Key Features of ITU-T NGN and Future Vision

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2. Impacts of ITU-T NGN
3. Ultimate Goal of User
4. Future Study Direction
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ITU-D/ITU-T Seminar on Standardization and Development of NGN for Arab Region

Definition of NGN

ITU-T

Rec.

Y.2001

Next Generation Network (NGN):
a **packet-based** network able to provide telecommunication services and able to make use of **multiple broadband**, **QoS-enabled** transport technologies and in which **service-related functions** are **independent** from underlying **transport-related technologies.**

It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports **generalized mobility** which will allow consistent and ubiquitous provision of services to users.

NGN in 4 words...

- by Fixed
- by Mobile
- by Wireless

NGN = Broadband Managed IP Network

- for Services
- for Businesses
- for Players
- for Users

Key Principles of NGN

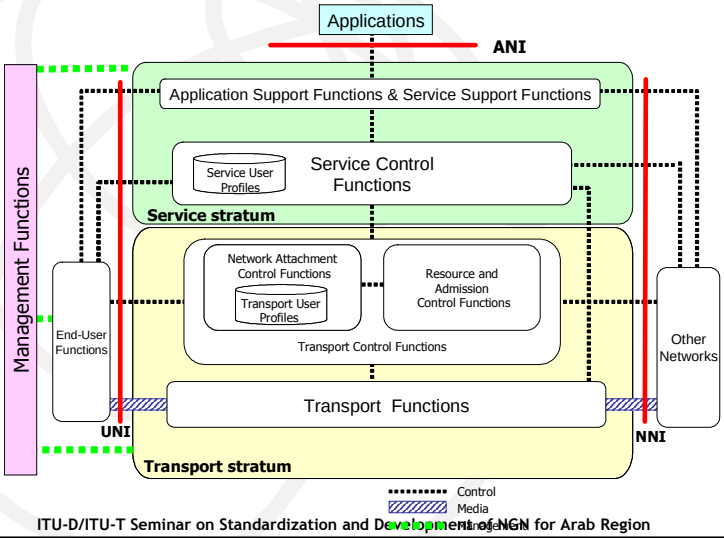
- Open architecture: open to support service creation, service updating, and incorporation of service logic provision by third parties and also support "Distributed control" as well as enhanced security and protection.
- Independent provisioning: service provision process should be separated from network operation by using distributed, open control mechanism to promote competition.
- Multiplicity: The NGN functional architecture shall offer the configuration flexibility needed to support multiple access technologies.

Key Features of ITU-T NGN

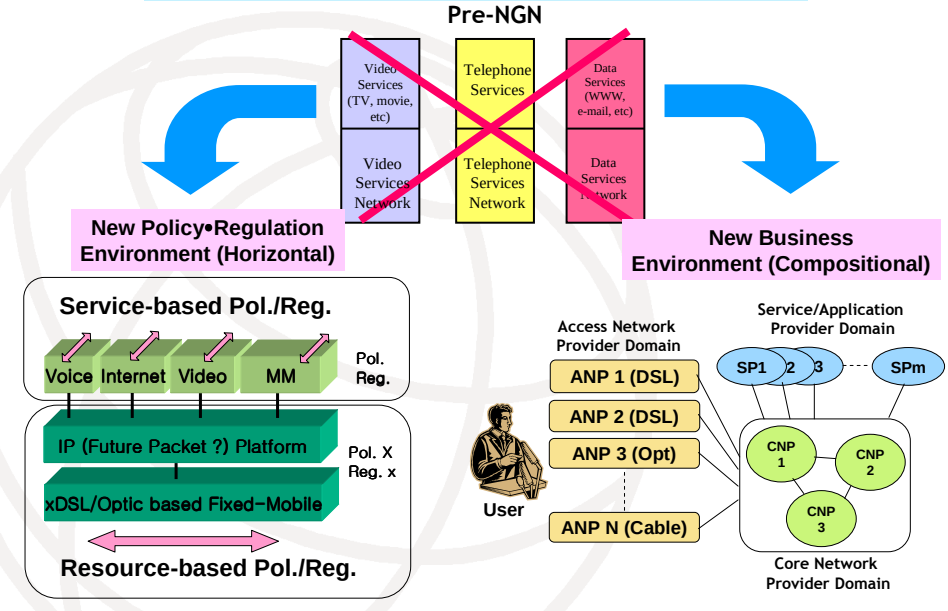
- **Packet-based transfer;**
- **Separation of control functions among BC, call/session, and application/ service;**
- **Decoupling of service provision from transport;**
- **Support for a wide range of services based on service building blocks;**
- **Broadband capabilities with end-to-end QoS;**
- **Interworking with legacy networks via open interfaces;**
- **Generalized mobility;**
- **Unfettered access by users to different service providers;**
- **A variety of identification schemes;**
- **Unified service characteristics for the same service as perceived by the user;**
- **Converged services between fixed/mobile;**
- **Independence of service-related functions from underlying transport technologies;**
- **Support of multiple last mile technologies;**
- **Compliant with all regulatory requirements (e.g. emergency, privacy, lawful interception, etc.)**

Overall NGN Architecture

- NGN= Service Stratum + Transport Stratum
- Basic Functions= User + Control + Management



Impacts of NGN Principles



Addition of Service Components

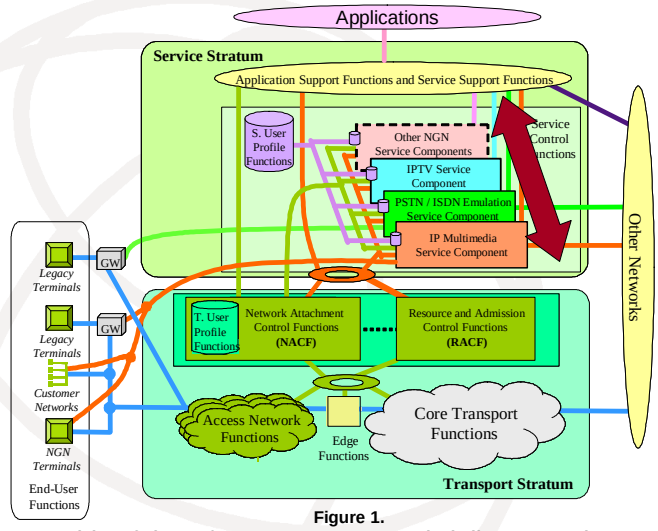
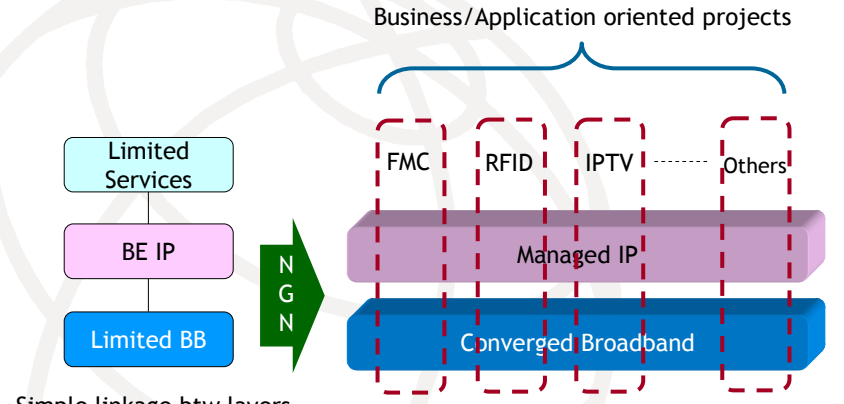


Figure 1.
Future revision of Figure 8/Y.2012: NGN components including IPTV service component

* Ref: NGN-GSI Output Document T05-NGN.GSI-0067R1

Enabling for Convergence

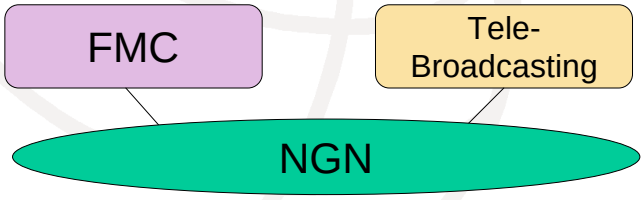


- Simple linkage btw layers
- Simple business relationships
- Simple players

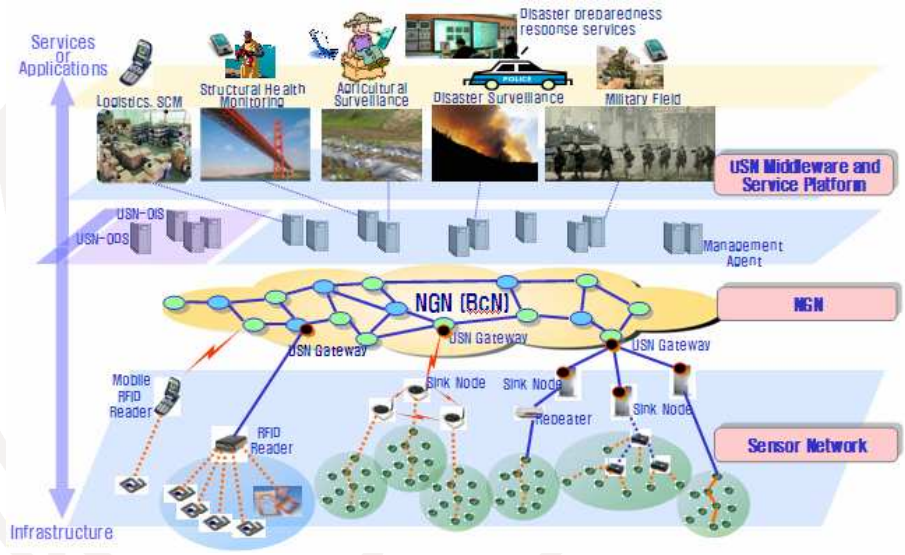
- Simple linkage btw layers with dynamics
- Diverse and Flexible business relationships
- Diverse business models and players

NGN; a Convergence Platform

- Combination IP with Broadband accelerating intrinsic convergence
  - Service convergence: Web based service provisioning
  - Network convergence: IP over any broadband transport networks
- Advanced Mobile and Wireless technology initiate business convergence such as Fixed-Mobile convergence
- Broadband Fixed, Wireless and Mobile technology boost another business convergence, called “Multiple Play: Tele-Broadcasting”

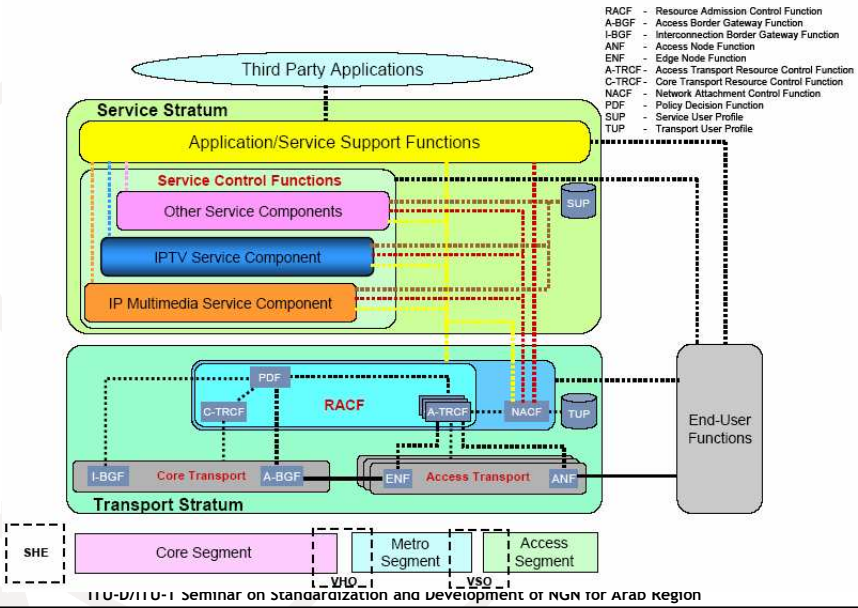


NGN Architecture Enabling RFIDs/USN



2. Impacts of ITU-T NGN

NGN Architecture Enabling IPTV

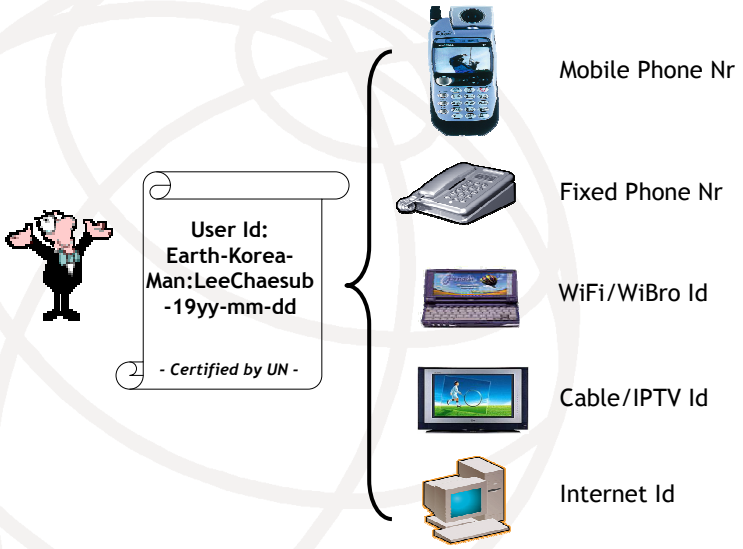


3. Ultimate Goal of User

Physical Communication Infrastructure

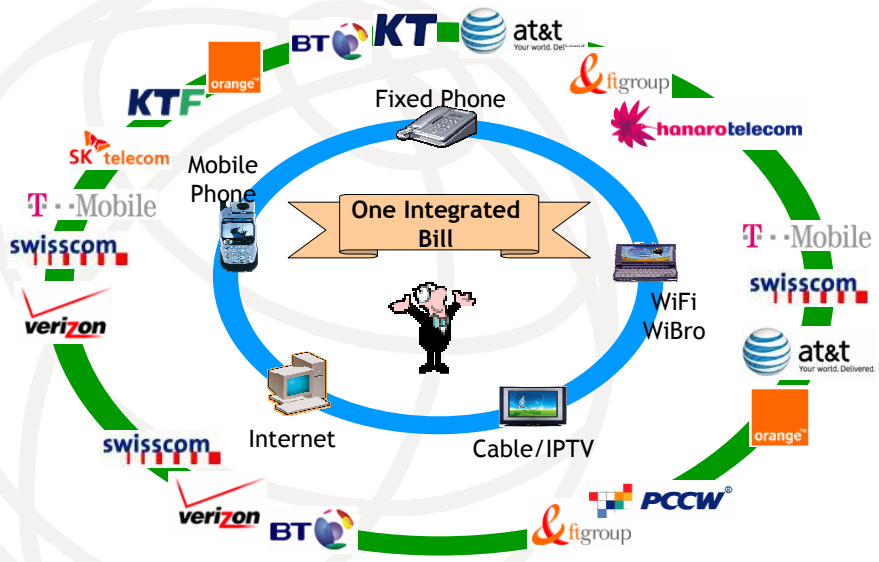
3. Ultimate Goal of User

Logical Communication Infrastructure



3. Ultimate Goal of User

Business Communication Infrastructure



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Clue for the Future Study

Convergence should be a critical framework for Future

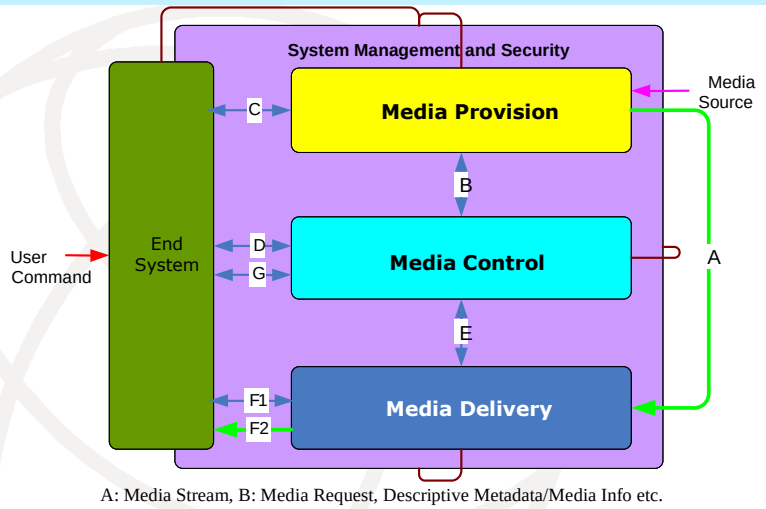
- Vision: Any Time, Any Where, Any Services and Any Devices
- Fixed Mobile Convergence should be the 1st instantiation
- Any information/services over any transport infrastructures: VoDSL, TVoMobile, etc. (because of transport agnostic)

Changing Role of current network model; U-/C-/M-

- IP is the point for service offerings: Everything ov. IP ov. Anything
- Key role of below IP is providing connections; BW, QoS etc
- Signaling among distributed network element, not end-to-end
- Many different IDs for different services; E.164, Names, IP Add etc.
- User expectation for Management is changing; no interest for connection or operation, only for services and businesses

New Paradigm: New model of User/Control/Management

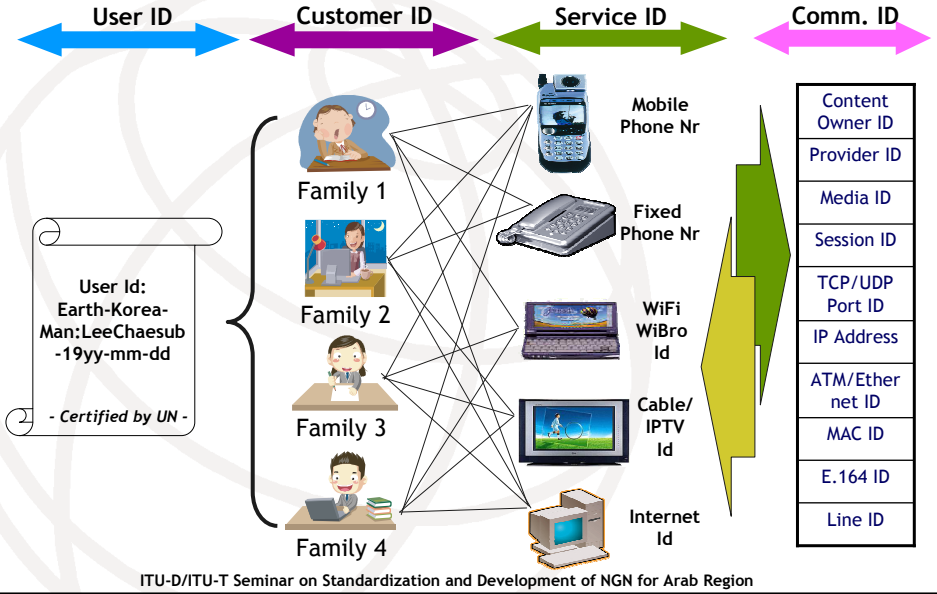
Key theme of Future User Plane: Media Processing



A: Media Stream, B: Media Request, Descriptive Metadata/Media Info etc.
C: Rights Management Interaction, G: Access Control System
D: Service Interaction Message
E: Media Location information, Billing information, Media Control Command, etc.
F1: Presentation Control Signal, F2: Media Stream

*Reference: FG IPTV-DOC-54, IPTV Architecture

Key theme of Future Control Plane: Identity Processing

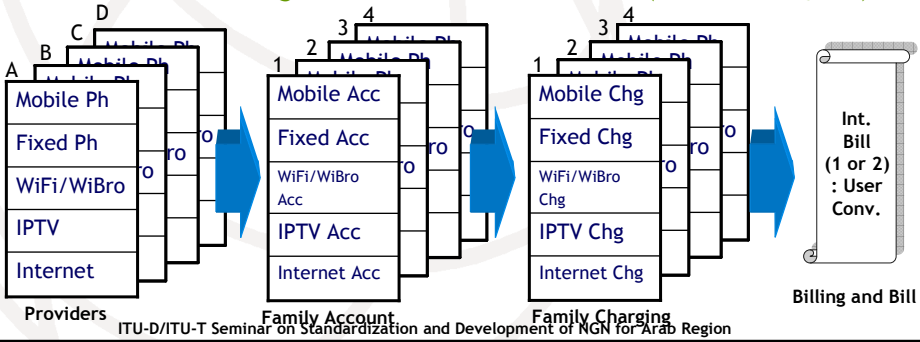


Key theme of Future Management Plane: ABC Processing

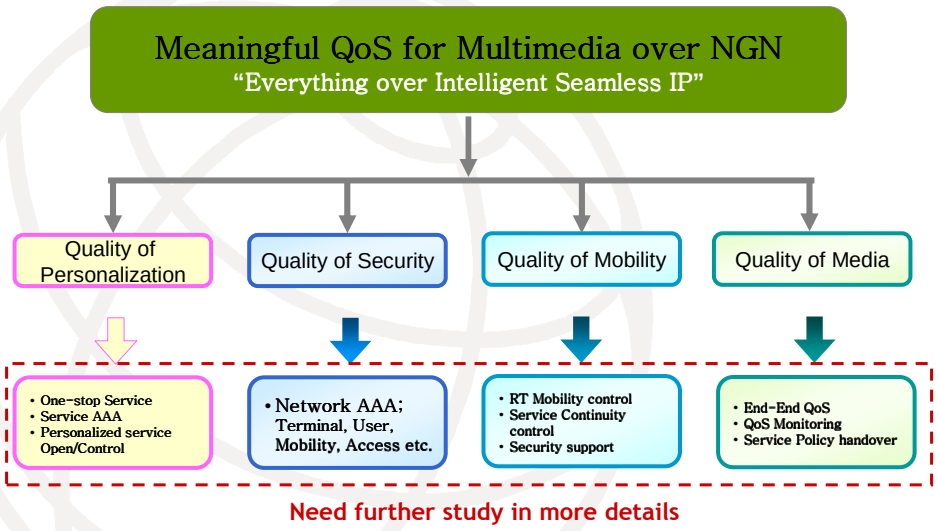
Accounting: Set of functions required for Usage Metering, Charging and Billing (ITU-T Rec. Q.825)

Billing: Administrative function to prepare bills to service customers, to prompt payments, to obtain revenues and to take care of customer reclaims (ITU-T Rec. Q.825)

Charging: The set of functions needed to determine the price assigned to the service utilization (ITU-T Rec. Q.825)



Change Views: Extend "Quality of Service"



Need further study in more details

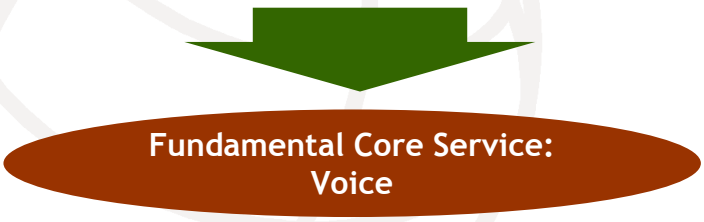
Confirmed Killer-App over Convergence

Network Convergence: Internet, NGN etc.

Service Convergence: FMC, IPTV etc.

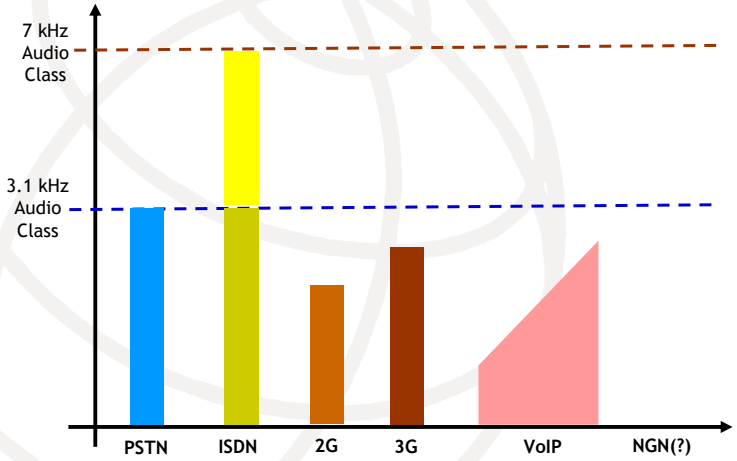
Terminal Convergence: PC, PDA, Int .Phones etc.

Business Convergence: Triple Play, Q Play etc.



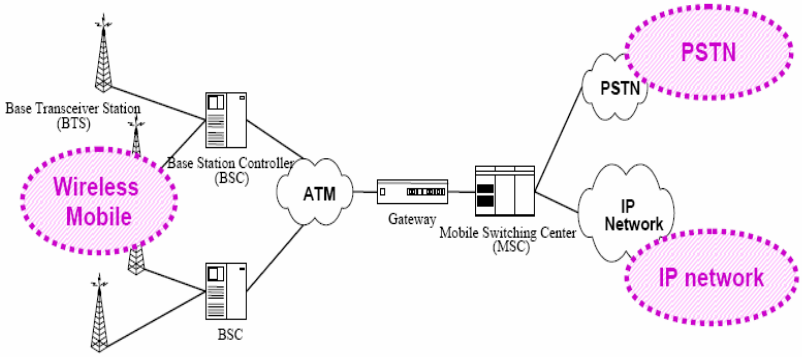
Status of Voice Quality

- During the last 20 years, big improvement in Use of Voice
- But during the last 20 years, no improve in Quality of Voice
- Cost/Price oriented policy, but change to Quality based



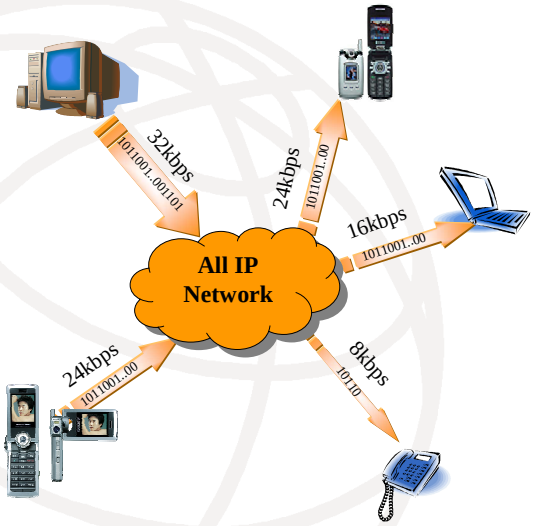
Status of Voice Codecs

- PSTN: G.711
- Mobile communication: AMR for 3GPP, EVRC for 3GPP2
- VoIP: G.729, G.729.1, G.711, G.723.1, G.726, ILBC
- NGN ?



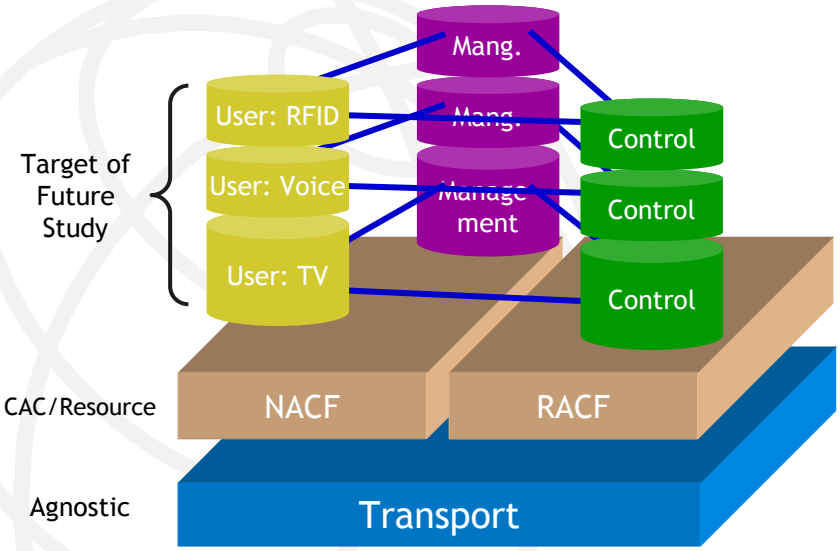
Too many speech codecs prevent VoIP interoperability.

Voice (Audio) over Convergence

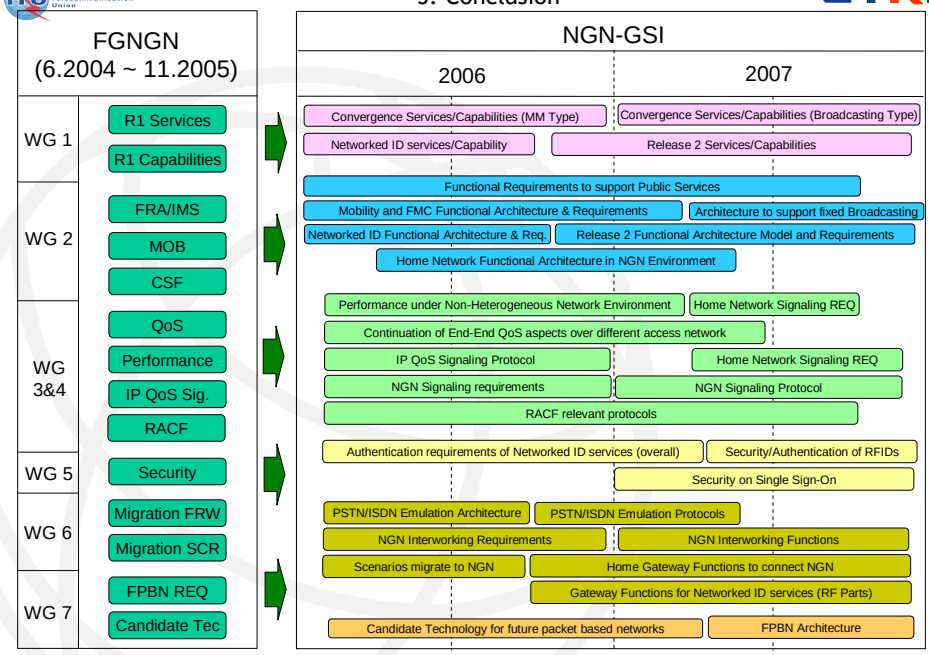


Premium Voice over various converged infrastructure

Framework Model for Future Study



5. Conclusion



Thank you for your attention !!!