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Korean government-driven ICT policy: IT 839 strategy

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Table of Contents

? . The Status of IT Industry

I-1. IT in Korean Economy

I-2. Korea's IT in the World

I-3. Key Success Factors

? -1. IT in Korean Economy

Key Industry in Korean Economy

- IT has been Korea's economic growth engine since 1990s
  - IT industry has played crucial role in early overcome of IMF crisis and revitalization of Korean economy
  - Average Growth Rate('98~'03) : IT - 18.8%, Korean Economy – 8.3%

< Trends of Share in GDP >

(unit : %)

	1961	1980	1996	2001	2002	2003
IT	-	-	7.5	12.7	14.9	15.6
Agri., Fishery and Forestry	39.1	14.8	6.0	4.5	4.1	3.6
Manufacture	13.6	28.2	26.7	27.6	26.9	26.6

Source : Bank of Korea, KISDI

? -1. IT in Korean Economy

High Contribution to GDP Growth

- IT industry has grown faster than any other industry in Korea
- Share of IT to real GDP growth : more than 30%
  - ? Highest contribution among OECD countries (IT Outlook 2004)

< The Importance of IT >

(unit : %)

category \ year	1996	2000	2001	2002	2003
Growth Rate of Real GDP	6.8	9.3	3.1	6.3	3.1
Growth Rate of IT	17.1	35.8	9.1	12.0	11.5
Growth Rate of Non-IT	-	5.7	2.0	5.9	2.1
Share of IT in GDP Growth	14.3	46.8	31.7	30.4	37.0

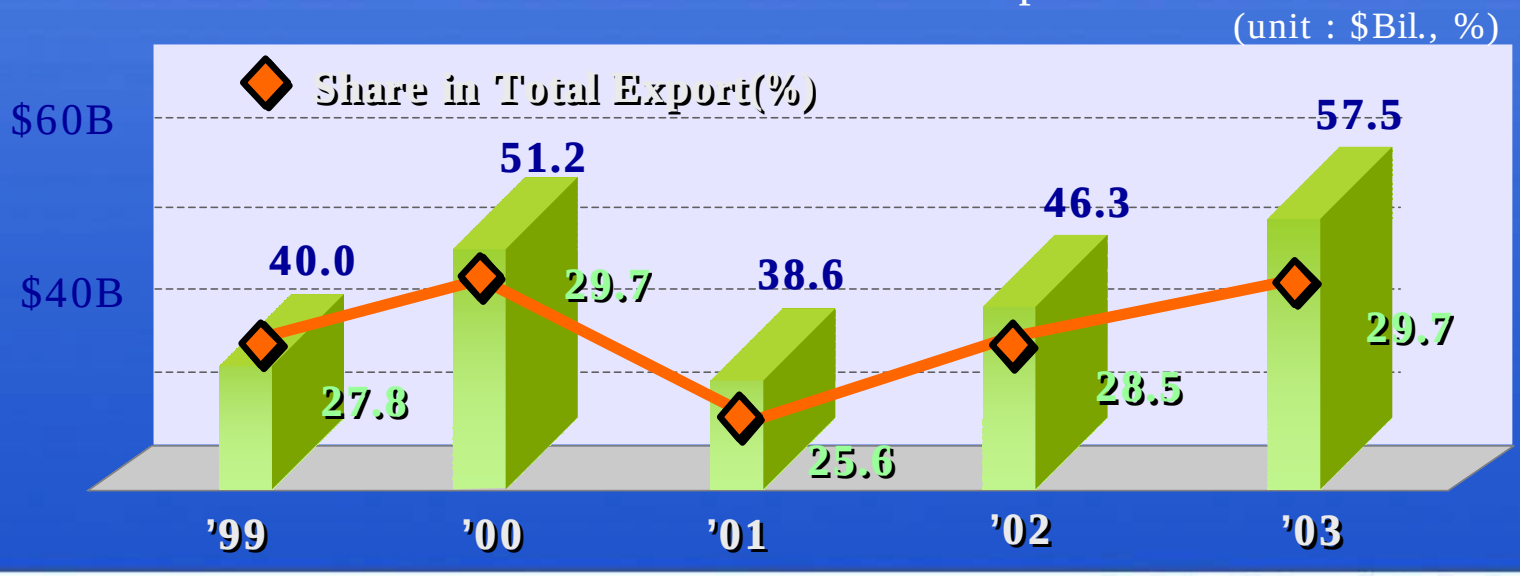
Source : Bank of Korea

? -1. IT in Korean Economy

Leading Korea's Export

- IT export in 2004 amounts to $74.3B
  - comprises 29.2% of total export($254.2B)
- IT is major source of Korea's Trade Surplus
  - recorded $62.9B surplus btw 2000~2003, which is 135% of Korea's total surplus($46.5B)
  - recorded $33.5bil. surplus in 2004

< Volume and Share of IT Export >

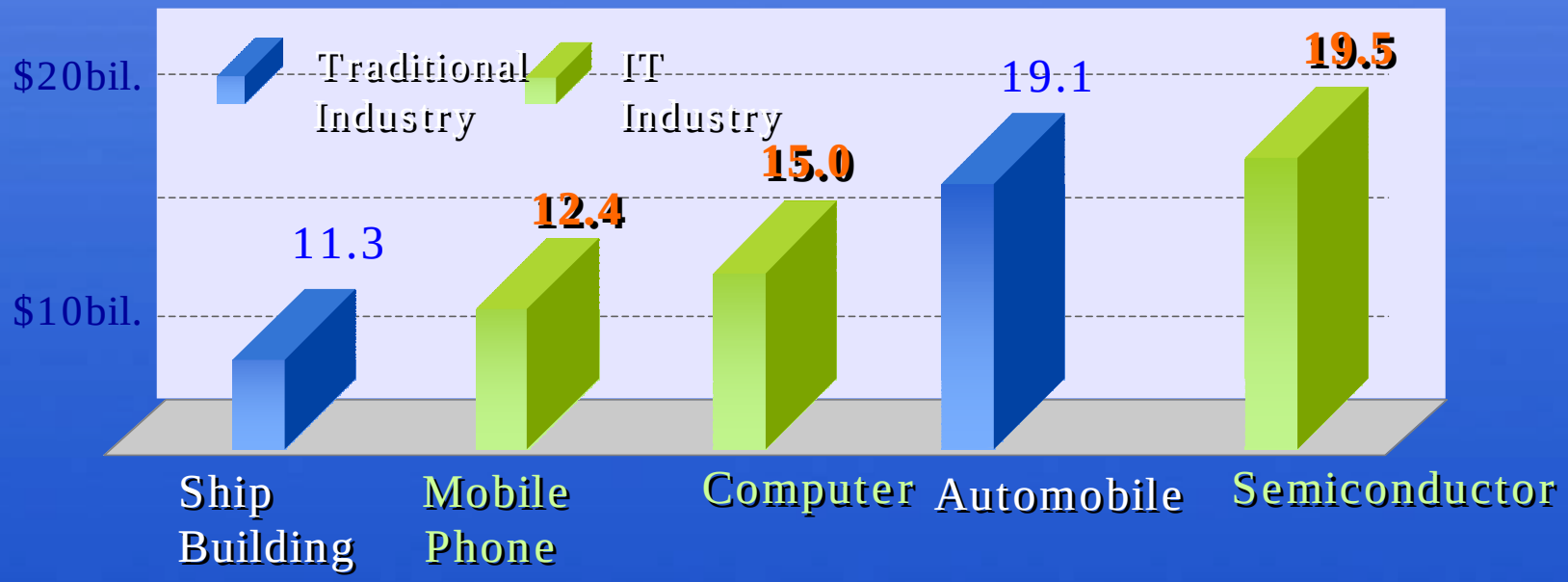


? -1. IT in Korean Economy

- 3 of top 5 export items are from IT Industry in 2003
  - Semiconductor $19.5B, Computer and its peripherals $15.0B, Mobile Phone $12.4B

<5 Major Export Items in 2003>

*source : MIC, MOCIE



? -1. IT in Korean Economy

Employment

- IT industry steadily creates job opportunity
  - No. of employees in IT increased while employees in whole economy decreased in 2003
- Government's investment contributed to transformation of non-IT human resources to IT specialists

< Employment Trends in IT Industry >

(unit : thousand)

	2000	2001	2002	2003
IT Industry	1,110	1,160	1,210	1,230
Whole Industry	21,160	21,570	22,170	22,140

Source : MIC, Korea National Statistical Office

? -1. IT in Korean Economy

Most Important Source of Patent

- In 2003, IT registered 17,691 patents, accounting for 60.6% of Korea's total patent registration(29,172)
  - in the case of patent registration to foreign countries, IT accounts for 82.2%(6,755) of total registration(8,222)

< Trends of Patent Registration >

year / industry	2001			2002			2003		
	domestic	foreign	total	domestic	foreign	total	domestic	foreign	total
IT	10,478	5,110	16,158	12,495	5,147	17,642	10,936	6,755	17,691
Total	15,668	5,906	21,574	18,964	6,124	25,088	20,950	8,222	29,172

Source : IITA

? - 2. Korea's IT in the World

IT Production

- Korea's IT production in hardware and component ranks 4th in the world
  - China emerged as major producer

< Major Countries in IT Hardware/Component Production >

(unit : bil. $)

Rank	2000		2001		2002		2003	
	country	volume	country	volume	country	volume	country	volume
1st	USA	314.5	USA	250.8	USA	220.0	USA	226.4
2nd	Japan	204.1	Japan	163.7	Japan	144.1	Japan	149.9
3rd	Korea	67.6	China	73.3	China	84.2	China	101.6
4th	China	58.6	Korea	48.0	Korea	54.0	Korea	59.9
5th	Malaysia	54.2	Taiwan	38.0	Taiwan	42.7	Taiwan	47.5

Source : Reed Electronics Research(2003)

? - 2. Korea's IT in the World

Most Advanced Level of IT Infrastructure

- Korea is one of most advanced countries both in IT infrastructure and IT utilization

Items	2000	2001	2002	2003	2004. 6
No. of Subscribers to Broadband Internet Service ('000)	3,950	7,810	10,410	11,180	11,620
No. of Internet Users ('000)	19,040	24,380	26,270	29,220	30,670
No. of PCs supplied ('000)	18,620	22,490	23,500	26,740	-
No. of Internet Banking Users ('000)	4,090	11,310	17,710	22,750	24,360
Volume of Electronic Transaction (Billion USD)	58	119	178	235	-
No. of Digital Signature Users ('000)	-	192	577	871	915

? - 2. Korea's IT in the World

National Informatization Index

Nation	1996	1997	1998	1999	2000	2001	2002	2003
Sweden	4	4	4	3	5	2	3	1
USA	1	1	1	1	1	1	2	3
Swiss	8	7	8	8	7	6	1	4
Korea	**22**	**22**	**22**	**19**	**14**	**14**	**12**	**7**
England	13	15	12	12	11	12	14	10
HK	12	12	11	13	13	13	9	11
Japan	11	10	10	11	12	11	16	16
Ireland	19	19	20	21	20	21	19	20
France	20	21	21	22	22	22	20	23

Source : White Paper of National Informatization 2004, NCA, 2004

? - 2. Korea's IT in the World

No. of Subscribers to Broadband Internet Service

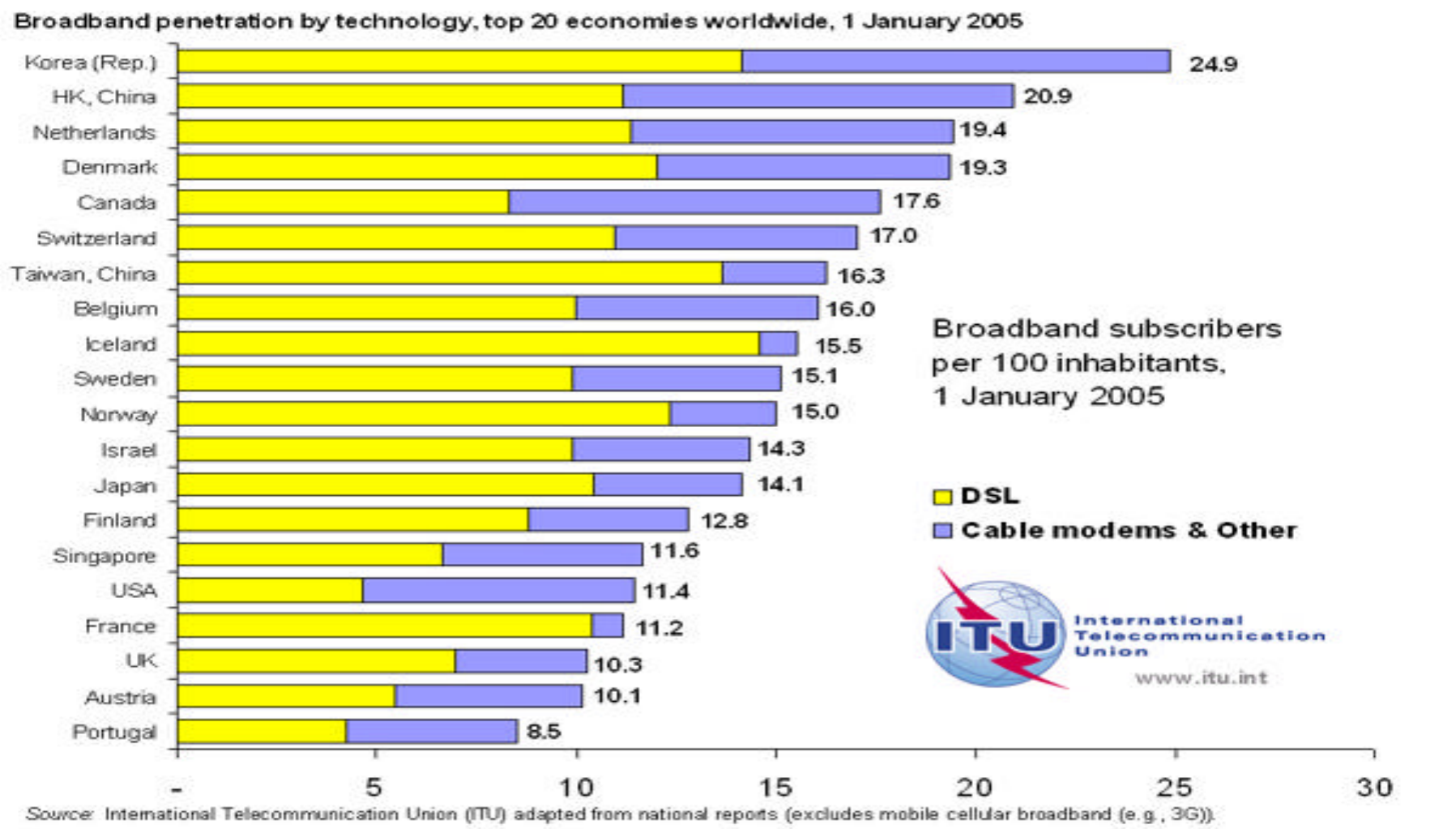
(unit : subscribers per 100 people)

Rank	Country	DSL	Cable Modem	Others	Total
1	Korea	14.36	8.45	0.37	23.17
2	Canada	6.09	7.18	0	13.27
3	Iceland	10.66	0	0.56	11.22
4	Denmark	7.29	3.17	0.65	11.11
5	Belgium	6.25	3.82	0.27	10.34
6	Netherlands	3.82	5.38	0.001	9.2
7	Sweden	5.44	1.96	1.76	9.16
8	Swiss	4.70	4.43	0	9.13
9	Japan	6.49	1.75	0.36	8.6
10	USA	2.68	4.84	0.74	8.25

Source : OECD, 2004

? - 2. Korea's IT in the World

ITU's New Broadband Statistics for 1 January 2005



? - 2. Korea's IT in the World

Internet Penetration (2003)

Country (Rank)	Iceland (1st)	**Korea (2nd)**	Sweden (3rd)	USA (4th)	New Zealand (5th)	Netherlands (6th)
Share of Users(%)	67.5	**60.3**	57.3	55.1	52.6	52.2

Country (Rank)	USA (1st)	China (2nd)	Japan (3rd)	Germany (4th)	**Korea (5th)**	England (6th)
No. of Users ('000)	159,000	79,500	57,200	39,000	**29,220**	25,000

Source : ITU, 2004.5

? - 2. Korea's IT in the World

Major Source of National Competitiveness

- IMD evaluated IT sector as Korea's major source of national competitiveness in 2004
  - Korea's comprehensive rank : 37th(2003), 35th(2004)

Strong Sector	
Rate of Subscription to Broadband Internet Service	1st
Rate of Internet Usage	5th
Internet Fee (20hrs per month)	7th
Mobile Phone Fee (3min. at peak time)	9th

Weak Sector	
Student / Teacher Ratio of Elementary School	56th
Living Cost of Major Cities	55th
Foreign Direct Investment	54th
Political Stability	55th
Race/Gender Non-Discrimination	57th

I-3. Key Success Factors

National Consensus on IT Development

"Though belated in industrialization, we should be advanced in informatization"

Public Sector

Since 1980s,
the government has
intensively invested
on network
infrastructure and
core technologies

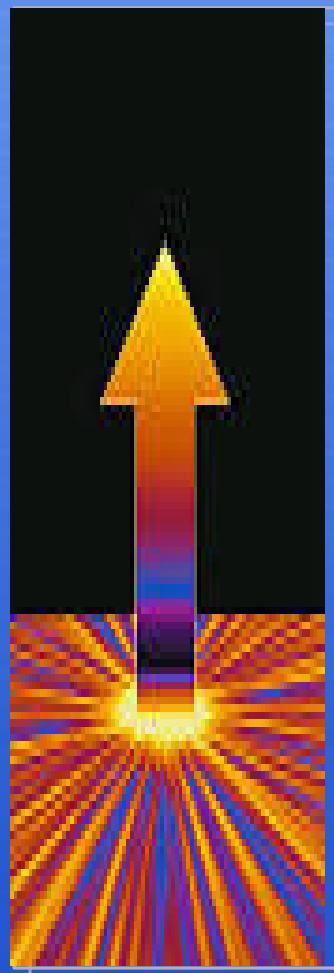
Government's Policy
for Informatization
and IT Development
+
Private Sector's Effort
toward the World
Market

Private Sector

Investment on IT
Ventures and R&D
- Expansion to
IT Businesses
- Aggressive
Investment on
Broadband and CDMA

I-3. Key Success Factors

System Building for IT R&D and Industrial Development



- Government Restructuring : foundation of MIC(1994)
  - integration of IT policy
- Building of Comprehensive National Plan for IT Promotion
  - Informatization Promotion Plan(1996)
  - Cyber Korea 21(1999)
  - e-Korea Vision 2006(2002)
  - Broadband IT Korea Vision 2007 (2003. 12)
- Foundation of Informatization Promotion Fund('93.1.1)
  - Secure financial resources for informatization and IT R&D

I-3. Key Success Factors

High Digital Mind of the People

- Koreans are highly responsive to new technologies and trends
  - rich pool of early adopters
  - fast spread of fashion

- Parents' Fever for Education
  - resulted in high demand on IT-based learning materials(including educational contents) and broadband internet services

I-3. Key Success Factors

Living Environment Adequate for IT Infrastructure Building

- Highly populated cities with large complexes of tall apartments

"80% of the population lives in urban areas and 98% of them are located within 4 km (ADSL service coverage) from telephone stations" (ITU, 2002)

I-3. Key Success Factors

Government Policy : Introduction of Competition

- Introduced competition into all kind of services
  - sharp increase in subscribers, operators and revenue
- Encouraged fare competition among existing and new players

I-3. Key Success Factors

Government Policy – R&D and HR Development

- Heavy investment on dev't of core tech. and IT professionals
  - Successful dev't of TDX, DRAM and CDMA was cornerstone of Korea's IT success
  - Supported HR dev't to meet market demand and informatize the people

	TDX	DRAM	CDMA
Gov't Investment	150bil.won	400bil.won	100bil.won
			
Revenue	7tri.won ('89~'02)	108tri.won ('91~'02)	54tri.won ('96~'03)

I-3. Key Success Factors

Had it not been for the government leadership, they would not be where they are today.

--David Young

director of technology policy, Verizon

? . New Trends and Challenges

? -1. Korean Perspectives on IT revolution

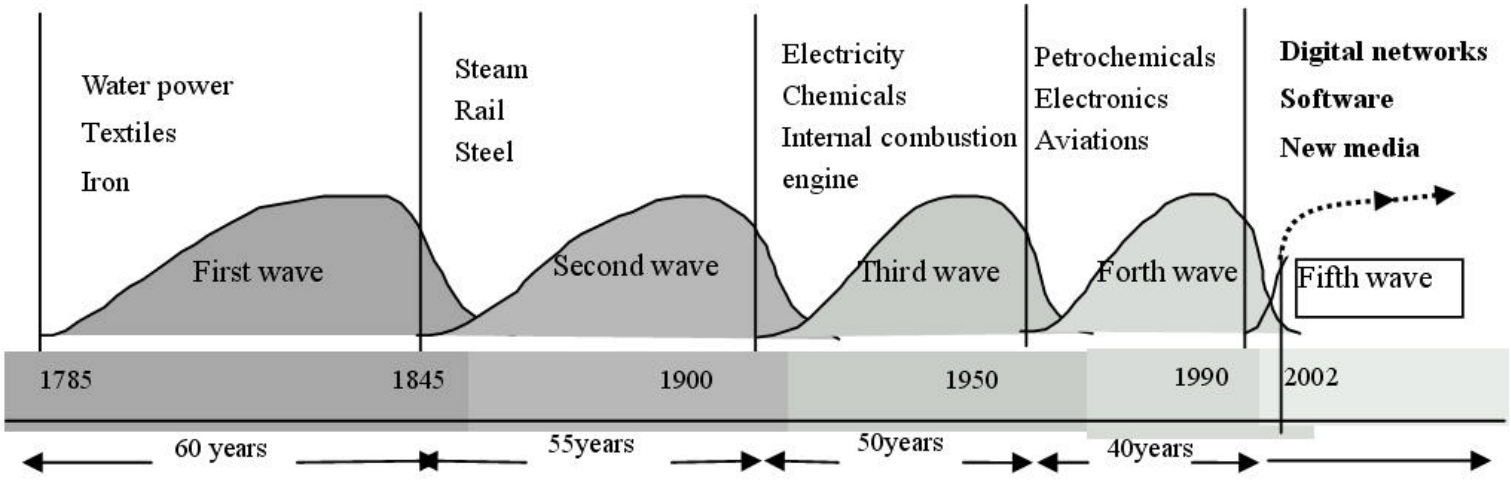
? -2. Changes of IT Paradigm

? -3. Challenges

? -1. Korean Perspectives on IT revolution

Digital Revolution

- The world has experienced major changes in every 50 years
- IT revolution results in new paradigm : Digital Economy and Knowledge-based Society



Source: *The Economist* (Dec. 8. 2001), Bank of Korea (2002. 3)

? -2. Changes of IT Paradigm

IT Mega Trend

Digital Convergence

Integration of Functions

➲ Mobile Phone +TV +Camera

New Industries/Services

➲ Telematics(IT +Automobile), Home Network(IT +C +H/A)

Ubiquitous Broadband /

Broadband/Convergence Network

➲ **Comm. +Broadcasting +Internet**

Ubiquitous Network

➲ Networking for People +Things, Things +Things (RFID for Everything)

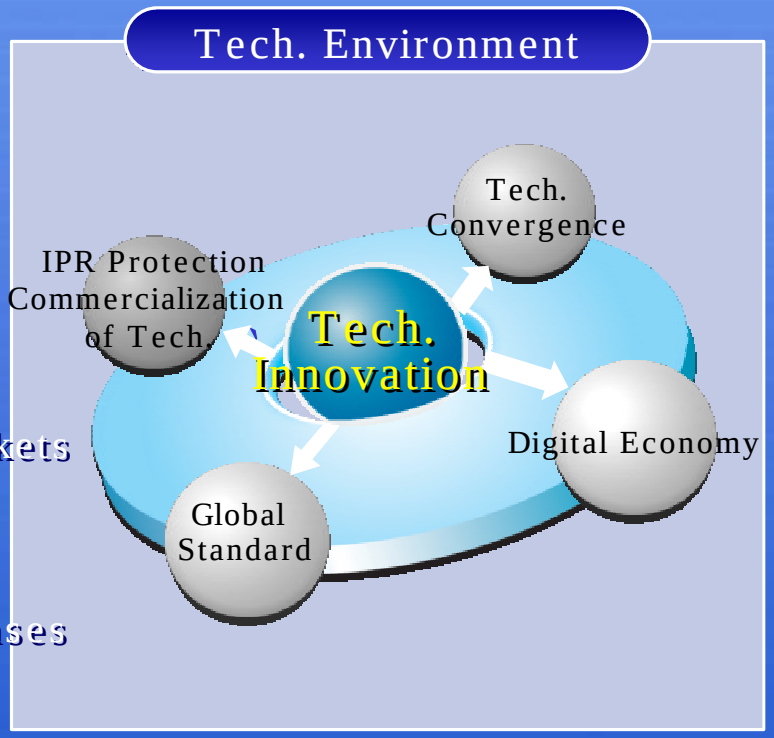
Ubiquitous Society

Constraints of Time and Space Disappear by the Integration of Real and Cyber World (Anytime, Anywhere, Anynetwork, Anydevice)

? -2. Changes of IT Paradigm

Technological Environment

- Severe Competition for Tech. Dev't
  - Only world best/world first tech. survives
  - Tech. life cycle shortened and risk of R&D investment increased
- Global Standard and Globalization
  - No distinction btw. domestic and world markets
  - Companies with core tech. reign the market
    - → Winner takes all
    - → Importance of 'De Facto Standard' increases



? -2. Changes of IT Paradigm

Industrial Environment

- More rapid and profound globalization
  - WTO, Internet
- Convergence btw. industries advances
- New Industries Emerge
  - WiBro(Wireless Broadband; 2.3GHz Portable Internet), DMB, Home Network Service, Telematics, etc.

? -3. Challenges

- So far Korea has successfully responded to the development and deployments of IT technologies including digital technology and the Internet
- To actively respond to the trends of ICT industry development, we need to have the deepest understanding of the future IT technology and we should make a strategic decision to take opportunities for growth
- In particular, developing new technologies and finding new markets are the most critical challenges to achieve a continuous growth in the IT industry

? . IT839 Strategy

? -1. Value Chain

? -2. Contents

? -3. Expectations

? -1. Value Chain of IT Industry

Mobile Phone Production : $31.5bil.

29.6% of world market(2004)

Government

Industry

New Services (W-CDMA, DMB..)

License, Fare Competition

Prepare for Service

Dev't and Export of New Devices / Contents

Standard, Export Support

Commercial Tech.

Infrastructure Building :

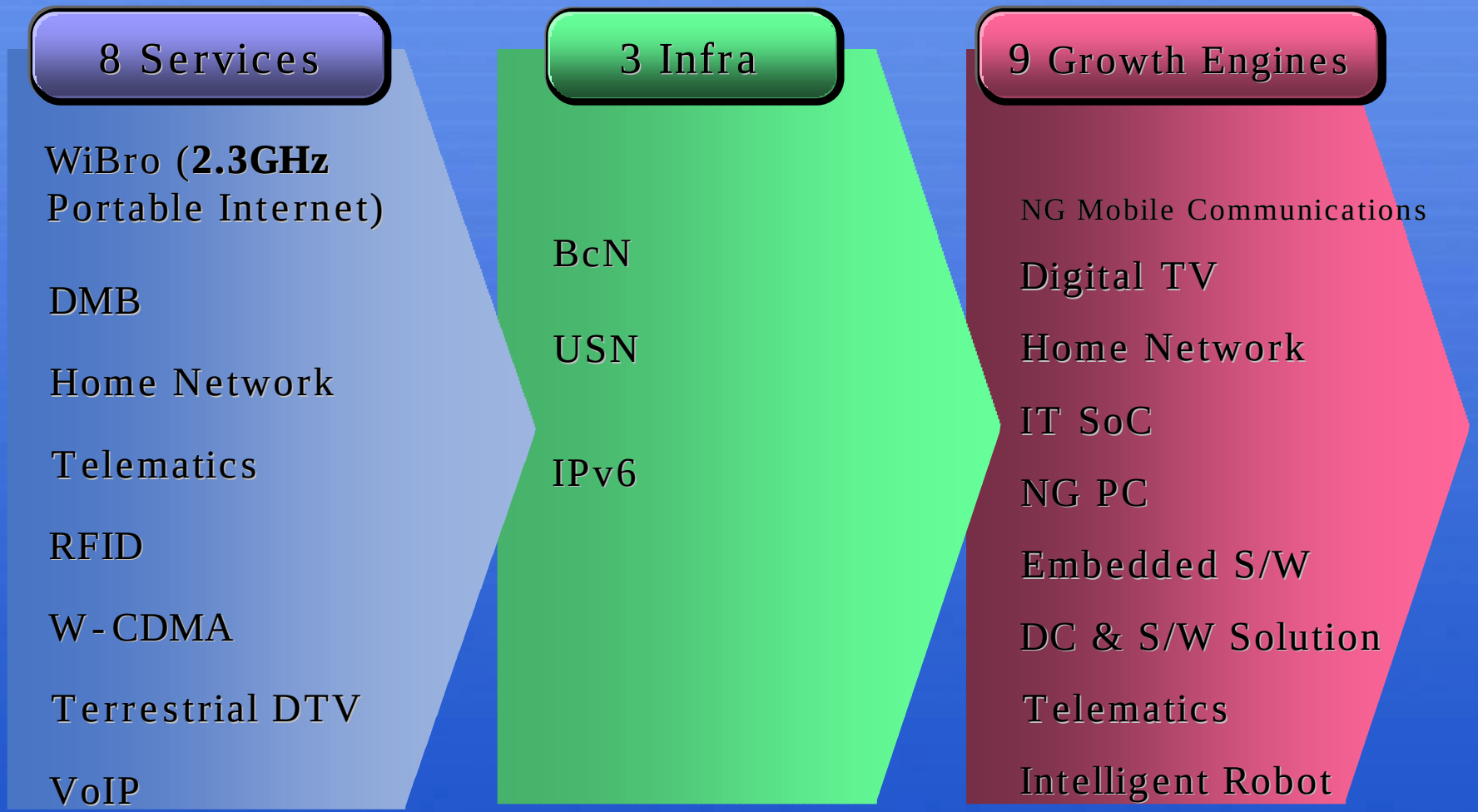
Station, Network..

Policy, Fund

Invest on Facilities

? -2. Contents of IT839 Strategy

Contents of IT839 Strategy : http://www.mic.go.kr/eng/res/res_pub_it839.jsp



? -2. Contents of IT839 Strategy

8 SERVICES	WiBro	A portable internet service that provides a high speed internet connection anytime, anywhere, whether you are on the move or at a standstill
	DMB	Digital Multimedia broadcasting service that provides quality audio and video services anytime, anywhere thru mobile devices such as cellular phone and PDA
	Home Network	A service to realize future home environment in which information home appliances are networked to provide various information services and remote control, regardless of time, space and the kind of device
	Telematics	An in-vehicle multimedia service that offers infortainment as well as location and traffic information via mobile communications networks
	RFID	A service to identify and communicate information on things with an RFID tag. It can be widely used in our lives from management of food, livestock, wastes and environment to logistics, distribution and security services
	W-CDMA	An IMT-2000 service that provides voice, video and high- speed data service in the 2GHz band
	T-DTV	A service to provide high definition and stereophonic sound on a large-sized screen and data broadcasting
	VoIP	A service to convert voice signals to packet data to provide a phone service over the internet

? -2. Contents of IT839 Strategy

Milestones

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

? -2. Contents of IT839 Strategy

3 I N F R A S	**BcN**	**Broadband Convergence Network which integrates telecommunications, broadcasting and the Internet.** **It aims at providing quality services at the speed of 50 to 100 Mbps to 20 million subscribers by 2010**
	USN	**Ubiquitous Sense Network which recognizes and manages information over the Internet thru an RFID tag attached to things**
	IPv6	**To solve address shortage problem under IPv4(32bit scheme) starting from 2006, IPv6 using 128 bit address scheme is expected to be a fundamental solution in ubiquitous network environment.** **By 2010, all-IPv6 based services will be provided**

? -2. Contents of IT839 Strategy

Milestones

Area	Name of project	Plan for 2004	Mid-to-Long Term Goal
Infra-structure	BcN	Develop Tech., Establish Network for R&D Use	20 Million Users ('10)
	U-Sensor Network	Establish Framework, Pilot Project Launch	Realize u-Life ('10)
	IPv6	Surport Pilot Project, Develop Equipment	Switch over to All IPv6 ('10)

? -2. Contents of IT839 Strategy

9 GROWTH ENGINES	NG Mobile Communications	Based on new high-speed packet transmission tech., it will enable users to have a fast and clear access to multimedia information via the existing mobile and Internet networks
	Digital TV	Broadcasting technologies to digitalize production, transmission and display of broadcasting contents, which can provide high-quality program, multi-channel service and various additional functions including broadcasting and communications convergence services
	H/N	Home network refers to core technologies of home automation that controls information appliances and provide TV-based home entertainment services
	IT SoC	IT System-on-a-Chip. A non-memory integrated circuit which is key component that determines the success of IT systems
	NG PC	A wearable PC that has information processing and networking power
	Embedded SW	S/W built in information appliances, vehicles, robots, industrial and medical equipments. It provides smart functions such as H/W control, communications and artificial intelligence services
	DC	Digital Contents and S/W solutions
	Telematics	Telematics is an in-vehicle mobile communication service that offers convenience, safety and pleasure
	Intelligent Service Robot	Network-based intelligent service robot

? -2. Contents of IT839 Strategy

Milestones

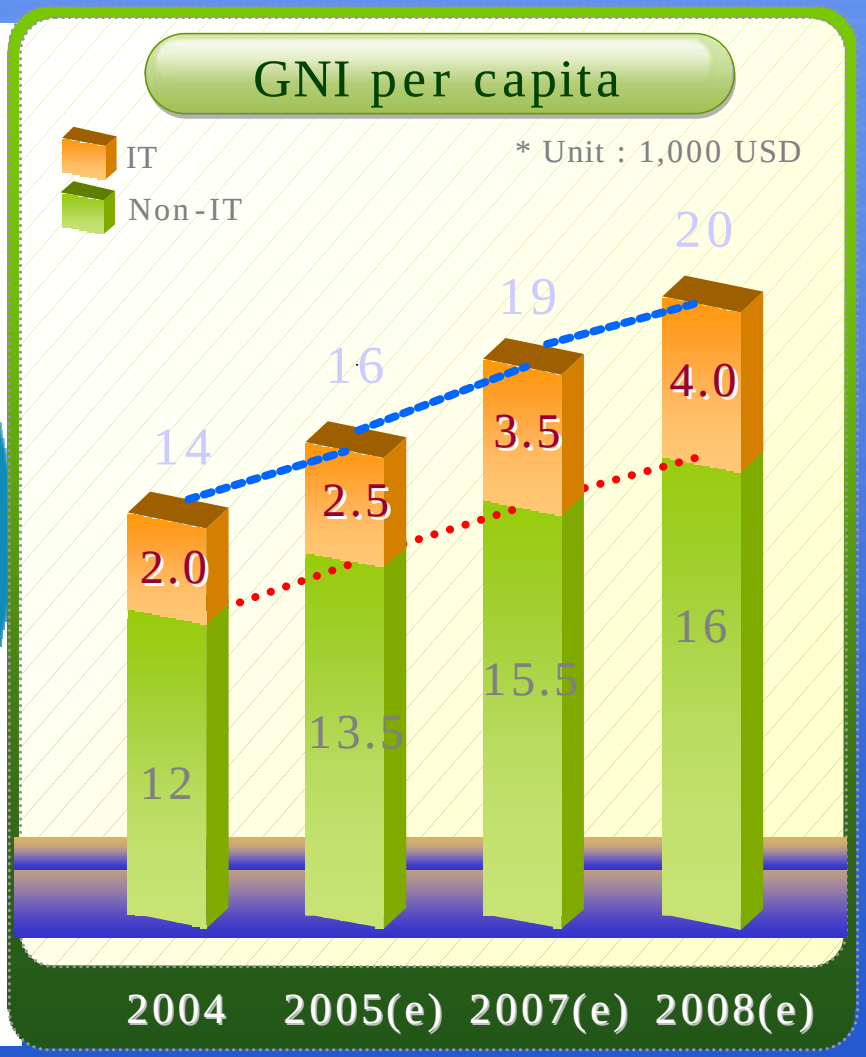
Area	Name of project	Plan for 2004	Mid-to-Long Term Goal
New growth engine	Next-Generation Mobile Communications	Develop Portable Internet Prototype	Develop 4G Mobile Communication Prototype ('07)
	Digital TV	Develop Terrestrial DMB Transmitter-receiver	Telecom & Broadcasting Convergent Service Server/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

? -2. Contents of IT839 Strategy

Broadband IT Korea (Multimedia)

? -3. Expectations

Source : KISDI / MIC



Source : KISDI / MIC

Thank You