3GPP2
3G Deployments and the
Future of IP Core Networks

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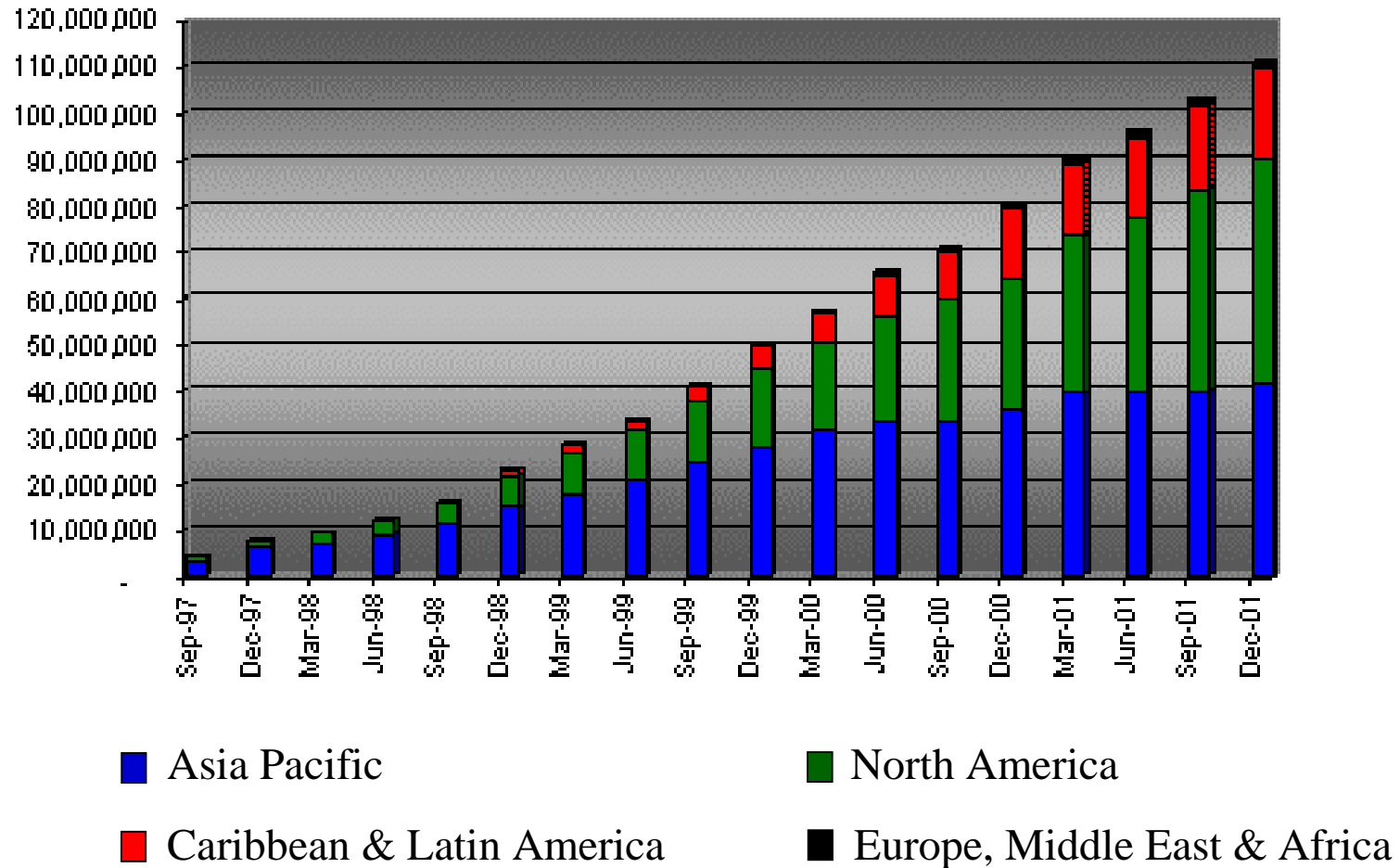
ITU Seminar on IMT-2000, May 28, 2002

Overview

- CDMA Subscriber Growth

- The Evolution of CDMA

- Deploying CDMA2000 & Beyond

- Delivering CDMA2000

- Diverse Solution

- The Future of All-IP
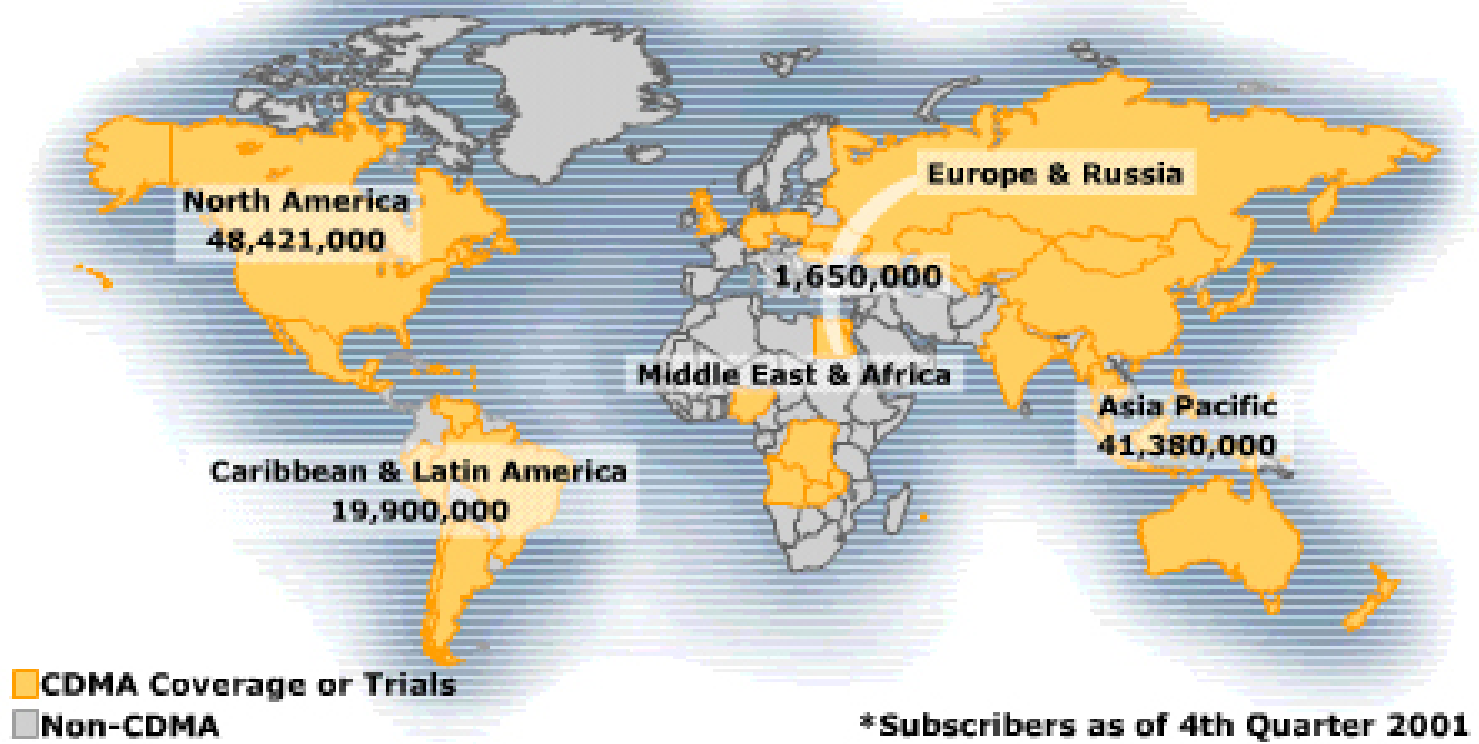
- Effects of Harmonization

- Conclusions

CDMA Subscriber Growth

■ Asia Pacific   ■ North America

■ Caribbean & Latin America   ■ Europe, Middle East & Africa

CDMA Subscriber Growth

CDMA SURPASSES 111 MILLION GLOBAL SUBSCRIBERS

North America
48,421,000

Europe & Russia

1,650,000

Middle East & Africa

Asia Pacific
41,380,000

Caribbean & Latin America
19,900,000

☐ CDMA Coverage or Trials
☐ Non-CDMA

*Subscribers as of 4th Quarter 2001

CDMA Evolution

IS-95A – Voice – Data up to 14.4 kbps

IS-95B – Voice – Data up to 115 kbps

CDMA2000 1X – 2X Voice Capacity – Data up to 307 kbps on a single carrier – IMT-2000 Compliant

1xEV-DO – Optimized high speed data up to 2.4 Mbps on a single carrier – IMT-2000 Compliant

1xEV-DV – Integrated Voice and Data with Downlink rates up to 4.8 Mbps

CDMA2000: Deploying 3G

The world's first commercial IMT-2000 3G systems were launched in October 2000.

Thirteen CDMA2000 networks are currently in live deployment in Europe, Asia and the Americas.

**Fourteen more networks will be deployed by end of the year.**

SK Telecom launched the first CDMA2000 1xEV-DO network in January 2002, achieving data speeds of up to 2.4 Mbps.

TELUS mobility-mobilité
Launch 2Q 2002

Bell Mobility
Commercial 1Q 2002

Moscow Cellular communications
Launch 2H 2002

ALLTEL
Launch 2002

LEAP
Commercial 4Q 2001

monet MOBILE NETWORKS
Commercial 4Q 2001

verizon wireless
Commercial 1Q 2002

CST Invest Ltd.
Launch 1H 2002

First in Mobile
KTF
Commercial 2Q 2001

KDDI
Commercial 2Q 2002

Sprint & Affiliates*
Launch Mid 2002

U.S. Cellular
Launch 4Q 2002

Western Wireless
Limited Commercial 3Q 2001

Zapp MOBILE
Commercial 4Q 2001

metroPCS
Commercial 1Q 2002

PEGASO
Trial 2Q 2002

CENTENNIAL DOMINICANA
Launch 1H 2002

CENTENNIAL DE PUERTO RICO
Commercial 2Q 2002

LG TeleCom
Commercial 4Q 2000

CENTENNIAL DIGITAL JAMAICA LTD
Launch 3Q 2002

SK Telecom
Commercial 4Q 2000

movilnet **TELCEL** @BELLSOUTH
Launch 1H 2002   Trial 1H 2001

Hutchison-CAT
Launch 3Q 2002

Launch 2H 2002

Telesp Celular
Commercial 4Q 2001

Telstra Making life easier™
Trial 3Q 2000

SMARTCOM pcs
Launch 1H 2002

VÉSPER
Launch 2H 2002

Telefonica CELULAR
Commercial 2Q 2002

Telecom NEW ZEALAND
Launch 2Q 2002

CDMA2000: Delivering to the Industry

- Today there are more than 7 million CDMA2000 1X subscribers
- More than 1.5 million are added every month
- KDDI Japan announced 7 million CDMA2000 1X mobiles shipped by EoY-2002 (Japan EoY, March 2003)
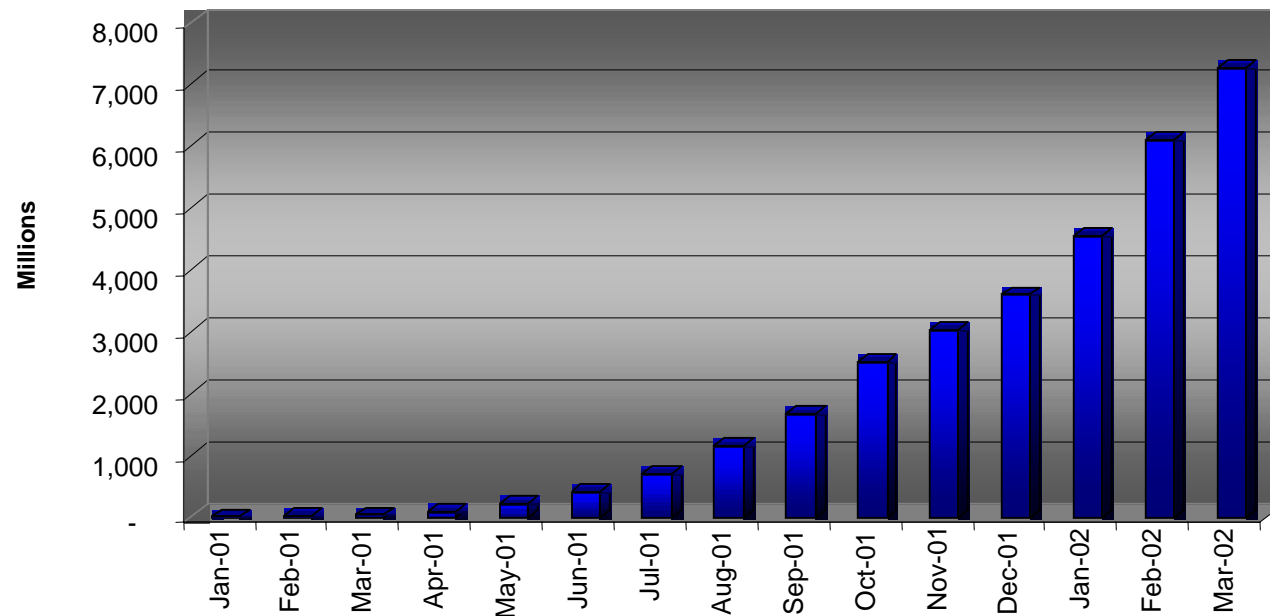
CDMA2000: Delivering Solutions

Multiple CDMA2000 1X terminal products are already available in the market

- Convergence toward an IP-based core network that is independent of the access network.

- Use of multiple access networks: CDMA2000, WCDMA, 802.11b, Ethernet, …

- A single core network.

- Integrated access technologies in terminals that allow the user to move from a cellular environment, to a campus wireless environment, to a wired environment - seamlessly.

IP Evolution Requirements

- Cost effective

- Phased migration plan with interim solutions

- Seamless support of existing services
  - User services and feature transparency
  - Smooth integration with web based services

- Target being an all IP Wireless Network

IP– High Level Objectives

- Unified (voice/data) wireless IP network interoperable with ANSI-41 and MAP services

- Gateways to legacy networks (e.g. ANSI-41 and/or MAP)

- Reuse of radio network

- Enable new services built on top of IP

- IP based infrastructure

- Air interface independent

- Global solution

- Maximize synergy and compatibility with existing standards efforts (e.g. 3GPP, IETF, etc.)
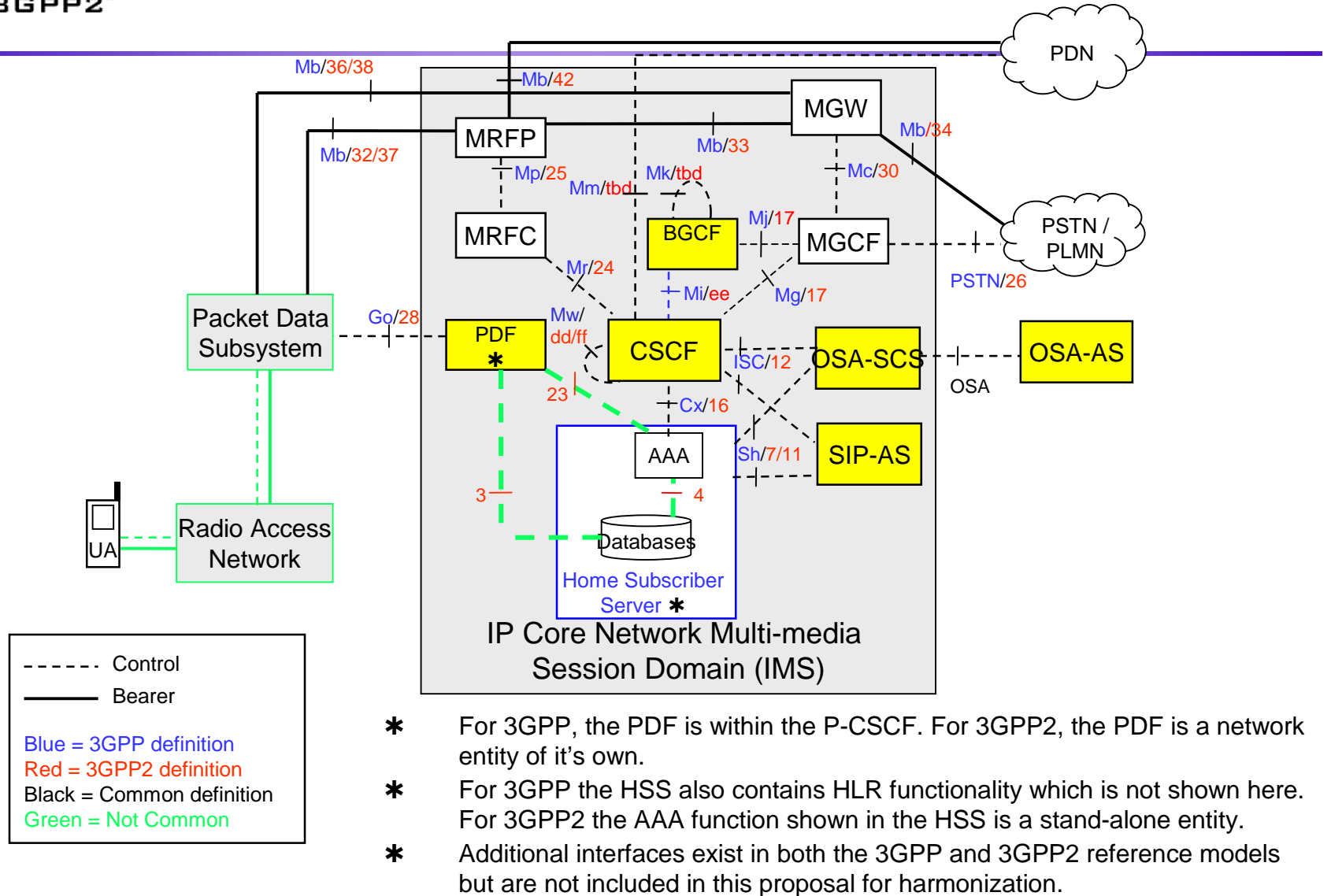
- Support high capacity

- **The Core IP Network Harmonization Workshop Supports the following for the beyond June 2002 timeframe:**

  – Alignment of terms in 3GPP/3GPP2 Reference Models

    - MMD Subset   IMS (IP Core Network Multi-media Session Domain)
    - CQM, PCF   PDF (Policy Decision Function)
    - X-SCM   X-CSCF (Call Session Control Function, X = P, I, S)
    - L-SCM   BGCF (Breakout Gateway Control Function)
    - NCGW   OSA-SCS (OSA Service Capability Server)

  – Alignment of functional entities and interfaces

    - 3GPP/3GPP2 should adopt common functionality where common entities exist
    - 3GPP/3GPP2 should adopt common procedures and protocols where common interfaces exist
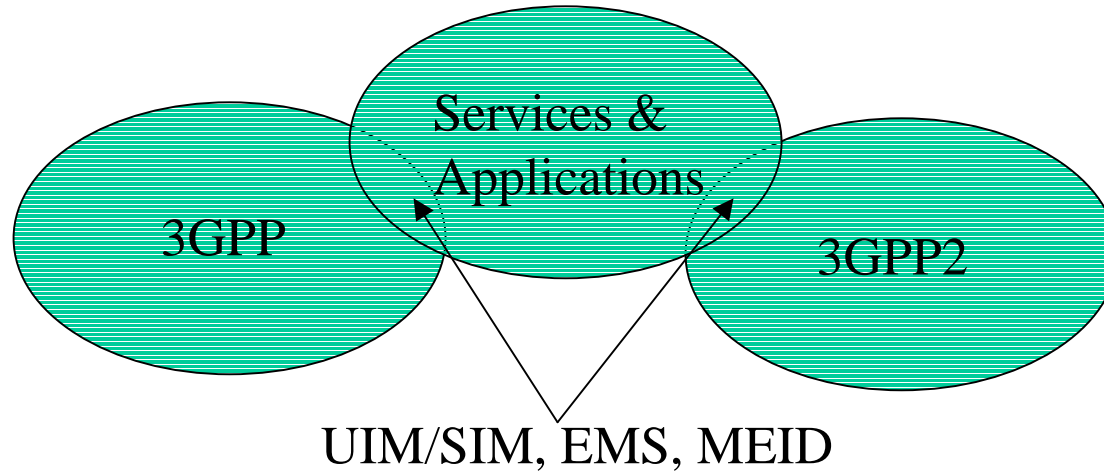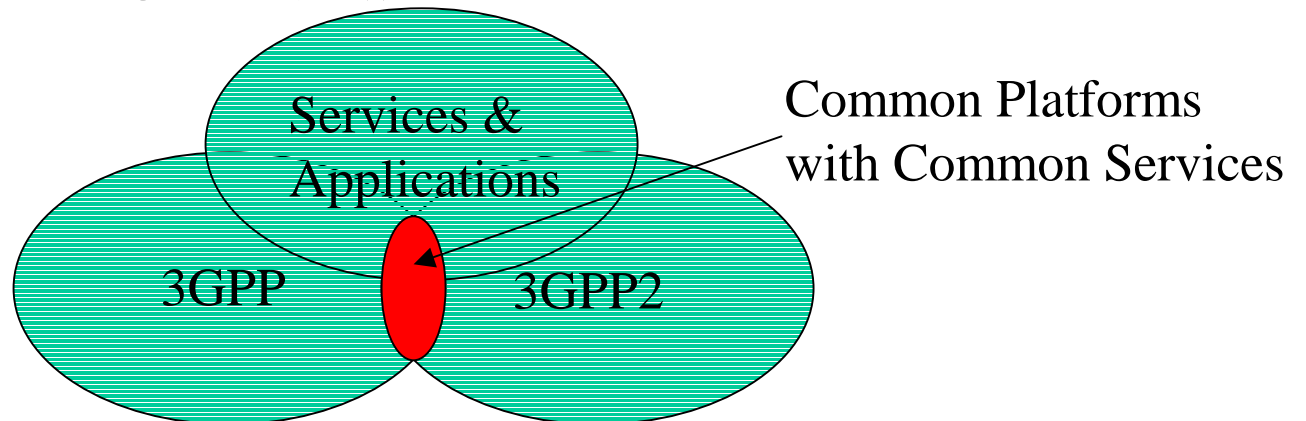
Common Reference Model

* For 3GPP, the PDF is within the P-CSCF. For 3GPP2, the PDF is a network entity of it's own.

* For 3GPP the HSS also contains HLR functionality which is not shown here. For 3GPP2 the AAA function shown in the HSS is a stand-alone entity.

* Additional interfaces exist in both the 3GPP and 3GPP2 reference models but are not included in this proposal for harmonization.

Effects of Harmonization

Prior to IP Core Network Harmonization

Services & Applications

3GPP

3GPP2

UIM/SIM, EMS, MEID

Post IP Core Network Harmonization

Services & Applications

3GPP

3GPP2

Common Platforms with Common Services

Conclusions

- 3GPP2 Endorsed the findings of the IP Workshop on April 29, 2002 and will strive to establish "out-reach" programs with 3GPP & other external organizations – as long as these relationship are:
    - Non-intrusive to 3GPP2 work in progress
    - Does not jeopardize or relinquish the Working Procedures of 3GPP2
    - Facilitates equal participation for contributing requirements while ensuring equal ownership of deliverables produced
- There will be a new "Status Quo" for 3G services – "ubiquity"
- We must learn from the past, realize the opportunities of the present, and strive towards the future

3RD GENERATION PARTNERSHIP PROJECT 2 "3GPP2"

3GPP2 Web Site at:

www.3gpp2.org

Membership Information Also Available