

Broadband for Rural Areas And Schools in Korea



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Korea's Broadband Policy and Achievement

Broadband for Rural Areas

Broadband for Public Areas (Schools, etc.)

Critical Success Factors

Future Network Strategy

Korea's Broadband Policy and Achievement

- The Brief History of Network Projects
- KII Project
- BcN Project
- Broadband-Related Global Ranking
- Achievement : Convergence Services

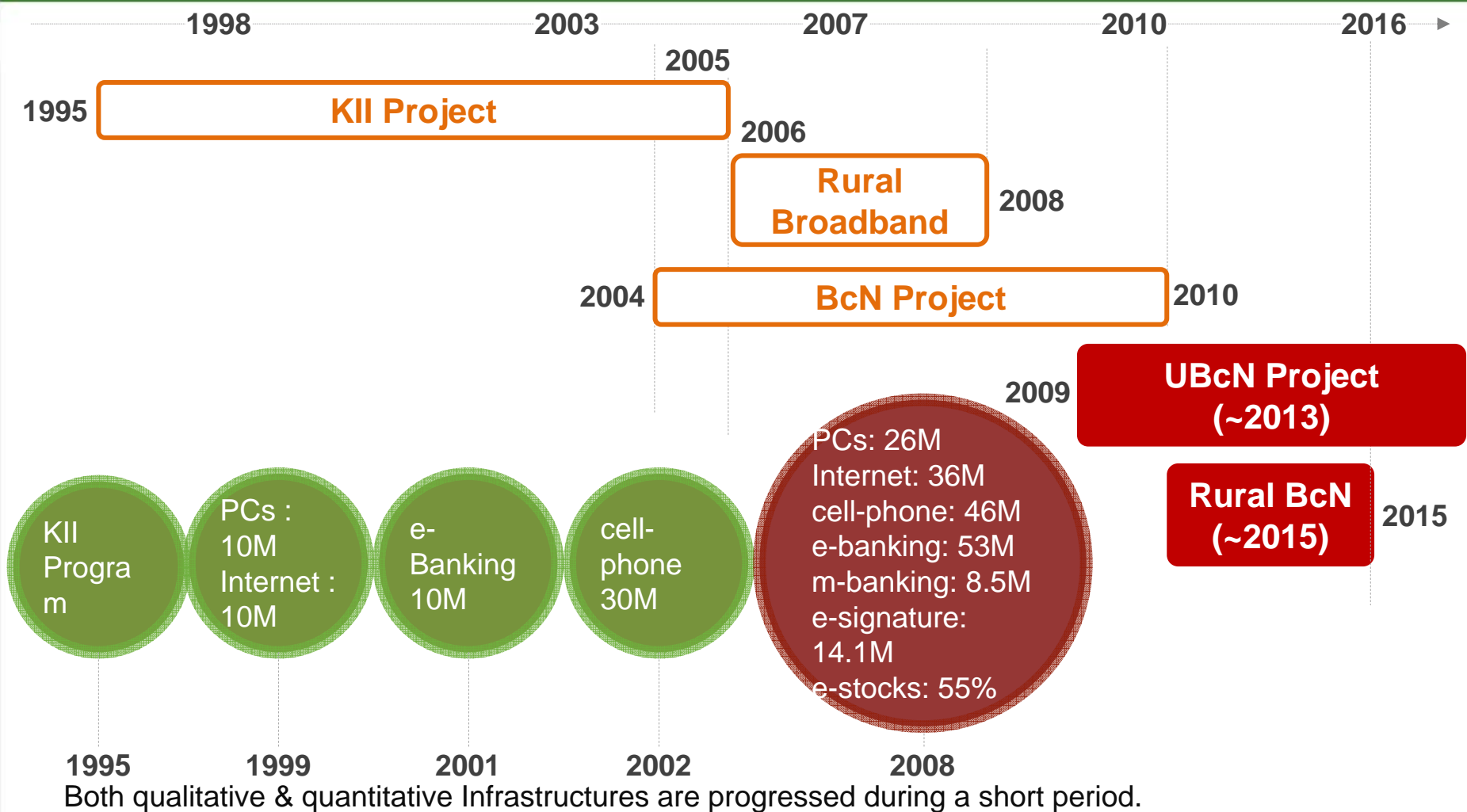
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■ The Brief History of Network Projects



* KII : Korea Information Infrastructure

* UBcN : Ultra BcN

* BcN : Broadband Convergence Network

* Korea's Population : 49 Million

■ KII Project(1)

The government invested KRW 42.8 trillion in constructing Korea information infrastructure (KII) (42 trillion in public networks/800 billion in national networks) and KRW 60 billion in building the test bed network)

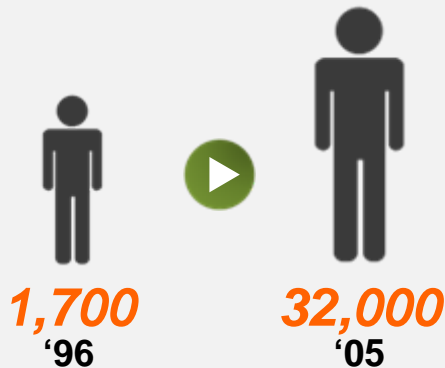
	KII Testbed For R&D	KII-G For deployment	KII-P For diffusion
Objective	<ul style="list-style-type: none"> To provide a high-speed network environment for R&D 	<ul style="list-style-type: none"> To deploy nationwide network infrastructure To provide high-speed service 	<ul style="list-style-type: none"> To expand commercial network To promote high-speed services
Main Users	Universities, Research Institutes	Government, Non-profit Organizations	Enterprise, Individual Home users
Management	<ul style="list-style-type: none"> Budget : government. Project Management : NIA Network O& M : KT 	<ul style="list-style-type: none"> Budget : Government (pay back by charge discount) Project Management : NIA Network O&M : KT, Dacom 	<ul style="list-style-type: none"> Loan from Government Pilot Service : NIA & Major Carriers Network O&M : Carriers

KII Project(2)

(Outcome) In middle of '00 years, endowing a few Mbps Speed of Internet with about 100% to household

World best in domain of 'Broadband penetration and speed'

Number of user agencies increased 19 times



Total bandwidth increased 156 times



Total Service Volume

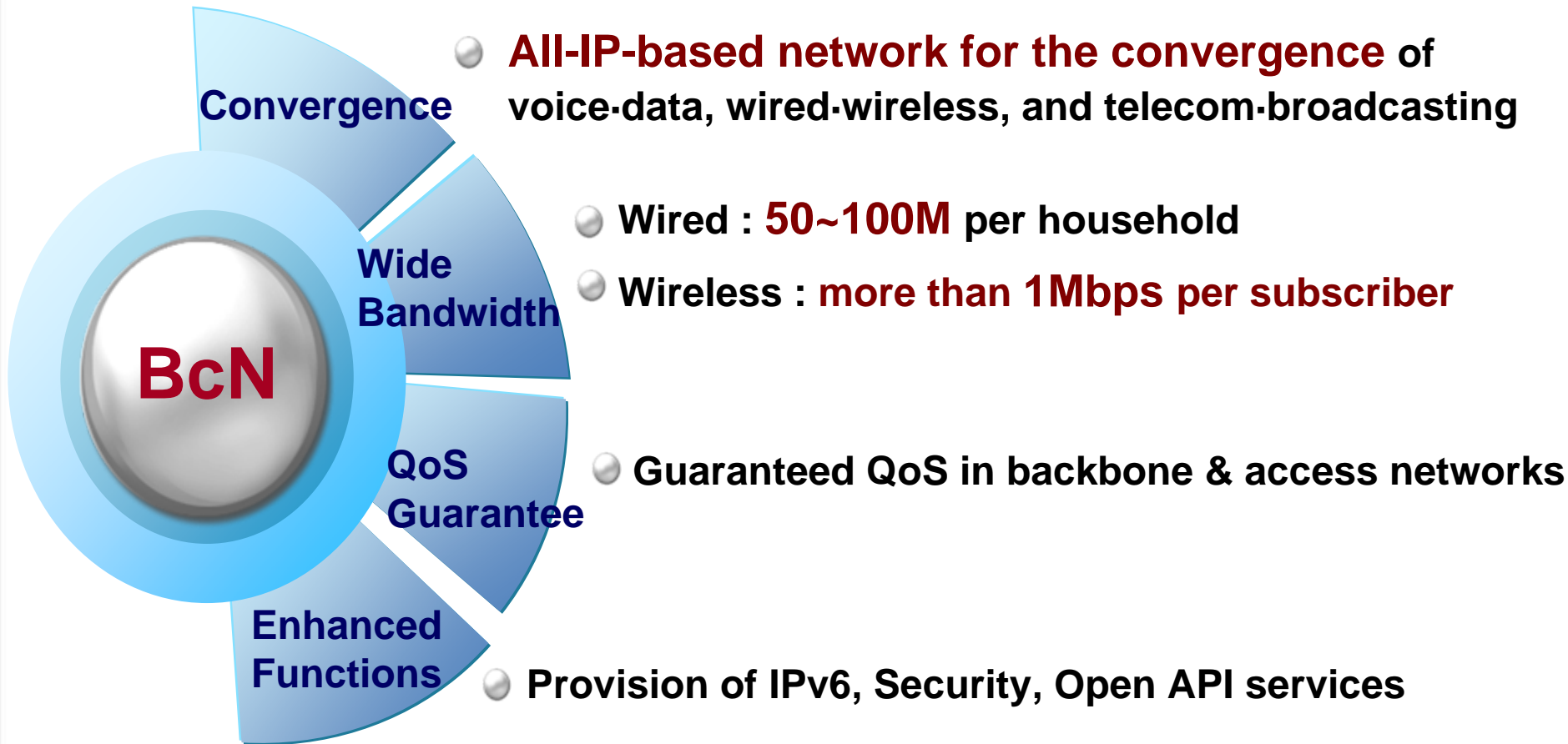


Money saved from '96 ~ '05



U\$ 3 Billion
By integrated contract of public agencies

■ BcN Project(1) – Characteristics of BcN



Vision & Goals of BcN

Vision

To provide seamless, broadband, integrated multimedia services anytime and anywhere by the year 2010

Goals

12 million BcN subscribers by 2010 in Korea



Wired(50~100M)



1,500,000
2005



7,000,000
2007



12,000,000
2010

* Leading investment of 1.2 trillion won by the government -> Induced the private sector to invest 55.8 trillion won in constructing BcN, and led to the production of broadcasting and telecommunications equipment worth 65 trillion won and their export worth 20.8 billion won

■ Broadband Related Global Ranking

Top ranking : The number of FTTH subscribers, download speed, broadband quality score and broadband access

Fibre/LAN Broadband subscribers

Rank	Country	Subscribers (per 100 inhabitants)
1	South Korea	15.1
2	Japan	12.4
3	Sweden	6.7
4	Denmark	3.9
Ave.	OECD	2.1

(OECD Jun. 2009)

Download Speed

Rank	Country	Speed (Mb/s)
1	South Korea	22.65
2	Latvia	19.56
3	Aland Islands	18.83
4	Japan	17.89
5	Romania	16.94

(www.speedtest.net, May, 2010)

Broadband Quality Score

Rank	Country	Score
1	South Korea	66
2	Japan	64
3	Sweden	57
4	Lithuania	54
5	Bulgaria	49

(Univ. of Oxford, Sept. 2009)

Households with Broadband access

Rank	Country	Percentage of all households
1	South Korea	94.3
2	Iceland	83.2
3	Denmark	74.1
4	Netherlands	74.0
5	Norway	73.0

(OECD Jun. 2009)

**The World's Best
ICT
Infrastructure**

■ Achievement : Convergence Services

Development of new services based on wide and guaranteed bandwidth

Soft Phone



VoIP



Video Phone



Video Conference



IPTV



Digital CATV



e-Learning



Korea's Broadband Policy and Achievement

Broadband for Rural Areas

- Rural Broadband Project
- Rural BcN Project

Broadband for Public Areas (Schools, etc.)

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Future Network Strategy

Implementation Background

- Even after the completion of the KII project in 2005, remote mountain areas were still underserved areas in terms of broadband Internet.
- The government sought to find a method to increase digital opportunities for fishing and farming villages.
- Reduced the digital divide on the basis of the Broadband Internet.

■ Rural Broadband Project(2)

From 2006 to 2008, broadband networks were established for 160,000 households in small-sized rural areas with less than 50 households.

- Rural areas with less than 50 households were targeted because those areas were not profitable.
- The matching fund was formed by the central government, local governments, and carriers with the proportion of 1:1:2.
(The government invested **\$20M** among total **\$80M** project budget.)
- Fixed networks were mainly deployed and two-way satellite networks were deployed in islands and mountain areas
- Tried to guarantee at least 2Mbps.

■ Rural Broadband Project(3)

Formed a matching fund with local governments and carriers
Establishment for 3 years from 2006 to 2008



**Rural broadband
project**



Broadband coverage
Reached 87% by 2002

94% by 2005

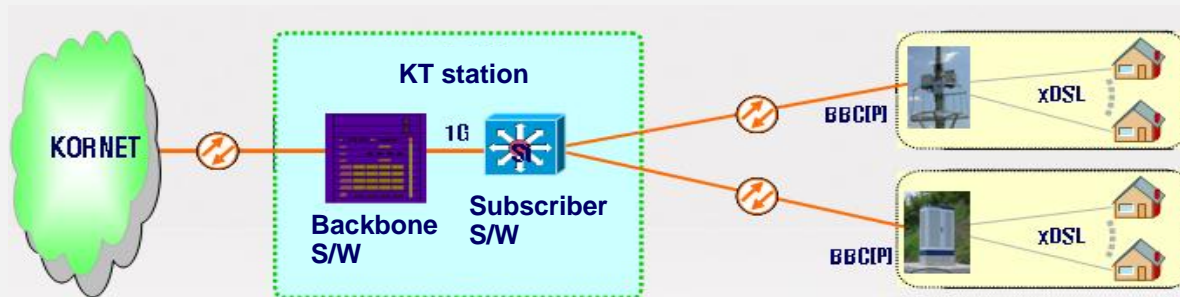
Almost 100% by 2008

■ Rural Broadband Project(4)

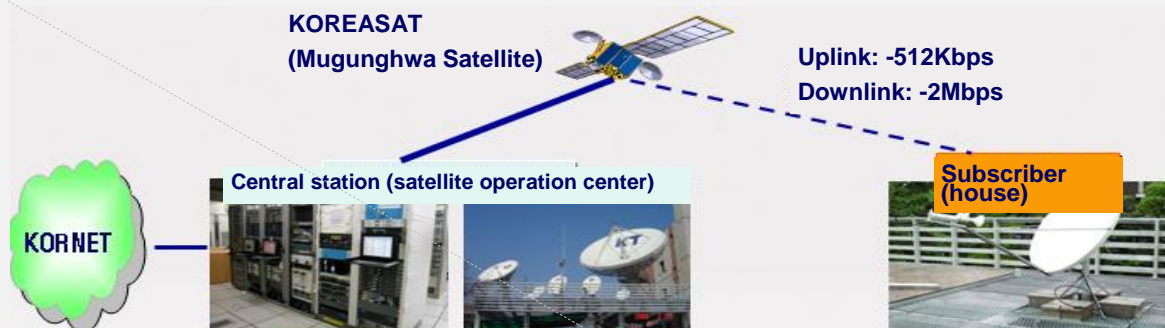
Network establishment Methods

Wired high-speed network was established for normal villages

Providing xDSL service with optical cable + phone line, depending on the outdoor cabinet installation method



Established two-way satellite network for remote areas such as islands and mountain areas where wired networks cannot be deployed.



Rural BcN Project

High quality IT infrastructure is also necessary in rural areas.

- Even though BcN establishment is in the final stage, rural areas are in the beginning stage.
- A concern about the vicious cycle that digital divide due to the IT infrastructure would cause the economic, social, and cultural gap.
- 100M bandwidth seems to be required to provide various future services such as IPTV, u-Learning, and u-Health. However, high-speed network like xDSL is not enough for smooth service provisioning.

More than 50 households

- Both voluntary competition and financial aid
- For areas with 50~240 households, providers establish BcN with low interest rate loan by government
- Government grants telco's M&A, privatization making them to invest in rural areas

KT is expecting 99% coverage by 2012 with voluntary investment.

SKB and LG U+ are expecting 41% and 14% coverage each by 2012 with M&A grant condition

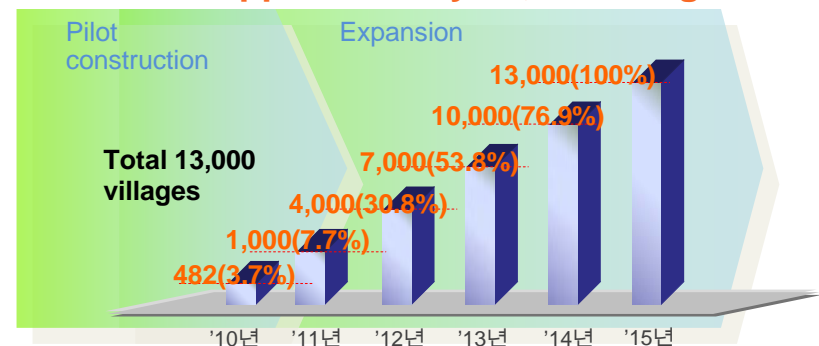
There are approximately 23,000 villages.

Less than 50 households

- Central and local governments invest as well
- By the end of 2010, BcN will be constructed in 482 villages

※ All villages in Korea having less than 50 households will have 100M BcN by 2015.

There are approximately 13,000 villages



Korea's Broadband Policy and Achievement

Broadband for Rural Areas

Broadband for Public Areas (Schools, etc.)

- High-speed information and communication network
- NIS Project
- School Net Enhancement Project

Critical Success Factors

Future Network Strategy

■ High-speed I & C Network – – Main Objectives

To establish information highway by 2015 that can transmit various types of information such as voice, data, and video, in order to expand the national infrastructure in advance to cope with the 21st century.

To improve the quality of people's lives by implementing universal I&C service by establishing high-speed and high-capacity I&C network.

To generate new employment and strengthen global competitiveness by nurturing the multimedia information industry, which will be the most promising industry in the future, based on the high-speed I&C network.

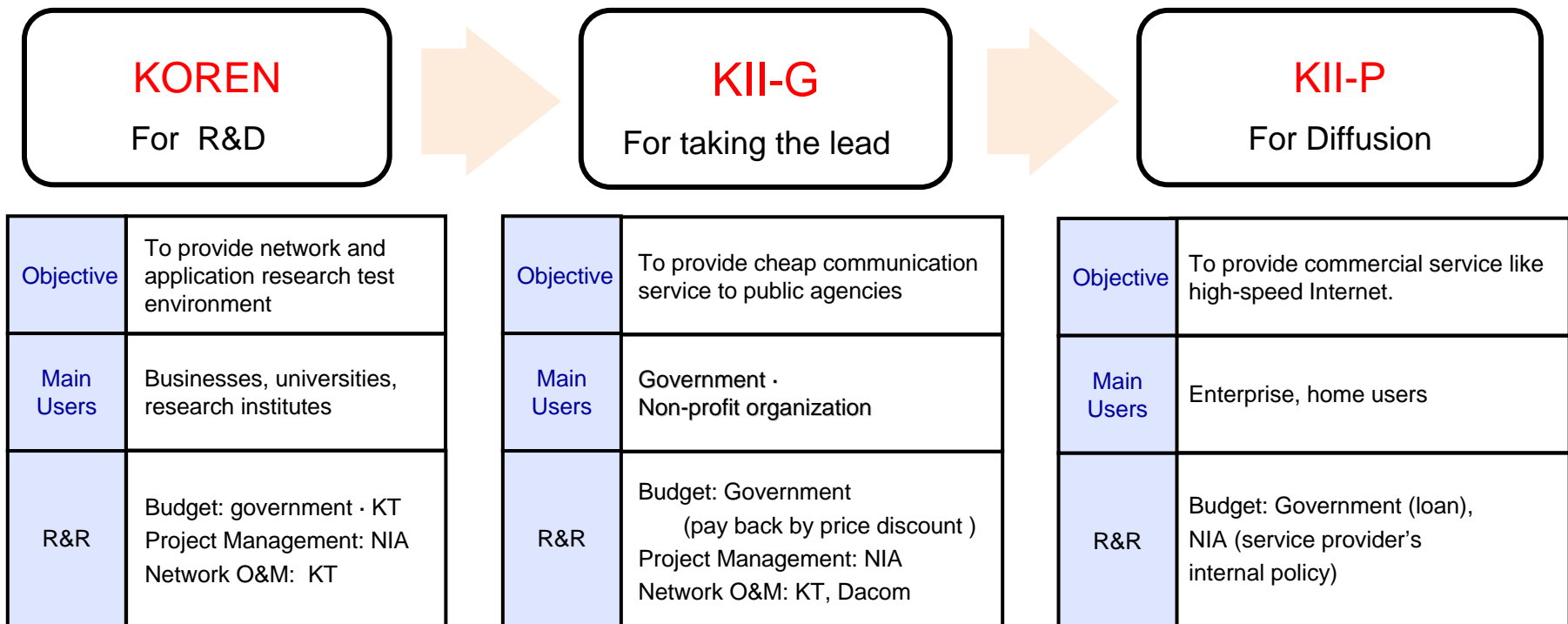
Objectives of the high-speed I&C network project

- ❖ To establish high-speed national network that connects public agencies like local autonomous bodies with optical cable by 2010.
- ❖ To establish high-speed public network that provides high-speed Internet service to industries and general households by 2015.
- ❖ To establish high-speed advanced test network to verify validity and appropriateness of various high-speed information and communication network technologies.

Source: Comprehensive promotion plan for high-speed information and communication infrastructure construction (March 1995)

■ High-speed I & C Network – Implementation Phases

Promoting the high-speed I&C network project to form the business structure and build information highway, by expanding Korea Advanced Research Network (KOREN), national network (KII-G), and public network (KII-P)



■ High-speed I & C Network – Implementation History

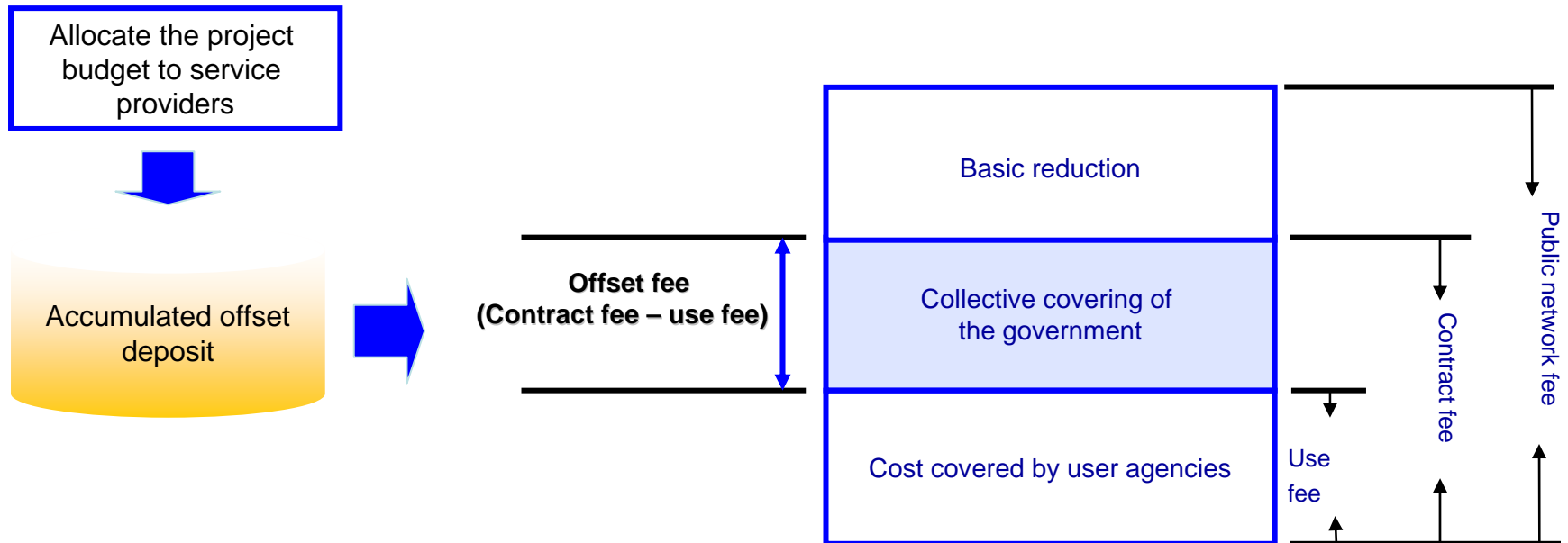
Providing the communication network service to 30,000 public agencies at low prices that can transmit a large amount of information at high speeds (800 billion won invested by the government in advance)

Type	Phase 1 (infrastructure construction)	Phase 2 (infrastructure completion)	Phase 3 (advancement)
Period	1995 ~ 1997	1998 ~ 2000	2001 ~ 2005
Contents	<ul style="list-style-type: none"> • Built an optical transmission network in 80 areas nationwide • Provided high-speed Internet service nationwide 	<ul style="list-style-type: none"> • Completed the optical transmission network and ATM exchange network in 144 areas nationwide 	<ul style="list-style-type: none"> • Provided high-quality IP service based on ATM-MPLS, and enhanced the network
Number of User agencies and lines	<ul style="list-style-type: none"> • User agency: 15,000 • Lines: 23,000 lines 	<ul style="list-style-type: none"> • User agency : 29,000 • Lines: 36,000 lines 	<ul style="list-style-type: none"> • User agency : 32,000 • Lines: 38,000 lines
Service	Dedicated line service Packet exchange line service Frame relay service	Internet service ATM service	ATM-Metro service MPLS-VPN service Disaster recovery service Security management service

■ High-speed I & C Network – Ways to Promote the Project

The government secured budget needed for infrastructure construction, and gave it to service providers (KT, Dacom).

- Service providers could accumulate the government's investments as an offset deposit, and can offset it with the actual charges of subscribed agencies when the project is completed. (Once settlement is completed, facilities belong to service providers)



Fee structure of the national network

- Contract fee: Fee determined by the contract between the government and service providers. 40% is discounted on average compared with ordinary public networks.
- Use fee: The amount paid by agencies like the government in return for the use of communication service
- Offset fee: A subsidy from the government to individual user agency, which is offset by the national network investment

NIS Project

Since the completion of the KII project in 2005, the government has promoted the NIS (National Information-communication Service) project to provide information and communications services for elementary, middle, and high schools and public organizations.

To provide low-cost and high-quality information and communications services for educational institutions and public organizations

-As the government's budget support was suspended, educational institutions, including some 15,000 schools, and public

organizations purchased telecom service providers' services competitively by using their purchasing power.

-The economy of scale realized by integrating demands from individual organizations and promoting a multi-year contract has contributed to the continuous provision of low-cost, high-quality information and communications services.

Target Organizations

Category	Target Organizations
"A" group	Schools built according to the Infant Care Act, Elementary and Secondary Education Act, and other Acts.
"B" group	<ul style="list-style-type: none">- Education offices and affiliated organizations under the Government Organization Act- Medical institutions established according to Item 2 or 4 of Para. 2 of Art. 30 of the Medical Law- Nonprofit research institutes- Museums and galleries under the Museum and Art Gallery Support Act- Libraries under the Libraries and Reading Promotion Act- Government-invested institutions under the Framework Act on the Management of Government-Invested Institutions, and special corporations established under the special law- Local government-invested institutions under the Local Public Enterprises Act- Schools established according to the Higher Education Act- Information and communications service used to concentrate Internet traffic of kindergartens, elementary, middle, and high schools among services used by "B" group organizations are classified as "A" group.

■ School Net Enhancement Project

Background : While the use of the Internet in education has rapidly increased in schools, the school net has not been upgraded since 2005 and remains outdated.

Goal : To speed up the Internet by 5 times so that high-quality video and multimedia education services (HD-MMS) can be provided for elementary, middle, and high schools across the country.

Project period : '09. 6. ~ '10. 12.

- Before enhancement

Category	Below 512K	1M	2M	4M~10M	15M~50M	Over 50M	Total
No. of Schools	64	22	2,307	8,847	443	148	11,831
Proportion(%)	0.5	0.2	19.5	74.8	3.7	1.3	100.0

- After enhancement

Category	Below 512K	1M	2M	4M~10M	15M~50M	Over 50M	Total
No. of Schools	-	-	55	2,249	8,925	652	11,831
Proportion(%)	0.0	0.0	0.5	18.9	75.1	5.5	100.0

* The government completed the enhancement of the school net by investing 45 billion won.

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Critical Success Factors

- Critical Success Factors of Korea's ICT

Future Network Strategy

■ Critical Success Factors of Korea's ICT(1)

Policy Foundation

- **Framework Law on Information Society(1995)**
 - Consistent and strong legal foundation

Government-led Investment

- **Communication N/W for government use was established**
 - KT and the public sector led the KII project

Competition

- **Multi-provider competition** enabled by lowering entry barriers (Hanaro : 1998) and **privatization of KT** (2002)
- Promotion of competition through **service quality evaluation** and **premise network certification program**

Demand Generation

- **Free Internet services in all schools**
- **e-government services**
- e-business stimulated by **electronic authentication system**

■ Critical Success Factors of Korea's ICT(2)

Universal Service

- Rural Broadband Project
- Internet education for 10 million people
- Supporting disabled and older people

Company

- Strategic investment in broadband Internet, CDMA, etc.
- Promotion of e-commerce & ICT adoption by traditional industries

Individual

- Enthusiasm for education (High literacy)
- Early adopter culture

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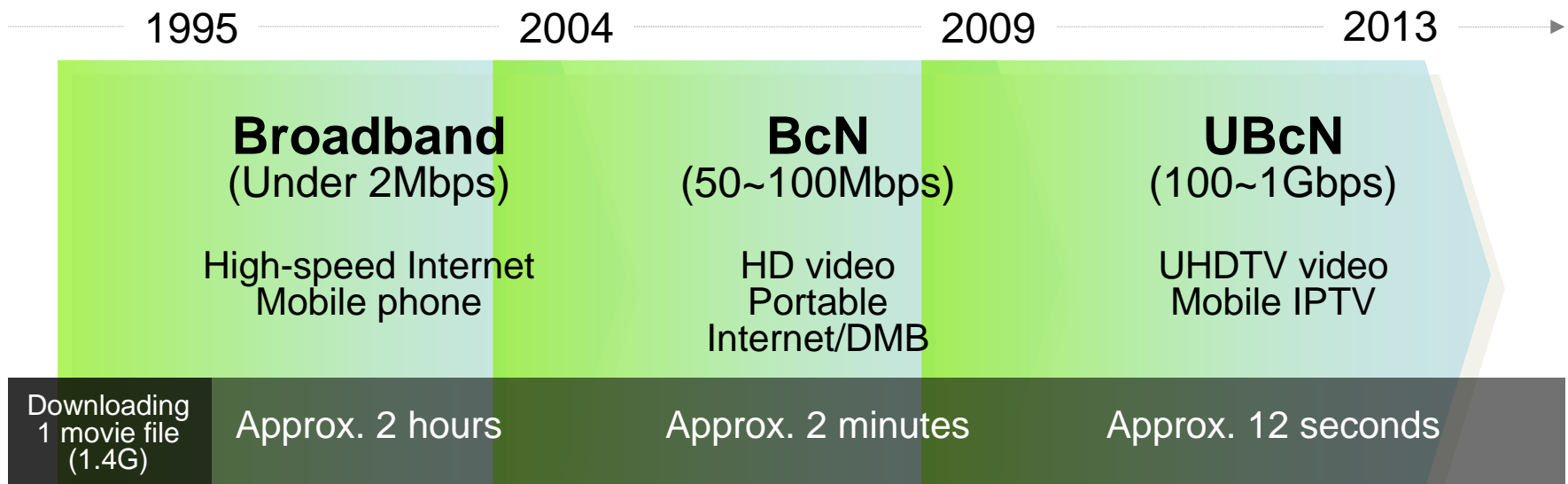
Critical Success Factors

Future Network Strategy

- UBcN Plan
- Future Network

**To establish ultra broadband convergence network by 2013,
which is 10 times faster**

UBcN provides up to 1Gbps (wired) and 10Mbps data rate on average (wireless)



To provide convenient and advanced broadcasting and communications convergence service to people, and support convergence of ICT with other industries by enhancing the network continuously

Wired Network

- To provide a Giga-level service from 2013

Wireless Network

- Wifi : To secure 170,000 hotspots by 2012
- Wibro : To construct Wibro networks in 84 cities in the country by 2011
- 3.9G : To introduce 3.9G by 2011
- 4G : To introduce 4G by the end of 2012

Future Network

- Started to develop the future network based on the new concept, which protects the information completely, guarantees the transmission quality, and provides mobility.
 - U.S., Europe, and Japan make an enormous investment in future Internet study in order to overcome the limitation of the current Internet that was made in 1970's
 - ※ The national investment is required for cloud service, which borrows S/W and server via the Internet.

Mobility

Acceptability

Security

**Future
Network**

Manageability

Ubiquity

Scalability

Implementation system

- Establish a committee to develop strategy and policies on future network

R&D and international cooperation

- Secure independent technology by increasing R&D in core technology areas.
- Promote strategic international cooperation with leading countries.

Thank You

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