

A Big Picture of Future Network

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Agenda

- Prologue – Open Question
- A Big Picture
- ETRI's Vision
- Epilogue

Open Question

- **What *will* be the Shape of the Future Network ?**
  - Why do we need a new network?
  - What are the drivers of change?
  - What is the direction of evolution?

New Paradigm

- The Long-tail
- UGC/UCC
- Wiki
- Web 2.0
- Enterprise 2.0
- Second Life
- …

Personalization
Participation & Sharing
Collaboration
Prosuming

Peoples in the Next Society

Fusion

Ubiquitous IT

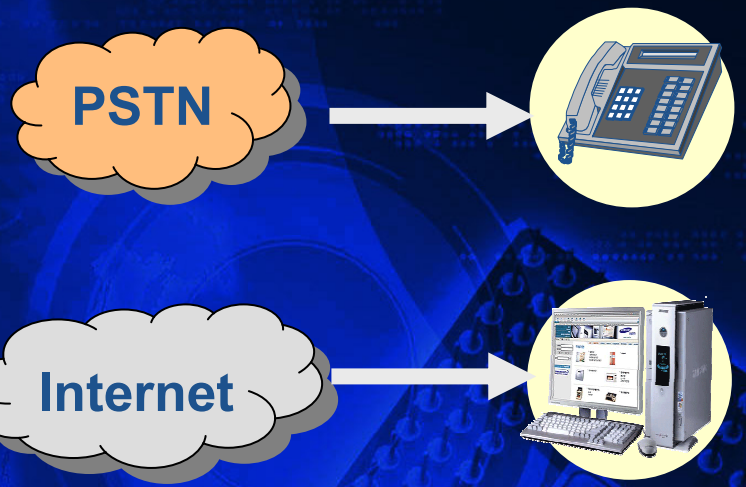
Dream & Emotional Society

Digital Native

Ubi-Nomad prosuming Culduct

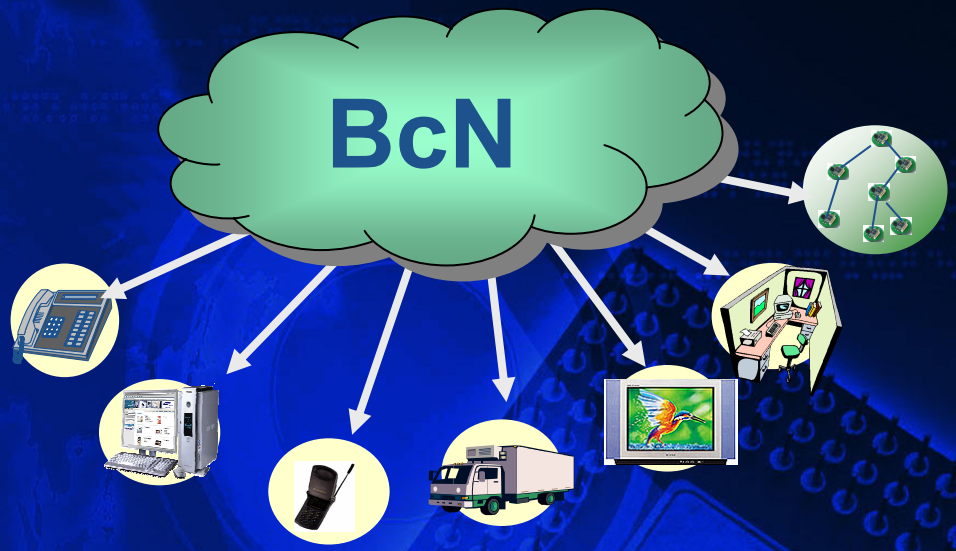
in the Past

- **Key Value**
  - Connectivity
  - Reliability
- **Control & Management**
  - telephone, PC
- **Intelligence**
  - Connection aware



in the Present & Near Future

- **Key Value**
  - Broadband
  - Mobility
- **Control & Management**
  - Mobile device
  - Multimedia device
  - Sensor Nodes
  - …
- **Intelligence**
  - Service aware
  - Location aware



in the Future

Key Value

- Hyper-Connectivity
- Personalization
- Reality of Experience

Control & Management

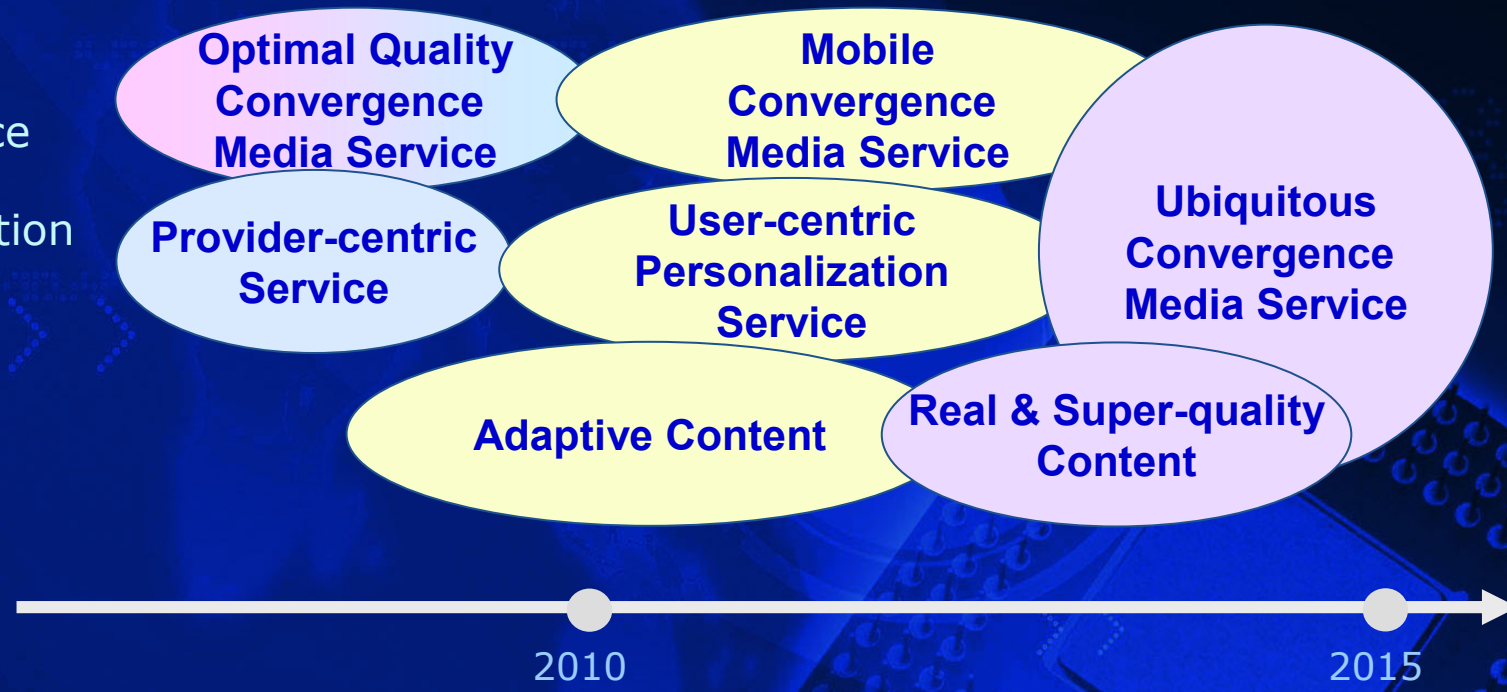
- Personal Communication Sphere

Intelligence

- Situation aware
- Experience aware
- Emotion aware

A Service Perspective (ETRI)

- Convergence
- Personalization
- Intelligence
- Reality



A Network Perspective (ETRI)

Mobile Multimedia over Seamless Intelligent IP

- Architecture beyond current IP Network
  - Privacy, Security, Mobility, QoS, Reliability
  - New Business model
- Key Features
  - Service as a Platform : Open Service
  - IP + Circuit-like IP Connectivity
  - Packet based Seamless Mobility
  - User-/Service-aware Transport

Next Challenges (ETRI)

u-Infra Control Platform

- Integrated Access Control
- Mobility Control
- Integrated AAA & Security
- Resource & Quality Control
- Network-context Control

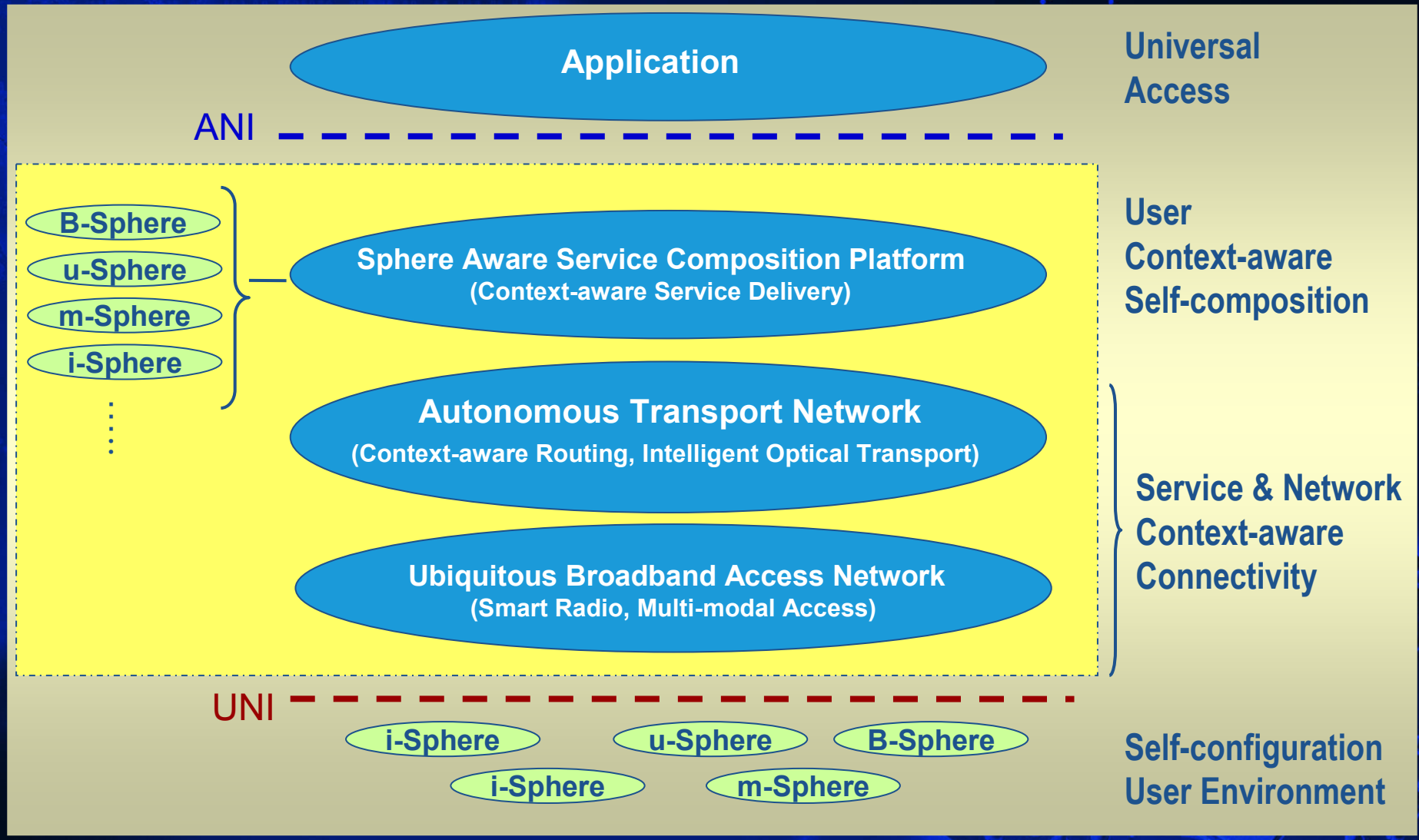
All Optical Integrated Transport Network

- Fiber to the end-user
- Full-mesh transport with Wavelength Cross-connect Switches
- Integrated Control over end-to-end packet/circuit/ optical paths
- Open & Transparent Transport with Converged Access

Network-centric IP-USN

- Network-centric Simple Sensor
  - Super-light IP mobile routing
  - Simple security
- Asynchronous Low Power Sensor
- Network-based synchronization
- IPv6-based global access & control

A Vision for Future Network (ETRI)



What about Network Capacity?

Traffic Volume on core transport

- 500Gbps in Korea, while 1 Tbps in US (2007)
  - If doubled every year, it grows 2^{13} (8,192) times 13 years later (2020)
  - 500Gb * 8,192 = 4,096 Tb = 4 Petabit

Optical Switch Fabric

- Scalable to 42 Petabit/sec, $32*(256^2 \text{ X } 256^2)$ connectivity[1)]
- No problem in core transport ?

Interface for a traffic elephant

- 2.97Gbps for uncompressed high-vision like digital cinema[2)]
- n*3Gig-to-the-home ?

*1) Optical Switching and Communications System Lab. UCDavis

*2) 3G-SDI: 3-gig Serial Digital Interface [standard:SMPTE 424M]

Open Question Revisited

- **What *will* be the Shape of the Future Network ???**
  - This is not the question for us.
  - Questions for us should be like …
- **What *should* be the Shape of Future Network and *How to create* the Future Network ?**

Future… Near-term?

- **Keywords for a near future**
  - Privacy & Security
  - Seamless Mobility
  - End-to-end Quality of Experience
  - Context Awareness
  - … and above all, *Economic Incentive*

Future… Long-term?

- **Keywords for a far future ? - Imagination**
  - *Lifelike real communication*
  - *Multi-dimensional communication*
  - *Emotion-aware communication*
  - *Terminal-less communication*
  - *Address-less routing*
  - *Ambient intelligence*
  - *Personalized virtualization*
  - *…*

Painting a rosy picture …

- **Imagination, a Future Creator**
  - Vision Sharing
  - Collaboration
  - Consilience (統攝)

Thank You !

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