Seminar on ITU-T hot topics for Standardization

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Access to NGN

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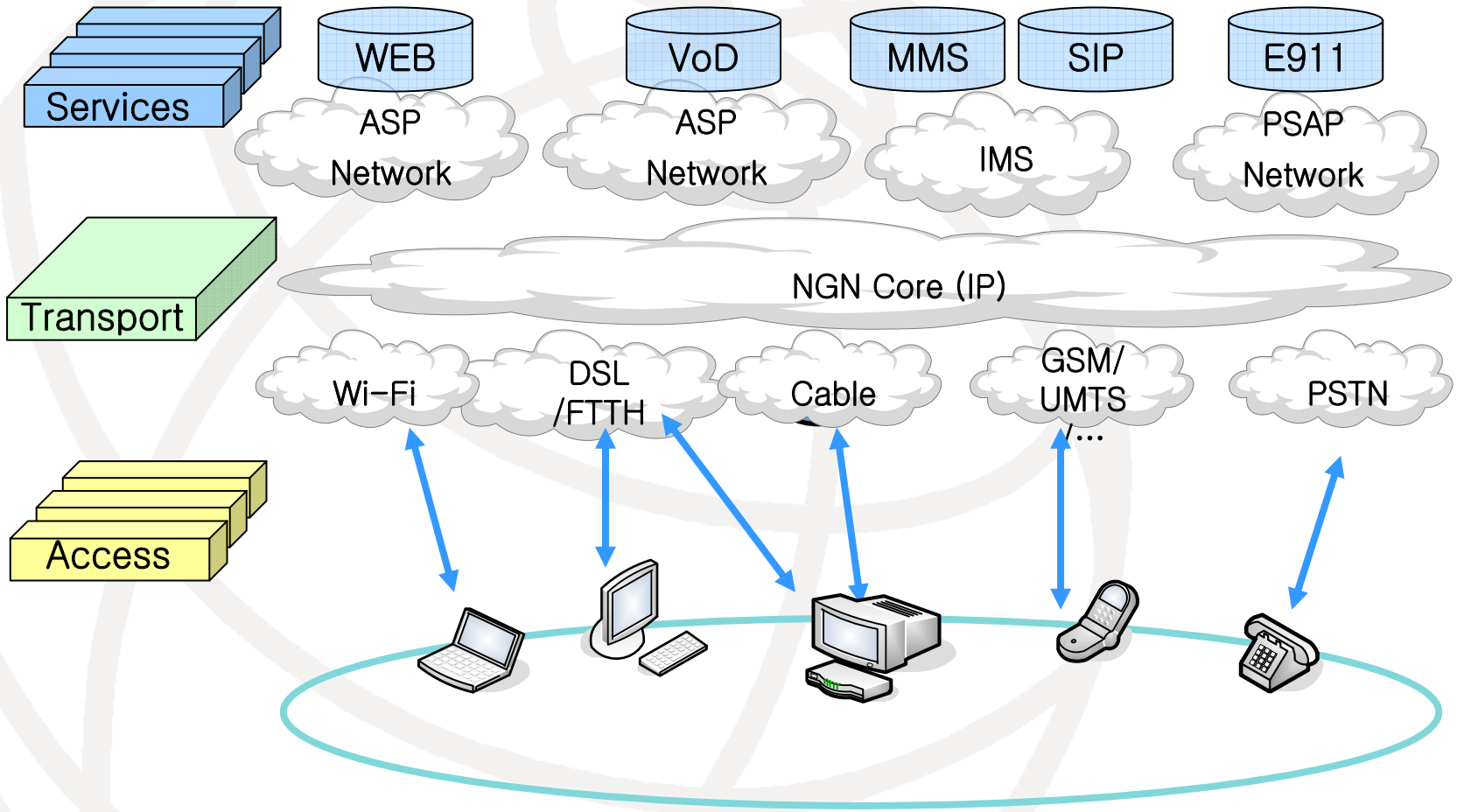
Access to NGN: introduction

- "Access to NGN" may imply several form/level of "access":
  - Access to "NGN transport network":
    - Authentication and authorization of user for **network access** (e.g., authentication and authorization of an end user device, a home or enterprise gateway to obtain access to the network)
  - Access to "NGN services":
    - Authentication and authorization of user for **access to NGN services/applications** (e.g., authentication and authorization of an user, a device or a combined user/device where the authentication and authorization apply to NGN services/applications access)
  - Access to a specific "NGN service/application"
    - Each service/application may have its own assurance level requirement to validate the identity and privileges of a user, user device or user and device combination

  Note that access to "NGN transport network" and "NGN services" may in some cases be coupled: "bundled" case

- This presentation will mainly focus on access to "NGN transport network", also referred as "**Network attachment**".

Access to NGN: general view

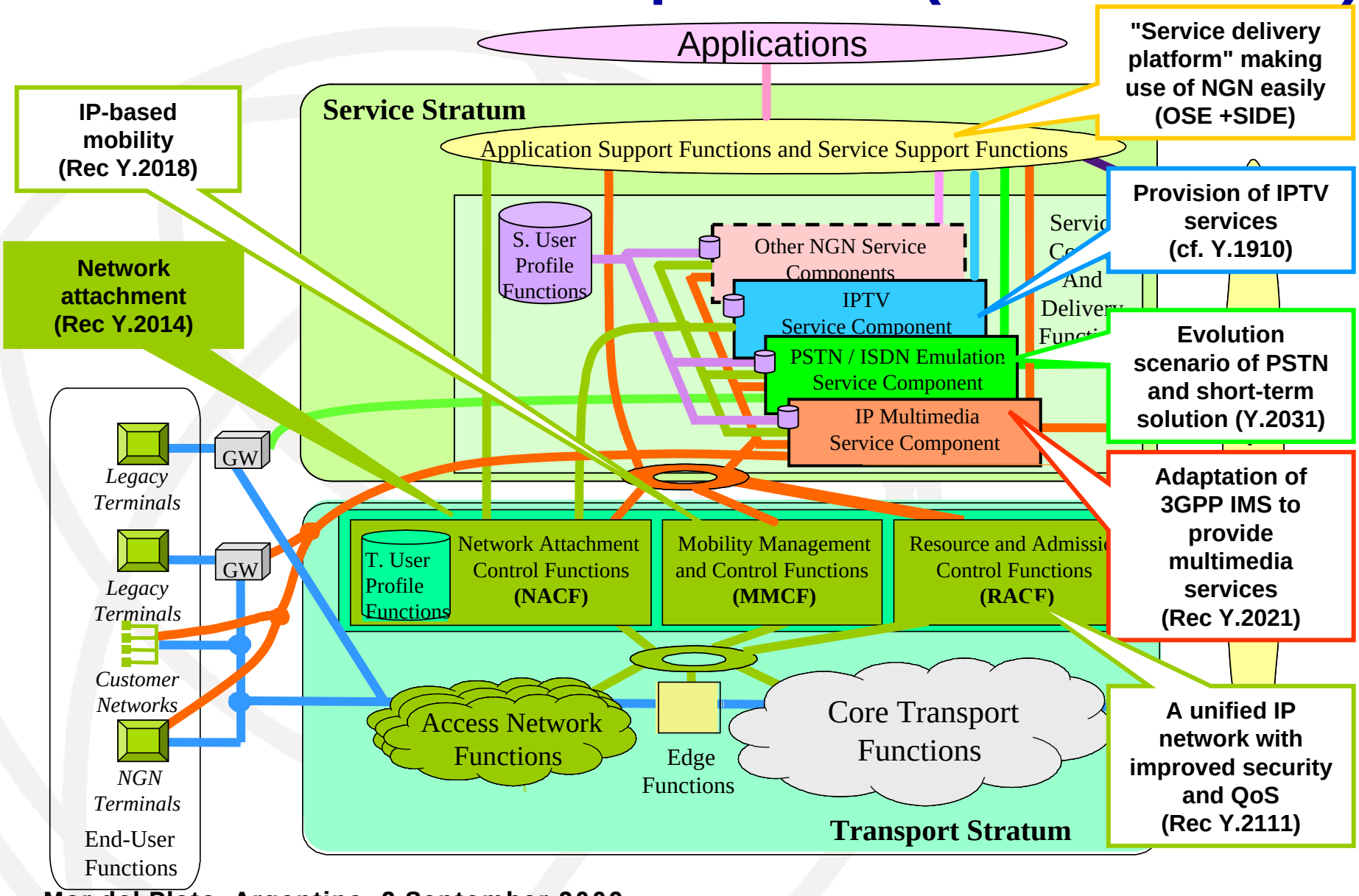


ITU-T general requirements (Y.2201)

- It is an **ITU-T NGN objective** to support services and applications **independently of the access network technologies**. Thus:
  - 1) NGN is required to support **diverse access transport technologies**.
  - 2)The transport stratum is required to be capable of providing **IP connectivity** between the end-user functions and core transport functions

- For the services to which mobility is appropriate:
  - 1) NGN is **required** to provide **nomadism** for personal mobility and terminal mobility
  - 2) NGN is **recommended** to provide support for handover and seamless handover which realize **service continuity** for Inter-AN (access network) and Intra-AN scenarios. Service continuity includes Service continuity **on the same terminal** and Service continuity on **different terminals**;
- **Roaming**:
  - An access network is required to be able to authenticate and authorize access by a user roaming on this access network from another access network.

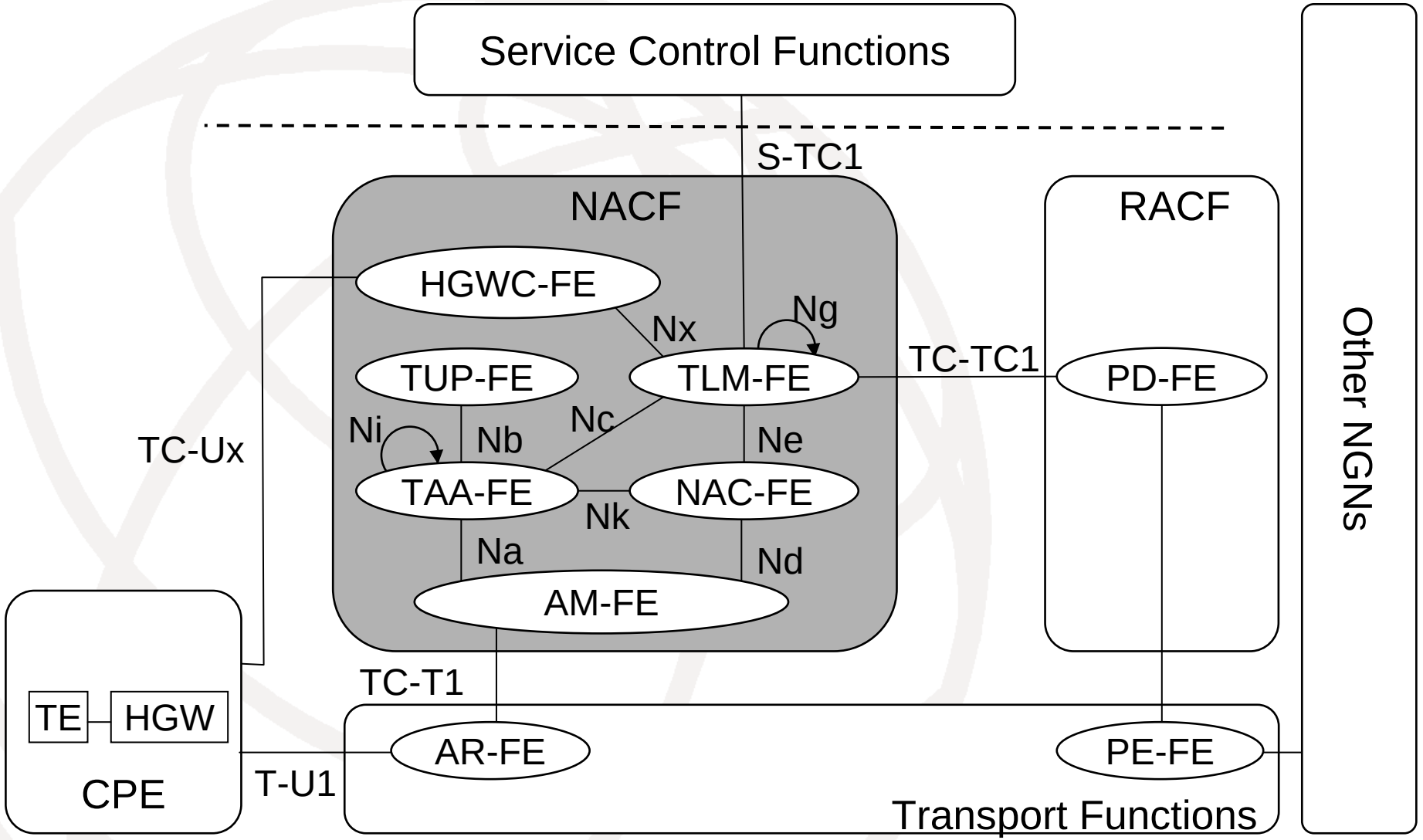
NGN functional components (Y.2012 Rev1)



Role of NACF (Rec. Y.2014)

- Control the attachment to the NGN
- Dynamic provision of IP address and other user equipment configuration parameters (e.g. using DHCP).
- User authentication, prior or during the IP address allocation procedure.
- Authorization of network access, based on user profile.
- Access network configuration, based on user profile.
- Location management at the IP layer.

NACF functional architecture (Y.2014)



ITU-T NACF (Y.2014)

- Ideally, **ITU-T NACF** should be "access technology agnostic" and should make service providers agnostic to the details of transport facilities

- However, **ITU-T NACF** is focusing on the fixed-network (xDSL, FTTH,..).
  - It was designed in harmonization with **ETSI TISPAN NASS**
    - See back-up slide for a **high-level mapping** between both architectures
  - But does not cover network attachment (see back up slide) for e.g.:
    - Mobile networks (such as 3GPP and WiMax networks)
    - Cable
  - No common/generic solution since intrinsically different access technologies but also studied in different SDOs

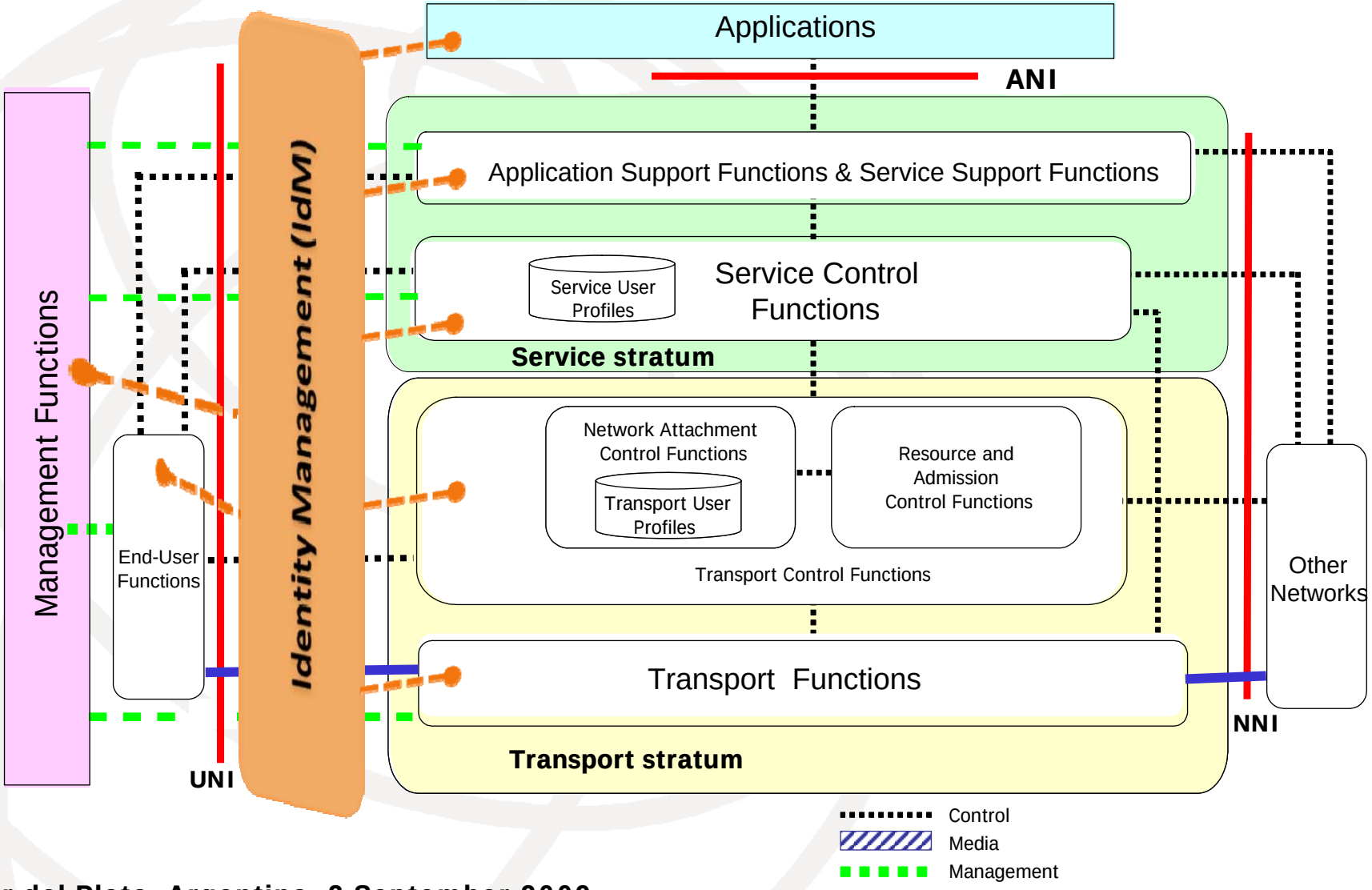
- ITU-T NACF can operate with **ITU-T MMCF** (Mobility Management and Control Functions) to provide IP based mobility:
  - Can be viewed as a way of introducing mobility support in "fixed" networks
  - But lacking overall "harmonization" with "mobile architectures" (e.g. 3GPP SAE/EPC)
  - Similar issue of harmonization between fixed and mobile architectures exist regarding Resource and Admission Control (RACF)

Other issues related to NACF (Y.2014)

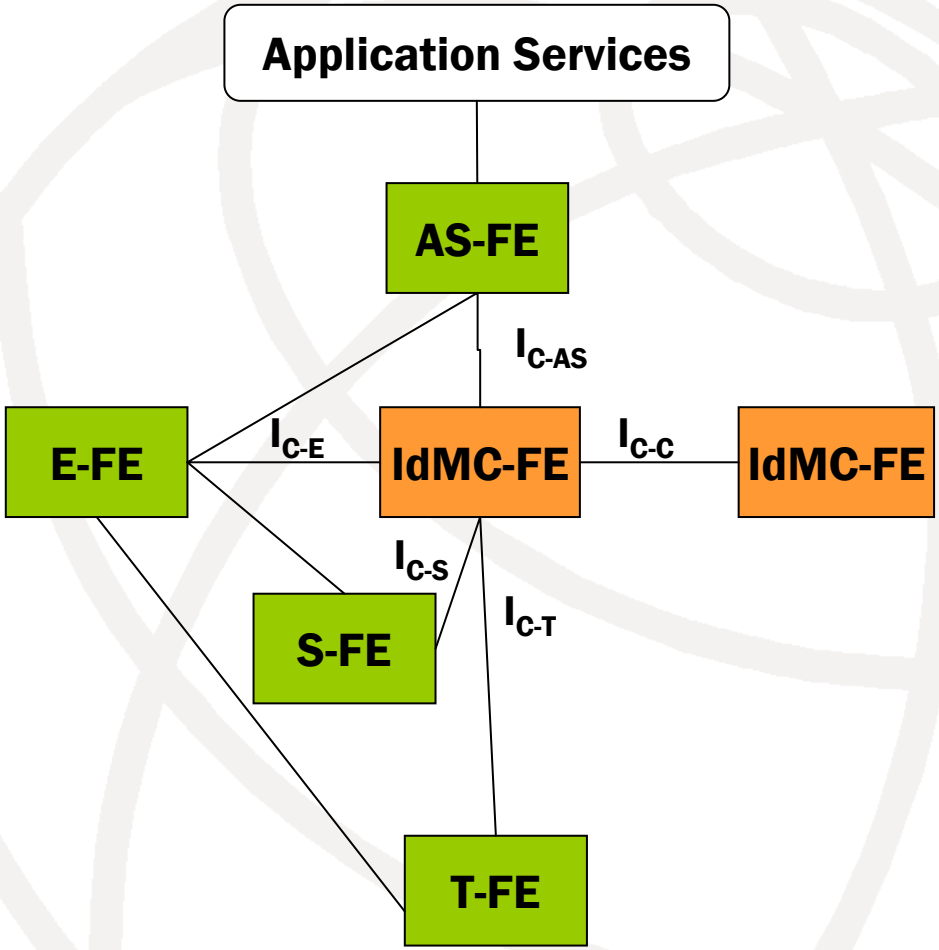
- Harmonization of inter-domain roaming interfaces between ITU-T, ETSI TISPAN and 3GPP for supporting:
  - Authentication
  - Location Updating
  - Profile downloading

- Key inter-domain reference points
  - ITU-T NACF Ni / ETSI NASS e5
  - ITU-T NACF Ru / ETSI NASS e4
  - ITU-T NACF Ng /ETSI NASS e2

Identity Management (IdM) functions in the NGN



IdM functions in NGN (under study)



- I_{C-C} Reference Point
  - Between IdM Coordination Functional Entity (IdMC-FE)s
- I_{C-AS} Reference Point
  - Between IdMC-FE and Application Support Functional Entity (AS-FE)
- I_{C-S} Reference Point:
  - Between IdMC-FE and Service Stratum Functional Entity (S-FE)
- **I_{C-T} Reference Point:**
  - **Between IdMC-FE and Transport Stratum Functional Entity (T-FE)**
- I_{C-E} Reference Point:
  - Between IdMC-FE and End User Functional Entity (E-FE)

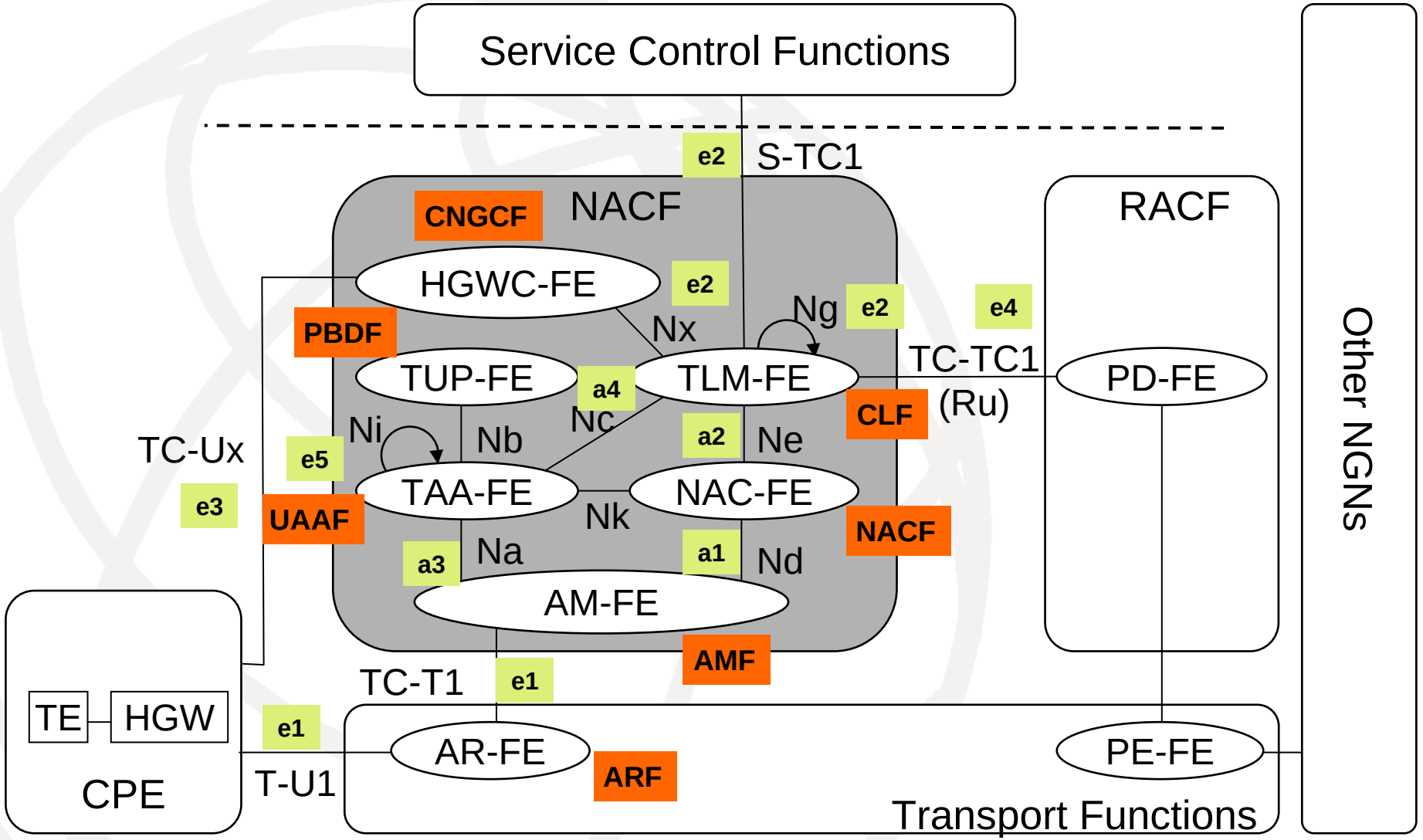
IdM functions and NACF (Y.2014)

- IdM functions and NACF relationship (and more generally NGN components involved in "access to NGN") needs further study

- NACF issues to be looked at include:
  - Identify IdM-related FEs in NACF
  - The IdMC-FE may interact with the following functional entities within the NACF of Transport Stratum via the IC-T Reference Point:
    - T-10 Network access configuration functional entity (NAC-FE)
    - T-11 Transport authentication and authorization functional entity (TAA-FE)
    - T-12 Transport user profile functional entity (TUP-FE)
    - T-13 Transport location management functional entity (TLM-FE)
    - T-14 Access management functional entity (AM-FE)
  - Information flows between related entities to be studied

Thank you!!!

ITU-T NACF / ETSI NASS high-level mapping



Network attachment solutions

	ITU-T NACF	3GPP/SAE	ETSI TISPAN NASS	WiMax	Cable
Configuration	NAC-FE	PDN-GW(DHCP)	NACF	DHCP (w/ ASN-GW)	DHCP
Authentication & Authorization	TAA-FE, TUP-FE	MME (identification, authentication /key agreement), HSS (HLR), AuC	UAAF, PDBF, UPSF	ASN-GW	KDC, DPS, CMTS
Location Management	TLM-FE	MME (tracking/ routing area management)	CLF	LA (in MN/BS) LC (in ASN-GW)	
Remarks	For only fixed networks	-	For only fixed networks	-	-

- No common solution since each SDO is working on a different access and transport technologies