NEC's View on IMT-2000

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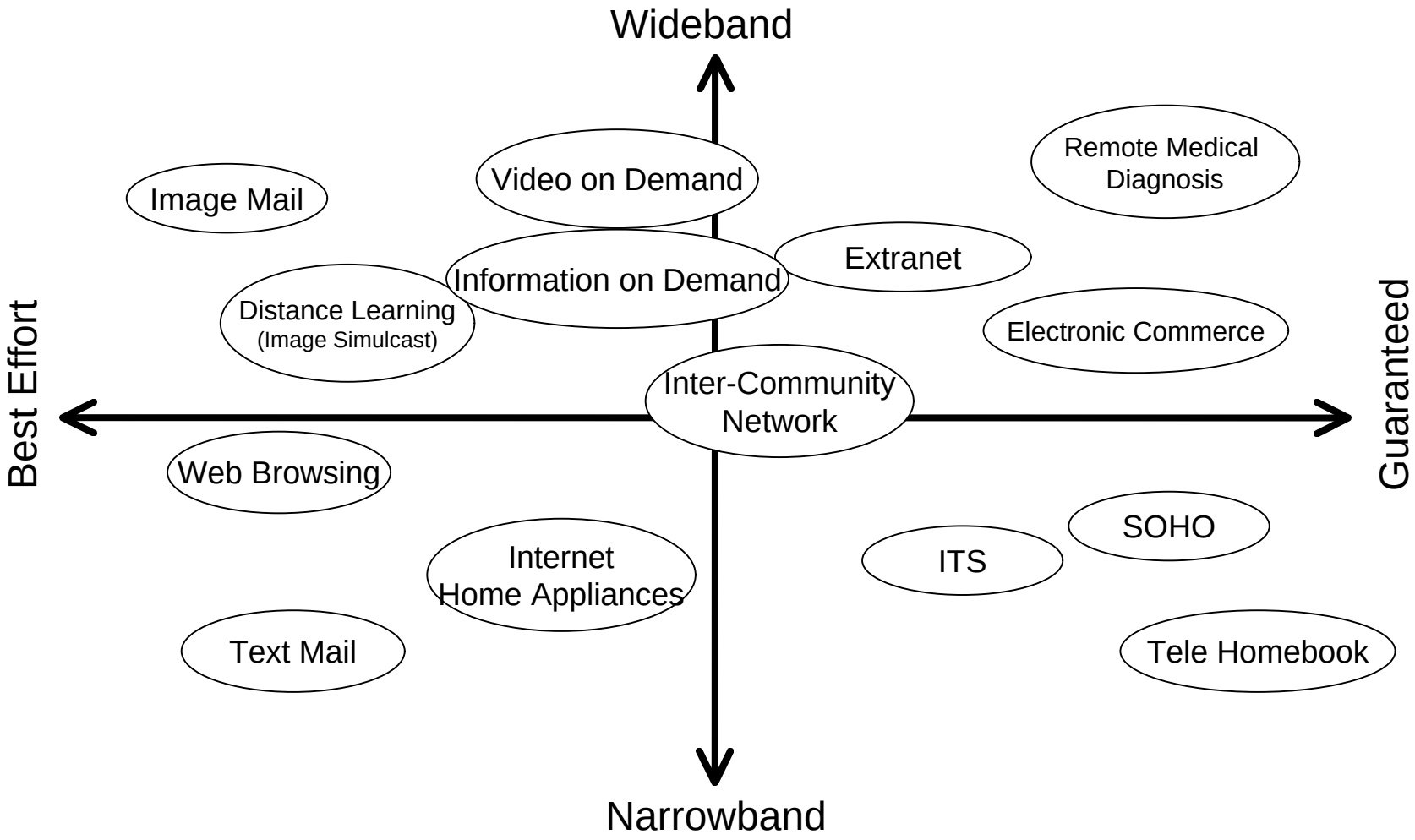
Network to Harmonize with “Life in 2005”

- Services personalized to each individual
  - IN and Internet operating with personal profiles
  - Cyber secretary in the network
- Large volume and wide variety of data to support business and casual life through tetherless communications
  - Large scale and high speed network
  - From bandwidth guaranteed to best effort
- Search for information
  - Indexed by location, individual, time, ……
- Seamless and global services
  - Service portability
- Reliability as a life line

Example of Multimedia Services



Prerequisites for IMT-2000

- Worldwide System for Mobile Multimedia Services
- Multiple Environment Operation
- Large System Capacity and Flexible User Speed Assignment for Personal Communications
- Wired-level Quality
- Low Cost
- Flexibility for Future Evolution

W-CDMA Features (1/2)

- Multi-access system using different spreading codes
- Soft / Softer handoff
  - no interruption handoff
  - lower transmission power
- Various Services
  - 8kbps voice (G.729) ~ 144/384kbps data ~ 2Mbps data
  - G4 Fax, E-mail, Image, Video , Internet Access, FWA
- High Quality Transmission
  - Bit Error Rate 10^{-3} (for voice)
  - Bit Error Rate 10^{-6} (data)

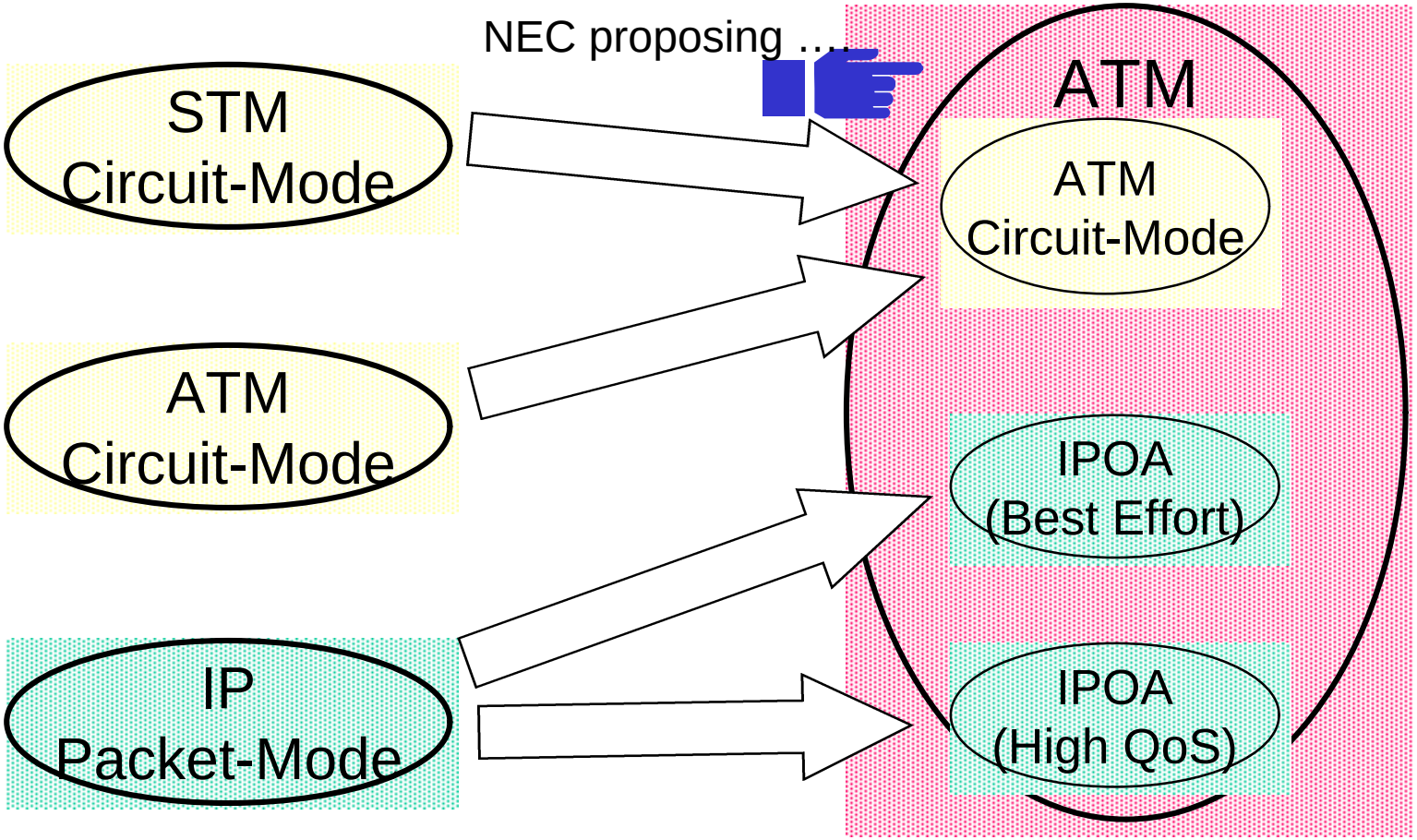
W-CDMA Features (2/2)

- Increase of capacity
  - High Capacity more than those of PDC Half Rate System
- Economy
  - Large coverage → decrease in number of Base Station
- Improvement of robustness against fading
  - Enhanced improvement can be realized by introducing Interference canceller
- Efficient intermittent reception
  - long battery life
- Flexibility / Expandability

ATM-based CDMA Network

- Efficient / High-Performance Network for CDMA
  - Real Time Small Volume Traffic ;
    - Voice Traffic : AAL2 is applied
    - Other Traffic : AAL5 is applied
  - Real Time Large Volume Traffic ;
    - AAL5 or RTCP/IP over ATM (QoS) is applied
  - Non-Real Time Small/Large Volume Traffic
    - ATM Switches are used to handle
    - TCP/IP over ATM (Best Effort Type)
- Future Evolution to Seamless Multimedia Services

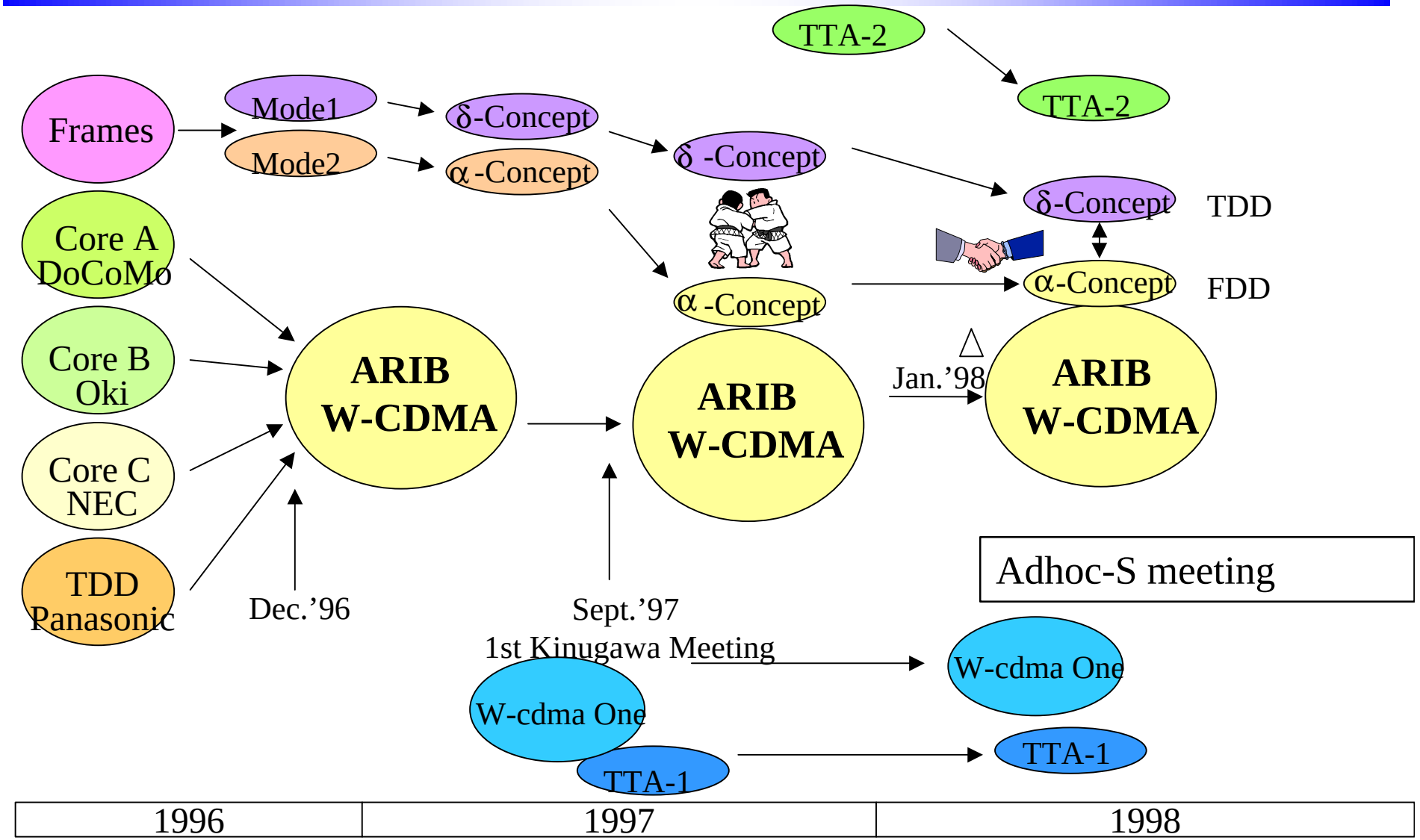
What Technology gives Unified Solution?



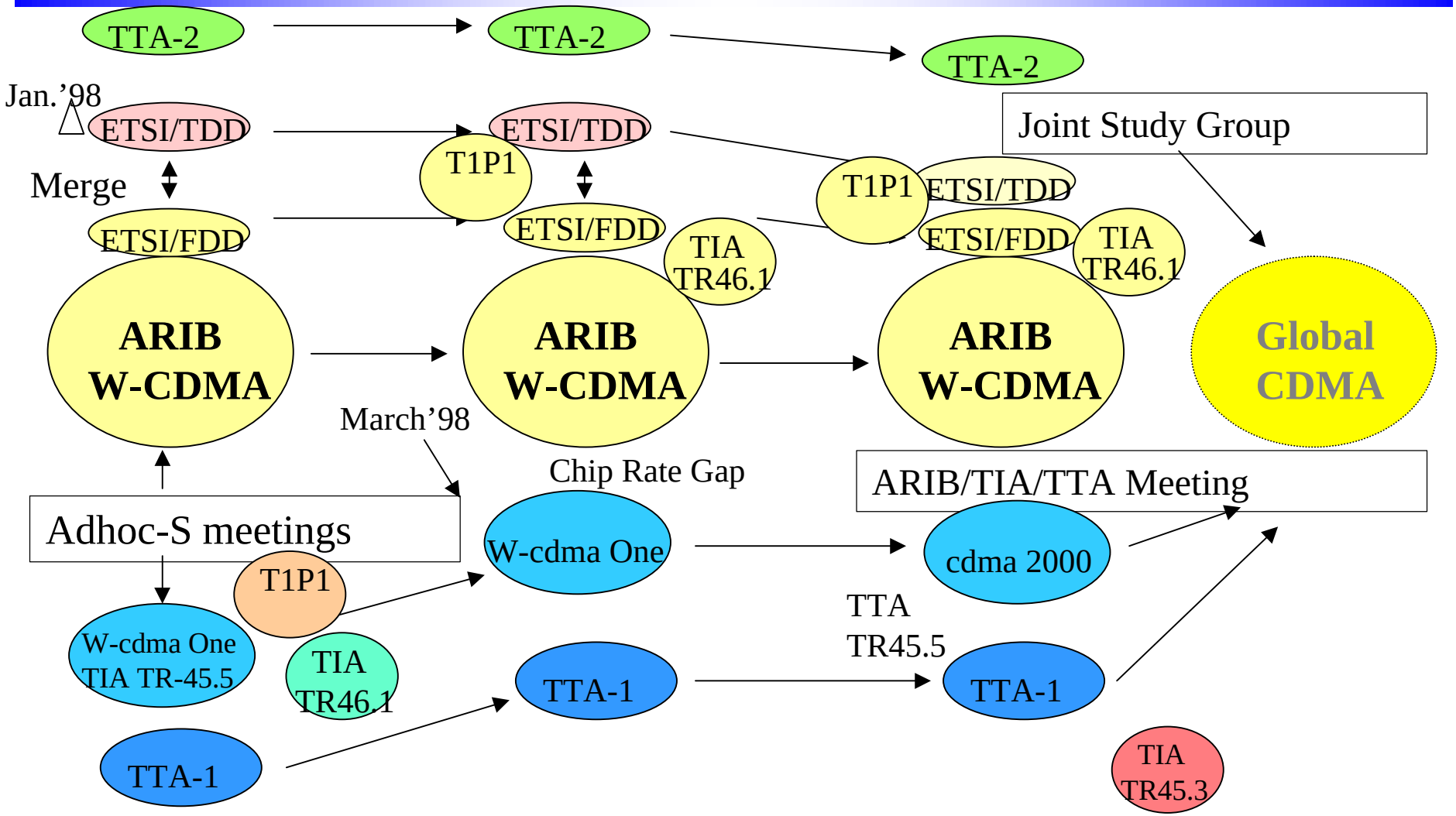
Characteristics of ATM-based Network

- ***ATM transmission*** is employed network-wide, including RAN and CN.
- In the Iu Interface, the ATM virtual path and ATM virtual circuit shall provide the ***voice circuits***, ***best effort IP service*** channels, ***high QoS IP-based service*** channels and signaling channels.
- The MSC and GMSC, which need to handle both circuit-mode channels and IP packet-mode channels, shall be provided as a unified switch with ***built-in IP routing capabilities***.
- The architecture guarantees ***the future evolution*** of IMT-2000 network.

International Harmonization

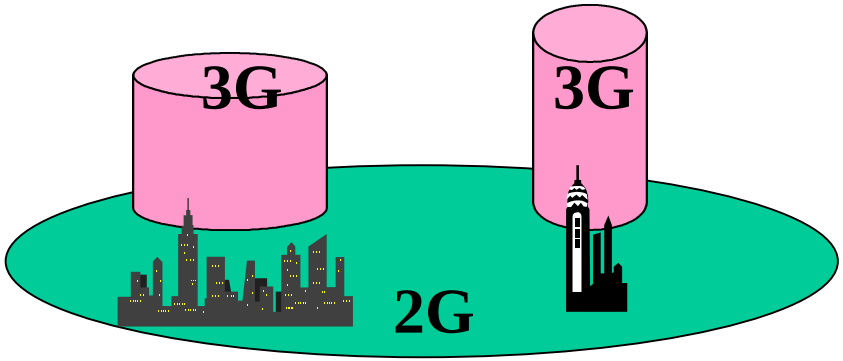


International Harmonization



Initial deployment of 3G

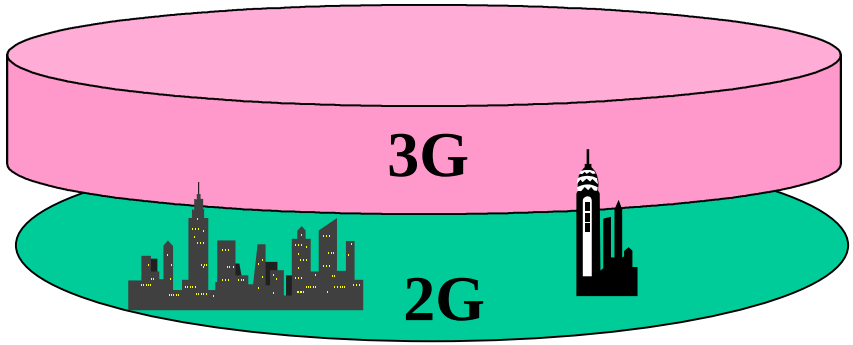
(1) Starting from urban area.



2G/3G dual-mode handsets, assumed.

3G Services: Limited Area

(2) Starting from nation-wide.



3G single-mode handsets, available.

3G Services: Anywhere, Anytime

Dual-mode Handsets

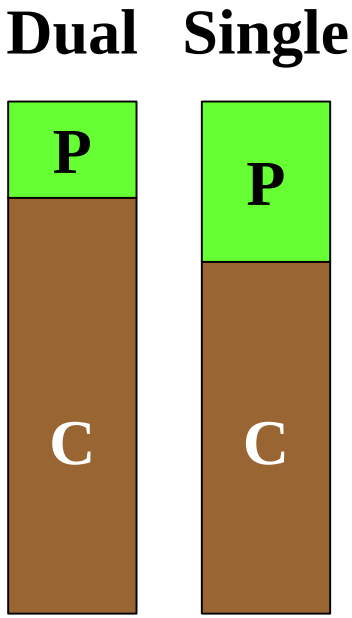
For the initial deployment of 3G systems, dual-mode handsets are commonly discussed.

However, introduction of a new system relying on dual-mode handset is very risky.

Wide area deployment to allow single-mode handset is strongly recommended.

Why not “Dual Mode” ?

- Profits for Handset supplier are less in Dual-mode.
  (Price is set by market)
- Suppliers competition can’t be expected in Dual-mode.
  (USA 1G/2G is a good example)
- Single mode system (=2G) will survive, if 3G relies on Dual-mode.



Schedule in Japan