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# Title: **Insight into Network Convergence in Korea (VHO related works in BcN project)**

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# Contents

1. NIA
2. BcN Project
3. VHO related works
4. Conclusion

# In this chapter we address ~

1. NIA (National Information Society Agency)
2. Broadband convergence Network Project
3. Vertical Handover related Works
4. Conclusion

# NIA (National Information Society Agency) at a Glance

## Founded in 1987 to

NIA is a National Agency which Support ICT Enablement of National-Wide and Development of Policies for the Information Society (Framework Act on Informatization Promotion)

## Public Agency

- **Statutory Agency**
  - Computerization Act(1986), Informatization Promotion Act(1996)
- **Government Funded**
  - USD 600 Million Annual Budget ('06), over 300 Employees('06)

http://www.nia.or.kr/special_content/eng/

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1. NIA (National Information Society Agency)
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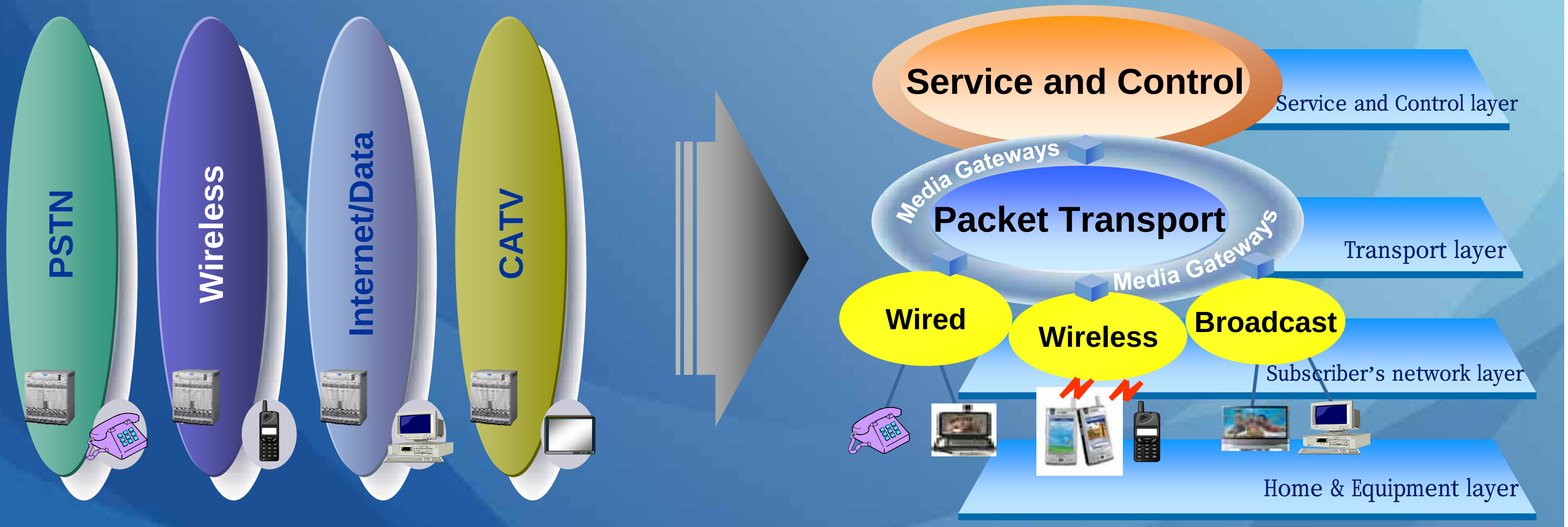
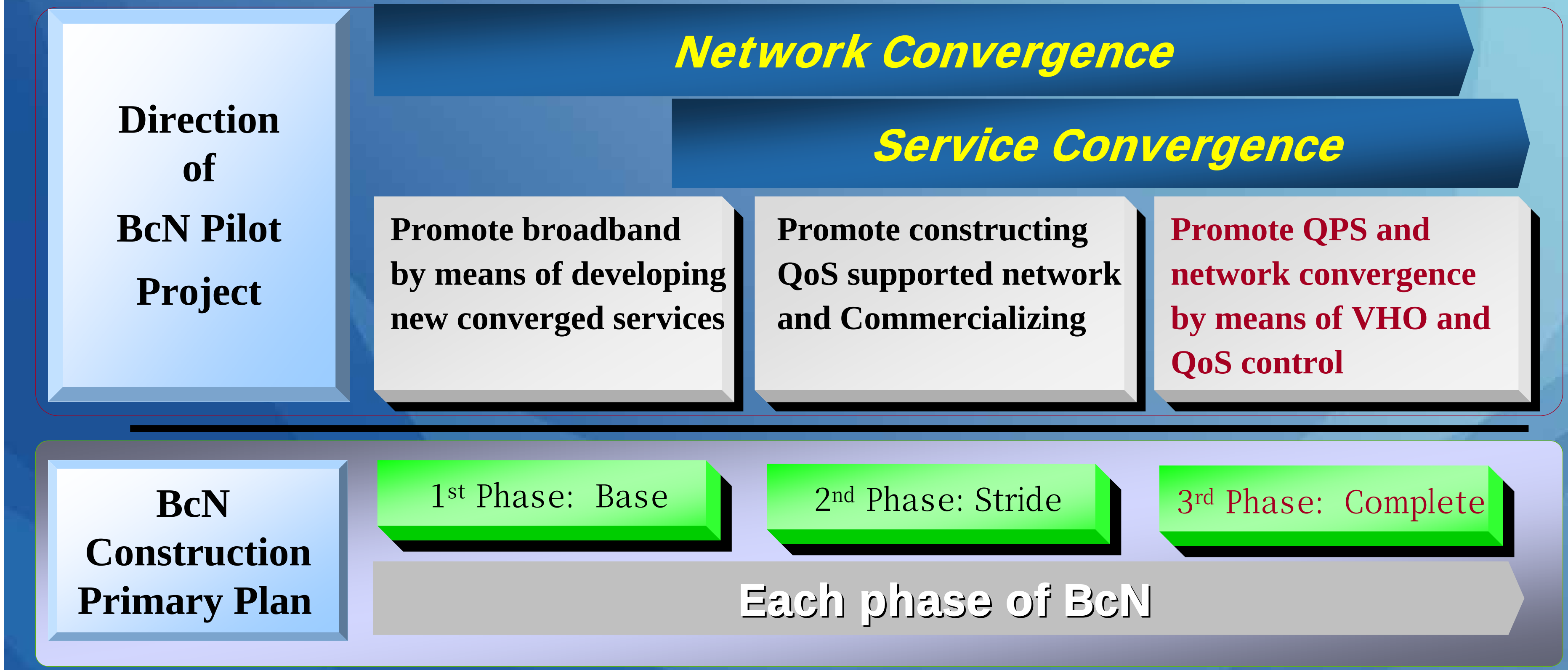
# Broadband convergence Network Concept & Architecture

- Aim to provide converged services on single network
- Reduce OPEX shortly and CAPEX in the long term
- BcN is same as Next Generation Network conceptually


PSTN
Wireless
Internet/Data
CATV
Service and Control
Service and Control layer
Media Gateways
Packet Transport
Media Gateways
Transport layer
Wired
Wireless
Broadcast
Subscriber's network layer
Home & Equipment layer

# Project Phases

- 1st Phase('04~'05year) : driven by new converged services
- 2nd Phase('06~'07year) : driven by QoS
- 3rd Phase('08~'10year) : driven by VHO



**Direction of BcN Pilot Project**

*Network Convergence*

*Service Convergence*

| Promote broadband by means of developing new converged services | Promote constructing QoS supported network and Commercializing | Promote QPS and network convergence by means of VHO and QoS control |
|---|---|---|

**BcN Construction Primary Plan**

| 1st Phase: Base | 2nd Phase: Stride | 3rd Phase: Complete |
|---|---|---|

Each phase of BcN

# Participating consortiums

Octave Consortium

OCTAVE

Life is wonderful KT

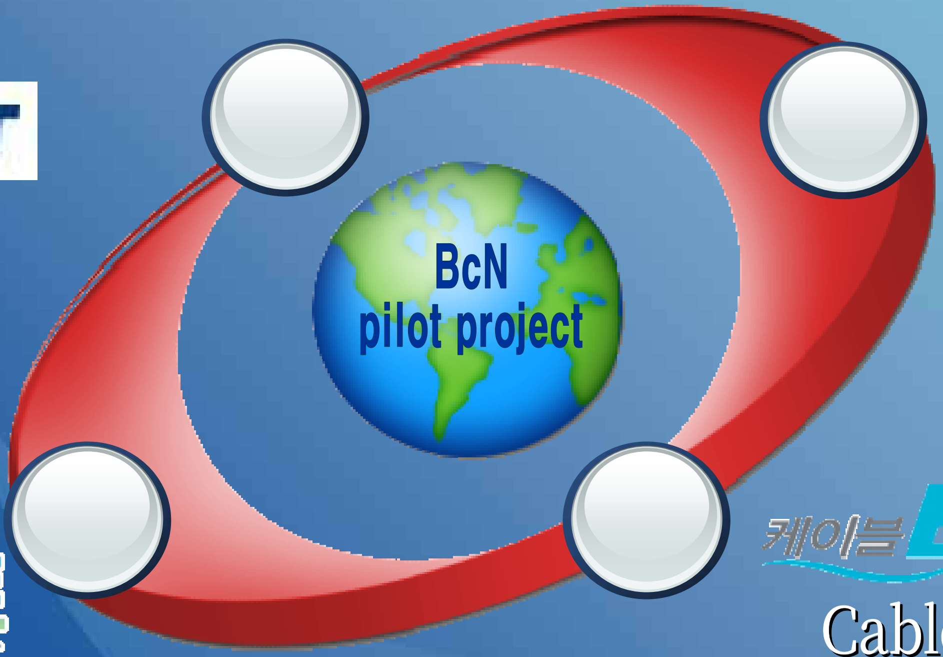
KTF

UbiNet 컨소시엄

UbiNet Consortium

SK telecom

hanarotelecom



케이블 BcN

CableBcN Consortium

U 광개토
BcN Leader

Kang-gae-to Consortium

LG Dacom

기분좋은변화
LG TeleCom

# Broadband and Convergence states in Korea(1/3)

◆ **Classify service model in the view of provider (operator)**

### Voice & Data

- **VoIP (PSTN quality)**
- **Video IP telephony**
- **Application service based on Open API**

### Wired & Wireless

- Wired & wireless interworking -

- **Wired video IP telephony & WCDMA video IP telephony**

### Comm.& Broadcast

- **TV portal ( IPTV )**
- **DCATV (SD, HD, Interactive)**

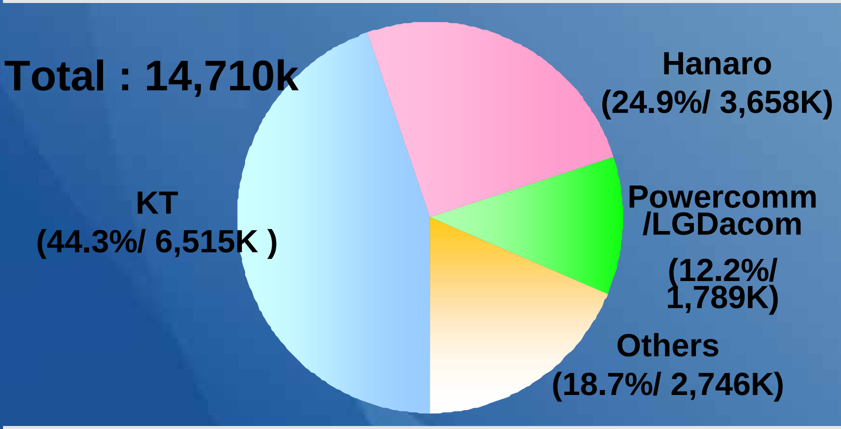
◆ **Objectives index : wired 50~100Mbps and wireless 1~2Mbps per user**

| Subscriber No. (Dec. '07) | Wired subscriber (thousand HH) | | | | Wireless subscriber (thousand) | | |
|---|---|---|---|---|---|---|---|
| | LAN 방식 | FTTH | VDSL | HFC | HSDPA | WLAN | WiBro |
| | 3,900 | 840 | 1,950 | 320 | 5,010 | 510 | 110 |

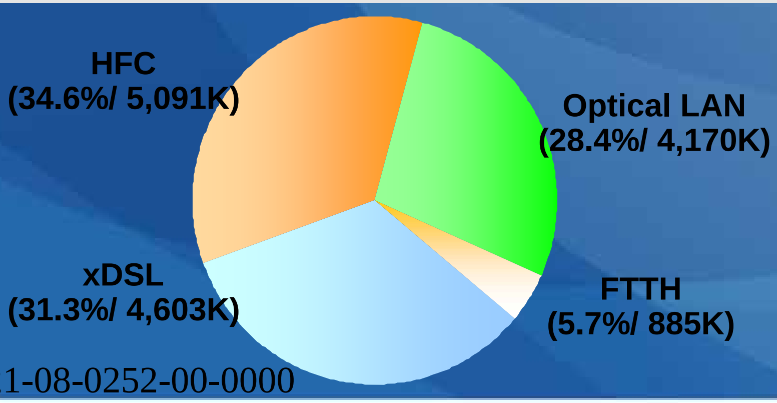
# Broadband and Convergence states in Korea(2/3)

◆ **Broadband is switching to 100Mbps services (speed competition)**

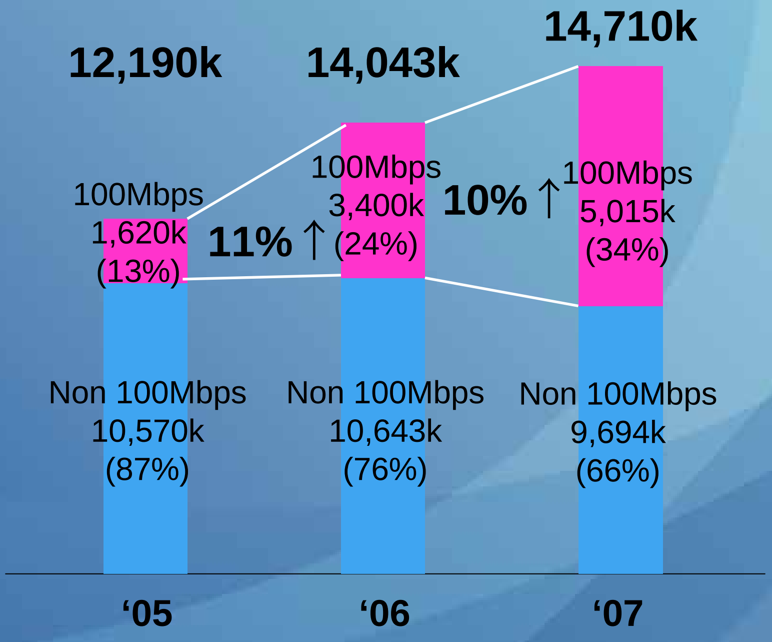
## Broadband M/S (Provider)



## Broadband M/S (Access)



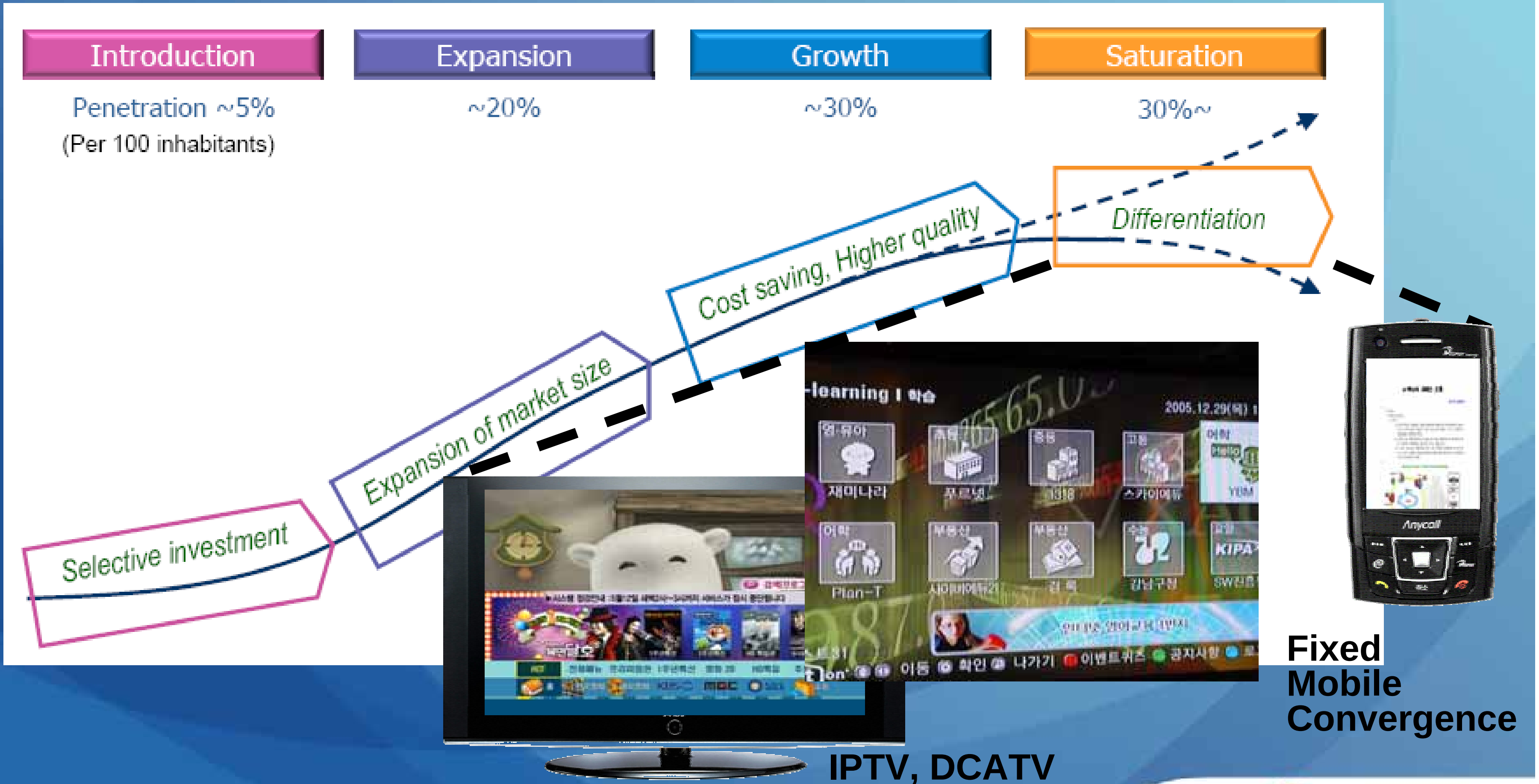
## 100Mbps Broadband M/S



(Dec, 2007/ Unit : thousand)

# Broadband and Convergence states in Korea(3/3)

◆ **General Broadband Strategies of Network Providers** **(from KT material)**



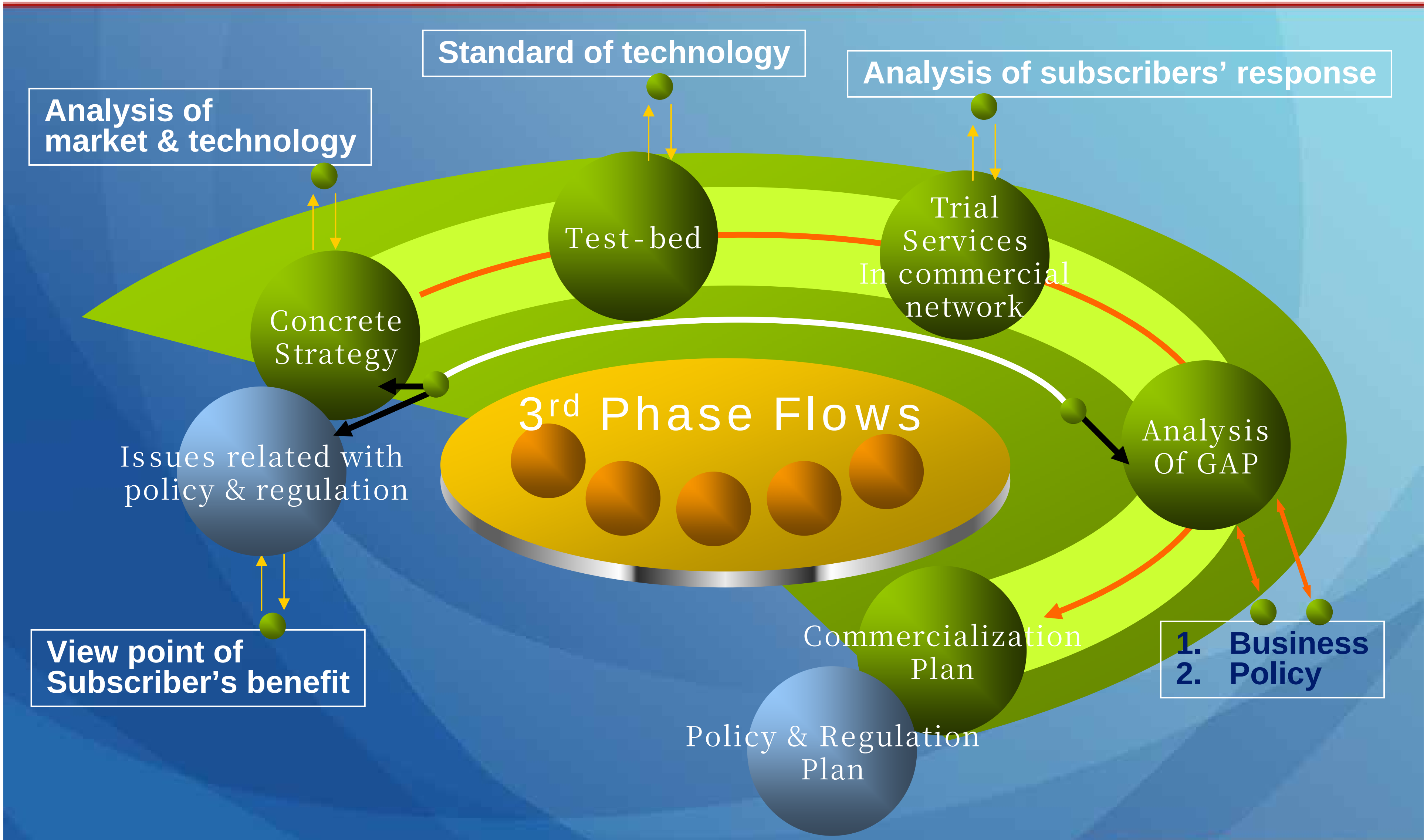
| Introduction | Expansion | Growth | Saturation |
|---|---|---|---|
| Penetration ~5%<br>(Per 100 inhabitants) | ~20% | ~30% | 30%~ |

Selective investment
Expansion of market size
Cost saving, Higher quality
Differentiation
-learning I 학습
2005.12.29(목)
Anycall

**IPTV, DCATV**

**Fixed Mobile Convergence**

# 3rd Phase



Standard of technology

Analysis of subscribers’ response

Analysis of market & technology

Test-bed

Trial Services In commercial network

Concrete Strategy

3rd Phase Flows

Issues related with policy & regulation

Analysis Of GAP

View point of Subscriber’s benefit

Commercialization Plan

Policy & Regulation Plan

1. Business
2. Policy

NIA 한국정보사회진흥원

# Main contents of 3rd phase

**Fixed Mobile Convergence**

Deal with Vertical Hand Over technology issues

**Interoperability**

Deal with inter IMS communications, video IP telephony etc

**QoS control and it's interoperability**

Deal with interoperation of operators' QoS policies

**Policy & regulation issues**

Deal with issues of converged wired and wireless services

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# Candidate technologies

Life is wonderful KT
KTF
OCTAVE

- HSDPA, WiBro dual interfaces and WLAN
- MIH, Mobike, CMIP, PMIP
- Make before break approach

UbiNet 컨소시엄
SK telecom
hanarotelecom

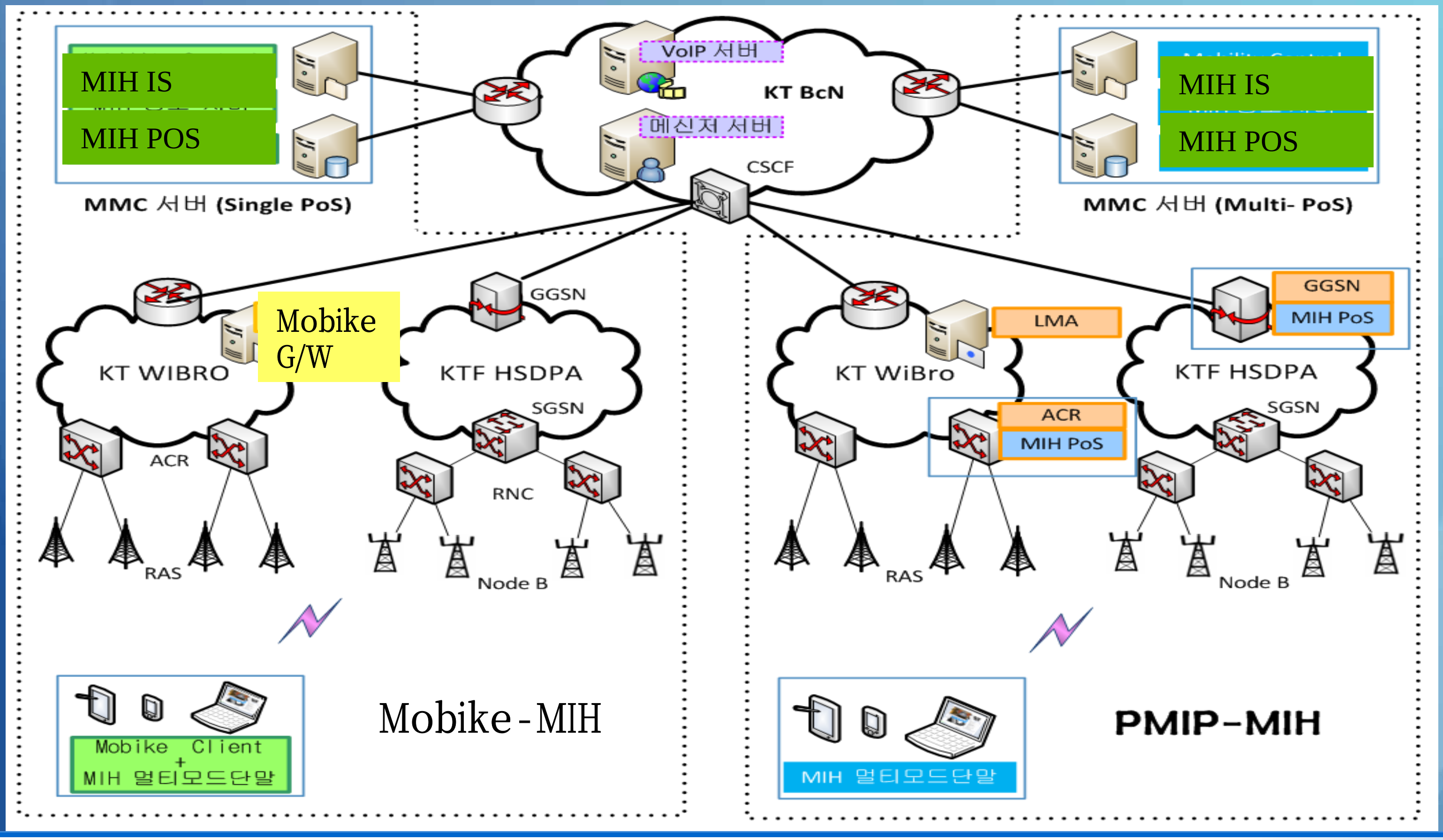
- HSDPA, WiBro dual interfaces and Ev-DO
- MIH, CMIP, PMIP
- Make after break approach, high VHO latency

U 광개토
BcN Leader
LG Dacom
기분좋은변화
LG TeleCom

- Ev-Do and WLAN dual interfaces
- MIH, xGMIP
- MBB approach (xGMIP’s proprietary scheme)

# Design of Octave's Test-bed

Referenced by KT's materials

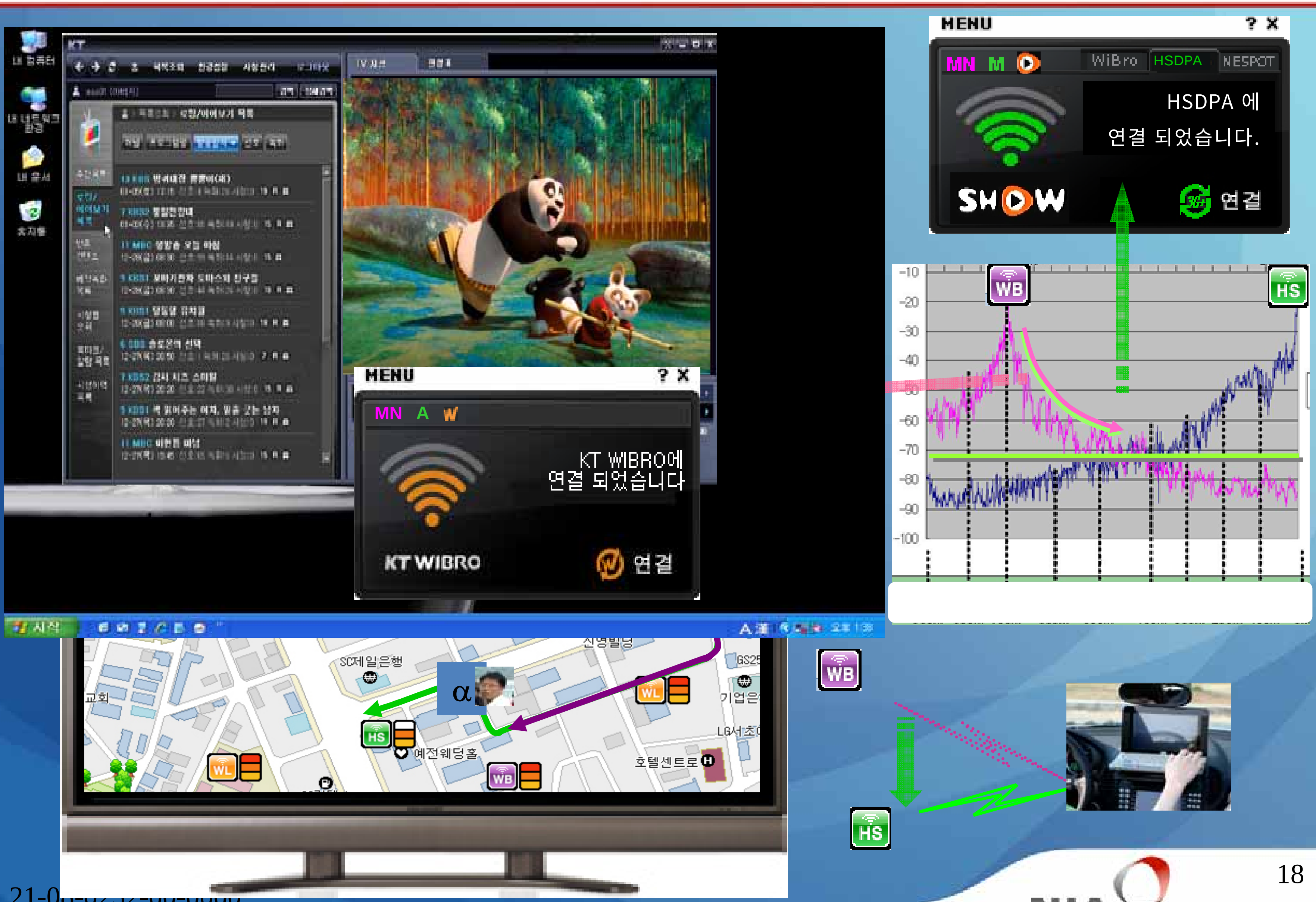

MIH IS
MIH POS
MMC 서버 (Single PoS)
VoIP 서버
KT BcN
메신저 서버
CSCF
MIH IS
MIH POS
MMC 서버 (Multi- PoS)
Mobike G/W
KT WIBRO
GGSN
KTF HSDPA
SGSN
ACR
RNC
RAS
Node B
Mobike Client + MIH 멀티모드단말
Mobike-MIH
LMA
GGSN
MIH PoS
KT WiBro
ACR
MIH PoS
KTF HSDPA
SGSN
RAS
Node B
MIH 멀티모드단말
PMIP-MIH

◆ **1. left side : based on HSDPA-WiBro commercial network**

◆ **2. right side : based on lab test-bed**

# Design of Octave's Test-bed

Referenced by KT's materials

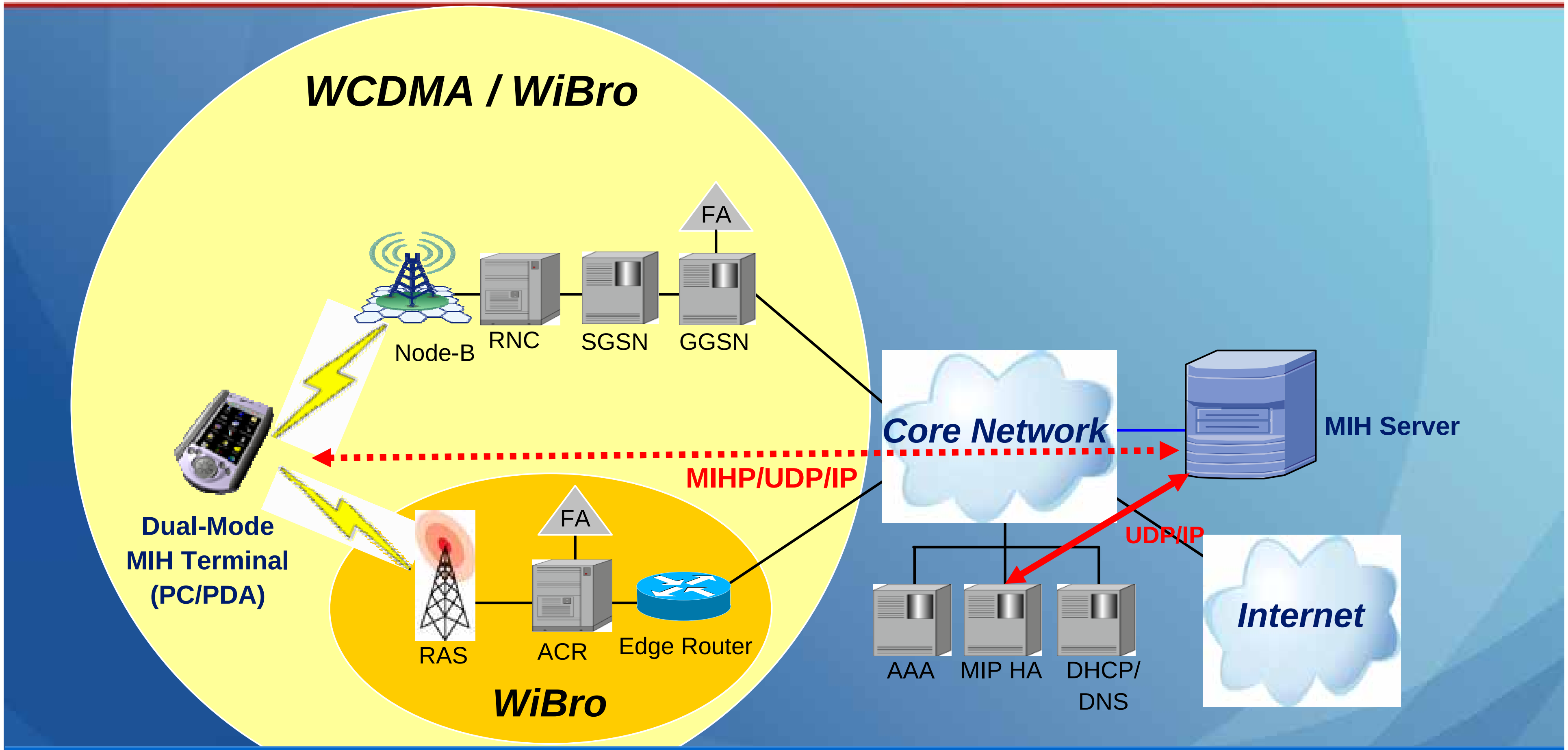

MENU
? X
MN M
WiBro
HSDPA
NESPOT
SHOW
연결
MENU
? X
MN A W
KT WIBRO
연결
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
WB
HS
WL
SC제일은행
교회
α
예전웨딩홀
호텔센트로
기업은
LG서초
GS25
신영빌딩
시작

HSDPA 에 연결 되었습니다.

KT WIBRO에 연결 되었습니다

# Design of Ubinet's Test-bed

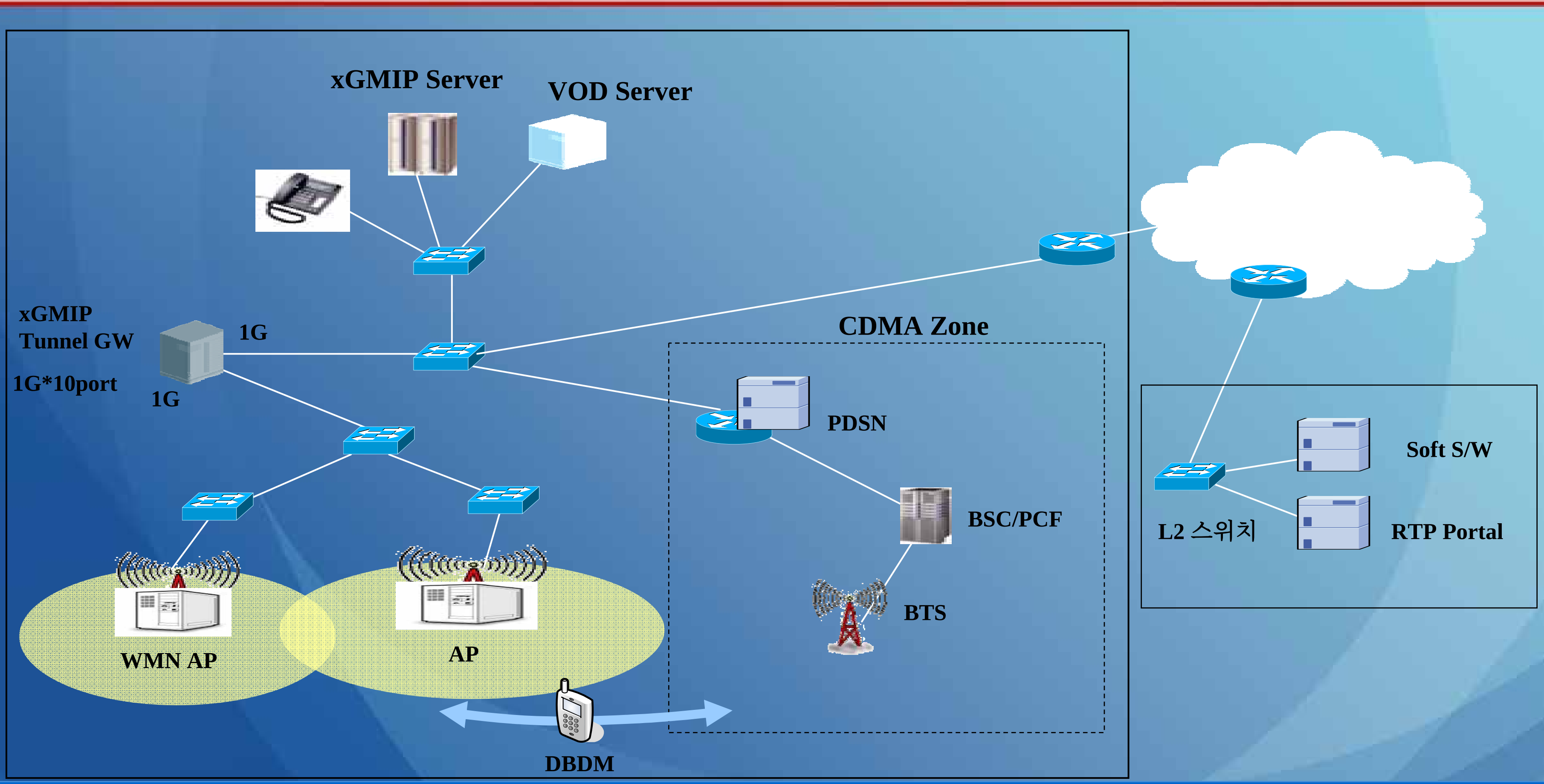
**Referenced by SKT's materials**


WCDMA / WiBro
FA
Node-B
RNC
SGSN
GGSN
Core Network
MIH Server
MIHP/UDP/IP
Dual-Mode
MIH Terminal
(PC/PDA)
FA
RAS
ACR
Edge Router
WiBro
UDP/IP
AAA
MIP HA
DHCP/
DNS
Internet

- **Network Initiated Handover (with support from MN)**
- **Policy: Signal strength, ABC, subscriber's profile, cell overload state etc.**

# Design of Kang-gae-to's Test-bed

Referenced by LG Dacom's materials


xGMIP Server
VOD Server
xGMIP
Tunnel GW
1G
1G*10port
1G
CDMA Zone
PDSN
BSC/PCF
BTS
Soft S/W
L2 스위치
RTP Portal
WMN AP
AP
DBDM

◆ MIP like protocol but mobile VPN scheme like Mobike

◆ Ev-DO and WLAN in household.

# Last chapter

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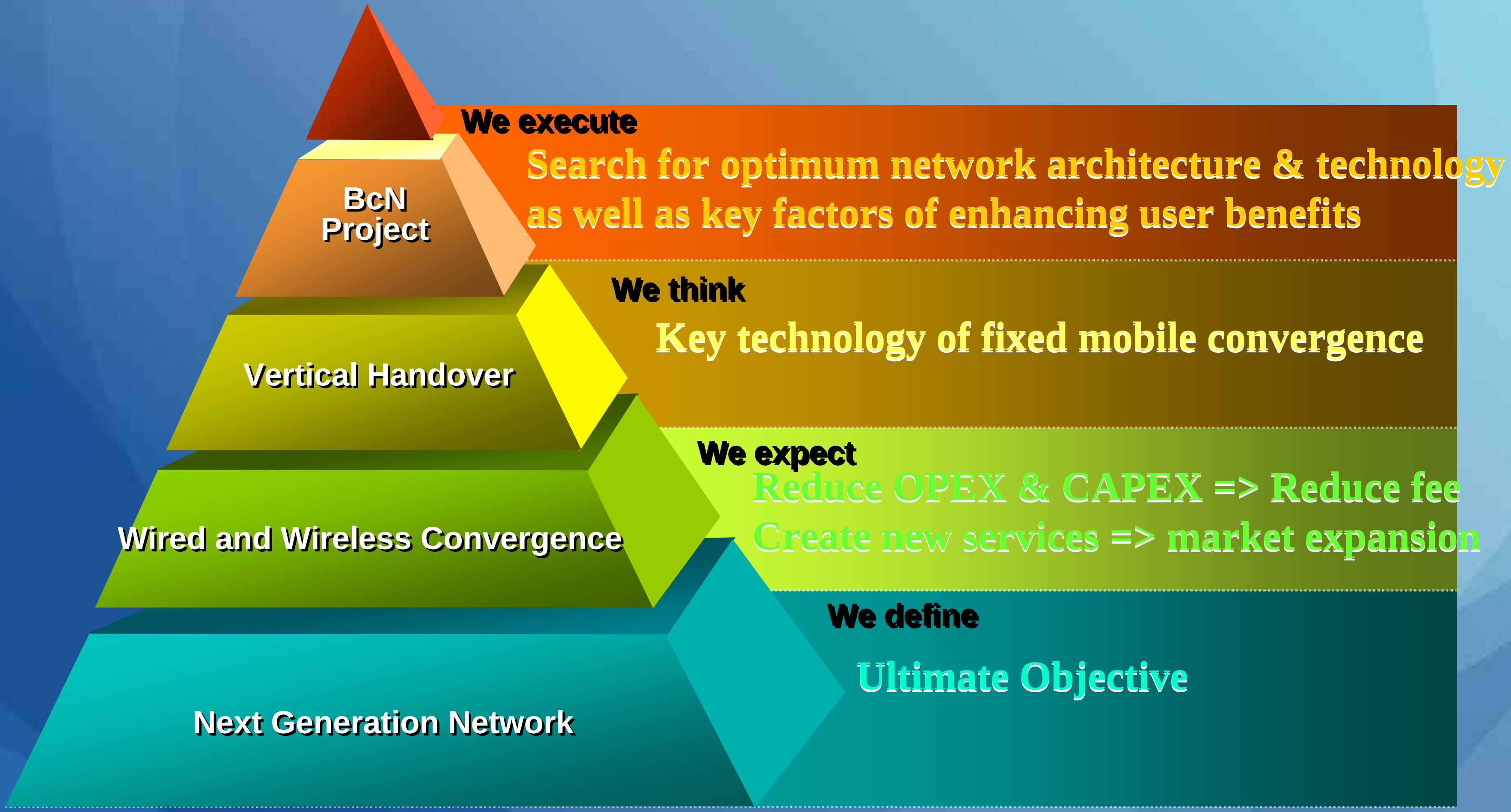
# Conclusion



BcN Project

**We execute**

Search for optimum network architecture & technology as well as key factors of enhancing user benefits

Vertical Handover

**We think**

Key technology of fixed mobile convergence

Wired and Wireless Convergence

**We expect**

Reduce OPEX & CAPEX => Reduce fee

Create new services => market expansion

Next Generation Network

**We define**

Ultimate Objective

# Thank You!