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數位匯流 - 行動多媒體之利基與願景

Digital Convergence - The way quad-play goes



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Vision for Digital Convergence
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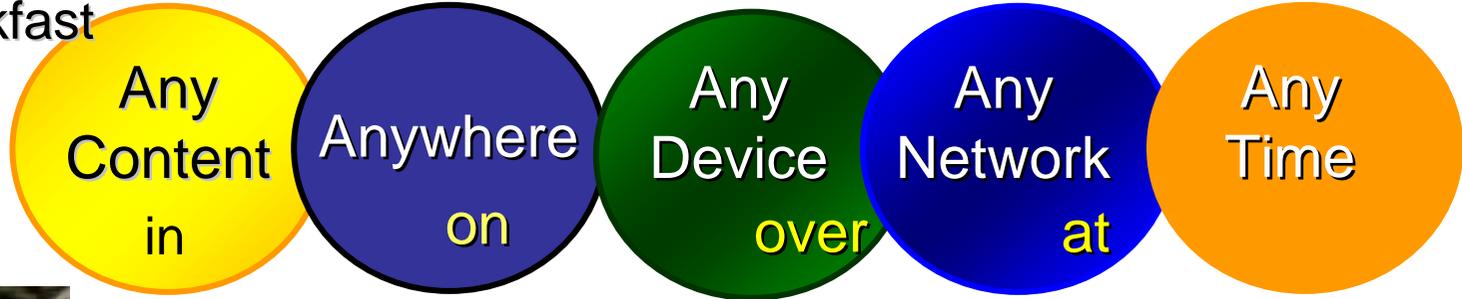
Quad-play in U-Life: Vision for Digital Convergence





Ubiquitous Computing

Internet @ Breakfast



Telematics on the Road

Internet @ Office



Internet @ Leisure



Internet @ Meetings



Internet in the Air



U-Taiwan
U-Japan
U-Korea

Internet @ Hotel



Internet via Taxi



U-Life Global Outlook : Wireless Cities

North America

- U.S: Philadelphia, SFO
- Canada: Fredericton, Kingston

Asia

- Taiwan: Taipei, Taichung, Kaohsiung
- India: Pune
- Malaysia: Pasir Gudang, Subang Java

Europe

- UK: Kingsclere, Basingstoke, Portsmouth
- German: Bergen, Hamburg, Bochum
- France: Lauris, Nantes
- Sweden: Gotland, Skellefteå
- Finland: Mäntsälä, Porvoo

South Pacific

- Australia: Adelaide
- New Zealand: Auckland, Wellington

**Over 130
Wireless Cities**

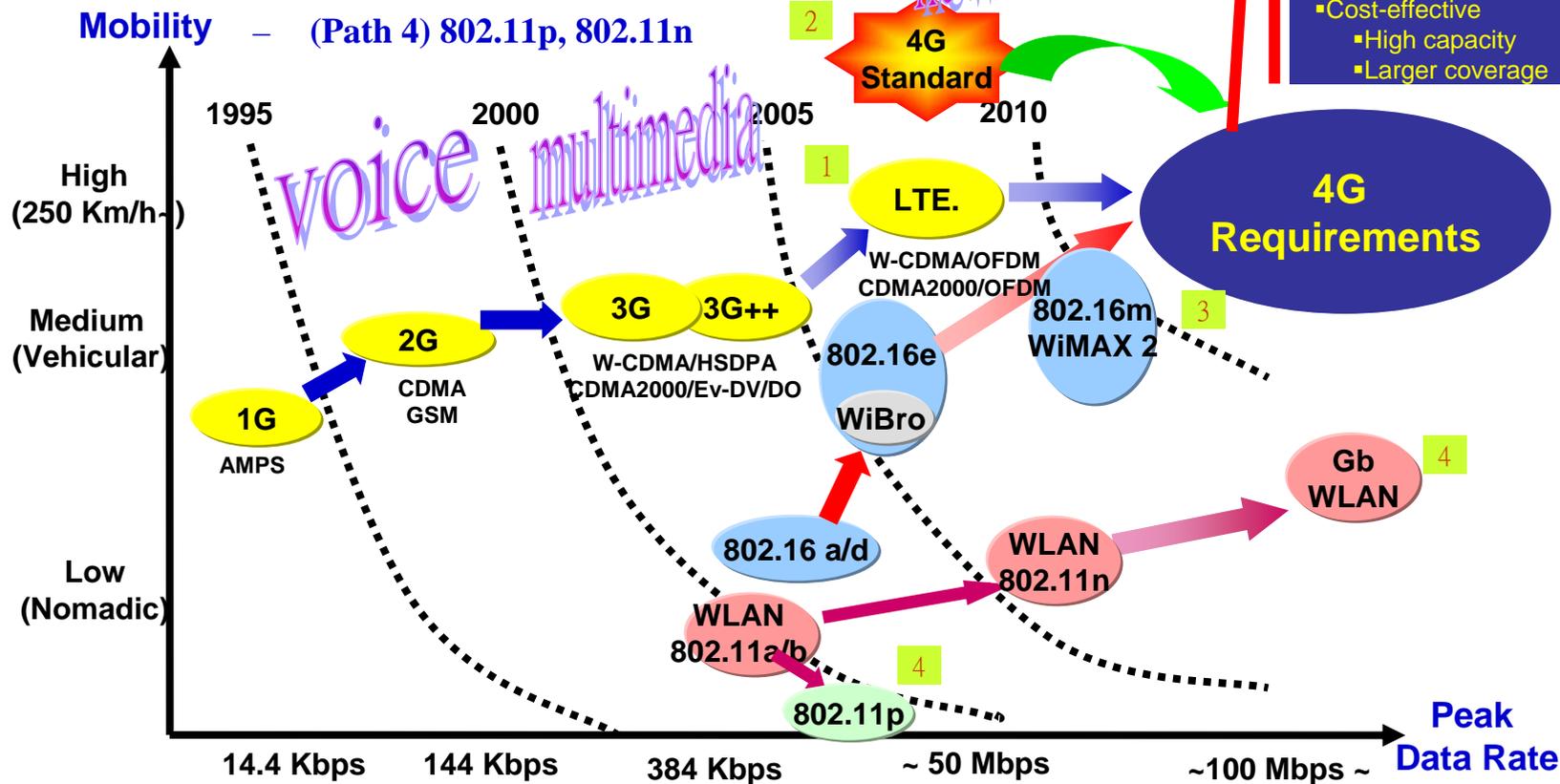
Wi-Fi, WiMAX, LTE, 4G...



Broadband Wireless Attaining Ubiquity

- **Global Evolution Trends**
 - (Path 1) 3G Evolution
 - (Path 2) 4G standard body
 - (Path 3) Broadband wireless
 - (Path 4) 802.11p, 802.11n

- Wireless Transmission
 - 100 Mbps (high mobility)
 - 1GHz(Fixed, Nomadic)
 - High Spec. efficiency (5~10 bps/Hz ~)
- Ubiquitous communication
 - Heterogeneous IW
- Cost-effective
 - High capacity
 - Larger coverage



Source: "Korea 4G R&D and Standardization", LGE, 2006



Market Transition: Consumer Driven

Network/Content/Device Boundaries Blurring

Content / Applications



Networks

At Home, At Work, On the Move



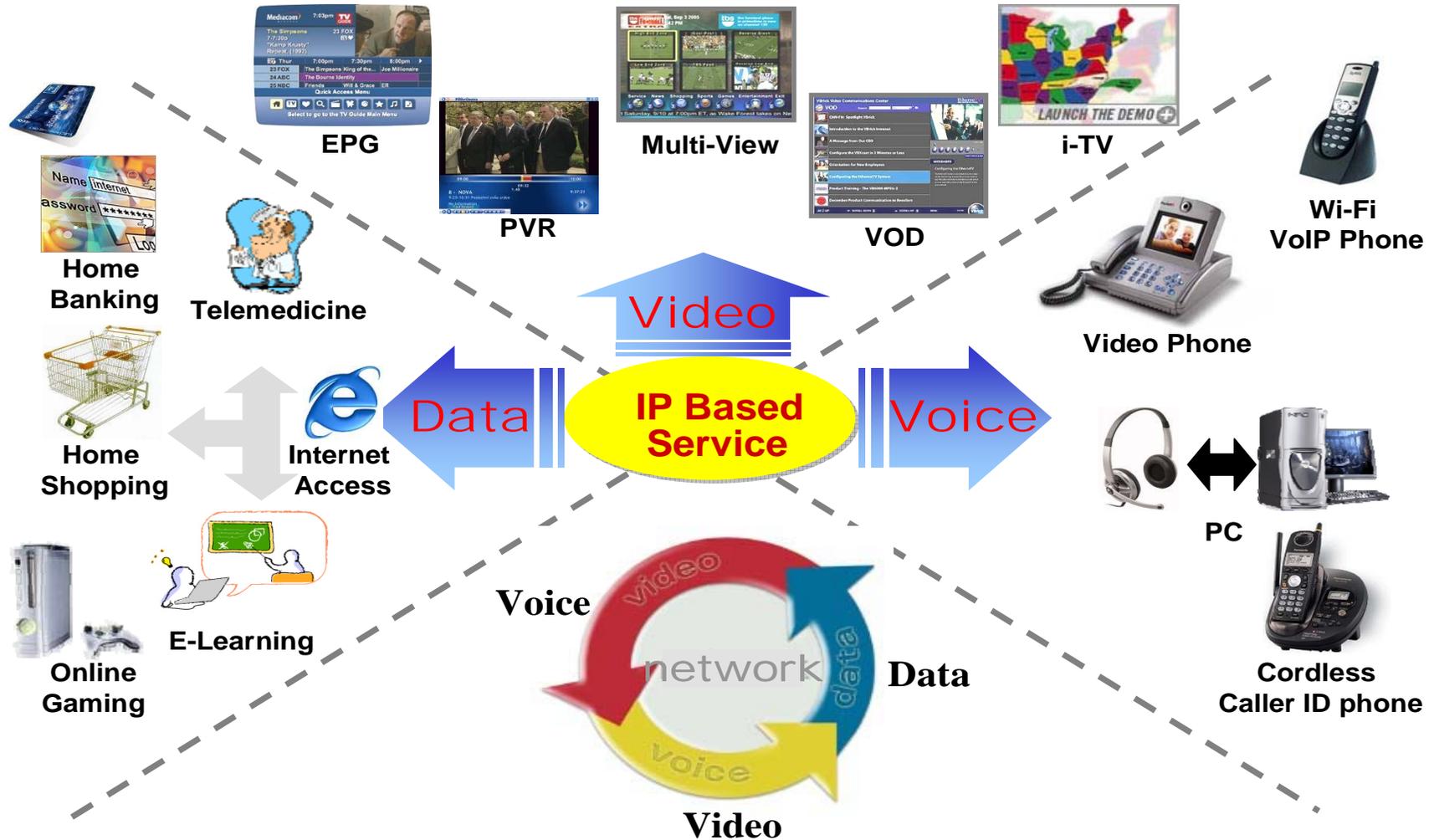
Devices

Source: Cisco, 2007



Triple-play has become mainstream, and...

Video、Data、Voice—Triple Play Service



Source : MIC, Nov. 2006



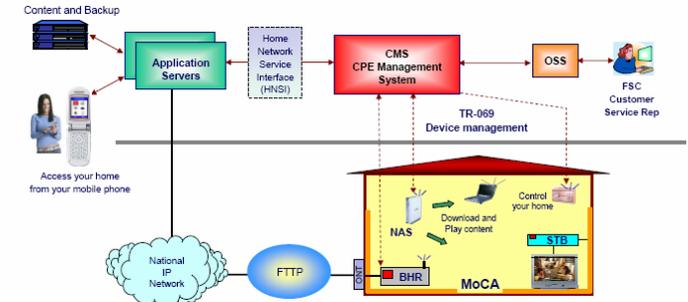
“Quad-Play” Services & Devices Integrates Ubiquitous Network Society



- ▶ **Ultra Mobility**
 - Less than one inch thick
 - 1.54 pounds
- ▶ **Advanced On-the-Go Design**
 - Ergonomic round shape
 - Rubber grip
- ▶ **Long Battery Lifetime**
 - Over 4 hours (4 cell)
 - Over 6.5 hours with extended battery (6 Cell)



engadget





Trends/Characteristics for Digital Convergence





What we see on CES 2008 : Convergence!

Indoor/Home



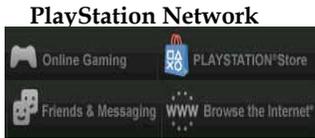
Xbox 360



Xbox Live



PS3



PlayStation Network



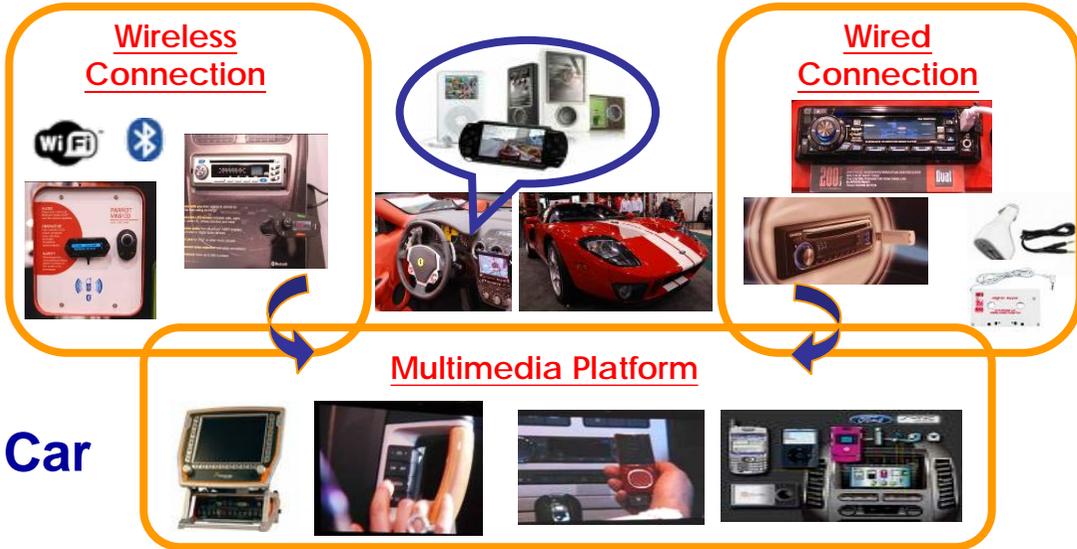
Wii



Wii Channels



On the Move



In Car

Source : MIC , 2008, 01



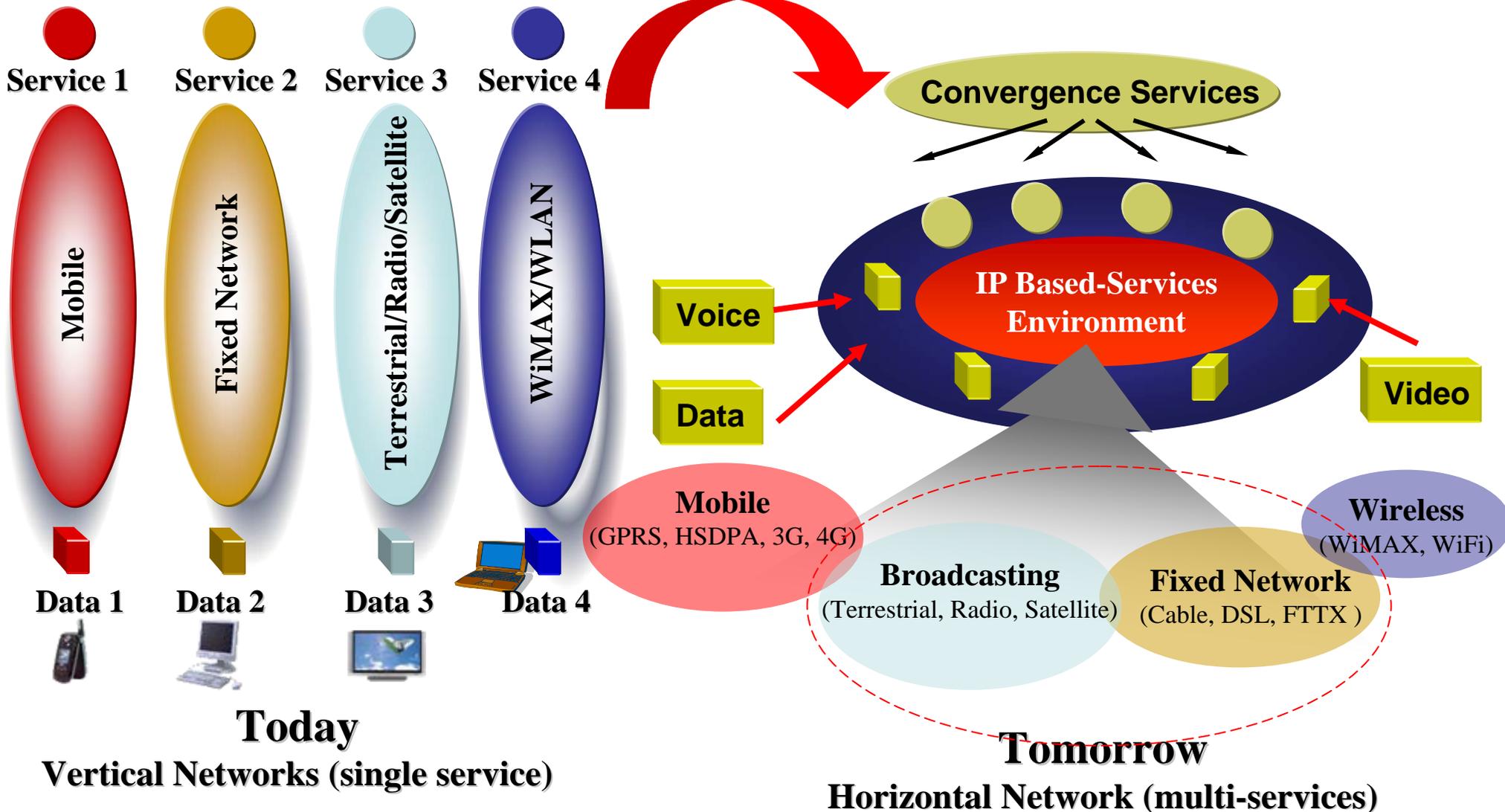
Characteristics of Convergence

- **Networks**
- **Devices**
- **Contents**
- **Services**



Networks :

Integrated network achieves convergent services



Source: MIC, April 2007



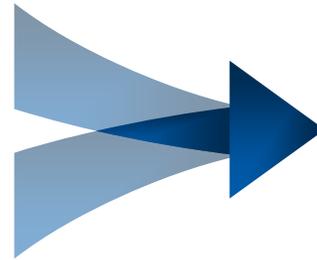
Devices :

Change on end-user experience by convergence

single service, single billing,
single-mode terminal



multiple function, personal service,
multi-mode terminal of unified billing



Preference For a Single Device Creates Demand For Converged Devices

Source:

1. Mobile Terminals for Convergence, ZTE Corporation, 2007/10
2. Insight Entertainment Technologies Consumer Survey, Jupiter Research, 2007,06



Contents :

Quality & Interaction pushes content aggregation

High-Definition (Quality)

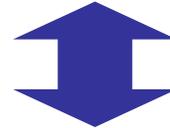
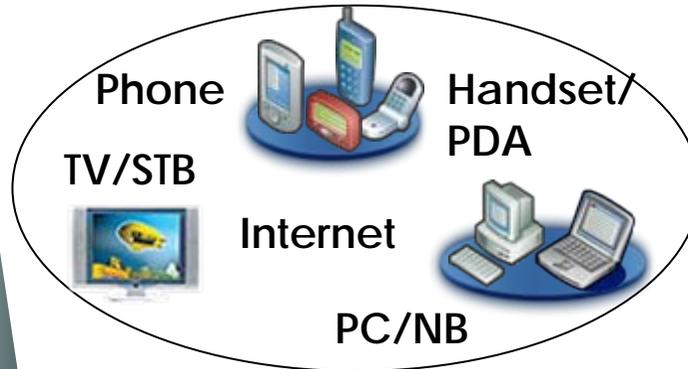


Premiere Channel Package

Pay-Per-View

VOD, Push VOD

Quad-Play



Data Voice Video



Bundle Service !
Single Provider !
Single Bill !

Video-on-Demand (Interaction)

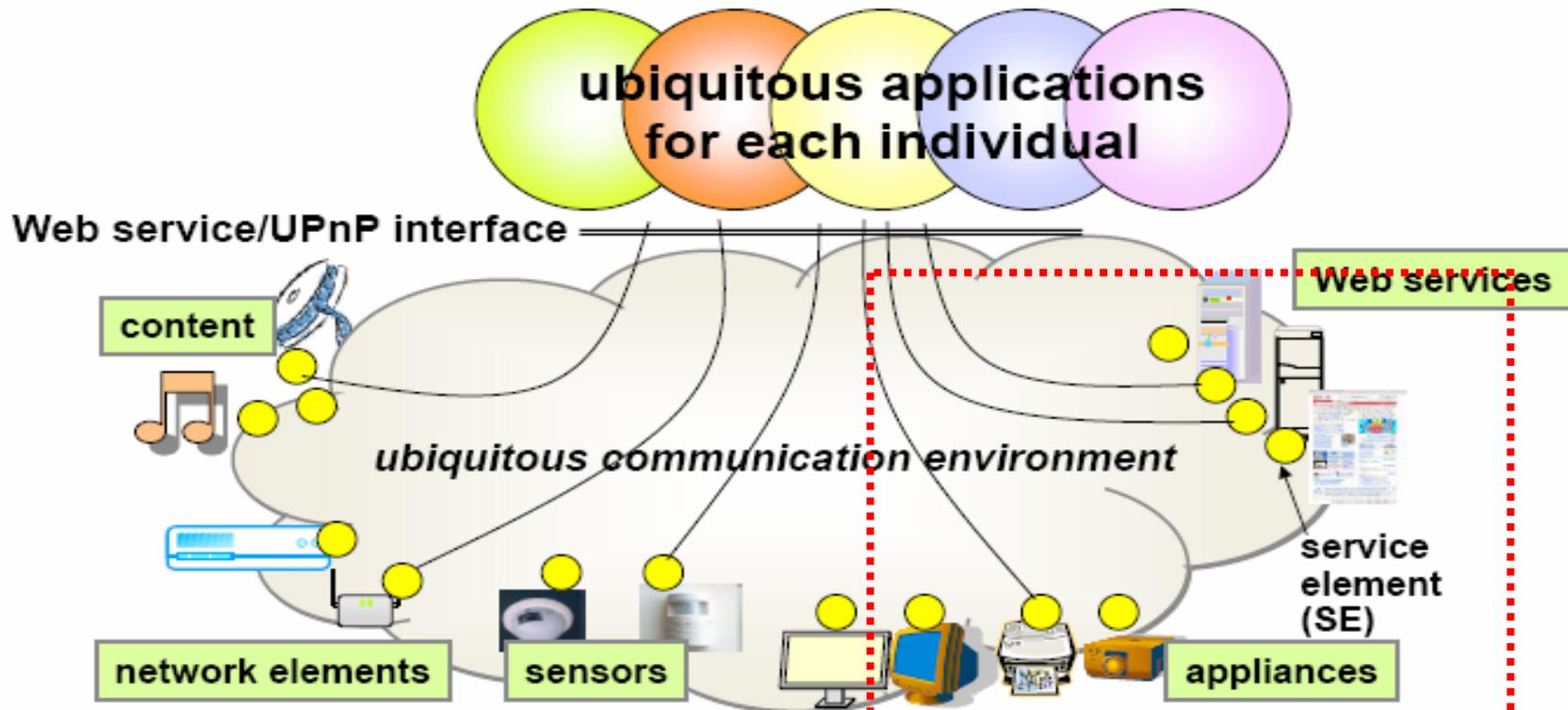




Services :

Convergence of Devices & Web2.0 Mash up..

In future ubiquitous networks, there are an enormous number of useful entities; content, network elements, sensors, appliance, Web-services, ... They should be used as materials to construct original and personalized services



NTT-LAB© NTT 2006





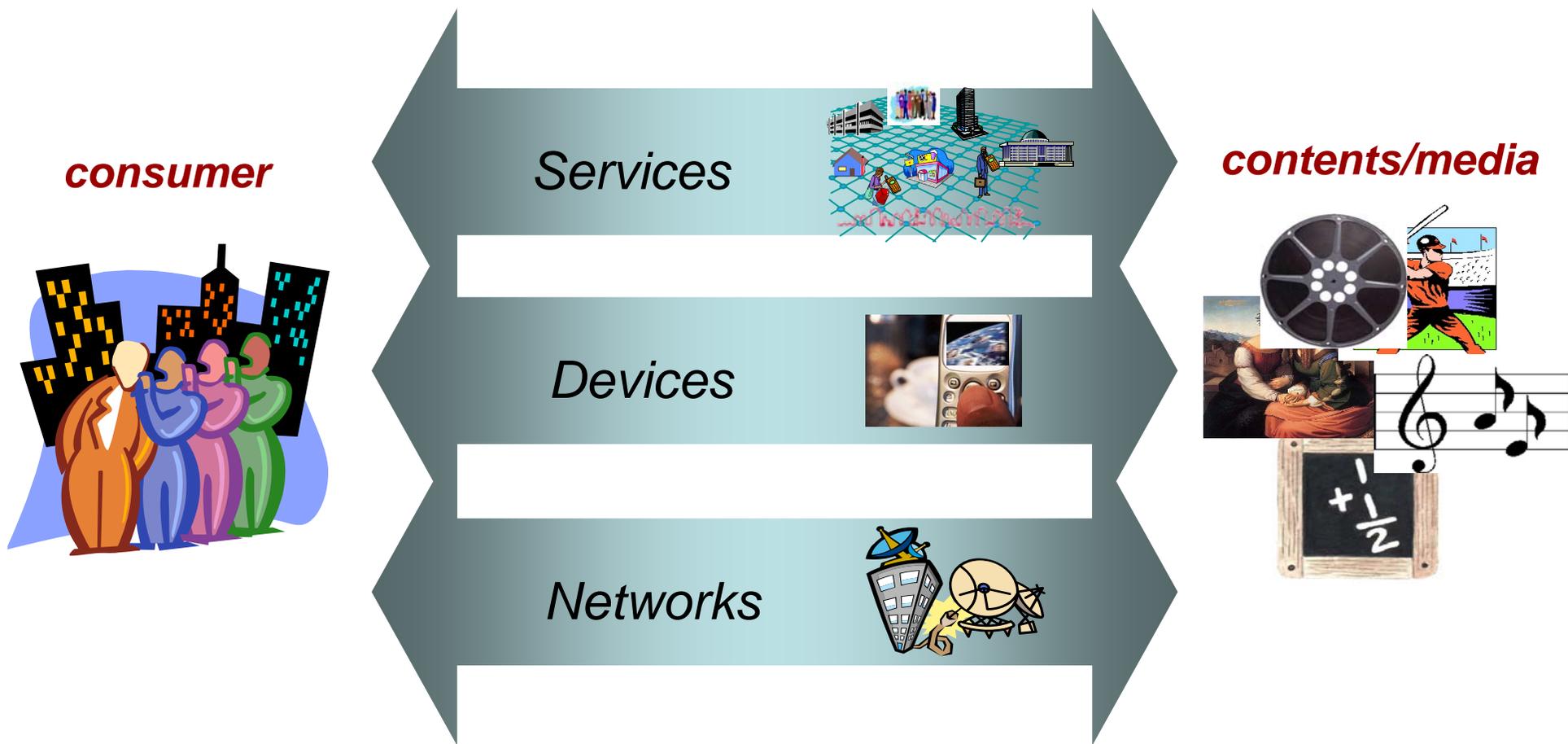
Challenges & Potential ICT Approaches





ICT Issues on Ubiquity/Convergence

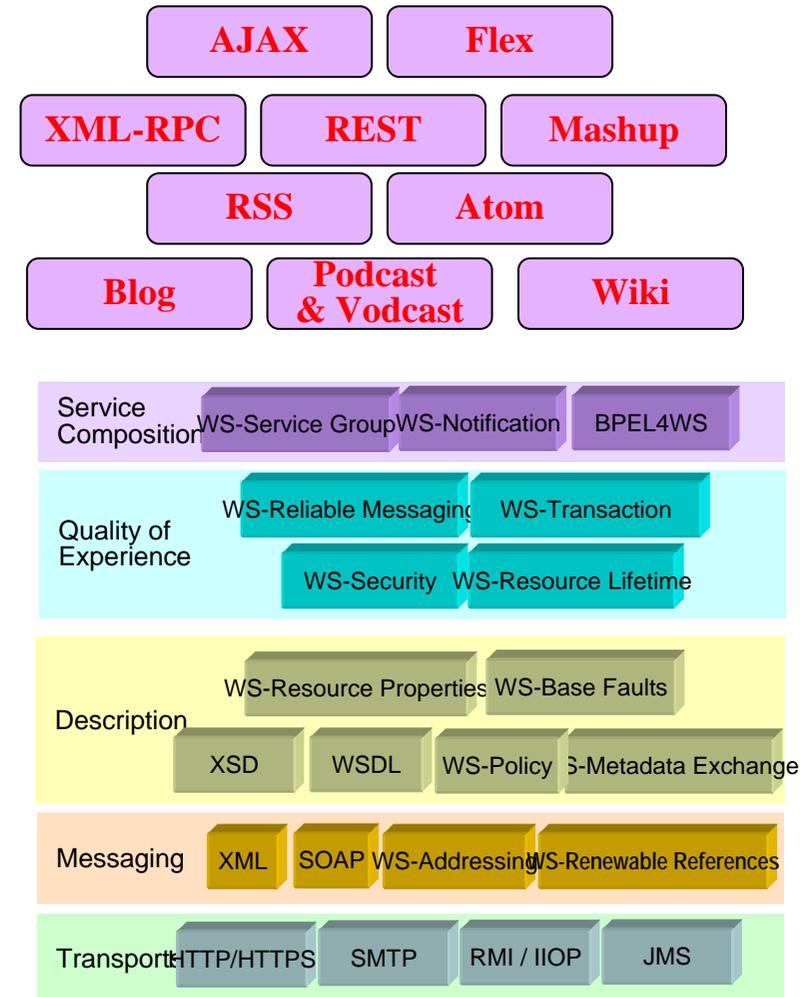
- Cross Services, Networks, and Devices for contents/media continuity





Issue 1: Cross Services

- **Rich Internet Application Techniques:** Ajax, Flash/Flex, ...
 - Enabling website to attain RIA (Rich Internet Application)
- **Web Service APIs:** XML-RPC、REST、RSS、Atom、Mashup
 - Providing software development tools to **facilitate connection to data and information**, enabling “mash-up” into Web 2.0 websites
- **Content Creation and Distribution Tools:** Blog、Wiki、Podcast/Vodcast, ...
 - Providing **simple and easy-to-use tools to encourage user-participation**



Source: IDEAS/III, IIBM



Issue 2: Cross Networks

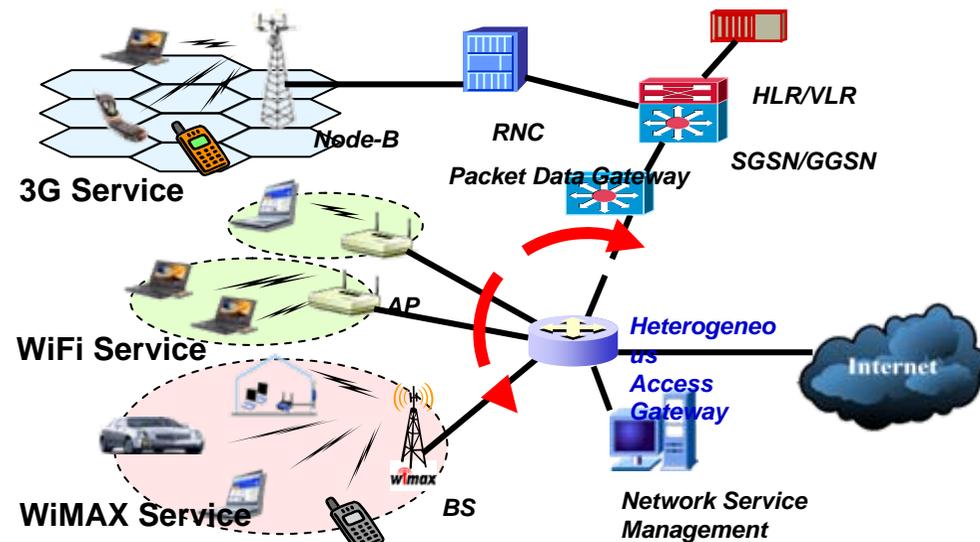
• Seamless internetworking

– Requirements

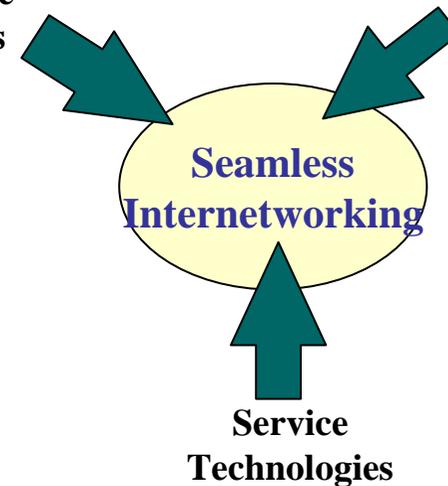
- One provider over multiple networks
- Partnerships among different networks
- Users subscribe to each network separately but use one common ID on the network

– Key Challenges

- Scalability
- Standard handover interfaces
- Cross-layer solutions.
- QoS guarantees during handover
- Security



Reconfigurable
Mobile Access
Technologies



Heterogeneous
Internetworking
Technologies



Issue 3: Cross Devices

- Discovery & establishment of ubiquitous environment
 - Media Adaptation (UAPProfile)
- Experience enhancement over ubiquitous environment
 - User Interface for user-friendly & multi-function switch
- Heterogeneous Network Continuity/handover (focus on Home/Community/Telematics)



Form Factors

- Increasing physical diversity
- More screen sizes
- Innovative physical designs (swivels, flips, sliders)
- Combination devices, music, media, camera

Other

- Innovative UI, eg tilt, 3D, acceleration
- Radio and TV reception
- Location sensing
- Wi-Fi, WiMAX

Handset Software

- Better Web browsers, PIM
- Operator customization
- Better graphics & games support
- Multi-format media players
- DRM
- Voice recognition/synthesis



Potential Markets

- **Next Generation Networks**
 - High-speed broadband wireless: WiMAX & LTE
 - IMS enabled Service Oriented Devices - smartphones
- **FMC/FMS (Fixed-Mobile Convergence/Substitute)**
 - Mobile TV, mobile payment, ...
- **Telematics**
 - PND, OBU-DSRC, LBS
- **Security**
 - Intrusion detection/protection, Vulnerability Scan
- **Mobile Web 2.0**
 - Service mesh-up and aggregation
 - E.g. Yahoo connected, Google, ...



Conclusions





Conclusions

- **Quad-play (Data, Voice, Video, Mobility) blurs the boundaries across network/device/contents/service**
- **Digital Convergence brings multi-industry, cross-domain integration, in which causes brand-new & innovative opportunities, business models and markets**
- **Keys: Customer-driven → differentiation**
 - Customization, personalization (long-tails)
 - User interface & interaction for value-added services



Thanks for your attention !!!