Harmonization and Convergence of IMT-2000 Systems

Dr. Young Kyun Kim
ITU-T SSG/WP3 Chairman
Senior Vice President
Global Standards & Strategy
Samsung Electronics
youngkyunkim@samsung.com
Outline

Industry Trends

Core Network Harmonization

- Benefits of Harmonization
- Recent Workshop in Toronto

Role of ITU-T SSG on “IMT-2000 and Beyond”

Studies in Working Party 3/SSG

- Interworking/Harmonization
- Fixed/Mobile Convergence

Concluding Remarks
Industry Trends

Third-generation (3G) systems are evolving to provide enhanced capabilities to meet end-user needs.

3G core networks are migrating towards a common packet-switched architecture using IETF protocols.

Service providers are moving towards support for an IP-based multimedia service concept.

Convergence of fixed and wireless networks provides additional synergy.
Harmonization Objective

Major objective of the Harmonization

- The development of harmonized CN solution
  - Can facilitate cost-effective IMT-2000 network deployments based on the standardized open interfaces
  - Stimulate the commercial uptake of IMT-2000 services
  - Foster global roaming across all evolving IMT-2000 systems

Harmonization of CN standards should give network operators the ability to deploy new services without unnecessary adverse impact on other common systems

- This could be achieved by separation of transport, control and services
Drivers for Core Network Harmonization

Extended Service Opportunity
- Variety of networks are increasing in many operators along with the emergence of new technologies in RAN side: operators are suffering from the heterogeneity of the core networks since those limit the opportunity of service transparency, seamless roaming and common application.

IP based Convergence Trend
- With the core network gradually migrating to Internet Protocol (IP) and packet-switching based, service convergence could generally become easier: even for the voice services in the long run.
- The direction of moving to support IP based multimedia service is already slated for both cdma2000 and W-CDMA operators: why not to go in line with it?

Promising Aspect of Access Transparency
- Increasing diversity and shortened lifetime of access technology (I.e., WLAN) give rise to the strong need of infrastructure sharing and access transparency.
Harmonization Benefits

- Harmonization can bring benefits to users, vendors, and network operators
  - **Benefits for Users:**
    - Variety of Service
    - Reduced User cost
  - **Benefits for Vendors:**
    - Single and open architecture
  - **Benefits for Network Operators:**
    - Enable seamless roaming irrespective of radio access technologies
    - Facilitate service transparency
    - Enable common service and application development
  - Early realization of emerging real-time IP multimedia service, in line with IP convergence trend of evolution:
    - Provide high commonality and feasibility that will accelerate deployment of IP multimedia services based on open service access platform
Harmonized IP Core Network

Harmonized Core Networks

Services

cdma2000 Terminal
- or -
Multi-mode Terminal

cdma2000 Radio Interface

cdma2000 RAN

3GPP2 Access Network

3GPP Access Network

W-CDMA RAN

W-CDMA Terminal
- or -
Multimode Terminal

W-CDMA Radio Interface

Concept of a common core network designed to ensure service transparency between evolving IMT-2000 systems and having an IP-based architecture
Medium-term Focus on Harmonization

- Operators are making efforts to convince suppliers of the benefits of harmonization (e.g., through OHG)
- Specifications forums are taking steps to encourage development of required new standards
- Standards bodies are working to achieve harmonization, convergence, and alignment of evolving standards
- Vendors of network equipment are creating enhanced product evolution solutions
- Manufacturers of handsets are evolving terminals to fully integrate with the target core network protocols
- Harmonization of core networks is key to the success of evolution in the medium-term timeframe
Participants at the Workshop in Toronto (3-4 April 2002) agreed on a number of points:

- The considerable alignment of 3GPP IMS and 3GPP2 MMD was recognized
- Priority areas for harmonization were identified
- A high-level “IMS Harmonization Reference Model” was recommended for adoption by 3GPP and 3GPP2
- Support was given for aligning terminology, the functional entities and interfaces in 3GPP/2 Reference Model

Future interactions:

- Promotion of harmonization activities by 3GPP and 3GPP2
- 3GPP/3GPP2 collaboration on inputs to IETF
- Work common evolution strategy taking into account the vision work in other groups (including ITU)
Summary of SSG Mandate

- Lead SG on IMT-2000 and Beyond and for mobility
  - Primary responsibility within ITU-T for overall network aspects of IMT-2000 and Beyond
- Will study:
  - Vision for IMT-2000 and Beyond (circa 2010)
  - Identification and globalization of IMT-2000 Family members
  - *Support Harmonization of evolving IMT-2000 Family members*
  - *Convergence of fixed and wireless networks*
- To assist developing countries in applying IMT-2000
- Emphasis on strong cooperative relations and complementary programs with SDOs and 3GPPs
SSG Work Topics and Relationships

Showing dependencies and relative time perspectives.

Reflects consolidation of Q.2, 4 and 6/SSG, anticipated to be ratified May 2002.

For consideration by:

Operator Inputs

3G
3rd Generation Partnership Project 2 "3GPP2"

3G
A GLOBAL INITIATIVE

SAMSUNG DIGITAL
everyone's invited
Identify functions required to facilitate appropriate interworking among IMT-2000 family members developed by relevant SDOs, the PSTN/ISDN, and Packet Data Networks (including the Internet) and document appropriately for consideration by the Partnership Projects and SDOs, and other ITU-T SGs as part of their long term network evolution plans:

- Establish co-operative working arrangements with external organizations to ensure that work does not overlap with external organizations.
- Identify and study the degree of harmonization of existing IMT-2000 networks and document these in an appropriate manner.
- Identify and study appropriate harmonization issues of the existing IMT-2000 systems where harmonization may be desired; document appropriately.
- Develop harmonization proposals for evolving IMT-2000 systems, document appropriately for consideration by the Partnership Projects and SDOs as part of their evolution plan.
Q.7/SSG Task Objectives

- Convergence of fixed and existing IMT-2000 systems
  - The foundation for migration paths to interoperable and harmonized network architectures to provide service transparently to users across different network access arrangements
  - Studies on network aspects and protocol requirements for Service Provisioning, Mobility Management, Session Control, and Bearer Control
  - Initial output document will describe principles and requirements for convergence of public fixed networks and existing IMT-2000 networks
Concluding Remarks

- IP CN Harmonization is of great help for seamless roaming in IP Multimedia Domain, and enabling common application for it
- Must consider the view of operators’ evolution plan and must not delay business plans of operators
- Close collaboration with the 3GPP/3GPP2 will be required.
- Seminar participants are encouraged to submit contributions to help progress ITU-T SSG work in the area of Interworking/Harmonization and Fixed/Mobile Convergence