Tomorrow's Network Today Workshop

Next Generation Networks: Mobility and Nomadicity

Ultra 3G: KDDI's Concept for Future Network

EV-DO
W31S

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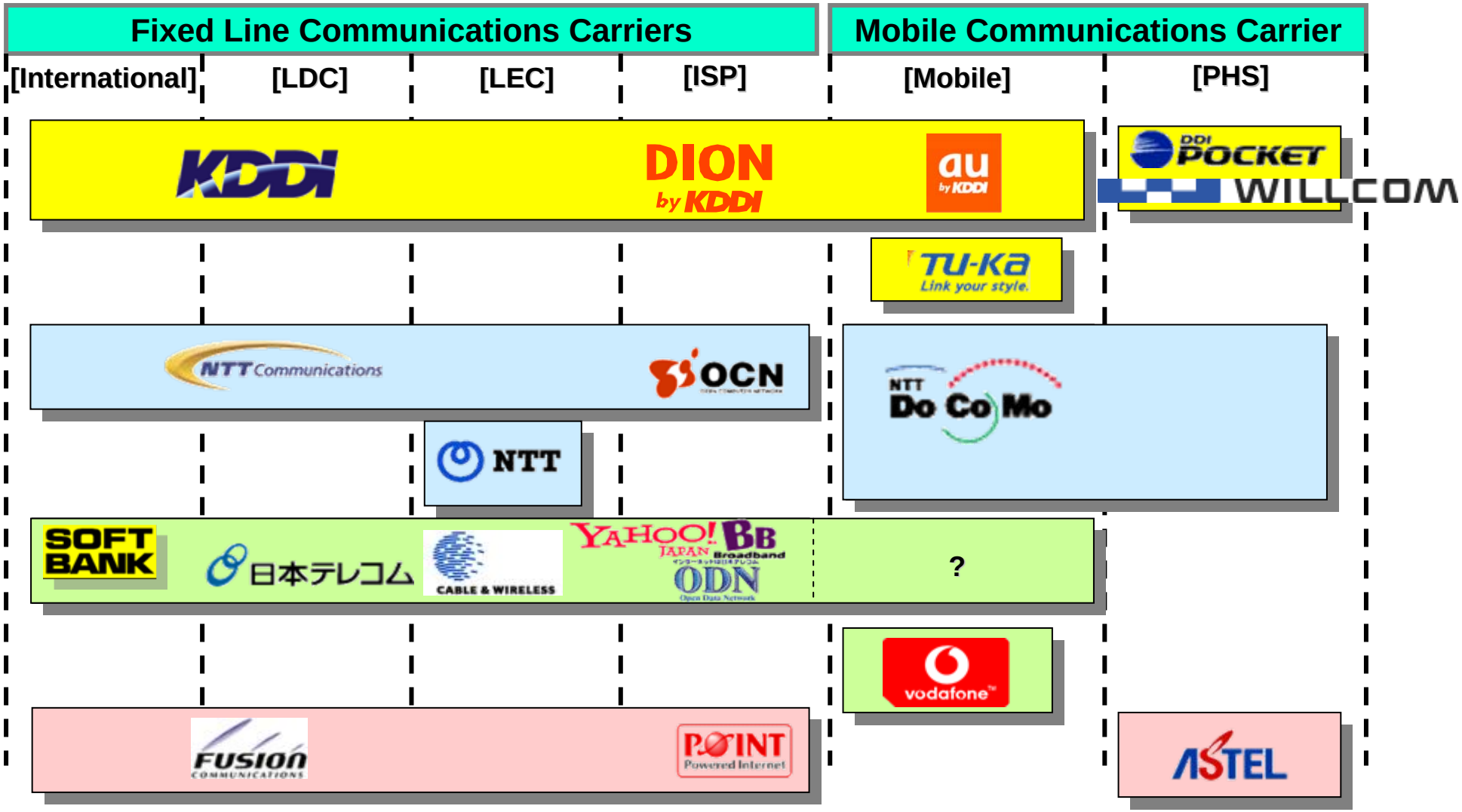
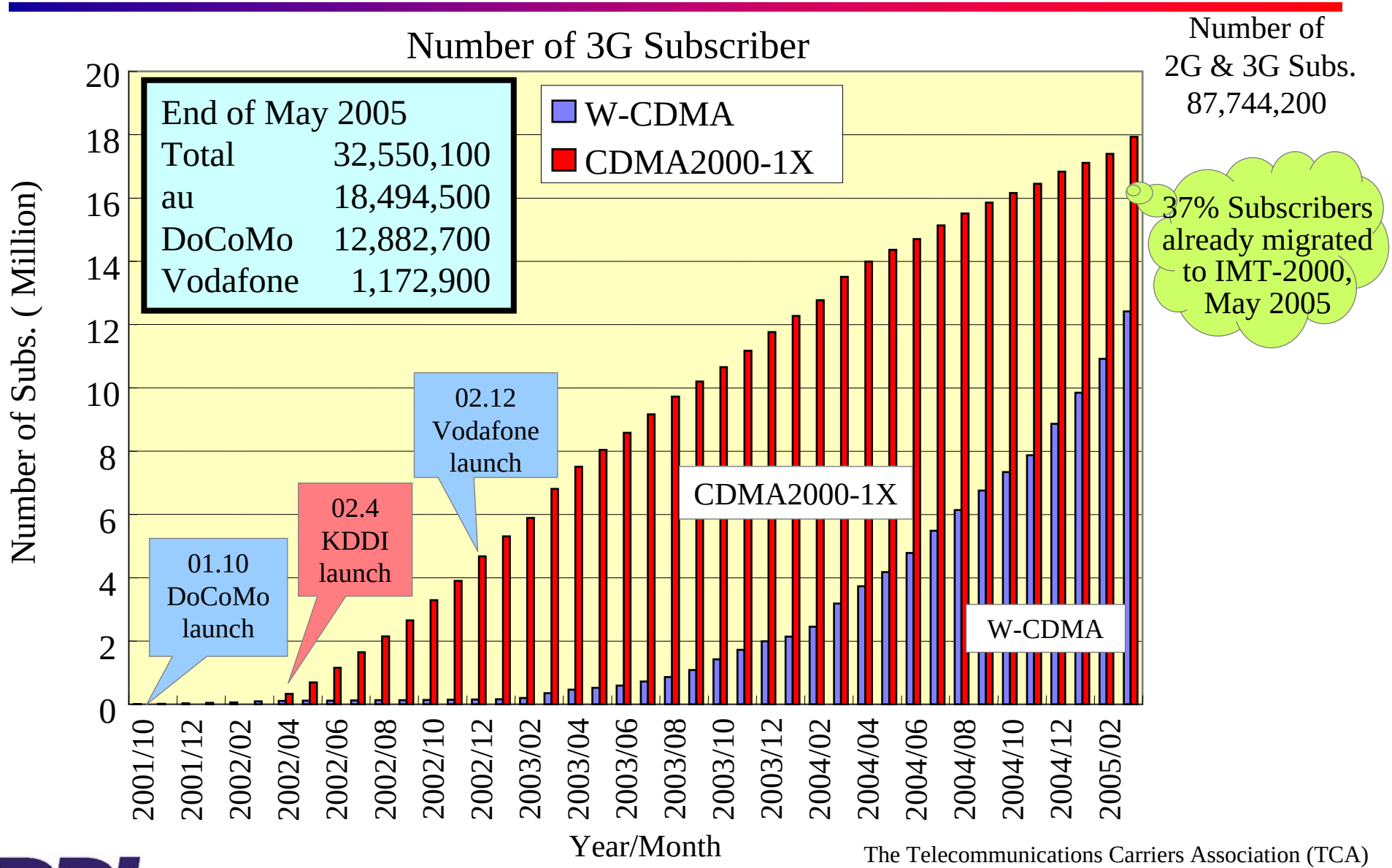
1. Japan's Telecommunication Market

Major Telecommunication Players in Japan

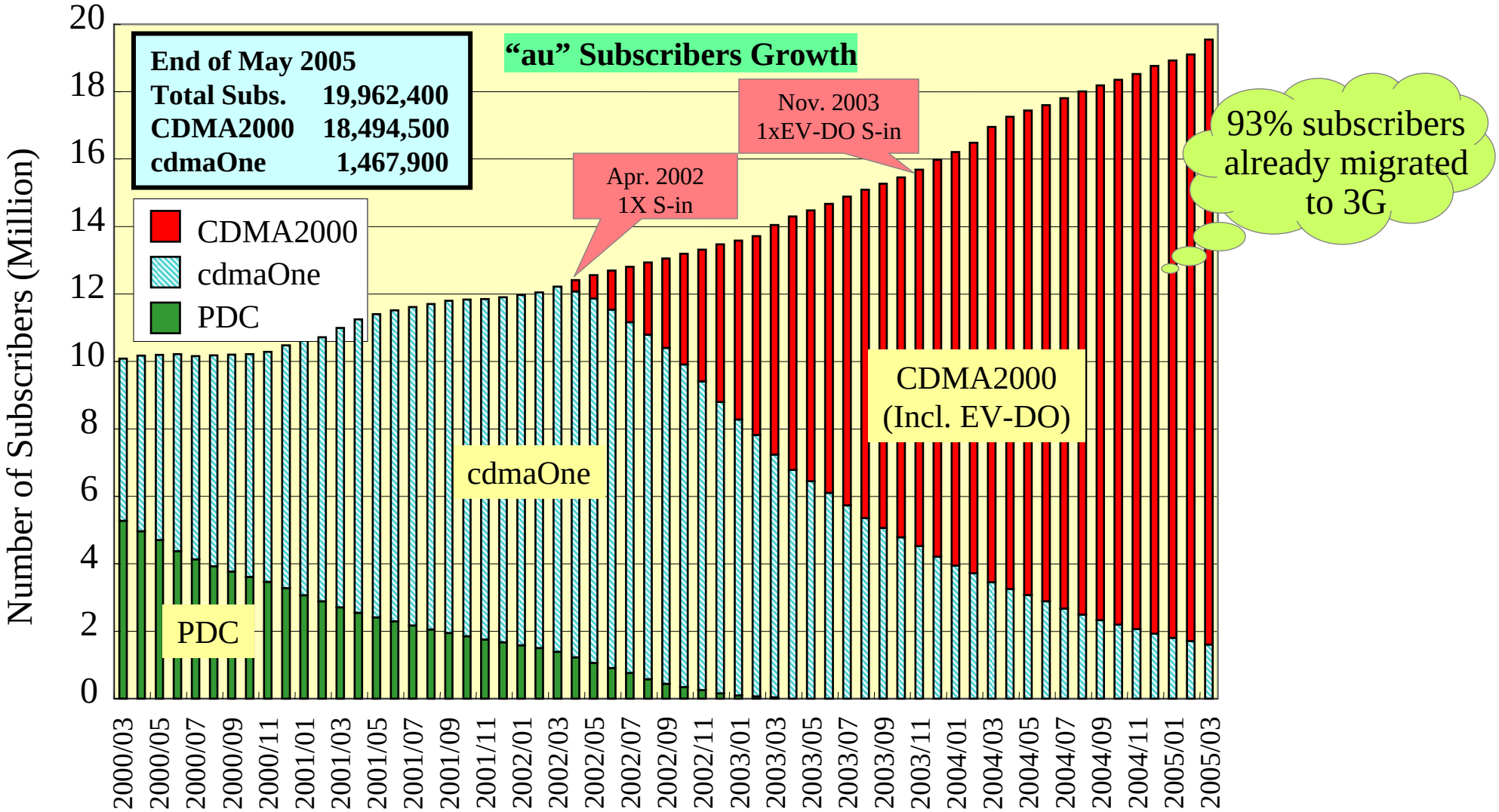


IMT-2000 Subscribers Growth in Japan



The Telecommunications Carriers Association (TCA)

KDDI Seamless Migration to 3G



Functions of Mobile Terminals

"Everything on Mobile" will provide human life with various useful features.

Each device function will be assembled.

All in one

Wallet, Card, Keys, etc.

Navigation System

Media Player・

Magazines, Books

TV/Radio

Office Documents・

Services for Mobile Terminals

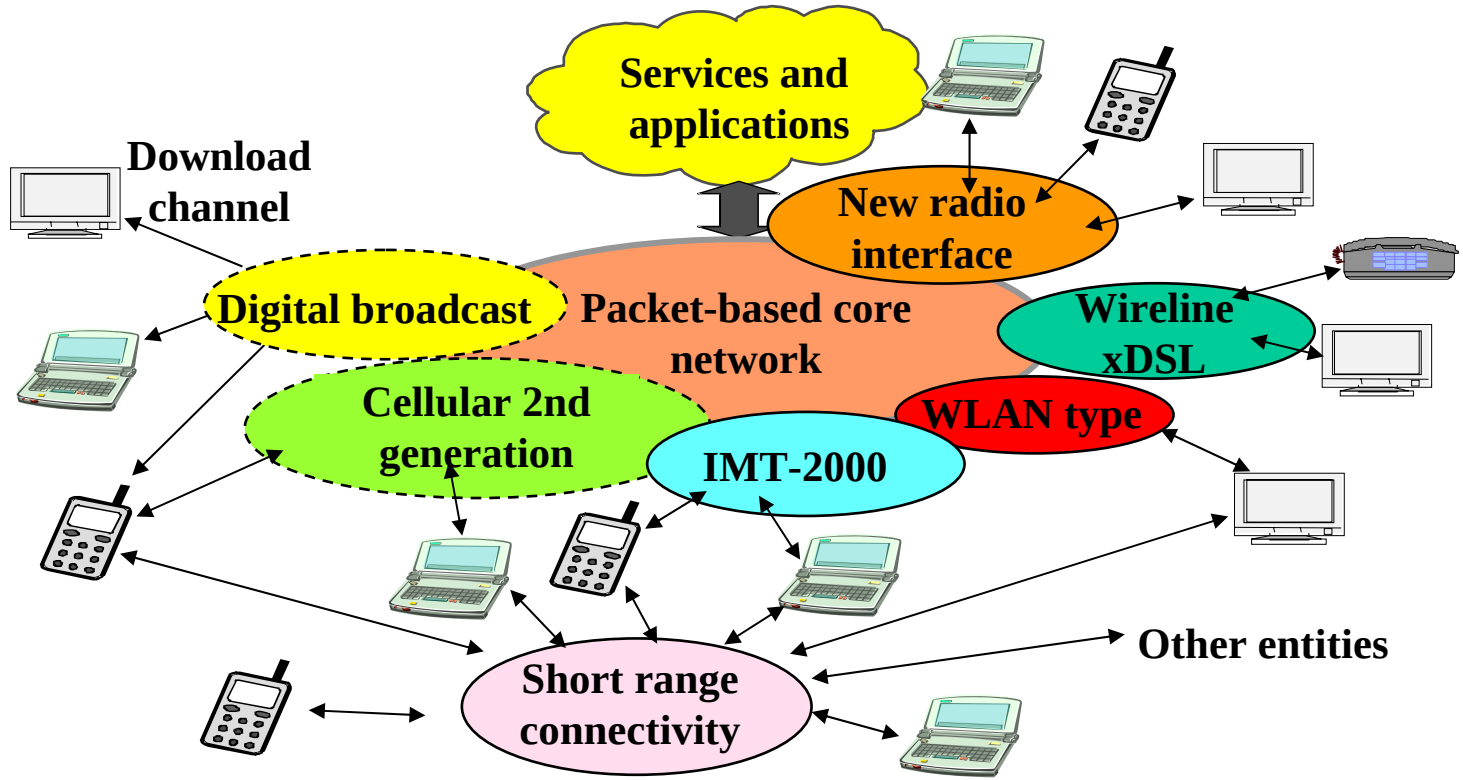
Flat Rate for Packet Communication

- Video and Music
  - Music download, Music search, FM Radio, TV, Video contents.....
- Shopping
  - Auction, On-line shopping, ...
- Navi (GPS)
  - Navigation, Location check, ...
- Others
  - Book, Game, Learning, ...

2. Essence of "Beyond 3G"

IP Centric Heterogeneous Network

- Heterogeneous Network allows a variety of terminals, protocol, interconnectivity.
- Services provided seamlessly independent to access network.

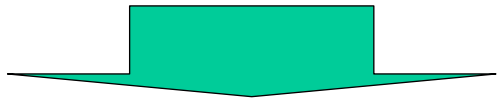


Complementary Access System (from ITU-R Recommendation M.1645)

Essence of “Beyond 3G”

Network comprising a variety of interworking access systems connected to a common packet-based core network

- Various access systems (e.g. 3G cellular, a new radio Interface, W-LAN, Short range radio, and wired access, etc.) will be connected via flexible core networks.
- User can be connected via a variety of different access systems to the networks.
- “Access Independent Service”: Network services are provided seamlessly through variety of access supported with horizontal and vertical handover.



- “4G air interface” (100Mbps / 1G bps) would be an element of “Beyond 3G”
- “4G air interface” will not replace 3G radio, and it is complement to 3G radio and other access subsystems
- NGN/MMD/IMS is essential toward “Beyond 3G”

Evolution of Air Interface-Enhanced CDMA2000

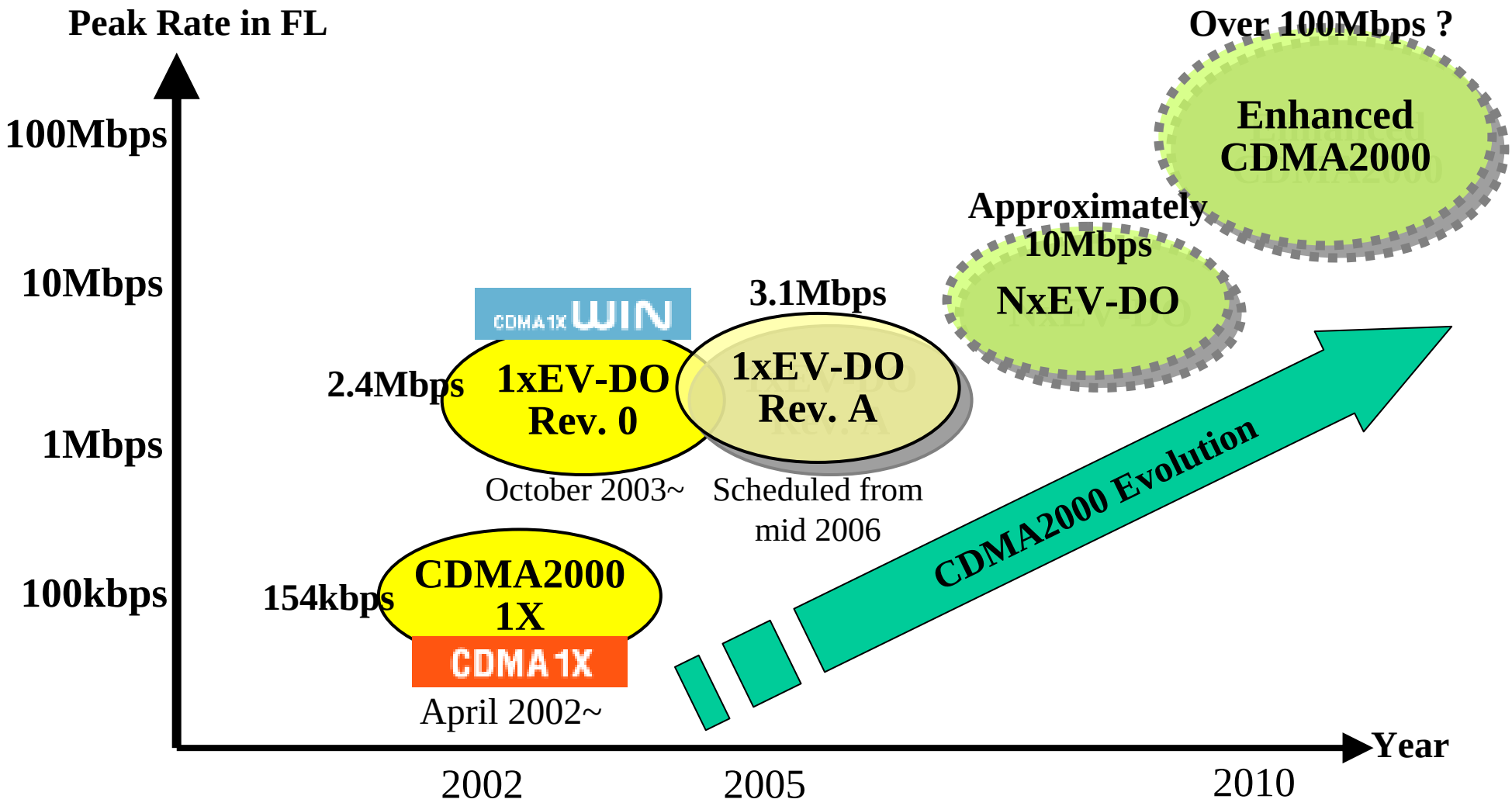
Enhanced CDMA2000

- Improve system voice capacity (VoIP)
- Increase peak transmission rate to 100Mbps
  (FL:100M~1Gbps, RL:50Mbps)
- Improve spectrum efficiency
- Reduce set-up time and round-trip delay
- Reduce cost per bit
- Backward compatibility with existing system

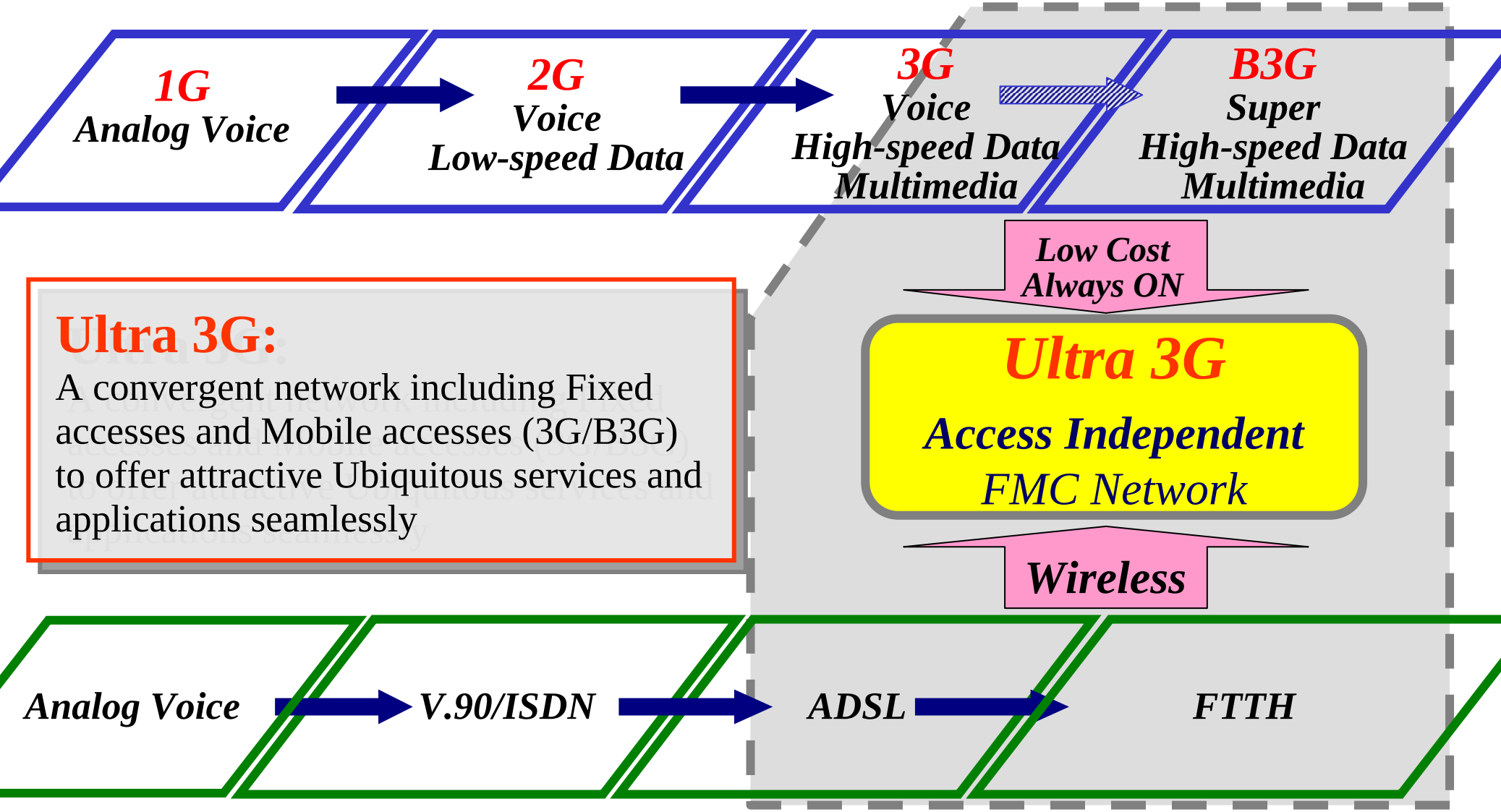
3GPP2 TSG-C has approved to initiate development of system requirements and technology specifications for Enhanced CDMA2000 air interface based on proposal by 29 members (2005/5/20, Portland).

3. KDDI's "Ultra 3G" Concept

Evolution of KDDI Systems



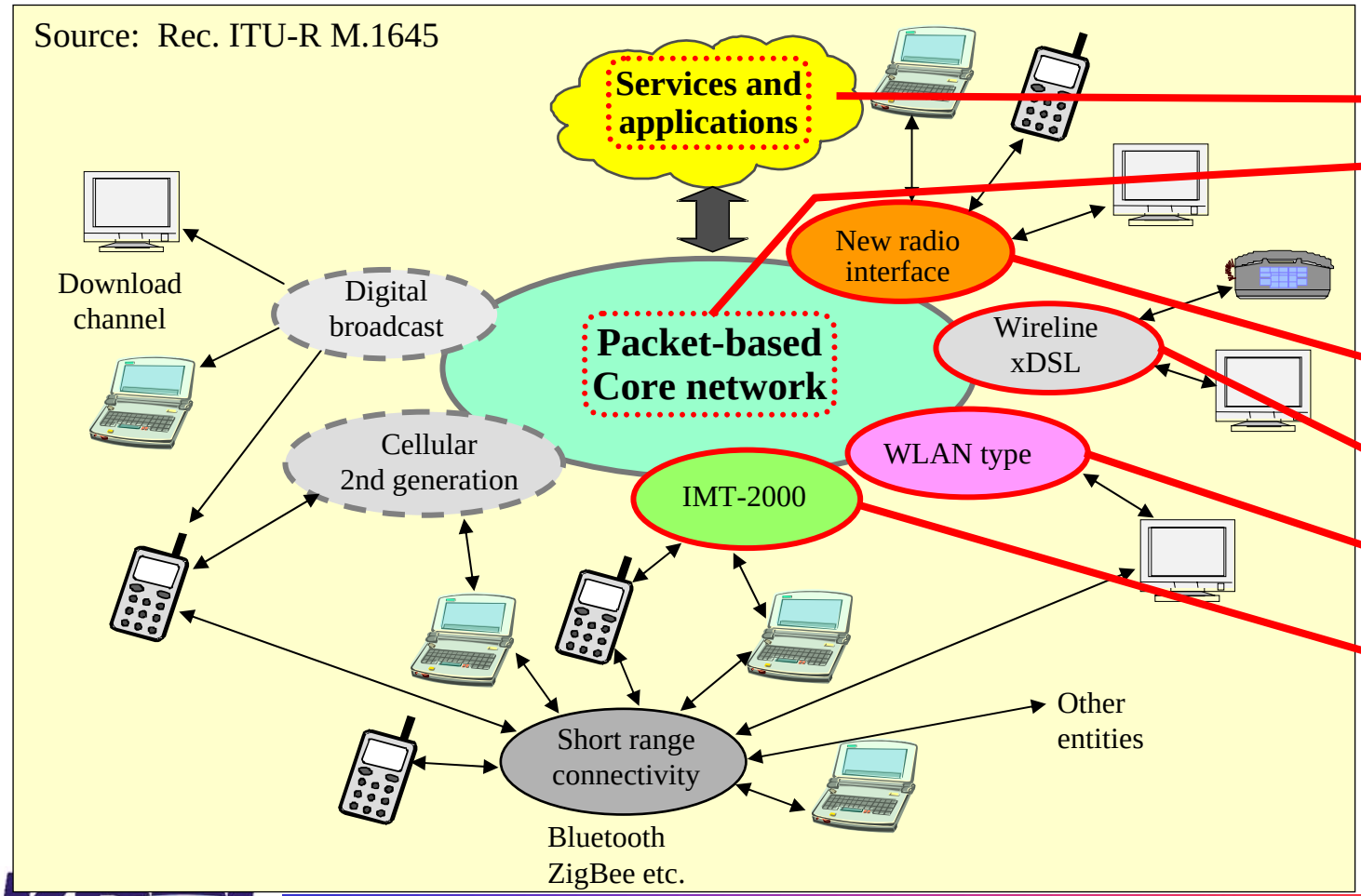
What is “Ultra 3G”?



Ultra 3G:
A convergent network including Fixed accesses and Mobile accesses (3G/B3G) to offer attractive Ubiquitous services and applications seamlessly

KDDI's "Ultra 3G" Concept

Enhancement of the 3G network to offer the attractive services and applications seamlessly over the packet-based core network with a variety of access systems which compliment each other



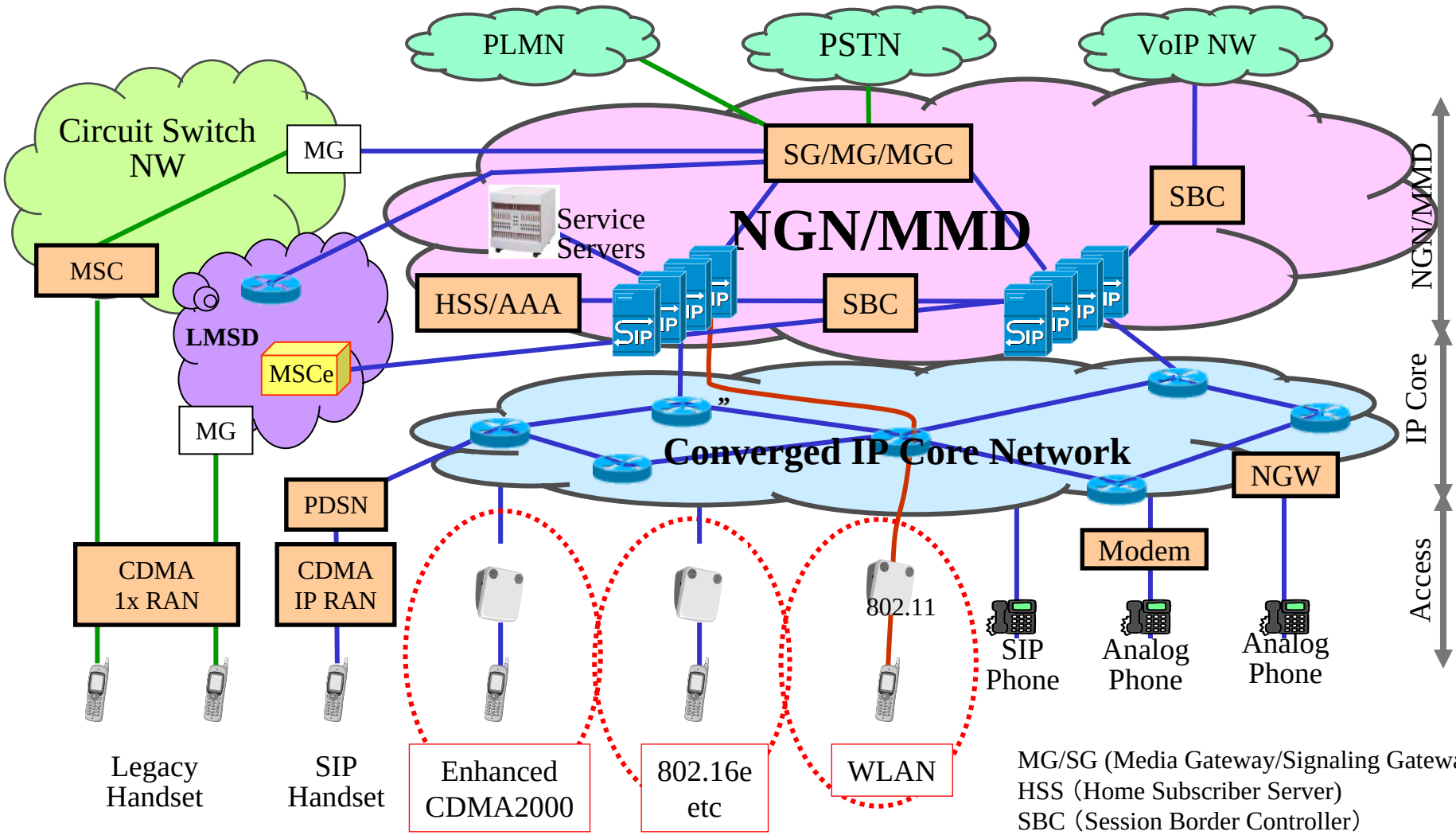
Integrated services

- NGN/MMD based
- IPv6 Network

A variety of access systems

- **Enhanced CDMA2000 IEEE802.16e, etc.**
- **ADSL FTTH**
- **IEEE802.11 a/b/g + n, e, i**
- **CDMA2000 + EV-DO Rev.A + NxEV-DO, etc.**

Network Convergence



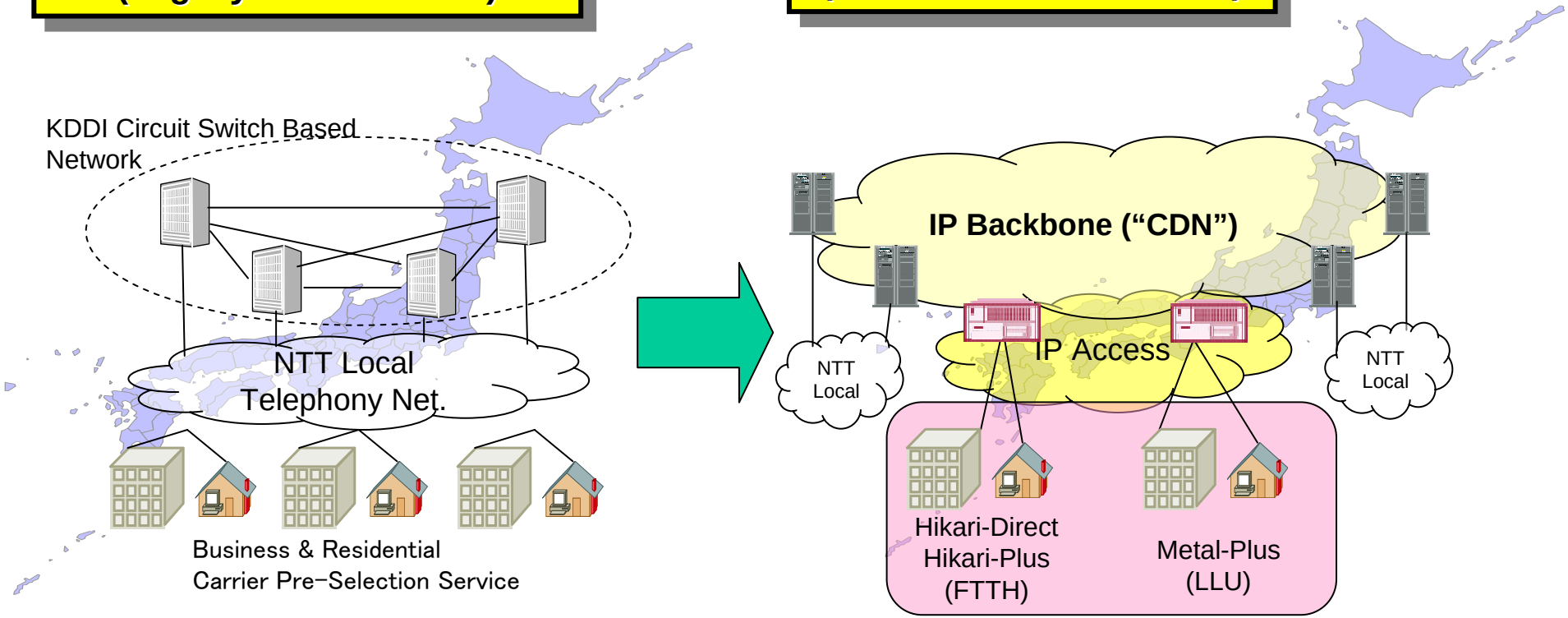
MG/SG (Media Gateway/Signaling Gateway)
HSS（Home Subscriber Server)
SBC（Session Border Controller）
B3G (Beyond 3rd generation)

KDDI's VoIP Migration Plan for ALL IP Network

- KDDI will promote High-Quality direct access voice service from now on.
- KDDI will replace all the Circuit Switched Based Network by 2008.1Q.

KDDI Telephony Network (Legacy Switch + SDH)

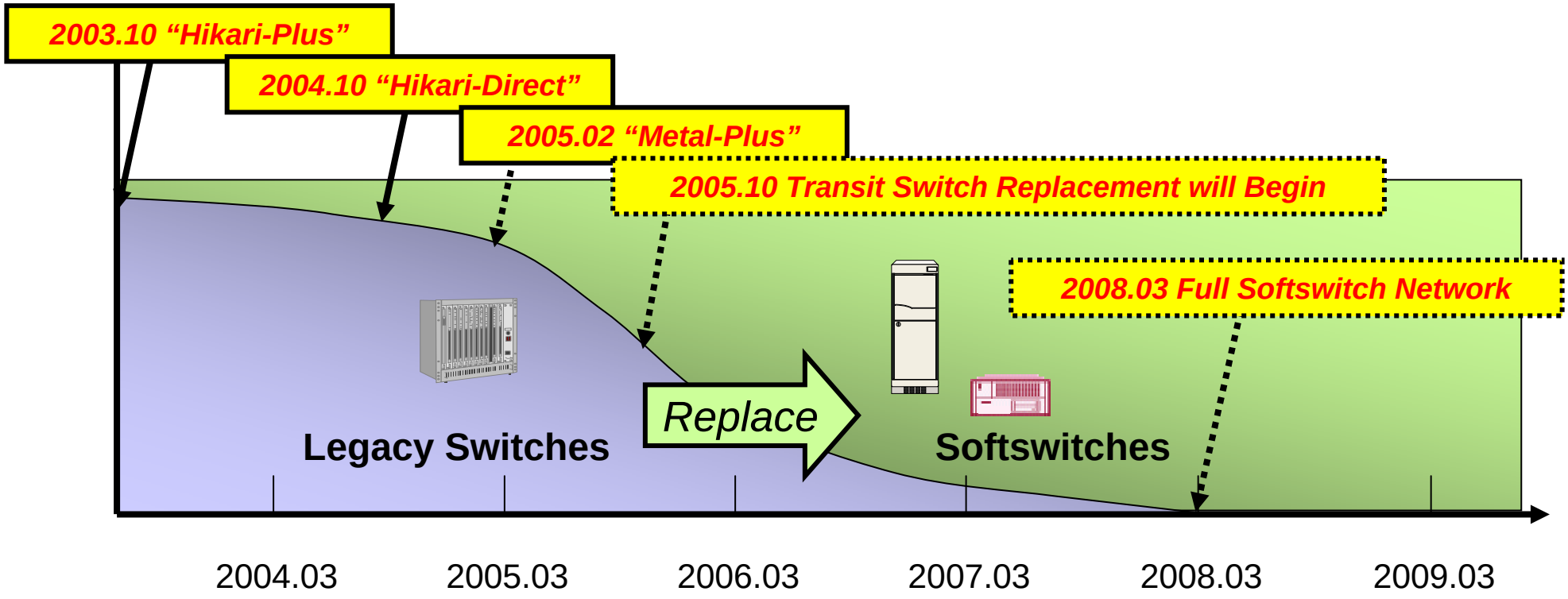
Next Generation Network (Softswitch + IP Network)



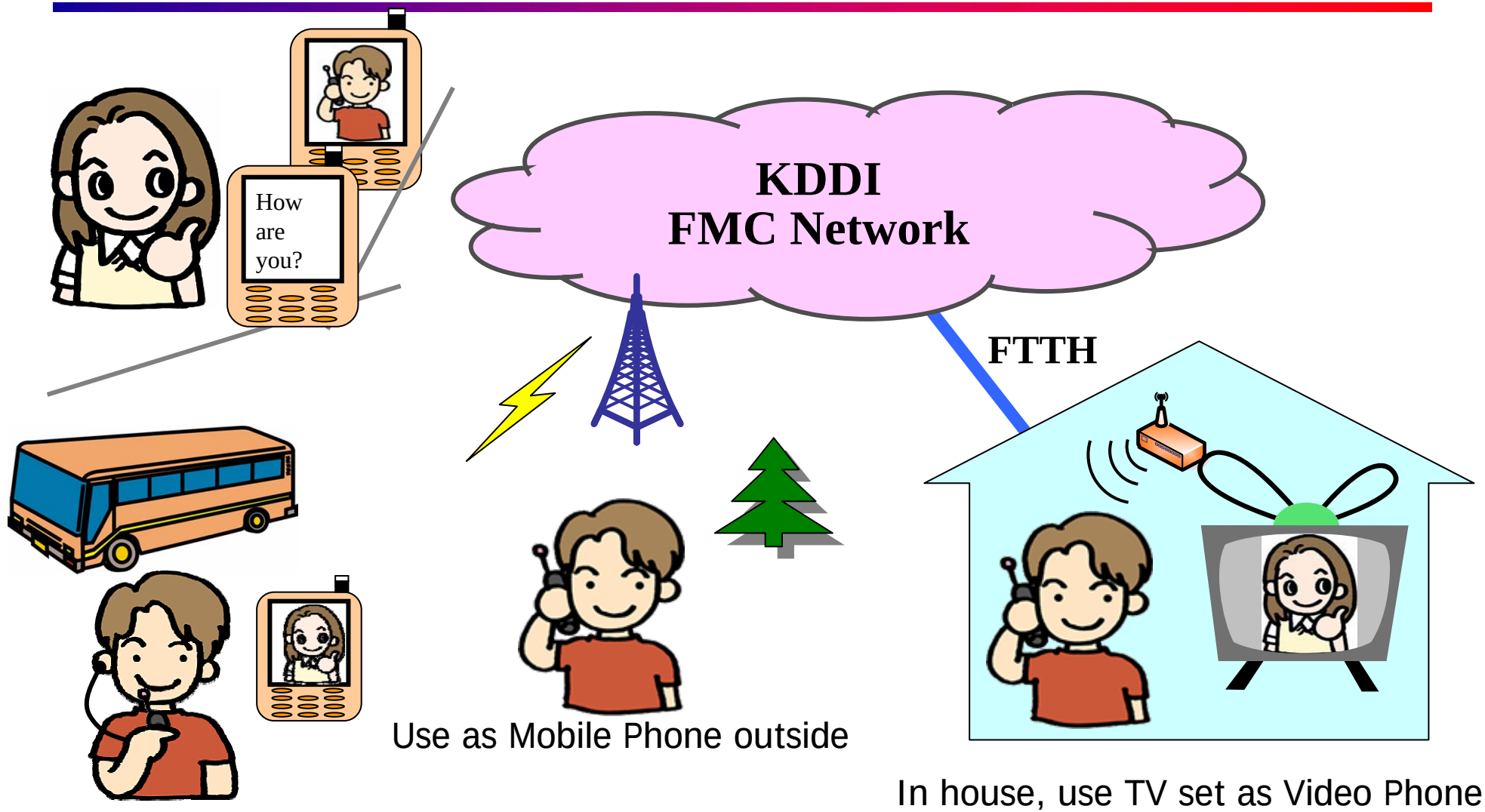
CDN: Contents Delivery Network (IP base, QoS enabled)

Schedule from Legacy Switches to Softswitches

- 1Q of 2008 is the target date to complete.
- Focusing on VoIP based subscriber services.
- International VoIP, VoIP Interconnection, All-IP Mobile will follow.

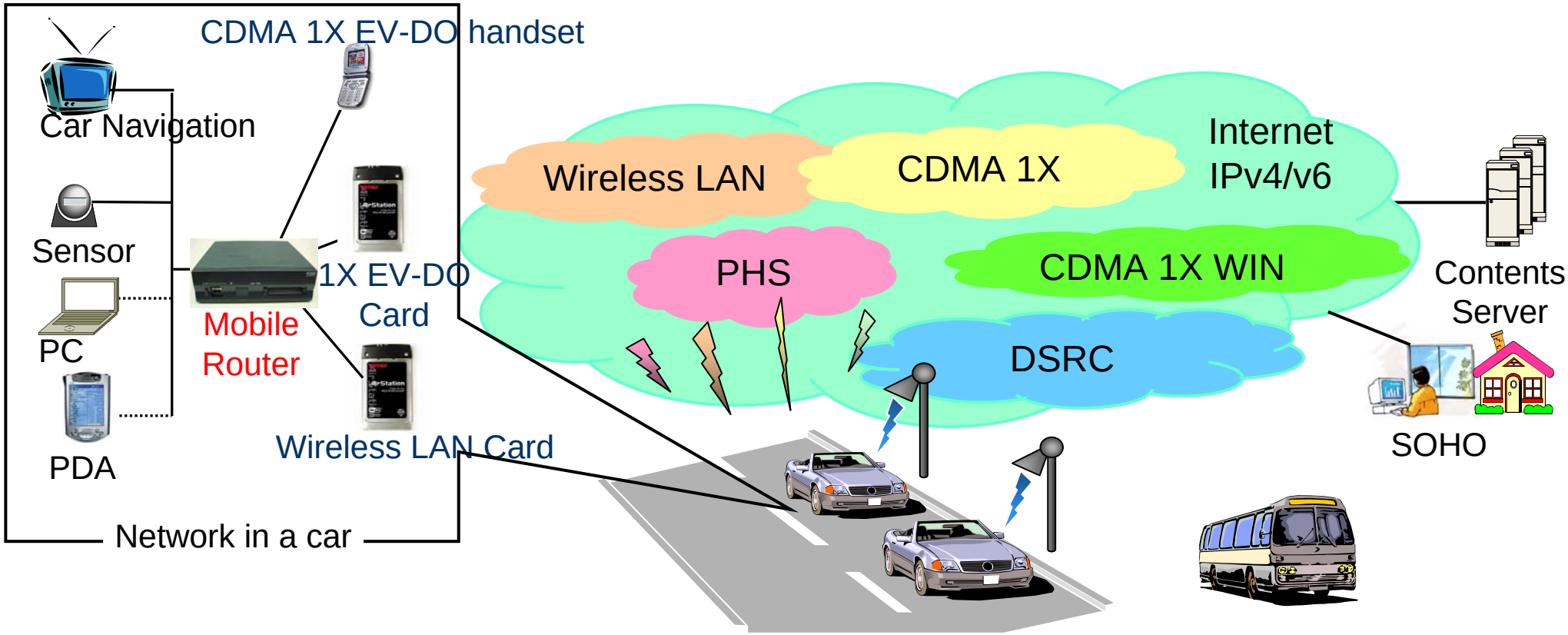


Seamless Communications on FMC Network



Seamless Connection for Vehicle Environment

- Mobile router in a car enable simultaneous connection to multiple equipments (EV-DO, Wireless LAN, PHS, etc.) in order to realize the media selection.
- For IPv4 and IPv6 Network



4. Conclusions

Evolution of Network

- In order to update service grade with keeping current service area, the current systems will be updated gradually, and new systems will be overlaid on the current system.
- Various access methods, such as not only a traditional cellular phone system, but wireless broadband, wireless LAN, digital broadcasting, etc., will be combined seamlessly.
- In response to ALL IP network of a fixed-line telephone network, mobile network will be changed to the All IP network. Then new services will be developed using FMC concept over unified networks.

Evolutional network expansion is a way for “Beyond IMT-2000”.

- Replacement such as 2nd to 3rd generation will not occur by the 4th generation.
- The expansion towards “Beyond 3G” advances without waiting for 2010.


KDDI
Designing The Future