



Catalyzing 5G Launch in India

3GPP 5G System Architecture Overview and Roadmap

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Outline

-  Partnership & Eco-system
-  The work split within 3GPP
-  3GPP 5G timeline
-  5G Service Based Architecture
-  5G SBI Protocols
-  Network Capability Exposure
-  Network Slicing
-  5G QoS Model
-  Session and Service Continuity
-  Future Roadmap

Partnership (1/2)



Organizational Partners (SDOs)

- ARIB (Japan)
- ATIS (USA)
- CCSA (China)
- ETSI (Europe)
- TTA (Korea)
- TTC (Japan)
- TSDSI (India)



Partnership 2/2

Market Representative Partners

- 17 Market partners representing the broader industry:

- 5G Americas,
- 5G Infrastructure Association,
- COAI (India),
- CTIA,
- GCF,
- GSA,
- GSMA,
- IPV6 Forum,
- MDG (formerly CDG),
- NGMN Alliance,
- Public Safety Communication Europe (PSCE) Forum,
- Small Cell Forum,
- TCCA,
- TD Industry Alliance,
- TD-Forum,
- Wireless Broadband Alliance

NEW: 5G Automotive Association (5GAA)



The 3GPP Eco-system



EU



Japan



Korea



China



North America



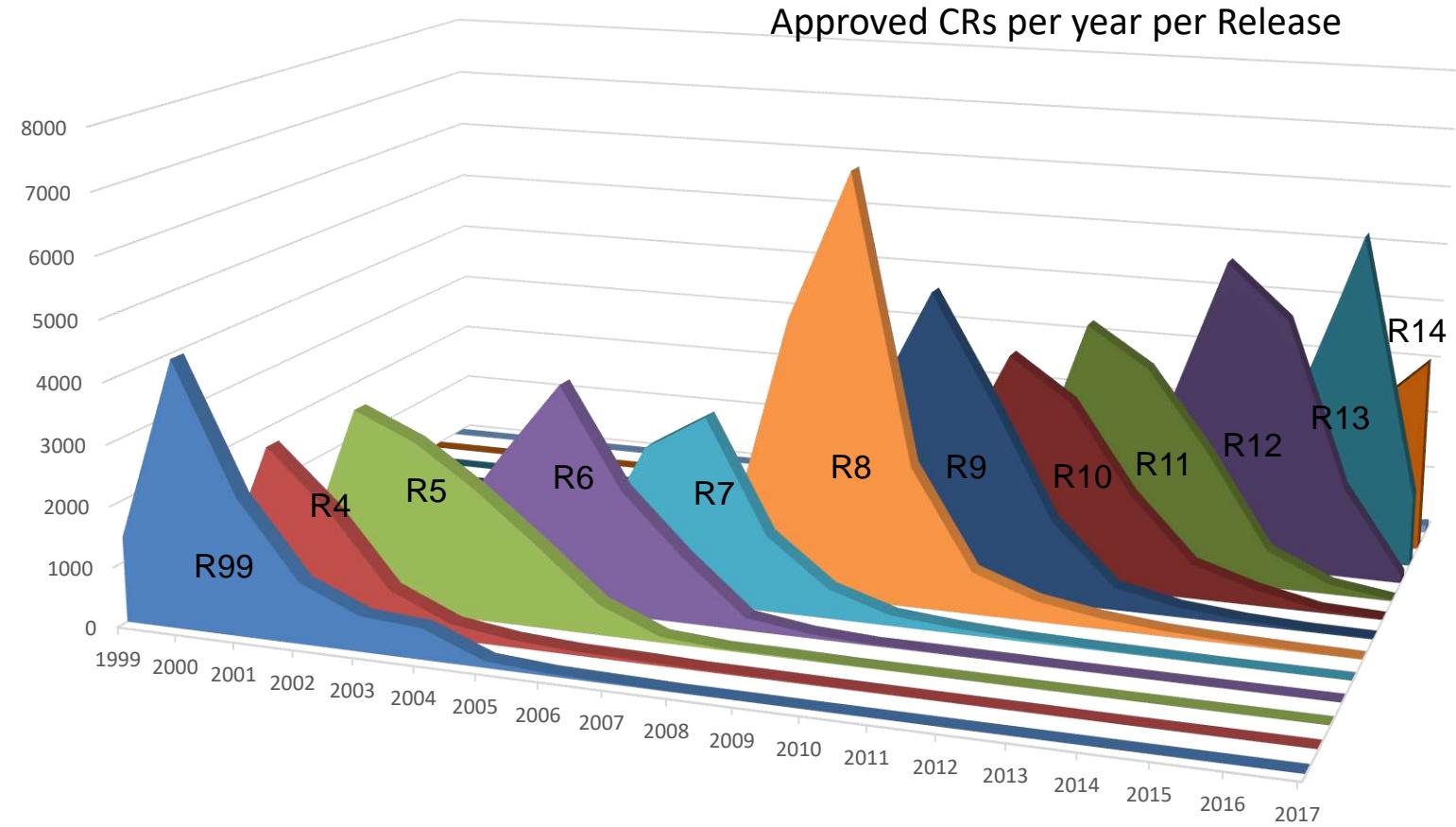
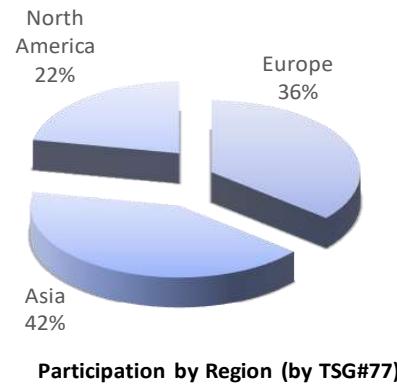
India



3GPP Facts and Figures



- ~400 Companies from 39 Countries
- 50,000 delegate days per year
- 40,000 documents per year
- 1,200 specs per Release
- New Release every ~18 months



Work split for phase 1 within 3GPP



Services & Architecture (SA) WG1: Service Requirements

Services & Architecture (SA) WG2: Overall System Architecture

Radio Access Network (RAN)

WG1: radio layer 1

WG2: radio layers 2 and 3

WG3: RAN and RAN-Core Network interfaces

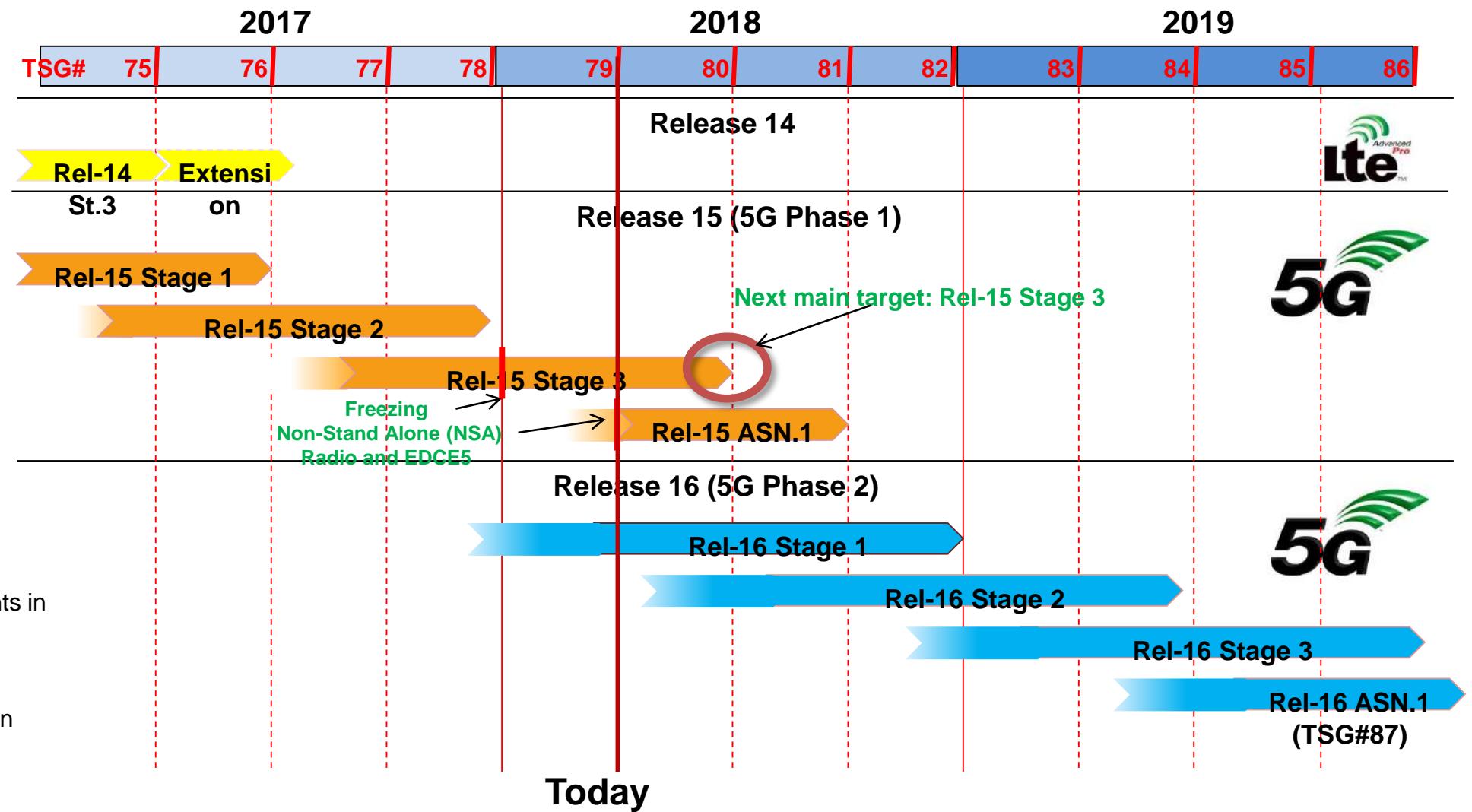
SA WG3:
Security

SA WG5:
Operation and
Maintenance

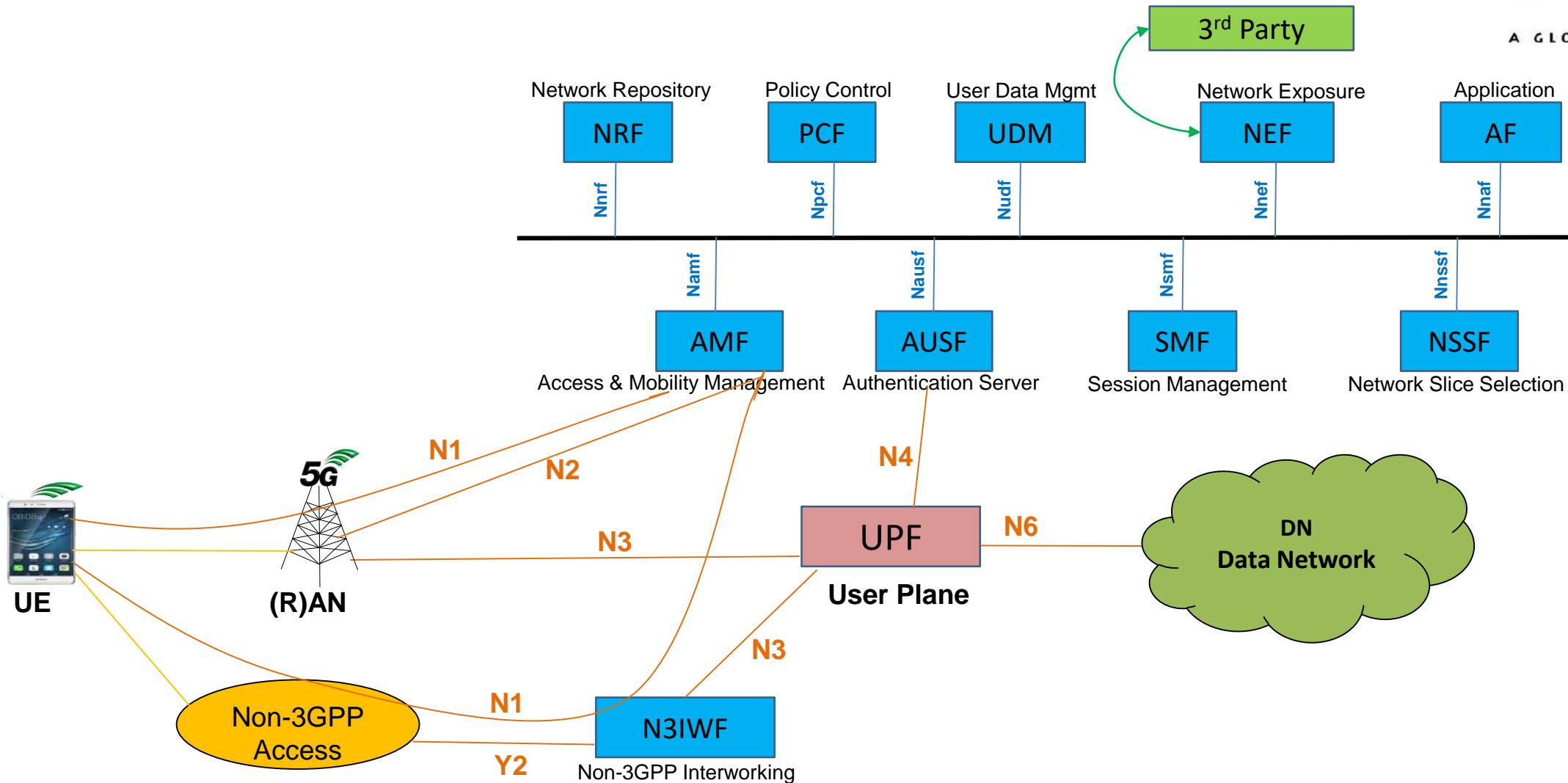
3GPP 5G Timeline



A GLOBAL INITIATIVE



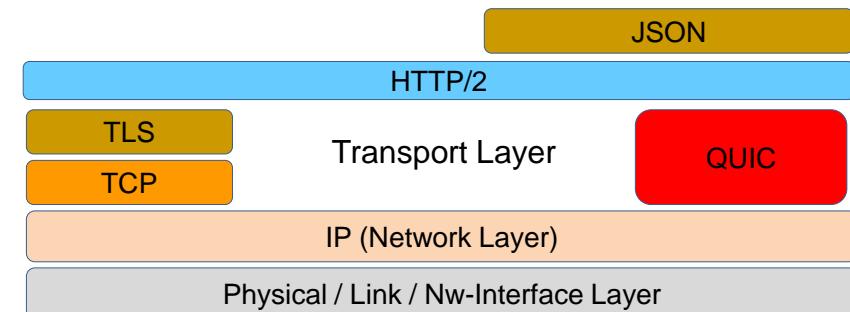
5G Service Based Architecture



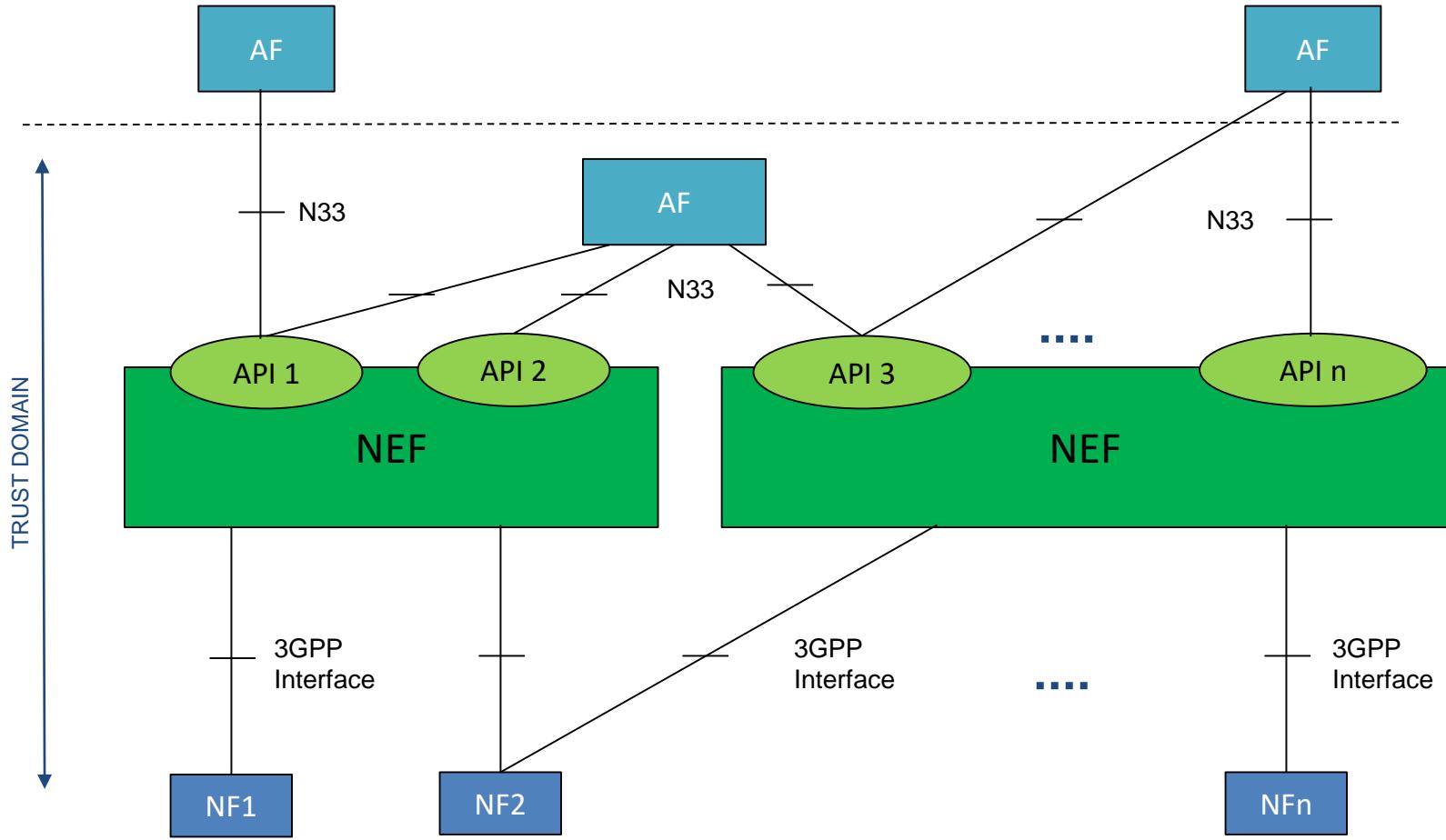
5G SBI Protocols



- REST-style service design whenever possible
- Open-API based specification
- HTTP/2 adopted as the application layer protocol
- TCP adopted as the transport layer protocol
- QUIC will be evaluated in Rel-16
- JSON adopted as the serialization protocol

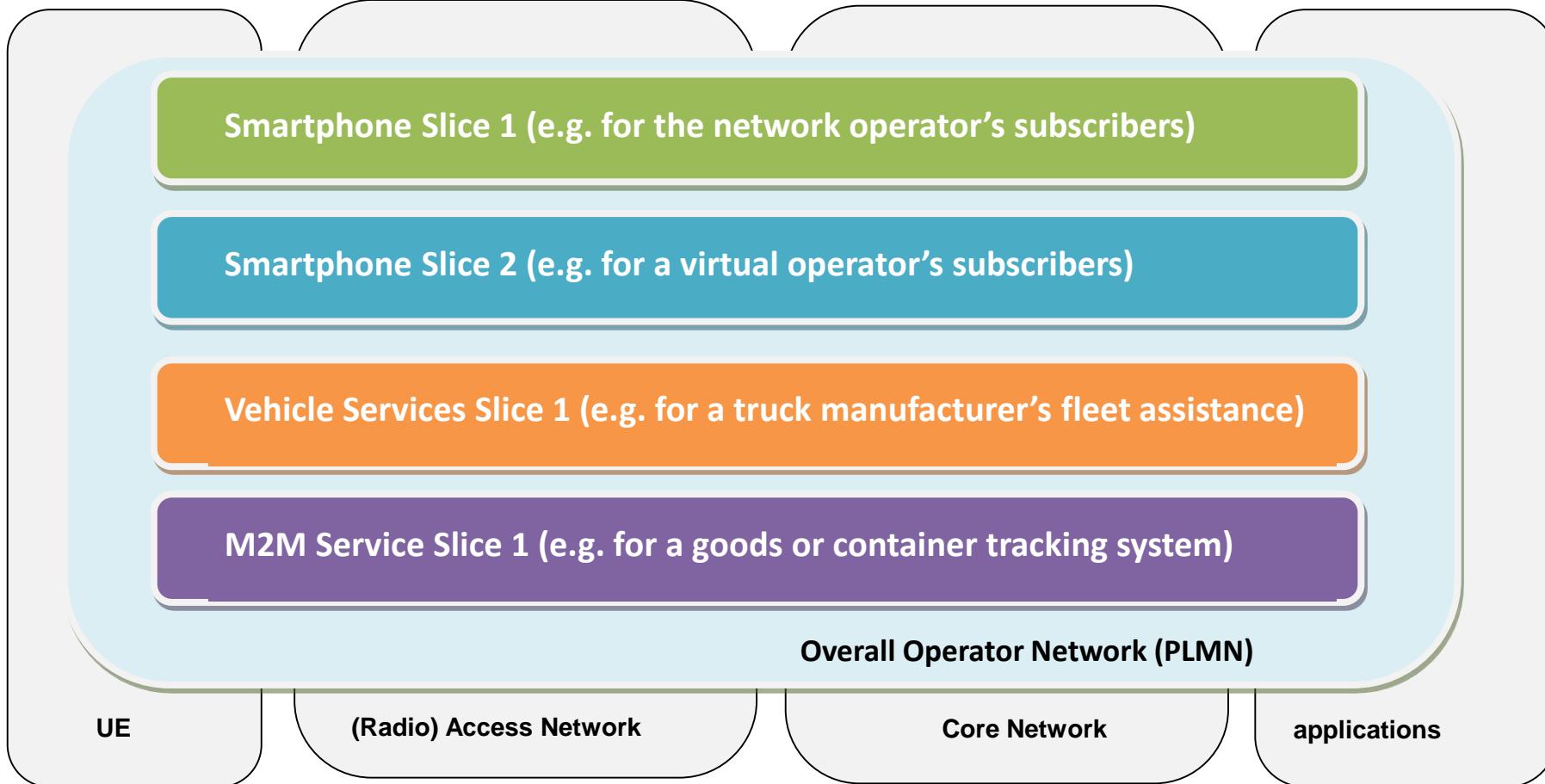


Network Capability Exposure



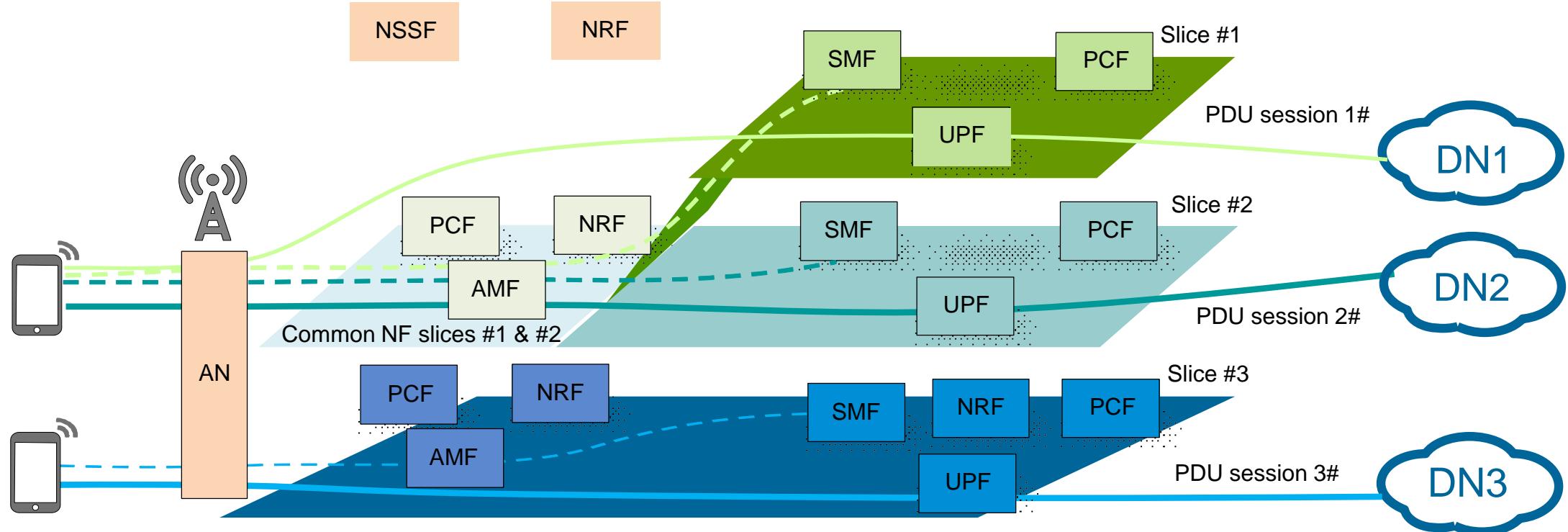
3GPP Interface represents southbound interfaces between NEF and 5GC Network Functions e.g. N29 interface between NEF and SMF, N30 interface between NEF and PCF, etc.

Network Slicing – the concept



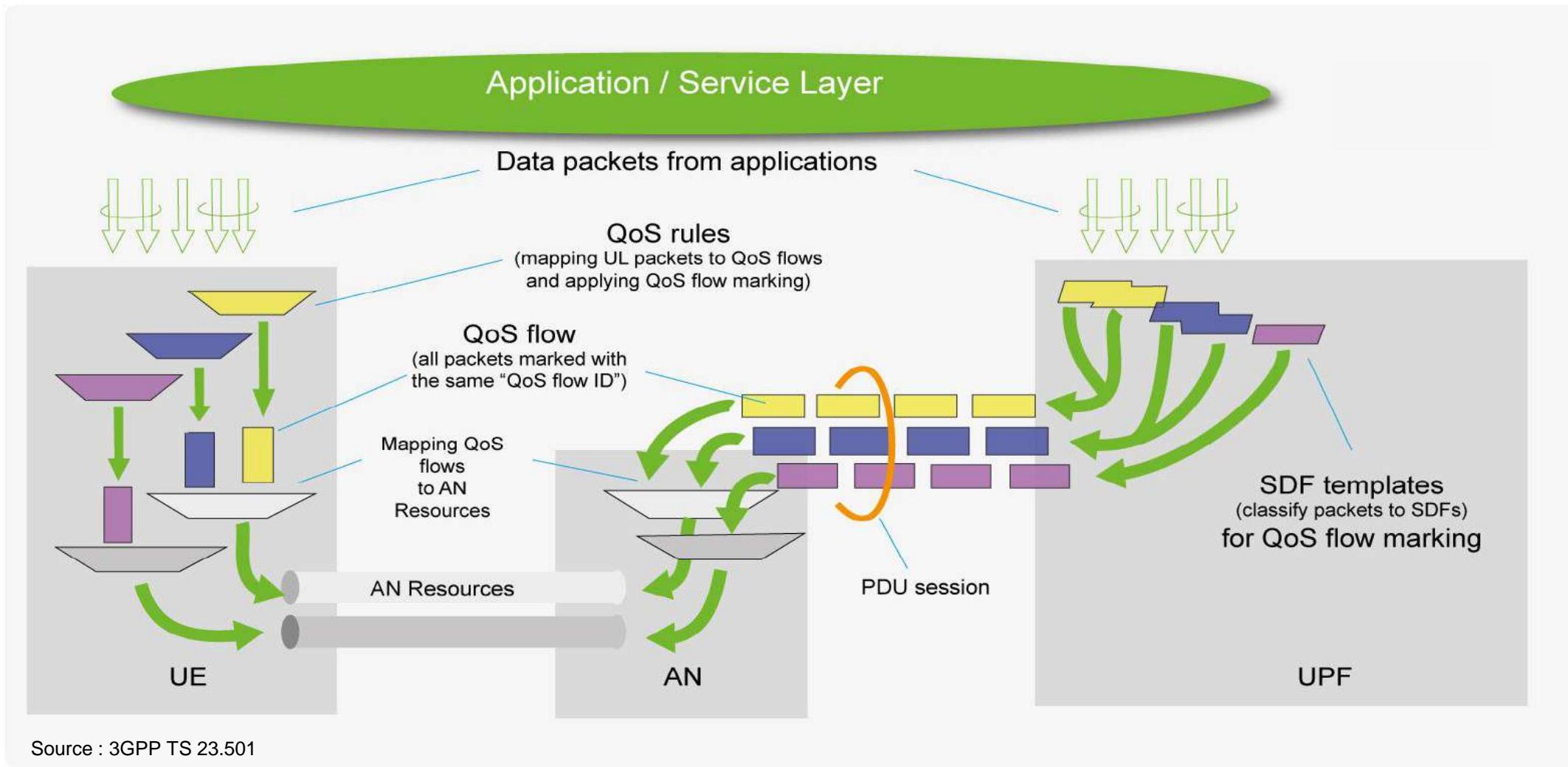
Network Slicing enables the network operator to deploy multiple separate end-to-end logical networks sharing the same or using separate infrastructure. Each network slice can be customized independently for different application and/or business scenarios/usages (SLAs).

Network Slicing – deployment aspects



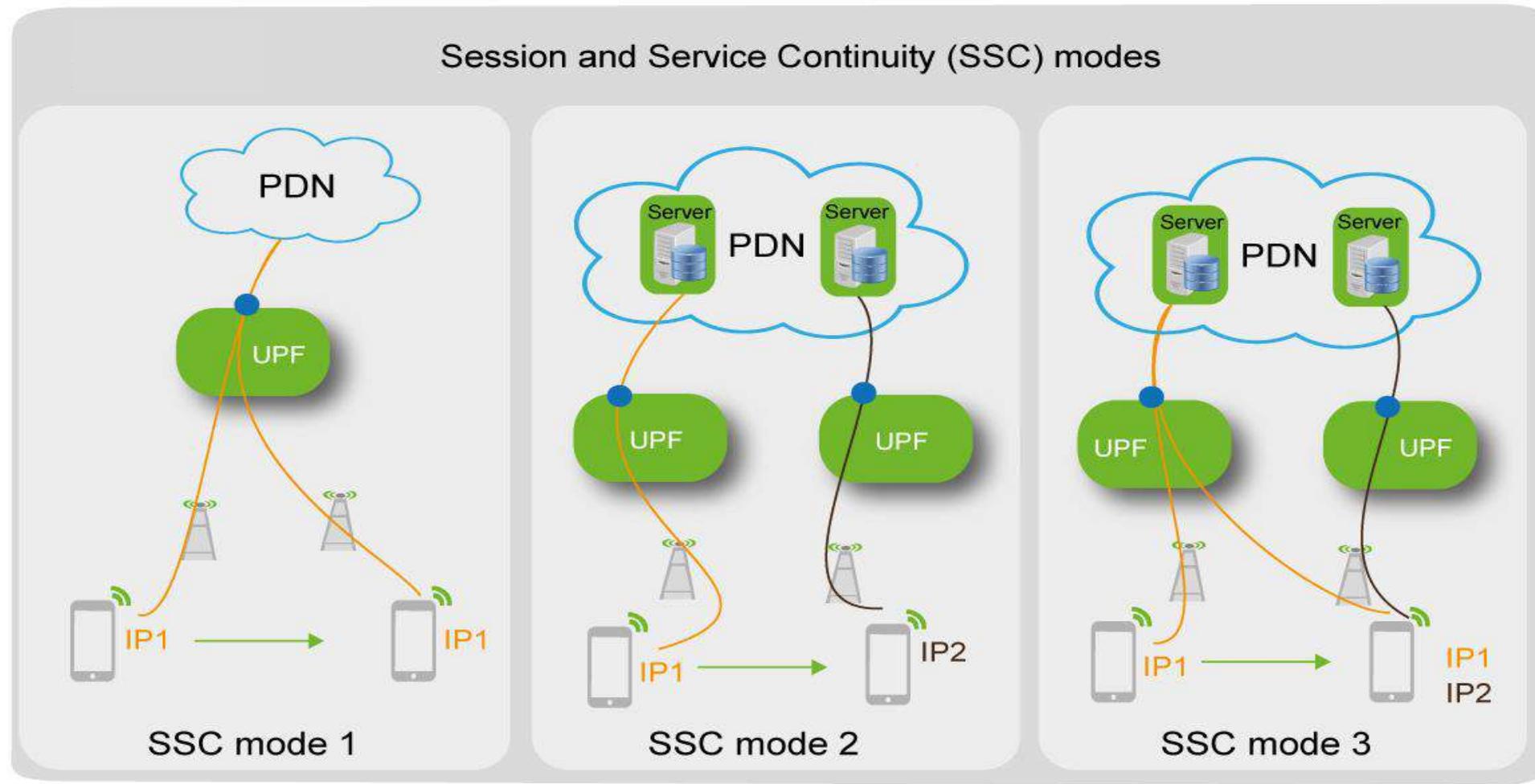
Features are not always independent from each other. E.g. (very) UE low battery power consumption competes with obtaining services via multiple network slices. As an example, network slices #1 and #2 are for different IoT usages with on the same UEs sharing common NFs. While network slice #3 could be for smartphones.

5G QoS model



Source : 3GPP TS 23.501

Session and Service Continuity



Future Roadmap

- **Enablers for new verticals:** Communication for automation support for vertical domains, 5G LAN service, Advanced V2X services, Future Railway Mobile Communication services.
- **Support for other Access –** Satellite Access in 5G, Wireless – Wireline convergence, maritime communication services over 3GPP.
- **Support for new services –** 5G messaging services for massive IoT, Location/Positioning services, Multimedia proximity services, Multicast & broadcast services.
- **Further optimizations –** Service Based Architecture enhancements, IMS enhancements, Network slicing enhancements, URLLC enhancements.

For more and up-to-date information:



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www.3gpp.org

Search for WIDs at <http://www.3gpp.org/specifications/work-plan> and http://www.3gpp.org/ftp/Information/WORK_PLAN/ (See excel sheet)