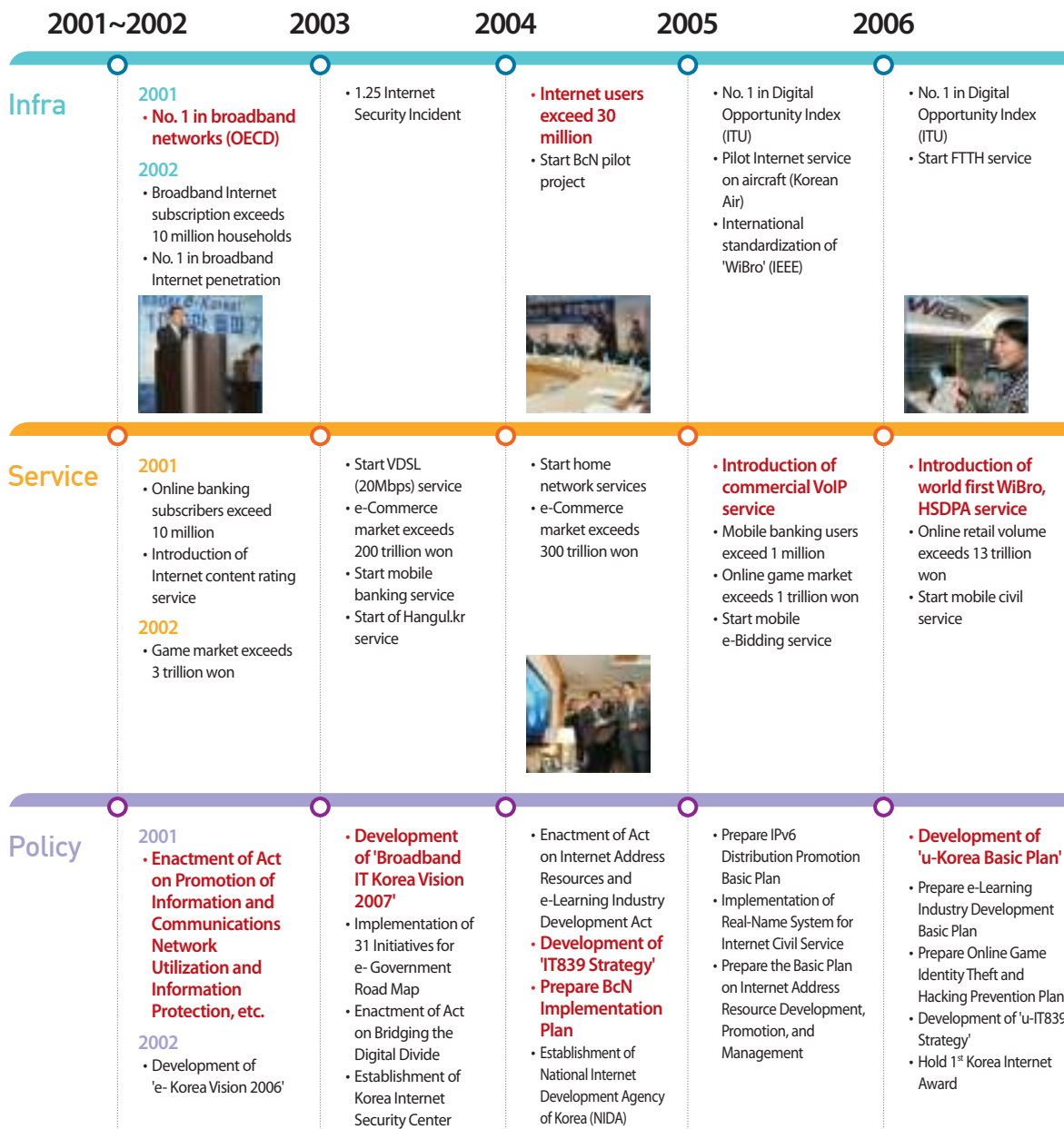
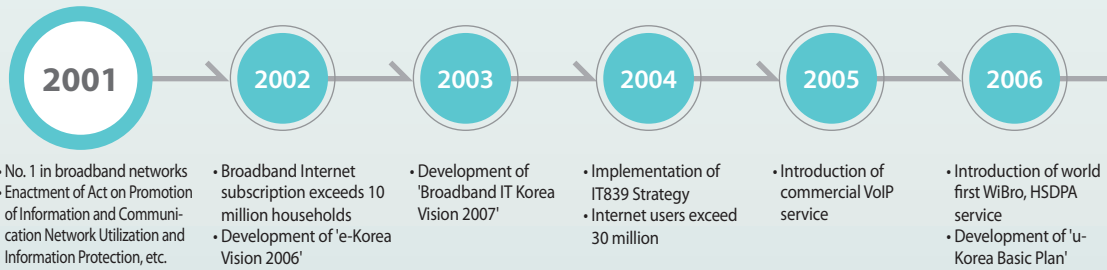
1999

- **Development of 'Cyber Korea 21'**
- Enactment of Framework Act on Electronic Commerce, Digital Signature Act
- Establishment of KRNIC

2000

- Completion of 2nd Stage National Information Super Highway Project
- Enactment of Software Industry Promotion Act, Knowledge Information Resource Management Act
- Prepare Personal Information Protection Guidelines
- Implementation of 11 Initiatives for e-Government
- Establishment of Korea SW Industry Promotion Agency (KIPA)

# 2012 Korea Internet White Paper





- Implementation of Identity Verification



- Establishment of Korea Communications Commission
- OECD Ministerial Meeting on the Future of the Internet Economy



- No. 2 in ICT Development Index



- No. 1 in UN e-Government Development Index and e-Participation Index
- Smartphone subscribers exceed 7 million



- Smartphone subscribers exceeds 20 million
- Launch of the LTE (LongTerm Evolution) service

## 2007

- No.1 in Digital Opportunity Index (ITU)
- International standardization of WiBro and T-DMB (ITU)

## 2008

- **Broadband Internet subscribers Exceed 150 million**
- Commercialization and service coverage expansion of WiBro Wave2



## 2009

- **No. 2 in ICT Development Index**
- Implementation of Giga-Internet Pilot Project
- **7.7 DDoS Attack**



## 2010

- **No. 1 in UN e-Government Development Index and e-Participation Index**
- Completion of BcN project

## 2011

- **No. 1 in ICT Development Index**
- Opening of the LBS Business Support Center
- No. 1 in terms of the number of subscribers to wireless Broadband Internet per a population of 100 people (OECD)

- Introduction of the 2<sup>nd</sup> level kr domain (QuickDom)
- e-Commerce market exceeds 500 trillion won

- **Registrations of kr domains exceed 1 million**
- **Online banking customers exceed 50 million**
- Online game export attains 1 billion USD
- **Launching of commercial IPTV services**

- Subscribers of VoIP exceed 6.5 million
- Mobile banking users exceed 10 million

- **Subscribers of Real-time IPTV service exceed 3 million**
- Smartphone subscribers exceed 7 million
- WiBro export attains 1 trillion won

- **Launch of the LTE commercial service (SKT/LG U<sup>+</sup>)**
- Launch of the '한국' domain service
- Smartphone subscribers exceeds 20 million
- Internet banking users exceeds 70 million
- Mobile banking users exceeds 20 million

- Implementation of Identity Verification
- Introduction of i-PIN, an alternative to resident registration number
- Establishment of Korea IT International Cooperation Agency (KIICA)

- **Establishment of the Korea Communications Commission**
- **OECD Ministerial Meeting on the Future of the Internet Economy**
- Enactment of the Internet Multimedia Broadcasting Business Act
- Prepare the 2<sup>nd</sup> Basic Plan on Internet Address Resource Development, Promotion, and Management
- Prepare the Internet Security Protection Plan

- Establishment of Midlong-term Broadcasting Communication Network Development Plan
- Establishment of Mobile Internet Promotion Plan (Phase 1 & 2)
- **Launching of integrated Korea Internet & Security Agency**
- Hosting of 36<sup>th</sup> ICANN Meeting in Seoul
- Establishment of Cloud Computing Promotion Plan

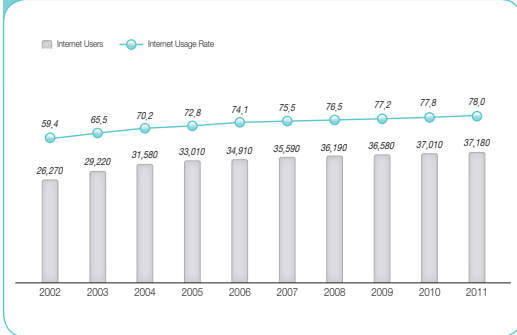
- **Opening of '118' Counseling center**
- Development of IPv6 transition plan
- Establishment of the Internet Cooperation Forum
- Establishment of Internet Advertising Market Promotion Plan
- Organization of KIDS (Korea Internet Dream Stars)

- Establishment of the Plans for Promotion of the NFC-based Mobile Smart Life service
- Opening of pan-governmental policy council on cloud computing
- Implementation of the Personal Information Protection Act
- Introduction of the Mobile Ad Platform Certification Law

# 2012 Internet at a Glance

Internet Usage Rate and Internet Users Trend

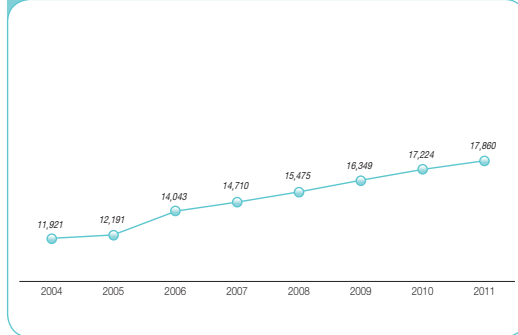
(Unit: thousand persons, %)



KCC - KISA, 2011 Survey on the Internet Usage, January 2012

Broadband Internet Subscribers

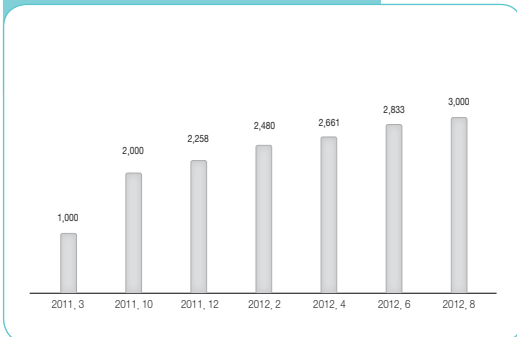
(Unit: thousand persons)



KCC, Broadband Internet Subscription (compiled), December 2011

Number of Smartphone Subscribers

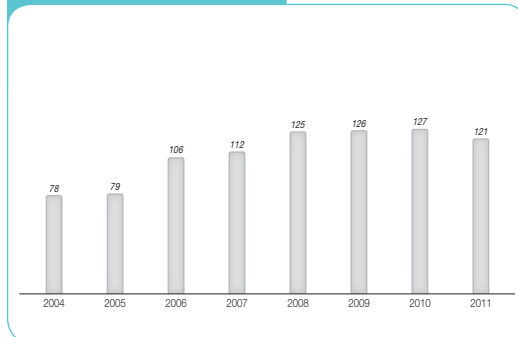
(Unit: 10 thousand persons)



KCC, Statistics on subscribers to wired and wireless services (compiled), September 2012

Number of ISPs

(Unit: each)



Internet Statistics Information System, isis.kisa.or.kr

Bank e-Finance Transaction Amount

(Unit: billion won, %, %p)

Type	2010(A)		2011(B)		Increase(B-A)	
	Amount	Component Ratio	Amount	Component Ratio	Amount	Increase Rate
Online Banking	14,358,085	26.0 (91.1)	15,543,759	25.6 (91.2)	1,185,674	8.3
Mobile Banking	133,711	0.2 (0.8)	225,434	0.4 (1.3)	91,723	68.6
CD/ATM	714,694	1.3 (4.5)	798,439	1.3 (4.7)	83,745	11.7
Phone Banking	692,557	1.3 (4.4)	701,383	1.2 (4.1)	8,826	1.3
Total e-Banking	15,765,336	28.6 (100.0)	17,043,581	28.1 (100.0)	1,278,245	8.1
Teller Window	39,417,709	71.4	43,632,176	71.9	4,214,467	10.7
Total	55,183,045	100.0	60,675,757	100.0	5,492,712	6.4

FSS, 2011 Financial Institution e-Finance Performance, March 2012

Bank e-Finance Transaction Case

(Unit: thousand cases, %, %p)

Type	2010(A)		2011(B)		Increase(B-A)	
	No. of transactions	Component Ratio	No. of transactions	Component Ratio	No. of transactions	Increase Rate
Online Banking	1,595,419	26.5 (33.7)	1,828,203	29.7 (37.2)	232,784	14.6
Mobile Banking	195,652	3.3 (4.1)	280,583	4.6 (5.7)	84,931	43.4
CD/ATM	2,524,581	42.0 (53.4)	2,498,716	40.7 (50.8)	△25,865	△1.0
Phone Banking	607,308	10.1 (12.8)	592,168	9.6 (12.0)	△15,140	△2.5
Total e-Banking	4,727,308	78.6 (100.0)	4,919,087	80.0 (100.0)	191,779	4.1
Teller Window	1,285,799	21.4	1,226,469	20.0	△59,330	△4.6
Total	6,013,107	100.0	6,145,556	100.0	132,449	2.2

FSS, 2011 Financial Institution e-Finance Performance, March 2012

# I Internet Statistics I

## e-Commerce Market Volume by Sector

(Unit: billion won, %)

Type	2010		2011 <sup>p</sup>		Year-on-Year	
	Component Ratio		Component Ratio		Growth Amount	Growth Rate
B2B	747,090	90.6	912,562	91.3	165,472	22.1
B2G	52,772	6.4	58,378	5.8	5,606	10.6
B2C	16,005	1.9	18,522	1.9	2,516	15.7
C2C	8,524	1.0	9,788	1.0	1,264	14.8
Total	824,392	100.0	999,250	100.0	174,858	21.2

※ p : preliminary

KOSTAT, 2011 Annual and Q4 e-Commerce and Online Shopping Trend, February 2012

## Online Shopping Transaction Volume by Product Range and Operation Type

(Unit: billion won, %)

Type		2010		2011 <sup>p</sup>		Year-on-Year	
		Component Ratio		Component Ratio		Growth Amount	Growth Rate
Product Range	Total Store	19,042	75.6	21,836	75.1	2,794	14.7
	Specialty Store	6,161	24.4	7,226	24.9	1,064	17.3
Operation Type	Online Only	16,961	67.3	18,993	65.4	2,033	12.0
	On-Offline	8,242	32.7	10,068	34.6	1,826	22.2
Total		25,203	100.0	29,062	100.0	3,859	15.3

※ p : preliminary

KOSTAT, 2011 Annual and Q4 e-Commerce and Online Shopping Trend, February 2012

## Internet Industry Sales Volume

(Unit: billion won, %)

Type	2006	2007	2008	2009	2010 <sup>p</sup>	2011 <sup>p</sup>	CAGR	YoY Growth Rate
Infrastructure Industry	1,346 (5.6)	1,499 (5.5)	1,547 (5.1)	1,659 (5.0)	1,766 (5.0)	1,967 (4.9)	7.9	11.4
Support Industry	5,835 (24.2)	6,486 (23.8)	7,937 (26.1)	8,407 (25.2)	8,932 (25.1)	10,103 (25.3)	11.6	13.1
Utilization Industry	16,942 (70.2)	19,278 (70.7)	20,974 (68.9)	23,289 (69.8)	24,923 (70.0)	27,786 (69.7)	10.4	11.5
Total	24,123	27,263	30,458	33,355	35,621	39,856	10.6	11.9

※ p : preliminary, ( ) is ratio

※ CAGR : Compound Annual Growth Rate for 2006~2011

KAIT, Broadcasting Communication Industry Report (Monthly/Yearly)(compiled), December 2011

## Revenues of e-Learning Service Providers

(Unit: million won, %)

Type	2009		2010		2011		YoY Growth Rate
	Sales	Component Ratio	Sales	Component Ratio	Sales	Component Ratio	
Contents	490,904	23.5	509,024	22.7	538,326	22.0	5.8
Solution	211,291	10.1	223,876	10.0	235,210	9.6	5.1
Service	1,388,838	66.4	1,512,933	67.4	1,677,828	68.4	10.9
Total	2,091,033	100.0	2,245,833	100.0	2,451,364	100.0	9.2

NIPA, 2011 Survey on e-Learning Industry Trend (compiled), March 2012

## World Internet Usage Rate and Internet Users Trend

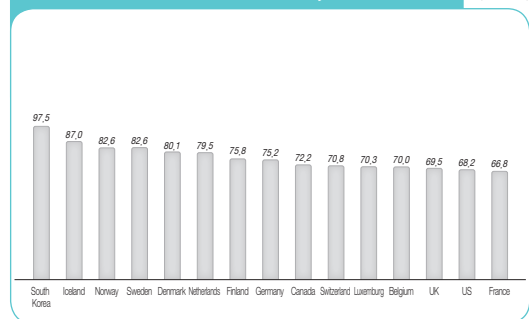
(Unit: million persons, %)



ITU, ITU Statistics, June 2012

## Households with Broadband Access of Major OECD Members

(Unit: %)



※ Switzerland based on 2008, Canada and UK based on 2009

OECD, OECD Broadband Portal, July 2012

## Top 10 Internet News

### • The Era of 4G Mobile Communication Begins

01

On July 1, 2011, SK Telecom and LG U+ launched commercial services of LTE, a 4th-generation mobile communication technology, thus opening up the era of 4G next-generation mobile communication.

LTE is also referred to as 'Dream Mobile Communica-

tion' as it can provide a much faster service than its predecessor, 3G mobile communication, i.e., downloading is 5 times faster and uploading is 7 times faster, thereby enabling the use of multimedia contents including video and network gaming in a much pleasanter and more convenient environment. The three main mobile communication companies have greatly expanded their LTE coverage since beginning the service. On December 28, 2011, LG U+ established the LTE network in 84 cities nationwide including Seoul, the metropolitan area, and 6 metropolitan cities and major highways, and, in late March 2012, the company announced that it had achieved complete LTE coverage throughout the country. Meanwhile, SK Telecom and KT completed the installation of LTE coverage in 84 cities in April 2012. The three mobile communication companies competitively introduced differentiated services together with the expansion of coverage, and the number of LTE subscribers has increased explosively since then. As of July 2012, the number of LTE subscribers was estimated at 8.67 million in total, with 4.22 million for SK Telecom, 2.95 million for LG U+, and 1.5 million for KT. Meanwhile, in August 2012, the VoLTE (Voice over LTE) service, which transmits voice in addition to data through LTE, began operating, thus enabling high-quality HD video call and stable services even during heavy traffic.



### • A New Type of Mobile Ad is Emerging



The KCC (Korea Communications Commission) and Korea Online Ad Association introduced the mobile ad platform certification system in October 2011 to facilitate the growth of new types of online ads including mobile ads and to secure the competitiveness of Korean mobile ad platforms. In December 2011, the KCC certified two platforms – 'MMAN' of Mezzo Media and 'Real Click' of DNA Soft for the first time.

02

The mobile ad market is growing rapidly with the wildfire spread of mobilephones, as mobile ads are easily inserted at the bottom of smartphone applications. These days, mobile ads can be placed in various forms including mobile banner ads, mobile search ads, in-app ads (which can be loaded onto applications), location-based ads, and mobile code ads.

Mobile ads are quickly emerging as a new channel of ads as they enable customized communication with users. Meanwhile, competition is fierce over leadership in the mobile ad market, where there is no 'absolute forerunner' as yet. LG U+ began its mobile ad service by developing 'U+ AD', which is an open ad platform.

Daum Communications introduced AD@m, a platform which encompasses in-app ads, which are loaded on mobile applications, and the mobile web. SK Telecom and KT also introduced the mobile ad platforms *T ad* and *Olleh ad*, respectively, to explore the market. Meanwhile, NHN Business Platform began the pilot 'Naver mobile ad platform' service.

• Heated Controversy over Network Neutrality

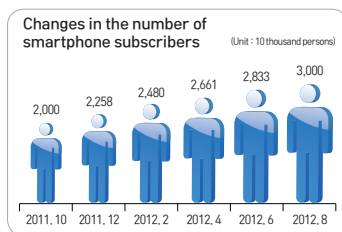
03

The focus of mobile communication services is moving from voice to data, causing an explosion in data traffic. Network overload often occurs where smart phones are used a lot, particularly in downtown areas, and as a result data connection is interrupted.

Network neutrality means that all kinds of traffic transmitted through the Internet network should be treated equally regardless of the contents, types, kinds of service or terminal, caller or receiver. Mobile communication companies demanded an improvement, claiming that service providers are providing the investment in network establishment while the heavier load on the network is attributable to the spread of smart devices and the increase in large contents. However, contents business operators and smart devices manufacturers responded to this claim by emphasizing the public character of the network as an infrastructure in which all contents that use the network should be treated equally. With the increase in free Internet phone (mVoIP) and the use of mobile text messages, such a conflict is creating controversy over network neutrality, including the sharing of network costs. Thus the KCC announced guidelines on network neutrality and Internet traffic management in December 2011 with a view to creating an environment characterized by open and fair usage of the Internet and to promoting the sustainable development of IT technology. Nevertheless, the controversy over network neutrality, including Smart TV app blocking between KT and Samsung Electronics, and the problems associated with the full-fledged introduction of the Voice Talk service of KakaoTalk continue unabated.



• Number of Smartphone Subscribers in Korea Keeps Increasing



04

On October 28, 2011, the number of smartphone subscribers in Korea exceeded the 20-million mark. According to the KCC, as of the end of June 2012, the number of subscribers to mobile communication services stood at 52.68 million, among whom the number of smartphone users was 28,337,000, or 53.8% of the total number of subscribers. In August 2012, the number of smartphone users exceeded 30 million. This rapid increase in the number of smartphone users

is the highest level in the world, having rapidly increased since the initial release of the iPhone in November 2009. The popularization of the smartphone, also referred to as the 'PC in the hand', brought about a revolutionary change not only in people's daily life but also in the activities of companies and the government. While the mobile phone was an excellent tool for voice calls and the like, the smartphone is a 'comprehensive cultural service platform' that offers diverse social and cultural conveniences. Now, people can even buy things and transact stocks with a smartphone. The smartphone is creating entirely new spheres of activity for finance, medicine, and education among other areas with 'mobile banking', 'smart health', and 'smart learning'. What's more, 'one-to-multiple' communication has become possible with the SNS application.

However, personal information leakage and privacy intrusion through smartphones are emerging as new social problems, and the 'Smart Divide' phenomenon, in other words the difference in the social and economic benefits gained by those who use a smartphone and those who don't, is also a matter of concern.

## Top 10 Internet News

### • '.한국' Domain Service Begins in Earnest

# 05

In response to the growing demands from non-English-speaking countries to be able to use their own alphabets in their domain names, a new history in the registration of Internet addresses (domains) began in May 2011. As a result, it is now possible to

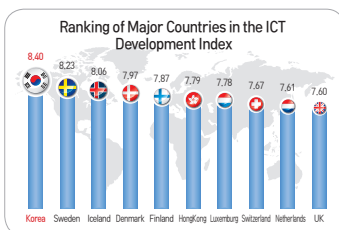
register a domain name in Korean. For example, the domain name of the KCC, which is 'www.kcc.go.kr' in Roman letters, can also be written in Korean as '방송통신위원회.한국'. The purpose of opening a homepage or writing the name of an organization in Korean in full is to make it easier to remember as well as to enhance the marketing effect. The letters allowed for the '.한국 (hanguk)' domain include 11,172 Korean letters, alphabets, numbers, and hyphens (-). However, at least one Korean letter should be included to enable registration in the '.한국' domain, and a hyphen (-) cannot be used for the first or last letter. A maximum 17 letters may be used. Applications for the registration of a '.한국' domain should be made to KISA; and registrations are being carried out gradually to avoid potential confusion during the early stage of registration and to ensure stable introduction of the system.

By June 2012, the number of '.한국' domains had exceeded 220,000 in the 13 months since the beginning of registration. The pace of growth has been much faster than the '.한글 (hanguk).kr' domains, which saw 80,737 cases of registration in about one year.

The number of registrations by the public (i.e., excluding registrations by the government, public agencies, and trademark right holders) accounted for 96% of the total, attesting to the high level of interest among ordinary users.



### • Korea Ranks No.1 in ICT Development Index



In September 2011, Korea was ranked first among 152 nations in the ICT Development Index (IDI) announced by the International Telecommunication Union (ITU). The ICT (Information & Communication Technology) Development Index is used in analyses

of comparisons of the degree of ICT development among ITU members, and to evaluate the direction of ICT development in different countries, the extent of the digital divide, growth potential, and so forth. The ICT

Development Index comprises the three criteria of ICT accessibility, usage, and capability. Korea was ranked first in the world in terms of ICT usage, second in capability, and 10<sup>th</sup> in accessibility. In the detailed indexes, Korea was placed high regarding the percentage of households connected with the Internet (1<sup>st</sup>), the number of wireless broadband subscribers (1<sup>st</sup>), and the number of wired broadband subscribers (4<sup>th</sup>).

Prior to this, in April, Korea was positioned 10<sup>th</sup> among 138 countries in the world in the Network Readiness Index (NRI) of the World Economic Forum (WEF) which evaluated the ICT development and competitiveness of each country.

The NRI offers a comprehensive evaluation of not only ordinary information and communication areas but also of political and administrative regulations, the general market environment, and efficiency in legislation. The survey evaluated 71 specific items in the three areas of 1) market environment, regulations and infrastructure; 2) the readiness of ICT usage by individuals, companies, and the government; and 3) actual ICT usage in each country.

# 06

• Cloud Computing is Spreading Rapidly as a New Concept of IT

07

The spread of cloud computing, which is taking center stage as a new distribution model for information technology, including hardware and software, is becoming increasingly faster. Cloud computing is a new concept of IT service that enables the use of smartphone, smartpad, TV, etc. through the network regardless of time and place by saving contents and data in the server. Mobile communication companies, portal companies, and IT service companies have selected cloud computing as a future growth business and are now locked in fierce competition. However, the service competitiveness and technological capabilities of Korean companies in the cloud computing domain are weaker than those of global companies, and demand is insufficient due to users' perception of unreliability with regard to service quality and security. The size of the cloud market in Korea was 160 billion won as of 2011, which is a mere 0.5% of the world market ( 31 trillion won). The KCC has prepared a draft version of the Law on the Development of Cloud Computing and User Protection with the aim of supporting Korean cloud computing companies, facilitating the use of the service, and establishing an environment for safe usage, and will work for its legislation. It is expected that the enactment of a law on cloud computing will be a watershed moment in the systematic fostering and support of the Korean cloud computing industry, the creation of various fusion services on the basis of cloud computing, and the preparation of an institutional support system to help create a safe user environment.



• A Steep Rise in the Number of Mobile Instant Messenger Users



08

With the popularization of the smartphone, the number of users of mobile instant messenger services has been increasing dramatically. The number of users of 'KakaoTalk', the leader in the mobile instant messenger market in Korea, exceeded 60 million in September 2012, just 2 years and 6 months after its introduction in March 2010. 'Line', the global mobile instant messenger service launched by NHN in June 2011, recorded 25 million users by April 2012, and went on to exceed 60 million as of September 2012. Meanwhile, the number of subscribers to 'My People' of Daum Communications exceeded 22 million as of August 2012. According to a survey conducted by Embrain Trend Monitor, a professional market research company, of 1,000 adult men and women who use mobile instant messenger services, 75.6% of the respondents answered that mobile instant messenger is an essential service, making it seem likely that the popularity of mobile instant messenger services such as 'KakaoTalk' will continue for some time to come. The reason for the great popularity of mobile instant messenger is that, in addition to being free, it is being converted to a platform for the real-time exchange of valuable information and knowledge in addition to the voice service. Some observers expect that, ultimately, mobile instant messenger will become established as a mainstream communication tool.

## Top 10 Internet News

### • Consecutive Breakout of Serious Security Incidents

09

The most serious security incident in Korean history occurred in 2011, causing considerable social turmoil. A large-scale DDoS (Distributed Denial of Service) attack was launched on forty websites including the Blue House (the presidential residence), the National Intelligence Service, and national financial institutions in March 2011. The attack was similar to the 7.7 DDoS chaos which occurred in 2009, when a domestic P2P site was identified as the source. Then, in April the financial service of Nonghyup was paralyzed. In July, the personal information of millions of subscribers to Nate, a large portal service, was leaked. SK Communications announced that the personal information, i.e., the ID, password, resident registration number, and name of some 35 million subscribers was leaked through a Chinese IP. In November, the back-up server of 'Maple Story', an online game of Nexon, was hacked and the personal information of 13 million people was leaked. The consecutive leakage of personal information raised increasing concerns about the security of personal information, and a general consensus to the effect that the basic industries of the nation - including the public sector, financial institutions and portal companies - could be brought down at any minute spread widely. As such, every user needs to be aware of the fact that there can be no safe zone due to the indiscriminate nature of cyber-attacks launched through malicious codes, mutant viruses, and advanced hacking techniques for the purpose of monetary interest rather than the simple leakage of personal information, and that it is vital to establish a system for responding before and after such incidents.



### • Implementation of the 「Personal Information Protection Act」



10

The 「Personal Information Protection Act」 was enacted on September 30, 2011 and took effect on March 30, 2012, for the purpose of applying strict protection criteria to every stage in the collection, usage, and management of personal information and of providing compensation for infringements of personal information. According to the act, the Presidential Committee for the Protection of Personal Information was launched to deliberate and decide on improvements to the policies, systems, and ordinances related to the protection of personal information, and to recommend corrections and improvements concerning any behaviors and practices of government agencies, local governments, constitutional institutions, etc. that lead to infringements of personal information. The best feature of the 「Personal Information Protection Act」 is that it is a general law that eliminates the 'blind spots' generated by the application of special laws in each department of the government for the protection of personal information. The objects of its application include public agencies, profit or nonprofit private organizations, and 3.5 million businesses including small & medium enterprises which handle personal information. Also, the significance of the 「Personal Information Protection Act」 is that it reinforced the rights of the owners of personal information and expanded the obligations of those who handle personal information. According to the act, people have the right to peruse their personal information and may request the correction or deletion of wrongly registered personal information.

# The 30-Year History of the Internet



## 1 Birth and development of the Internet

In every minute of our daily lives, we use the worldwide network of the Internet to access diverse services including Email, information search, social networks, and video. People can use data services at any time without limitations on the data transmission speed through both the wired and wireless networks. For the generations of people who can take this service as soon as they are born, the Internet will be recognized as the service itself rather than as a network with a physical apparatus.

It is now thirty years since the Internet was introduced to Korea, and since then it has gradually become an indispensable part of our life. About thirteen years prior that, in 1969, the USA established what is known as the ARPANET (Advanced Research Project Agency Network), but the speed of establishment of the network using TCP/IP was very quick given that commercial routers were first propagated in 1986.

The Internet developed in Korea at a speed similar to the pace of international advancement in Internet-related technologies including the USA. These days, Korea is playing the role of a leader in the Asia-Pacific region.

Before the Internet was fully commercialized in Korea, the Korean government's active implementation of an informatization policy between 1982 and the late 1990s influenced the development and propagation of the Internet. In addition, schools and research institutes played an important and effective role in network management, international cooperation, and the introduction of network technologies and application service technologies developed mainly by the USA or the UK.

We will summarize the process of the development of the Internet in Korea from its introduction in May 1982 to the present time when the country is leading the global Internet industry. In addition, the impetus for such development and its future potential will be reviewed.

## A. Establishment of the Internet network

The history of the Internet originates from ARPANET, which began with the support of the USA's DARPA (Defense Advanced Research Project Agency) in the late 1960s. Development of the TCP/IP began in the 1970s, and the core functions of TCP and IP currently being applied to the Internet were completed in the early 1980s. Most people think that the history of the Internet in Korea began with the provision of the commercial service in 1995, but the computer network using TCP/IP had already been launched as early as 1982. However, this computer network was not the result of a project to develop the network itself, but was implemented with the aim of sharing data and promoting cooperation among computer developers as part of the development of mini computers in Korea.



In May 1982, a midrange computer, PDP/11/44, at the Department of Computer Science at the Graduate School of Seoul National University was connected with another midrange computer, PDP/11/70, at ETRI (Electronics and Telecommunications Research Institute), located in Gumi, with a speed of 1,200bps using a network software. The first network application service demonstrated with the connection of the two computers was remote log-in. A remote log-in was performed on the computer at SNU from the computer at KETI, and another remote log-in was performed on the computer of KETI to demonstrate the bidirectional connection. In 1983, a midrange computer at KAIST was added to the connection to form a network with three nodes.

In 1986, the technique to run TCP/IP in X.25 was realized in Korea, and the computer in ARPANET was connected through the ARPANET gateway of CSNET. On September 29, 1986, the work for the management of the '.kr' domain was transferred from the IANA with Professor Kil-Nam Chon of KAIST as the administrative contact point. According to the data of INTERNIC, among the top national domains of ccTLD, '.us' was transferred first in February 1985 for domain management, and '.kr' was transferred the following year, also for domain management. As the management of the hierarchy of domain names was divided into the two main categories of ccTLD, and the top general domain was designed in 1983, Korea began participating in the new system of domain names from the early stage.



The management system of the 'kr' domain placed public domains in the second level, and ordinary users were able to register in the third level. In the early stages, second-level public domain names such as 'ac', 'or', 'go', 're' or 'nm' were used. Looking at the process of change of the second-level domain names, the second-level regional domains for metropolitan cities and provinces were made in 1998, as were the second-level domains for elementary schools, middle schools, and high schools (es, ms, hs), followed by the second-level domains for kindergartens (.kg) and individuals (.pe) in 1999. Then, in 2003, the second-level domain of 'mil' was generated for exclusive use by military organizations. In the same year, the technologies and standards for the generation of domain names using the alphabets of each nation in addition to the Roman alphabet were prepared, and it became possible to register Korean alphabet for the second-level domain. Unlike English alphabet domains, ordinary people were allowed to register freely in the Korean 2nd level domains. The Roman alphabet domains maintained the public second-level domain system until 2006, and allowed ordinary people to register their domains freely in the second-level from 2007.

Commercial ISP appeared in the USA in 1991, offering an Internet connection service to ordinary companies. In Korea, I-Net began offering commercial Internet connection service for the first time in November 1994, and various ISP services appeared in 1994 and 1995, including KORNET of KT, Boranet of Dacom, Hancom Net of Hancom Inc., and Aminet of Hyundai Electronics. The Internet in Korea was being implemented separately from the government's project to construct the Information Super Highway.

The speed of Internet access was only 96kbps until the mid-1990s, but ordinary households became connected with the Internet at a speed of over 1Mbps with the launch of Thrunet's Broadband Internet service using cable modem in June 1998. The Broadband Internet service using ADSL was offered by Hanaro Communications in April 1999, followed by KT in May 1999. As a result, connection with the Internet at 8Mbps in an ordinary household became possible. Since then, the rise in the Internet penetration rate in Korea has been unprecedented in the world as a result of the efforts of commercial ISPs to improve the Internet speed and charge cheaper fees. In 1999, the number of Internet users in Korea exceeded 10 million for the first time, while the number of the subscribers to the Broadband Internet exceeded 10 million households in 2002. In fact, Korea achieved the fastest increase in the number of Internet users among all OECD member nations.

## B. Establishment of the global network

The first Internet service in Korea, the SDN (System Development Network), did not just connect domestic websites, but it made efforts to establish a global network from 1983, including cooperation with CSNET, which was organized by mainly universities in the USA. ARPANET connected the websites of the

universities responsible for conducting the research projects of DARPA (communicated by using TCP/IP) using a piece of equipment known as the IMP (Interface Message Processor) developed by BBN. In 1981, the Madison Campus of Wisconsin University of the USA took the initiative in establishing CSNET, which connected the universities and research institutes not connected with ARPANET. Upon its establishment in 1981, CSNET was composed only of Delaware University, Princeton University, and Purdue University, but Israel was connected in 1983, followed by Korea, Australia, Canada, Germany, France, Japan, etc. in 1984, transforming it into an international network.

In 1983, SDN was connected with the HP Research Institute and Seismo of the USA to begin cooperation with CSNET, which united the universities and research institutes of the USA, and was then connected with MCVAX of the Netherlands to open the way for cooperation with EUNET, which encompassed the UK, the Netherlands, Sweden, and Denmark. At that time, UNIX was mainly distributed to schools, and thus the Internet was connected through telephone lines using the UUCP which was integrated with UNIX. From 1980 to the 1990s, BITNET became an international network centered in Japan with the active support of IBM. In Korea, the educational network was connected with BITNET in 1988, and then with the Internet in 1992 by KT.

The computer network reduces the cost and time spent by people on global travel, and thus it is necessary to increase the number of countries which can be connected through the computer network in order to expand international cooperation. In February 1984, the project to build a computer network in Asia was discussed at a UNESCO workshop, and AsiaNet was established using the UUCP protocol with the participation of five nations, namely, Australia, Indonesia, Japan, Korea, and Singapore. A workshop which will enable sharing of the status of the computer network in each nation and network-related technologies beyond simple establishment of the network was planned and held in the Walkerhill Hotel, Seoul, in 1985. While workshops and conferences on the sharing of important technologies for computer communication and the network had been held since the 1970s, the PCCS (Pacific Computer Communication Symposium) was the first event in the world held to exchange information on the status of the network of each nation. A similar workshop to this one was INET, which was held in 1991.

The international cooperation activities carried out in the Asia-Pacific region with the initiative of Korea include the following: AsiaNet in the early 1980s; APCCIRN in the early 1990s; APNG (Asia Pacific Networking Group) in the mid-1990s; and APAN (Asia Pacific Advanced Network) in the late 1990s.

Conceptual diagram of the exclusive Internet line between Korea and the USA (Dong-A Daily, June 4, 1990)



## C. Expansion of application services

J.C.R. Licklider of MIT proposed a project to establish a computer network in the USA during the 1960s with the aim of enabling easy access to data or programs without geographical limitations. SDN, which was established in 1982 in Korea, too, was proposed as a way for computer developers and researchers to exchange information effectively. The application services mainly used during the early stage included an Email service, a file exchange service and a remote host connection service. According to a presentation made at a symposium held by the KIISE (Korea Institute of Information Scientists and Engineers) in 1985, the first example of practical use of SDN for data sharing among researchers was the AI NET, which installed a database for storing the AI-related research data and human resources information of the researchers in the computers of KAIST and enabled researching of the database through SDN.

In addition to the network for domestic researchers, SDN provided an environment for the exchange of data with researchers in the USA, Europe, etc. In July 1983, Email and news were exchanged by connecting with USENET through the computers at the HP Research Institute in the USA using UUCP, and CSNET, USENET, UUCPNET, EUNET, etc. were also connected. UUCPNET was a network connected with a 1,200bps (low speed) telephone line, but it offered a mailing list service for the exchange of data and news among club members. Each mailing list was called a 'news group', and was managed by individuals from different sites. The 'news groups' included a software source, a discussion group for each research area, and even 'humor groups' which facilitated the active exchange of various kinds of information and contents.

According to experts in this area, during the 1980s, the computer network was regarded as a research tool by people who majored in computer science, but the fees charged for the use of international telephone lines were too expensive for the active exchange of data through the network. In particular, the transmission speed was too slow for the data volume of USENET, and the fees for international calls were so expensive that a magnetic tape had to be sent by mail once a month. The received data was redistributed to other countries in Asia, including Japan, through the network.

ARPANET, BITNET, CSNET, and UUCPNET, all of which co-existed during the 1980s, each had different network structures, protocols and user groups, but they commonly provided an Email service compatible with DARPA standards. Using a single mail form, it was possible for the users of different networks to exchange Emails using the device of 'mail relay'.

Thanks to an increase in the Internet access speed and the advent and propagation of the graphic web browser in

A picture of sending an Email through a PC  
(Dong-A Daily, August 7, 1984)



1993, various services based on the Internet were produced and diffused very quickly. Prior to the propagation of the graphic web browser, various tools were used for text-based information search and sharing, such as Archie, Wais, and Gopher, with the latter in particular being more widely used than the worldwide web (www) at that time. However, as graphic expression became possible, www became the most popular service tool, easily beating the other tools. With the spread of web usage and the Broadband Internet, portal service companies which provided Internet search, Email, news, and so forth, including Naver and Daum, emerged and developed rapidly, and venture companies prospered with the appearance of various application services offering different contents and professional information including e-Commerce and Internet games.

The first web server to be established in Korea was cair.kaist.ac.kr, which was developed by the Artificial Intelligence Research Center of KAIST in late 1993. As the host server for ftp archive and mailing list, it was used for sharing data related to the web among ordinary people and served as an arena of discussion. The web-related technologies were introduced at the KRnet, which was held in June 1993, by Professor Jae-Yong Lee of POSTECH. Thereafter, clubs were created by students and researchers at Chungnam University, KAIST, ETRI, and Dacom, and annual workshops for the sharing of technology were held on a total of five occasions up until 1998. As a result of such active efforts to share technology, the numbers of domestic websites and users expanded gradually. Within fifteen years of the launch of the commercial online service in Korea, the Internet-based economy amounted to approximately 63 trillion won, or 6% of Korea's GDP. As of 2012, online services rank first and second in major sectors of the national economy. For example, the transaction volume of online shopping is 34 trillion won, which is 11% of the total volume of the retail market, taking the largest portion in this sector.

### D. Internet network and address management

From the early days of the establishment of SDN, the SDN Management Center screened organizations applying to use the service and gave them instructions on how to connect with the network, etc. As SDN was a network originally created for the purpose of research, only domestic and overseas research institutes and educational institutions in the area of computing and electricity were admitted. The SDN Management Center was operated by KAIST, ETRI, Dacom, and Hanyang University, which comprised SDN's backbone network, and opened up connection to new subscriber organizations.

In 1988, the ANC (Academic Network Council) was organized mainly by the universities and research institutes using SDN, KREN, and KREONET. The ANC was composed of the ANC Steering Committee and the SG-INET subcommittee, a technical committee in which hands-on staff related to network operation par-

anticipated. The ANC assigned the domain names and IP addresses in Korea and represented Korea in the international network council responsible for coordinating connection with overseas computer networks. The works related to the assignment of domain names and IP addresses in Korea had been conducted by KAIST until 1992, but were transferred to the NCA (National Computerization Agency) in 1994, and are now being operated by the KRNIC (Korea Network Information Center). The KRNIC was established in keeping with the global trend of establishing network information centers in each continent and country.

With the advent of various commercial ISPs from 1994, the KNC (Korea Network Council) became the overall supervisory organization, encompassing Internet service companies in addition to universities and research institutes. The KNC was changed into the NIC Committee in 1997, and then into the NNC (Number and Name Committee) in 1998.

Such private organizations created Korean domain names in cooperation with the KRNIC, discussed policies on changing the domain management system, and closely observed the activities of international Internet coordination organizations so as to actively participate in their activities and to establish policies in Korea that were in harmony with those of the international Internet.

KISA (Korea Internet & Security Agency) was established on the basis of the Internet Address Resources Act enforced in 2004, and the KRNIC became the department in charge of Korean Internet address resources within KISA. In addition, since 2004, policies related to Korean Internet domain names and addresses have been decided by the Address Policy Deliberation Committee, which is composed of members appointed by the KCC (Korea Communications Commission, formerly the Ministry of Information & Communication).

## 2 Traces of the Internet throughout its 30-year history in Korea

### A. First connection with the Internet and construction of the network infrastructure

- **1982 TCP/IP connection between SNU and ETRI**

The history of the Internet in Korea began in May 1982 with the connection of the computers in SNU (Seoul National University) and ETRI (Electronics and Telecommunications Research Institute). Though there were already some connections between computers, this was the first establishment of an SDN, a computer network that used such application protocols as FTP and Telnet based on TCP/IP, which is the foundation of the

current Internet. The connection using TCP/IP was a great achievement made possible by the independent technology of Dr. Kil-Nam Chon and his team in a situation where the USA, the only nation in the world using the Internet, refused to sell Internet-related equipment on the pretext of military secrecy. As a result, Korea has developed independently into an Internet power nation where 78% of the population uses the Internet.

### Establishment of the first Internet network

Winner of an Achievement Award at the 30th anniversary celebration of the Internet

**Kil-Nam Chon** | KAIST Honorary Professor

Dr. Kil-Nam Chon developed the Internet for the first time in Korea in May 1982 by connecting two mid-range computers – one in the Department of Computer Science at Seoul National University and one at ETRI in Gumi. Thirty years have passed since he established Korea's first Internet network. Dr. Chon says that he was impressed by the young researchers who worked hard in a room without proper heating. Though he is called "the father of the Korean Internet," even he did not expect the amazing rise of the Internet era.

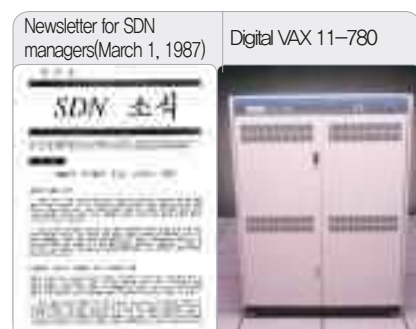
Recollecting that time, Dr. Chon said, "When we were developing the Internet in Korea, we worked in a poorly-heated room due to the oil crisis, and I was impressed

by the young graduate students and researchers who worked very hard.

Ultimately, the commercial network entered service at a speed of 1,200bps, although we originally aimed to achieve a speed of 9,000bps." Dr. Chon also thinks that it is very hard to predict the ICT industry these days as it is changing so rapidly. He emphasizes that the most important thing is to continue creating new innovations in order to adjust to the rapidly developing future. Dr. Chon asserts, "Though it is hard to predict the future, it is very important to continue creating new things such as Google and Facebook as the future will see infinite development."

- **1983 Connection of SDN-EUNET/UUCPNET**

In 1983, the Korean Internet was linked to the overseas Internet for the first time. The Department of Computer Science of KAIST, a participant in SDN, was connected with EUNET of Europe via the gateway of VAX 11/720, and soon after achieved connection with UUCPNET of the USA. There were of course many trials and errors with the first linkage with overseas networks, but it became possible to exchange information with overseas regions at 1,200bps using dial-up. Internet-related academic exchanges with overseas regions became more active, serving as a catalyst for the development of Internet technologies in Korea.



- **1985 The advent of commercial Email and Korean Email services**

The use of Email in Korea began auspiciously with the English-language Email sent to the person in charge at CS-NET in 1984 to link SDN to overseas networks. In the next year, 1985, Dacom (now LG U+) began as a commercial Email service, and thereafter it became possible to send and receive Emails in the Korean alphabet using a Korean language Email program and a Korean language editor called 'hvi'. With the provision of a free Email service by Daum Communications in 1997 via the Web, ordinary users could finally use an Email service.

A workplace that is using a Korean character based Email system.



- **1986 Launch of Korea's first commercial PC communication service**

1986, Dacom (now LG U+) launched Chollian, a commercial PC communication service. At that time, the service industry was becoming a mainstay of the Korean economy, and the communication network, which is the backbone of the service industry, was constructed as the infrastructure of the nation. Chollian was born against such a background to offer a database on living information, for which it attracted in excess of one million subscribers. Chollian also served as a catalyst for the birth and promotion of various other PC communication services such as KETEL (later Hitel), Nownuri, and Unitel.

The videotex of Chollian provided by the Korea Data Communication (Maeil Economic Daily, June 30, 1988)



PC communication provided a stage for communication with the world by sharing information among users with chatting, club activities, electronic post box, etc., and is the origin of the cyber community.

- **1986 Securing of the '.kr' national domain**

In 1986, Dr. Kil-Nam Chon was authorized by IANA (Internet Assigned Numbers Authority) to manage the '.kr' national domain and to take care of domain names in Korea. The fact that the national domain of '.kr' began to be managed in Korea means that Korea had secured independent sovereignty over its Internet territory. After that, the 한글.kr service was introduced in 2003, followed by the 한글.한국 Korean language national domain service in 2011, making it possible for people who are not proficient in English to connect with the Internet. The national domain was operated in a stable manner so as to enable every-

one to use the Internet easily and conveniently.

The fact that Korea introduced its national domain in the early stages of the Internet, after the USA and the UK, is highly significant in that it laid the groundwork for the country to become a major Internet power.

- **1988 Opening of Korea's first PC communication café**

In 1988, *Electronics*, the first cyber café in Korea, opened near Hongik University. With a totally different structure from existing cafes, *Electronics* became the prototype for what we now refer to as PC rooms. The café was more advanced than those of foreign countries by around 2 to 3 years. It showed animations or movies that were difficult to obtain in Korea at that time and provided a 'magic' communication service connecting Seoul with LA. Together with *Kantata* in Hyehwa-dong, *Electronics*, Korea's first cyber café

reserved exclusively for PC communications, played an important role in stimulating changes in youth culture and opened the culture of a new generation in cyber space.

The appearance of the Electronic Café  
(Maeil Economic Daily, May 13, 1990)



### Spreading the educational computer network throughout the nation

Winner of an Achievement Award at the 30th anniversary celebration of the Internet

Yang-Hee Choi | SNU Professor

Professor Yang-Hee Choi began constructing KREN (Korea Educational Network) in 1991, when he was teaching at the Department of Computer Science at Seoul National University, and completed it in 1993, connecting the operation headquarters with nine regional centers and linking them to overseas networks, too. The educational network laid the groundwork for the support of computer education at schools; the pilot project of the educational computer network; the establishment of an academic information database; and the computerization of universities, libraries, and educational administration, etc., and it became possible to exchange information with leading overseas universities and research institutes.

The educational computer network constitutes both an effective tool for the exchange of information by inter-

working domestic educational institutions, government agencies, education-related organizations, etc. with computer communication lines, and a venue for the extensive exchange of information by linking with overseas networks. Educational institutions including universities, city and provincial educational offices, and elementary and secondary schools will be able to use the service.

Professor Choi received a doctorate in computer science at ENST, France. He has worked at the CNET Research Institute in France and the Thomas J Watson Research Center in the USA, and has been a senior researcher at ETRI. Currently, he is a professor at the School of Computer Science of Seoul National University, as well as the dean of the Graduate School of Convergence Science and Technology at Seoul National University, and the chairman of the Future Internet Forum.

- **1989 Establishment of the SDN–HANA network and IP-based Internet connection with the USA**

In 1989, the Internet in Korea was connected with the overseas Internet for the first time via a 56Kbps exclusive line upon the establishment of the SDN-HANA network. At the initiative of KAIST, various entities including KT, ETRI, and POSTECH participated in the project, which came about during the process of developing the domestic network into an international network. As a result, the domestic Internet network of SDN was henceforth able to transmit Emails and data freely through the overseas Internet connection network of the HANA network (linked to Hawaii University, USA). At about the same time, KREN (KoRea Education Network), which is a network combining national and public universities, and KREONET (Korea Research Environment Open Network), a computer network dedicated to research, were established.

A picture of connecting with the Internet bulletin board KIDS



## B. Evolution of the Internet into an essential tool of daily life

- **1991 Opening of Korea's first Internet bulletin board**

In 1991, Korea Telecomm (now KT) opened KIDS (Korea Internet Dream Stars), thus enabling information exchange through Korea's first Internet bulletin board. By showing Hangeul, the Korean alphabet, on the Internet for the first time, the KIDS bulletin board led people to recognize the Internet as a sea of information sharing rather than as an item of curiosity, as was the case when there were only a few Internet users. Notably, it became possible to use the Internet at an affordable price rather than making expensive international calls, and Korean students studying overseas were able to hear news about Korea through the service, which resembled an oasis in their eyes. KIDS introduced the Internet to ordinary users of communication services, offered communication tools to domestic and overseas Internet users, and provided the momentum for the spread of Internet bulletin boards.

- **1994 Launch of Korea's first commercial Internet service**

The year 1994 was the first year of commercial Internet services in Korea. Recognizing the importance of the information and communication industry and of laying the foundations for its take off, the government expanded the

Scenery of searching Internet information in various countries using the KORNET network (Maeil Economic Daily, October 4, 1994)



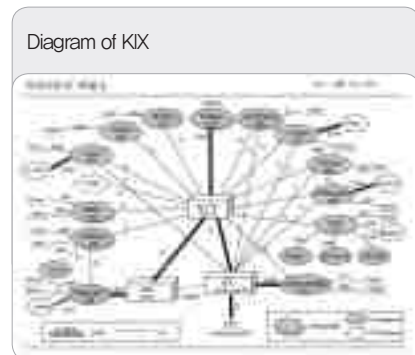
organization of the Ministry of Information and Communication (now the Korea Communications Commission) by integrating the various IT-related functions scattered across numerous departments. At that time, Korea Telecomm (now KT) introduced KORNET, Korea's first commercial Internet service.

As a result, the Internet environment, which had been the sole preserve of universities and research institutes, was changed to suit the requirements of ordinary users. The service was offered in SLIP, PPP protocol, and remote connection with modem. The Internet access speed was mostly 2,400bps, but a 14,440bps service was offered in some regions including Seoul.

- **1995 The advent of IX in Korea**

In 1995, KIX (Korea Internet eXchange), the first IX (Internet eXchange) in Korea, was established. As the volume of domestic Internet traffic increased rapidly with the vitalization of Internet usage, the necessity for IX for the effective exchange of Korean Internet traffic was raised. Until IX was established, the exchange of traffic between Korean service providers had to be performed via an overseas location, somewhat ineffectively, due to the lack of an infrastructure capable of accommodating ISPs in an integrated manner.

The then Ministry of Information and Communication (now the Korea Communications Commission) made efforts to find a solution at the national level, resulting in the birth of KIX as the solution. KIX became the gateway for the effective exchange of Internet traffic in Korea by accommodating ISPs in an integrated manner.



- **1995 Launch of Korea's first Internet newspaper service**

In 1995, *the JoongAng Ilbo* began an electronic newspaper service which reported articles on the Internet rather than on paper. At that time, even the world's leading .com companies such as Yahoo and Amazon.com were in the early stage of their Web services, and thus the initiative of *the JoongAng Ilbo* to offer real-time news and the original texts of foreign press organs was sufficiently surprising to draw domestic and overseas attention. Thereafter, other newspaper companies established Internet news sites too, and, since the early 2000s, some newspaper companies have been distributing their articles solely through the Internet.



- **1995 Development of Korea's first Hangeul Internet search engine**

In December 1995, Kor-Seek opened as the first search service in Korea. The service was created by Mr. Young-Lyeol Kim, then a university student, as the first Hangeul (Korean alphabet) search engine, with the theme of 'A joyful Internet with Hangeul'. Until then, only English-language pages could be registered in search engines. But with the appearance of Kor-Seek, it became possible to search in Korean rather than in English. After the opening of Kor-Seek, such Korean search engines as Kkachine and Simmani gradually took root to support search in the Korean alphabet.

- **1996 Launch of Korea's first Internet shopping mall service**

In 1996, Dacom (now LG U+) opened Interpark, the first Internet shopping mall in Korea, and began its commercial service. Dacom was able to meet the challenge of selling items solely through the Internet without opening any offline shops on the strength of the experience it had accumulated with Chollian and other services. Serving as a catalyst for the appearance of various Internet shopping malls, Interpark greatly contributed to the expansion of the Internet shopping market and the vitalization of e-Commerce in Korea.



## The rise of Electronic Commerce in Korea

Winner of an Achievement Award at the 30th anniversary celebration of the Internet  
**Gi-Hyung Lee / Interpark CEO**

The era of e-Commerce opened in 1996 with the establishment of Interpark, the first Internet shopping mall in Korea. In 2000, G-market was established and expanded the volume of Internet shopping malls. With the appearance of G-market, the market changed into a multiple competition structure, originally led by Auction alone, and the open market system was formed in Korea. Gi-Hyung Lee, CEO of Interpark, is a man who represents success in the 'First Generation Venture'. With consecutive success of Interpark and G-market as in-house business incubation programs, he became an object of benchmarking by other companies. G-market became a subsidiary of Interpark in 2000, and was directly listed on NASDAQ in 2006. Considering

that there many traditional markets due to the characteristics of the open market, G-market exempted the product registration fee and imposed the lowest sales commission in the industry, which contributed to the increase of the income for traditional markets through development of the online sales route.

Beginning with Internet shopping business, Interpark challenged to different business areas such as books, performances, tours, etc. to make a successful category killer-type online business model. In December 2011, the company merged iMarketKorea to be a new power in the B2B online market. Prepared to take a second step, Interpark is becoming a global player as an online distribution group.

- **1996 Provision of graphic online game services via the Internet**

In 1996, Nexon introduced 'The Kingdom of the Winds', the first graphic MUD game devised for the Internet in Korea. The release of 'The Kingdom of the Winds' marked the beginning of the Internet game industry in Korea, which led to Internet game fever, including 'Lineage', and the rapid development of the Korean Internet game industry. 'The Kingdom of the Winds' played an important role in transforming Korea into a world-class purveyor of Internet game services. Indeed, the growth of the online game industry has contributed to the rise of cultural content exports as a future growth engine of the Korean culture industry.

A picture of the game 'The Kingdom of the Winds' in its early stage



### Making Korea an online game power

Winner of an Achievement Award at the 30th anniversary celebration of the Internet

**Taek-Jin Kim** | NC SOFT CEO

CEO Taek-Jin Kim became famous by developing 'Hangeul' in 1989 while he was a student at the Department of Electronic Engineering, Seoul National University. He worked for Hyundai Electronics from 1991 to 1996 and made 'Aminet', the first Internet online service in Korea. In 1997, he established NC SOFT to begin the online game business. He introduced his first product, 'Lineage', which created a new history of online games in Korea, in 1998.

Lineage was the first Internet-based online game in Korea, and as such has great social significance. Many games were produced in the wake of Lineage, and it created an environment which enabled many youngsters to make ambitious challenges.

According to industry spokesmen, the accumulated sales of this game, which is still in service, amounted to more than 1.8 trillion won (as of June 2012).

The growth in the online game industry led the growth of the computer hardware and cultural contents industry. With the appearance of new online games such as 'Lineage 2', 'Guild Wars', and 'Iron', the sales of the computer hardware industry increased, too, and Korean gamers were able to enjoy the best gaming products. NC SOFT is widely recognized as the leader in the development of online games in the global market with the consecutive successes of follow-up products such as 'Lineage 2', 'Iron', 'Guild Wars', and 'Blade & Soul'.

- **1998 Commercialization of Korea's first Broadband Internet service**

In 1998, Thrunet, a Broadband Internet service that used cable modems, was launched for the first time in Korea, surprising users with an Internet speed hundreds of times faster than that of other services. In

1999, the Ministry of Information and Communication (now the Korea Communications Commission) approved ADSL, whereupon Hanaro Communications (now SK Broadband), Korea Telecomm (now KT), and other companies launched their Broadband Internet services. As a result, the number of Internet users increased explosively and the Broadband Internet industry in Korea was vitalized to an incredible degree.

In 2012, the number of Broadband Internet subscribers in Korea exceeded 17.86 million. Such rapid development of the Broadband Internet service laid the groundwork for Korea to become a leading Internet power, and the country was ranked 1<sup>st</sup> in the world in the ITU's ICT Development Index in 2011.

Ranking in the ICT Development Index			
Ranking	Country (IDI)	Ranking	Country (IDI)
1	Korea(8.40)	8	Switzerland(7.67)
2	Sweden(8.23)	9	Netherlands(7.61)
3	Iceland(8.06)	10	UK(7.60)
4	Denmark(7.97)	12	New Zealand (7.43)
5	Finland(7.87)	13	Japan(7.42)
6	Hong Kong(7.79)	17	USA(7.09)
7	Luxemburg(7.78)	19	Singapore(7.08)

▲ ITU, Measuring the Information Society 2011, September 2011

- **1999 Launch of the Internet portal service**

In 1999, when the Internet first took root in our daily life with the Broadband Internet service, Internet portal sites began to appear in Korea. Daum Communications began the Daum Hanmail service in 1997, and opened the Daum Café in 1999, thus starting its Internet portal service. With the customer-oriented community café service, Daum Communications became No. 1 in 2001, beating Yahoo, a foreign portal site. Meanwhile, Naver launched Korea's first search portal service using its own search engine in 1999. Naver grew explosively by providing the 'Jisikin' (knowledge search) service.

Naver accumulated more than 10 million notices on 'Jisikin' in the two years after its launch, and the company has been ranked No. 1 in terms of its share of the Korean search market since 2006. Naver has been contributing to the development of the Korean Internet market by providing various kinds of information, forming Internet opinion and culture, and laying the basis for the popularization of Internet services.

- **1999 Launch of Korea's first Internet banking service**

In 1999, the first Internet banking services emerged in Korea. Now, we no longer have to go to the bank to get a bank statement or remit money. The Internet banking service is perhaps the best example of how life had been made easier and more convenient thanks to the propagation of the Internet. After the government laid the basis for e-Commerce, most banks established and began operation of the Internet banking system in 2000.

Opening ceremony for the first IDC Nonhyeon Center of Dacom (now LG U+) in Korea in 1999



- **1999 Establishment of KIDC, Korea's first IDC**

In 1999, the Korea Internet Data Center, the largest in Asia, was established in Korea. With the establishment of the IDC (Internet Data Center), which leases computer and network equipment to companies and individuals, domestic venture companies could use the Internet-related infrastructure.

At that time, it was not easy for small venture companies to prepare equipment, including exclusive lines or IP, so the Ministry of Information and Communication (now the Korea Communications Commission) tried to find a solution: the KIDC solved such problems neatly. The KIDC is referred to as the heart of the Internet industry as it supports the Internet services of Korean companies and provides an environment for optimum server management and computer management. The establishment of the KIDC laid the groundwork for Korea to become an Internet power by creating an environment conducive to the birth of various IT venture companies.

## C. Communicating through the Internet

- **2001 Opening of the Cyworld mini homepage service**

In September 2001, Cyworld began a mini homepage service for the first time in Korea, enabling users to decorate 'my own space' in the Internet, and grew rapidly. As a result, a wind of personalization blew through the world of the Internet, making 'myself' the main character. This was a revolutionary new concept which dramatically changed the existing community with the social syndrome known as 'Cying'. Such a phenomenon spread quickly by combining the efforts of Internet service providers who focus on users' convenience with Netizens' keen desire to express themselves.

Thereafter, Cyworld became the largest SNS in Korea, acquiring 26 million subscribers. It was an epoch-making service because Cyworld offered a one-person media Internet service using social networking,

in contrast to the existing services which formed communities on the basis of group activities in a café.

### Developer of Cyworld, the first personal media in Korea

Winner of an Achievement Award at the 30th anniversary celebration of the Internet

**Young-Mok Kim** | SK Communications Director

Young-Mok Kim led the personal media market in Korea by developing 'Cyworld', Korea's first one-man media service, into the largest SNS in Korea. Through Cyworld, it became possible to express emotions on the Internet, and communication between humans was further activated. As a result, Cyworld contributed to the development of social networking in Korea.

Not only pictures but also videos and bulletin writings can be easily updated through Cyworld's mini homepage, and spaces for the expression of one's own personality such as Mini Room, Mini Me, and Skin were created. Soon enough, there occurred a social syndrome known as 'Cying'.

The 'Cy good world' was created to connect various social contribution organizations with Netizens, and 'NATEON', a messenger service, was introduced. NATEON became the No. 1 messenger service in Korea,

beating MSN.

Cyworld was able to position itself as the largest SNS in Korea with the merit of enabling easy updating of personal contents such as photos and videos on the mini homepage.

The 'Brand Mini Homepage' was launched in 2005 to enable ordinary companies to use the mini homepage for communication with customers. The service has received many favorable responses for its creative new way of using SNS.

After that, Mr. Kim successfully led the Cyworld 'Dream Campaign'. Netizens post their dreams and these are actually realized if many people within the social sharing system 'sympathize' with them. The campaign received a favorable response with campaigns for the support of multicultural families and the eradication of school violence, etc.

- **2002 Launch of the Wireless LAN service**

In 2002, KT opened the era of wireless LAN by beginning the NESPOT service. The NESPOT service solved the spatial restrictions of the existing wired Internet, and created an environment which enabled laptops and mobile phones to be connected with the Internet anytime, anywhere. As such, NESPOT changed the Internet usage environment in Korea from a wired to a wireless service.

The era of wireless LAN provided the impetus for an increase in the number of laptop users and the technological

Internet connection test through PDA in a Nespote zone



development of the wireless Internet - including developments in the technology for PDA terminals. According to an announcement by the OECD in June 2011, Korea ranked 1st in the world in the penetration rate of broadband wireless Internet (89.8%).

- **2002 Emergence of blogs as a new mode of communication with the wider world**

In October 2002, 'Able Click', the world's first blog, was produced. Blogs appeared on the Internet when the service and environment for the operation of personal bulletins were provided with the development of the Internet. Fresh information is carried with photos, music, flash, video, etc. in blogs to stimulate public participation in and communication on various social and political areas. At present, the Internet blog culture is led by Naver blog, T-story of Daum Communications, and Egloos of SK Communications.

A blog is a one-man media entity as it can exert as much influence as the existing mass media. The introduction of blogs is significant in that it has changed Internet users from passive consumers to active producers of information.

- **2004 Establishment of BcN, a new growth engine of the IT industry**

The year 2004 saw the construction of BcN, a next-generation integrated network environment. The project was one of the core projects implemented by the Ministry of Information and Communication (now the Korea Communications Commission) under its vision of offering the essential infrastructure necessary for the realization of Broadband IT Korea. An attempt was made to establish an ALL IP environment which would enable users to enjoy diverse services with one terminal by integrating the communication, broadcasting, and Internet networks in BcN.



The establishment of BcN maximized the convenience and benefit of users, expanded new markets for convergence broadcasting and communication services, and laid the basis for investment in the IT area. It is significant in that it led to the identification of a new profit model through the creation of various fusion services of communication, broadcasting, and Internet, thereby overcoming the technological limitations of the high-speed network.

- **2006 Launch of the world's first commercial WiBro service**

In 2006, the world's first commercial WiBro, portable Internet, service was launched. The development of WiBro technology was a core task of the IT839 Strategy prepared by the Ministry of Information and

Communication (now the Korea Communications Commission), and from the initial planning stage, the aim was to advance the technology into the wider world as a comprehensive national project. Notably, it was developed by Korean technology under the initiative of ETRI and with the cooperation of KT, SK Telecom, and Samsung Electronics among others. Users can enjoy the broadband Internet service anytime, anywhere, with WiBro, which enables the use of the wireless broadband Internet service without any inconvenience even while in rapid motion.

The commercialization of WiBro is highly significant in that Korea secured a revolutionary original technology for the first time in the area of communications to provide the broadband Internet service and create a perfect communication environment. With the launch of the commercial WiBro service, Korea took the lead of global standardization with its own communication technology.

- **2007 Changes in the perception of Internet culture**

In 2007, a female singer committed suicide due to the proliferation of malicious comments traded on the Internet. The news shocked Korean society tremendously, and people began to change their perceptions of Internet culture. As a result, consensus was reached on the need for the creation of a sound and healthy Internet environment, and many organizations were formed with that goal in mind.

Notably, the 'Good Reply Movement' is being spread actively in the belief that a good, cheering reply by one person can create many good replies in return and that a sound discussion culture can be formed and established in the Internet world.

As the Ministry of Information and Communication (now the Korea Communications Commission) is working actively for the formation of a national consensus about a desirable Internet culture, various voluntary activities including the Clean Internet Movement are being made. With the intention of raising Internet users' awareness of Internet ethics, various activities aimed at the establishment of a desirable and positive Internet culture are contributing to the cultivation of a sounder Internet culture and a more harmonious society.

- **2008 Launch of the commercial IPTV service**

In 2008, IPTV, a fusion broadcasting and communication service, entered into commercial operation. IPTV was one of the core tasks implemented by the Korea Communications Commission to promote the fusion industries. As such, it is a representative fusion service which enables a person to use the Internet

Site of demonstration of WiBro commercialization



service while watching TV. Even people who cannot use a computer very well can use the added service including information search using a TV.

In particular, it has the merit of being able to satisfy the diverse needs of viewers by providing customized contents, and it is surely this factor that pushed the number of subscribers to the commercial IPTV service up to 5 million by April 2012, just 3 years and 4 months after its launch. The activated commercial IPTV service has been positioned as the representative paid broadcasting service, with a result of the total sales of the broadcasting industry boosting up to 15% (1.5 trillion won). It is also playing an important role as a catalyst for the development of Internet-based fusion services for broadcasting and communication.

Ceremony for exceeding 5 million subscribers of IPTV service



- **2010 Launch of a pan-national council to create a harmonious Internet world**

In 2010, a pan-national council for the creation of a harmonious Internet world was launched, with the participation of more than fifty government agencies, Internet companies, private organizations, and so forth in a bid to form a pan-national consensus about 'creating a more harmonious Internet world'. The number of member organizations is increasing every year in line with the determination of the Korea Communications Commission to expand education on Internet culture and to continue campaigning in that direction, and with the emergence of a pan-national consensus on the need to upgrade the Internet culture to a level more befitting of a world-class Internet power.

The 'Making a Beautiful Internet World' campaign (online signature street campaign, ethics class)



The pan-national council is conducting the campaign to steadily create a more harmonious Internet world to promote the qualitative growth of the Korean Internet industry, having already achieved quantitative expansion in the use of the Internet. In 2011, i.e., the year after its launch, the council made concerted efforts to spread the consensus by inducing the participation of 40,000 people through 37 related events including an online pledging ceremony, ethics classes, and street campaigns. In addition, the council is creating a sound and safe environment for Internet use and spreading a culture of sharing through the Internet.

- **2011 The mobile revolution leads the change in the Internet paradigm**

In 2011, the mobile revolution - triggered by the spread of smartphones and the emergence of various new wireless Internet services and SNS-brought about epoch-making changes to the lifestyle of the nation.

Most notably, KakaoTalk, a free mobile messenger service which appeared in 2011, is contributing greatly to the spread of SNS (Social Network Service) and leading the culture of mobile communication. Native mobile messenger services are pursuing rapid changes in order to take the initiative as social media in the changes and innovations facing future society at a time when the Internet industry is preparing for a new leap forward under the propulsion of a rapid change in its paradigm.

Domestic mobile services are also leading a new communication culture and taking the initiative in the globalization of innovative mobile service technologies that are being positioned as global services.

KakaoTalk, free mobile messenger service



### 'KakaoTalk', a representative Korean SNS brand

Winner of an Achievement Award at the 30th anniversary celebration of the Internet

**Beom-Soo Kim** | KakaoTalk BOD Chairman

KakaoTalk has already taken root deep in the everyday life of the nation with the ongoing changes in the mobile paradigm. KakaoTalk is a 'National App' used by all smartphone users. With the coining of the phrase 'Let's Ka-Talk' which replaced 'Let's keep contact', KakaoTalk is leading a new communication culture in the mobile society. The same goes for KakaoStory, which was introduced early this year. The new app is maintaining a powerful leadership, emerging as the representative SNS in the shortest time together with KakaoTalk.

At the center of the 'Kakao Phenomenon' is the founder of KakaoTalk, Chairman Beom-Soo Kim. Chairman Kim has become a legend due to his success in the IT history of Korea with Han Game, NHN, etc. and his endless challenges and innovative thinking.

As a hero in the history of Internet ventures, Chairman Kim accurately predicted the emergence of the era of mobile communication, and created another success story with KakaoTalk.

Furthermore, Chairman Kim showed the growth potential of the mobile market with KakaoTalk and presented a new vision for mobile platforms. Now, Chairman Kim is realizing his dream of establishing a sound mobile ecology where everyone concerned, including developers and contents copyright holders, can have a win-win relationship together with Kakao, which has become a pivot of the mobile ecology. Now, Kim is dreaming of another astonishing leap forward with an open global platform that will be loved by all the people of the world.

## **3** Future direction of the Internet

### A. Developmental direction for the next 30 years

As reviewed earlier, the Internet began in Korea in 1982 and has grown and developed to a world-class level with the cooperative efforts of the private sector and the government with universities and research centers at the center. The history of the Internet in Korea has a unique feature in that the Internet was not made in Korea by adopting results previously verified in advanced nations, but by bringing technologies then undergoing testing and application in advanced nations into Korea to test and evaluate them during the same period of time. However, regretfully, while Korea is a frontrunner in the world's Internet industry, it has not taken a definite lead. Though Korea has developed some advanced technologies, they have not been spread out continuously.

For example, before a commercial router was introduced in the world, Korean router software was developed by the cooperation of the researchers of Samsung Electronics, ETRI, and KAIST in a representative Industry-Academia-Research cooperative project. However, more than 90% of the routers now being used in Korea in 2012 are foreign products.

The second example concerns the registration of the RFC (Request For Comments) document. An RFC document related to Korean alphabet encoding in Email was registered in 1993 for the first time in Korea, and was registered in IPv6 in 2002. Since then, about twenty cases of RFC have been produced and registered by Korean research teams, but this figure is insignificant compared to the more than 3,000 cases of RFCs developed after 2002.

The third example concerns the fact that services similar to Facebook or Skype, which are now explosively popular throughout the world, had already been made by Korean Internet ventures in around 1999. The companies seemed to grow rapidly, but most of them have since closed down while others are barely surviving due to the drastic decrease in the number of consumers. Moreover, there are some companies which have occupied more than 70% of the market share in Korea but whose services have not expanded into overseas markets.

### B. Tasks and suggestions

While the Internet was the object of technological testing and research by computer and network experts since 1982 and for the decade or so thereafter, it has - since the mid-1990s and the beginnings of a full-fledged commercial Internet service - been shared and developed by people of all generations and

business areas, and is no longer the exclusive preserve of network technicians. However, on the reverse side of the world-class Internet speed and penetration rate, there are many negative effects such as Internet addiction, copyright infringement, human rights violations and malicious contents.

We will all have to make efforts to minimize such negative effects in order to 'establish a network that enables creation, distribution, and acquisition through free connection by everyone, anytime, anywhere,' which is the basic goal pursued by the Internet.

The Korean government created the Korea Internet Safety Commission (KISCOM) in 1995, and opened the Korea Internet Addiction Center and the Illegal Spam Center in 2002. Since then, the Korea Internet Safety Society and the Korean Society of Internet Ethics have made efforts to provide academic support and resolve the negative issues surrounding the Internet. In addition, in the private sector, organizations such as the Sunfull Movement ('Good Reply Movement') National Headquarters, the Association for Making a Beautiful Internet World, and major news media have endeavored to maximize the positive functions of the Internet through 'Clean Contents' and 'Clean Internet' campaigns. It is necessary to maximize the synergy of such efforts by the private and government sectors by uniting them rather than leaving them to operate as separate entities.

To that end, the opinions of the stakeholders including network users and service providers need to be collected for the coordination or management of Internet-related affairs, instead of unilateral decision-making by the government. The Ethics Council on the Internet was established in 2004, the Internet Development Council in 2010, and the Korea Internet Governance Alliance in 2012 to provide a stage for the participation of the general public in efforts to improve the Internet environment.

The next-generation address project is being implemented to solve the urgent problem of the lack of addresses. ETRI and various universities participated in IPv6-related research and standardization activities in the late 1990s and the early 2000s, and, as a result of their efforts, IPv6 is being spread out for the commercial Internet in Korea. In 2004, the government took the initiative in establishing a plan to introduce IPv6, and examples for the discussion of future Internet technologies and the establishment of pilot networks have been proposed internationally in earnest since the mid-2000s.

Due to the excessively bloated size of the Internet compared to the philosophy at the time when ARPANET was first designed, the size of the network expected at that time, and the unforeseen usage patterns of the Internet, it will become impossible to satisfy the demands of users if the existing structure of the Internet is maintained. Therefore, those who study networks are conducting research on the structure and protocol of the future Internet worldwide.

Calls for 'studies on the future Internet' to overcome the limitations of the current Internet by analyzing its structural problems and redesigning it are becoming ever louder. Studies of the future Internet, which began in around 2005 in the USA, spread rapidly throughout the world from 2007. Advanced na-

tions such as the USA, Japan and Europe recognize that future national competitiveness lies in taking an early lead in the future Internet, and have invested huge budgets in the area accordingly. In Korea, the Future Internet Forum was launched in 2007 to coordinate active research with academia and research centers at the center. In 2009, the Future Network Forum, a research organization for the recommendation of technologies and policies related to the future network, led by the government and industry, was organized.

The Korean government also established related policies after recognizing the importance of the future Internet. In 2011, the KCC led the establishment of the plan for the development of the Internet in preparation for the future. Taking the changes in the Internet paradigm as an opportunity, the government is implementing policies aimed at establishing a virtuous cycle in which the Internet infrastructure will be established, future Internet technologies secured, promising new services identified, and the industrial basis and security strengthened in order to realize the 'leap forward to becoming a global Internet leader in the next ten years'.

We should not forget that the introduction of the Internet thirty years ago was made possible not only by the adoption of foreign equipment but also by the results of prophetic research conducted by domestic researchers. It will be the same in the future. Careful strategies are necessary in order to ensure that Korea does not become a mere consumer of the future Internet. Now we have to be able to lead the development of technologies. For this, not only researchers but also the government and business enterprises will have to participate actively to put theories and experimental results into practice.

## The next ‘30 Years of Internet’, a ‘Promise’ to leap forward once again



▲ A commemorative event was held on May 30, 2012, at the Sejong Center for Performing Arts to celebrate the 30<sup>th</sup> anniversary of the Internet, with the participation of Korean Prime Minister Hwangsik Kim (in the center), Chairman of the Korea Communications Commission Kyecheol Lee (to the left of the PM), and more than 300 industry VIPs.

### At the commemorative event held to celebrate the 30th anniversary of the Internet

It has been 30 years since the first Internet network began operating in Korea. The ‘Commemorative Event for the 30<sup>th</sup> Anniversary of the Korean Internet’ was held on May 30, 2012, in the Sejong Center for Performing Arts to celebrate the 30<sup>th</sup> anniversary of the Internet in Korea. The event was held by the KISA (Korea Internet & Security Agency) with the supervision of the Korea Communications Commission (Chairman : Kyecheol Lee) to celebrate May 1982, the auspicious date when the Internet was first connected in Korea. Participants in the event included Korean Prime Minister Hwangsik Kim, Chairman of the Korea Communications Commission Kyecheol Lee, Chairman of the Presidential Council on National ICT Strategies Jungho Park, Special Aide on IT in the Blue House Haesuk Oh, Future Strategy Planner Myunghee Yu, fourteen heads of broadcasting and communication organizations, and more than 300 VIPs from industry associations, communication companies, portal companies, etc. who promised to actively address the demands of the future Internet environment.

During the event, awards were granted to six persons and two organizations in recognition of their contributions to the development of the Internet in Korea.





2012  
Korea Internet  
White Paper

# CONTENTS

## Special Report

- |                             |    |
|-----------------------------|----|
| 1. Big Data                 | 46 |
| 2. Internet Ethics          | 49 |
| 3. Mobile Instant Messenger | 52 |
| 4. HTML5                    | 54 |

## Part 1. Infrastructure

- |                            |    |
|----------------------------|----|
| 1. Internet Infrastructure | 58 |
| 2. Internet Resources      | 70 |
| 3. Internet Technology     | 75 |

## Part 2. Service

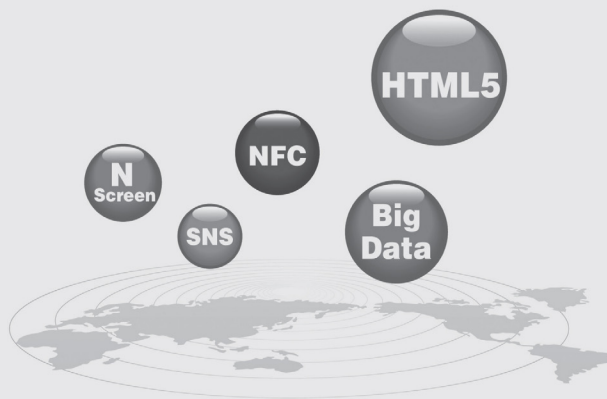
- |                                   |     |
|-----------------------------------|-----|
| 1. Internet Service               | 84  |
| 2. Internet Business              | 93  |
| 3. Internet Convergence Service   | 100 |
| 4. Public Sector Internet Service | 104 |

## Part 3. Utilization

- |                                |     |
|--------------------------------|-----|
| 1. Internet Industry and Users | 110 |
| 2. Internet Society Trend      | 118 |
| 3. Internet Promotion          | 122 |
| 4. Internet Related Laws       | 139 |

## Appendix

- |                           |     |
|---------------------------|-----|
| List of ISPs              | 144 |
| Organization Abbreviation | 148 |



**2012**  
**Korea Internet**  
**White Paper**



2012 KOREA INTERNET WHITE PAPER

## Special Report

- 1. Big Data
- 2. Internet Ethics
- 3. Mobile Instant Messenger
- 4. HTML5

# 1. Big Data

The volume of newly generated and distributed data is increasing geometrically with the increase in new types of multimedia contents, the widespread adoption of SNS services, and the extensive use of various smart devices including smartphones.

The major characteristics of the era of 'big data' include the generation of various types of large data, the use of various analysis technologies based on open source, and the increase in the use of cloud computing. In particular, not only does the size of the data in one's possession increase exponentially but also the kinds of data collected become so varied that it is possible to analyze data by combining individuals' history of purchase and location information, and the customer opinions expressed on SNS. In addition, in the software aspect, it has become possible to analyze massive data using open software, while, in the hardware aspect, database storage space, databases, and data warehouses, which used to be very expensive, can now be used at very cheap prices by utilizing cloud computing technologies for the storage of data (See Table special-1-1).

Table special-1-1 Major Features of the Big Data Environment

Classification	Existing IT Environment	Big Data Environment
Data	<ul style="list-style-type: none"> <li>Mainly standardized numerical data</li> </ul>	<ul style="list-style-type: none"> <li>Various nonstandard data</li> <li>Text data (keywords, etc.), video data</li> <li>Location data</li> </ul>
Software/ Analytical method	<ul style="list-style-type: none"> <li>Relational database</li> <li>Statistical package (SAS, SPSS)</li> <li>Data Mining</li> <li>Machine learning</li> </ul>	<ul style="list-style-type: none"> <li>Open-source type free S/W</li> <li>NoSQL, Hadoop, Cassandra, MapReduce</li> <li>Open source statistics solution (R)</li> <li>Text mining, online buzz analysis (opinion mining)</li> <li>Sentimental analysis</li> </ul>
Hardware	<ul style="list-style-type: none"> <li>Expensive storage devices</li> <li>Databases</li> <li>Large data warehouses</li> </ul>	<ul style="list-style-type: none"> <li>Possible to use cost-effective equipment such as cloud computing</li> </ul>

KISDI, Big Data revolution and media policy issues, 2012

As 'big data' has recently emerged as a core factor in determining future national competitiveness in the ICT area, and its economic and social uses have increased, the Korean government drew up 'plans to realize smart government using big data' in 2011 under the initiative of the President's Council on Informatization Strategies. In addition, the

KCC (Korea Communications Commission) set up the 'plan to promote a big data service' in June 2012, taking into account the opinions of experts in industry, academia, and research institutes, in order to secure Korea's competitiveness in leading the global market in the era of big data by combining world-class IT infra with big data based on the policy measures of the President's Council on Informatization Strategies.

The 'plan to promote the big data service' of the KCC contains the core tasks to be conducted in three major areas: 1) identifying and promoting services related to the big service; 2) securing technological competitiveness; and 3) creating an environment conducive to the use of big data under the vision of 'leaping forward to become a smart power based on big data'.

First, the government plans to introduce innovative pilot services in various industrial areas including broadcasting and communication, education, transportation, and medicine in order to discover and activate big data services. To that end, a big data support center will be established. The center will support R&D and the training of human resources through a test bed for R&D, the implementation of pilot services, and consulting with small & medium-sized enterprises. Moreover, a system for sharing original data and information without exposing personal information and corporate secrets will be prepared.

Second, big data technologies and competitiveness in service platforms will be strengthened to secure technological competitiveness in the field of big data technology. The core technologies necessary for the analysis of big data—such as cloud technology, distributed computing technology, intelligence technology and open source-based platform—will be developed and opened for use in diverse areas. Also, to secure professional human resources, which is a core task for improving the competitiveness of big data, talented holders of masters and doctorate degrees equipped with theories and practical ability will be trained by conducting R&D and pilot projects in cooperation with universities. Potential employees and hands-on staff will be trained and retrained jointly with professional Korean software companies and global enterprises, and the Chartered Big Data Analyst system will be introduced.

Third, the government will assess the realities of big data industry and the use of big data and reinforce the measures for protecting personal information to create a sound environment for the use of big data. In 2012, a survey will be conducted on the realities of big data companies in Korea, market size, and the recognition and use of big data.

Also, institutional and technical devices will be prepared to guarantee anonymity so as to minimize such side effects as the possibility of privacy infringement in the big data

environment, and the certification of PIMS (Personal Information Management Systems) will be improved to upgrade the level of personal information management by companies using big data. In the long run, the privacy protection measures appropriate for the big data environment will be prepared through the operation of forums on the protection of personal information related to big data. At the same time, the general laws will be updated to promote big data services and industries; research on and the use and technological development of big data; standardization; the training of human resources; and the spread of a big data usage culture under comprehensive policy measures.

## 2. Internet Ethics

In recent years the Internet has taken deep root in all aspects of contemporary society including the political, economic, social and cultural sectors. On the other hand, the adverse effects of Internet, such as cyber defamation of character and the leakage of personal information, have emerged with the increase in the number of smartphone users and the advent of the ubiquitous environment.

The Korean government recognized the importance of Internet ethics as an effective means of coping with the adverse effects of the Internet, and has continued to update the related laws, policies and services and to implement them while conducting various educational and PR activities for Internet users. Especially, the KCC (Korea Communications Commission) and the KISA (Korea Internet & Security Agency) have conducted various kinds of education and activities on Internet ethics including Internet ethics classes, an Internet Ethics Lecture Tour, the Korea Internet Cream Corps., and the Beautiful Internet World Pan-national Council to raise Internet ethics and establish a sound Internet culture. The government actively supports the self-purifying efforts of users while launching Internet culture campaigns aimed at helping users realize the importance of Internet ethics. In particular, the Korea Internet Cream Corps was established in 2010 to focus on helping young people cultivate sound habits when using the Internet. The Korea Internet Cream Corps was organized as a youth corps by the initiative of the KCC and KISA to help young people acquired a well-developed ethical sensibility and foster the appropriate behaviors and attitudes by themselves. The Corps helps students create a righteous environment of usage by conducting such campaigns as Cyber Protector and the Sunfull Movement (an Internet movement dedicated to countering cyber-bullying), carries out Internet education aimed at the creative and sound use of the Internet, and performs various social participation activities.

In addition to the activities of the Korea Internet Cream Corps, the KCC and KISA have been running an Internet Ethics Lecture Tour in which celebrities visit schools and built Internet ethics experience centers at the Yeosu Expo, Busan, Gwangju, etc. to enable students to personally experience the harm caused on the Internet, such as malicious replies and defamation of character, and to learn Internet ethics while playing games in order to

further develop their Internet ethics. The Internet ethics experience centers received a highly favorable response from hundreds and thousands of youths who visited the centers in both the metropolitan area and localities.

Given the increasing social concern about the adverse effects of the Internet, not only the government but also various civic organizations are implementing programs related to addiction to the Internet and games to improve the Internet usage culture. The activities of the various organizations are more popular than the programs implemented by government agencies as they are being carried out on the basis of the agreement of the majority in the private and public sectors. However, while they provide Internet users with opportunities to experience various programs, they may overlap and become diffuse unless there is a proper link between the organizations supervising the programs. Thus, the KCC and KISA have been operating the 'Internet World Making Campaign' since 2010 as a way of linking the various Internet cultural movements being carried out in various sectors of society.

The KCC and KISA designated the period from September 26 to 30, 2011 as the '2011 Beautiful Internet World Making' week and conducted 37 online and offline campaigns and events in total, including the Online Promise Campaign, the Beautiful Internet World Street Campaign (on September 27, 2011 in Gwanghwamun KT Olleh Square), the Internet Filial Duty Album Presentation Ceremony (September 28, 2011 in the KISA Academy), the Internet Ethics Society Establishment Seminar (September 29, 2011 in the KISA Academy), and the Internet Dream Corps' Local Cultural Event and Ethics Experience Exhibition (September 30, 2011 in Busan BEXCO).

The KCC and KISA are also focusing their capabilities on educational projects to raise the level of Internet ethics. Notably, in 2012, they published the Reference Materials for Internet Ethics Education at Schools, which can be used by school teachers and textbook publishers to promote education on Internet ethics during regular classes in schools. The Reference Materials for Internet Ethics Education was compiled by analyzing the educational courses announced by the Ministry of Education, Science & Technology in 2007 and 2009 (publicly announced in August 2011) and matching them with a list of the various contents of Internet ethics education. The contents are available at the Internet Ethics Education Information System ([www.nethics.kr](http://www.nethics.kr)) and the official homepage of the Korea Official Textbook Association ([www.ktbook.com](http://www.ktbook.com)). The contents can be used very conveniently: If a teacher clicks an item on the list of educational contents, the relevant materials can be used immediately for a class or compiling a book. Recently, the level of

cyber violence perpetrated by youths, including malicious replies and anti-cafes, has exceeded the critical level and efforts have been made to purify the Internet culture of young people. So it is expected that the provision of educational contents, including various supplementary materials for education on Internet ethics, videos, and audio materials which can be used in regular classes, will greatly help reinforce education on Internet ethics for youth in schools.

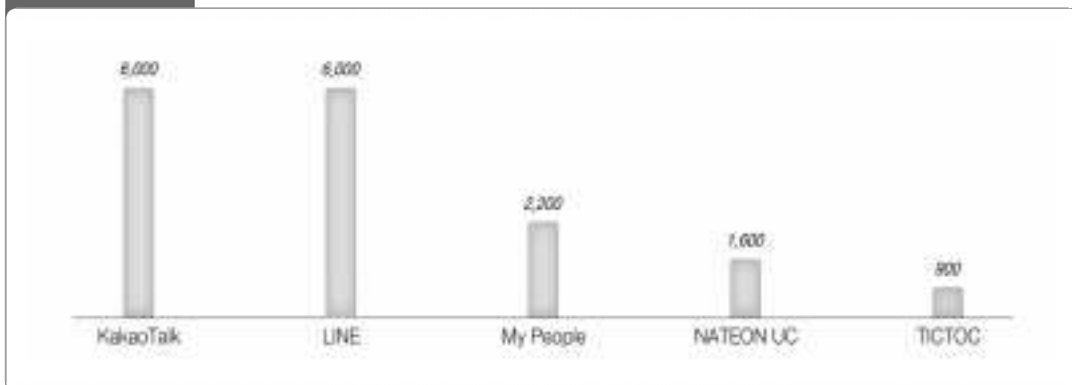
With the appearance of new types of school violence such as ‘cyber bullying’ as a result of the diversification of unethical and illegal behaviors in the Internet space, the government is conducting an intensive control (the police) program while maintaining a permanent monitoring system. The establishment of a ‘cyber bullying hotline’ is being seriously considered to be able to take active measures by detecting collective bullying on the Internet and mobile devices. Pan-national education, campaigns, and PR activities are being strengthened by connecting classes at elementary, middle and high schools with Internet literacy education and by increasing the related training programs for parents and teachers.

### 3. Mobile Instant Messenger

With the increasingly frequent use of MIM (Mobile Instant Messenger), people are using fewer PC messenger, Email, mini homepage or SMS services, and the use of voice call keeps decreasing, too. In addition, MIM is also used in the online shopping, social coupon, news, and search areas, there by threatening the entire basis of existing industries including the Internet.

Besides KakaoTalk, there are various other kinds of MIM services including Line, My People, NATEON UC, and TICTOC. KakaoTalk was launched in March 2010; My People in May 2010; Line in June 2011; and TICTOC in July 2011. In their early days they were simply used for chatting, but in 2012 they began providing linking and sharing of photos and videos, voice and video call, shopping and gaming services. They have gained explosive popularity, as evidenced by the fact that 5 out of the 7 apps that were downloaded more than 10 million times are MIM. According to the announcements of these companies, KakaoTalk and Line have 60 million users each (as of September 2012), My People 22 million users, NATEON UC 16 million users, and TICTOC 9 million users (as of August 2012) (See Figure special-3-1).

Figure special-3-1 Number of Subscribers to Major MIM Services in Korea (Unit : 10 thousand persons)



Press releases of each company (compiled), September 2012

KakaoTalk is the service which expanded the MIM market by securing 60 million subscribers as of September 2012, just two and a half years after its launch. In terms of actual usage, its number of daily transmissions of messages exceeded 1 billion in December 2012 and 3 billion on July 26, 2012.

The biggest competitor of KakaoTalk in the future will be Line of NHN, which announced a strategy to foster its mobile platform as a core feature. Line is offering its service mainly in overseas markets: it is ranked first in many Asian countries including Japan, Taiwan and Hong Kong, and is being provided in five languages. Line has more than 60 million subscribers around the world, a similar figure to that of KakaoTalk, but its market share in Korea is not significant.

According to a 'Survey on the smartphone usage in the latter half of 2011', published by KISA, 79.2% of smartphone users had experience of using MIM. However, according to data announced by Trend Monitor in April 2012, 98% of smartphone users had experience of using KakaoTalk, which indicates that most smartphone users use MIM services.

The main reason why MIM has become a major smartphone service that is used the most by Korean people is that it is available free of charge. Unlike SMS, which is limited to about 40 characters, MIM does not place a limitation on the number of characters, and it has a function for attaching photo and video links freely, which has been welcomed by users. It also has a group chatting function, and an emoticon and sticker decoration function that uses pictures and cartoons to express emotions richly, which appeals to young people. It is notable that the records of the chat room and the contents of chats are kept even after one leaves a group chat, so the sense of belonging and the psychological bond can be maintained (See Table special-3-1).

Table special-3-1 Comparison of Merits and Demerits of SMS and MIM









Items	SMS	MIM
Cost of message transmission	Charged	Free of charge
Type of transmission	Only text	Picture and video also available
Length of message	Limited to about 40 characters	Virtually limitless
Type of conversation	1:1 conversation	1:1 and multilateral group conversations possible
Decoration	Simple text emoticon	Emoticon with picture, sticker, and photo

Data of each company (compiled), 2012

## 4. HTML5

HTML5 is a web programming language that evolved to be able to express and provide various applications such as multimedia and location information by developing the previous web technology, which expressed text, image and hyperlink based on HTML4. Especially, HTML5 has greatly improved the function for handling multimedia field such as audio, video, and graphic treatment through the web itself (See Table special-4-1).

Table special-4-1 Major Functions of HTML5

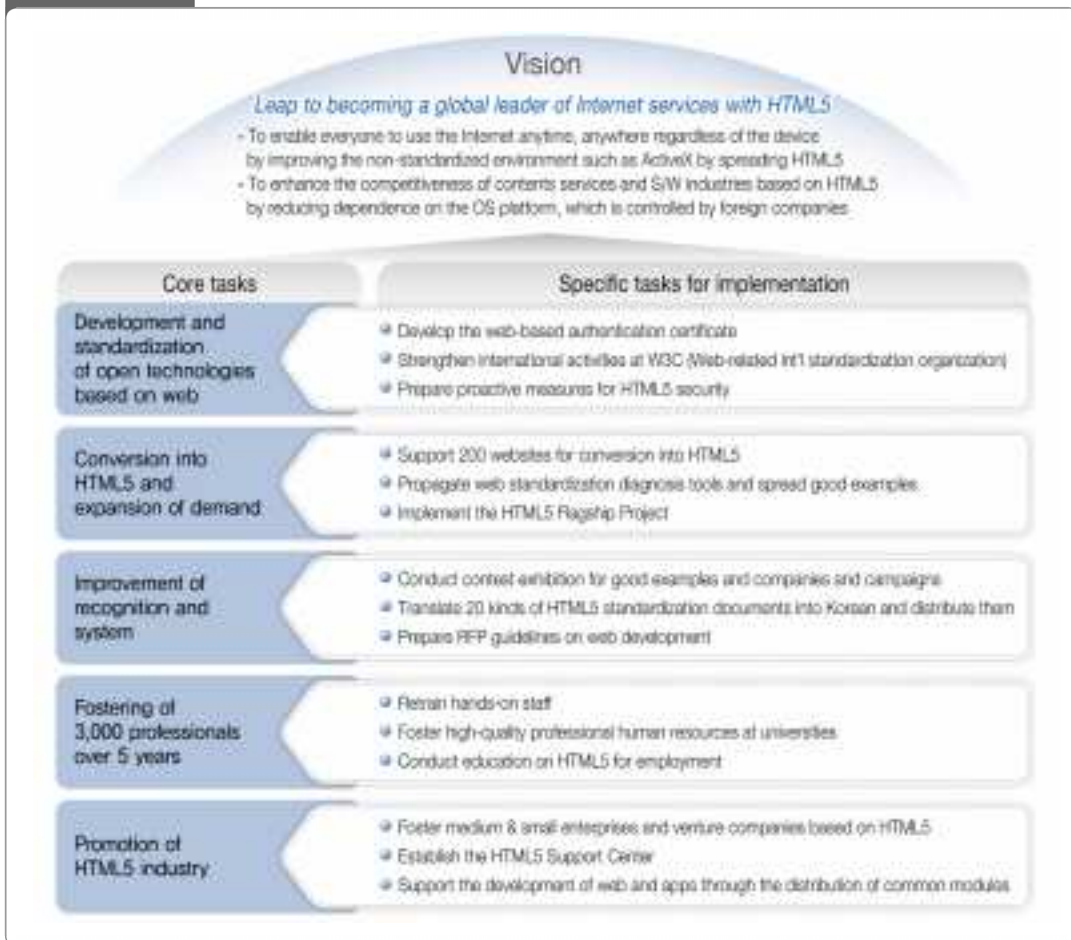
Classification	Image	Contents
Video & Audio		Self-supports audio and video functions
3D, Graphics & Effects		Supports various 2D and 3D graphic functions
Offline & Storage		Makes it possible to use the web in an environment without the support of the network
Device Access		Enables direct control of the H/W function such as camera and motion sensor in the web
Web Socket		Direct two-way communication is possible between web (client) and server
Geo location		Provides the geographical location information of the terminal without GPS
Styling Effects		Offers various styles and effects including font and color
Semantics		Assigns meaning to web data to offer search customized to the intentions of the user

KCC, Plan to spread the next-generation web standard (HTML5), July 2012

A new 'canvas' tag has been included in the HTML5 standard, and various graphs and images can be expressed through various web browsers using this tag and Java script. The function for saving data in the web browser has been added to make it possible to treat data in the offline condition. The browser can confirm the location using the Geolocation function. Also, the HTML5 standard has a function for accessing hardware devices directly.

By spreading the HTML5 standard, the KCC (Korea Communications Commission) plans to change the non-standardized web environment of Korea into a standardized environment which offers the same service anytime, anywhere, and to reduce Korean ICT companies' dependence on global OS platform companies so as to expand their opportunities for advancement into the global market (Figure special-4-1).

Figure special-4-1 HTML5 Vision and Policy Tasks



KCC, Plan to spread the next-generation web standard (HTML5), July 2012

The KCC has announced fifteen fixed tasks for the dissemination of standard HTML5 technologies under a plan to develop the utilization technology for the web-based authentication certificate by 2014 and to strengthen international activities at W3C (a

Web-related int'l standardization organization). The Commission will support 200 websites including 15 websites of government agencies and 185 websites of small-and medium-sized enterprises for conversion into HTML5, the next-generation web standard, by 2015, and foster professional human resources for HTML5 over the next five years. In addition, a web standardization diagnosis tool will be developed and distributed to make it easier for companies to confirm observation of the web standard, and twenty types of HTML5 standardization documents will be translated into Korean for distribution. Furthermore, the HTML5 Support Center will be established to promote the HTML5-based Internet industry, the establishment of HTML5-related companies will be supported, and essential technologies including HTML5-based software modules will be developed and distributed.



## Part 1. Infrastructure

- 1. Internet Infrastructure
- 2. Internet Resources
- 3. Internet Technology

# 1. Internet Infrastructure

## A. Backbone Network

### 1) IX

The number of ISPs (Internet Service Provider) has increased with the increase in the number of Internet users. This has expanded investment and traffic due to excessive costs for lines and numerous connected lines, and as a result it has become necessary to manage them effectively.

If all the domestic ISPs make direct connection with other domestic ISPs, it will cost a tremendous amount as they have to make a direct connection with overseas networks in the USA, Europe, etc. IX (Internet eXchange) appears to have solved these problems.

IX is an Internet connection system that was designed for the smooth handling of traffic among ISPs. Each ISP connects their lines with NOC (Network Operations Center), which were established for the mutual connection among ISPs, and they share the center to lower costs for the operation of lines and to reduce unnecessary traffic relay.

Currently, commercial ISPs are being connected with KTIIX (KT, [www.kornet.net](http://www.kornet.net)), DIX (LG U<sup>+</sup>, [www.uplus.co.kr](http://www.uplus.co.kr)), SKBIX (SK Broadband, [www.skbbroadband.com](http://www.skbbroadband.com)), and KINX (KINX, [www.kinx.net](http://www.kinx.net)). 6NGIX (KISA, [www.vsix.kr](http://www.vsix.kr)), which is a connection network based on the next-generation Internet address of IPv6, is being operated on a non-profit basis (See Table 1-1-1).

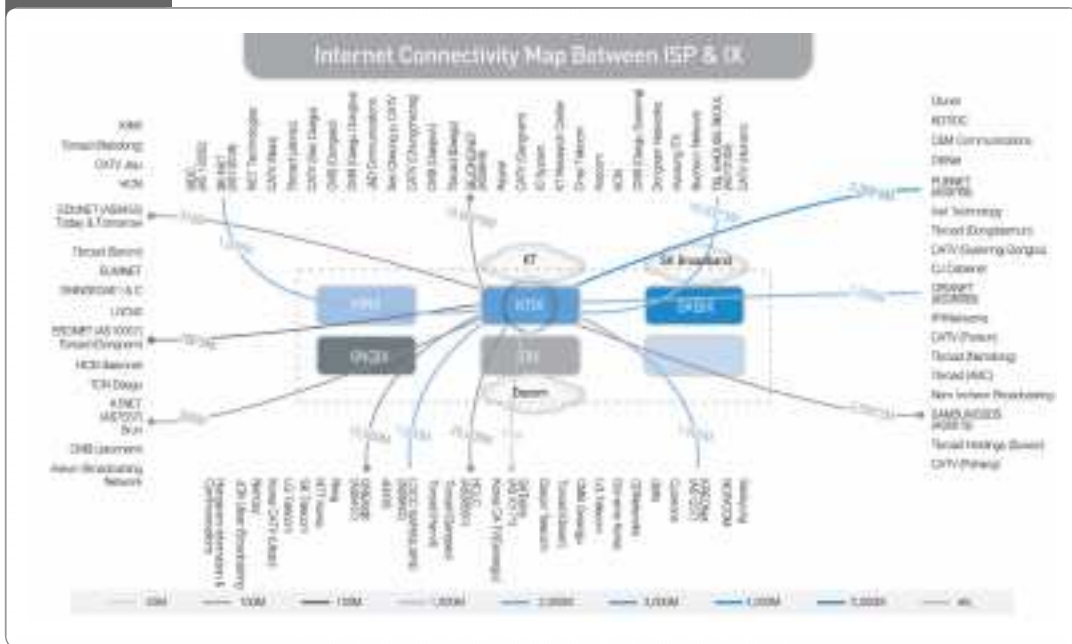
Type	Internet Exchange Node	Operated By	Linked ISPs	Total Capacity
Commercial	KTIIX	KT	21	3,050
	DIX	LG U <sup>+</sup>	40	1,400
	KINX	KINX	21	400
	SKBIX	SK Broadband	20	1,800
Non-profit	6NGIX	KISA	5	4

KISA, 2012

## 2) Commercial Internet Network

The commercial Internet services in Korea are being provided by 121 companies including KORNET (KT), Boranet (LG U<sup>+</sup>), B-Net (SK Broadband), Sejong Net (Sejong Telecom), Dream Max (Dream Line), and Samsung SDS (Samsung SDS) who have all been assigned IP addresses by KISA (Korea Internet & Security Agency). They provide organizations and individuals who use the Internet with exclusive lines, connection with Broadband Internet, etc (See Figure 1-1-1).

Figure 1-1-1 Internet Network Structure (as of December 2011)



Internet Statistics Information System, isis.kisa.or.kr

KORNET is an infrastructure of the high-speed national network, which was established by KT for connection with the Internet in Korea. It stands for 'KORea-telecom-interNET'. It began to be constructed in June 1994, and 2.5G~10Gbps of high-speed network has been installed in 90 regions nationwide. 127Gbps international lines have been established in 17 nations, including 60Gbps in the USA.

Boranet has installed a dual broadband transmission network for more than 800 backbone and subscriber capacity nodes to provide Internet connection services with differentiated quality and speed throughout the country. The company maintains a stable qual-

ity of connection with overseas Internet on the basis of cooperative relationships with many overseas service providers.

B-Net accommodates subscriber section traffic in 130 nodes nationwide, and is providing superior quality Internet connection service through linking with numerous domestic and overseas major service providers.

### 3) Submarine Fiber-Optic Cable and Satellite Communication

A submarine fiber-optic cable has been installed under the sea for communication between continents or between land and an island that are separated from each other by the sea. While the submarine coaxial cable had the problem of insufficient capacity, the current transmission system, which uses a fiber-optic cable, has the merit of bulk transmission and high-speed communication. The advantage of the international submarine fiber-optic cable is that it enables the long-distance, high-speed transmission of dozens of Tbps of bulk data and its data transmission is more reliable than that of satellite communication. The international submarine fiber-optic cable is playing an especially important role in communication media for international communication in the high-speed transmission of bulk data, which is in accordance with the expansion of Internet usage worldwide and the activation of social media through P2P and smartphones (See Table 1-1-2).

Table 1-1-2

International and Domestic Submarine Fiber Optic Cables

(Unit : bps, km)

Region	Cable Name	Landing Points	System Capacity	Distance	Completion
Overseas	FEA	Korea-Japan-Hong Kong-Middle East-Europe, etc. 13 nations in total	5G×2	29,000	1997
	SMW-3	Korea-Northeast Asia-Southeast Asia-Middle East-Europe, etc. 35 nations in total	160G	39,000	1999
	CUCN	Korea-USA-China-Japan-Taiwan-Guam	20G×4	30,000	2000
	APCN2	Korea-Japan-China-Hong Kong-Taiwan-Singapore-Malaysia	2.56T	19,000	2001
	KJCN	Korea-Japan	2.88T	500	2002
	EAC	Korea-Japan-Taiwan-Hong Kong	2.56T	10,600	2001
	C2C	Korea-Japan-Taiwan-China-Hong Kong-Taiwan-Singapore-Malaysia	7.68T	17,000	2002
	FNAL	Korea-Japan-Taiwan-Hong Kong	2.4/3.8T	9,600	2002
	TPE	Korea-China-Taiwan-USA	2.56T	18,000	2008
Domestic	Ulleung-land	Ulleung-Hosan	2.5G	159	1993
	2 Jeju-land	Jeju-Goheung	2.5G×4	191	1996
	3 Jeju-land	Jeju-Namhae	2.5G×2	236	2000

KT, Status of International Lines Submarine Fiber-optic Cables, April 2012

There are 8 submarine cable relay stations in total in Korea, including in Busan, Geoje, and Taean. International landing facilities are located in Busan, Geoje, and Taean, and domestic relay stations are located in Jeju, Goheung, Namhae, Hosan, and Ulleung. As of 2011, there were 9 international submarine cables planted in Korea whose total capacity is about 25Tbps.

Satellite earth stations in Korea are located in Seoul, Yongin, Geumsan, and at Boeun (KT), Asan (LG U<sup>+</sup>), and Yeosu (Onse Telecom), and satellite control centers are located in Yongin and Daejeon. The earth stations are oriented to INTELSAT, INMARSAT, Asiasat, SES, JSAT, Apstar, and KOREASAT (See Table 1-1-3).

Table 1-1-3 KOREASAT Status

Type	KOREASAT 3	KOREASAT 5	Olleh 1 (KOREASAT 6)	Condosat-1	Condosat-2	Olleh 2
Orbit (East Longitude)	116°	113°	116°	75°	75°	116°
X-day	Sep. 5, 1999	Aug. 22, 2006	Dec. 30, 2010	Sep. 26, 1999	2013 <sup>e</sup>	2016 <sup>e</sup>
Launching Company	Ariane	Sea Launch	Ariane	International Launch Service	Ariane	-
Frequency Band	Ku/Ka	Ku	Ku	C	C, Ku	Ku
Polarization (For Communication)	Both directions	Both directions	Both directions	Both directions	Both directions	-
Beam Coverage	Korean Peninsula	Korean Peninsula, Japan, Philippines, Taiwan, East China	Korean Peninsula	Asia/Middle East/Africa	Asia/Australia	Korean Peninsula, Asia/Middle East/Australia and global

※ e : estimated

KT, Status of Operation of Satellites in Korea, April 2012

## B. Subscriber Network

### 1) Fixed Line Network

Korea secured a world-class IT infrastructure via the National Information Super-Highway Project, which was implemented from 1995 to 2005, and via the BcN (Broadband convergence Network) Establishment Project, which proceeded from 2004 to 2010. On this basis, Korea began commercial Internet service in 1994, and the commercial Broadband Internet service in 1998. After that, the number of the subscribers of Broadband Internet

service exceeded 10 million in 2002. As of May 2012, the total number of Broadband Internet subscribers was 17.97 million, and among them 4.29 million people are using FTTH (Fiber to the Home) service. The users of the Internet provided by xDSL and satellites are the subscribers living in rural areas, and for them broadband service is being implemented in the FTTH and M/W method (See Table 1-1-4).

Table 1-1-4 Broadband Internet Subscribers (Unit : persons)

Companies	xDSL	LAN	HFC	FTTH	Satellite	Total
KT	1,882,156	2,768,235	-	3,293,946	495	7,944,832
SK Broadband	256,574	1,117,023	1,163,120	644,955	-	3,181,672
SK Telecom (Resale)	97,718	458,784	307,717	235,455	-	1,099,674
LG U <sup>+</sup>	-	1,619,017	1,026,173	110,245	-	2,755,435
Comprehensive Cable Television	77,518	351,042	2,428,854	-	-	2,857,414
Others	4,123	79,562	41,536	3,508	-	128,729
Total	2,318,089	6,393,663	4,967,400	4,288,109	495	17,967,756

KCC, Statistics of Subscribers of Wired and Wireless Internet Service, May 2012

The BcN Establishment Project was implemented with the initiative of the Korean government and was begun in 2004 and completed in 2010. The number of the subscribers of BcN with a speed of over 50Mbps has exceeded 14.82 million, which is 20% more than the original goal of a million. With the establishment of BcN, it is possible to use Broadband Internet service based on FTTH and HFC of over 50Mbps not only in large cities but also in small and medium cities and eup and myeon regions in rural areas throughout the nation. For rural villages with less than 50 households, which cannot use Broadband Internet service, the project to activate a broadband subscriber network in rural areas has been implemented since 2010, and as of December 2011, 1,583 villages out of the total 13,217 villages were supported for the establishment of a broadband network in the FTTH method.

## 2) Wireless Network

As the usage of multimedia contents such as music, video, and games through the 802.11 communication network keeps increasing at home or at work, more users are increasingly installing their own AP for personal use. Telecommunication service providers

also continue to expand Wi-Fi hot spots with the purpose to resolve the traffic load caused by the users of smartphones or tablet PCs. As of May 2012, the number of the APs installed for hot spots by the three major telecommunication service providers is more than 200,000 for KT, more than 96,000 for SK Telecom, and more than 80,000 for LG U<sup>+</sup>. In total, the number will soon exceed 400,000. While in 2011 the hot spots were mainly placed in densely populated regions, these days they are being installed in various areas including at conventional markets, buses, subways, and taxis.

As most of the APs installed by individuals or telecommunication service providers are concentrated in the 2.4 GHz frequency band service, providers are installing APs in the same region overlapping each other to increase interference and telecommunication, which the government is trying to coordinate. In January 2011, the government announced the Guideline to minimize 2.4 GHz Wi-Fi jamming, and has since recommended that telecommunication service providers install the hot spots jointly. As a result, the three major telecommunication service providers agreed to establish and use the hot spots together in July 2011, and began establishing hot spots jointly in April 2012. Among the 1,000 public facilities, such as cultural facilities and libraries, which were selected by the KCC (Korea Communications Commission), the 400-odd places where hot spots are already established were opened, and the infrastructure for the rest of the places are to be installed evenly by the three telecommunication service providers and then opened for free to all subscribers.

The usage of bulk multimedia contents has increased with the explosive expansion of LTE subscribers, and as a result the usage of wireless data through the LTE network is increasing too. It is estimated that the monthly usage of data by LTE users through the LTE network is 40~50% more than that of WCDMA users. As the problem of data loads in the LTE network has become serious, telecommunication service providers are planning to introduce Femtocell as a solution to the problem. Unlike the mini repeater, which only secures coverage by simply relaying the signal of the base station, Femtocell can secure coverage and increase transmission capacity at the same time by sending a separate signal. Due to these characteristics, Femtocell can offer more stable LTE service if it is installed in shadowy regions of the building, such as the interior or basement and places that have slow speed due to the concentration of users. SK Telecom commercialized Femtocell in June 2012, for the first time in the world and KT followed suit soon after that. They are expected to help the stable operation of LTE voice service, which will begin by the latter half of 2012.

## C. Research Network

### 1) Domestic Network

The establishment and operation of KOREN (KOREa advanced REsearch Network) provided universities and industries with the environment for the R&D of high-tech IT equipment, application services, broadband, and high-quality open testing that connects future Internet and broadcasting and communication fusion technologies. The main purpose of this project is to reinforce national technological competitiveness by supporting IT R&D at universities, research institutes, and industries and by offering the infrastructure for testing in order to keep pace with the IT policies of the government.

KOREN established the new transmission network in a single backbone network on the basis of the domestically produced equipment of ROADM (Reconfigurable Optical Add-Drop Multiplexer) between the 6 nodes located nationwide. The existing Point-to-Point transmission network structure, which is without a protection function, has been improved to a system that segments the nation into the following 3-multi-rings: the metropolitan ring, the Yeongnam ring, and the Honam ring. If a problem occurs, the signal will detour to another route automatically to realize a service without stopping.

KREONET (Korea Research Environment Open NETwork) was launched in 1988 as one of the 5 national backbone networks. Now it is being managed and operated by KISTI (The Korea Institute of Science and Technology Information) with the support of the Ministry of Education, Science, and Technology, which is playing the role of a national network for science and technology.

KREONET provides state-of-the-art technologies in high performance networking, a logical group network, security, and future Internet in order to support high-tech scientific and technological researches and distant joint researches conducted by approximately 300 domestic research institutes, universities, government agencies, and industries on the basis of maximum 100Gb domestic and overseas backbone networks. The backbone of KREONET's domestic networks connects 16 major areas in Korea including Busan, Incheon, Daegu, and Gwangju with Seoul and Daejeon as the center. It does so by using a high-performance, state-of-the-art fiber-optic network. Internationally, it offers an exclusive infrastructure for scientific and technological research through GLORIAD (GLObal RIng network for advanced Applications Development), which is participated by 14 nations, to help the distant joint projects conducted by researchers who are scattered

throughout Korea and in countries overseas.

## 2) International Network

TEIN (Trans Eurasia Information Network) is an international communication network that is used for research and it connects Asia and Europe. It was launched as a cooperation project of ASEM (Asia Europe Meeting) for the facilitation of joint international researches in high-tech areas such as IT and BT between Asia and Europe. Now 19 Asian countries and 32 European countries are connected with TEIN3 through the 3<sup>rd</sup> stage of the TEIN project. With TEIN3, 19 Asian countries are connected with the regional research network of Europe (GEANT3) and the Asia-Pacific Connection Network (TransPAC3) of the U.S. through the 4 TEIN PoP (Point of Presence), which is located in Beijing, Singapore, Hong Kong, and Mumbai.

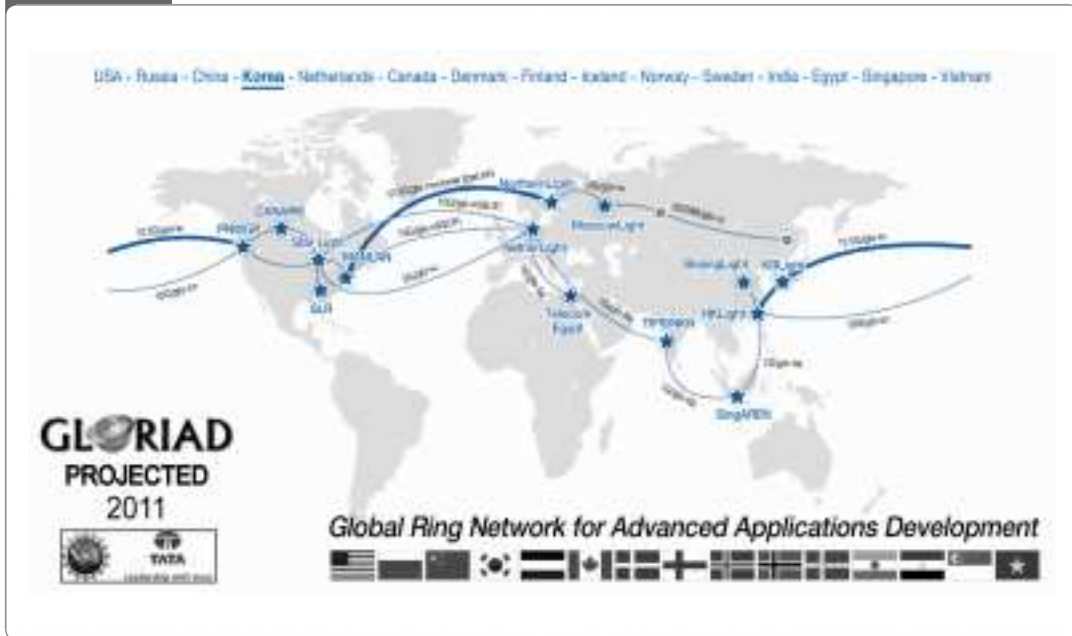
23 organizations in 19 Asian countries are now participating in TEIN3, which is used by more than 30 million people working for more than 4,000 member institutes that are linked to NREN (National Research Education Network). NIA (The National Information Society Agency) is participating in the TEIN3 project through direct investment in the 2.5Gbps international lines in the sections of Korea-Hong Kong and Hong Kong-Singapore, which is the Asian backbone of TEIN3.

The APII (Asia-Pacific Information Infrastructure) testbed is a project that has been proceeded by the joint proposal by Korea and Japan, which was made at the 12<sup>th</sup> IT Working Group Meeting that was held in 1995 in Shanghai, China. The purpose of the APII testbed is to contribute to the building of IT infrastructure by laying the groundwork for the cooperation in research in the Asia-Pacific region for the development of advanced technologies that are necessary for the information society and for the utilization of developed technologies and that are also for mutually connecting and linking next-generation networks. The international cooperation program also develops next-generation Internet-related technologies and provides an environment for the research and testing of application services by developing mutual operation programs with the high-speed networks, which will be upgraded every year.

GLORIAD (GLObal Ring network for Advanced application Development) continues to develop a network of over 10Gb, especially in linking intercontinental networks, and is leading the development of network technology. The representative areas of high-tech global scientific and technological researches, which need the bulk transmission of data,

are high energy physics, weather and climate, astronomy and space, nuclear fusion energy, medicine, etc (See Figure 1-1-2).

Figure 1-1-2 The Entire Structure of GLORIAD (as of 2011)



GLORIAD-KR (compiled), [www.gloriad-kr.org](http://www.gloriad-kr.org)

All of which require a high-performance, high-quality international infrastructure for a research network in order for high-tech and high-speed international remote cooperative researches to be conducted beyond geographical or spatial restrictions. Due to such changes in the environment of research and development, the GLORIAD project began in 2005 as an international research network that connected the world in a ring-shape through the joint efforts of the USA, China, Russia, Canada, the Netherlands, etc. Since then, GLORIAD has contributed to the activation of numerous high-tech international cooperative researches in science and technology.

The major research areas related to GLORIAD are high-energy physics, nuclear fusion energy, astronomy and space, earth science, medical science, future science, grid computing, atmospheric science, etc. As these types of areas need two-way remote cooperation through the real-time transmission of large, high-quality data, a global infrastructure, such as GLORIAD, which is exclusive for their research, is essential.

## D. Convergence Network

### 1) UBcN

UBcN (Ultra Broadband convergence Network) is a human-oriented network that intelligently enables the usage of realistic, large-scale future broadcasting and communication services anytime and anywhere. It is an intelligent ultra broadband broadcasting and communication network that recognizes and judges the situation by itself at a speed faster than the existing BcN (Broadband convergence Network) by more than 10 times.

In 2010, when the BcN project was completed, the world's first pilot program for mobile service between different kinds of networks was provided. Through the BcN pilot program, 50M-100Mbps of Broadband Internet was offered to 90% of the households using Internet (17.86 million) as of the end of 2011, and the number of the households using IPTV exceeded 5 million in May 2012.

In 2009, the Giga Internet Service Basis Establishment project was prepared for the establishment of UBcN, which can accommodate future broadcasting and communication services after BcN, and the project was selected as the core policy task in the Mid-and long-term plan for broadcasting and communication network (2009), which was set up by KCC (Korea Communications Commission). The project was also positioned as an essential infrastructure for the implementation of the national IT strategy being chosen as a specific task for the IT Korea Future Strategy (2009) of the Future Planning Committee and the Upgrading smart infrastructure and creating the basis for private activation (2010) of the President' Council on National ICT Strategies.

Through the Giga Internet pilot program, services were offered to 2,530 households in 9 cities, including Seoul, Busan, Daejeon, Daegu, and Gwangju, by 2011, and more than 7,000 additional households in 8 cities will be able to enjoy the service in 2012.

In addition, in order for the Giga Internet subscriber network to be used and experienced fully, large realistic future broadcasting and communication fusion services such as the UHDTV service, the no-glass 3D digital signage service, the Giga broadband wireless home service, and the multi screen service are being discovered and developed and offered to test subscribers.

Due to the strong will of the government to be a leading country with world-class broadcasting and communication infrastructure and the continuous implementation of projects to achieve this goal, Korea is ranked first in the world in the penetration of

Broadband Internet (2011, Akamai) and the average Internet access speed (2011, Akamai). Korea is first among OECD nations in the penetration of wireless Internet (2011, OECD) and in the UN evaluation of e-Governments (2011, UN). The country can boast of having the world's best Internet infrastructure (See Table 1-1-5).

Table 1-1-5 Status of Development of Giga Internet Pilot Application Services

Year	Service Name	Description	Consortium
2011 (6 each)	SNS-based N player service	• Sound source and videos are provided in SNS together with additional information, and the consumption of voluntary contents is promoted through the expansion of users' participation.	KT
	Smart network-based B2B2C	• Construct a network that can relay large media contents effectively through a distributed network.	
	Realistic multimedia book	• Offer users two-way service with electronic book service in the form of large streaming, which contains audio and video.	CJ Hello Vision
	Intelligent social video streaming service	• The individual broadcasting service that offers real-time video streaming service in SNS through various wired and wireless terminals can be used in group meetings, seminars, etc.	
	Intelligent contents distribution platform	• A smart network that can transmit effective media transmissions will be established, and on this basis an optimized N-screen service will be offered.	LG U+
	Giga broadband wireless home service	• The home service will conveniently enable the real-time transmission of full HD pictures, video, etc. at home through the transmission of 1Gbps wireless AV data and Wi-Fi data.	

NIA, 2011 Report on the results of network upgrading project, February 2012

## 2) M2M

M2M (Machine to Machine) develops the traditional human-oriented information usage, which connects humans. It expands the communication between man and things and from things to things. The next-generation fusion infrastructure provides intelligent services using various kinds of media rather than a service based on a single media.

The main projects implemented in 2011 include the development and standardization of the original technologies for M2M service; the pilot program for the service through adjustment to the environment of next-generation mobile infrastructure and the discovery and propagation of killer services; the establishment and operation of a comprehensive M2M support center, which will support saving costs for conducting tests and will reduce the time needed for the development of modules and terminals through a one-stop serv-

ice for the entire process from service development to field tests; training manpower and encouraging the spread of service in public and private sectors; and the establishment of a cooperation system with advanced nations.

In December 2011, IoT (Internet of Things) was selected as one of the 7 new smart industries to be promoted by the KCC. In 2012 emphasis was put on laying the groundwork for the activation of M2M, supporting the promotion of the demand for M2M, and helping small and medium venture companies develop the related infrastructure.

## 2. Internet Resources

### A. IP Address and AS Number

Korea has made continuous efforts to secure IP (Internet Protocol) addresses and AS (Autonomous System) numbers on a stable basis. As of the end of June 2012, the amount of Korea's IPv4 addresses was 112.24 million, which is the 6<sup>th</sup> largest in the world, and the amount of IPv6 addresses was 5,223 (/32 standard, /32 = 2<sup>96</sup>), which is ranked 9<sup>th</sup> in the world.

Also, Korea is ranked 11<sup>th</sup> in the world in the amount of AS numbers, with 1,015 numbers. 'AS number' means the unique number that is assigned to the networks being operated in the same routing policy (See Table 1-2-1).

Table 1-2-1 Domestic Internet Address Stewardship (as of June 30, 2012) (Unit : each)

IPv4 Address by Country			IPv6 Address by Country			AS No. by Country		
Rank	Country	No. of IPv4	Rank	Country	No. of IPv6 (based on /32bit)	Rank	Country	No. of AS
1	USA	1,555,253,888	1	Brazil	65,728	1	USA	21,733
2	China	330,207,744	2	USA	18,698	2	Russia	4,564
3	Japan	201,901,824	3	China	12,501	3	Ukraine	2,047
4	UK	122,862,928	4	Japan	11,213	4	UK	1,806
5	Germany	118,634,600	5	Germany	10,699	5	Brazil	1,735
6	Korea	112,246,272	6	France	8,640	6	Poland	1,703
7	France	95,516,752	7	Australia	8,548	7	Germany	1,626
8	Canada	79,234,304	8	EU	6,170	8	Canada	1,525
9	Italy	52,431,776	9	Korea	5,223	9	Romania	1,510
10	Brazil	50,660,864	10	Italy	4,785	10	Australia	1,364
11	Australia	47,663,872	11	Argentina	4,206	11	Korea	1,015
12	Netherlands	44,953,088	12	Taiwan	2,330	12	Japan	960
13	Russia	43,745,824	13	Poland	2,223	13	France	911

Internet Statistics Information System, isis.kisa.or.kr

## B. Domain

A domain is an Internet address that indicates the address of a computer that is connected with the Internet with easy-to-remember characters (English letters, Korean characters, numbers, and hyphen).

A domain used on the Internet must be unique without overlapping throughout the world, and thus it is made according to a common system and it cannot be made or changed at will. All the domains existing on the Internet are made in an inverted tree under the domain called '.' or 'root'.

There are two kinds of top national domains in Korea: '.kr' and '.한국.' The '.kr' domain has been made in a three-level system like 'abc.co.kr', since its introduction in 1986. The two-level 'Korean alphabet.kr' system was introduced in 2003 and the two-level English system, like 'abc.kr', was introduced in 2006. A total of 1,102,014 addresses have been registered in the '.kr' domain as of the end of June 2012 (See Table 1-2-2).

Table 1-2-2 Classification and Characteristics of the National Domains of '.kr' and '.한국'

Type	.kr		.한국 (2 <sup>nd</sup> Level)
	2 <sup>nd</sup> Level	3 <sup>rd</sup> Level	
Usable letters	English letters (upper case and lower case not differentiated), Korean alphabet (2,350 characters), numbers (0-9), hyphen(-).	English letters (upper case and lower case not differentiated), numbers (0-9), hyphen(-).	English letters (upper case and lower case not differentiated), Korean alphabet (11,172 characters), numbers (0-9), hyphen(-).
Composition	Desired letters.kr ※ One or more English letters or Korean characters must be included.	Desired letters.2 <sup>nd</sup> level public domain.kr ※ Choose one out of 29 2 <sup>nd</sup> level public domains.	Desired letters including Korean characters.한국
Length	3-63 letters ※ 2-17 letters if the Korean alphabet is included.	3-63 letters	1-17 letters
Examples	kisa.kr or 한국인터넷진흥원.kr	kisa.or.kr or abc.co.kr	인터넷진흥원.한국

KISA domain, <http://domain.kisa.or.kr>

Meanwhile, according to the demand of non-English speaking countries that want to use their own languages for the domain, ICANN (Internet Corporation for Assigned Names and Numbers), which establishes the global policy for the world's Internet addresses, finalized its plan, in October 2009, to introduce multi-language top national domains. So the KCC (Korea Communications Commission) decided to use the Korean

characters of ‘.한국’ for the top national domain considering the representative nature of Korea and the economic effect when entering the address for Internet usage. ICANN delegated KISA as the authority for the management of the ‘.한국’ domain in February 2011, and the registration of the ‘.한국’ domain began on May 25, 2011.

## C. DNS

DNS (Domain Name System) is the core system that converts a domain name used on the Internet to an IP address that can be recognized by the computer. According to the operating mode, DNS is divided into the Cash DNS, which makes questions on behalf of the user, and the DNS, which takes responsibility for the uniqueness of the address.

For a stable Internet service, the national DNS is being operated with a distributed arrangement in 14 domestic and overseas sites. Two domestic sites and one overseas site were additionally established in 2010 to strengthen security against a DDoS (Distributed Denial of Service) attack, and now 5 out of the 14 sites in total are equipped with devices that can cope with a DDoS attack.

The main reason that the national DNS is distributed around the world is to improve the access speed in the locality for the convenience of the users of the national domain (.kr, .한국). Another reason is that it can allow for a detour connection if a problem such as a DDoS attack occurs. The distributed load can improve the stability of the entire national DNS.

## D. Internet Governance

The term ‘Internet Governance’ was first used in the mid 1990s at Harvard’s Berkman Center to mean ‘the system of management of Internet addresses, including the operation of root DNS and IP addresses’, and its concept was extended to ‘the development and application of specific principles, rules, decision-making procedures, and programs, which have been made for the development and usage of the Internet, by the government, private sector, and the civic society’ at WSIS (World Summit on the Information

Society) that was held in 2005. Recently, the domain of Internet Governance keeps expanding and has been recognized as 'a system that manages the total structure of politics, economy, society, culture, etc'.

The scope of the discussion of Internet Governance encompasses the areas that need various kinds of cooperation in governmental and non-governmental sectors on online territory beyond the management of each nation, and where the rules, policies, protocol, decision-making process, technological basis, etc. related to cyber space are coordinated. The global Internet Governance is not only handling the matters of resource assignment and distribution, such as technological standardization and Internet identifiers like domain names and IP addresses; but also spam; cyber crimes; conflicts on intelligent property, such as copyrights and patents; and consumer protection.

There are active discussions going on about the issue of Internet Governance in various areas. The representative international organization related to Internet Governance is the UN-affiliated IGF (Internet Governance Forum), which was established in 2006, according to the agreement made at WSIS in November 2005. The IGF discusses public policies such as the sustainability, firmness, security, stability, and development of the Internet and major Internet resources for the development of the information society throughout the world. IGF has had 6 meetings so far, and various issues related to Internet Governance are treated in its annual meeting (See Table 1-2-3).

Table 1-2-3 Status of Internet Governance Forum (IGF) Meetings

No.	Year	Venue	Topic
1 <sup>st</sup>	2006	Greece (Athens)	Internet Governance for development-Access, diversity, openness, and security
2 <sup>nd</sup>	2007	Brazil (Rio de Janeiro)	Major Internet resources
3 <sup>rd</sup>	2008	India (Hyderabad)	Internet for all
4 <sup>th</sup>	2009	Egypt (Sharm El-Sheikh)	Internet Governance-Creation of opportunity for all
5 <sup>th</sup>	2010	Lithuania (Vilnius)	IGF2010-The future with co-prosperity
6 <sup>th</sup>	2011	Kenya (Nairobi)	Internet as a catalyst for change-Access, development, freedom, and innovation
7 <sup>th</sup>	2012	Azerbaijan (Baku)	Internet Governance for the sustainable development of humanity, the economy, and society

KISA, 2012

To cope with the international trends of Internet Governance systematically, KIGA (Korea Internet Governance Alliance) was established in April 2012 as a government-civilian

council whose operation is supported by the KCC. KIGA encourages Korean civilian experts to advance in ICANN, whose organization is expected to change; IGF, which deals with a wide range of issues of Internet Governance; and other international organizations. It also discusses domestic and overseas Internet-related issues to present the directions of the national policy. KIGA is preparing to invite the next APriGF (Asia-Pacific Region Internet Governance Forum) to lay the basis for the international cooperation in the pan-Asian region on issues related to the Internet.

## 3. Internet Technology

### A. Technology Trend

USN technology has been actively developed since the mid 2000s. In Korea, with ETRI as the center, related industrial, academic, and research institutions carry out its technological development and standardization. So far, USN middleware technology has been developed to be applied to the U-city project in Korea. The technologies on low-electricity sensor nodes and System-On-Chip solutions, routing protocols, sensor network communication, etc. have been developed. The developed core technologies were proposed to the IEEE, etc. to help with international standardization. In countries overseas, the presentation standard of sensor data was developed by the OGC (Open Geospatial Consortium), and Microsoft, Nokia, etc. have developed platform technologies. IBM, Oracle, OASIS (The Organization for the Advancement of Structured Information Standards), etc. are actively researching semantic searching technologies. In the USA, the research on USN technology is being performed by developing the standards for routing protocol, which has the characteristics of reliability and low delay.

Meanwhile, the IP-USN is a technology made by combining USN technology and IP technology to guarantee wide expandability and mobility by loading IP in sensor node. Internet technology has been combined with the sensor network, which was sporadically used rather narrowly for disaster prevention, weather forecast, or building management, to reinforce networking function. Especially, the IP-USN technology can develop and apply various application services by establishing a sensor network at a desired place in connection with various kinds of existing Internet infra and interconnecting them through the Internet.

### B. Standardization

Internet standardization in Korea is being mainly implemented by the TTA (Telecomm-

unication Technology Association) and Internet-related IT standardization strategy forums, such as the Future Internet Forum, the IPv6 & Identifier Forum, the VoIP Forum, the Korea Ethernet Forum, the Mobile Web 2.0 Forum, the Web Korea Forum, the IPTV Forum Korea, and the FN2020 Forum (See Table 1-3-1).

**Table 1-3-1** Main Activities of Internet Related IT Standardization Strategic Forums

Name	Main Activity	Website
Future Internet Forum	<ul style="list-style-type: none"> <li>• Research on the standardization technology for the general affairs of future Internet including future Internet structure, service, wireless, testbed, and policy areas.</li> <li>• Differentiation in the area of standardization technology through cooperation with TTA Future Internet Project Group (PG220) and expansion of the scope of activities and participating manpower.</li> <li>• Activities for international standardization related to future Internet (ISO, ITU-T, IETF/IRTF).</li> </ul>	www.fif.kr
IPv6 & Identifier Forum	<ul style="list-style-type: none"> <li>• Domestic standardization of IPv6 conversion and switching technology.</li> <li>• Standardization of security guidelines for the introduction of IPv6 in Korea.</li> <li>• Preparing guidelines for the registration of the DNSSEC pilot domain and establishment of a name server in Korea.</li> </ul>	www.ipv6.or.kr www.uniform.or.kr
VoIP Forum	<ul style="list-style-type: none"> <li>• Standardization of the connection of the service providers of VoIP/MoIP such as Internet phones and videophones.</li> <li>• Activities related to ITU-T international standardization.</li> </ul>	www.voip-forum.or.kr
Korea Ethernet Forum	<ul style="list-style-type: none"> <li>• ITU-T, IEEE802 international standardization including revision of the bridge LAN.</li> </ul>	www.ethernet.or.kr
Mobile Web 2.0 Forum	<ul style="list-style-type: none"> <li>• Standardization of mobile web based on mobile OK.</li> <li>• International standardization of W3C mobile web.</li> <li>• Pilot service of mobile OK.</li> </ul>	www.mw2.or.kr
Web Korea Forum	<ul style="list-style-type: none"> <li>• Standardization of web service quality technology language 2.0, etc.</li> <li>• International standardization of W3C, OASIS.</li> </ul>	www.webkorea.or.kr
IPTV Forum Korea	<ul style="list-style-type: none"> <li>• Standardization of IPTV service and requirements.</li> <li>• ITU-T international standardization activities.</li> </ul>	www.iptvforum.or.kr
FN2020 Forum	<ul style="list-style-type: none"> <li>• Standardization of the NGN relay network user profile.</li> <li>• ITU-T, JTC1, 3GPP international standardization activities.</li> </ul>	www.bcnforum.or.kr

KISA (compiled), 2012

International organizations for standardization can be divided into official standardization organizations and de facto standardization organizations, and the Internet standards are mainly developed by de facto standardization organizations. De facto standardization organizations include the IETF (Internet Engineering Task Force), which develops the standards for Internet communication, and the W3C (World Wide Web

Consortium), which develops web standards. The characteristic of the de facto standardization organizations is that they establish the standards rapidly by focusing on users and markets with the participation of companies and individuals.

Official standardization organizations include international standardization organizations in which government representatives participate, and national standardization organizations in which the stakeholders within the nation participate. The ITU, ISO (International Organization for Standardization), and the IEC (International Electrotechnical Commission) are the representative official standardization organizations. As a UN-affiliated international organization, the ITU is developing and propagating international recommendations for not only wired communication but also for radio waves, broadcasting, satellite frequencies, etc. ISO is developing international standards for all industrial areas including information technology. ISO and IEC established JTC1 (Joint Technical Committee1) for the standardization of information technologies and are closely cooperating with ITU-T and other de facto standardization organizations (See Table 1-3-2).

Table 1-3-2 Major Standardization Issues by International Standardization Organizations

Name	Description	Members	Major Internet Standardization Issues
IETF	De facto standardization organization	Companies, researchers, individuals, etc. in more than 40 nations	<ul style="list-style-type: none"> <li>Standardize P2P transmission with the establishment of the ALTO working group and the LEDBAT working group.</li> <li>Finalizing standardization of Pv4CS and Ethernet CS.</li> <li>Began research on multi cast mobility, IPTV, etc. for the evolution of the Internet.</li> </ul>
W3C	De facto standardization organization	More than 350 member companies	<ul style="list-style-type: none"> <li>IPTV-related standardization by establishing video on the Web activity.</li> <li>Standardization for synchronization of widgets, video, and text.</li> </ul>
ITU	Official standardization organization	193 member nations, 564 sector members, 155 organizations	<ul style="list-style-type: none"> <li>Restructure SG13 as a future network.</li> <li>Standardize IPTV, the next-generation multimedia system, and USN.</li> <li>Standardize disaster management emergency numbers.</li> <li>Increase interest in public policies related to the international Internet.</li> <li>Study on how to cope with climatic changes using ICT.</li> </ul>
ISO/IEC JTC1	Official standardization organization	86 member nations, cooperative activities with 36 standardization organizations	<ul style="list-style-type: none"> <li>Letter code, audio/video coding, graphic.</li> <li>Software, user interface.</li> <li>Information and communication protocol, application, and service.</li> <li>Sensor network, future network, etc.</li> </ul>

ETRI (compiled), 2012

## C. Future Internet

'Future Internet' is a generic term that refers to the research activities related to an advanced Internet that can overcome the structural limitations, such as mobility, security, expandability, and the provision of quality for users, of the current Internet and that can accommodate the explosively increasing data, terminal, and demand of users.

With the intention to enhance the status of Korea as an Internet power, efforts to develop the future Internet are being made with the cooperation of the industry, academics, research institutes, and the government. The KCC (Korea Communications Commission) set the 'development of the future Internet' as a national agenda, and established the plan to develop the Internet preparing for the future through a series of discussions with the industry, academics, and research institutes for one year from June 2010 to June 2011. This was done in order to push Korea from being a network power to becoming an 'Internet Power'.

The plan presented the vision of 'leaping into becoming a global Internet leader in 10 years' and set the following 3 goals of: 'establishing the world's safest Internet infrastructure', 'strengthening global competitiveness in the Internet market', and 'contributing to the national economy by increasing production and creating jobs'. It also set the following 5 major policy tasks of: establishing the world's best smart network, developing smart Internet technologies through open and cooperative researches, discovering the service model that can lead the future, creating a global testbed, strengthening the industrial basis, and providing a safe environment for usage.

Meanwhile, separately from the plan of the government for the development of the future Internet, there are active research activities by expert networks such as the Future Internet Forum and the Future Network Forum. The Future Internet Forum provides a stage for the exchange of the discussions and researches that are related to the Internet, which are being performed at industries, academic institutions, and research institutes. Not only the professors of leading Korean universities but also researchers at companies such as Samsung and KT and government-affiliated research institutes such as KISA, NIA (The National Information Society Agency), and ETRI (The Electronics and Telecommunications Research Institute) are participating in the Future Internet Forum. Internally, there are working groups in the areas of architecture, wireless network, service, testbed, security, etc. to conduct cooperative researches and to hold conferences related to the fu-

ture Internet. Together with KISA, the Future Internet Forum held the 'Global Future Internet Summit', in Seoul in December 2011, where the summits for the future Internet at both home and abroad gathered to review the direction of the implementation of the future Internet.

The Future Network Forum carries out researches on the establishment of the network infrastructure, the development of new services, and the provision of policy support for future Internet. KISA, NIA, and ETRI are the co-chairs of the Future Network Forum and there are 3 research committees, 7 subcommittees, and 7 working groups in the forum.

## D. Cloud Computing

There is no unified definition of cloud computing yet, as its concept is continuing to evolve. Generally, it can be described as a service that lends hardware (storage, server, etc.); software (word processing, graphic, etc.); and development platforms (development tool, library, etc.) as the occasion demands. As it is possible to only pay for the amount of used IT resources rather than purchasing them, the method of using IT resources is changed from the traditional 'ownership' into 'rent'. Finally, if cloud computing is used, all IT resources such as CPU, storage, and applications, except for the keyboard and monitor that are necessary for the input and output of information, can be put in the cloud. As a result, users do not have to worry about purchase, operation, and maintenance of the equipment and they can use IT resources at cheap prices anytime and anywhere.

According to the ranking of the '10 major strategic technologies' announced by Gartner, which is a professional market research company, cloud computing was ranked 1<sup>st</sup> in 2011 and 10<sup>th</sup> in 2012. Though the ranking of cloud computing itself dropped, its importance has increased as most of the items included in the 10 major strategic technologies are connected with cloud computing either directly or indirectly, which makes cloud computing a pivot of the 10 major strategic technologies.

In Korea, the KCC (Korea Communications Commission), the Ministry of Knowledge Economy, and the Ministry of Public Administration and Security jointly established the Comprehensive pan-national plan for the promotion of cloud computing in December 2009, and they announced the Strategies to spread cloud computing and strengthen its competitiveness in May, 2011. Through these strategies, the 3 goals and 5 policy tasks

were selected with the aim to leap into becoming a global power in cloud computing by 2015. Among the 5 policy tasks, ‘Preparing a legal system that is friendly to cloud computing’ is led by the KCC, and the ‘IT advancement and the early adoption of cloud computing in the public sector’ is led by the Ministry of Public Administration and Security. The rest of the 3 policy tasks of, ‘Strengthening the global competitiveness of the cloud industry and services’, ‘Fostering the global IT hub and the cloud data center’, and ‘Creating a solid demand for the promotion of the market’ are being implemented with the cooperation of the three departments (See Table 1-3-3).

Table 1-3-3 Cloud Computing Expansion and Competitiveness Strengthening Plan

3 Core Objectives	5 Initiatives
I. Vitalize economy through creation of global cloud service <ul style="list-style-type: none"> <li>• Induce production of 10.5 trillion won for next 4 years (2012~2015)</li> </ul> II. Advance and efficiency public sector IT infrastructure <ul style="list-style-type: none"> <li>• Save 30% annually on uncontrollable expenditure for national informatization</li> </ul> III. Establish usage environment that is reliable and safe <ul style="list-style-type: none"> <li>• 15% cloud service rate by 2015</li> </ul>	1. Prepare cloud-friendly laws and regulations 2. Implement advanced IT systems and cloud computing to public sector 3. Strengthen global competitiveness of cloud industry and services 4. Build global IT hub and cloud data center 5. Establish stable demand for market vitalization

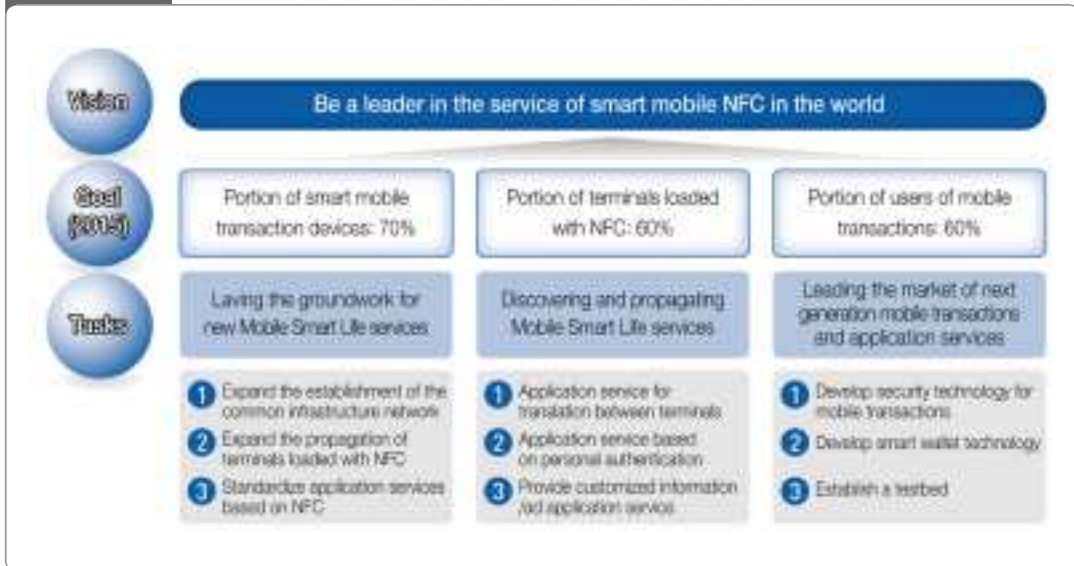
KCC-MKE-MOPAS, Cloud Computing Expansion and Competitiveness Strengthening Plan, May 2011

## E. NFC

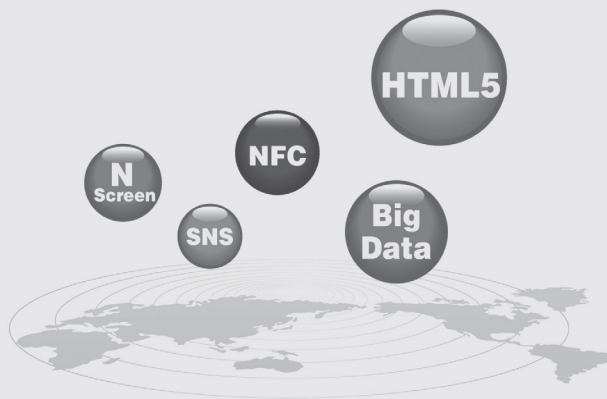
NFC (Near Field Communication) technology is used for the transmission and reception of data at a distance of about 10cm using a 13.56MHz bandwidth frequency. NFC technology can substitute credit cards and ID cards by being loaded into portable terminals, and it has a great potential to be used for user authentication for the usage of a laptop, mobile ticket, coupon, etc.

With the vision to, ‘Be a leader in the service of smart mobile NFC in the world’, the KCC (Korea Communications Commission) announced its Plan to promote NFC-based Mobile Smart Life services in March 2011. 9 specific core tasks were presented in the 3 areas of, ‘Laying the groundwork for new Mobile Smart Life services’, ‘Discovering and propagating Mobile Smart Life application services’, and ‘Leading the market of next-generation mobile transactions and application services’ (See Figure 1-3-1).

Figure 1-3-1 Plan to Promote NFC-Based Mobile Smart Life Services



KCC, Press release - Full-fledged promotion of Mobile Smart Life services based on NFC, March 29, 2011



**2012**  
**Korea Internet**  
**White Paper**



## Part 2. Service

- 1. Internet Service
- 2. Internet Business
- 3. Internet Convergence Service
- 4. Public Sector Internet Service

# 1. Internet Service

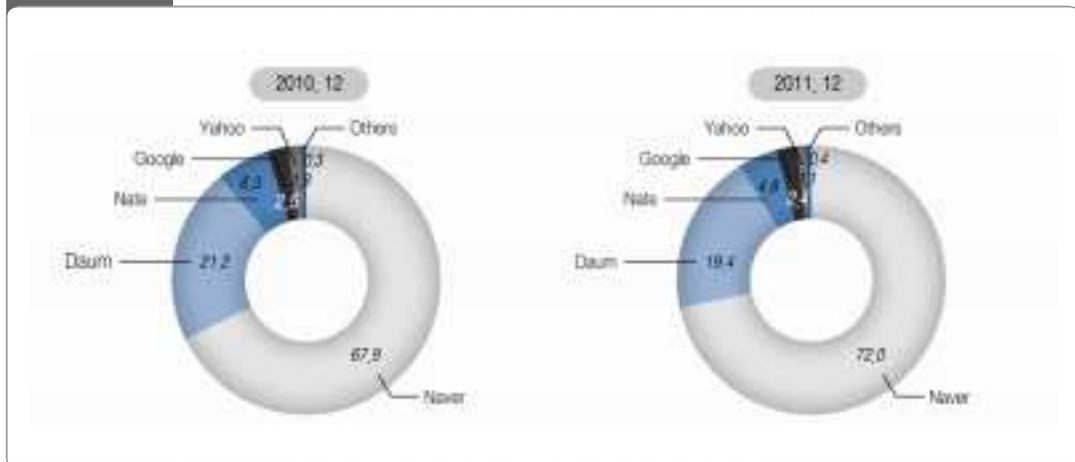
## A. Information Search

Naver's share of the domestic search service market in 2011 exceeded 70% once again, while that of Nate decreased to around 4%. Helped by continuous service improvements and the introduction of new services, Naver's share of the mobile market also reached 63% and is still increasing.

In the PC-based search market, Naver's share increased by 4% to 72%, while those of Daum and Nate decreased by 1.4% and 1.5% to 19.4% and 4.8%, respectively. Google's share of 2.4% was about the same as that recorded in 2010, while Yahoo's share plummeted further still to a mere 1.1% (See Figure 2-1-1).

Figure 2-1-1 Domestic major Portal's Search Market Share

(Unit : %)



nielsen KoreanClick, www.koreanclick.com

The top-ranking search words of major domestic search sites in 2011 included traditionally popular entertainment-related keywords for popular programs such as 'I'm a Singer', 'Secret Garden', and 'Dream High', as well as the names of entertainers who made the news. In addition, 'Coupon' and 'Ticket Monster', indicating the social commerce boom,

and 'iPhone 5' and 'Galaxy S2', reflecting the interest in IT devices were high on the list. Users also showed deep interest in the death of Steve Jobs, the founder of Apple. Because of the widespread distribution of smartphones, Podcast, a personal broadcasting download service, was very popular, while a leading podcast program, 'I'm a Trickster', which mostly deals with political issues, was ranked as the leading keyword (See Table 2-1-1).

Table 2-1-1 2011 Top KeyWords of Major Portal Sites

Rank	Naver	Daum	Nate	Google
1	Coupang	I Am a Singer	Pyeongchang Winter Olympics	IU
2	Ticket monster	E.Jiah and Seo Taiji	Muhandojeon Song Festival	NH Internet Banking
3	I Am a Singer	Kang Ho-dong's Retirement	Steve Jobs' Death	Galaxy S2
4	Dream High	Facebook	Japanese Earthquake and Nuclear Reactor Explosion	Dream High
5	Tera	Yim Jae-bum	E.Jiah and Seo Taiji's Divorce	Secret Garden
6	Galaxy S2	Song Ji-sun's Death	Movie Dogani	Girls Generation
7	Superstar K3	Secret Garden	Naneunkomsuda	I Am a Singer
8	iPhone5	iPhone	Reality TV programs	iPhone5
9	E.Jiah	Daesung in Traffic Accident	Entertainers beginning military service	Yim Jaebum
10	Yim Jaebum	Dream High	Ramyeon with white soup	Angry Bird

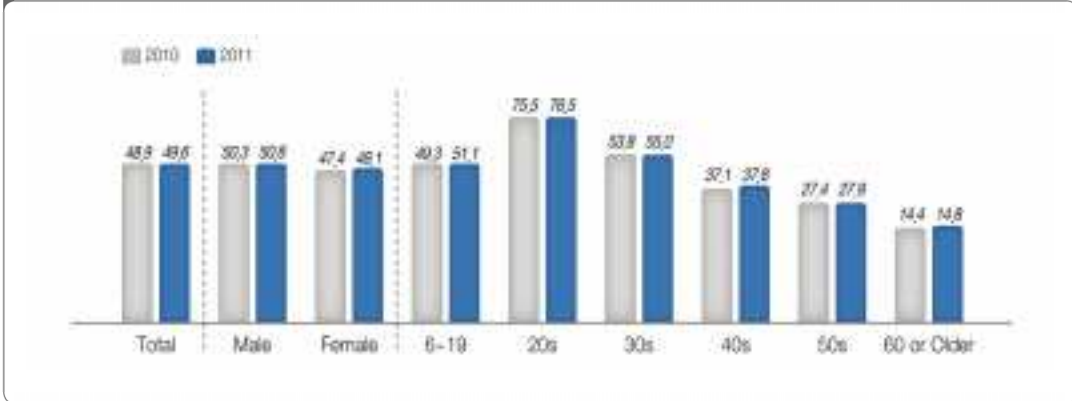
Each Portal Site (compiled), 2012

## B. Communication

### 1) Online Communication

According to a survey on Internet usage in 2011, 74.6% of SNS users aged 6 and over used community type SNS such as cafés and clubs, indicating the high popularity of community communication services among smartphone users. 46.9% of Internet users aged 6 and over were 'community users' who used community services (cafés and clubs) in the past year. Males (50.8%) showed a slightly higher rate than females (48.1%), with users in their 20s showing the highest rate (76.5%). In all age groups, the community usage rate in 2011 was higher than that recorded in 2010 (See Figure 2-1-2).

Figure 2-1-2 Online Community Usage Rate (Internet Users Aged 6 Years or Older) (Unit : %)

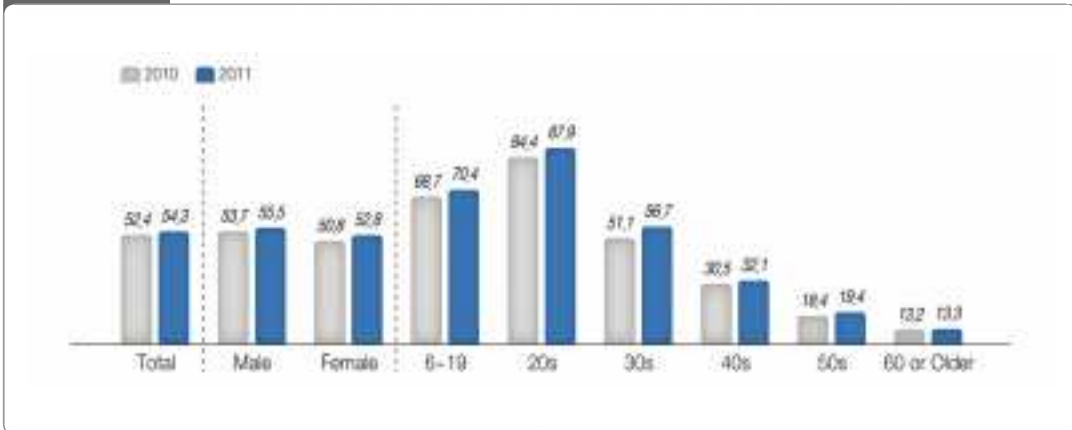


KCC-KISA, 2011 Survey on the Internet Usage, January 2012

## 2) Instant Messenger

According to the 2011 Survey on the Internet Usage, the percentage of instant messenger users barely changed, rising from 52.4% in 2010 to 54.3% in 2011 (See Figure 2-1-3).

Figure 2-1-3 Instant Messenger Usage Rate (Internet Users Aged 6 Over) (Unit : %)

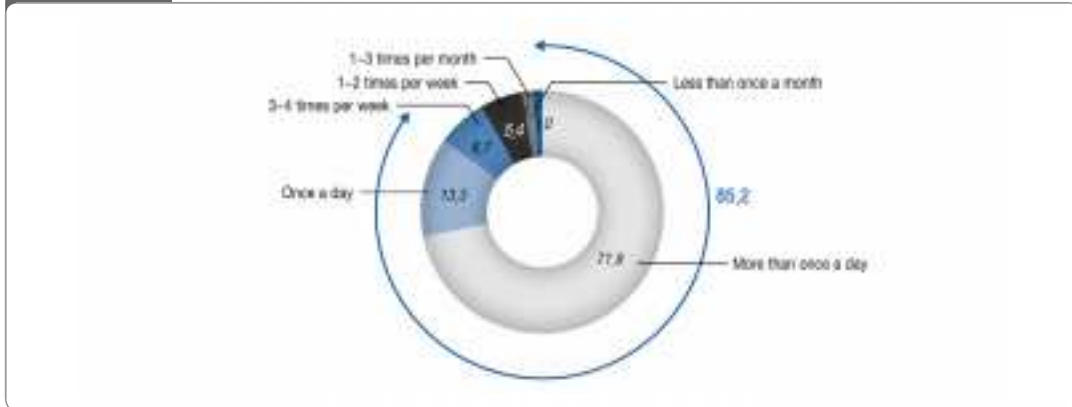


KCC-KISA, 2011 Survey on the Internet Usage, January 2012

MIM (Mobile Instant Messenger) was the most rapidly growing service along with smartphone. According to the 2011 Survey on the Smartphone Usage, 79.2% of smartphone users used MIM, of whom 85.2% used it at least once a day (See Figure 2-1-4).

Figure 2-1-4 MIM Usage (MIM Users)

(Unit : %)



KISA, 2011 Survey on the Smartphone Usage, March 2012

The number of MIM users continued increasing, such that the majority of smartphone users had also used it by the first half of 2012. According to a survey on the use of MIM services-namely, KakaoTalk, My People, and NATEON UC-conducted on 1,000 people nationwide by Trend Monitor in June 2012, 98.0% of the respondents downloaded KaKaoTalk while 44.9% and 44.5% installed My People and NATEON UC, respectively. This result indicates that at least 98.0% of smartphone users have used MIM.

## C. Contents

### 1) Video & Music

Helped by the openness of the web, digital cameras, and the advancement of the network environment, Internet video services are producing a wide range of UCCs (User Created Contents). In Korea, the Internet video service took off after Daum Communications opened 'Daum TV Pot' and Google acquired YouTube in 2006. Although from 2008 its growth slowed temporarily because of such issues as the limitations of income models, copyright/privacy violation, and the proliferation of harmful contents, it now faces another opportunity for development and growth due to the wider use of smart devices and the advancement of the telecommunication infrastructure.

According to the 2011 Contents Industry Statistics, the size of the domestic online and

digital music contents market was valued at around 622.1 billion won in 2010, showing an increase of 9.2% over 2009. The online and digital music contents market is steadily increasing, and its revenue structure is also changing as the use of smart devices becomes increasingly widespread. Continued growth of the online and digital music contents market is a global trend and is not limited to Korea.

In terms of categories, the Internet music service industry occupied the largest portion with 453.9 billion won (74.0%), representing an increase of 26.1% over 2009. This was followed by the music source agency industry at 63.5 billion won (10.2%), showing an increase of 5.3% over 2009; the mobile music service industry at 55.3 billion won (8.9%), showing a decrease of 27.6% over 2009; and the Internet/mobile music contents production and delivery industry (CP) at 49.3 billion won (7.9%), showing a decrease of 32.2% over 2009, and which is continuing to decrease (See Table 2-1-2).

Table 2-1-2

Revenue of the Online Music Industry

(Unit : million won, %)

Category	Sales			Component Ratio	Year-on-Year Growth Rate	CAGR
	2008	2009	2010			
Mobile Music Service	87,650	76,502	55,388	8.9	△27.6	△20.5
Internet Music Service	253,082	359,969	453,919	73.0	26.1	33.9
Music Source Agency	39,671	60,331	63,528	10.2	5.3	26.5
Internet/Mobile Music Contents Production and Delivery (CP)	146,042	72,799	49,327	7.9	△32.2	△41.9
Total	526,445	569,601	622,162	100.0	9.2	8.7

MCST, 2011 Contents Industry Statistics, May 2012

## 2) Games

The total revenue of the domestic game industry came to 7.4 trillion won in 2010, posting an increase of 12.9% over the previous year. The compound annual growth rate (CAGR) during the period 2005~2010 was 15.1%. The lower CAGR of the game industry, which had been rapidly increasing, may be attributed to the fact that Bada lyagi was included in the surveys of 2005 and 2006. The game industry is actually growing rapidly, with both revenues and exports showing high growth since 2007, after which Bada lyagi was no longer included in the surveys.

As exports to China and Japan are rising continuously, total exports grew by 29.4% from 1.2 billion dollar in 2009 to 1.7 billion dollar in 2010. This performance proves that

the domestic game industry has resumed its normal growth after the heavy decline which beset it in 2007. The added value ratio was 50.7%, i.e., 9.2% higher than the 41.6% recorded for the entire contents industry (See Table 2-1-3).

Table 2-1-3 Game Industry Statistics (2005~2010)

Type	Revenue (million won)	Added Value (million won)	Added Value Ratio	Export (thousand dollar)	Import (thousand dollar)
2005	8,679,800	4,381,563	50.48	564,660	232,923
2006	7,448,900	3,655,175	49.07	671,994	207,556
2007	5,143,600	2,487,445	48.36	781,004	389,549
2008	5,604,700	2,808,000	50.10	1,093,865	386,920
2009	6,580,600	3,348,867	50.89	1,240,856	332,250
2010	7,431,118	3,768,320	50.71	1,606,102	242,532
Year-on-Year Growth Rate	12.9	12.5	-	29.4	△27.0

MCST, 2011 Contents Industry Statistics, May 2012

### 3) e-Learning

The term 'e-Learning' refers to 'learning through electronic means, information and communication technology, and/or radio and broadcasting technology'. Since e-Learning largely consists in storing learning contents in the server and delivering them, the learning of diverse contents is enabled without teachers and students having to face each other in the same space and time.

The domestic e-Learning market has been growing at an average annual rate of 10% since 2004. In 2001, 1,656 service providers recorded combined revenues of 2.5 trillion won, and around 53% of all citizens aged 3 and over were using e-Learning (See Table 2-1-4).

Table 2-1-4 e-Learning Industry Statistics

(Unit : each, 100 million won, %)

Type	2007	2008	2009	2010	2011	Year-on-Year Growth Rate
Service Providers	756	1,145	1,368	1,549	1,656	6.9
Total Sales Revenue	17,270	18,704	20,910	22,458	24,513	9.2
Personal e-Learning Usage Rate	39.4	45.0	48.3	49.0	52.8	7.7

NIPA, 2011 Survey on e-Learning Industry Trend (compiled), March 2012

According to a survey by NIPA (National IT Industry Promotion Agency), the total revenue of domestic e-Learning service providers in 2011 amounted to 2.4 trillion won, representing an increase of 9.2% over the previous year. Of the three main leading e-Learning business domains (service, contents, and solutions), the revenue of service providers accounted for 68% of the total, followed by contents at 22.0% and solutions at 9.6% (See Table 2-1-5).

Table 2-1-5 Revenues of e-Learning Service Providers (Unit : million won, %)

Type	2009		2010		2011		Year-on-Year Growth Rate
	Sales	Component Ratio	Sales	Component Ratio	Sales	Component Ratio	
Contents	490,904	23.5	509,024	22.7	538,326	22.0	5.8
Solution	211,291	10.1	223,876	10.0	235,210	9.6	5.1
Service	1,388,838	66.4	1,512,933	67.4	1,677,828	68.4	10.9
Total	2,091,033	100.0	2,245,833	100.0	2,451,364	100.0	9.2

NIPA, 2011 Survey on e-Learning Industry Trend (compiled), March 2012

Based on the results of a survey on consumers' expenditure on e-Learning in Korea in 2011, the total domestic e-Learning end market was estimated to be worth 2.5 trillion won. Individuals occupied the largest portion with an expenditure of 1.09 trillion won, or 44.1% of the total market, followed by enterprises with an expenditure of 1.08 trillion won, or 43.7% of the total market. Combined, these two consumer types accounted for 88.1% of total expenditure. Expenditure by the government/public sector was 165.3 billion won, or 6.7% of the total, and that of educational institutes was 127.5 billion won, or 5.2% of the total (See Table 2-1-6).

Table 2-1-6 e-Learning Demand Market Volume (Unit : million won, %)

Type	Individual	Business	Educational Institutes	Government Public Agency	Total
Amount	1,093,016	1,075,645	127,540	165,315	2,461,516
Rate	44.4	43.7	5.2	6.7	100.0

NIPA, 2011 Survey on e-Learning Industry Trend (compiled), March 2012

#### 4) Internet News

The Act on the Promotion of Newspapers, etc., revised on January 25, 2010, defines an

online news service as ‘an electronic publication that continuously supplies or intermediates the news articles of newspapers, online newspapers, and news communications via the Internet’. Online news is divided into websites, which are operated by the press to present only its newspaper or broadcasting news contents; online newspapers, which deliver the online news service only, without publishing news offline; and portals, which present articles received from the existing press.

The publication of and subscription to offline newspapers are gradually declining while Internet news services are steadily growing. As various digital platforms are introduced, their importance is also increasing.

56.2% of Internet users use Internet news sources. In terms of age groups, 90.8% of users aged 18~29 use the Internet news, followed by 82.7% of those in their 30's, 60.4% of those in their 40's, 35.3% of those in their 50's, and 9.2% of those aged 60 or older, indicating a large gap in Internet news usage between young users and older users (See Table 2-1-7).

Type	Total	18~29	30s	40s	50s	60 or Older
Usage Rate	56.2	90.8	82.7	60.4	35.3	6.9
Non-usage Rate	43.8	9.2	17.3	39.6	64.7	7.7

KPF, 2011 Media Consumer Attitude Survey, March 2011

With the appearance of various mobile devices including the smartphone, connection to the Internet as well as access to Internet news has also diversified. 25.9% of users indicated that they view Internet news via a tablet PC or the news application of their smartphone.

According to the periodically issued registration statistics, the number of registered Internet newspapers is growing continuously, rising from 927 in 2007 to 2,484 in 2010 and to 2,921 in 2011. In 2011, the number of registered Internet newspapers increased by 17.6% over the previous year (See Table 2-1-8).

Type	2007	2008	2009	2010	2011
Total Registration	927	1,282	1,698	2,484	2,921
Growth Rate over Previous Year	48.1	38.3	32.4	46.3	17.6

Culture Statistics Portal, Periodical Registration Statistics, July 2012

## D. Location Based Service

'LBS' (Location Based Service) refers to a service that provides location-based information such as location tracking, public safety, and navigation information using the GPS (Global Positioning System) of a mobile device such as a smartphone or the base station data of mobile telecommunication carriers. It includes all types of services related to the collection, usage, and delivery of location based information as well as service technologies that provide useful functions based on the location information obtained through the communication network and GPS.

As of June 2012, there were 578 domestic LBS enterprises, i.e., 91 location information providers and 487 location based service providers. The number of LBS enterprises is expected to continue growing due to the increasing interest of domestic enterprises in the LBS business and the wider availability of location information (See Table 2-1-9).

Type	2005	2006	2007	2008	2009	2010	2011	2012. 6	Total
Location Information Providers	17	9	7	12	7	20	12	7	91
Location Based Service Providers	69	18	12	9	30	53	222	74	487

※ The number of closed businesses in a given year are deducted from that year's figure

KCC, 2012

Using GPS and the Wi-Fi network, locations can be tracked indoors or outdoors, and customized services specific to the personal preferences of each user can be offered. By converging user data, augmented reality, and SNS to the location data using smart devices, LBS is becoming increasingly intelligent, enabling it to provide a key service platform capable of improving the quality of life.

## 2. Internet Business

### A. e-Commerce

The total value of e-Commerce transactions in 2011 amounted to around 99.9 trillion won, representing an increase of 21.2% over the 82.4 trillion won posted in the previous year, and continues growing (See Table 2-2-1).

Table 2-2-1 e-Commerce Market Volume

(Unit : trillion won, %)

Type	2006	2007	2008	2009	2010	2011 <sup>P</sup>
Total e-Commerce Transactions	414	517	630	672	824	999
Growth Rate	15.4	24.9	22.0	6.7	22.6	21.2

※ p : preliminary

KOSTAT, 2011 Annual and Q4 e-Commerce and Online Shopping Trend, February 2012

The value of B2B e-Commerce transactions totaled 912.6 trillion won, accounting for 91.3% of the total value of e-Commerce transactions, while B2G, B2C and C2C e-Commerce transactions accounted for just 5.8%, 1.9% and 1.0%, respectively (See Table 2-2-2).

Table 2-2-2 e-Commerce Market Volume by Sector

(Unit : billion won, %)

Type	2010		2011 <sup>P</sup>		Year-on-Year	
		Component Ratio		Component Ratio	Growth Amount	Growth Rate
B2B	747,090	90.6	912,562	91.3	165,472	22.1
B2G	52,772	6.4	58,378	5.8	5,606	10.6
B2C	16,005	1.9	18,522	1.9	2,516	15.7
C2C	8,524	1.0	9,788	1.0	1,264	14.8
Total	824,392	100.0	999,250	100.0	174,858	21.2

※ p : preliminary

KOSTAT, 2011 Annual and Q4 e-Commerce and Online Shopping Trend, February 2012

The value of B2B e-Commerce transactions amounted to 912.6 trillion won in 2011, showing a rise of 22.1% compared to the 747.1 trillion won posted in 2010 (See Table 2-2-3).

Table 2-2-3 B2B Market Volume

(Unit : billion won, %)

Type	2006	2007	2008	2009	2010	2011 <sup>P</sup>
Total Trade	366,191	464,456	560,255	592,965	747,090	912,562
Growth Rate	14.7	26.8	20.6	5.8	26.0	22.1

※ p : preliminary

KOSTAT, 2011 Annual and Q4 e-Commerce and Online Shopping Trend, February 2012

In terms of B2B e-Commerce market volume by transaction type, the value of buyer-driven type transactions totaled 498.8 trillion won in 2011, showing an increase of 17.5% from 2010. Supplier-driven type transactions, which are established by buyers visiting e-Commerce sites operated by sellers, rose by 30.2%, while intermediary-driven type transactions, which are established by buyers and sellers visiting intermediary B2B e-Commerce sites, rose by 15.7% (See Table 2-2-4).

Table 2-2-4 B2B e-Commerce Market Volume by Transaction Type

(Unit : billion won, %)

Type	2010		2011 <sup>P</sup>		Year-on-Year	
		Ratio		Ratio	Growth Amount	Growth Rate
Buyer-led	424,426	56.8	498,767	54.7	74,341	17.5
Seller-led	278,938	37.3	363,221	39.8	84,283	30.2
Broker-led	43,726	5.9	50,574	5.5	6,848	15.7
Total	747,090	100.0	912,562	100.0	165,472	22.1

※ p : preliminary

KOSTAT, 2011 Annual and Q4 e-Commerce and Online Shopping Trend, February 2012

The total value of online shopping transactions was 29.1 trillion won in 2011, showing an increase of 15.3% over the 25.2 trillion won recorded in 2010 (See Table 2-2-5).

Table 2-2-5 Online Shopping Transaction Volume

(Unit : billion won, %)

Type	2006	2007	2008	2009	2010	2011 <sup>P</sup>
Online Shopping Transactions	13,460	15,766	18,146	20,643	25,203	29,062
Growth Rate	26.1	17.1	15.1	13.8	22.1	15.3

※ p : preliminary

KOSTAT, 2011 Annual and Q4 e-Commerce and Online Shopping Trend, February 2012

## B. e-Finance

The number of registered customers of electronic banking in 2011 was 50.4 million (including duplicate customers of multiple banks), representing an increase of 8.7% over 2010. Of that figure, the number of online banking users grew by 14.22%, i.e., twice that of CD/ATM users, indicating continued growth in the number of online banking and smartphone users (See Table 2-2-6).

Type	2010(A)		2011(B)		Growth (B-A)	
	Registered Users	Component Ratio	Registered Users	Component Ratio	Registered Users	Growth Rate
Online Banking	64,393	28.0	73,518	29.4	9,125	14.2
Phone Banking	40,560	17.6	42,716	17.1	2,156	5.3
CD/ATM	125,364	54.4	134,170	53.6	8,806	7.0
Total	230,317	100.0	250,404	100.0	20,087	8.7

※ Figures include all duplicate subscriptions to the same or different banks FSS, 2011 Financial Institution e-Finance Performance, March 2012  
The figure for online banking includes that for mobile banking

Helped by the boom in the stock market, online securities trading grew rapidly after Article 109 of the Securities Transaction Act and Article 66-2 of the Enforcement Decree of the same law were revised to allow cyber transactions in 1997. As of December 2011, the number of online securities trade subscribers came to around 10.6 million, indicating that 62.9% of all customers were using online securities trade services (See Table 2-2-7).

Type	2010(A)		2011(B)		Change (B-A)	
	Registered Users	Component Ratio	Registered Users	Component Ratio	Registered Users	Growth Rate
Online	9,406	59.6	10,622	62.9	1,216	12.9
Offline	6,375	40.4	6,258	37.1	△117	△1.8
Total	15,780	100.0	16,879	100.0	1,099	7.0

※ Subscribers who trade both online and offline are treated as online users FSS, 2011 Financial Institution e-Finance Performance, March 2012

After Shinhan Bank, Hanmi Bank, and House & Commercial Bank launched their online banking service in partnership with Bank Town in July 1999, online banking transactions reached 10.6 quadrillion won, representing 91.2% of all e-Banking transactions, as of the end of December 2011. In line with the ever increasing adoption of smartphones and other mobile Internet devices, the mobile banking trade reached 22.5 trillion won in 2011, showing an increase of 68.6% over 2010 (See Table 2-2-8).

Table 2-2-8

Bank e-Finance Transaction Amount

(Unit : billion won, %, %p)

Type	2010(A)		2011(B)		Growth (B-A)	
	Amount	Component Ratio	Amount	Component Ratio	Amount	Growth Rate
Online Banking	14,358,085	26.0 (91.1)	15,543,759	25.6 (91.2)	1,185,674	8.3
Mobile	133,711	0.2 (0.8)	225,434	0.4 (1.3)	91,723	68.6
CD/ATM	714,694	1.3 (4.5)	798,439	1.3 (4.7)	83,745	11.7
Phone Banking	692,557	1.3 (4.4)	701,383	1.2 (4.1)	8,826	1.3
e-Banking System	15,765,336	28.6 (100.0)	17,043,581	28.1 (100.0)	1,278,245	8.1
Desk	39,417,709	71.4	43,632,176	71.9	4,214,467	10.7
Total	55,183,045	100.0	60,675,757	100.0	5,492,712	6.4

FSS, 2011 Financial Institution e-Finance Performance, March 2012

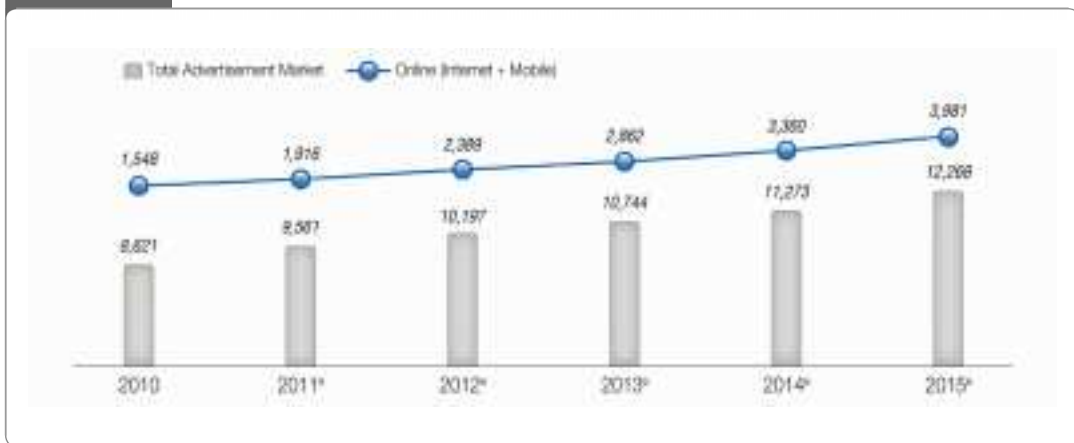
## C. Online Advertisement

Helped by the continued growth of Internet advertising and the emergence of smartphone-based mobile advertising, the domestic online advertisement market grew to 1.9 trillion won in 2011, making it the second largest advertising medium after terrestrial TV. Particularly in light of the broadcasting and communication convergence trend, Internet advertising is quickly transforming into smart advertisement of various forms, and is leading the growth of the whole advertisement market by converging with other media such as TV, radio, and newspapers. Although message-based advertising dominated mobile advertising when the wireless Internet was not easily accessible during the era of the feature phone, the new growth is being led by wireless Internet-based Web advertis-

ing and application (app)-based app advertising in the smartphone environment. Recently, advertisements featuring the characters of game apps, banner advertisements featuring 3D technology, and compensated advertising (that pays cash or points when viewers watch the ad) have become popular. As the base for mobile advertising is expanding with the increasing number of smartphone users, the domestic online advertisement market is expected to grow rapidly (See Figure 2-2-1).

Figure 2-2-1 Volume of Domestic Advertisement Market

(Unit : billion won)



※ e : estimated

KT DIGIECO, New Opportunity of Internet and Mobile Advertisement Market, June 2012

Mobile advertising is very important as a key income model that enables the development and advancement of various mobile services including game, SNS, search, and message services. The growth of mobile advertising has had an important influence on the development of the mobile ecosystem. Thus, major global companies like Google, Apple, Facebook, and Twitter are acquiring small online advertisement companies to lead the emerging online advertising market. In 2011, InMobi, a leading independent mobile advertising company, entered the domestic market to launch rich media advertising, while Tapjoy, a mobile game app specialized advertisement company, opened its Korean operation. To cope with the rapidly increasing number of global advertisement companies entering the domestic market, it is absolutely vital that domestic mobile advertising companies secure global competitiveness.

## D. App Marketplace

During 2011 and 2012, mobile devices such as smartphones and table PCs and the app marketplace (app store) in the domestic and foreign market passed the embryonic phase, and are now entering the growth phase. In this phase, the app store is playing the most important pivotal role because it is at the center of the C-N-T-P (contents-network-terminal-platform) structure, which forms the smart mobile ecosystem, and is the key to linking customers, who are the users, with developers, who are the creators, and mobile telecommunication carriers, who are the distributors.

Leading smartphone app marketplaces in Korea include those provided by the mobile telecommunication carriers—such as ‘T store’ from SK Planet, ‘olleh Market’ from KT, and ‘U+ App Market’ from LG U+. Samsung Electronics, the leading mobile phone manufacturer, converted ‘Samsung Apps’, which had been limited to overseas smartphone users, into a shop in Korea and has been operating it as an independent app store centered on Samsung mobile phones since May 2011.

Moreover, portals, which are providing Internet Web-based services but have established only a small presence in the mobile business, are challenging the independent app stores as the mobile open market. NHN, Korea’s leading portal, launched ‘N Store’ to provide an e-Book, music, and VOD service in June 2012. ‘Nate App Store’, which opened in September 2010, also renovated itself with a new platform strategy for growth recently.

As the app store market is expanding, the competition is becoming more heated. Independent app stores led by portals are actually in a better position to distribute their apps since they feature both smart mobile apps and Web-based apps, and thus are not limited to certain user groups unlike the existing markets operated by OS developers or telecommunication carriers. The expansion of and limitless competition within the mobile app marketplace are affecting not only app stores but also the developers who produce the apps.

The Game Rating Board decided not to rate mobile games in advance from May 2011, which resulted in the game category of ‘Google Play’ and Apple’s ‘App Store’ being opened to the public in Korea. As such, Apple opened its game category, which had been accessible only to overseas users, to Korean users in November 2011, thereby offering them access to all games from all around the world. Domestic game developers have also gained the opportunity to increase their revenues by securing users here and abroad. At

the same time, unlimited competition between domestic mobile telecommunication carriers and overseas companies meant that app contents competitiveness has become more important than anything else. In that respect, new changes in the domestic app store market, which is centered on mobile telecommunication carriers, are expected (See Table 2-2-9).

Table 2-2-9 Domestic App Marketplaces Operated by Mobile Telecommunication Carriers

Service Provider	Service Name	Registered Apps	Type of Apps Registered	Registration Fee (Annual)
SK Planet	T Store	73,850	Fun : 34.0%, Language/Education : 21.0%, Living/Location Based : 23.7%	Individuals : 100,000 won (unlimited) Enterprises : 100,000 won (2 apps), 200,000 won (5 apps), 300,000 won (10 apps), 60,000 won/app for more than 100 apps
KT	olleh Market	36,215	Entertainment : 12.8%, Multimedia : 12.4%, Music : 14.5%, Bell/Notice Tones : 23.0%	Registration fee : 1,000 won 30,000 won verification fee for charged apps
LG U+	U+ App Market	13,001	Life : 37.7%, Education : 14.0%, Utility : 8.1%	30,000 won/app

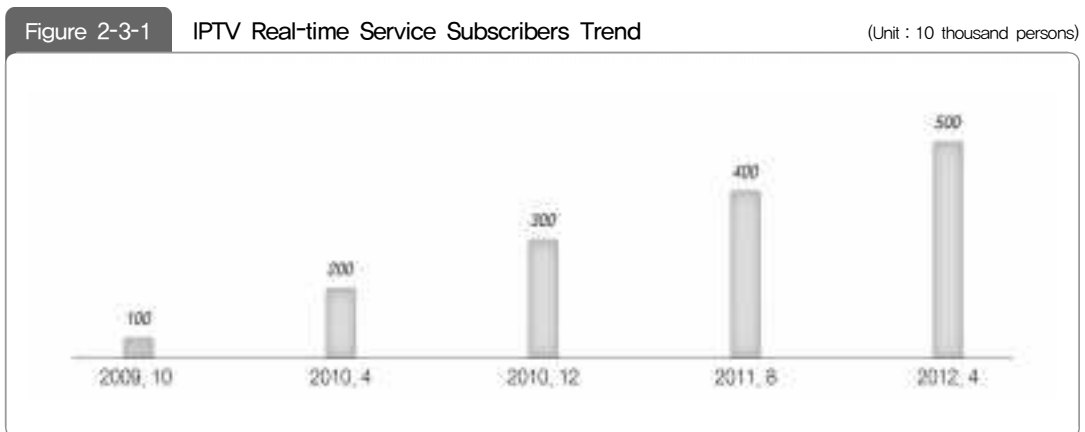
KCC, 2012

## 3. Internet Convergence Service

### A. IPTV·Smart TV

IPTV is the leading interactive broadcasting/communication convergence service. It provides video contents such as movies and broadcasting programs and multimedia contents such as Internet search nationwide via TV over the Broadband Internet. It is rapidly transforming passive TV viewing limited to real-time broadcasting into active viewing of VOD (Video on Demand), whereby viewers can select the contents they wish to view at a convenient time of their choosing, and offers an interactive service enabling shopping and payment via TV.

Launched in Korea in January 2009, the number of subscribers exceeded 1 million in September 2009 and then 5 million in April 2012 to become the leading service in the new era of broadcasting and communication convergence, just 3 years and 4 months after the service began (See Figure 2-3-1).



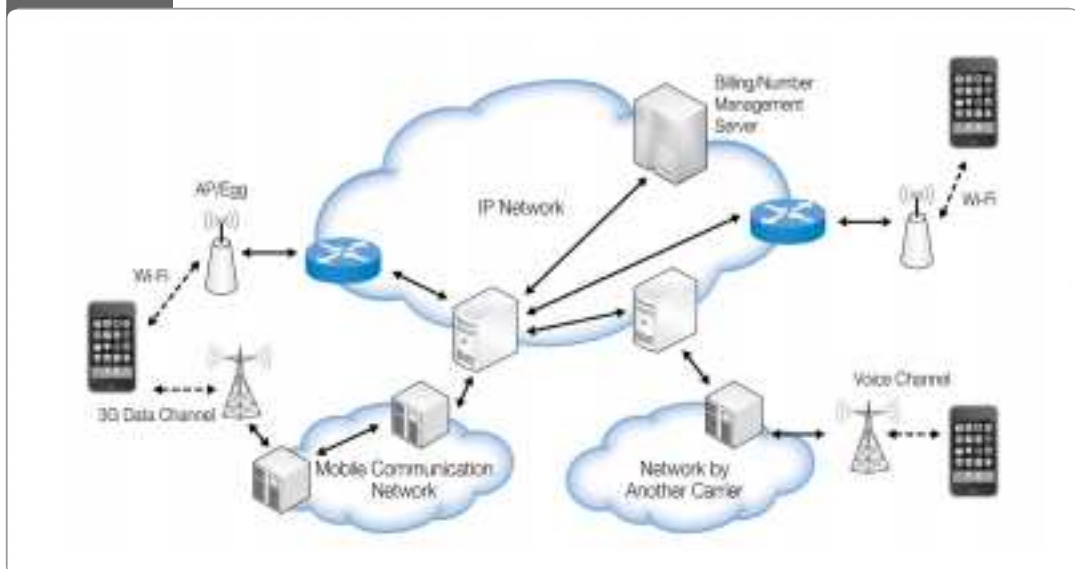
KoDiMA, Significance and Challenge of 5 Million IPTV Subscribers, April 2012

## B. VoIP

VoIP (Voice over IP) is a telecommunication service technology that does not use the circuit switched network designed for conventional local phone calls but rather enables voice calls over the Internet network by converting voice data into Internet protocol packets. Its benefits include the transmission and reception of voice calls anywhere and anytime as long as the Internet is accessible. The packetized voice service can provide voice calls more efficiently and cost effectively than the circuit switched voice service in the network. Moreover, since all traffic including voice is transferred in the form of packets in the packet network, various types of value added services (life information, video call, text message, etc.) can be provided.

VoIP is mainly divided into fixed VoIP and mobile VoIP. The latter uses the mobile telecommunication service (3G, WiBro, etc.) for VoIP to provide the low cost mobile voice call service. Helped by the rapid, widespread adoption of smartphones that began with the introduction of the iPhone in Korea at the end of 2009, it is rapidly gaining popularity, particularly as problems with call quality and stability are being resolved by the advancement of telecommunication technology (See Figure 2-3-2).

Figure 2-3-2 mVoIP Service Network Architecture



ATLAS, mVoIP

## C. Smart Work

'Smart work' refers to the concept of the future-oriented working environment in which people can work conveniently and efficiently anywhere and anytime using IT without being constrained by time and space. The successful introduction of smart work strengthens the competitiveness of an enterprise by increasing work efficiency and provides the frame for innovation to improve creativity and productivity. In particular, it can be used as the means to promote the participation of disadvantaged members of society—such as stay-at-home mothers, senior citizens, and the disabled—in economic activities and thus resolve the social problems of the low birth rate and the aging society by mitigating the spatial/temporal/physical limitations of work.

Types of smart work include on-the-road/field work (mobile office), working from home (home office), remote working (smart work center), and workplace work according to the place of work.

'On-the-road/field work' is a form of work in which smartphones, PDAs, notebooks, smart pads, and so forth can be used without any spatial limitations. More than simply using the wireless intranet and notebooks, the working environment uses the mobile communication network and mobile devices. People can connect to a company network using wireless terminals to carry out the company's business from outside, and can interface with Email, groupware, electronic workflow as well as ERP and CRP to access the company system and data from outside.

'Working from home' consists in creating a work space at home and setting up the systems needed for work by utilizing information and communication technology. It allows disadvantaged groups including stay-at-home mothers, senior citizens, and the disabled to participate in economic activities.

'Smart work center work' means working in an environment set up like an office using the IT infrastructure located near a worker's home. It can reduce the time spent on commuting to and from work.

'Working at the office' means working in an office set up with the systems and conditions required to increase work efficiency. It includes telepresence, which is a type of video conference that allows workers to face and hear each other from separate workplaces, enabling them to collaborate over the network without meeting at an offline location, as well as allowing flexible seating arrangements, etc (See Table 2-3-1).

Table 2-3-1 Type of Smart Work

Type		Form	Working	Benefits
Location	Site/ Mobile	On the Road/Field Work (Mobile Office)	Real-time work using mobile devices while moving or from the field without spatial limitations	<ul style="list-style-type: none"> <li>• Enables quick processing of field work</li> <li>• Simplifies workflow, Email usage, etc</li> </ul>
	Fixed	Working from Home (Home Office)	Setting up of a working environment and system at home and SOHO	<ul style="list-style-type: none"> <li>• Provides more jobs for the disabled and senior citizens</li> <li>• Reduces company costs</li> </ul>
		Smart Work Center Work	Working at a smart work center which is set up in a similar way to the office environment or a more creative environment	<ul style="list-style-type: none"> <li>• Decreases commuting time</li> <li>• Improves creative thinking</li> </ul>
		Working at Office	Setting up of an office in a workplace to increase work efficiency	<ul style="list-style-type: none"> <li>• Increases business productivity</li> <li>• Strengthens communication</li> </ul>
Remote Collaboration			Mutual remote collaboration using smart work solution anywhere anytime without spatial limitations like home/mobile/center/workplace	<ul style="list-style-type: none"> <li>• Reduces business trips</li> <li>• Promotes collective intelligence and prompt decision making</li> </ul>

KCC-NIA, Introduction/Operation Guidebook for Smart Work for Enterprises, January 2011

## 4. Public Sector Internet Service

### A. G2C Service

The G2C service creates a single window for e-Government so that users can easily process services from home; builds a database of important information to enable a one-stop service; and integrates the data and services dispersed among different agencies into a single portal site to provide comprehensive information for the purpose of helping citizens to acquire the information they require and to conveniently use government services (See Table 2-4-1).

Table 2-4-1 G2C Service Cases

Service	Website
Government service portal	<a href="http://www.minwon.go.kr">www.minwon.go.kr</a>
Government welfare information service	<a href="http://www.bokjiro.go.kr">www.bokjiro.go.kr</a>
Integrated administrative information service	<a href="http://www.open.go.kr">www.open.go.kr</a>
Online citizens' suggestion service	<a href="http://www.epeople.go.kr">www.epeople.go.kr</a>
Food and drug information service	<a href="http://kifda.kfda.go.kr">kifda.kfda.go.kr</a>
National tax service	<a href="http://www.hometax.go.kr">www.hometax.go.kr</a>
Administrative appeal Internet service	<a href="http://www.simpan.go.kr">www.simpan.go.kr</a>
Resident service portal	<a href="http://www.oklife.go.kr">www.oklife.go.kr</a>

Each G2C Service Website (compiled), June 2012

The government service portal ([www.minwon.go.kr](http://www.minwon.go.kr)) is an integrated government service window that combines the information technology infrastructure and administrative services. Created in light of the vast number of citizens who use the Internet and the rapid development of information technology, the portal enables members of the general public to receive government services anywhere and anytime.

The number of online service requests increased sharply from 18.3 million cases in 2008 to 38.6 million cases in 2011, while online issuance increased from 10.9 million cases in 2008 to 28.2 million cases in 2011 (See Table 2-4-2).

Table 2-4-2 Government Service Portal Usage

(Unit : thousand cases)

Type	2008	2009	2010	2011
Requests	18,247	25,711	31,289	38,582
Issuances	10,946	16,245	21,106	28,244
Reviews	1,769	3,944	5,263	5,949

※ Civil service issuance and reviews included in requests

KOSTAT, www.index.go.kr, July 2012

The Home Tax Service (HTS, www.hometax.go.kr) is a government tax service which allows citizens to receive taxation services such as tax filing, bill payment, and civil service requests and issuances from home or office without having to visit the tax office.

In 2011, 86.0% of all national tax filing was processed online and 73.0% of certificates were issued online (See Table 2-4-3).

Table 2-4-3 Hometax Usage

(Unit : case, %)

Type	2007	2008	2009	2010	2011
Online Filings (Rate)	16,125,537 (81.0)	17,657,768 (81.0)	19,246,316 (81)	20,457,791 (84.0)	22,239,124 (86.0)
Online Issuances (Rate)	5,601,784 (64.0)	7,262,219 (71.0)	8,914,098 (71)	10,127,463 (72.0)	11,081,161 (73.0)

NIA, 2012

## B. G2B service

The government's G2B (Government to Business) services are designed to restructure enterprise-related processes and services, such as the provision of approvals and information to businesses from the business perspective, in order to improve efficiency and help enterprises to strengthen their competitiveness.

The leading services are the integrated single window for business support, which integrates the systems and administrative procedures of the agencies dealing with business activities such as business creation and factory construction; the national logistics and trade information sharing & integration service, which interfaces logistics/international trade data (previously provided separately by different agencies) and provides the integrated logistics/international trade information network service from the consumer's

position; and the national e-Procurement service, which unifies the procurement processes of all government agencies and provides an efficient procurement administrative and civil service to public administrative agencies and suppliers (See Table 2-4-4).

Table 2-4-4 G2B Service Cases

Service	Website	Description
Government for Business	G4B www.g4b.go.kr	Business portal service that provides administrative and industrial information required throughout enterprises' business cycle.
National Logistics and Trade Information Sharing & Integration Service	National Logistics Information Center www.nlic.go.kr	User-centered logistics information service that collects and integrates the land/marine/air logistics information dispersed among different agencies and presents it to service users.
	SP-IDC www.spidc.go.kr	Service that delivers comprehensive port logistics information and supports information sharing and collaboration among logistic subjects.
	uTradeHub www.utradehub.or.kr	e-Trade services that handles overall trade processes from marketing to commercial trade, logistics, customs clearance, and foreign currency exchange settlement.
	UNI-PASS portal.customs.go.kr	Internet-based export/import customs clearance service that supports customs filing and approval, tariff payment and refund, and criteria review.
National e-Procurement Service	Korea ON-line e-Procurement System www.g2b.go.kr	Single window for national e-Procurement that processes all government procurement procedures and allows monitoring of operations on the Internet.
Patent Information Service	KIPOnet www.patent.go.kr	Service that processes all patent-related procedures such as applications for patent and queries on progress thereof over the Internet.

Each G2B Service Website (compiled), July 2012

The business creation procedure was greatly simplified from 8 steps in 2010 to 3 steps in 2011, and the time required reduced from 7 days to 5.6 days. As of the end of 2011, the number of annual site visitors had increased to more than 2.7 million people (See Table 2-4-5).

Table 2-4-5 Government for Business Site Usage

(Unit : thousand persons)

Type	2006	2007	2008	2009	2010	2011
No. of Visitors	273	1,354	2,287	2,378	2,512	2,672

www.g4b.go.kr

The national e-Procurement system processes online all procurement procedures such as bidding, contracting, shipment, and payment. Users can monitor the progress of these procedures in real time online. Since the launch of the service in 2003, transactions via e-Bidding have been increasing each year. As of 2011, the number of suppliers who reg-

istered for e-Procurement exceeded 210,000; the number of e-Bids increased from 284,417 in 2010 to 288,533 in 2011 and is still rising; and the use of e-Contracting also increased from 555,126 cases in 2010 to 626,533 cases in 2011 (See Table 2-4-6).

Type	2007	2008	2009	2010	2011
Suppliers	121,349	152,812	191,643	195,022	218,719
e-Bids	213,539	207,960	235,178	248,417	288,533
e-Contracts	187,795	264,768	446,517	555,126	626,533

PPS, 2013 National Informatization Implementation Plan, April 2012

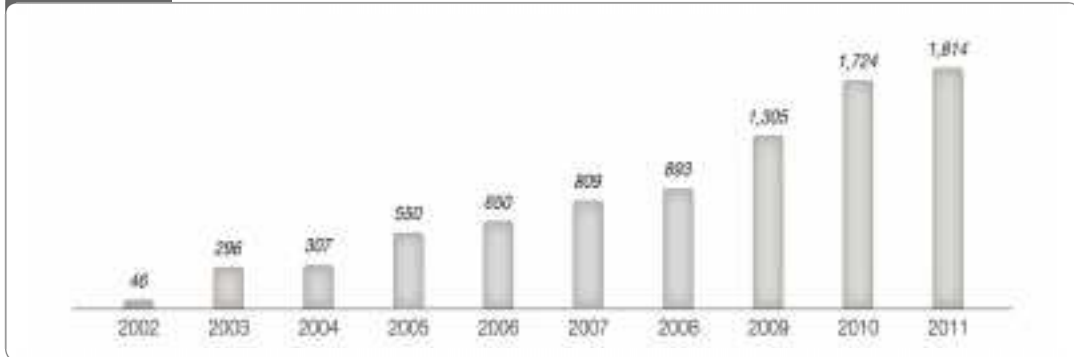
## C. G2G Service

E-Government is generally defined as the new government innovation strategy of improving administrative efficiency by utilizing information and communication technology to make it easier for citizens to access and utilize government information and services. Of the various e-Government services, the G2G service utilizes information technology to improve the efficiency and transparency of inter-administrative agency processes and ultimately to increase the quality of government services for citizens and businesses and to improve national competitiveness.

The e-Document distribution service allows the online transfer of electronic documents not only between administrative agencies but also between educational institutes and other government agencies. As part of the service, the delivery certification system was developed to record and manage the whole process of document distribution in order to certify document transmission and receipt, and is now in operation. The Korean government began promoting online workflow and e-Document distribution in 1998 for the e-Document distribution service. By December 2011, the service had been expanded to a total of 1,814 government agencies including 510 administrative agencies, and 1,304 public corporations, special corporations, and educational institutes. As a result, the majority of agencies in the public sector are now able to distribute documents online (See Figure 2-4-1).

Figure 2-4-1 Agencies Using e-Document Distribution Services

(Unit : each)



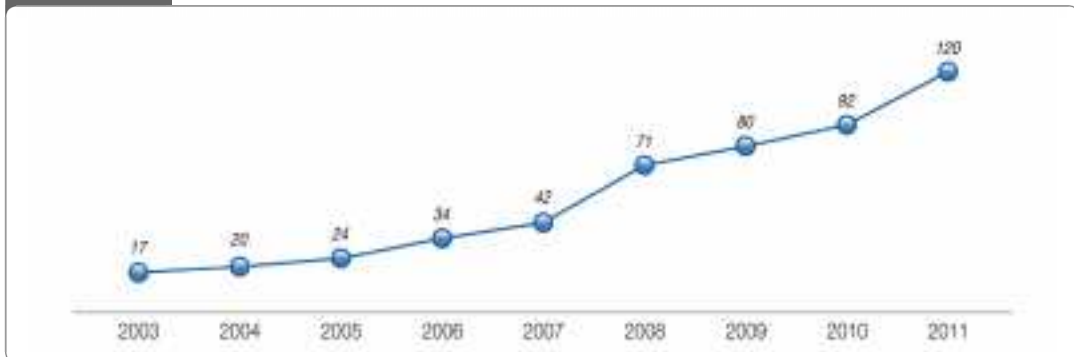
MOPAS, RFP-ISP for Development of e-Document Distribution System between Public and Private Sectors, March 2012

Administrative information refers to data that are expressed in digitalized symbols, characters, sounds, and/or images, and which are created or acquired for management purposes by an administrative agency. As such, the administrative information sharing service is a service that allows an administrative agency to receive the administrative information owned by another administrative or government agency to process it for its operation.

To provide the administrative information sharing service, the Korean government developed a system for sharing seventeen types of information in five areas that are closely related to citizens' daily life, including residential, real estate and automobile issues, and launched the service in November 2002. The types of shared administrative information increased to 24 in 2005 and 120 in 2011 (See Figure 2-4-2).

Figure 2-4-2 Shared Administrative Information Types (Cumulative)

(Unit : type)



MOPAS, Shared Administrative information (compiled), 2012



## Part 3. Utilization

- 1. Internet Industry and Users
- 2. Internet Society Trend
- 3. Internet Promotion
- 4. Internet Related Laws

# 1. Internet Industry and Users

## A. Internet Industry Status

According to the Report on Broadband Internet Subscribers, by the KCC (Korea Communications Commission), the number of Broadband Internet subscribers in Korea was 17.9 million, as of December 2011. KT had the largest amount of subscribers with 7.8 million (43.8%), followed by SK Broadband with 4.2 million subscribers (23.5%), cable TV networks with 2.9 million subscribers (16.0%), and LG U<sup>+</sup> with 2.8 million subscribers (15.7%) (See Table 3-1-1).

**Table 3-1-1** Broadband Internet Subscribers (Unit : thousand persons, %)

Provider		2007	2008	2009	2010	2011
KT		6,516(44.3)	6,712(43.4)	6,953(42.5)	7,424(43.1)	7,823(43.8)
SK Broadband		3,658(24.9)	3,544(22.9)	3,847(23.5)	4,002(23.2)	4,192(23.5)
Dreamline		2(0.0)	1(0.0)	0(0.0)	0(0.0)	0(0.0)
LG U <sup>+</sup>	LG Dacom	68(0.5)	29(0.2)	12(0.1)	2,773(16.1)	2,810(15.7)
	LG Powercom	1,721(11.7)	2,182(14.1)	2,510(15.4)		
System Operator		2,507(17.0)	2,786(18.0)	2,811(17.2)	2,826(16.4)	2,857(16.0)
Relay Operator		16(0.1)	13(0.1)	11(0.1)		
Network System Operator		58(0.4)	50(0.3)	42(0.3)		
Special Category Telecommunications System Operator		164(1.1)	158(1.0)	163(1.0)		
Total		14,710	15,475	16,349	17,224	17,860

KCC, Broadband Subscription (compiled), December 2011

Although the portion occupied by the utilization industry of the total Internet industry revenue in 2011 decreased by 0.3% in 2010, it still had largest share at 69.7%. The infrastructure industry and support industry portions infrastructure industry and support industry did not change much from 2010 (See Table 3-1-2).

Table 3-1-2 Internet Industry Sales Volume

(Unit : billion won, %)

Type	2006	2007	2008	2009	2010 <sup>p</sup>	2011 <sup>p</sup>	CAGR	Year-to-Year Growth Rate
Infrastructure Industry	1,346 (5.6)	1,499 (5.5)	1,547 (5.1)	1,659 (5.0)	1,766 (5.0)	1,967 (4.9)	7.9	11.4
Support Industry	5,835 (24.2)	6,486 (23.8)	7,937 (26.1)	8,407 (25.2)	8,932 (25.1)	10,103 (25.3)	11.6	13.1
Utilization Industry	16,942 (70.2)	19,278 (70.7)	20,974 (68.9)	23,289 (69.8)	24,923 (70.0)	27,786 (69.7)	10.4	11.5
Total	24,123	27,263	30,458	33,355	35,621	39,856	10.6	11.9

※ p : preliminary, ( ) is ratio, KAIT, Broadcast Communication Industry Statistics (Monthly/Yearly) (compiled), December 2011  
CAGR : Compound Annual Growth Rate for 2006-2011

## B. Internet Usage Status

### 1) Individuals & Households

According to the '2011 Survey on the Internet Usage' by the KCC-KISA, the Internet usage rate (rate of persons who used the Internet at least once in the last one month to total population) of people aged 3 and over was 78.0%, up by 0.2%p from the previous year, and the number of Internet users was 37.2 million (up by 170 thousand from the previous year). Helped by rapid distribution of Broadband Internet infrastructure, the number of Internet users and usage rate increased by 1.5 times and 18.6%p, respectively, in the past 10 years compared to 26.3 million and 59.4%, respectively, in 2001 (See Figure 3-1-1).

Figure 3-1-1 Internet Usage Rate and Internet Users Trend

(Unit : %, thousand persons)



※ 2001 : Population age 7 and over, KCC-KISA, 2011 Survey on the Internet Usage, January 2012  
2002-2005 : Population age 6 and over; after 2006 : Population age 3 and over

The Internet usage rate for males and females ages 3 and over was 83.4% and 72.5%, respectively. The number of Internet users for males was 20.0 million and for females was 17.23 million (See Figure 3-1-2).

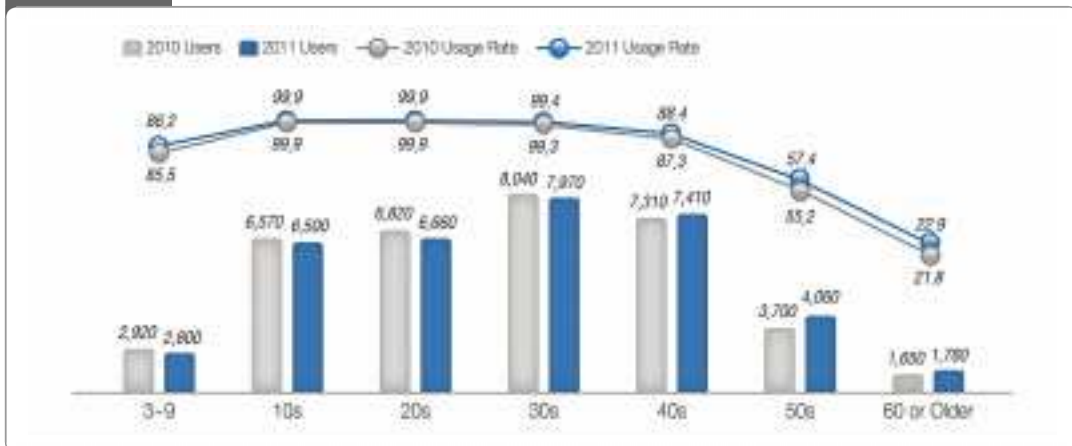
Figure 3-1-2 Internet Usage Rate and Internet Users by Gender (Unit : %, thousand persons)



KCC-KISA, 2011 Survey on the Internet Usage, January 2012

Almost 100% of the younger generation, teens (99.9%), those in their 20's (99.9%), and those in their 30's (99.4%), use the Internet, and the Internet usage rate for those in their 40's (88.4%) and for children aged 3-9 (86.2%) was also more than 80% (See Figure 3-1-3).

Figure 3-1-3 Internet Usage Rate and Internet Users by Age (Unit : %, thousand persons)

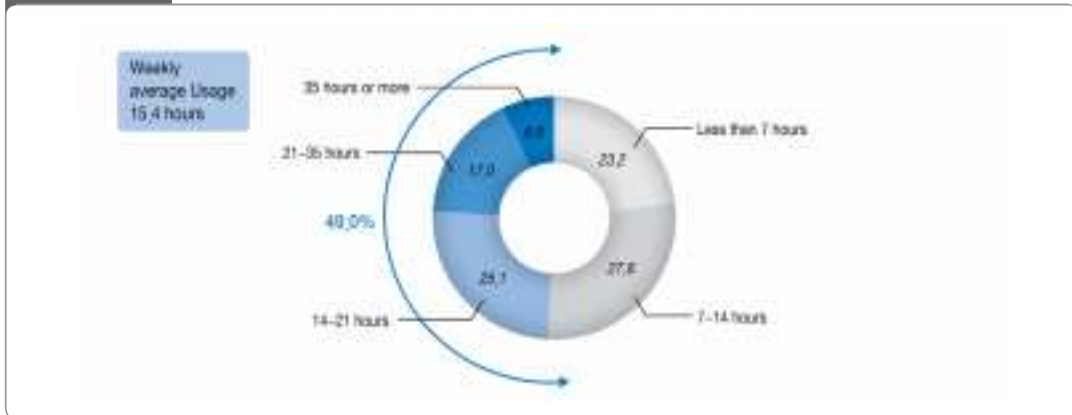


KCC-KISA, 2011 Survey on the Internet Usage, January 2012

Internet users spent a weekly average of 15.4 hours using the Internet (daily average of 2.2 hours). Almost half (49.0%) of them used the Internet 14 hours and more per week (14~21 hours : 25.1%, 21~35 hours : 17.0%, and 35 hours or more : 6.9%) (See Figure 3-1-4).

Figure 3-1-4 Weekly Average Internet Usage Hours

(Unit : %)



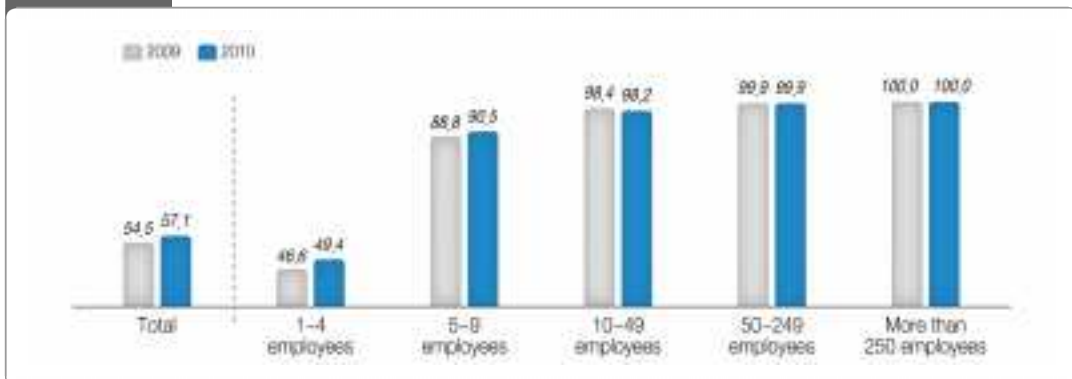
KCC-KISA, 2011 Survey on the Internet Usage, January 2012

## 2) Business

As of December 2010, 57.1% all Establishments had access to the Internet, which was up by 2.6%p from the previous year. The slight increase was attributed to smaller companies with 10 or less employees, as most (more than 98%) of the Establishments with 10 or more employees already had access to the Internet in 2009 (See Figure 3-1-5).

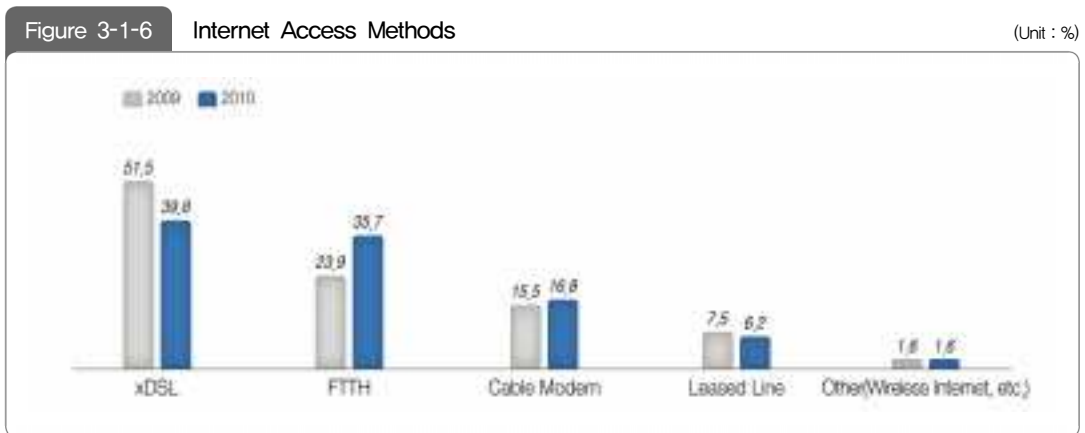
Figure 3-1-5 Internet Access Rate by Establishment Size

(Unit : %)



MOPAS-NIA, 2011 Yearbook of Information Society Statistics, October 2011

39.8% of Establishments with Internet access used xDSL(x Digital Subscriber Line) to connect to the Internet, followed by optical LAN·FTTH (35.7%), cable modem (16.8%), leased line (6.2%), and others (1.6%). The portion of Establishments using xDSL for Internet access decreased by 11.7%p from the previous year, while those using optical LAN·FTTH increased by 11.8%p (See Figure 3-1-6).



MOPAS·NIA, 2011 Informatization Statistics, October 2011

## C. Overseas Internet Status

### 1) Global Internet Status

Korea has proven its position as an Internet powerhouse by being highly ranked in various ICT related indices announced by international organizations like the UN (United Nations) and the ITU (International Telecommunications Union), as well as by private institutes like the WEF (World Economic Forum), the IMD (International Institute for Management Development), and the EIU (Economist Intelligence Unit). In the IDI (ICT Development Index), an evaluation of the ICT development level and competitiveness of countries worldwide, which was announced by ITU in September 2011, ranked Korea as No. 1 out of 152 countries in 2011 and as No. 1 out of 159 countries in 2010. The country was also ranked No. 1 two years in a row in the ICT national competitiveness index, which was announced by the Japanese Ministry of Internal Affairs and Communications (See Table 3-1-3).

Table 3-1-3 International ICT Related Indices

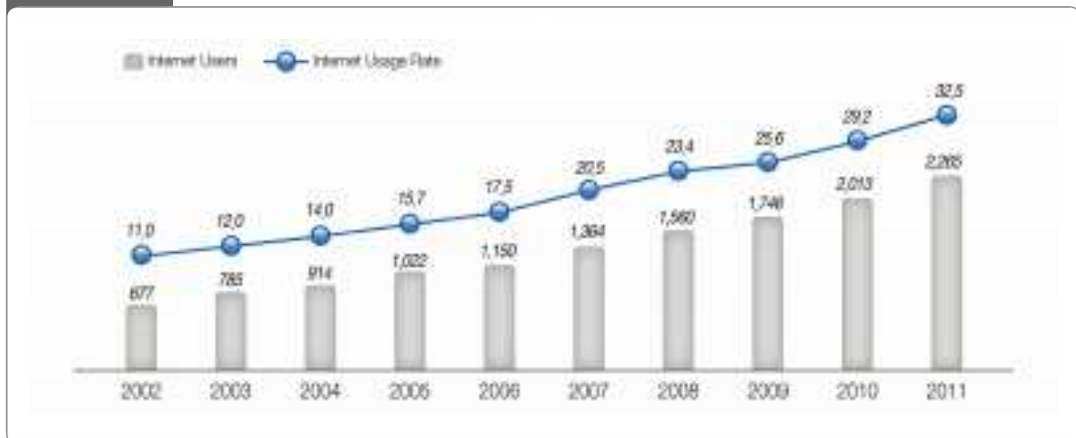
Organization	Index Name	Korea Ranking (out of total)						Major Country Rankings
		2006	2007	2008	2009	2010	2011	
UN	e-Government Development Index	-	-	6	-	1	-	USA ranked 2 <sup>nd</sup> Canada ranked 3 <sup>rd</sup>
ITU	ICT Development Index	1 (180)	1 (181)	-	2 (154)	1 (159)	1 (152)	Sweden ranked 2 <sup>nd</sup> Island ranked 3 <sup>rd</sup>
WEF	Networked Readiness Index	14 (115)	19 (122)	9 (127)	11 (134)	15 (133)	10 (138)	Sweden ranked 1 <sup>st</sup> Singapore ranked 2 <sup>nd</sup>
	Technical Readiness, Global Competitiveness Index	12 (125)	7 (131)	13 (134)	15 (133)	19 (139)	18 (142)	Switzerland ranked 1 <sup>st</sup> Sweden ranked 2 <sup>nd</sup>
IMD	Technical Infrastructure, World Competitiveness Index	6 (53)	6 (55)	14 (55)	14 (57)	18 (58)	14 (59)	USA ranked 1 <sup>st</sup> Sweden ranked 3 <sup>rd</sup>
Japanese MIAC	ICT National Competitiveness Index	-	-	-	2 (24)	1 (25)	1 (30)	Sweden ranked 4 <sup>th</sup> USA ranked 5 <sup>th</sup>

KISA, 2012

Between 2006 and 2011, the number of Internet users worldwide continuously increased with a CAGR of 14.7%. According to the ITU, the number of Internet users worldwide in 2011 was 2.27 billion, which was an increase of 252 million from the previous year, and the Internet usage rate was 32.5%, which was an increase of 3.3%p from the previous year (See Figure 3-1-7).

Figure 3-1-7 Worldwide Internet Usage Rate and Internet Users Trend

(Unit : %, million persons)



ITU, ITU Statistics, June 2012

## 2) Asia

According to the ITU, the number of Internet users in the Asia-Pacific region in 2011 occupied 44.15% of all Internet users worldwide. The annual growth rate of Internet users in the region was 21.8%, which was higher than 14.5% in the Americas and 11.9% higher than in Europe. However, Internet users and Broadband Internet subscribers per 100 persons was 25.5% and 6.4%, respectively, which was less than the world average of 32.5% and 8.5%, respectively (See Table 3-1-4).

**Table 3-1-4** Internet Users and Broadband Internet Subscribers in Asia-Pacific (Unit : million persons, %)

Type	2005	2006	2007	2008	2009	2010	2011
Internet Users	344(9.3)	394(10.6)	503(13.3)	612(16.1)	721(18.8)	868(22.3)	1,000(25.5)
Broadband Internet Subscribers	80(2.2)	103(2.8)	121(3.2)	149(3.9)	179(4.6)	213(5.5)	250(6.4)

※ Figures in ( ) mean the Internet users and Broadband Internet subscribers per 100 persons

ITU, ITU Statistics, June 2012

## 3) North America

According to the ITU, the number of Internet users in the Americas, including in South America and North America, was 520 million in 2011. The region occupied 22.2% of all Internet users worldwide. However, the portion is gradually decreasing as the number of Internet users in developing countries in the Asia-Pacific region and Africa are increasing (See Table 3-1-5).

**Table 3-1-5** Internet Users and Broadband Internet Subscribers in Americas (Unit : million persons, %)

Type	2005	2006	2007	2008	2009	2010	2011
Internet Users	316(35.9)	346(38.8)	385(42.7)	403(44.2)	424(46.1)	458(49.3)	502(53.0)
Broadband Internet Subscribers	66(7.5)	81(9.0)	98(10.9)	111(12.2)	120(13.1)	132(14.3)	144(15.4)

※ Figures in ( ) mean the Internet users and Broadband Internet subscribers per 100 persons

ITU, ITU Statistics, June 2012

## 4) Europe

In March 2010, the EC announced the informatization strategy at the EU 2020, which contained its vision for the next 10 years. At The Digital Agenda Summit in October 2011, it also announced its plan to invest 12.6 billion dollar to develop the fiber optic communication broadband infrastructure and to support the European broadband market.

The EC proposed the Amendment of the Data Protection Rules in the first half of 2012 to strengthen personal information protection.

The number of Internet users was 423 million and the Internet usage rate was 68.4% in Europe in 2011. That number represents 18.7% of Internet users around the world (See Table 3-1-6).

Type	2005	2006	2007	2008	2009	2010	2011
Internet Users	278(46.3)	300(49.7)	339(55.9)	367(60.1)	382(62.4)	406(65.9)	423(68.4)
Broadband Internet Subscribers	66(10.9)	89(14.8)	111(18.4)	125(20.6)	137(22.3)	146(23.6)	154(24.8)

※ Figures in ( ) mean the Internet users and Broadband Internet subscribers per 100 persons

ITU, ITU Statistics, June 2012

The UK government is implementing its broadband policy through the digital infrastructure named, 'Digital Britain'. In December 2010, the UK government announced Britain's Superfast Broadband Future as a plan to invest 830 million pounds in broadband infrastructure. This strategy has the goal of developing Europe's highest level of broadband infrastructure and increasing the broadband population coverage to more than 90% by 2015. The government and broadcasting industry jointly carried out the Digital Television project between 2001 and 2005. All terrestrial analog broadcasting will be terminated and switched to digital broadcasting by 2012.

In October 2008, the French government announced, 'Digital France 2012', which is the plan to promote the digital economy with the purpose of national modernization. The plan contains 154 digital services' plans that are related to the Internet, mobile phones, and broadcasting, which represent the digital national development competitiveness. The 4 strategic goals are as follows : 1) assurance of broadband access for all citizens, 2) expansion of digital contents, 3) diversification of digital services, and 4) expansion of the digital economic management system.

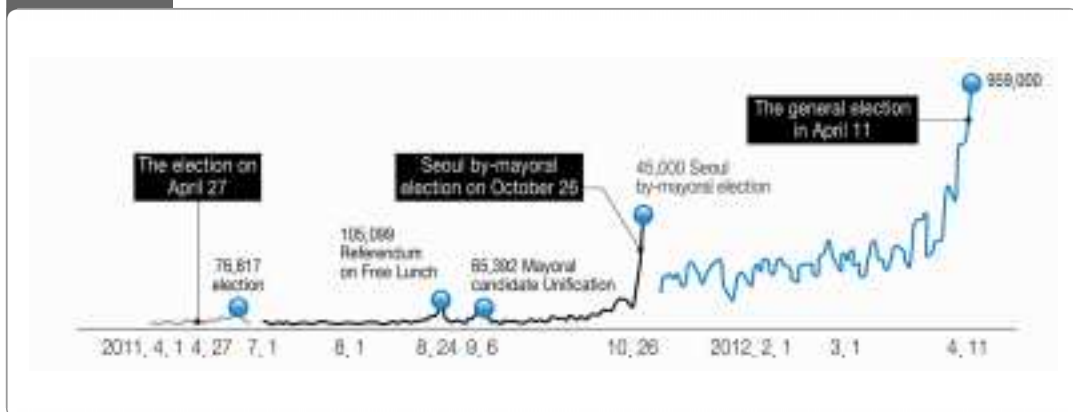
## 2. Internet Society Trend

### A. Politics

In preparation for the general election in 2012, all of the political parties are concentrated on utilizing SNS. The Saenuri Party reflected the ‘SNS communication index’ in nomination screening. The Democratic United Party introduced mobile voting to Citizen Participants electrical college in electing the National Chairman in January and June in 2012. Such changes are helped by the government allowing election campaigns to use SNS. On December 29, 2011, the Constitutional Court found Paragraph 1, Article 93 of the Public Official Election Act to be partially unconstitutional. That meant that restrictions on SNS election campaigns under the provisions of Article 93 were judged to be invalid. As such, SNS services like Twitter, Facebook, and me2day became the popular tools for election campaigns in the general election in April 11. According to an article in the Kyunghyang Shinmun, tweets mentioning the word ‘election’ numbered 959,000 cases during the election period. That number is twice that of the 450,000 tweets during the Seoul mayoral by-election on October 26, 2011 (See Figure 3-2-1).

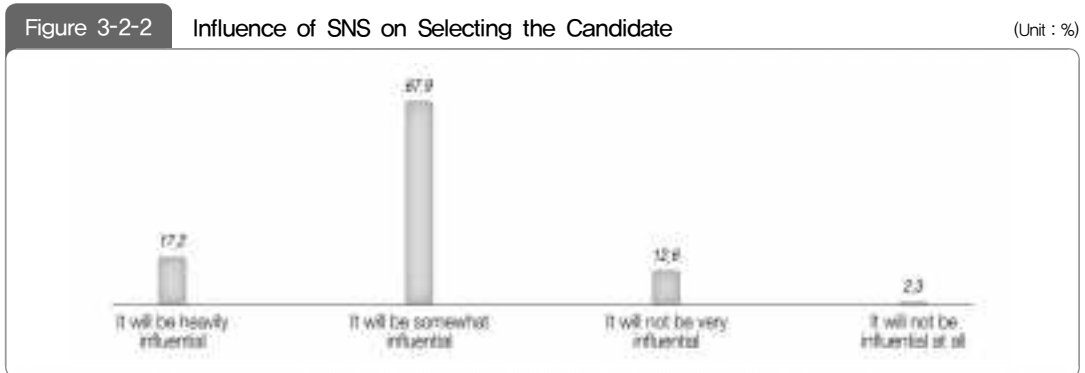
Figure 3-2-1 Number of Tweets during the Election Period

(Unit : case)



The Kyunghyang Shinmun, Living in the e-World: Inaccurate Prediction of Social Public Sentiment Attributed to User Concentration in the Capital Metropolitan Region, April 24, 2012

This meant that SNS has become a motivating factor in politics or in increasing interest in an election. According to a survey by Nielson Korea, 81% of respondents to a question of whether SNS affected their selecting a candidate, answered that it did have an influence (See Figure 3-2-2).



Nielson Korea, Press release - 85% of Citizens Agreed that SNS was Influential on their Selecting of a Candidate, April 9, 2012

In 2011, the use of smartphones and the popularity of SNS brought new changes in election culture with podcasts. Podcasts proved their significant political influence in several aspects. They played an important role in unifying the youth as the support base in the Seoul mayoral election on October 26, 2011. They also played a key role in gathering the crowd in the 'Korea-USA FTA Opposition Demonstration' in November 2011.

Podcasts also contributed to the birth of a new form of politically oriented media. Programs like 'I'm a Trickster', 'News Breaker', 'Low Altitude Flight', and 'TV in Your Palms' appeared to bypass the established press and to communicate directly with citizens. Broadcasting its first program on April 28, 2011, 'I'm a Trickster' became the No. 1 ranked podcast program in news and politics in the world in only after 3 months.

## B. Economy

According to the '2011 Payment and Settlement Trend' by The Bank of Korea, Internet banking settlements reached a daily average of 16.1 trillion won, which was an increase of 15.6% in 2011. According to the '2011 White Paper on Korean Games', the online game revenue was 5.7 trillion won, which was an increase of 20.0% in 2010.

Other agencies reported that Internet shopping, Internet advertising, and e-Learning also grew by 15.3%, 20.8%, and 9.2%, respectively, indicating that the Internet economy is continuing to grow (See Table 3-2-1).

Type	2006	2007	2008	2009	2010	2011
Online Banking (Daily Avg. Settlement)	69,520	82,690	96,850	120,044	169,147	160,804
Online Game	17,768	22,403	26,922	37,087	47,673	57,208
Online Shopping	134,596	157,656	181,455	206,430	252,030	290,620
Online Advertisement	8,907	11,364	12,859	12,923	15,571	18,805
e-Learning	16,177	17,270	18,704	20,910	22,458	24,514

BOK, 2011 Payment and Settlement Trend, March 2012

MCST, 2011 Korea Game White Paper, September 2011

KOSTAT, 2011 Annual and Q4 e-Commerce and Online Shopping Trend, February 2012

IMCK, 2010 Internet Advertisement Volume Survey, November 2010

KOA, 2011 Online Advertisement Market Size, February 2012

MKE-NIPA, 2011 Survey on e-Learning Industry Trend, March 2012

Such changes are accelerating recently with the popularity of the mobile Internet and with the rapid increase of smart device users. As Internet usage is changing with the diffusion of mobile services, as well as cloud computing and social network based services, its ripple effect is also rapidly increasing. This type of expansion of the Internet economy is causing a ripple effect to the related social areas and the public sector to lead the changes of the industrial structure.

LTE (Long Term Evolution) is a 4<sup>th</sup> generation communication technology, which is more than 5 times faster than the 3<sup>rd</sup> generation (3G) mobile communication. With more than 8 million subscribers in one year since the LTE service was launched, Korea is showing the fastest subscriber expansion in the world, and it is also changing the Internet economic environment (See Table 3-2-2).

Type	SK Telecom	LG U <sup>+</sup>	KT	Total
LTE Subscribers	422	295	150	867
Year-end Target	700	500	400	1,600

Telecommunication Carriers, July 2012

The era of 4G LTE is also gradually changing the lives of mobile users. Although the users of 3G smartphones could access the Internet anywhere and anytime, there were some limitations because of data network overload, which was due to a rapidly increasing number of users and a speed that is too slow for multimedia contents. However, in the 4G LTE mobile environment, users can experience wired level service on their smartphones. Moreover, as the devices are advanced at the same time, the smart devices can replace more PC functions and expand their utilization.

## C. Society & Culture

With the popularity of smartphones, tablet PCs, and SNS, the outcome of data rush, in other words, the interest in big data, increased in 2012. Companies created profits by analyzing the data and by providing useful information to consumers while government agencies have been improving the efficiency of budget execution and the quality of public service based on the vast amount of data (transportation, tax, crime, disaster, etc). produced by members of society.

However, as the volume of data soared and the producers of the data diversified, people had more difficulties in finding the needed information and the social curation service appeared under that background. The social curation service is a type of social filtering search, which uses more 'reliable' and 'sympathetic' information that is found and selected by acquaintances or experts. It can sort by time series and can use the categorization criteria or keyword that is specific to each individual participating in social filtering. Users of the social curation service can search for not only the information based on the recommended product or brand but can also search for the information based on their preference or emotional sympathy. As SNS enables information filtering based on preference or emotional sympathy, companies are now carrying out target marketing that is customized to individual preference by analyzing the information left on SNS. In 2012, SNS moved beyond human networking management or simple information distribution and evolved into tool oriented SNS that is centered on personal hobbies and goals to strengthen its social curation function.

## 3. Internet Promotion

### A. Promotion of Internet Business

#### 1) Establishment of Mutual Prosperity for Internet Businesses

As of 2009, the economic size of the Internet in Korea reached 63 trillion won 5.94% of the GDP. Compared to other industries, this is higher than the electrical/electronic manufacturing (5.71%) or automobile industries (4.23%), which are Korea's main export industries. This proves that the Internet has grown to be a significant part of the national economy.

Such figures indicate that the social position of Internet industry should be strengthened in accordance with its importance and that the Internet companies should continue paying attention to shared growth and social responsibilities.

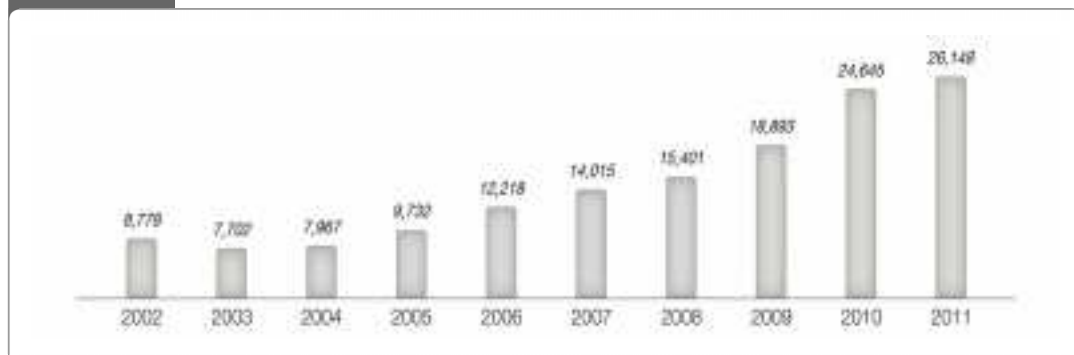
Shared growth means that the industry develops and that Internet companies mutually grow through cooperation under the rapidly changing Internet environments and global competition.

In Korea, the second venture boom occurred with the diffusion of smart devices, such as smartphones and tablet PCs, between 2009 and 2010. The number of venture enterprises grew from 4,934 in 1999 to 26,148 in 2011, resulting in a 14.9% annual growth rate (See Figure 3-3-1).

Figure 3-3-1

Number of Venture Enterprises

(Unit : each)



KISDI, Structural Problems of ICT Venture Ecosystem and Improvement Method, August 2012

The KCC (Korea Communications Commission) held its 7<sup>th</sup> plenary session in February and announced the 'Global K-Startup Program 2012'. The plan contains the program to identify the innovative Internet startups and to cultivate them methodically through shared growth with portal operators and mobile telecommunication carriers. It will also link with Google and other global companies for international IR and support entry into global markets. KCC's goal is to establish the foundation for the ecosystem of domestic startups in Korea so that the innovative ideas can be materialized into the service and companies can grow globally (See Figure 3-3-2).

Figure 3-3-2 Global K-Startup Incubation Process



KCC, Press Release-Global K-Start-up: Incubation of future Internet blue chips, February 15, 2012

## 2) Promotion of Wireless Internet

Under the smart mobile environment, companies are in heated competition to develop a competitive ecosystem that is based on killer contents and services like mash source and various apps. The environment is changing from the internal competition of individual industries for contents, platforms, network, and devices in the past into a competition between ecosystems that link the value chain of different industries. Global IT companies like Apple and Google are taking the early leadership in the global markets by developing a smart ecosystem through collaborating with various industries.

Mobile payment was introduced in the early 2000's but did not catch on because of inadequate standardization and duplicated investment, as there has been a conflict of interests among the service providers. However, the environment is becoming more favorable for a mobile payment service with the diffusion of smartphones, the introduction of

interactive online payment technology, and the implementation of a payment market strategy by global companies. NFC (Near Field Communication) based mobile payment is accepted as the key to mobile business, as it enables various application services such as personal data authentication and advertising. NFC is a wireless communication technology that enables bidirectional data communication between two smart devices within 10cm from each other. As the global companies like Apple and Google are focusing on NFC based services as the next key business and on embedding NFC functions in smartphones succeeding the smartphone market, they are expected to become the new leading service providers based on the existing infrastructure and customers.

To cope with the situation, KCC announced its 'Smart Mobile Korea Vision 2010' to secure global competitiveness in smartphones, as well as to promote and productively utilize smartphones. It also issued the 'NFC Based Mobile Smart Life Service Promotion Plan' in March 2011 to promote the NFC service as the key smart mobile business and to create new industries. With the vision of 'Leading Country of Mobile NFC Service', it presented 9 agendas in 3 areas of the establishment of grounds for new mobile smart life service, identification and promotion of mobile smart life application services, and leadership in the next generation mobile payment and application markets.

### 3) Improvement of Internet Usage Environment

A survey by KISA (Korea Internet & Security Agency) in June 2012 on the use of ActiveX in 200 major Websites in Korea indicated that 147 sites (74.0%) were using ActiveX technology. This figure was about 9% lower than in March 2012 and continued to decrease (See Table 3-3-1).

Table 3-3-1 Use of ActiveX by 200 Major Korean Websites

(Unit : each, %)

Type	Private Sector							Administrative Agencies
	Public	Finance	Portal Sites	Shopping Malls	Online Bookstores	Game	Others	
Sites	20	15	10	15	10	10	20	100
Usage	15	14	7	12	10	9	13	68
Usage Purpose	Keyboard security and communication encryption	Login PC firewall	e-Payment file upload	e-Payment keyboard security	e-Payment keyboard security	Login keyboard security	-	Video playing keyboard security
Usage Rate	75	93	70	80	100	90	65	68

KISA, Survey on ActiveX Usage in the 2<sup>nd</sup> Quarter, June 2012

In March 2011, the KCC announced its 'Internet Usage Environment Improvement Plan' to apply Web standards of 100 major sites and to assure Internet users of having a selection among various browsers. In accordance with its execution plan, it carried out consulting for ActiveX alternative technology for 20 sites in 2011 and plans to complete its consulting for 100 major sites by 2014. It is also carrying out the training of 200 people on ActiveX alternative technology.

In July 2011, the KCC launched the campaign for upgrading old browsers and for the support of various browsers. As a result, the usage rate of IE6 decreased by 19% in July 2011 to the 1% level by June 2012. The Internet environment is particularly improving in the financial sector as the Web sites voluntarily feature open banking services that enable e-Banking from various browsers.

The 'ActiveX Alternative Technology Application Guideline' for ensuring Web compatibility describes 12 alternative technologies in 4 functions of security, file handling, graphic and chart presentation, and multimedia playing (See Table 3-3-2).

Table 3-3-2 ActiveX Alternative Technology Application Guideline

Service		Replacement Measures
Security	Electronic signature using a public certificate	General purpose technologies for using an electronic signature without ActiveX. (e.g., Smart signature)
	Personal firewall	User option to install a personal firewall, which used to be forcefully installed in the user PC by the service provider (financial company). Users have the choice to use the firewall provided by the OS of the PC instead
	Keyboard security	Like the firewall, the service provider (financial company) allows the users an option for security and it uses a virtual keyboard function to replace program installation, in order to ensure Web service compatibility
	Communication data encryption	Communication data encryption using the SSL function
	Secured Email	Email content security with POP3 communication using SSL
File Handling	Multiple file upload	Use of the 'multiple' attribute of the file API of HTML5
	Multiple file download	Web programming using HTML 4.0 or higher, CSS, and JAVA script
	File download	Download service through HTML link
Graphic and Chart Presentation	Graphic	Use of XML based SVG, CSS, and DOM technologies
	Graph/Chart	Use of the CANVAS element of HTML5 and JAVA script
Multimedia Playing	Video playing	Use the <video> tag of HTML5
	Music playing	Use of the <audio> tag of HTML5

KCC, Internet Usage Environment Improvement Plan, March 2011

#### 4) Internet Accessibility Improvement

We live in a world in which the Internet is changing everything. The appearance of the Internet has changed everything in politics, society, administration, culture, and economy into something that we could not have ever imagined before. It is also increasing the efficiency and transparency of government operation through e-Democracy and e-Government. The Internet is no longer an option we can choose, as it had become the essential survival measure that we must utilize to live in the modern world. However, vulnerable classes of people, like the disabled, are having difficulties of even accessing the Internet because of a lack of support. To resolve this, a Web accessibility policy enabling the disabled to access the Internet like other users was enacted. The government required the public agencies to comply with Web accessibility in the Framework Act on National Informatization and the Act on the Prohibition of Discrimination Against Disabled Persons and the Remedy Against the Infringement of Their Rights, etc (hereinafter the ‘Discrimination Prohibition Act’). It also carried out the awareness programs, including Web accessibility standardization, the quality mark system, training, and seminars, to establish the environment in which the disabled can use the Web like other users.

The government has been supporting the operation of the ‘Information and Communication Accessibility Improvement and Standardization Forum’, which is participated in by academia, enterprises, civic organizations, and research institutes related to Web accessibility, since 2002. The forum operated by NIA is striving to standardize the key information and communication products and services such as the Web, banking automation systems, software, mobile phones, etc. that have a great influence on vulnerable classes of people, such as the disabled and senior citizens (See Table 3-3-3).

Type	2005	2006	2007	2008	2009	2010	2011
Central Agency	72.3	82.3	87.4	90.1	92.6	94.7	94.8
Local Municipality	71.6	81.8	78.2	83.3	91.9	96.3	91.9
e-Government	77.1	78.4	74.0	80.3	82.2	87.1	87.5
Public Agency and Corporation	-	-	-	74.6	84.2	86.5	88.4

MOPAS, Survey on Web Accessibility, February 2012

To establish the Web accessibility related policies, central administrative agencies, local

municipalities, and public agencies have been surveyed on Web accessibility since 2005. A total of 800 sites were evaluated in 2011. In terms of the Web accessibility level, the central agencies and local municipalities were judged to be ‘outstanding’ with 94.8 and 91.9 points, respectively, while the public agencies and corporations received 88.4 points. In 2011, they were also surveyed on 45 mobile applications for the first time.

## B. Establishment of the Internet Usage Culture

### 1) Internet Literacy

As the increasing popularity of the wireless Internet is changing the Internet environment with rapidly increasing information and communication on the Internet, the adverse effects such as defamation, privacy violation, and malicious comments in cyber space are deepening, and the Internet ethical problems like the spreading of false information and cyber violence among youth have become a serious social issue. As such, education on Internet literacy has gained attention as the important alternative to foster Internet cultured citizens.

Internet literacy is defined as the, ‘comprehensive capability to creatively express one’s self and properly understand others’ contents over the Internet, as well as to soundly and effectively utilize the Internet’. It is the concept that encompasses the overall capabilities for communication, knowledge acquisition, personal relationships, and cultural sharing (See Table 3-3-4).

Type	Description	Agency
Non-Profit Organization	Media education	Parent Information Monitoring Group, Playground Media Center, Media Addition Prevention Center
	Civil movement organizations	Media Coalition, ITcanus, Information and Communication Activists Network
Commercial Service Provider	Voluntary media education by media companies	-
Local Media Center	Internet related education programs by local media centers established by the KCC	Citizen Media Center
Semi-government Agency	Projects by Internet related public agencies	KISA, NIA

KISA, 2012

In Korea, government agencies, commercial service providers, and non-profit organizations lead education on Internet literacy. Of the programs, the ones by government agencies such as KISA and NIA are considered to be the most systematic programs.

## 2) Internet Ethics

As Internet services became more user friendly and widely utilized, various social side effects such as information that is harmful to youths and false information that is more quickly and widely dispersing in the Internet space are appearing. Particularly for teenagers who are interested in new services and devices and who have the capability to easily absorb the information, these issues become even more serious. As such, many programs to ensure proper Internet usage and to make the Internet a way of life are carried out at the government level. The leading program is the ‘Korea Internet Dream Stars’, which was founded in 2010.

The ‘Korea Internet Dream Stars’, which is targeted on the youth (elementary and middle school students) who are the leaders of the future Internet society, is a youth organization that has been established to cultivate young leaders who have a sound understanding and values in the Internet society. The program does so through the development and operation of programs related to the access, utilization, understanding, ethics, protection, and safety of the Internet (See Table 3-3-5).

**Table 3-3-5** 2<sup>nd</sup> Phase Dream Stars Organization (Unit : persons)

Type	Seoul	Gyeonggi	Incheon	Gangwon	Daejeon	Chungbuk	Chungnam	Gwangju	Jeonbuk	Jeonnam	Ulsan	Daegu	Gyeongbuk	Gyeongnam	Busan	Jeju	Total
1 <sup>st</sup> Phase	164	489	14	19	7	39	8	10	2	0	0	22	4	31	21	1	831
2 <sup>nd</sup> Phase	397	731	354	84	26	70	136	114	101	68	9	62	265	93	296	47	2,853
Total	561	1,220	368	103	33	109	144	124	103	68	9	84	269	124	317	48	3,684

KISA, 2012

Through the ‘Korea Internet Dream Stars’ program, youth can develop their ability to creatively express their thoughts and properly accept others’ opinions, as well as participate in various activities (education, campaigns, experience/exploration, social volunteering, etc.) to improve their capability to lead the way in social responsibility in this Internet society, in which personal authority is becoming more important.

### 3) Child Protection Online

As computers and Internet are diffused in households worldwide, Internet usage by children is also increasing. According to the '2011 Survey on the Internet Usage' by KISA, 86.2% of the children aged 3~9 and 99.9% of teenagers in Korea were using the Internet.

The diffusion of the Internet enriches the lives of children and youths by providing them with the opportunity to access its unlimited information, as well as cultures such as online education, games, and music. But it also brings various side effects and dysfunctions. The exposure of children to threats such as the distribution of illegal contents, cyber violence, pornography, online game addiction, and online scams is becoming more wide reaching and serious.

With the popularity of Internet usage, 7.7% of all users are known to be suffering from Internet addiction. In terms of age groups, the addiction of high school students is the highest and the addiction of children from vulnerable classes (low income families, multi-cultural families, single parent families, etc.) is also relatively high.

According to the '2012 Internet Addiction Prevention and Mitigation Status and Action Plan', which was announced on March 23, 2012, 8 government agencies formed the Internet Addiction Policy Council and are cooperating to establish the policy for national level response.

To protect children and youths from illegal harmful contents in the rapidly changing broadcasting and communication environment, KCC launched 'Green i-Net' ([www.greeninet.or.kr](http://www.greeninet.or.kr)) in 2008 to provide various programs, such as the filtering of information that is harmful to youth, an information rating service, cyber rights violation prevention, and Internet information usage time management, to cope with the amount of harmful information that exists on the Internet. It is also operating an emergency response hotline council, which is formed of 30 Internet service providers including portals, P2P, and Web hard, to monitor the pornographic contents on the Internet and to prevent the distribution of illegal and harmful information over the Internet. The Internet service providers, like portals, are strengthening monitoring to prevent the uploading of pornographic contents and they are strictly inspecting the legality of the contents in house.

The KCC and KISA have analyzed the Internet ethical problem and are carrying out the systematic cultural programs to create a sound Internet culture in which the members of the community voluntarily participate as the countermeasures. To protect children, who are the most active and also the most vulnerable on the Internet at the same time, the

education of youth on Internet literacy with subjects including Internet ethics and privacy protection is being conducted and the on/off line education is being expanded by linking with relevant organizations, such as the portals. Moreover, the 'Internet Ethics Class' program is being expanded at elementary schools and middle schools nationwide, and the 'Korea Internet Dream Stars' was launched in June 2010 to provide the stage for experiential education for youths to acquire proper Internet culture.

#### 4) Internet Addiction Disorder

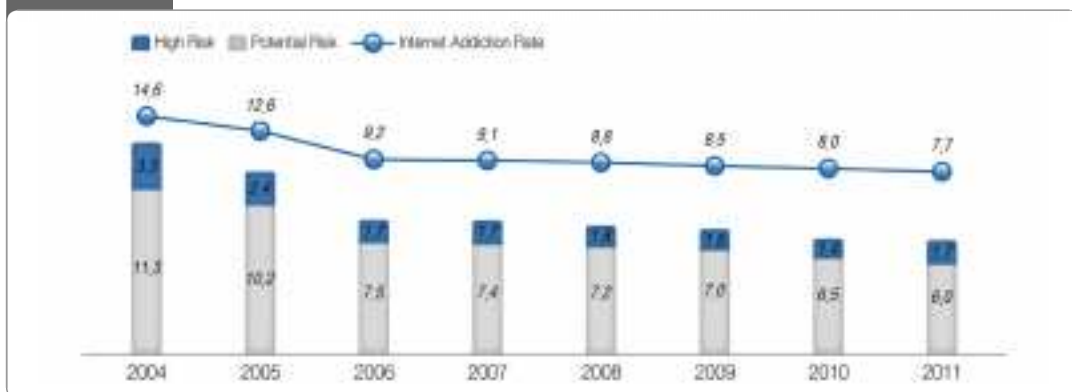
Even until a few years ago, the term 'Internet addiction' was a phrase that only a few people had interest in. However, it has become the key issue in the discussions about IT policy or child education.

As Internet addiction has still not been assigned an official code as a mental disease in the medical field, its definition still varies widely. The Framework Act on National Informatization (Article 30) defines it as 'suffering the loss of physical, mental, or social functions, which are hard for the individual to recover in their daily life, due to their abuse of the Internet, etc'.

In Korea, KOSTAT (Statistics Korea) sponsors the survey on Internet addiction each year. According to their 2011 survey, a total of 7.7% were suffering from Internet addiction, including 1.7% who were considered to be at high risk and 6.0% with a potential risk. The result was a 0.3%p decrease from 8.0% in 2010. Since the first survey in 2004, the Internet addiction rate has been continuously decreasing (See Figure 3-3-3).

Figure 3-3-3 Annual Internet Addiction Rate

(Unit : %)



※ 2004-2010: Aged 9-39, PC based

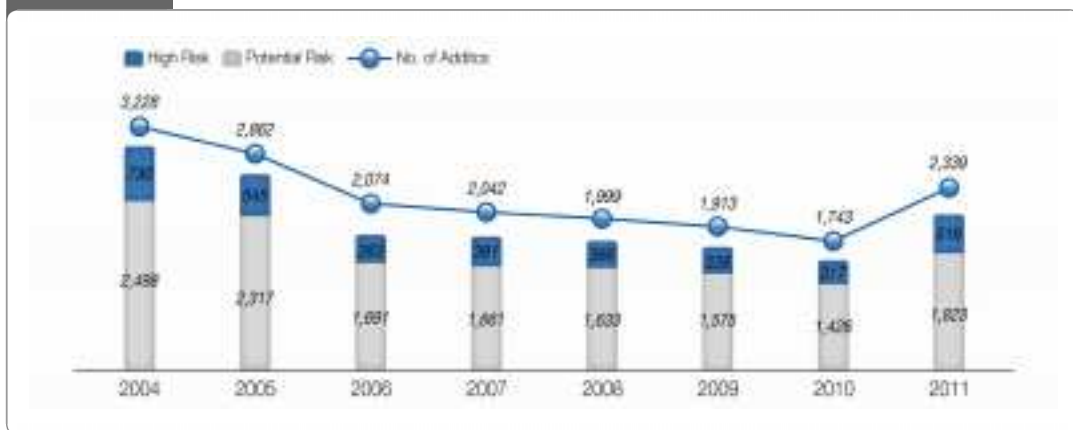
MOPAS-NIA, 2011 Survey on Internet Addiction, March 2012

※ 2011: Aged 5-49, PC and smart device based

According to the '2011 Survey on Internet Addiction', the overall addiction rate is decreasing, but the number of addicts is still too large to be ignored. In 2010, the total number of addicts was 1/74 million. The figure increased to 2.34 million in 2011. The reason for the higher number of addicts, despite the low addiction rate, is because the age range of the survey was widened. Since the entire family also suffers when there is an Internet addict in the family, it is estimated that more than 6 million people suffer from Internet addiction (See Figure 3-3-4).

Figure 3-3-4 Annual Internet Addicts

(Unit : thousand persons)



※ 2004~2010: Aged 9~39, PC based

MOPAS·NIA, 2011 Survey on Internet Addiction, March 2012

※ 2011: Aged 5~49, PC and smart device based

To cope with Internet addiction, 8 government agencies led by MOPAS and joined by MCST, MOGEF, MEST, MHW, MOJ, MND, and KCC cooperate under the provisions of the Framework Act on National Informatization. MOPAS has the overall responsibility for the programs related to Internet addiction and reports the key issues to the President's Council on Informatization Strategies.

Prevention is very important in Internet addiction. That is because, once a user becomes an addict, it not only takes a long time to recover from it through treatment but it is also very easy to become an addict again. Thus, the agencies spend a long time on preventive education, along on advisory projects. KISA conducted preventive education on more than 1.5 million people in 2011 alone.

## C. Internet Security

### 1) Information Security

In 2011, there were several specifically targeted large-scale intelligent continuous attack intrusion incidents like NH network hacking, and attacks on Hyundai Capital, SK Communications, and Nexon. The attacks included the subtle hacking of the open program update server to disperse the malware to only the specific targets or by turning the notebook computer of a vendor employee into a zombie PC and monitoring the system for a long time to acquire data.

Moreover, many Web sites received DDoS attacks with various purposes. The 3.4 DDoS attack against 40 domestic major sites and the DDoS attack against the National Election Commission on the by-election day on October 26 were the leading cases. They were particularly serious because their purposes were not for self-satisfactory or monetary gain but to create social confusion or to achieve a political objective. There were also DDoS attacks against small Internet shopping malls, gambling sites, and adult sites for the purpose of theft or the business obstruction of a competitor.

The KCC (Korea Communications Commission) opened the KISC (Korea Internet Security Center), which is managed by KISA, to monitor cyber threats 24×365 to collect and analyze various threats in advance for prevention. In the case of an actual security incident, it analyzes the cause and prepares the countermeasures. It also cooperates with the relevant agencies to quickly respond to incidents.

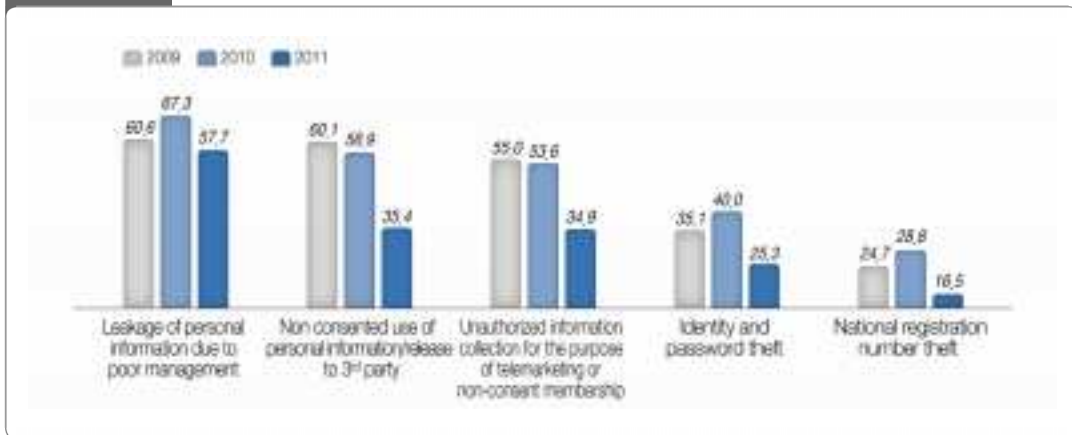
The Infected PC Cyber Treatment Center, which opened for service in 2011 after the development in 2010, notifies the users of an infected zombie PC and promptly provides the vaccine in advance to prevent it from being used in a DDoS attack. During the 3.4 DDoS attack, it distributed 11.9 million notifications of treatments for infected PCs to prevent the spreading of the damage after the large scale intrusion incident.

### 2) Personal Information Protection

According to the '2011 Information Security Survey' by KISA, 'the case of personal information being leaked due to management neglect by the service provider' was the most frequently occurring type of personal information and privacy violation at 57.7%. It was followed by 'the case of the service provider using the personal information for a purpose other than the original purpose or providing it to a third party without the con-

sent of the subject (35.4%)', 'case of the service provider collecting personal information without giving notice or enrolling membership without giving notice (34.9%)', 'case of a game item, cyber money, or character being stolen through ID and password theft (25.3%)', and 'case of failing to enroll in a Web site or incurring economic damage by stolen resident registration number (16.5%)'. Compared to 2010, the damage rates of all violation types was lower (See Figure 3-3-5).

Figure 3-3-5 Types of Personal Information, Privacy Infringements (multiple responses) (Unit : %)



※ Basis : Users experiencing personal information privacy violations  
(People aged 13-59 who use the Internet at least once a month)

KISA, 2011 Information Security Survey, March 2012

Since the Amendment on the Act on the Promotion of the Information and Communication Networks Utilization and Information Protection, etc. to strengthen the personal information protection in the information and communication field in 2008, measures to actively cope with various problems caused by the changes in the information and communication environment have been continuously applied. Since 2008, it obligated the sites to allow membership enrollment without using the resident registration ID to prevent misuse and to establish the legislative basis for personal information protection by strengthening the technical and managerial protective measures. Particularly, after the large-scale information leakage by hacking attacks against SK Communications and Nexon Korea in 2011, the 'Plan for Personal Information Protection on the Internet' was announced in October 2011 to minimize secondary damage and to prevent the re-occurrence of ID misuse, spam, and phone scams using the leaked personal information.

New regulations such as the restriction of the collection and use of resident registra-

tion IDs over the Internet, the establishment of the personal information expiration system, the implementation of the personal information usage notification, and the notification and reporting of personal information leakage to minimize the damage were added to the Amendment on the Act on the Promotion of the Information and Communications Network Utilization and Information Protection, etc. It was passed by the National Assembly in December 2011, announced in February 2012, and has been enacted since August 2012.

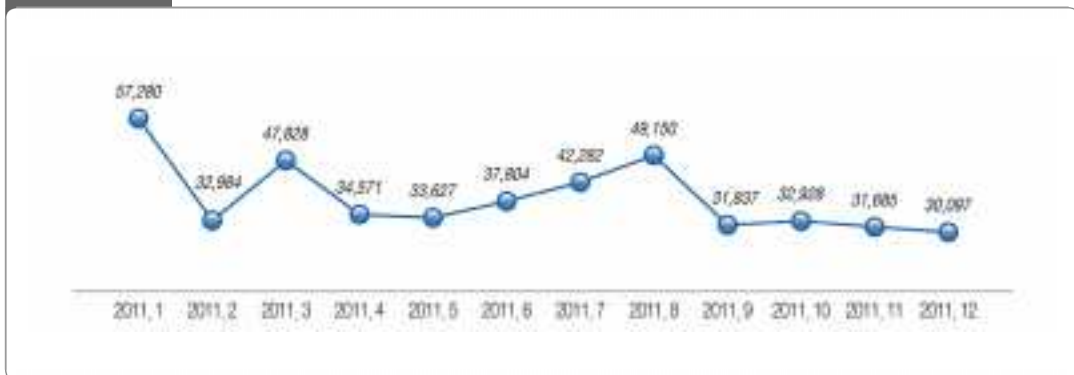
### 3) Consultation and Handling of Information Protection (☎ 118)

More than 460,000 inquiries were received by the ☎118 Advisory Center in 2011. That was more than a 32% increase over the inquiries received in 2010, which was the first year of the ☎118 Advisory Center being in operation. This indicates that the active PR campaigns, such as the public interest advertising on the Internet and information security broadcasting by KISA, have been effective (See Figure 3-3-6).

Figure 3-3-6

☎118 Inquiries

(Unit : cases)



※ The ☎118 Advisory Center opened on January 18, 2010

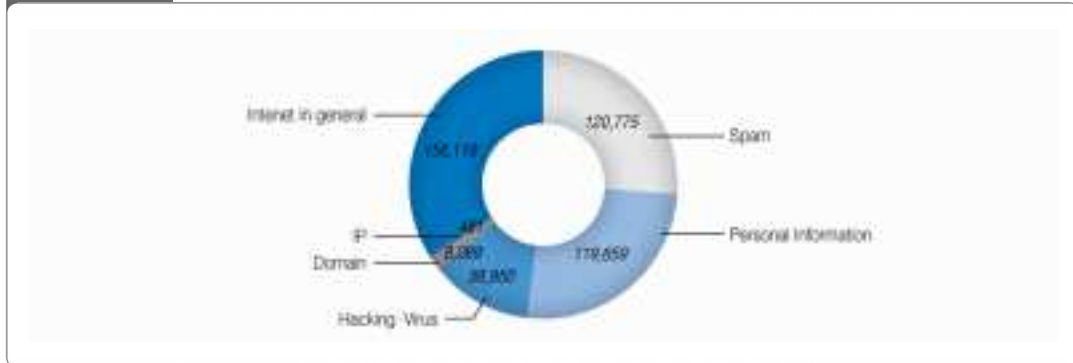
KISA, 2012

In terms of types, spam was the highest with 120,775 cases, followed by personal information with 119,659 cases, and hacking·viruses with 56,950 cases. Personal information and hacking·viruses particularly increased by more than 2.5 times over the previous year. This is attributed to the increased interest on information security after various Internet violation incidents like the 3.4 DDoS attack and personal information leakage incidents at large companies (See Figure 3-3-7).

Figure 3-3-7

☎118 Handling by Consultation Type (as of December 2011)

(Unit : cases)



※ Total calls in 2011 : 462,073

KISA, 2012

#### 4) Professional Manpower Development

Helped by the increasing popularity of mobile devices, more usage of the wireless Internet, and the introduction of new technologies like LTE, the Internet usage environment is improving day after day. Although the advancement of information technology is increasing the convenience of daily living as the key factor of leading the changes in all social areas such as industries, routine living, and services, it is also causing an increase in cyber crimes such as hacking, virus incidents, spamming information without consent, copyright violations, defamation, voice phishing, information leakage, and personal information violation. Moreover, the popularity of mobile usage has caused the various wireless Internet hacking attacks using the open AP. There are also increasing cases of monetary and emotional damage from hacking incidents in the financial sector. As such, the development of information security manpower at the national level is urgently needed, and the commercial enterprises and individuals should also be aware of information security.

To answer such requirements, the government has been conducting various educational programs since 1996 for the general public to increase their awareness about the information security. It expanded the Internet security program, which was originally targeted at government officials, to all citizens and created a systematic educational program by segmenting it into a general program and information security professional development program according to the level of the education targets.

The general program was conducted in the form of lectures on information security, which was targeted at the general public, including white-collar workers. The professional

development program included information security exercise education, reverse engineering, response to DDoS, an information security Internet ethics. Of the 67 information security education programs, 40 programs dealt with general education like the information security lectures on road and 27 programs dealt with professional education like information security exercise education (See Table 3-3-6).

**Table 3-3-6** General and Professional Information Security Training (Unit : persons, times)

Type	Program	Target	Students	Sessions
General Education	Information Security Lecture on Road	General public	4,983	40
	Subtotal		4,983	40
Professional Education	CISO/CPO Awareness	Company CEOs	26	2
	Latest Security Technologies	General public	88	2
	Network and Web Hacking Security Education	Information security managers at DOD	53	2
	Information Security Exercise Education (Fundamental and Advanced)	Security managers and general public	306	12
	Reverse Engineering	Security managers and general public	119	3
	Response to DDoS	Security managers and general public	134	4
	Information Security Internet Ethics (Video)	Security managers and general public	80	1
	Wireless Internet Promotion and Security (Mobile App)	Security managers and general public	58	1
	Subtotal		864	27
Total			5,847	67

KISA, 2011 Report on Information Security Education, December 2011

## D. Digital Divide

According to the ‘2011 Survey on the Internet Usage’ by the KCC and KISA, there was a great digital divide according to gender, age group, education level, and income in 2010. In terms of gender, there was a 10.9%p difference between males (83.4%) and females (72.5%). In terms of age group, 99.9% of people in their teens used the Internet, while 22.9% of people aged 60 or over used the Internet, which showed a large gap of 77.0%p. In terms of education level, 98.2% of college graduates used the Internet, while only 18.3% of elementary graduates or lower (excluding students) used the Internet,

which showed a large gap of 79.9%p. In terms of income level, 92.6% of people with a monthly household income of 4 million won or more used the Internet, while 24.7% of people with a monthly household income of 1 million won or less used the Internet, which was a large gap of 67.9%p. In terms of occupation, 99.8% of white-collar workers used the Internet, while 56.4% of blue-collar workers used the Internet, which was a gap of 43.4%p.

The average Internet usage rate of the vulnerable classes of people, such as senior citizens, those with low incomes, and residents of rural communities, was 45.6% in 2011, which was an increase of 1.3%p from 2010. As such, the digital divide in terms of the Internet usage between the general public and those in the vulnerable class decreased by 1.3%p to 32.7% (See Table 3-3-7).

Table 3-3-7 Internet Usage Rate and Digital Divide

(Unit : %, %p)

Type	2005		2006		2007		2008		2009		2010		2011		
	Usage Rate	Divide	Usage Rate	Divide	Usage Rate	Divide	Usage Rate	Divide	Usage Rate	Divide	Usage Rate	Divide	Usage Rate	Divide	
Total Population	72.8	-	74.8	-	76.3	-	77.1	-	77.6	-	78.3	-	78.3	-	
Vulnerable Population	Handicapped	41.0	31.8	46.6	28.2	49.9	26.4	51.8	25.3	52.7	24.9	53.5	24.8	54.4	23.9
	Elderly	22.5	50.3	28.3	46.5	34.1	42.2	35.6	41.5	37.6	40.0	39.3	39.0	41.1	37.2
	Lower Income	44.2	28.6	48.4	26.4	52.8	23.5	54.6	22.5	55.7	21.9	56.5	21.8	57.4	20.9
	Rural Area Residents	23.0	49.8	29.4	45.4	33.4	42.9	35.2	41.9	36.2	41.4	37.5	40.8	38.9	39.4
	Average	29.4	43.4	35.1	39.7	40.1	36.2	41.7	35.4	43.0	34.6	44.3	34.0	45.6	32.7

※ The gap represents the difference of the Internet usage between the vulnerable class and the general public NIA, 2011 Digital Divide Index and Survey, 2012

※ The averages are the weighted averages, which reflect the size of each vulnerable class

The digital divide index was developed in 2003 to analyze the digital divide in different aspects. The informatization of the general public was set to 100 points, and the relative informatization levels of the vulnerable classes were then measured. The digital divide index consists of the following three areas: information access, information capability, and information utilization. In 2005, the informatization level of the vulnerable classes was 53.3% in 2005 and 72.4% in 2011, which was an increase of 19.1%p in the past 7 years. The overall divide width decreased by 1.3 points in 2011 from 2010 (See Table 3-3-8).

Table 3-3-8 Comprehensive Divide Index and Comparison Level

(Unit : points, %)

Type	2005		2006		2007		2008		2009		2010		2011	
	Divide Index	Comparison Level	Divide Index	Comparison Level	Divide Index	Comparison Level	Divide Index	Comparison Level	Divide Index	Comparison Level	Divide Index	Comparison Level	Divide Index	Comparison Level
Handicapped	34.8	65.2	26.1	73.9	24.0	76.0	21.2	78.8	19.7	80.3	18.7	81.3	17.8	82.2
Lower Income	35.8	64.2	27.0	73.0	24.5	75.5	21.9	78.1	20.5	79.5	19.5	80.5	18.6	81.4
Rural Area Residents	58.3	41.7	50.2	49.8	45.4	54.6	42.1	57.9	39.7	60.3	38.2	61.8	36.4	63.6
Elderly	50.7	49.3	41.6	58.4	37.4	62.6	35.8	64.2	34.1	65.9	32.5	67.5	30.8	69.2
Average	46.7	53.3	38.0	62.0	34.1	65.9	32.0	68.0	30.3	69.7	28.9	71.1	27.6	72.4

NIA, 2011 Digital Divide Index and Survey, 2012

- ※ Divide Index = Informatization level of the general public (assumed to be 100) - Relative informatization level of the vulnerable classes
- ※ Relative level = Relative informatization level of the vulnerable classes as compared to the general public (100)
- ※ The averages are the weighted averages, which reflect the size of each vulnerable class. Low-income families are those receiving public welfare, and the senior citizens are people aged 50 and over

## 4. Internet Related Laws

Internet related legislation can be mainly divided into the Internet infrastructure and environment building related legislation (distribution of and access to the Internet, manufacturing and distribution of information systems like the terminals and storage units, Internet address resource management, electronic payment means, communication billing, electronic signature, e-Document, information security, etc.) and the Internet usage/utilization related legislation (e-Commerce, e-Banking, e-Learning, online contents, IPTV, Internet press, location based information service, u-Health, e-Government, u-City, etc.). They can be categorized into Internet service infrastructure building, Internet information security, Internet industry promotion, and Internet user protection related legislation (See Table 3-4-1).

Table 3-4-1 Internet Related Laws

Type	Name
Internet Service Infrastructure Building	「Telecommunications Business Act」, 「Framework Act on Telecommunication」, 「Internet Address Resources Act」, 「Framework Act on National Informatization」, 「Act on Promotion of Information and Communications Network Utilization and Information Protection, etc.」, 「Digital Signature Act」, etc.
Internet Information Security	「Act on the Protection of the Information and Communications Infrastructure」, 「Act on the Promotion of the Information and Communications Network Utilization and Information Protection, etc.」, 「Electronic Government Act」, 「Act on Prevention of Divulgence and Protection of Industrial Technology」, etc.
Internet Industry Promotion	「Information and Communications Technology Industry Promotion Act」, 「Framework Act on Electronic Transactions」, 「Electronic Financial Transactions Act」, 「Electronic Trade Facilitation Act」, 「Contents Industry Promotion Act」, 「e-Learning Industry Development Act」, 「Game Industry Promotion Act」, 「Act on the Promotion of Newspapers, etc.」, 「Internet Multimedia Broadcast Services Act」, 「Act on the Protection, Use, etc. of Location Information」, 「Act on the Construction, etc. of Ubiquitous Cities」, etc.
Internet User Protection	「Act on the Promotion of the Information and Communications Network Utilization and Information Protection, etc.」, 「Framework Act on National Informatization, Protection of Communications Secrets Act」, 「Personal Information Protection Act」, 「Use and Protection of Credit Information Act, Copyright Act」, 「Act on the Protection, Use, etc. of Location Information」, 「Act on the Consumer Protection in the Electronic Commerce Transactions, etc.」, 「Electronic Government Act」, 「Act on Reporting and Using Specified Financial Transaction Information」, 「Special Act on the Refund of Damages from Telecommunication Financial Scams」, etc.

Legal Knowledge Information System (compiled), likms.assembly.go.kr/law

During 2011~2012, legislation mostly reflected the public sentiment by emphasizing the need for privacy protection. Most amendments focused on establishing an environment for fair trade and promoting new IT services (See Table 3-4-2).

Table 3-4-2 Revisions/Enactments of Internet Related Laws and Description

Name	Date of Enactment·Revision	Description
「Telecommunications Business Act」	Partial Amendment (April 29, 2011 Passed by the National Assembly, May 19, 2011 Announced)	<ul style="list-style-type: none"> <li>• Definition of terms related to the value added telecommunication services of special type (addition of Paragraph 12-2 in Article 2)</li> <li>• Obligation for the provider of a value added telecommunication service of special type to register with the KCC (Paragraph 2 of Article 22)</li> <li>• Stipulation of the grounds for the disqualification of value added telecommunication service of special type (addition of Article 22-2)</li> <li>• Option to cancel registration when the corrective order according to Paragraph 4 of Article 64 of the Act on the Promotion of the Information and Communications Network Utilization and Information Protection, etc. was not implemented without a justifiable reason</li> <li>• Registration of the part to be canceled upon the request by the Minister of Culture, Sports, and Tourism following the decision by the Korea Copyright Committee under the provisions of Article 112 of the Copyright Act</li> <li>• Stipulation of a fine if a value added telecommunication (Paragraph 3-2 of Article 95)</li> </ul>
「Internet Multimedia Broadcast Services Act」	Partial Amendment (June 23, 2011 Passed by the National Assembly, July 14, 2011 Announced)	<ul style="list-style-type: none"> <li>• Revision of the provisions of the Broadcast Market Competition Evaluation Committee, whose purpose is to establish an efficient competition system and environment of fair competition, in order to evaluate the completion of Internet multimedia broadcast services (Article 12)</li> </ul>
「e-Learning Industry Development Act」	Partial Amendment (June 30, 2011 Passed by the National Assembly, July 25, 2011 Announced)	<ul style="list-style-type: none"> <li>• Establishment of the master plan for e-Learning support and technical development (addition of Item 4 of Paragraph 3 of Article 6 and Items 6 to 9 of Paragraph 3 of Article 6)</li> <li>• Strengthening of e-Learning consumers (Item 2 of Paragraph 2 of Article 8, Article 25, and Article 26)</li> <li>• Expanded the participation of small e-Learning service providers, etc. (Addition of Articles 20-2 to 20-5)</li> <li>• Support of e-Learning by educational institutes (Addition of Article 17-2)</li> </ul>
「Act on the Promotion of the Information and Communications Network Utilization and Information Protection, etc.」	Partial Amendment (March 10, 2011 Passed by the National Assembly, April 5, 2011 Announced)	<ul style="list-style-type: none"> <li>• Provisions on the designation of identification authenticating agencies and suspension/closing of identification authentication operations (Addition of Article 23-3)</li> <li>• Provisions on the reasons of suspension and cancelation of identification authentication operations (Addition of Article 23-4)</li> <li>• Specification to separate the procedure of agreeing to provide and consign the personal information and the procedure for membership enrollment (Addition of Paragraph 3 of Article 24-2)</li> <li>• Specification of notifications by the communication billing service provider in the law that are not in the presidential decree (Paragraph 1 or Article 58)</li> </ul>
「Act on the Promotion of the Information and Communications Network Utilization」	Partial Amendment (December 29, 2011 Passed by the National Assembly, February)	<ul style="list-style-type: none"> <li>• Prohibition of the collection and usage of the resident registration ID of the user, except when the telecommunication service provider is designated as the identification authentication agency or when the law allows the collection and usage of the resident registration ID (Article 23-2)</li> <li>• Obligation of telecommunication service provider, etc. to notify the user and</li> </ul>

Name	Date of Enactment- Revision	Description
and Information Protection, etc.]	17, 2012 Announced)	<p>report to the KCC the personal information loss/theft/leakage and to take the measures to minimize the damage (Addition of Article 27-3)</p> <ul style="list-style-type: none"> <li>• Obligation of the parties pertinent to the criteria of being the telecommunication service provider, etc. as defined by the presidential decree to periodically notify the details of the usage of collected personal information to the user (Addition of Article 30-2)</li> <li>• Stipulation of the legal grounds for the information security advance inspection policy and the allowance of the telecommunication service provider to appoint a chief information security officer (Addition of Articles 45-2 and 45-3)</li> <li>• Disposal of the information security safety diagnosis policy and unifying it with the information security management system authentication policy and stipulation of legal grounds of the personal information security management system authentication policy (Removal of Article 46-3 and the addition of Articles 47 and 47-3)</li> </ul>
「Personal Information Protection Act」	Enactment (March 29, 2011 Announced, September 30, 2011 Enacted)	<ul style="list-style-type: none"> <li>• All personal information handling parties in public and private sectors to be subject to the law (Article 2)</li> <li>• Establishment of the Personal Information Security Committee (Articles 7 and 8).</li> <li>• Establishment of the protection criteria for each step of personal information collection, usage, and delivery (Article 15-22)</li> <li>• Strengthening of the limitations on handling identification information (Article 24)</li> <li>• Establishment of the grounds for the installation limitations of a video data processing device (Article 25)</li> <li>• Introduction of a personal information influence evaluation system (Article 33).</li> <li>• Introduction of the notification and reporting of personal information leakage (Article 34)</li> <li>• Assurance of the rights of the subject's personal information (Articles 35-39).</li> <li>• Establishment of the Personal Information Conflict Arbitration Committee and introduction of the group arbitration policy (Articles 40-50)</li> <li>• Introduction of group litigation (Articles 51-57)</li> <li>• Reporting of personal information violations (Article 62)</li> </ul>
「Use and Protection of Credit Information Act」	Partial Amendment (April 29, 2011 Passed by the National Assembly, May 19, 2011 Announced)	<ul style="list-style-type: none"> <li>• Definition of credit information in the Act and details specified in the presidential decree (Article 2)</li> <li>• Obligation to delete the credit information, which can harm the subject of the credit information, within 5 years (Article 18)</li> <li>• Obligation of the credit rating service provider to report the utilization scope, period, and parties to which the information is provided to the FCC and the enactment of a fine of 10 million KRW or less to the violator (Article 22-2 and Paragraph 3-4-2 of Article 52)</li> </ul>
「Electronic Financial Transactions Act」	Partial Amendment (October 28, 2011 Passed by the National Assembly, November 14, 2011 Announced)	<ul style="list-style-type: none"> <li>• Obligation of financial companies (excluding the e-Banking aid service providers) to designate a chief information security officer who will have the total responsibility for e-Banking operations and IT security (Paragraph 1 of Article 21-2)</li> <li>• Obligation for financial companies, which are designated by presidential decree with consideration to their total assets and number of employees, to appoint an executive (including the person conforming to Item 3 of Paragraph 1 of Article 401-2 of the Commercial Act) as the chief information security officer (Paragraph 2 of Article 21-2)</li> <li>• The chief information security officer is to secure the safety of e-Banking transactions, establish the strategy and plan for user protection, protect and manage IT systems, conduct manpower management and the budgeting needed for IT security, and execute preventive measures for e-Banking acci-</li> </ul>

Name	Date of Enactment-Revision	Description
		dents (Paragraph 3 of Article 21-2) • Exclusion from penalty under the joint penal provision for the corporation or individual who performed the managerial or supervisory duty and separate provisions of the fine if the fine is not specified as the penalty of the joint penal provision (Article 50)
「Act on the Protection, Use, etc. of Location Information」	Partial Amendment (May 2, 2012 Passed by the National Assembly, May 14, 2012 Announced)	• Assignment of privilege to the police stations to obtain personal location information in order to improve their effectiveness and emergency rescues (Paragraph 2 of Article 29) • Obligation of the police stations and personal location information provider to report the details of requests and delivery of personal location information to the responsible Committee of the National Assembly in order to prevent the misuse of personal location information (Paragraph 2 of Article 30)
「Framework Act on Electronic Transactions」	Partial Amendment (May 2, 2011 Passed by the National Assembly, June 1, 2012 Announced)	• Change of the name (Framework Act on Electronic Transactions → Framework Act on Electronic Documents and Electronic Transactions) • Introduction of the certified electronic address system (Addition of Item 8 of Article 2 and Articles 18-4 and 18-5) • Designation of a certified electronic document intermediary (Addition of Item 10 of Article 2 and Articles 31-18, 31-20, and 31-21) • Prohibition of a display similar to the Outstanding e-Commerce Service Provider Certification (Addition of Article 18-2 and Item 1 of Paragraph 2 of Article 46) • Strengthening the effectiveness of e-Commerce conflict arbitration (Paragraph 3 of Article 35)

MOLEG (compiled), www.law.go.kr

# Appendix

- List of ISPs
- Organization Abbreviation

## List of ISPs (as of upper half 2012)

No.	Company Name	Phone No.	URL
1	GTP	+82-31-500-3004	www.gtp.or.kr
2	EDUNET	+82-2-2118-1471	www.keris.or.kr
3	NOWCOM	+82-2-590-4073	www.nowcom.co.kr
4	GSD	070-8188-5083	www.gstv.co.kr
5	TBROADNAKDONG	070-8188-9089	www.digitalbusan.net
6	NAMDONGNET	070-8188-6092	www.tbroad.com
7	QRIXINTERNET	070-8188-9743	www.tbroad.com
8	digitalbusanet	070-8188-9089	www.digitalbusan.net
9	DONGDAEMUNCABL EINTERNET	070-8188-5770	www.dcnecatv.co.kr
10	SAEROMNET	070-8188-6092	www.tbroad.com
11	QRIXNET	070-8188-5083	-
12	TBROAD	070-8188-1088	www.tbroad.com
13	VITSEN	070-8188-3082	www.tbroad.com
14	JEONJU-HANVITNET	070-8188-8085	www.tbroad.com
15	CHUNGBUVITSEN	070-8188-7086	www.tbroad.com
16	NARA-CABLE-TV	+82-31-894-0122	www.naraspeed.net
17	CABLENET	070-8145-7747	www.kctvjeju.com
18	UPASS	+82-61-270-1542	www.hbc24.co.kr
19	SEODAEGLUCLEANNET	+82-53-567-6000	www.scs5.co.kr
20	JCN	+82-52-928-0025	www.jcntv.co.kr
21	KCNNET	+82-63-850-8575	www.kcn.tv
22	NIBDIGITAL	+82-32-882-9660	www.nibtv.co.kr
23	KOREAONLINE	+82-2-2039-7749	www.kol.net
24	DUZON	+82-2-6233-5393	www.duzon.com
25	DURUAN	+82-2-6330-8044	www.duruan.co.kr
26	DREAMX	+82-2-6007-6009	www.dreamline.co.kr
27	LDCC-SAFEGUARD	+82-2-2626-3933	www.ldcc.co.kr
28	SAMSUNGSDS	070-7015-6504	www.sds.samsung.co.kr
29	DIRECT-HOSTING	+82-2-2029-0342	www.sds.co.kr
30	SSEN	+82-2-3397-1665	-

No.	Company Name	Phone No.	URL
31	SIMPLEXINTERNET	+82-2-6276-1572	www.simplexi.com www.cafe24.com
32	CDNETWORKS	+82-2-3441-0491	www.cdnetworks.co.kr
33	CMBDONGBU	+82-53-744-5700	cmbtg.tv
34	CMBSUSUNG	+82-53-744-5700	cmbtg.tv
35	INDICLUB	+82-2-1566-5670	www.ilinkkorea.co.kr
36	broadNnet	080-8282-106	www.skbroadband.com
37	SK-NET	+82-2-6400-4297	www.sk-net.com
38	SK-TELECOM-NET	+82-2-6100-4573	sktelecom.com
39	SKTelink	070-7400-1716	www.sktealink.net
40	NHN-NET	+82-31-600-6045	www.nhncorp.com
41	GIN	+82-2-2156-9000	www.kr.ntt.com
42	LXN	+82-2-887-6112	www.lxnetworks.co.kr
43	OK-NET	+82-2-2107-3600	www.ok-net.net
44	ULNETWORKS	+82-2-396-0100	www.ul-net.co.kr
45	EHOSTIDC	+82-2-3476-0478	www.ehostdc.co.kr
46	IIAC	+82-32-741-5685	www.airport.kr
47	JCNIDC	070-7704-7742	www.jndinfo.com/idc
48	GANGWONNET	+82-33-241-4435	www.igbn.co.kr
49	Netropy	070-7432-2345	www.netropy.co.kr
50	VAAN	+82-2-2016-0841	www.nexg.net
51	DOTNAME	070-7090-0828	www.dotname.co.kr
52	HIPASS	+82-42-624-5181	www.daejon.com
53	DICN	+82-51-831-5775	www.dicn.net
54	HCLC	+82-2-831-0510	www.funp.co.kr
55	VTOPIA	+82-2-563-2245	www.vtopia.co.kr
56	SCSNET	+82-55-740-3121	www.iscs.co.kr
57	SEJONGNET	+82-2-1688-7380	www.sejongtelecom.net
58	SMILESERV	070-7549-7062	www.1000dedi.net
59	SINC	+82-2-3397-1207	www.sinc.co.kr
60	CYBERONEIDC	+82-2-829-3066	idc.cyberone.kr
61	CNM	070-7410-4703	www.cnm.co.kr
62	CST21	+82-2-573-9262	tel.cst21.com
63	CMBKWANGJUNET	+82-62-461-9684	www.cmbkj.tv

No.	Company Name	Phone No.	URL
64	CMBI-NETDJ	070-8110-7395	www.icmb.tv
65	CMBPLUSONE	070-8125-0119	cmbds.tv
66	CMBI-NETHK	070-8110-7144	-
67	CJ-HELLOVISION	+82-2-2600-2941	www.cjhellovision.com
68	DITIZONE	070-8145-1031	www.abn.co.kr
69	KPIN	+82-2-2273-9744	www.kpin.net
70	INET	070-8220-7748	www.inet.co.kr
71	JIGUNET	+82-2-420-8241 (125)	www.iosystem.co.kr
72	IP4NET	+82-2-6925-0042	www.ip4.co.kr
73	ELIMNET	+82-2-3149-4923	www.elim.net
74	LG-NET	+82-2-6710-3486	www.lgcns.com
75	PUBNETPLUS	+82-2-2089-7755	www.pubnetplus.ne.kr
76	BORANET	+82-2-6928-3087	www.dacom.net
77	KIDC	+82-2-2086-2924	www.kidc.net
78	Xpeed	+82-2-6928-3087	www.powercomm.com
79	LGTELECOM	+82-2-6290-1680	www.lguplus.com
80	YBN	+82-33-749-3551	www.ybn.co.kr
81	TTNet	+82-2-2101-0150	www.tt.co.kr
82	SHINBIRO	+82-2-1666-0120	www.shinbiro.com
83	ONAIRIC	070-7897-7171	-
84	ESONET	+82-2-3281-1007	www.esocom.com
85	eGIOSNET	+82-2-2116-8035	www.egios.com
86	JNDINFO	+82-31-226-9399	www.jndinfo.com
87	GNJ	070-8795-0792	gnj.kr
88	RayNet	+82-2-2109-5000	www.raynet.co.kr
89	CMBMUTINET	+82-41-858-0100	www.cmbtv.com
90	KINXINC	+82-2-2187-6380	www.kinx.net
91	KTFWING	+82-31-727-1093	www.ktf.com
92	PUBNET	+82-2-3674-5890	www.pubnet.ne.kr
93	KORNET	+82-2-500-6630	www.kornet.net
94	KITINET	+82-2-2222-9232	www.ktn.co.kr
95	KOREACENTER	+82-2-2627-6634	koreacenter.com
96	KOINS	+82-2-767-7128	www.kosocm.co.kr

No.	Company Name	Phone No.	URL
97	WIZCDN	+82-2-2015-3419	www.clunet.co.kr
98	GINAMHANVITNET	070-8188-2082	www.tbroad.com
99	TBROAD-HANVIT	+82-31-480-9449	www.tbroad.com
100	HINETWORKS	+82-2-1544-4450	www.hilineisp.net/
101	KDTIDC	+82-2-2062-7671	www.kdtidc.com
102	KTNET	+82-2-6000-2705	www.ktnet.co.kr
103	HCN	070-8109-1656	www.hcn.co.kr
104	SAERONET	070-8109-4694	www.saeronet.com
105	GDSYS	070-7337-7355	www.gdsys.co.kr
106	TELEHOUSE SEOUL	+82-2-310-0461	www.kddi.co.kr
107	CROSSONNET	+82-2-6207-6208	www.crsn.net
108	TCNINTERNET	+82-53-254-2940	www.tcnhinet.com
109	PIRANHA	+82-2-1644-7568	www.turbonet.co.kr
110	HAIONNET	+82-2-3281-3456	www.haion.net
111	KREONet	+82-42-869-0707	www.kreonet.re.kr
112	KREN	+82-2-880-5364	www.kren.ne.kr
113	KDATA	+82-31-234-0445	-
114	SINGGATE	+82-2-360-3227	www.signgate.com
115	KOREN	+82-2-2131-0466	www.ngix.ne.kr
116	KCTVNET	+82-62-417-6070	www.kctv.co.kr
117	URINET	070-8145-6300	jbclife.com
118	GCS	070-8145-6143	www.gcs.co.kr
119	PCBNET	+82-54-275-3581	www.pcbtv.net
120	HYOSUNGCDN	+82-2-6288-6507	www.hyosungitx.com

## Organization Abbreviation

### A

AASL	American Association of School Libraries
AfriNIC	Africa Network Information Center
AIBD	Asia Pacific Institute for Broadcasting Development
APCERT	Asia-Pacific Computer Emergency Response Team
APEC	Asia-Pacific Economic Cooperation
APNIC	Asia-Pacific Network Information Center
APT	Asia Pacific Telecommunity
ARCEP	Autorité de Régulation des Communications Électroniques et de Postes
ARIN	American Registry for Internet Numbers
ARPA	Advanced Research Projects Agency
ASEAN	Association of SouthEast Asian Nations
ATIS	Alliance for Telecommunications Industry Solutions

### B

BEREC	Body of European Regulators for Electronic Communications
BIS	department for Business Innovation & Skills
BKM	die Beauftragter der Bundesregierung für Kultur und Medien
BMWi	Bundesministerium für Wirtschaft und Technologie

### C

CEBR	Centre for Economics and Business Research
CERNET	China Education and Research Network
CNNIC	China Internet Network Information Center
CRTC	Canadian Radio-television and Telecommunications Commission

### D

DCMS	Department for Culture, Media and Sport
DoD	Department of Defense

### E

EC	European Commission
EP	European Parliament
ERCIM	European Research Consortium for Informatics and Mathematics

ETRI Electronics and Telecommunications Research Institute  
 EU European Union

**F**

FCC Federal Communication Commission  
 FIRST Forum of Incident Response and Security Teams

**G**

GLC Global Learning Consortium  
 GLIF Global Lambda Integrated Facility  
 GSMA Global System for Mobile communications Association

**I**

IANA Internet Assigned Number Authority  
 IC Industry Canada  
 ICANN Internet Corporation for Assigned Names and Numbers  
 ICCP committee for Information Computer Communications Policy  
 IDA Infocomm Development Authority of Singapore  
 IEC International Electrotechnical Commission  
 IEEE Institute of Electrical and Electronics Engineers  
 IETF Internet Engineering Task Force  
 IFPI International Federation of the Phonographic Industry  
 IMD International Institute for Management Development  
 IRTF Internet Research Task Force  
 ISO International Organization for Standardization  
 ISOC Internet SOCIety  
 ITU International Telecommunication Union  
 ITU-D International Telecommunication Union-Development Standardization Sector  
 ITU-R International Telecommunication Union-Radiocommunication Sector  
 ITU-T International Telecommunication Union-Telecommunication Standardization Sector

**J**

JTC1 Joint Technical Committee1

**K**

KAIST Korea Advanced Institute of Science and Technology  
 KATS Korea Agency for Technology and Standards  
 KCC Korea Communications Commission

KIDC	Korea Internet Data Center
KISA	Korea Internet & Security Agency
KISC	Korea Internet Security Center
KISDI	Korea Information Society Development Institute
KISTI	Korea Institute of Science and Technology Information
KOBACO	Korea Broadcast Advertising Corporation
KOTRA	KOrea TRade investment promotion Agency
KrCERT/CC	KOREA Computer Emergency Response Team Coordination Center

## L

LACNIC	Latin American and Caribbean Internet Addresses Registry
LBSC	LBS Business Support Center

## M

MEST	Ministry of Education, Science and Technology
MCC	Ministère de la Culture et de la Communication
MCST	Ministry of Culture, Sports and Tourism
MHW	Ministry of Health & Welfare
MIC	Ministry of Internal Affairs and Communications
MINEFI	Ministère de l'Économie, des Finances et de l'Industrie
MND	Ministry of National Defense
MOGEF	Ministry of Gender Equality & Family
MOJ	Ministry of Justice
MOPAS	Ministry of Public Administration and Security

## N

NCIA	National Computing & Information Agency
NIA	National Information Society Agency
NICT	National Institute of Information and Communications Technology
NIPA	National IT Industry Promotion Agency
NSF	National Science Foundation
NTIA	National Telecommunications and Information Administration

## O

OASIS	The Organization for the Advancement of Structured Information Standards
OECD	Organization for Economic Cooperation and Development
Ofcom	Office of Communications
OGC	Open Geospatial Consortium
OSTP	Office of Science and Technology Policy

## R

RAG	Radiocommunication Advisory Group
RIPE	NCC RéRseaux IP Européens Network Coordination Center

## S

SMAC	Smart Mobile Application Center
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## T

TC	Technical Committee
TC	Trade Commission
TDAG	Telecommunication Development Advisory Group
TTA	Telecommunications Technology Association

## U

UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UN	ESCAP United Nations Economic and Social Commission for Asia and Pacific

## W

W3C	World Wide Web Consortium
W3C	WAI W3C Web Accessibility Initiatives
WEF	World Economic Forum
WPCISP	Working Party on Communication Infrastructures and Services Policy
WPIE	Working Party on Information Economy
WPISP	Working Party on Information Security and Privacy
WSIS	World Summit on the Information Society
WTSA	World Telecommunication Standardization Assembly

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