# RIPE 51

# Korean Internet Industry

## -Broadband, BCN, and Wibro Deployments -

Jinhyoun Youn
2005.10
jyoun@kt.co.kr

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- Brief History and General Trends
- Broadband and BcN
- KT Services including Wibro

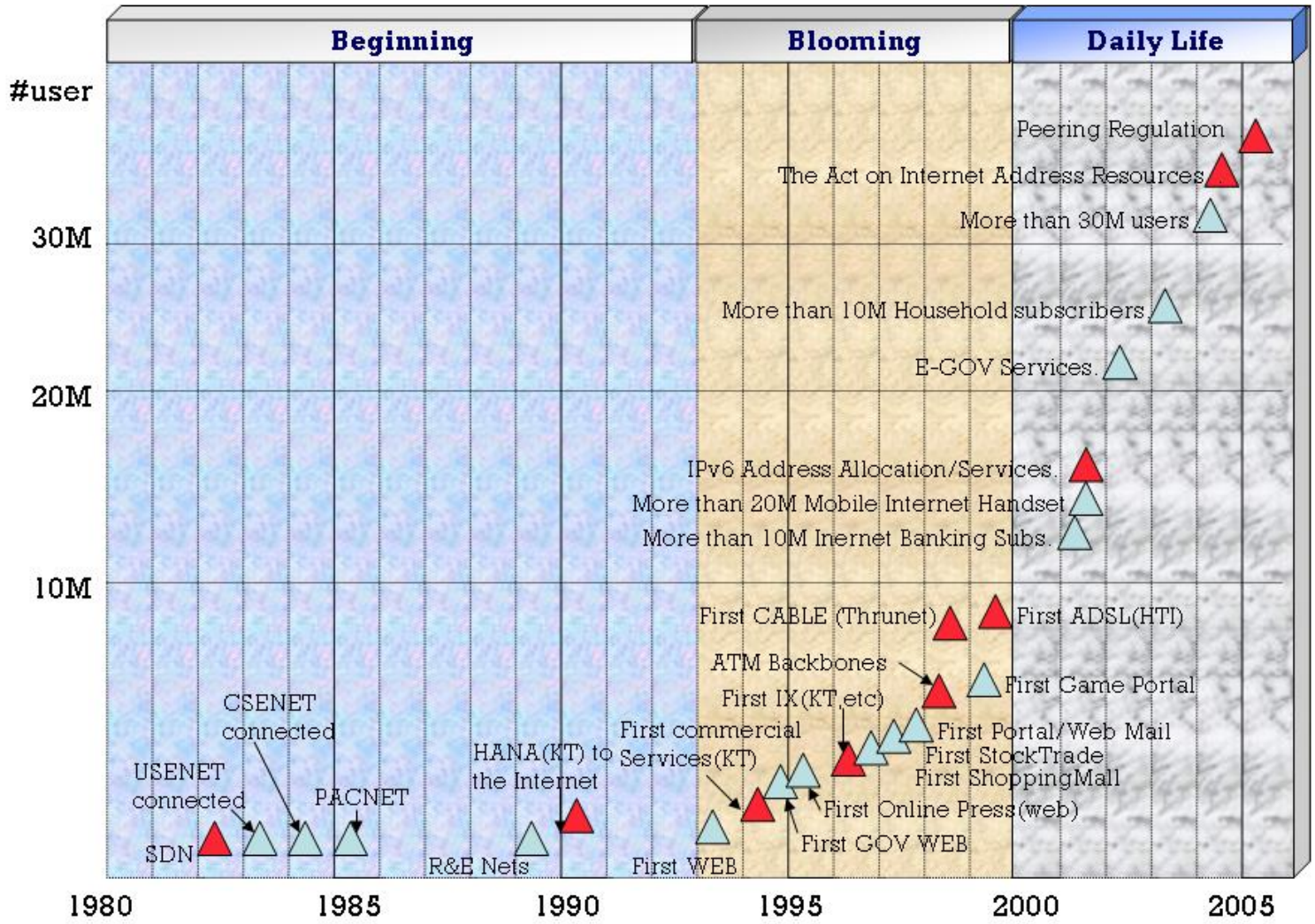
# Brief History and General Trends

- Internet History in Korea
- General Trends: Market situation and drivers

# Brief Internet History In Korea

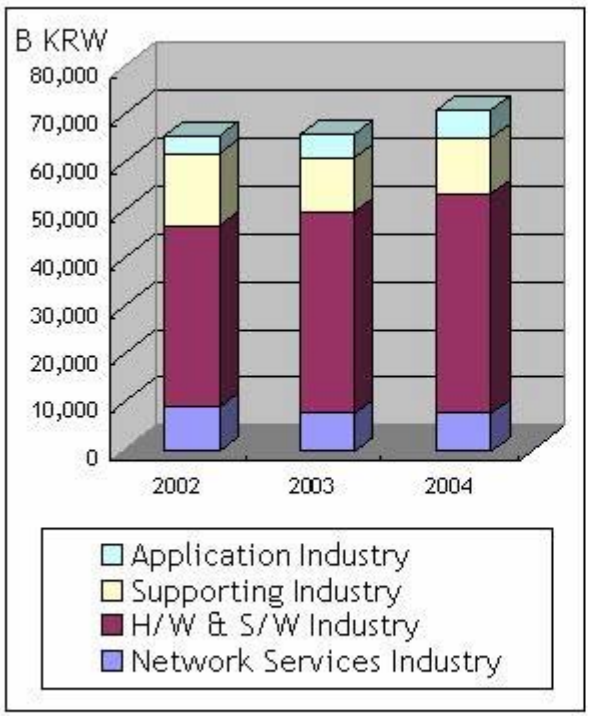
- Before 1990
  - Doing test and researches on TCP/IP and Applications like usenet, mail and so on
- 1990-1993
  - Doing intensive researches on Internet and
  - Research and Education Community Networks appeared
- 1994-1997
  - Building national-wide IP Infrastructures by ISPs
  - Starting many of the first things in Korea: ISP, Online-XXX
- 1998-
  - Starting Broadband Services
  - Boom of the Internet PC Cafes

# Brief Internet History In Korea(2)



# General Trends: Market Situations

Revenue of Korean Internet Industry

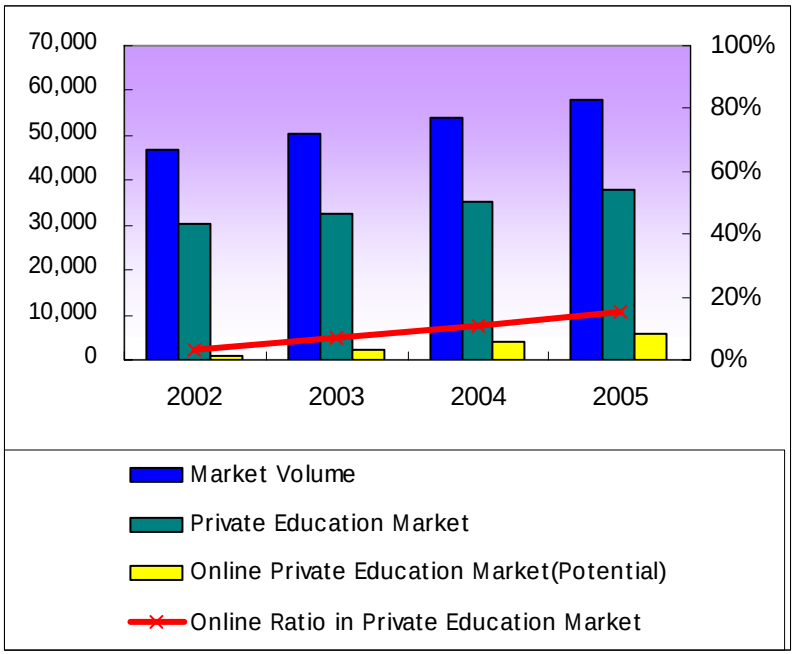



Source: KAIT Monthly Report(Dec. 2004)

- Internet market is still growing
  - Though network service industry is obviously shrunken
  - Network HW Market is also shrunken, but setop box/end user handset market is increasing.
  - In application industry, entertainment and portal market is rapidly increasing
- E-commerce is also growing
  - Relatively B2G and B2B market is growing faster than B2C and C2C market

# General Trends: Market Drivers(1)

**E-Learning Ratio In Private Education Market**




**Source: KEDI/ White Paper Internet Korea/NCA)**

- E-Learning
  - Education market is growing as well as E-learning
  - Learning Management System and Learning Content Management System
  - EBS VOD Services(by EBS and MOE)
    - Started from 2003.10
    - Internet Service 2004.4
    - Daily Web Access: over 120M users
    - Daily VOD Download: over 145,230 as of Oct.2004

# General Trends: Market Drivers(2)

**E-Sport Related Market Revenue**

| | 2004 | 2005 | Growth Rate |
|---|---|---|---|
| Broadcasting | 158.4 | 192.9 | 22% |
| Game League/Championship | 37 | 106.4 | 188% |
| Sponsering(Marketing) | 67 | 83 | 24% |
| ETC | 3 | 3 | 0% |
| GOV/Ass. Support | 1.5 | 10 | 567% |
| Total | 267 | 395 | 48% |

**Source: SERI,(CEO Information 205, Sept.2005)**

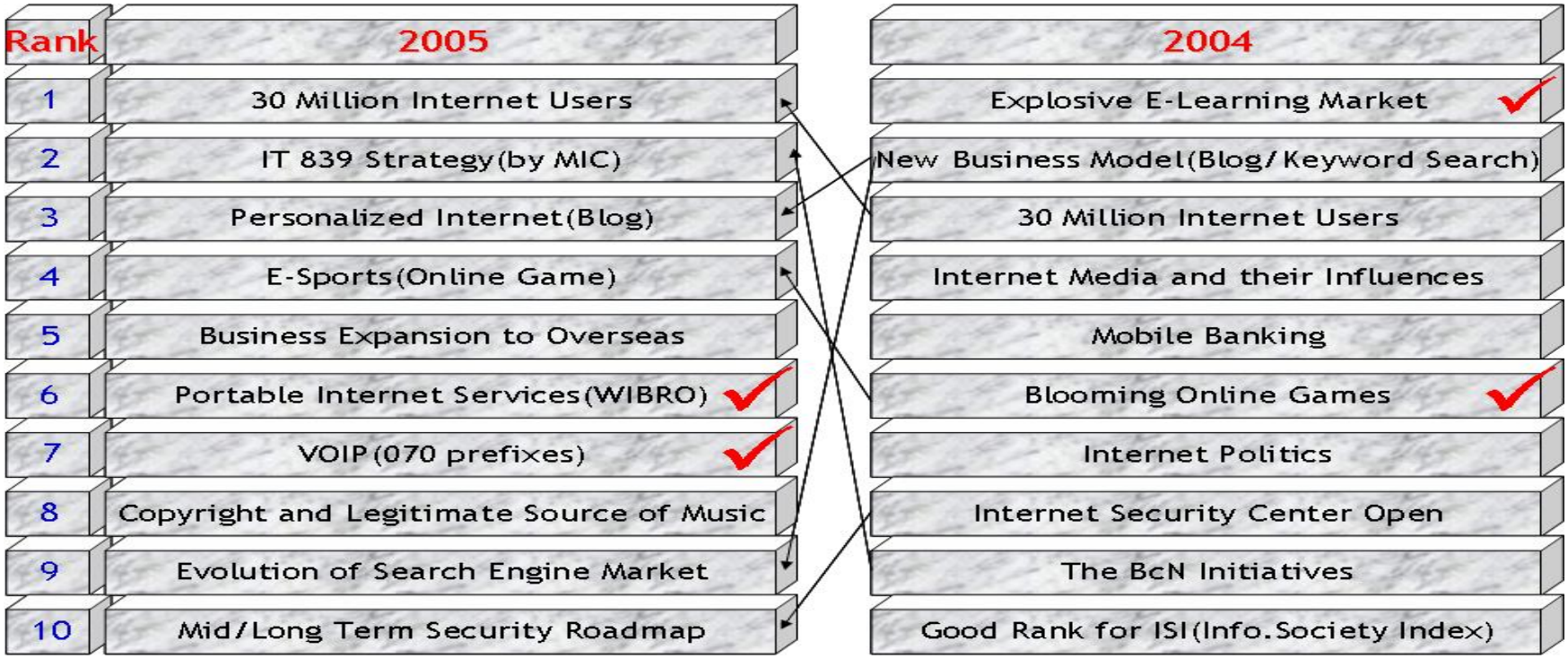
- Game Industry
  - 6.209 T krw market forecasting till 2007
    - Avg 10% annual growth in Game industry
    - Avg 33% annual growth in Online game industry

    (source: White Paper on Internet, NCA)
  - Double effect with Korean Wave in Asian area
- E-Sports
  - The initial stage as an independent industry based on the strong online-game/broadband market background
  - Vast impacts expected on various business including broadcasting, and enterprise marketing/advertisement

# General Trends: Market Drivers(3)

- Personal Communications
  - Unique communication tools like Cyworld, Daum and so on
  - Blog Services like any other countries
- Keyword/Knowledge based search and Advertisement market
  - Naver.com: Knowledge based DB !
  - Empas.com: Searching within all other search engines !

# General Trends: Domestic TOP 10 NEWS



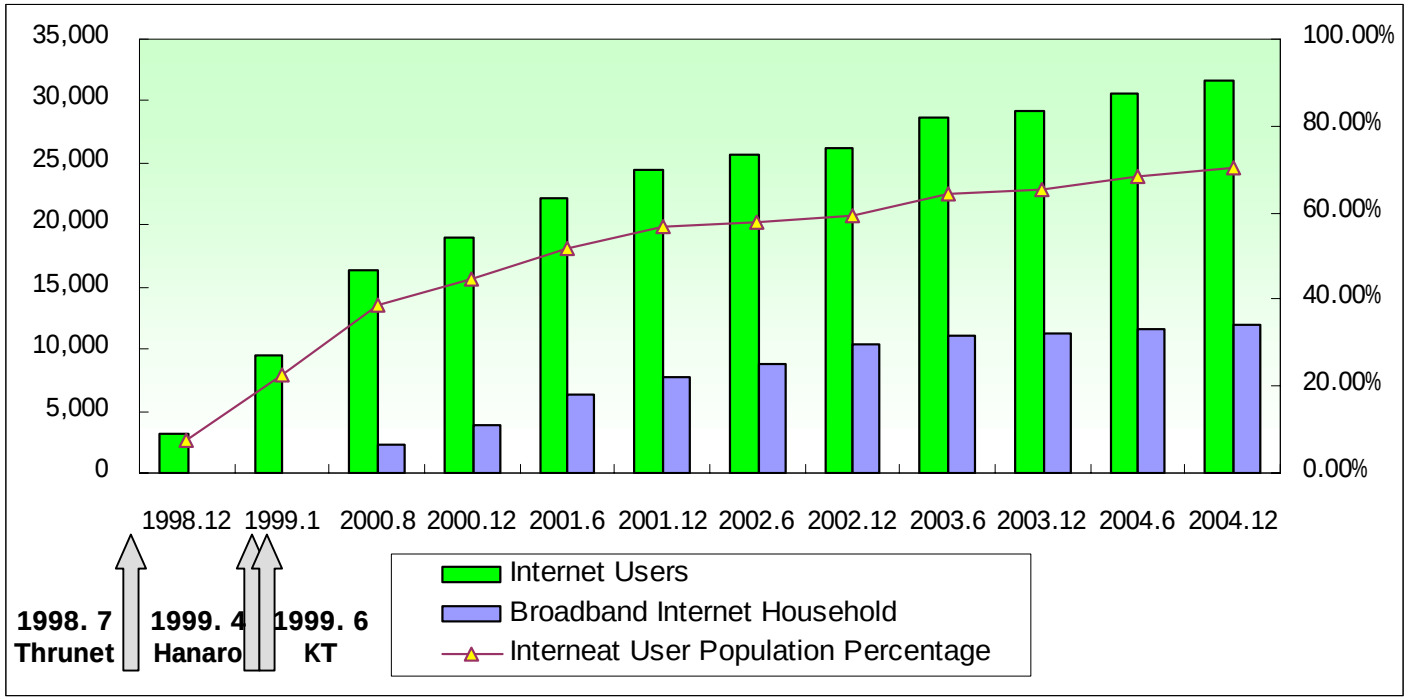

Source: www.nca.or.kr

- Industry issues, and political/social issues are covered

# Broadband and BcN

- Broadband Services in Korea
- Beyond Broadband
- Broadband Convergence Network(BcN)
- IT 839 Strategy by Ministry of Information and Comm.

# Broadband Services in Korea




<Source: http://isis.nida.or.kr>

- As of June 2005,
  12,260,915 households are connected to Broadband access
- As of Dec. 2004,
  76.7% of total households are connected to Broadband access

# Broadband Services(2)

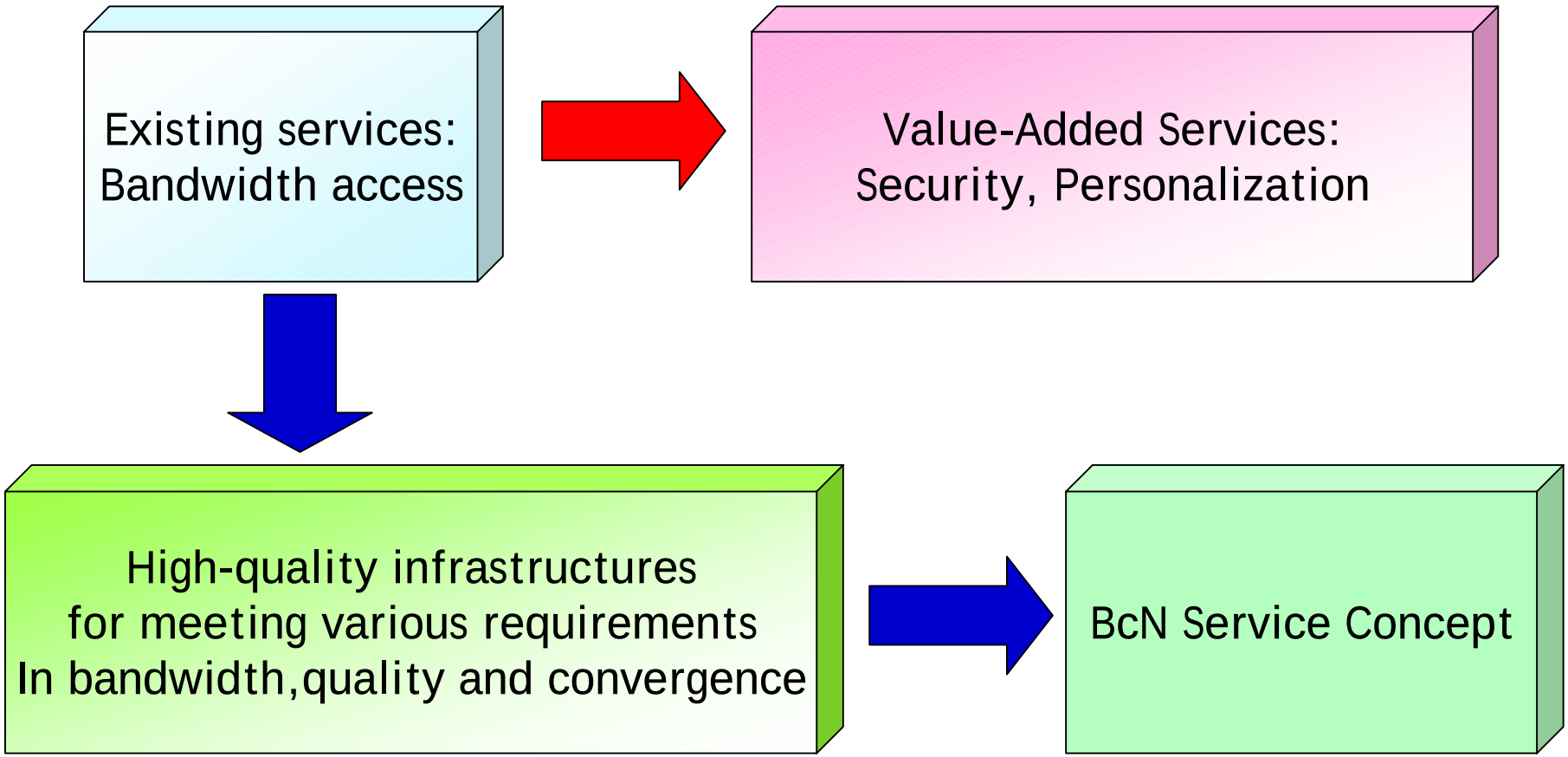
## Considerations in 2005

- Market saturation and heavy competition
- Traffic explosion and CAPEX/OPEX burden
- Higher customers' expectation/sensitivity on service quality
- Convergence issues between communication businesses:
  e.g. broadcasting and information services, wired and wireless services, etc.
- Regulations and a role as a public goods

## What required at the moment

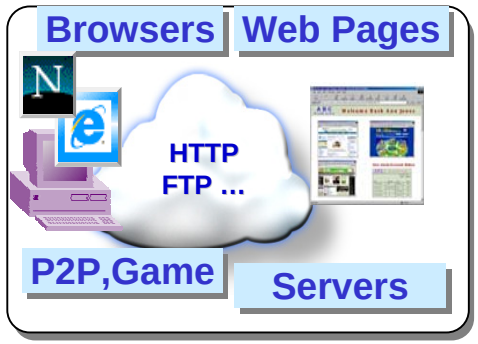
- More value added services to raise ARPU and overcome the tough competition
- More bandwidths and service quality supporting for users
- Large-scale user handling methods and quality-control methods
- Strategic approach for convergence services

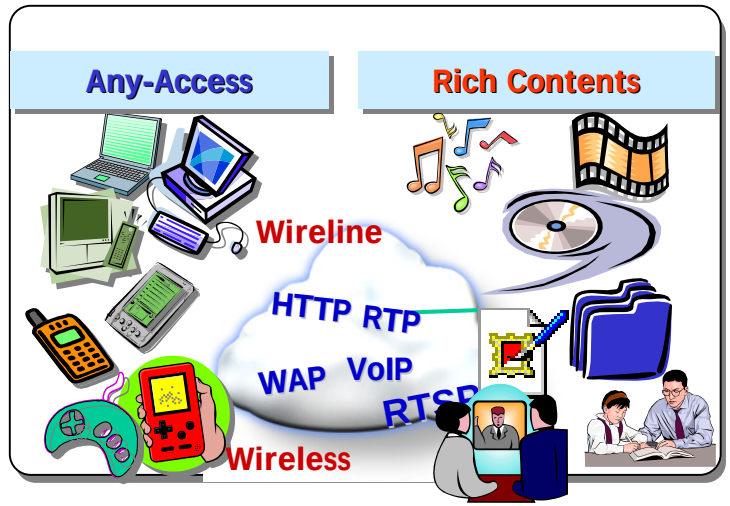
# Beyond Broadband



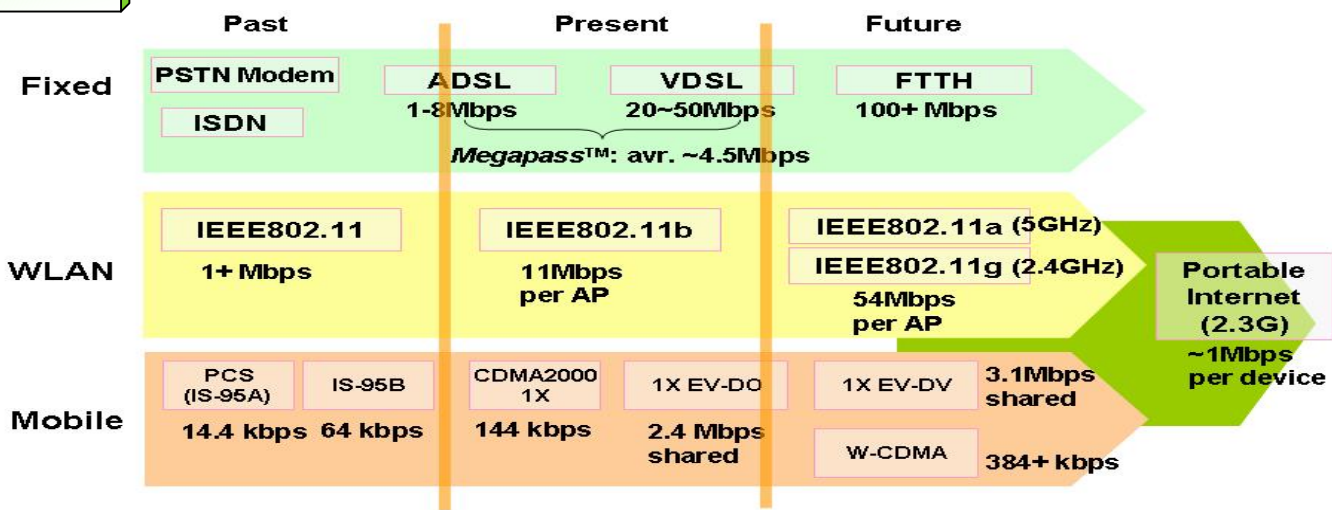
# Beyond Broadband(2)

## Service Features



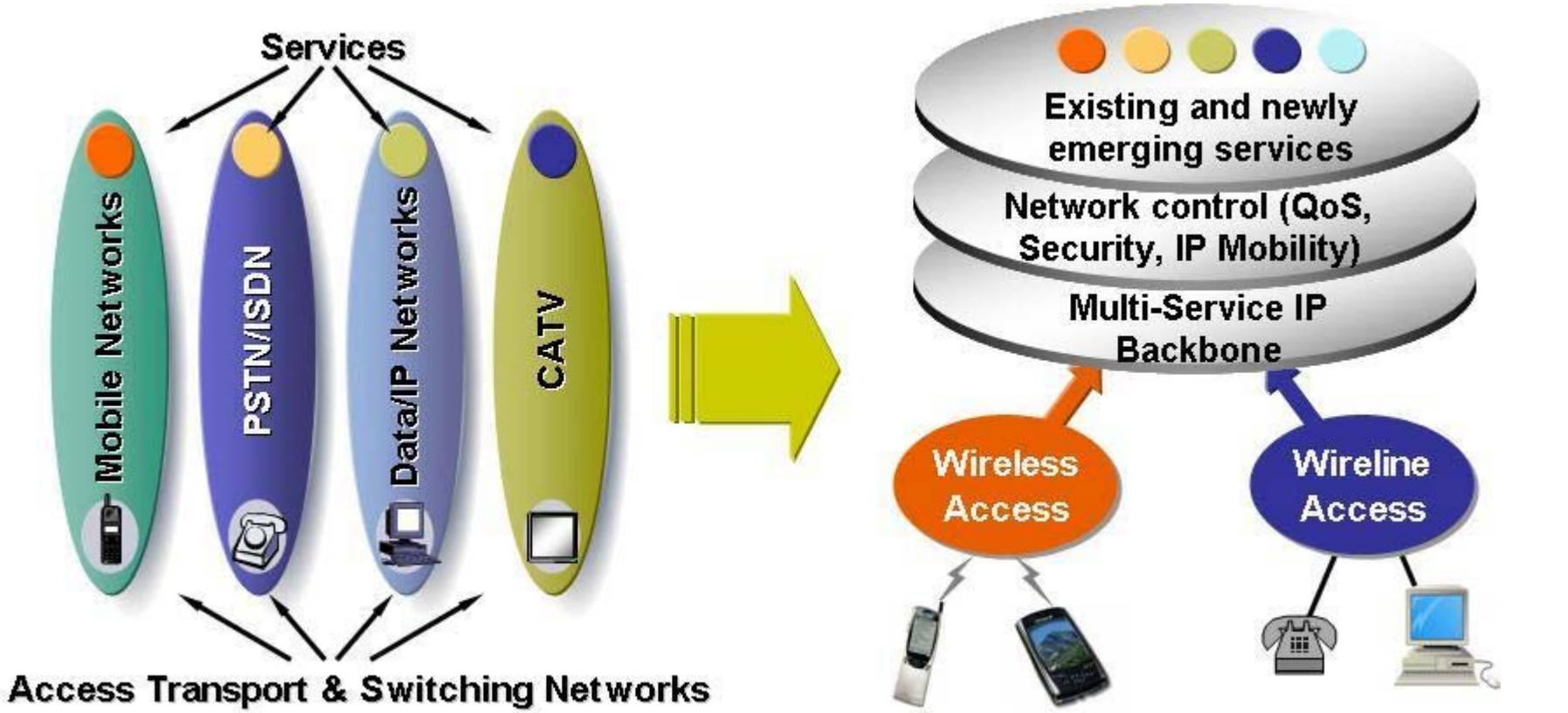




## Access Networks



# Beyond Broadband(3)

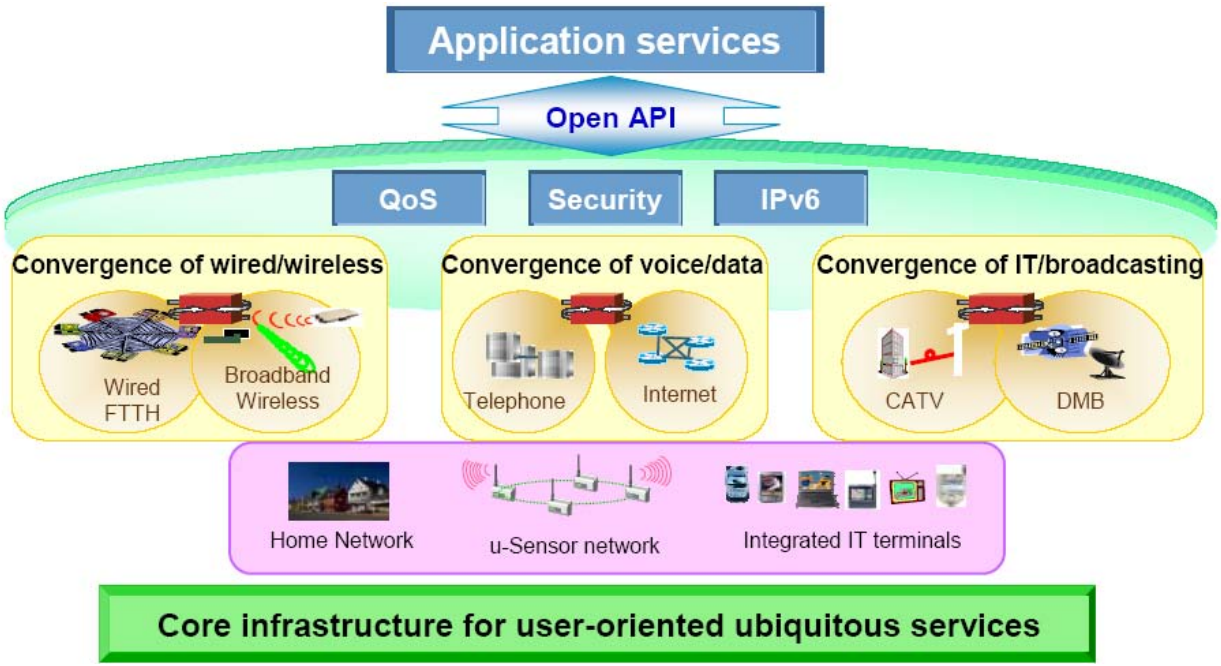
## Convergence Infrastructure




The basic concept of BcN

# Broadband Convergence Network(1)

**BCN:**
**high-quality broadband multimedia services integrating telecom, broadcasting, and Internet seamlessly at anywhere, anytime, and using any devices**



# BcN(2)

- BcN has been a conceptual network so far
- BcN Initiative was formed and try to implement the BcN concept stage by stage
- Softswitch is the main component of the pilot network
  - Service profile management and service(call) admission control will be key factors
- Primary services are at the moment
  - Packet Voices and Video Phone
  - A service which deployed independently can be classified as BcN Services : IP Broadcasting(IP-Media)
- The first pilot network is started to service in this month but with restrictions
  - partly QoS involved
  - IPv6 may not be involved in this test

# IT 839 Strategty

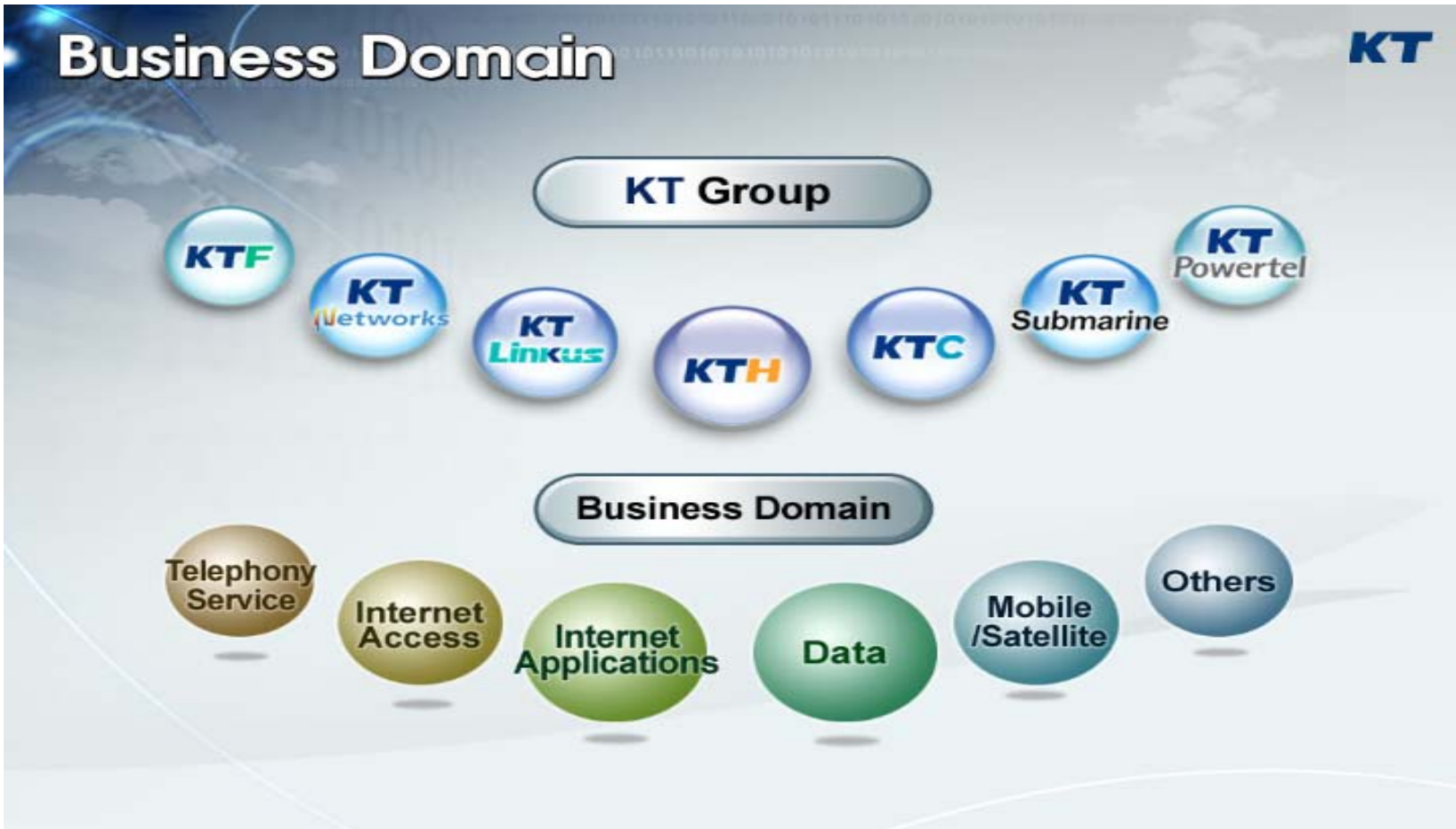
- Developed by Min. of Information and Communication
- Roadmap to the next-generation IT society
- 8 new services, 3 Infrastructures, and 9 Growth engines

| 8 new services | 3 infrastructures | 9 growth engines |
|---|---|---|
| Wibro<br>DBM<br>Home network<br>Telematics<br>RFID-based Service<br>W-CDMA<br>Terrestrial DTV<br>IP Telephony | BcN<br>USN(U-Sensor)<br>IPv6 | NG Mobile Comm.<br>Digital TV<br>Home network<br>IT Soc<br>NG PC<br>Embedded SW<br>Digital Contents & SW<br>Telematics<br>Intelligent Service Robot |

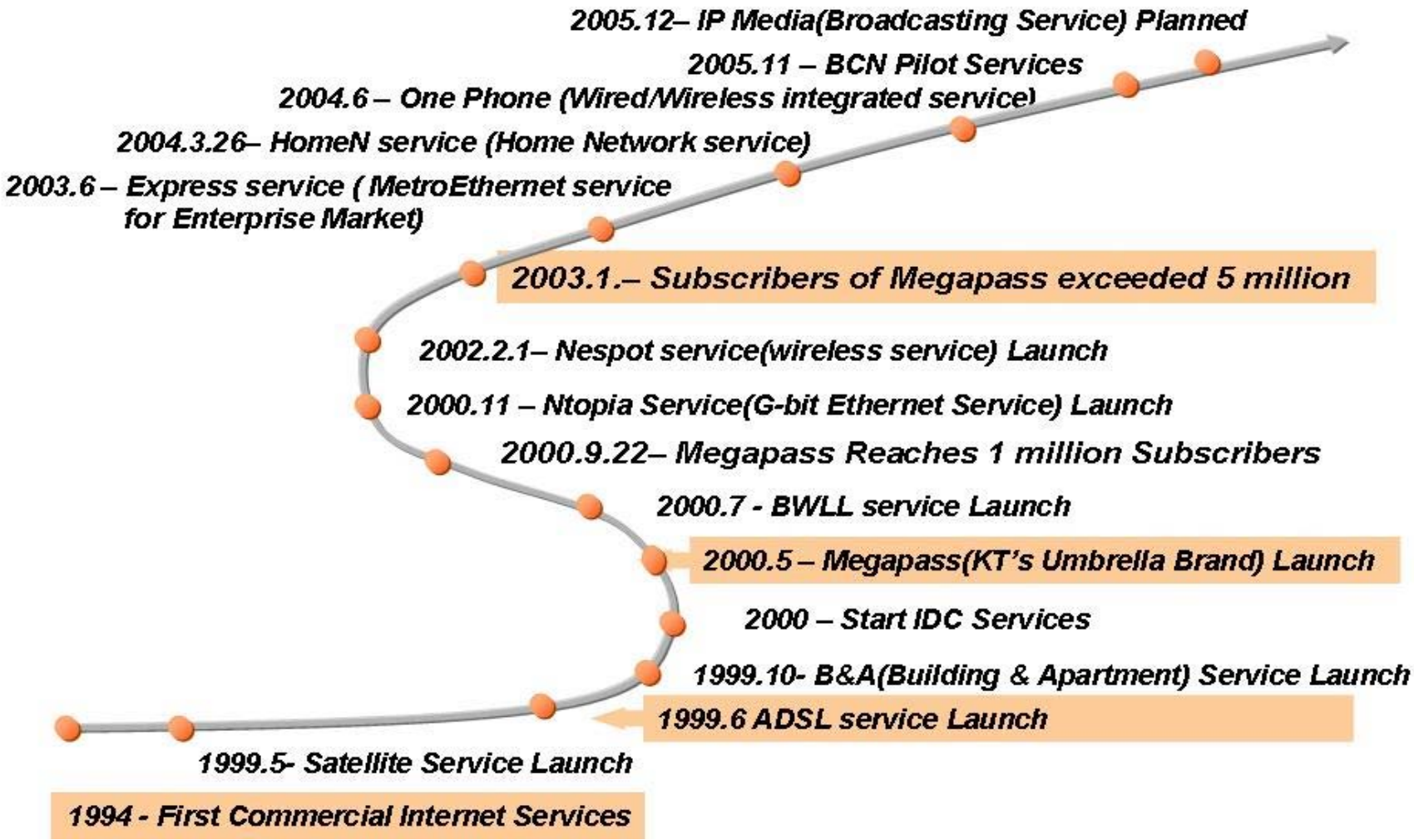
# KT Services

- KT Business Domain
- KT Internet & Broadband Services
- KT Wibro Service

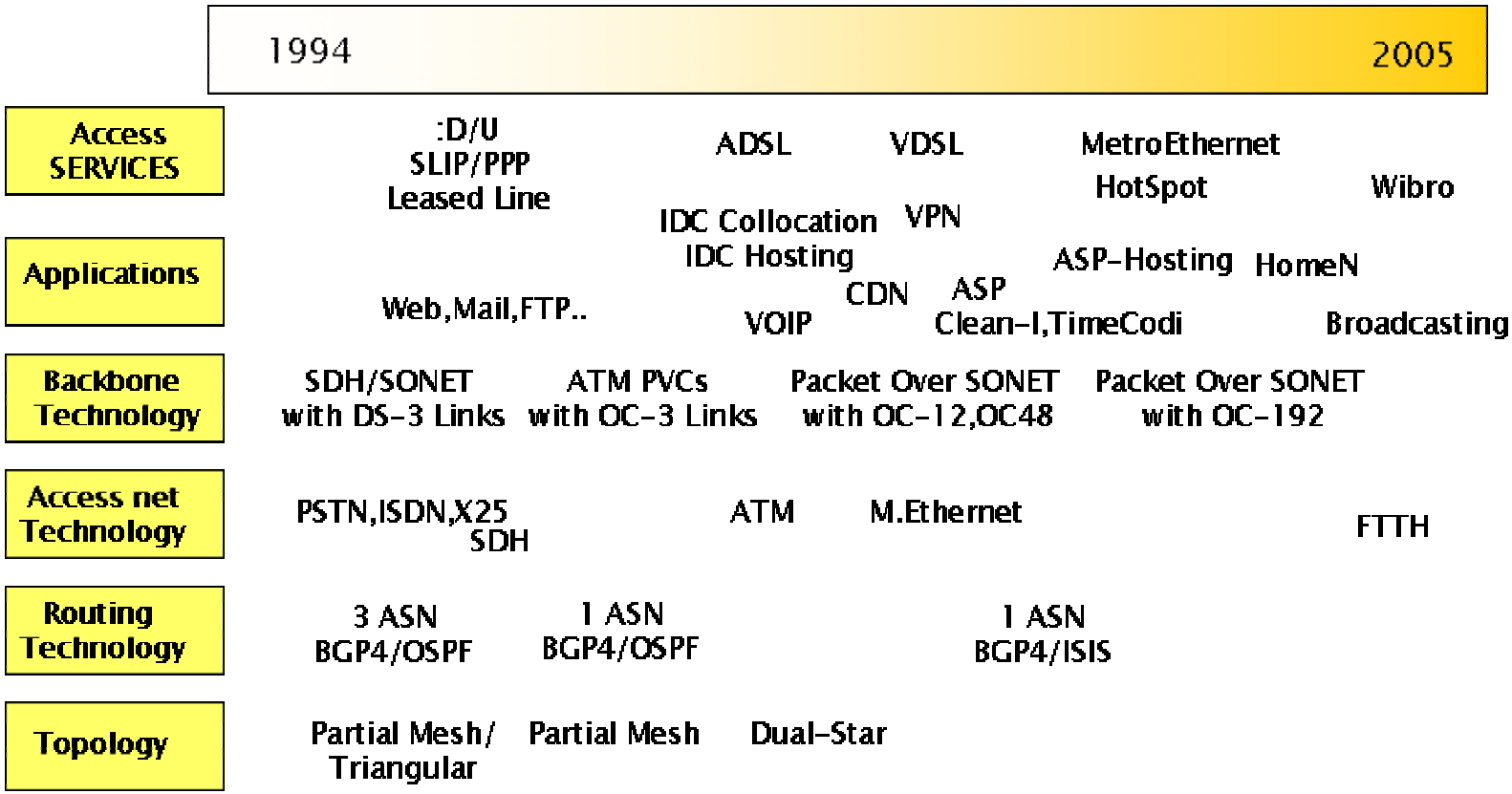
# KT Business Domain



# KT Internet Business and Services

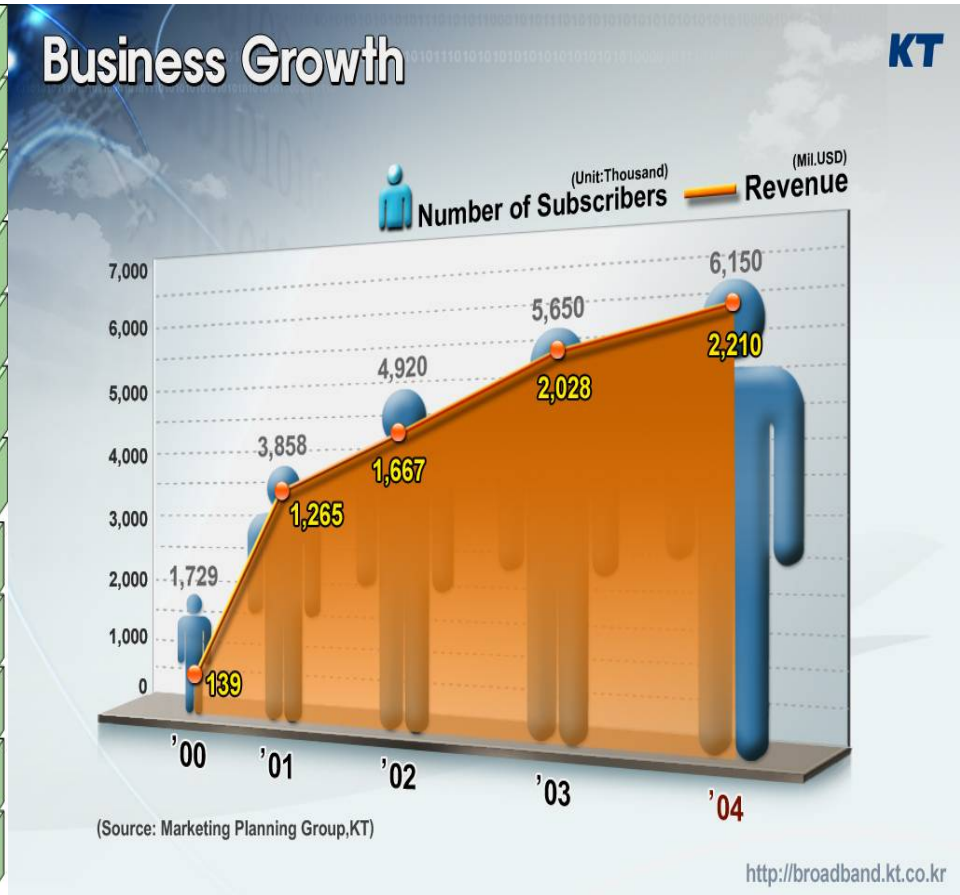


# KT Internet Backbone Evolution



# KT Broadband Service and Status

| | | | |
|---|---|---|---|
| Basic Broadband Services | ADSL | Download 2-8Mbps | Residential |
| | VDSL | Symm. 10-50 Mbps | Densely populated |
| | Ntopia | Symm. 10-100 Mbps | New Apt |
| | BNA | Symm. 2Mbps | Old Apt |
| | Satellite | Download 1Mbps | Rural,Islands |
| | Express | Ethernet 1-1000Mbps | Med. Size Enterprise |
| | Nespot | IEEE 802.11b 11Mbps | Residential, Hotspot zone |
| Value Added Services | Clean I | Web blocking Service | L2TP/GRE |
| | Time Cordi | Access Time Control | L2TP/GRE |
| | SWING | WiFI+CDMA | IEEE 802.11b, CDMA |
| | IP TV | Broadcasting,VOD | IP Multicast |
| | VOD | VOD | CDN |



# KT Wibro service:Introduction

- Service requirement changes are the main drivers of BcN as well as Wibro
  - From best effort to QoS based service
  - From fixed terminal to mobile terminal
  - From narrow mobile bandwidth to broad bandwidth
- Wibro is regarded as a new service to improve the depressed market situation
  - Create a new revenue in communication service market and related IT market as well
- 3 players got the license for 2.3GHz-Wibro service
  - KT, the largest Telco and Broadband service provider
  - SKT, the largest Mobile communication service provider
  - Hanaro, the 2nd largest Broadband service/Local telephony provider

# KT Wibro : concept and strategy

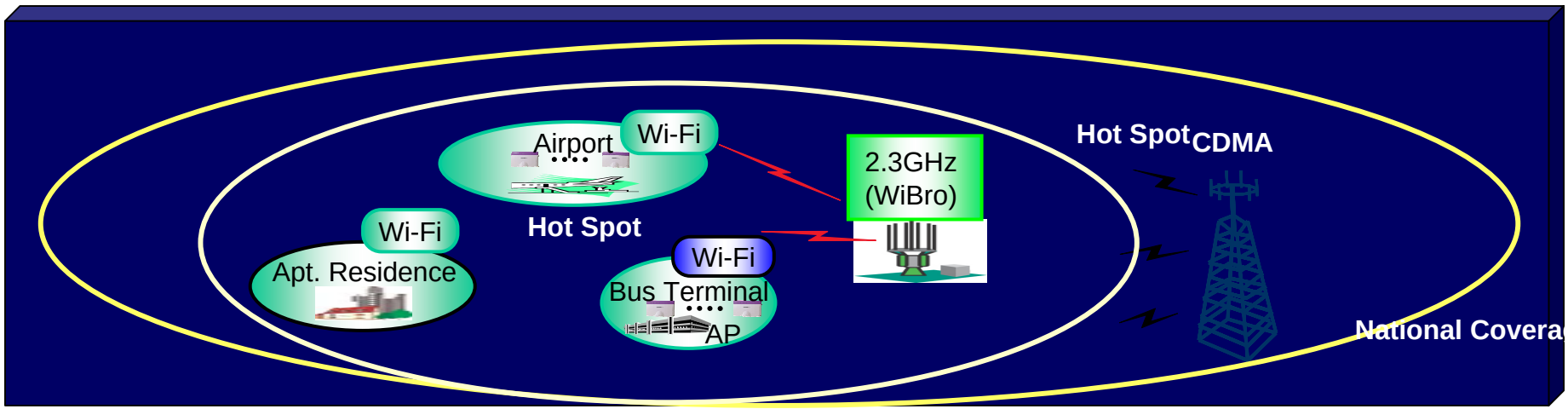
- Goal

  Provide high-speed, low-cost and various types of contents delivery services in indoor/outdoor environment

  - With Convergence(ubiquitous) Terminal
  - At Metropolitan Area
  - Lower cost and
  - Open IP environment
- Business Strategy
  - Make use of the existing IP infrastructure and the existing services
  - Different device strategy per stage:
    - Initially Laptop/PDA and dual-mode smart phone
    - Eventually multi-mode smart phone and ..

# KT Wibro service positioning(for mobility)

| 1999 | 2002 | 2003-2004 | 2005 |
|---|---|---|---|
| xDSL Launch | Wi-Fi Launch | Wi-Fi Enhancement | WiBro Launch |




**Cellular**

- Mobility
- High cost per user
- Low speed
- Limited throughput
- Limited adaptability to various terminals

**User Needs**

- Low cost
- Mobility
- High Speed
- Data + Voice
- More bandwidth
- Various terminals

**Wi-Fi**

- Low Portability
- Small coverage
- Low cost
- High speed
- Laptop, Desktop

# KT Wibro : concept and strategy(2)

## Existing Internet Service

**Fixed**

- Information (Web surfing, e-Mail, etc.)
- Entertainment (Movie, VOD, etc.)

Others: e-Stock, e-Banking, e-Learning

**Wireless**

- Short message service (SMS)
- Entertainment (VOD, Simple game)
- m-commerce (m-Commerce)

**Evolution**

Multimedia

Convergence

Fixed-Wireless Link

## WiBro Killer Applications

**Core Service**

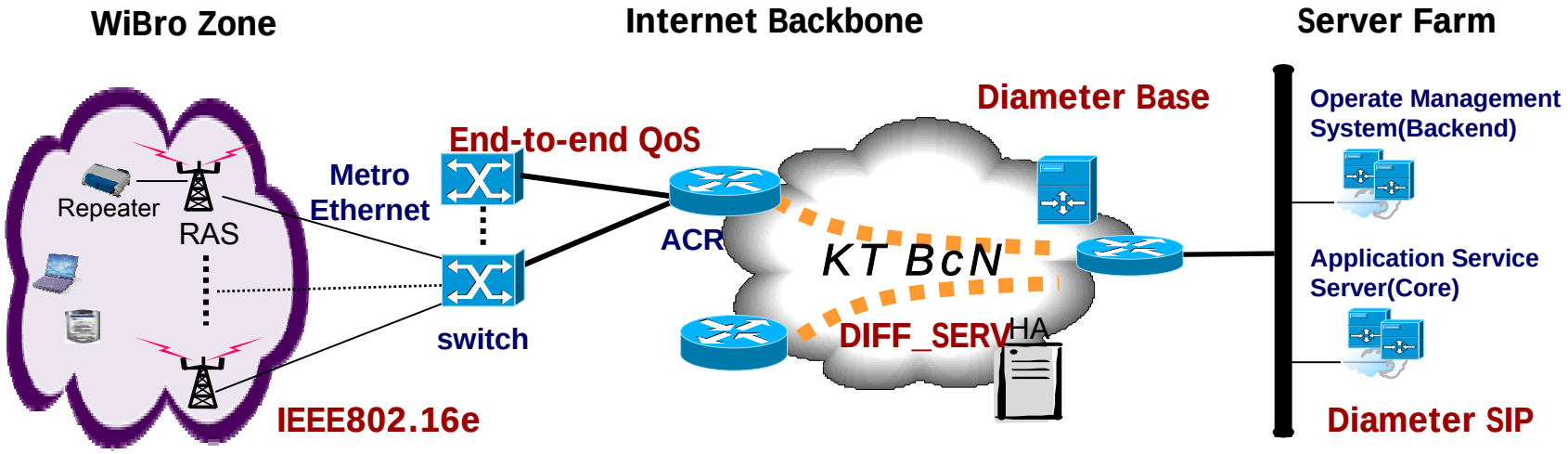
- MMS (Multimedia Messaging Service)
  - ✓ High Quality Image Mail/Messaging
- Push-type Service
  - ✓ Group Image Chatting, Ad & Coupon
- Game : IP based Network Game
- LBS (Location Based Service)
  - ✓ Applied Services based on LBS
- IP Multicasting Service
  - ✓ HD VOD, Real Time Play, Movie

**Package Service**

- Wi-Fi Package Service
- CDMA Package Service
- DMB Package Service

| Device Type | Early Stage | Developing Stage | Mature Stage |
|---|---|---|---|
| Laptop, PDA | PCMCIA ,CF, SD card, WLAN roaming capability | One chip | |
| Smart Phone | Dual-mode (WiBro+Wi-Fi or WiBro+CDMA) | Device with dedicated or multiple functionalities, Multi-mode (WiBro + Wi-Fi + CDMA ) | |

# KT Wibro : Network deployment




- In-progress IEEE 802.16e for Radio Access Network is being developed
- End-to-end QoS will be supported with BcN architecture
- A new Diff-Serv based backbone network with MPLS is almostly deployed.(Nov 2005)
- Most of Access Authentification will be EAP-AKA but Diameter Base and SIP is being developed

# KT Wibro : Network deployment

- Service Roadmap
  - Testbed : Oct 2005
  - Pilot Service at APEC summit Busan: Nov 2005
  - Trial Service: 1Q 2006
  - Commercial Service: 2Q 2006

# Concluding Remarks

- BcN and Wirbo at KT
  - In the pilot stage at the moment
- Through the operational experiences
  - More technical features will be implemented: e.g. IPv6, MIP and so on
  - Interaction between Call admission control and backbone/network resource management will be carefully defined
- In KT infrastructure,
  - Single-sign-on features across Broadband, Wifi, and Wibro will be deployed

- Thanks and

  contact to jyoun @ kt.co.kr if any question