

A Vision for Wireless Broadband Service

'WiBro'

2005.7

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The KT logo is rendered in a bold, blue, sans-serif font. The letters 'K' and 'T' are connected at the top. The background of the entire slide is a photograph of a young girl with dark hair lying on her back in a vast, arid, orange-brown desert landscape under a clear blue sky. In the distance, a small white building is visible on the horizon.

네트워크로 하나되는 나라
Let's **KT**

Outlines

- I. Introduction: What is WiBro?
- II. Business Environment
- III. Business Strategy
- IV. Service Plan

High Speed Internet in Your Pocket!

“Wired Internet + Mobility”

“While on the Move”

- Nomadic Service in the early stage – Low Mobility

“Anywhere at Anytime”

- Seamless Anywhere – High Mobility

“High Data Rate”

- 1 Mbps/User – Even Higher Later

“Low Access Cost”

- \$30~\$40/Month – Mixture of Meter Rate & Flat Rate

User Terminal



Phone Type



PDA



Handheld PC



Laptop



Laptop connected to Phone

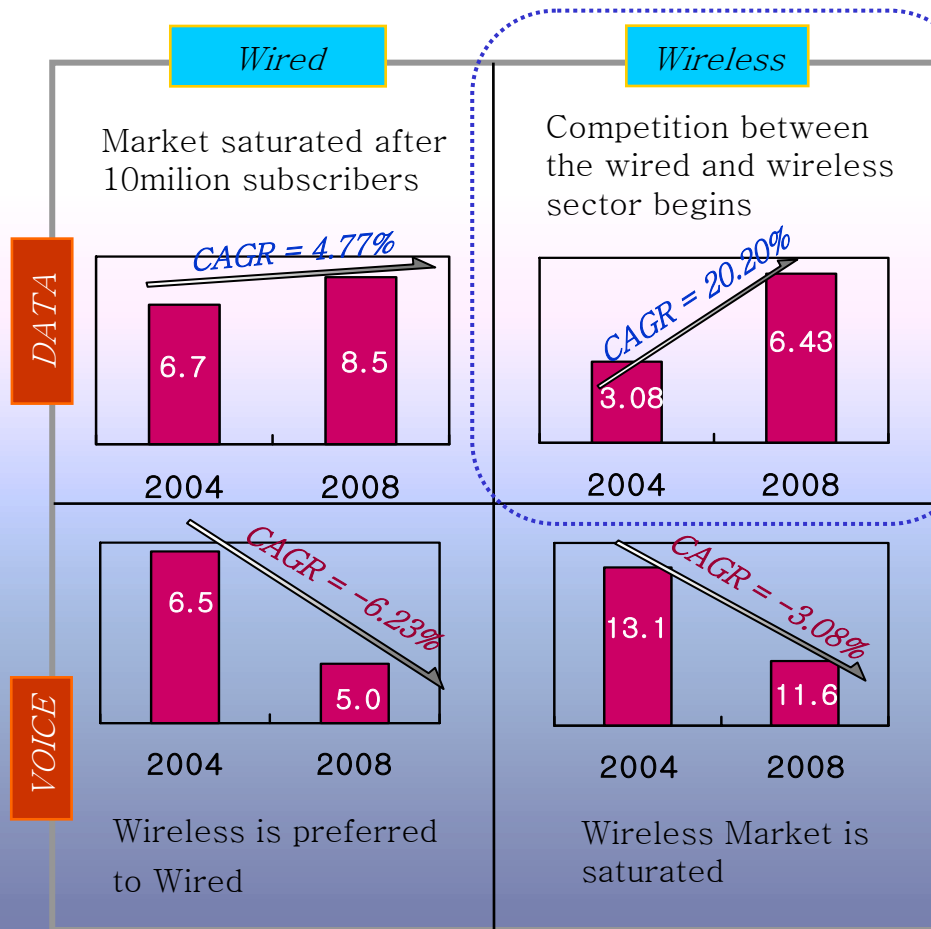


Laptop or PDA with PCMCIA modem card

II. Business Environment

1. Korean Wireless Data Market

- Wireless Data Market will expand from 3 tril. Won in 2004 to 6 tril. Won in 2006¹⁾



- Wireless Data Market expands rapidly.
 - 0.18 tril. Won(2000) → 1.9 tril. Won (2003)
 - 3 tril. Won(2004) → 6 tril. Won(2008)
- WiBro Market in 2008 : > 1 tril. Won (assuming 20% market share)
 - EV-DO (meter-rated billing) takes over 10% market share in 2 years.

Wireless Data Market Expectation

Institution	Rate of Growth(2005~2010)
OVUM	20% (National)
IDC (2003)	31% (International)
ARC (2003)	45% (National)

< IT Market Analysis (KISDI) >

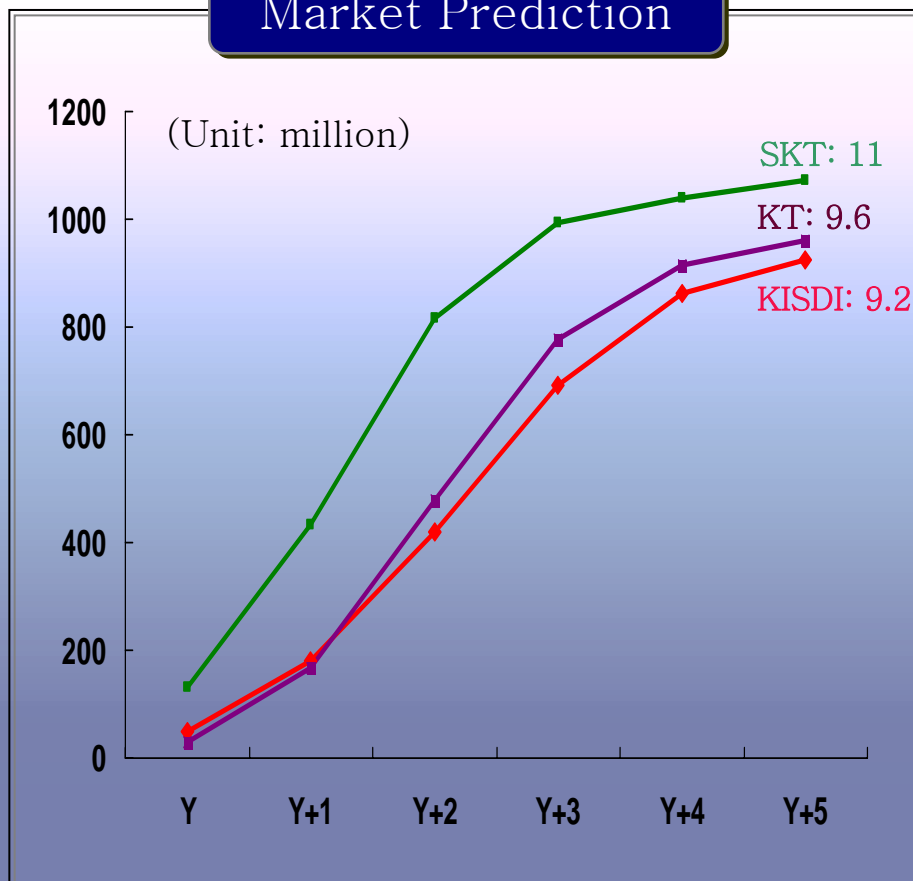
¹⁾ Reference : KT Business Management Research Lab

II. Business Environment

2. WiBro Market

- ❑ Market Size in Y+ 5: 9.2~10.7 mil. subscribers
- ❑ WiBro will create 270,000 new jobs, and the gross product of 18 tril. Won
- ❑ Systems and User Terminal Market is greater than 10 tril. Won
 (1 Device per Home → 1 Device per User → 1 Device per Appliance/Machine)

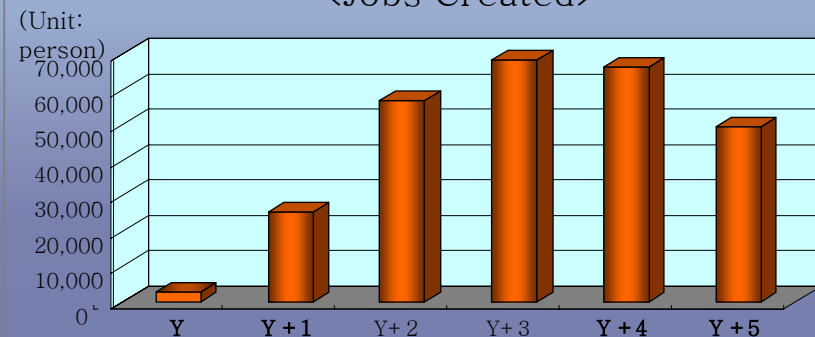
Market Prediction



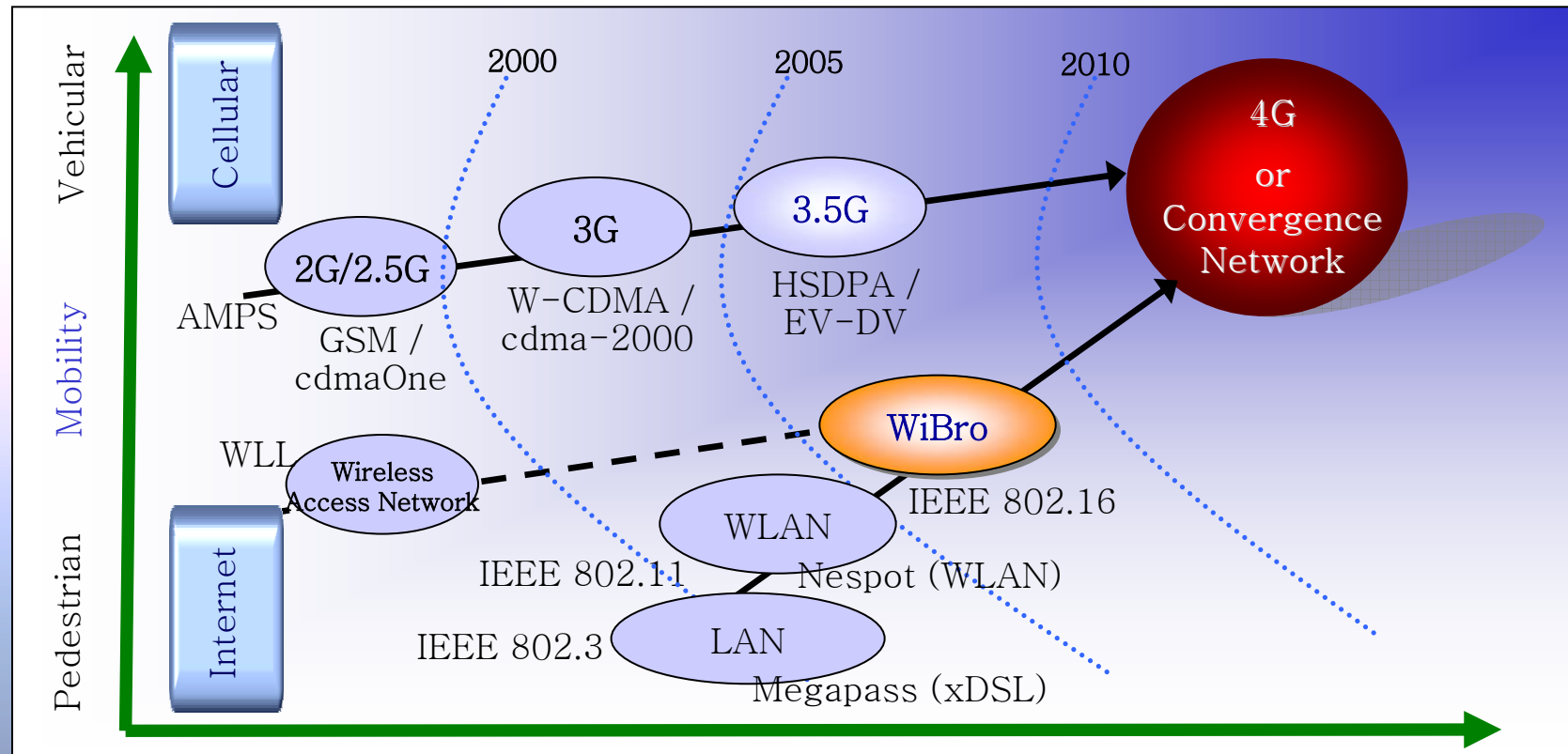
Economical Effect

Gross Product	17.98 tril. Won
Value Created	7.43 tril. Won
Total Export	6.28 tril. Won
Total Import	4.63 tril. Won

<Jobs Created>



(Reference : ETRI, IT Industry Trend Analysis, 2003.10)

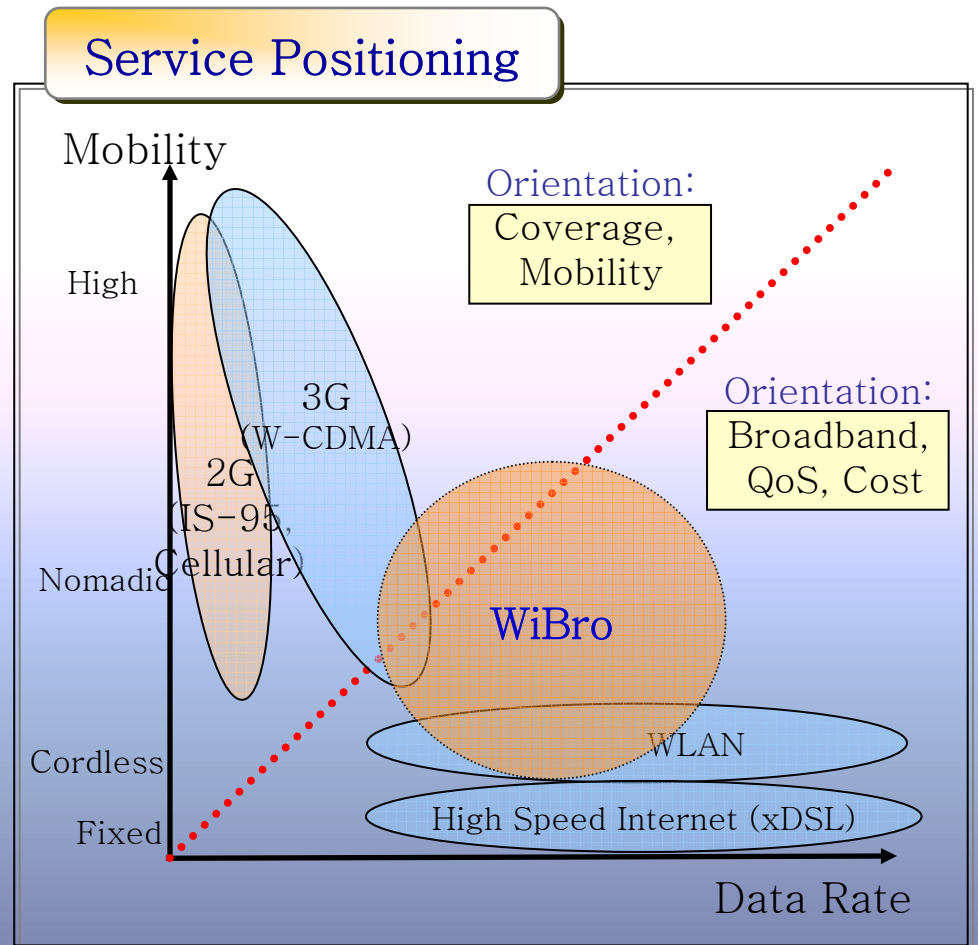
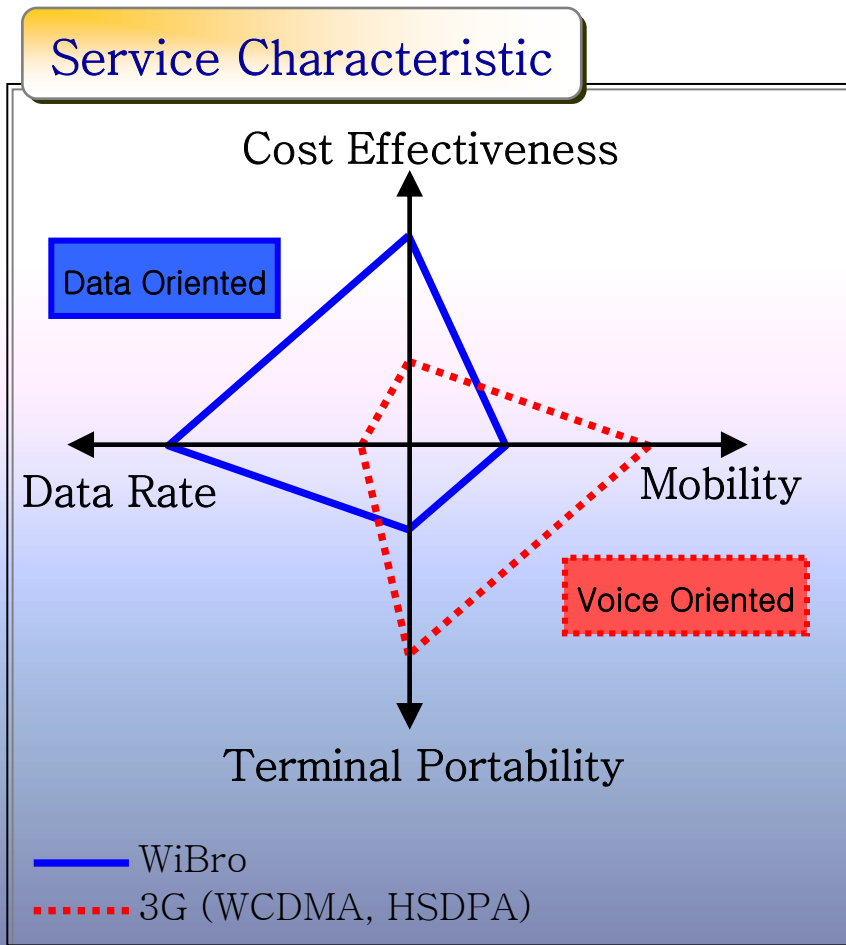


❑ Evolution of the Technology

○ Wired Internet: IEEE802.3(LAN) → IEEE802.11(WLAN) → IEEE802.16(WiBro)

○ Cellular Network: 1G (Analog) → 2G (Digital) → 3G (IMT-2000) → 3.5G (HSDPA)

❑ WiBro is a 'last mile' extension of the wired Internet.



👉 WiBro/3G/WLAN complements each other.

II. Business Environment

5. Technology Comparisons

Item		WiBro	W-CDMA		CDMA 2000	
			R4	R5 (HSDPA)	1x EV-DO	1x EV-DO Rev.A ⁽¹⁾
Duplex		TDD	FDD	FDD	FDD	FDD
Multiple Access		OFDMA	CDMA	CDMA	CDMA	CDMA
Bandwidth (FA)		10MHz	5MHz x 2	5MHz x 2	1.25MHz x 2	1.25MHz x 2
Frequency		2.3~2.4GHz	UL :1.94~1.98/DL:2.13~2.17G		800M/1.8G	800M/1.8G
Max. Data Rate (1FA 1sector)	Down	18.432 Mbps	2 Mbps	13.976 Mbps	2.4576 Mbps	3.072 Mbps
	Up	6.144 Mbps/User	2 Mbps/User	2 Mbps/User	153.6 kbps/User	1.2288 Mbps/User
Average Throughput (1FA 1sector)	Down	5.95 Mbps	1.04 Mbps	5 Mbps ⁽²⁾	850 kbps	825 kbps
	Up	1.53 Mbps	1.21 Mbps	1.5 Mbps	266.1 kbps	465.4 kbps
Standardization		802.16e D3 (04.05) 802.16e D4 (04.08)	2001.3	2002.6	2000.10	2004.2
Network Deployment		yr. 2006	Seoul Area	yr. 2006	Operating	yr. 2005

(1) In Revision A, the performance of 1x EV-DO is increased to that of 1x EV-DV.

WiBro vs. xDSL

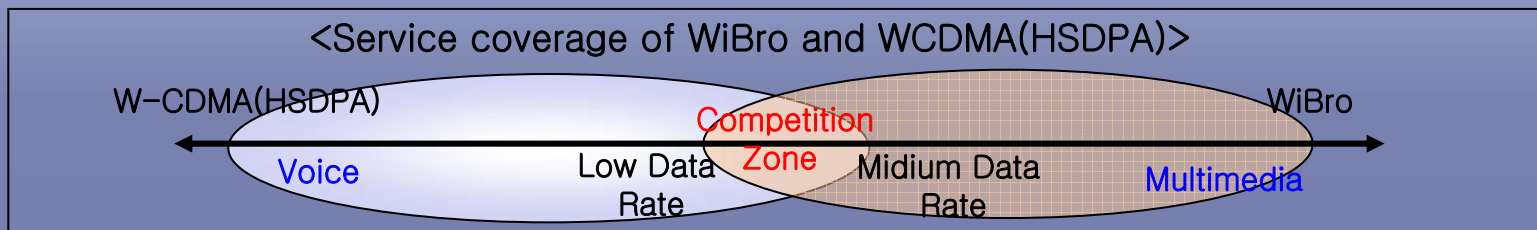
- ❑ WiBro provides **High Speed Internet Access** as xDSL.
- ❑ WiBro's **Mobility** and **Portability** will attract xDSL users to WiBro.

WiBro vs. WLAN

- ❑ Demand for coverage expansion in WLAN will attract WLAN users to WiBro.

WiBro vs. 3G

- ❑ Low access cost will attract 3G users to WiBro.
- ❑ There will be **partial competition** between the services; however, they will **complement** each other in general.



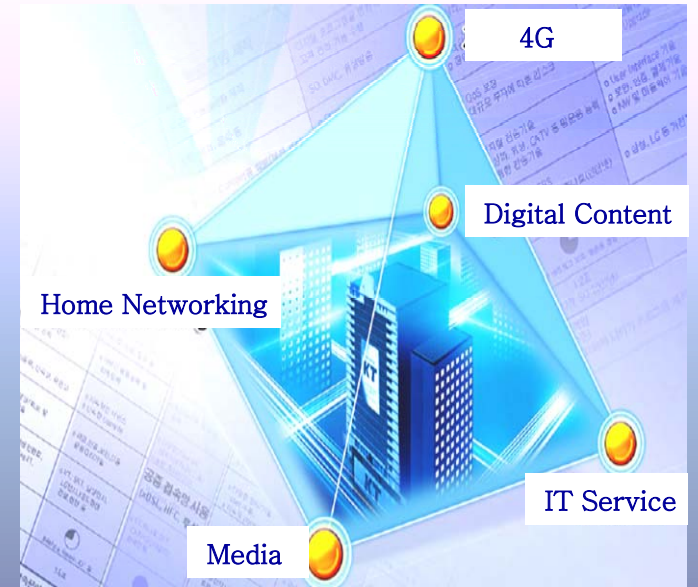
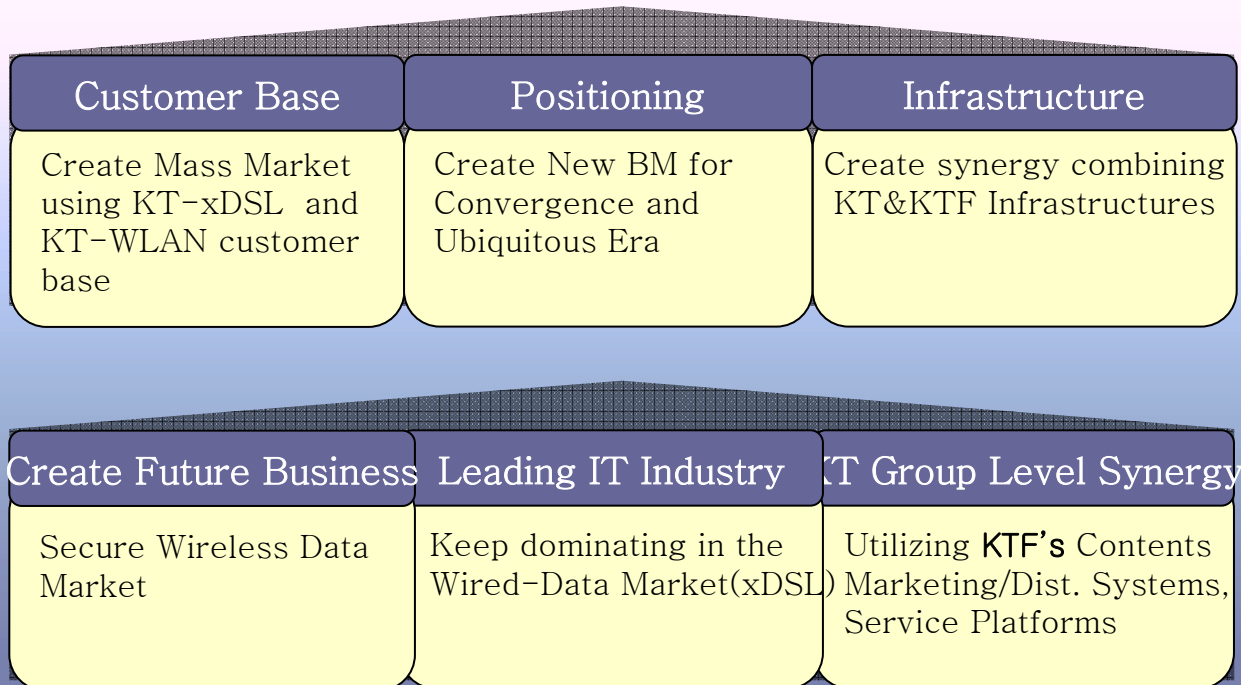
III. Business Strategy

1. KT-WiBro Vision

□ WiBro: Cornerstone of Wired/Wireless Convergence/Ubiquitous Network

Wired/Wireless Convergence and Ubiquitous Network

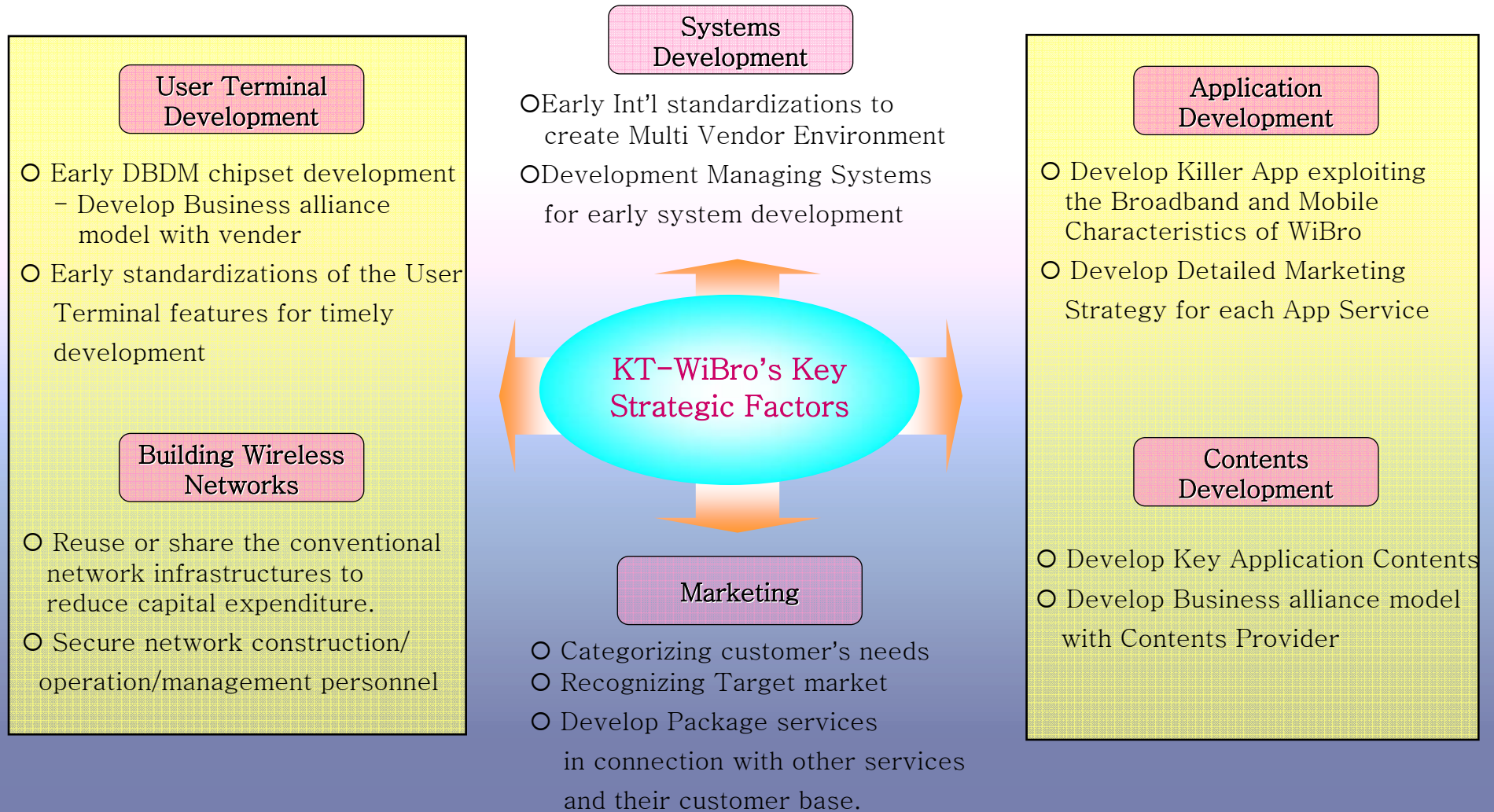
KT Vision 2010: 5 Business Engines



Exp. Annual Sales in 2010 : 17 tril. Won

III. Business Strategy

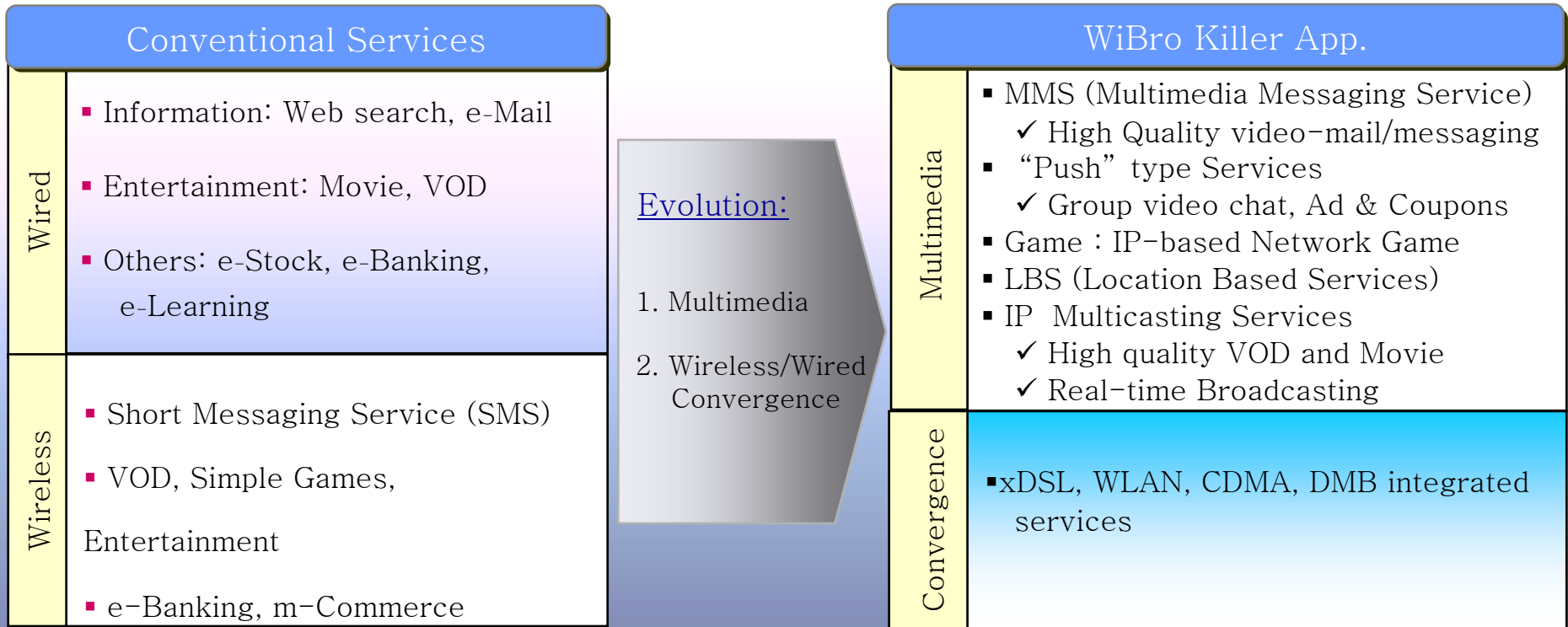
2. Key Strategic Factors



III. Business Strategy

3. Service BM

- ❑ Killer Applications: Exploiting the Mobile and Broadband Characteristics.
- ❑ Convergence Services: User Convenience and Max. Revenue.



Use KT's WLAN/xDSL Networks & Operation Know-How

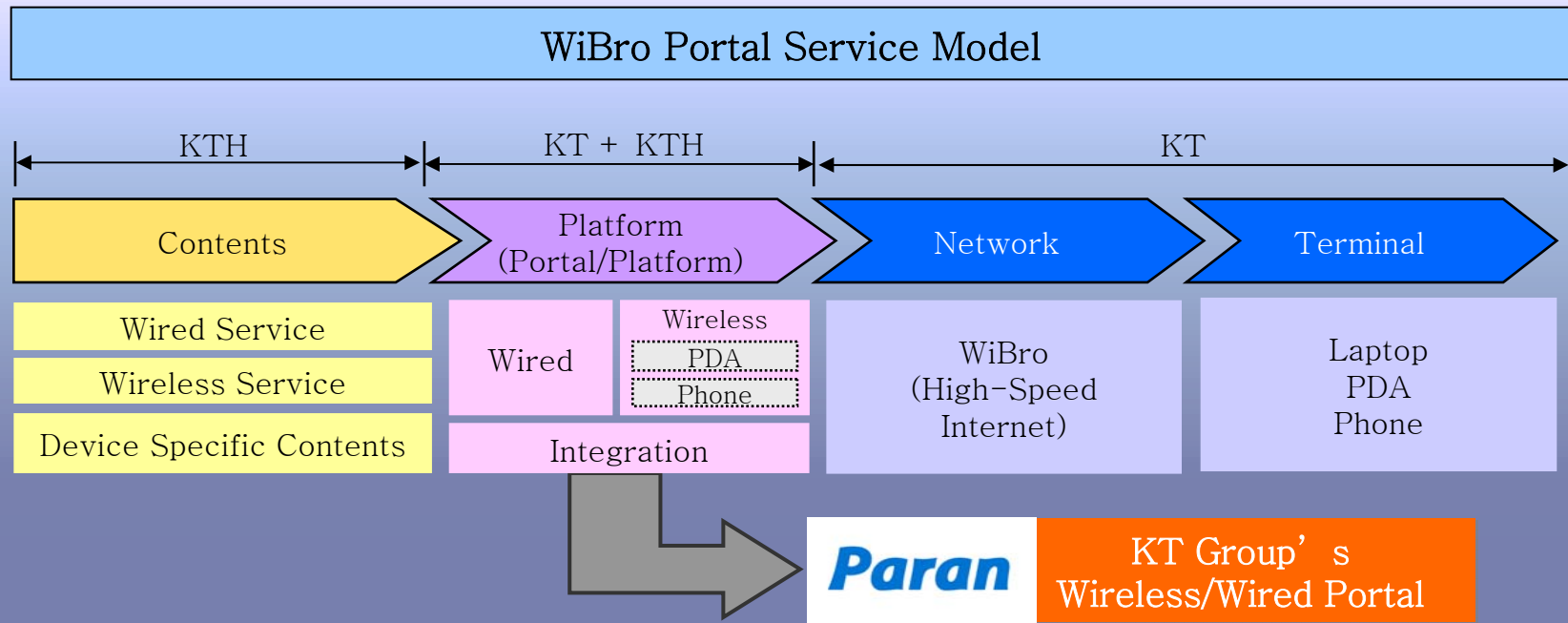
Wired/Wireless Contents + Internet Web Service

Wired<Lacks Mobility> + Wireless<Small BW> → Convergence

Up-grade to Multimedia/3D+ Convergence Services

❑ WiBro Portal

- Use KT's Internet Portal ('Paran') as a WiBro Portal
- Develop Wireless+ Wired Portal with KTH
- Develop Easy-to-Use/Customer-Friendly UI
- Develop New Contents, and Up-grade KTH's Conventional Content Service



❑ Contents Development and Management Strategy

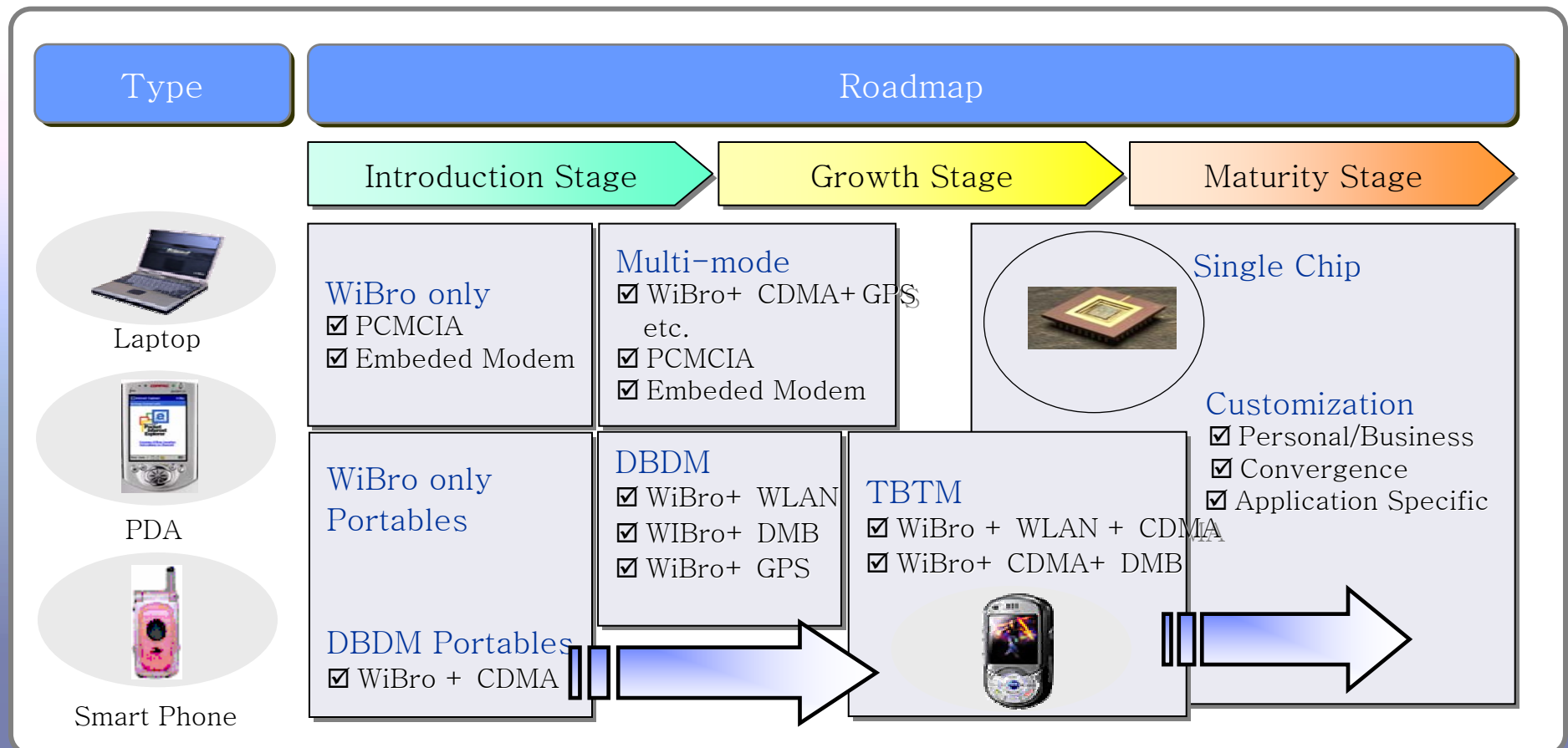
- Utilize KT's Conventional Portals and Services to Develop Multi-Purpose Portals (VOD, music, game etc.)
- Utilize KT Group's Contents: KTF (Fimm/MagicN), KTH (Paran), KDB
- Utilize KTH's MCP: Strengthen CP Relations
- Develop CP Management System: CP Selection, Support, Evaluation



IV. Service Plan

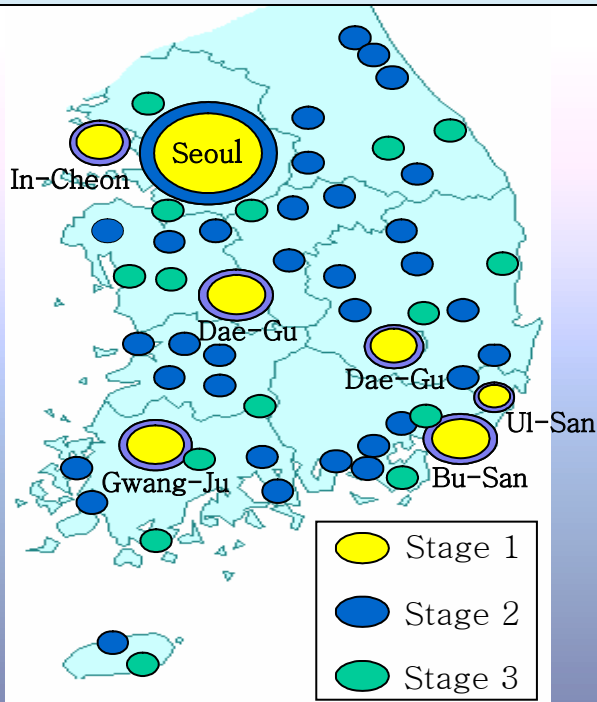
3. User Equipments

- ❑ Variety of User Equipments: PCMCIA card, Laptop, PDA, HPC, Smart Phone
- ❑ Wireless+ Wired Integrated Terminals: Friendly and Easy-to-Use UI
- ❑ DBDM, TBTM Equipments: WiBro + WLAN/CDMA/DMB

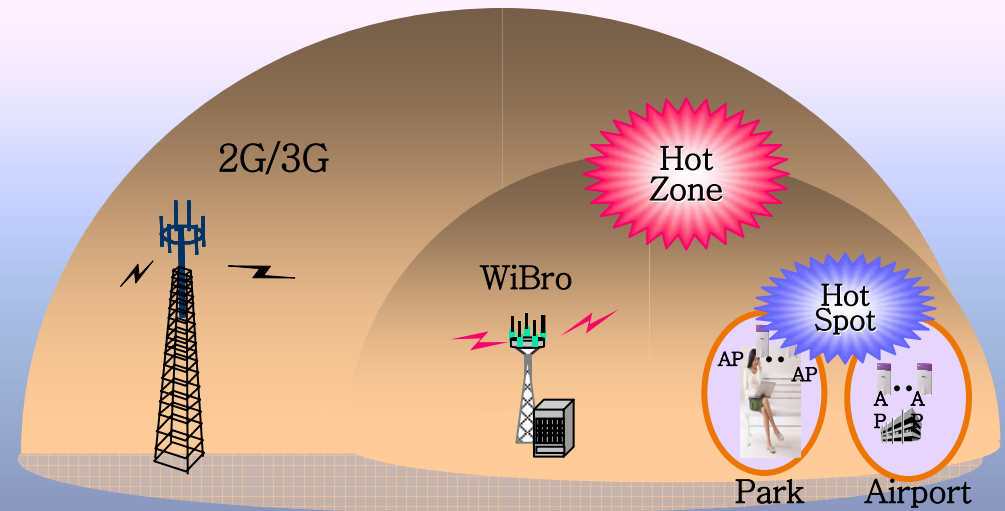


□ 3-Stage Network Deployment Plan

Network Planning



Access Network Integration

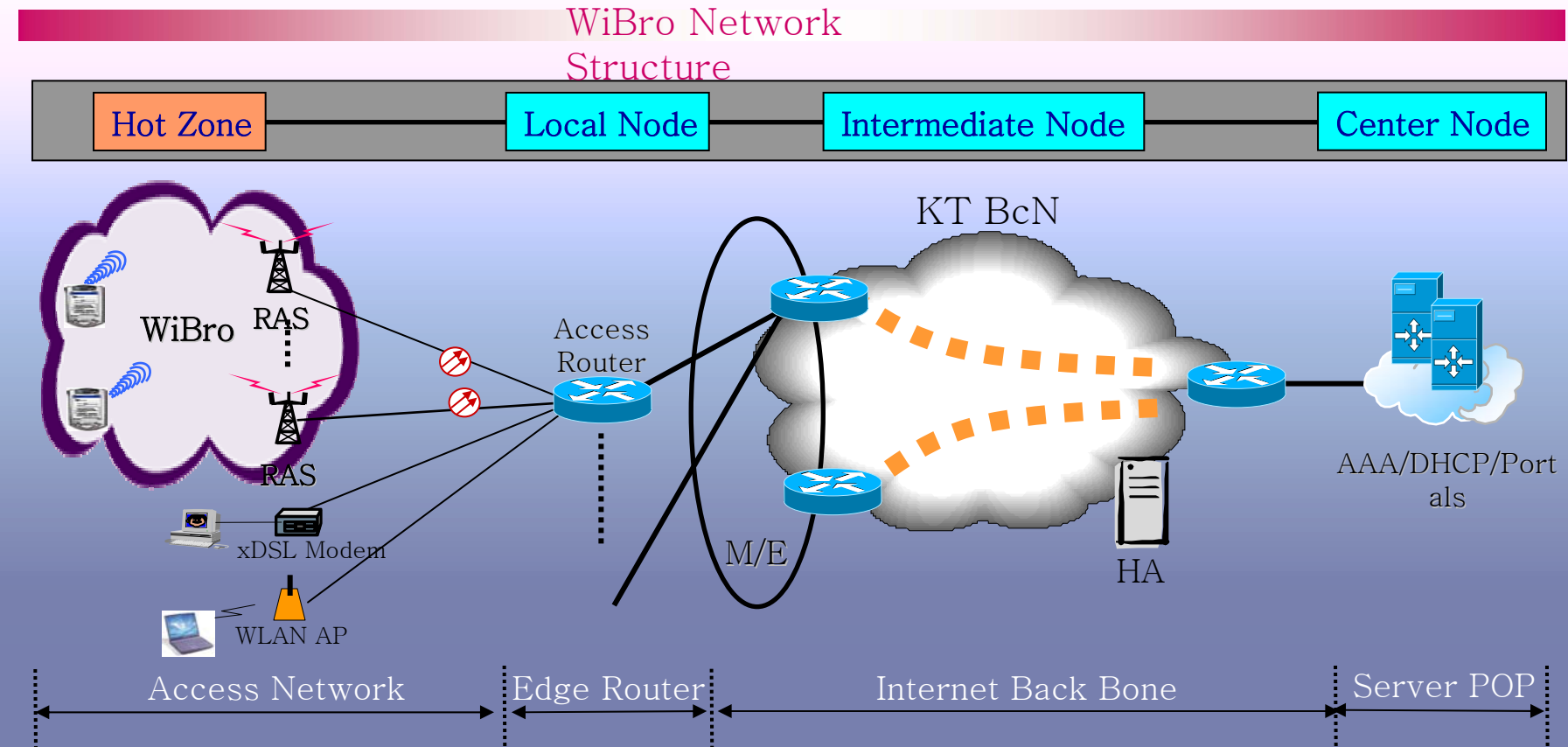


- Prep. Stage (2005): APEC Demo, Test Service
- Stage1 (2006): Seoul, Metro, Major Cities (20)
- Stage2 (2007): Medium Size Cities (18)
- Stage3 (2008): Rural Cities (46)

- 2G/3G: Voice-Oriented, Wide-Area, Narrow-Band
- WiBro: Urban Cities
- WLAN: Home, Hot-Spot, Airport etc.

- Sharing the Conventional Network Infrastructure to reduce Capital Expenditure
 - KT Internet Backbone, KT Optical Networks, KT Transmission Lines
 - KTF 2/3G Base Station Infrastructure , KTH Service Platform
 - Sharing Access Network with other WiBro Service Providers

Capex/Opex Reduction: 420 billion Won



IV. Service Plan

6. Vendors' Schedule

❑ Production Schedule

	RAS (Base Station)	PSS (Mobile Station)
Vendor	Samsung, LG, POSDATA	Samsung, POSDATA, Orthotron, RunCom
Schedule	End of 2005	End of 2005 ~2006

- ❑ 2005.11 Busan APEC : City-wide **WiBro Demonstration**
- ❑ 2006.04 Seoul : **Commercial Service** (Service extends to 84 cities within 3 years)



Mini-RAS

Standard RAS



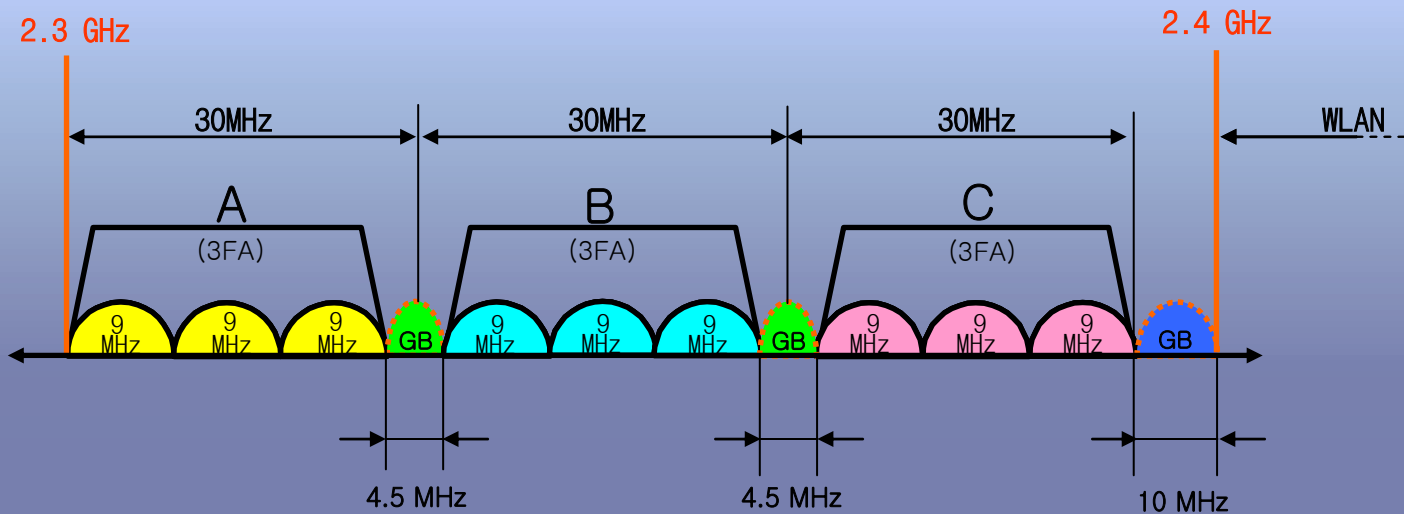








- ❑ KT, HTI, DACOM, SKT were competing for WiBro Service license.
- ❑ Government announced the competition results last month. (2005.1)
 - KT : 1st Place SKT : 2nd Place HTI : 3rd Place
- ❑ KT will select one frequency band of its choice at the end of this month.
- ❑ Commercial service begins
 - KT : 2006.4 SKT : 2006.6 HTI : 2006.6



A scenic landscape featuring a wide river flowing through a valley. The banks are lined with trees displaying vibrant autumn foliage in shades of yellow, orange, and red. In the foreground on the right, a young boy with dark hair, wearing a striped shirt, is looking down. The sky is a clear, bright blue. A dark blue rectangular box with a gradient is positioned in the upper center of the image, containing the text "Thank You" in yellow. Below it, the text "Let's KT" is written in a white, italicized font.

Thank You

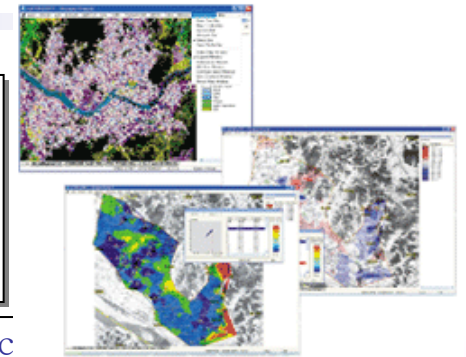
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[Appendix] R&D / Standardization Efforts

R&D

- ❑ Develop Cell Design Tool [CellTrek/OPT](#). 2004. 4
 - Optimized for WiBro Cell Design
 - Reducing the time and man power needed for cell planning



Standard

- ❑ Actively involved in [TTA standardization](#) and ETRI 's [HPI Project](#)
 - Playing major role in TTA standardization.
 - Shortest standardization resulting [timely-commercialization](#).
 - Contribution for HPI Project : 3 Billion Won (2003~2005)
- ❑ Playing major role in IEEE802.16 standardization.
 - Establish International Standardization Forum, [BWF](#). (2004.1.20)
 - ☞ Broadband Wireless Forum: KT, Sprint, Nextel, KDDI, SKT, Hanaro Telecom.
 - ☞ Leading vandors are actively participating (Intel, Samsung etc.)
 - Harmonizing TTA and IEEE Standardizations
 - ☞ Contributing 24 key technical drafts

Industry Coalition

- ❑ Establish [PII \(Portable Internet Initiative\)](#). (2003.3.11)
 - Over 100 Member Companies (2004.9)
 - Contributions
 - Develop WiBro Business Model
 - Sharing technical and business information among members



[Appendix] WiBro TDD Repeater

□ KT developed a first **TDD Repeater** in South Korea.

Repeater R&D

- TDD Repeater R&D Working Group (2004.2)
- Initiating TDD Repeater Research (involving 5 Companies and 6 Systems)
 - Optical Repeater : Solid Tech., Eastelsystems, Neotelecom
 - RF Repeater : Acetech, C&A Microwave
- Demonstration and Test
 - High Power TDD RF Repeater Demo (2004.8.23)
 - WiBro Repeater R&D Report (2004.9.23)

