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The Korean Broadband Miracle

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Agenda

- Broadband in the Republic of Korea, the basic facts

- Why Korea became the global leader in broadband

- The future of broadband in Korea

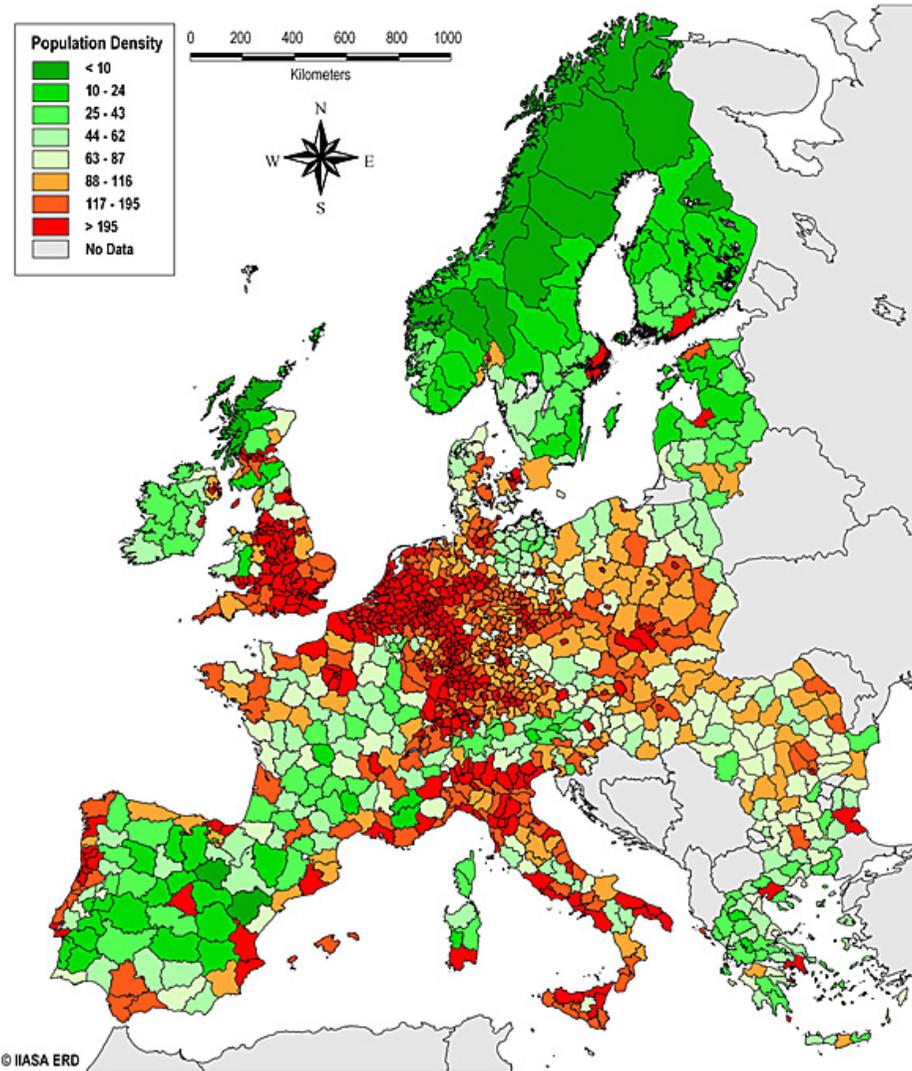- Lessons learned

The Republic of Korea

Smaller than Iceland, larger than Hungary or Portugal.
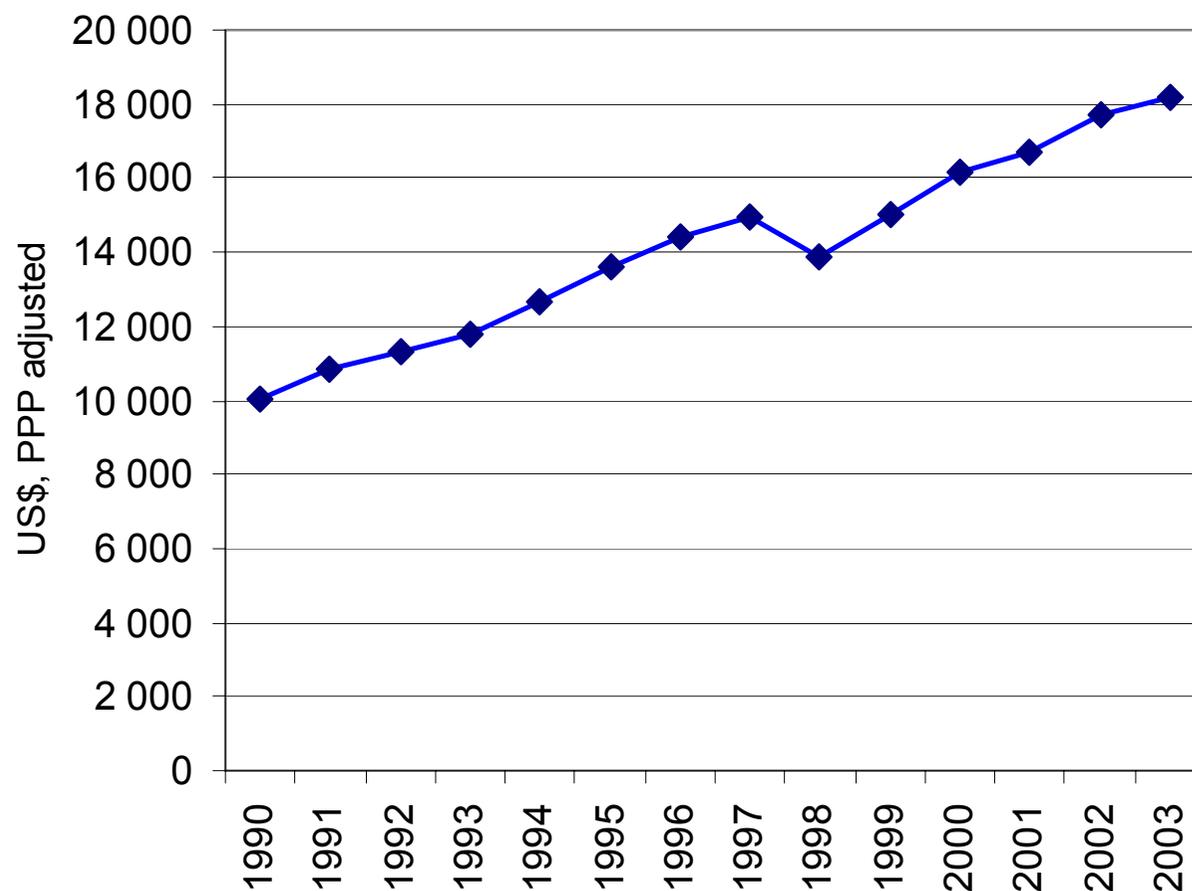25 times higher population density than Sweden.

Land area		98,190 sq km
Population (6/2004)		48,6 million
Population density		495 persons per sq km
	0-14 years	20.4%
	15-64 years	71.4%
	65 years and over	8.2%
Median age		33.7 years
Life expectancy at birth		75.57 years
Population growth rate		0.62%
Migration rate		0 migrant(s)/1,000 population
Ethnic groups		homogeneous (20,000 Chinese)
Literacy		Text comprehension: rank 2 Mathematical skills: rank 2 Scientific knowledge: rank 2

Source: CIA Factbook 2004; PISA 2003

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Population Density

- < 10
- 10 - 24
- 25 - 43
- 44 - 62
- 63 - 87
- 88 - 116
- 117 - 195
- > 195
- No Data

0 200 400 600 800 1000
Kilometers

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Source: http://www.iiasa.ac.at/Research/ERD/DB/mapdb/map_9.htm
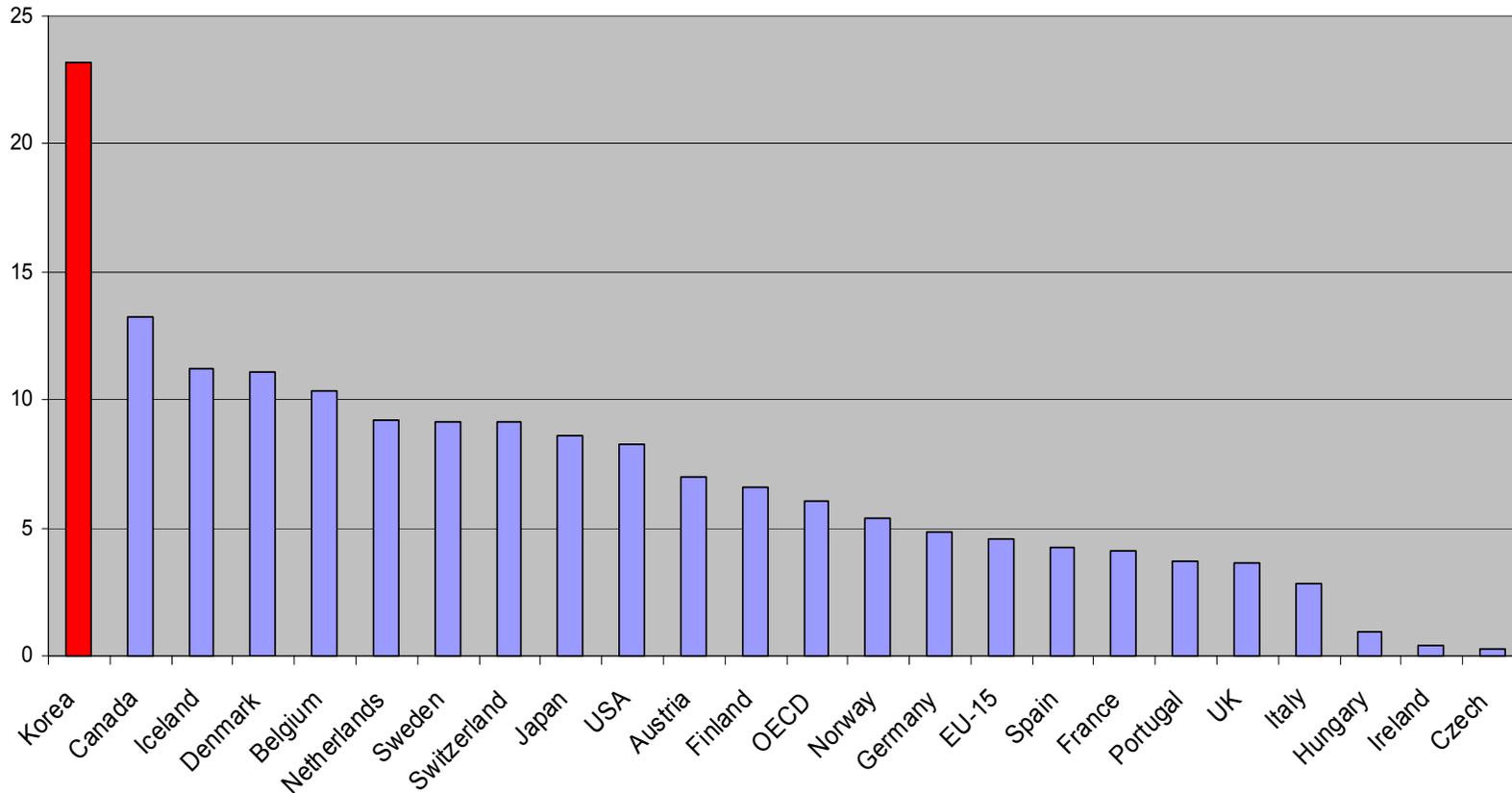
Real GDP per capita in Korea

Per capita income
(PPP adjusted):
1960: < US$ 100
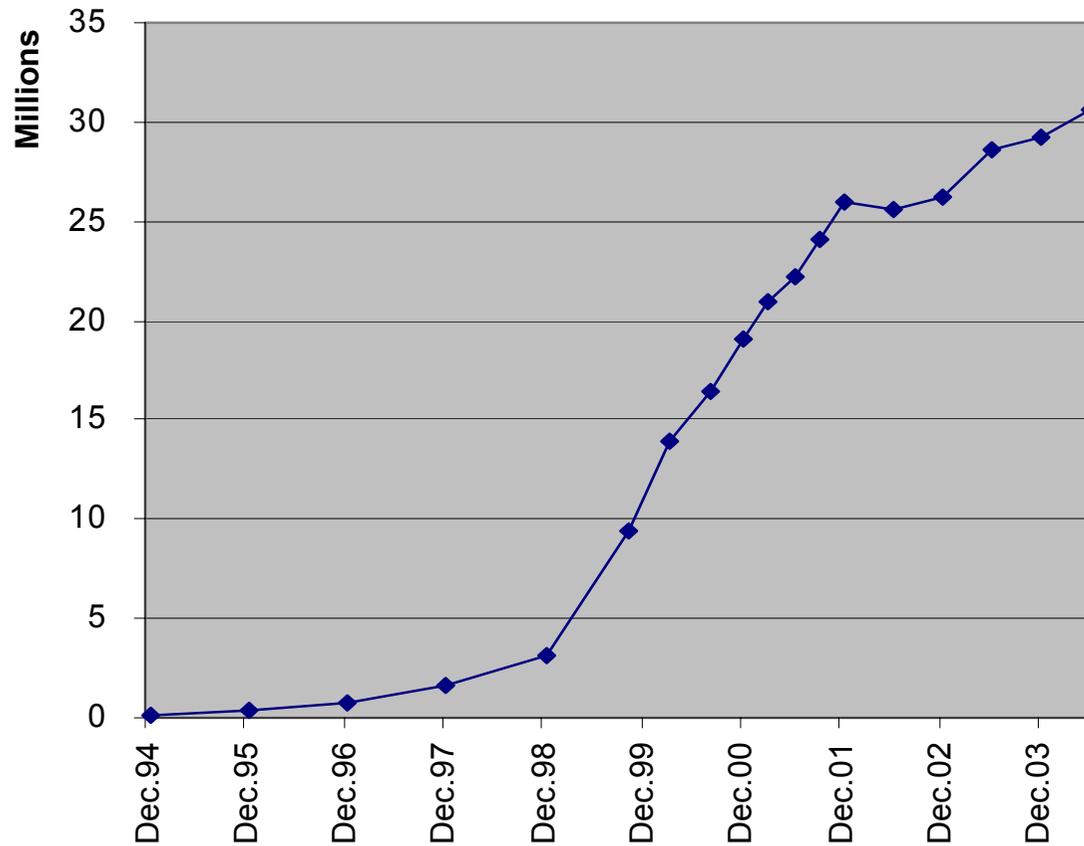2002: US$ 10,000

52 percent of the
US GDP per capita
in 2003

Broadband subscribers per 100 persons as of June 2003
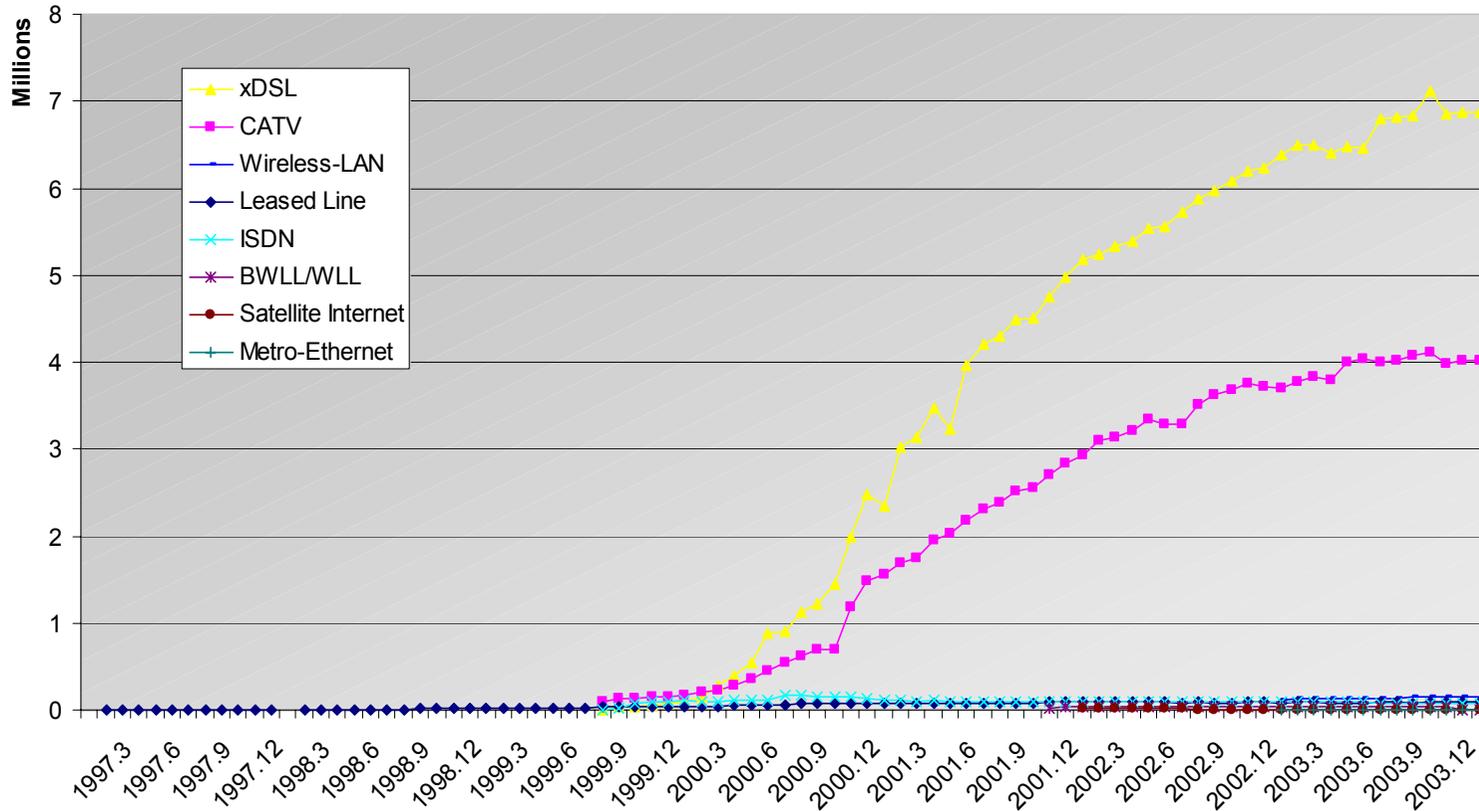
Internet users in Korea, Dec. 1994- July 2004

Source: KRNIC 2004

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Internet subscribers in Korea, 1996-2003

Source: KRNIC 2004

Broadband subscription cost as % of average monthly income (2003)

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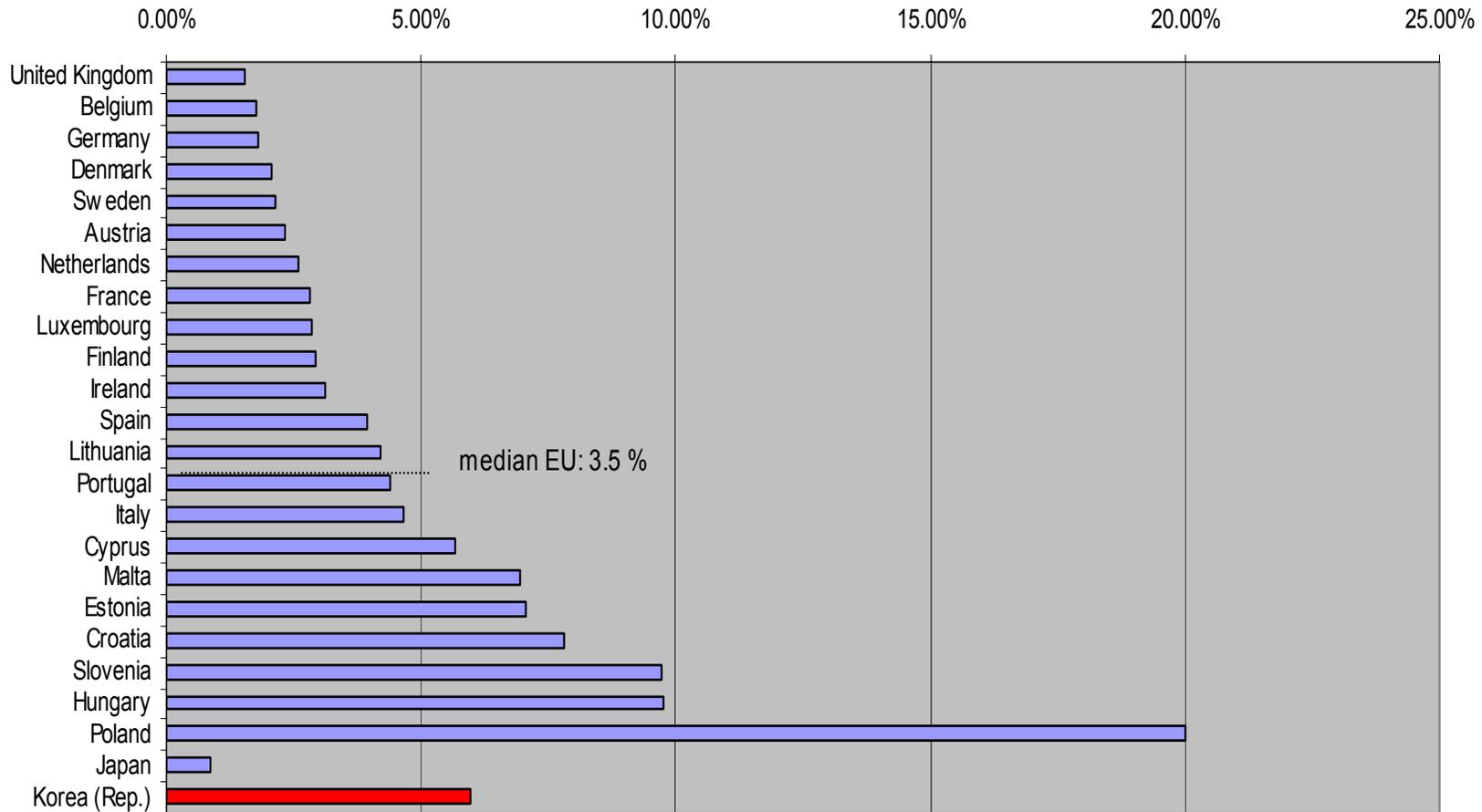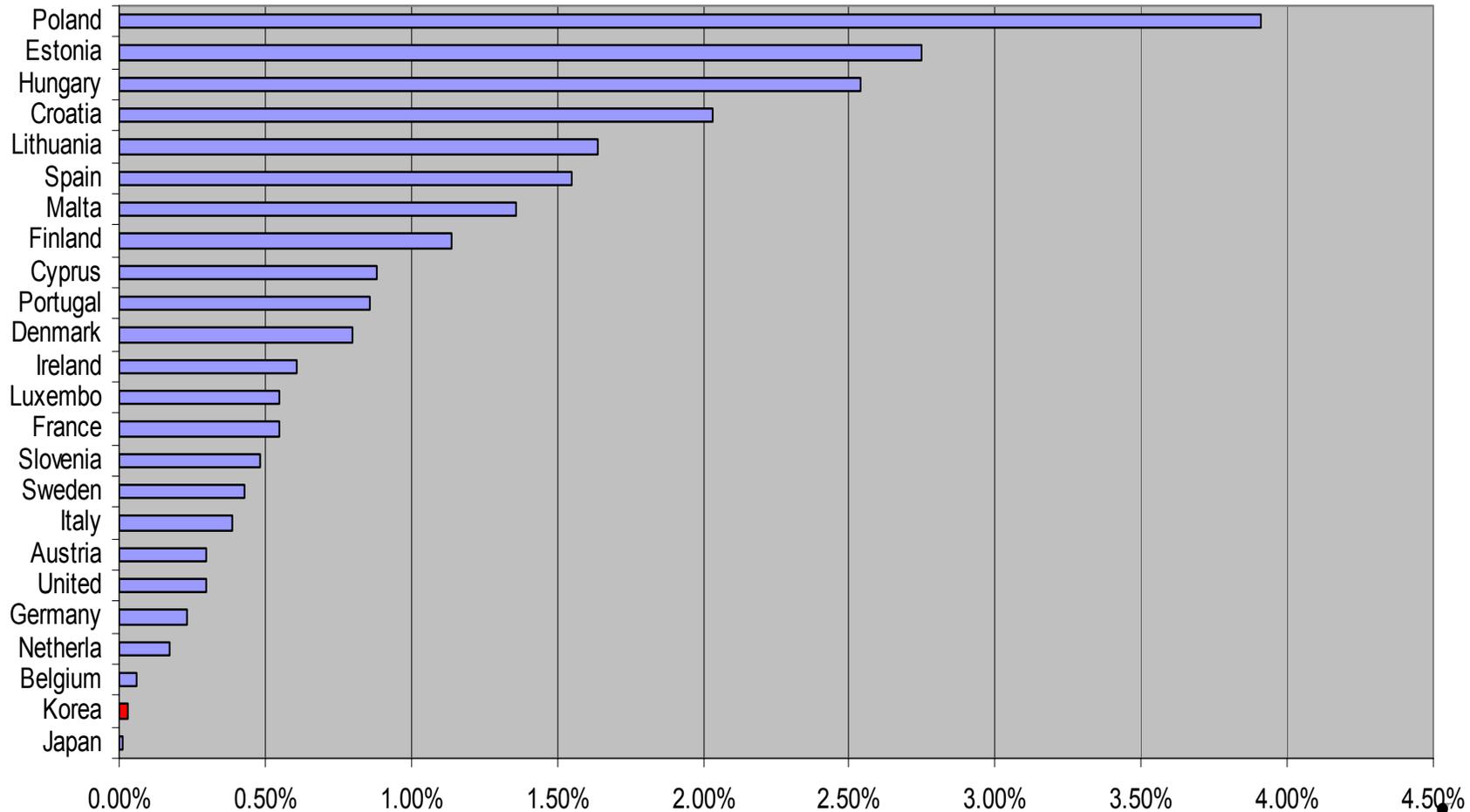
Broadband subscription cost per 100 bits/second
% of average income, year 2003

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Average speed in Korea: 4 Mbit/s
20-40 Mbit/s subscription about US$ 50

BroadBand Europe '04

How did this happen?

- The key actors:
  - Public sector
  - Private sector
  - Users

- The stage:
  - Historical situation
  - Cultural setting
  - Institutional and economic structures

Broadband subscribers per service provider
July 2004

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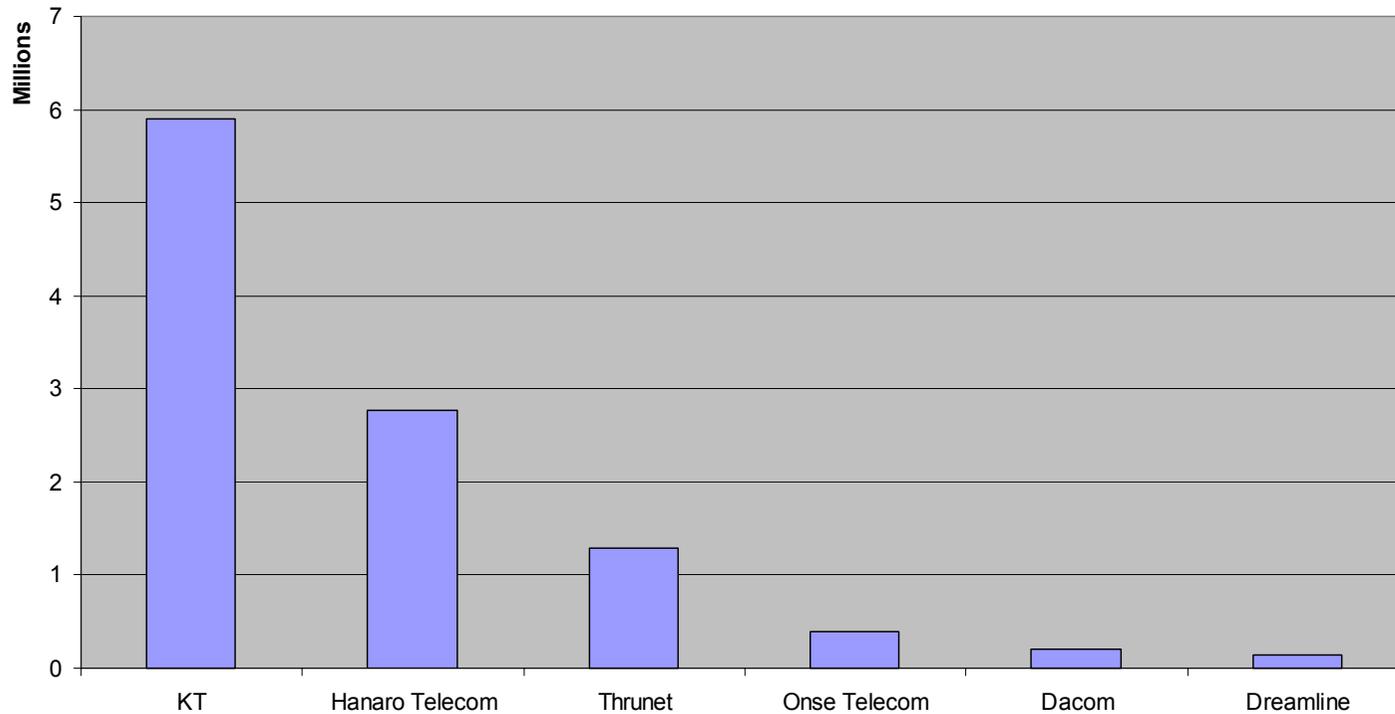
Source: MIC, August 2004

First BB service in Korea by Thrunet (cable) in July 1998
World's first ADSL service by Hanaro in April 1999
KT followed in June 1999

ISPs in Korea

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Number of KRNIC member ISPs
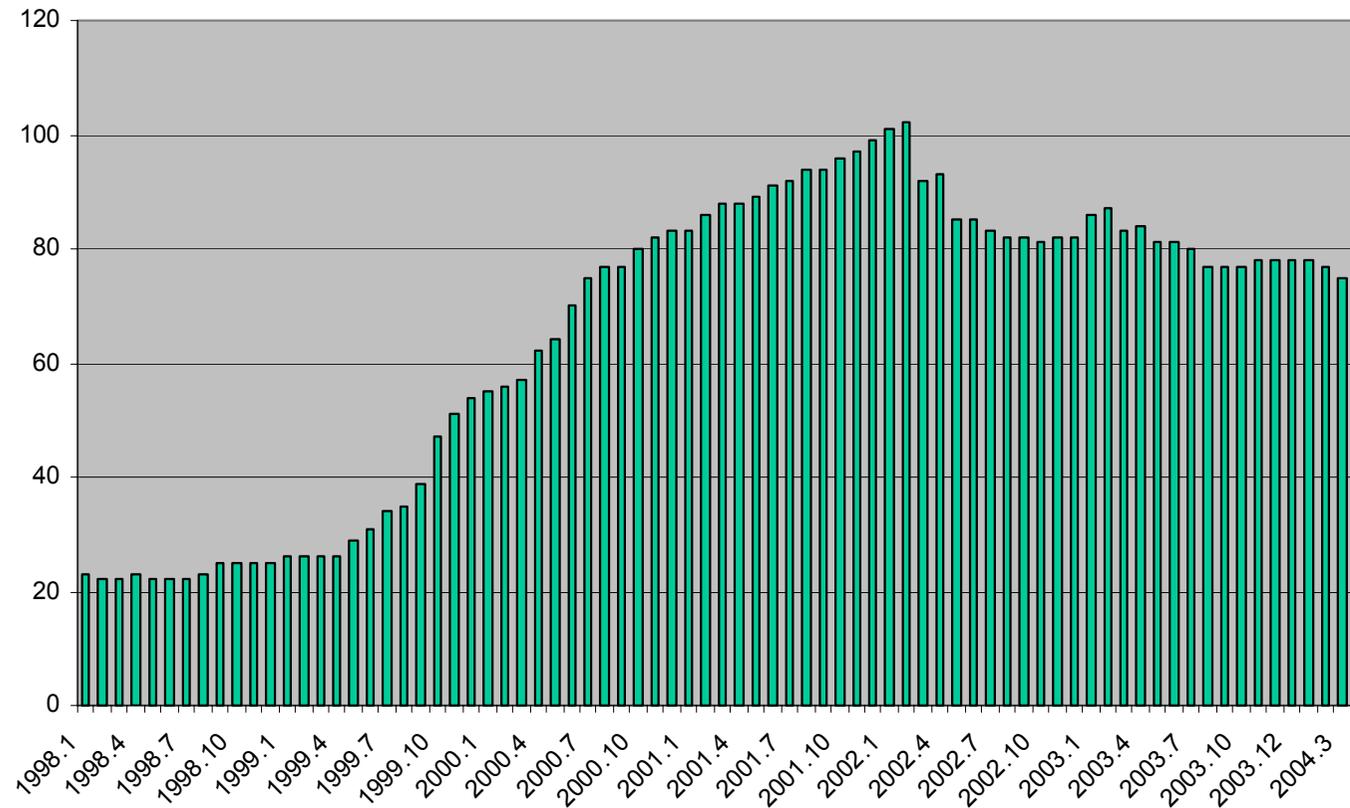
Source: KRNIC 2004

The historical context

- Successful five-year planning
  - Ships ('67), chips ('69), broadband ('95)

- Deregulation of telecom in 1990s
  - A failed attempt to generate local loop competition led to ASDL roll-out

- Asian economic crisis 1997

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The cultural and social context

- Homogeneous but hierarchical culture
  - Status and merit are important, and achieved through personal effort (education, hard work)
  - Civil servants have power (Confucian values)
- People live in cities and large apartment blocks
  - 47 percent lives in apartment complexes (multiple 15-storey buildings with a central telecom room); 93 percent of households within 4 km of exchange
- "Housewives" make investment decisions
- Gifts and service are important

Culture and its consequences
how to roll-out ADSL in Korea

- Justify the user investment through education
  - "Good parents give the best tools to their children"
- Educate housewives on the potential of broadband
  - 1 million housewives learned Internet skills in 2000
- Certify buildings that have broadband (and make the certificate visible to the neighbours)
- Treat the housing block telecom administrator/janitor respectfully (give a gift), drop fibre to the central communication room of the apartment block, and use in-house wiring and ADSL to connect customers
- Capture market share before it is profitable
  - First, buy ADSL from Alcatel
  - Then develop key technologies so that the costs drop rapidly

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Policy and its consequences
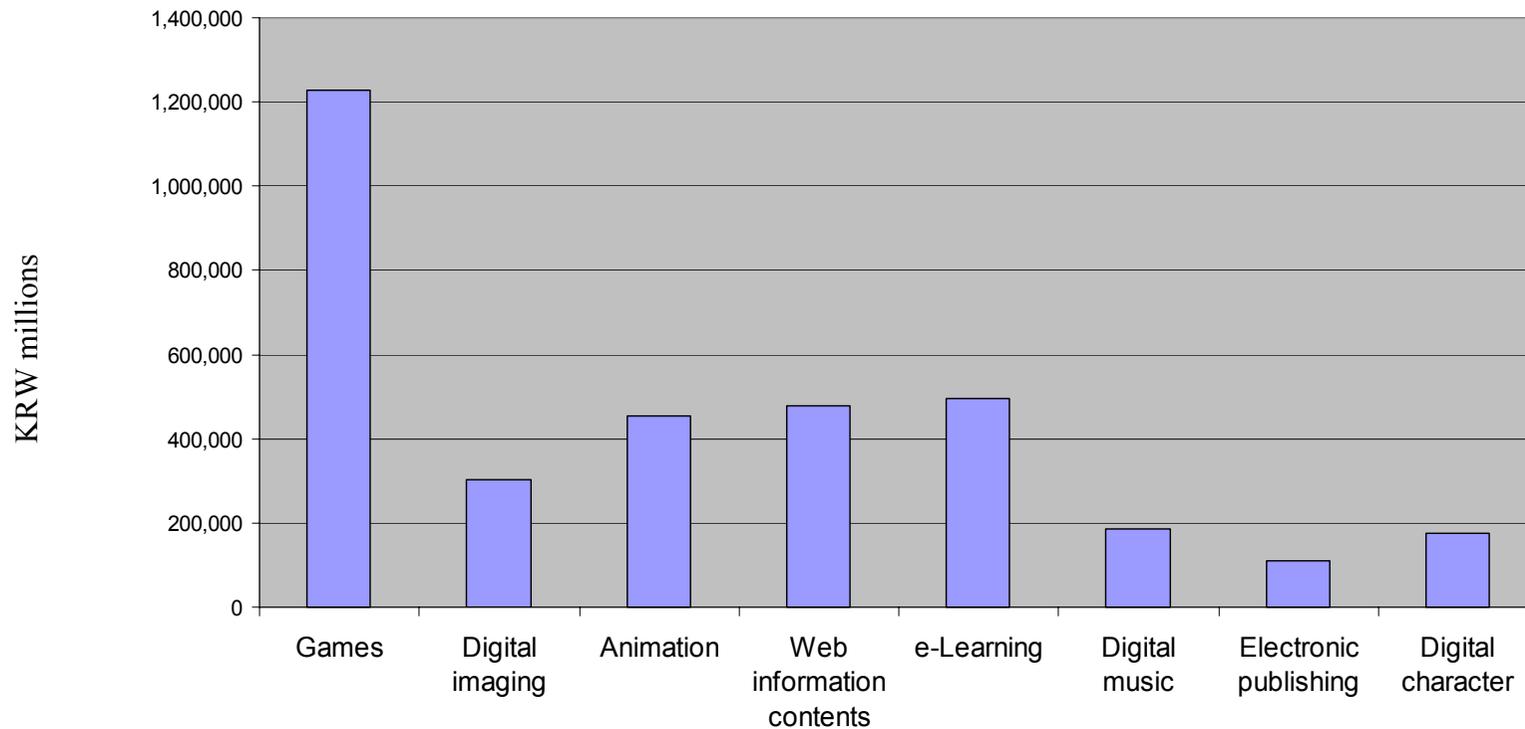## how to roll-out broadband in Korea

- Use spectrum licensing fees and "telecom taxes" for telecom development
  - For 2004, the "Information Promotion Fund" is 1,242 billion US$; 740 million reserved for R&D
- Train 10 million Internet users
- Unbundle local loop <u>both</u> for telecom and cable
- Push for low subscriber prices
- Put high-quality educational content on the web
- Engage the chaebols

Digital Contents Market in Korea
year 2003

KRW millions

	1,400,000
	1,200,000
	1,000,000
	800,000
	600,000
	400,000
	200,000
	0

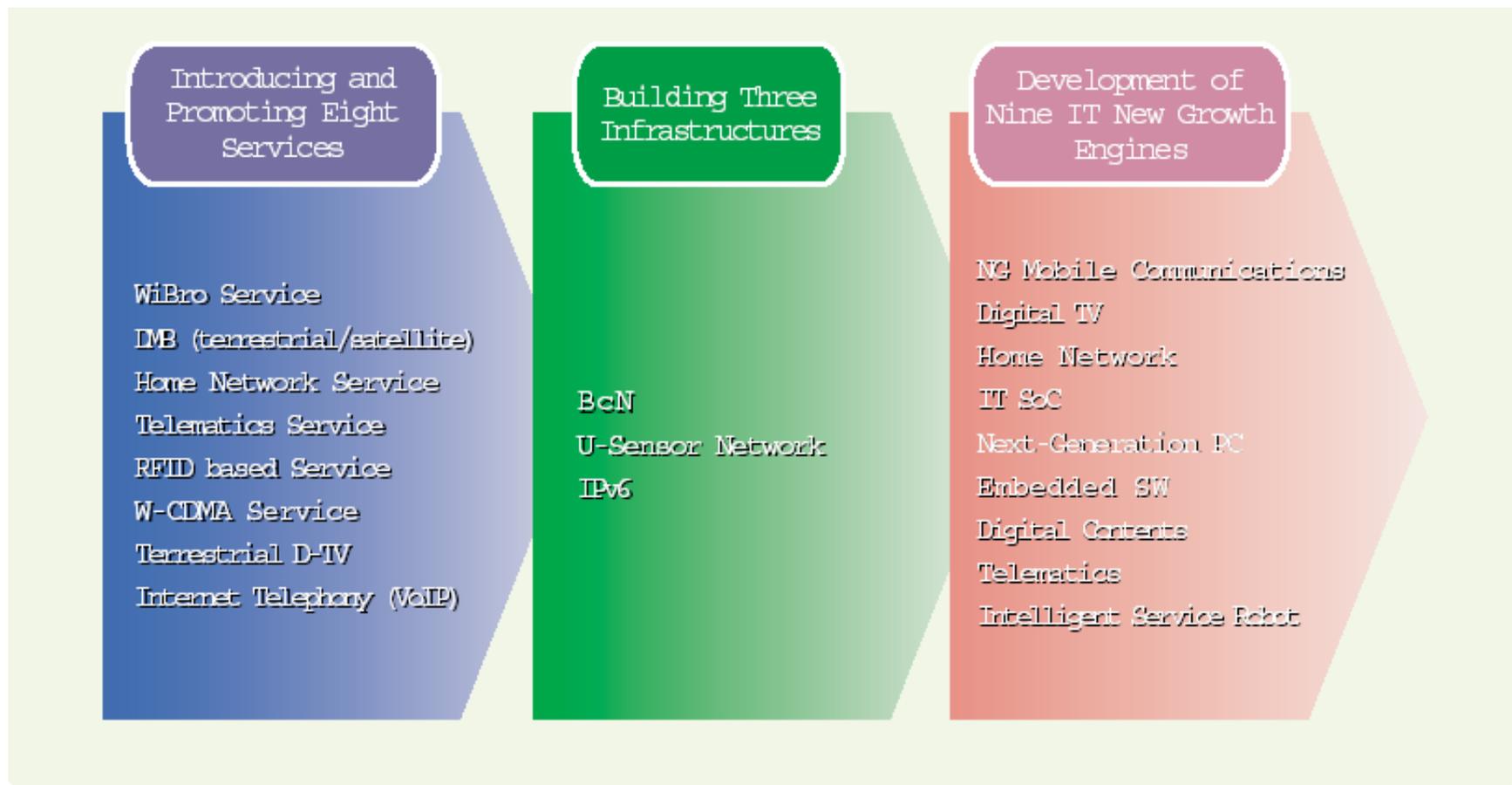Games · Digital imaging · Animation · Web information contents · e-Learning · Digital music · Electronic publishing · Digital character

Source: Korea Institute of Multimedia Contents and Software, Feb. 2004

The Next Steps: Korea IT 8-3-9 Strategy

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Broadband Convergence Network

Plan for building the world's first Broadband Convergence Network (Feb. 2004)
- fixed/wireless/TV
- mobile Internet (Wlan) (50Mbps)
- 4G (100 Mbps)

		Early phase 2004-'05	Building phase '06-'07	Completion phase '08-2010
Example services		Convergence videophone; High-quality VoIP	Portable Internet; Interactive DMB	HD multimedia with QoS
Wired subscribers	50~100Mbps	1.2	3.5	6
	100Mbps	0.3	1	4
	Subtotal	*1.5*	*4.5*	*10*
Wireless subscribers	50Mbps	0.5	3.5	9.5
	100Mbps	-	-	0.5
	Subtotal	*0.5*	*3.5*	*10*
Total (millions)		**2**	**8**	**20**

Source: NCA, 2004 Broadband IT Korea

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BroadBand Europe '04

Korea 8-3-9

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Plan for 2004 & Mid-to-Long Term Goal

	Name of Project	Plan for 2004	Mid-to-Long Term Goal
Services	① WiBro Service	Standardization, Establish Licensing Framework	Service Launch ('06)
	② DMB Service	License Broadcasting Station, Service Launch	Interactive Service ('06)
	③ Home Network Service	Provide the Service to 500,000 Homes (VOD/Electronics Control)	10 Million Home Network Serviced Houses ('07)
	④ Telematics Service	Establish Information Center, Pilot Project Launch	10 Million Service Users ('07)
	⑤ RFID based Service	Allocate Frequencies, Develop Core Technologies	Tiniest & Cheapest RFID ('07)
	⑥ W-CDMA Service	Allow Subsidies, Support Tech. Development	Nationwide Networks across Cities ('06)
	⑦ Terrestrial D-TV	End Standard Dispute, Expand Coverage	Nationwide Networks ('05)
	⑧ Internet Telephony (VoIP)	Establish Service Framework, Allocate Numbers	4 Million Service Users ('06)

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		Plan for 2004	
Infra-Structures	⑨ BcN	Develop Tech., Establish Network for R&D Use	20 Million Users ('10)
	⑩ U-Sensor Network	Establish Framework, Pilot Project Launch	Realize u-Life ('10)
	⑪ IPv6	Support Pilot Project, Develop Equipment	Switch over to All IPv6 ('10)

By 2006, 20 Mbps available to all households, by 2010 all households connected at 50-100 Mbps.

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		Plan for 2004	
New Growth Engines	⑫ Next-Generation Mobile Communications	Develop Portable Internet Prototype	Develop 4G Mobile Communication Prototype ('07)
	⑬ Digital TV	Develop Terrestrial DMB Transmitter-receiver	Telecom & Broadcasting Convergent Service Server/ Devices ('07)
	⑭ Home Network	Develop Wired & Wireless Convergent Home Server	Telecom & Broadcasting & Games Convergent Home Server ('07)
	⑮ IT SoC	Develop Multimedia Chipset for Mobile Phones	Develop into One of the Three Major Countries in IT SoC ('07)
	⑯ Next-Generation PC	Introduce Watch-type PC	Wearable PC ('07)
	⑰ Embedded SW	Build Embedded SW in 100 Kinds of Products	Develop into the second largest producer in Embedded S/W ('07)
	⑱ Digital Contents	Develop Multi-platform Game Engines	One of the Three Major Open Source SW Producers ('07)
	⑲ Telematics	Establish Test-bed for Tech. Verification	In-vehicle Mobile Office ('07)
	⑳ Intelligent Service Robot	Develop Humanoid that Recognize its Master	Global Presence ('07)

Portable Internet: 1-2 Mbps, 60 km/h, 15 USD flat rate

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Korean Broadband killers

- Wireless –fixed gateways and payments

- IPv6

- ENUM and VoIP

- Profit sharing and interconnection rates

- Regulation in the convergent networks

- Scam and spam

- DRM

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Thank you for your attention!

More information to be found in the next release of the
BREAD report

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