Second Global 5G Event

3GPP's flexible 5G system architecture

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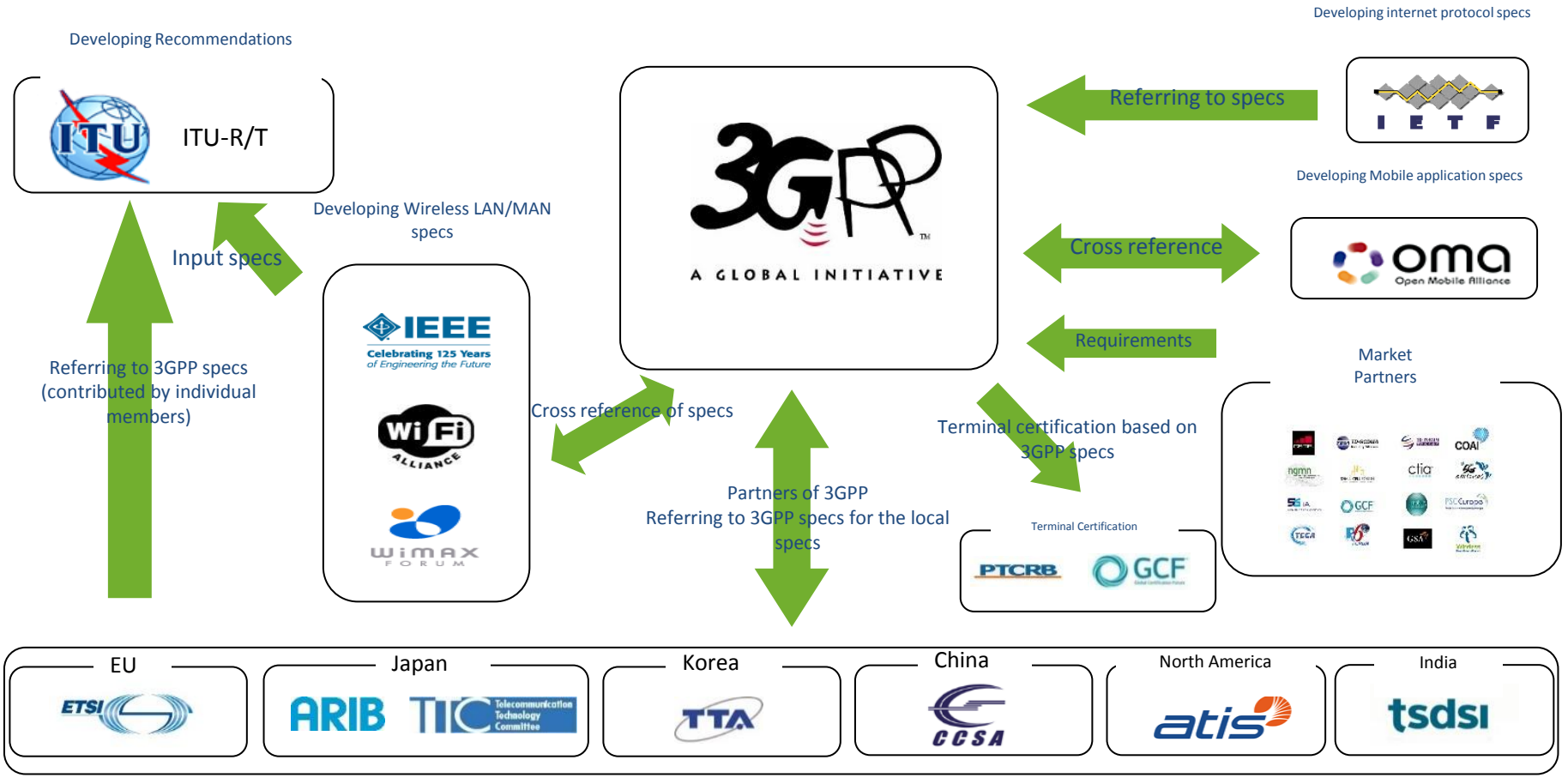
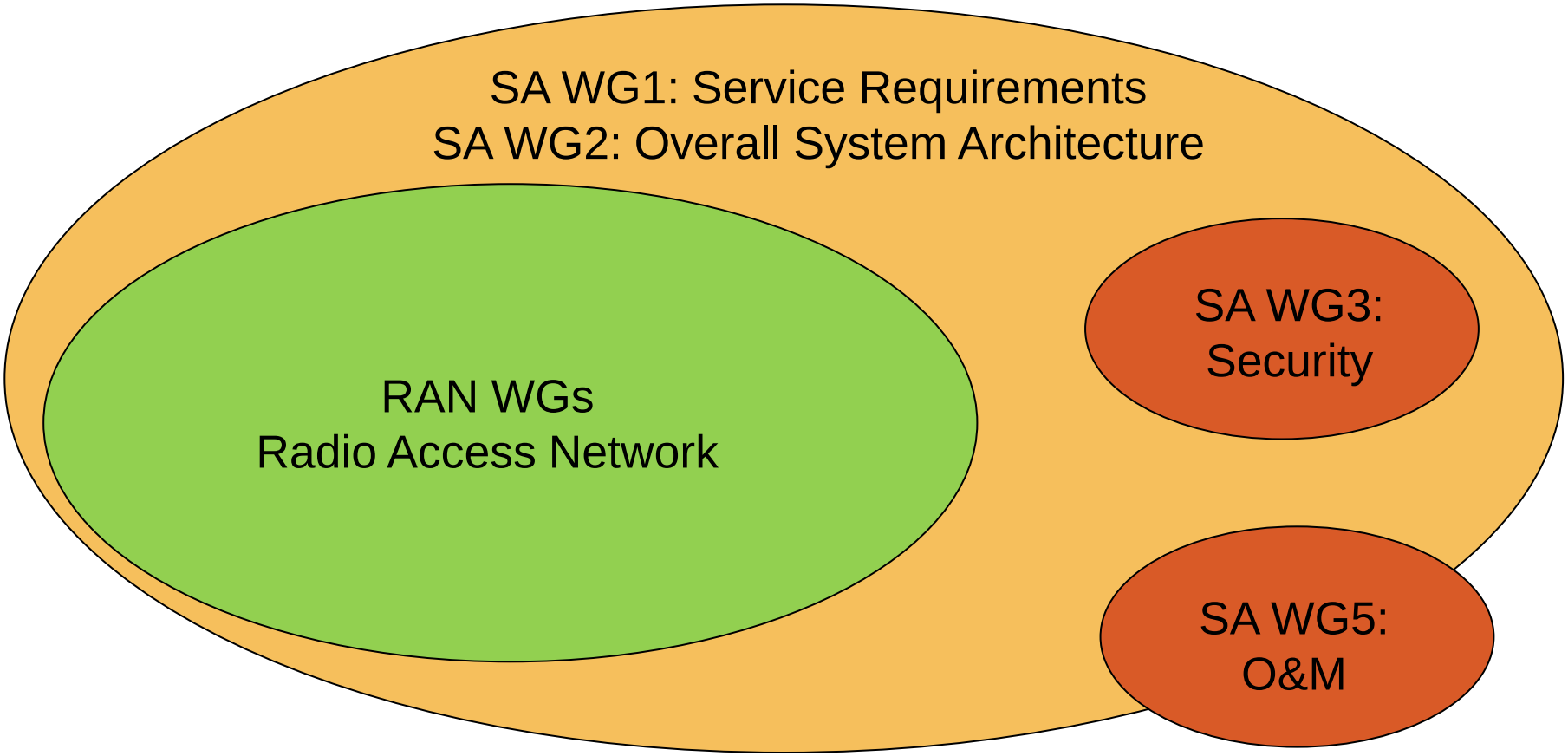
The 3GPP Eco-system



The work split within 3GPP



The generations of 3GPP packet systems

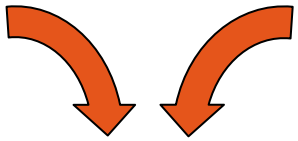
- 2nd – GPRS started as an overlay to CS for small data and got more and more bandwidth
- 3rd – initially rather circuit switched data, parallel to CS, became broadband packet with HSPA
- 4th – packet data only, reducing options and optimising for MBB, interacting with CS, small data/ low cost/ low power added lately

- 5th – for all known and unknown use cases, various access systems, flexible customisation, taking advantage of virtualisation

3GPP work

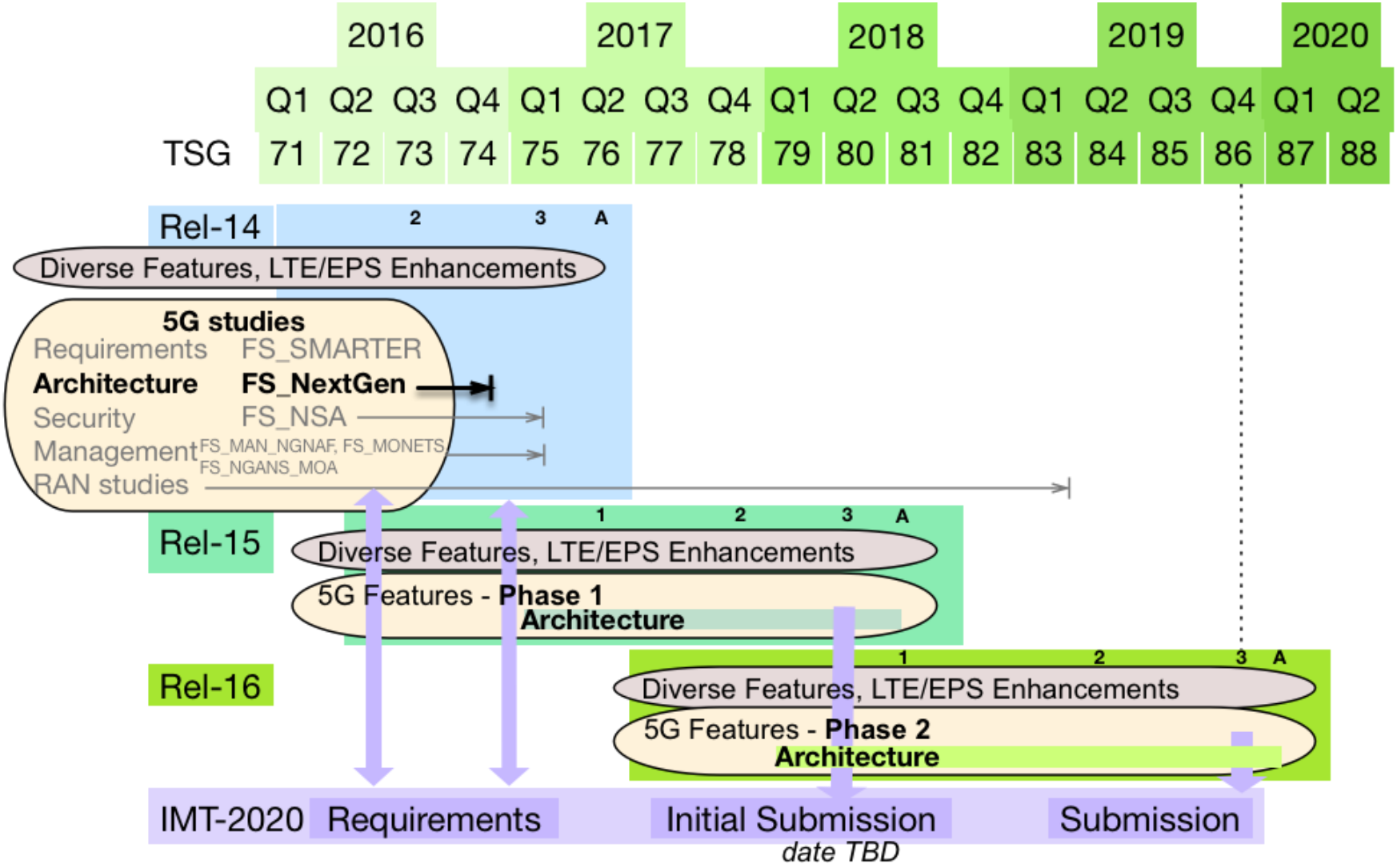
- Contribution Driven
- Consensus Decision
- Transparent Process

TSG SA WG2 work on 5G Architecture

Evolutionary path  Revolutionary path

Largely bottom-up design, defining specific network functions .

Architecture work timeline



Phases of the architecture work

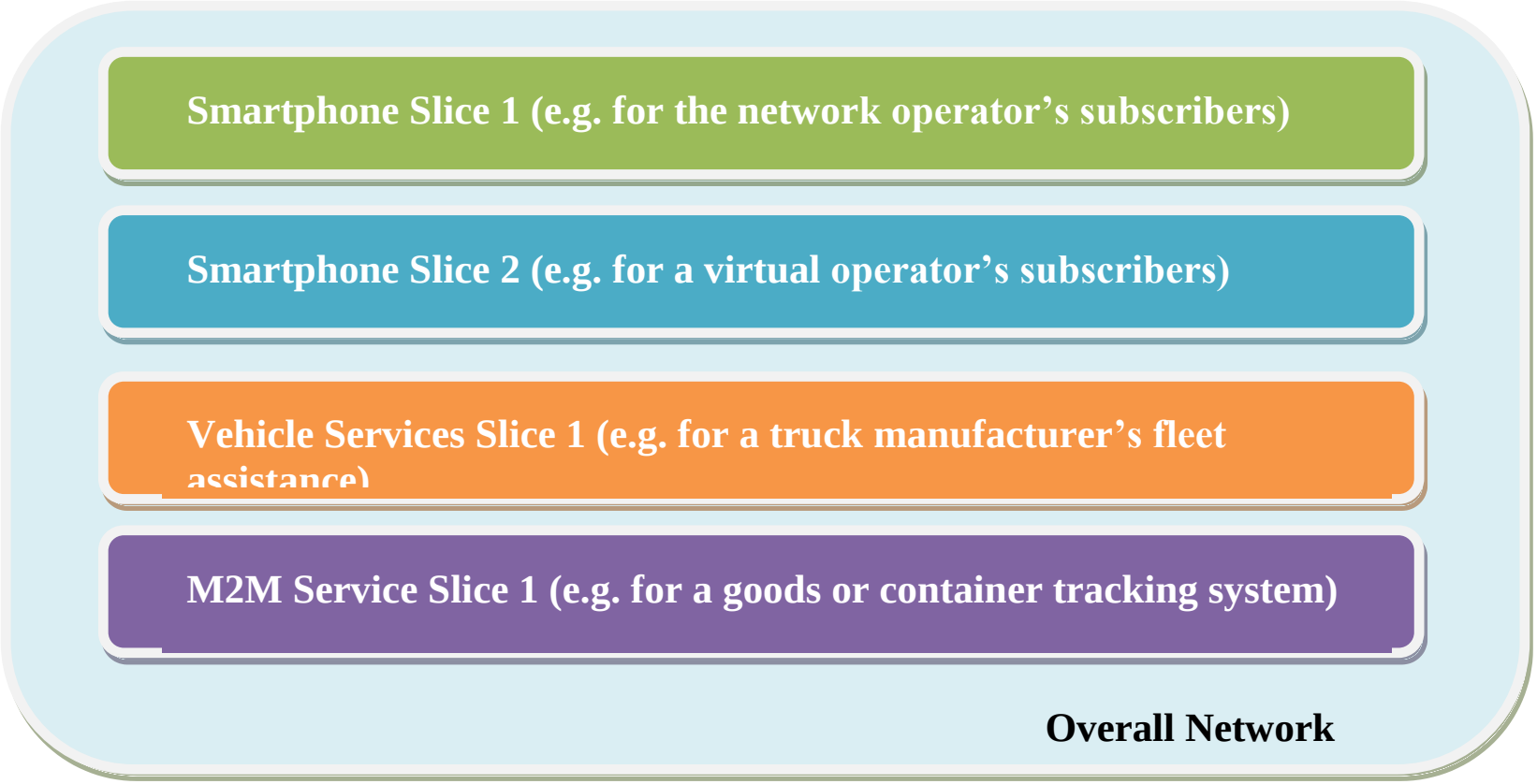
Phase 1

- Network Slicing Support
- QoS Framework
- UE/Mobility Management
- Data Session Management
- Data Session Continuity
- Efficient User Plane path
- Network Function Interaction
- Policy/Charging Control, Security
- Interworking & Migration from 4G
- Support IMS in providing voice, …
- Network discovery/selection 3GPP
- Network Capability Exposure

Subsequent Phases

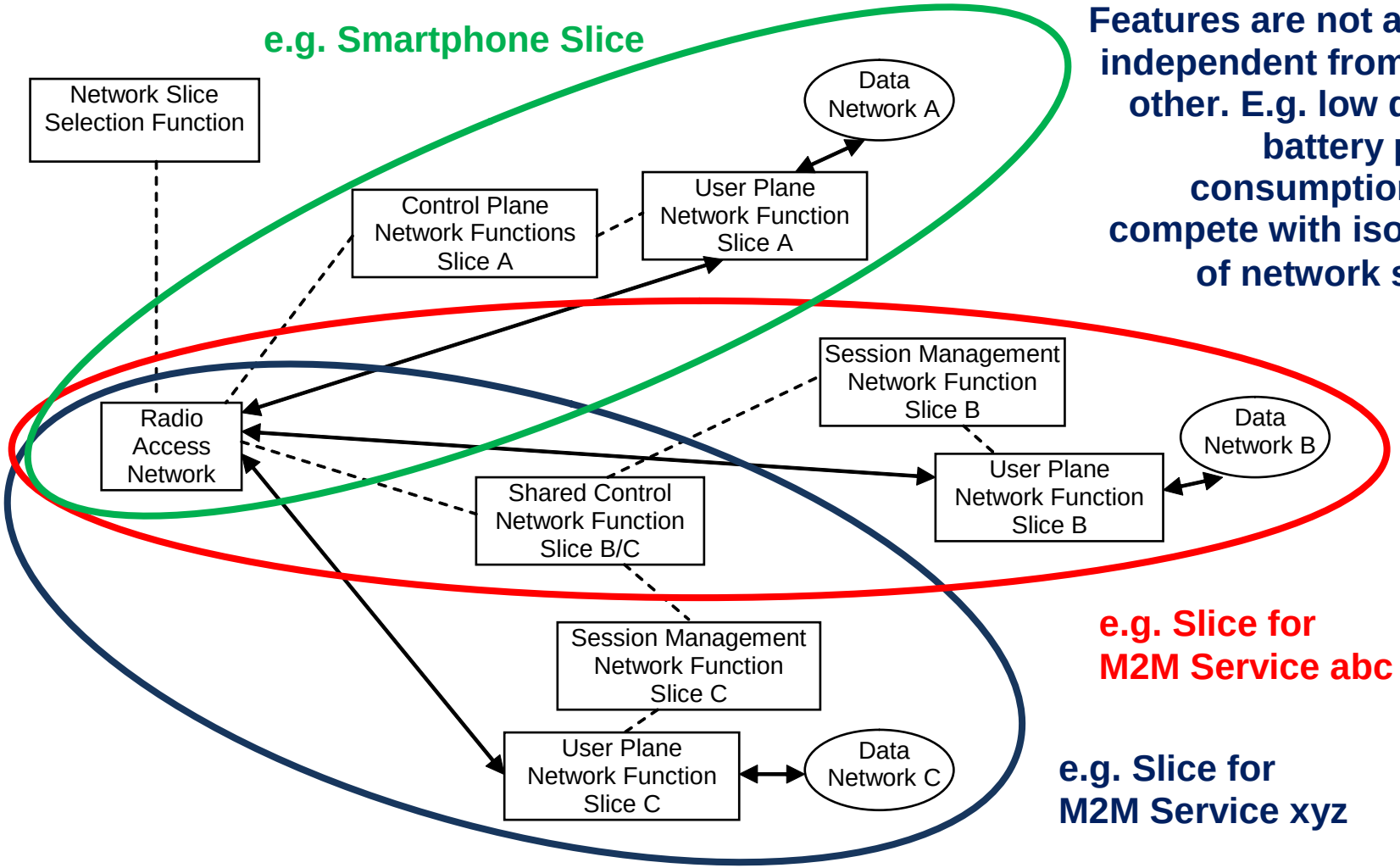
- Broadcast/Multicast Capabilities
- Proximity Services
- Communications via Relays
- Off-Network communication
- Netw. discovery/selection non3GPP
- Traffic steering/switching between 3GPP and non3GPP accesses
- Extremely rural deployments
- …

Network Slicing – The Concept



Slicing enables the operator to deploy multiple, more or less independent end-to-end networks potentially with the same infrastructure.
Each slice can be customized for different services and/or businesses, e.g. in line with an SLA.

Network Slicing – The Issues

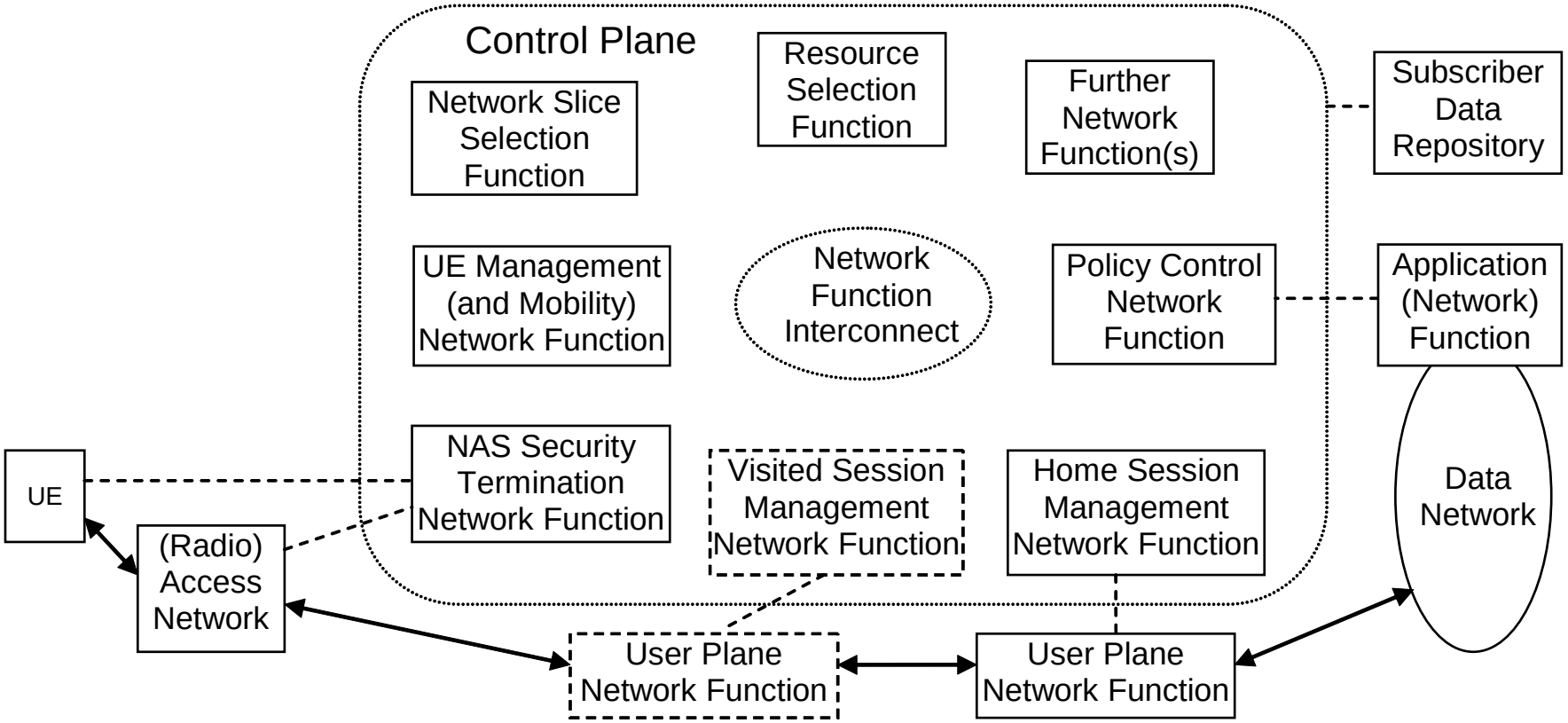


Features are not always independent from each other. E.g. low device battery power consumption may compete with isolation of network slices.

e.g. Slice for M2M Service abc

e.g. Slice for M2M Service xyz

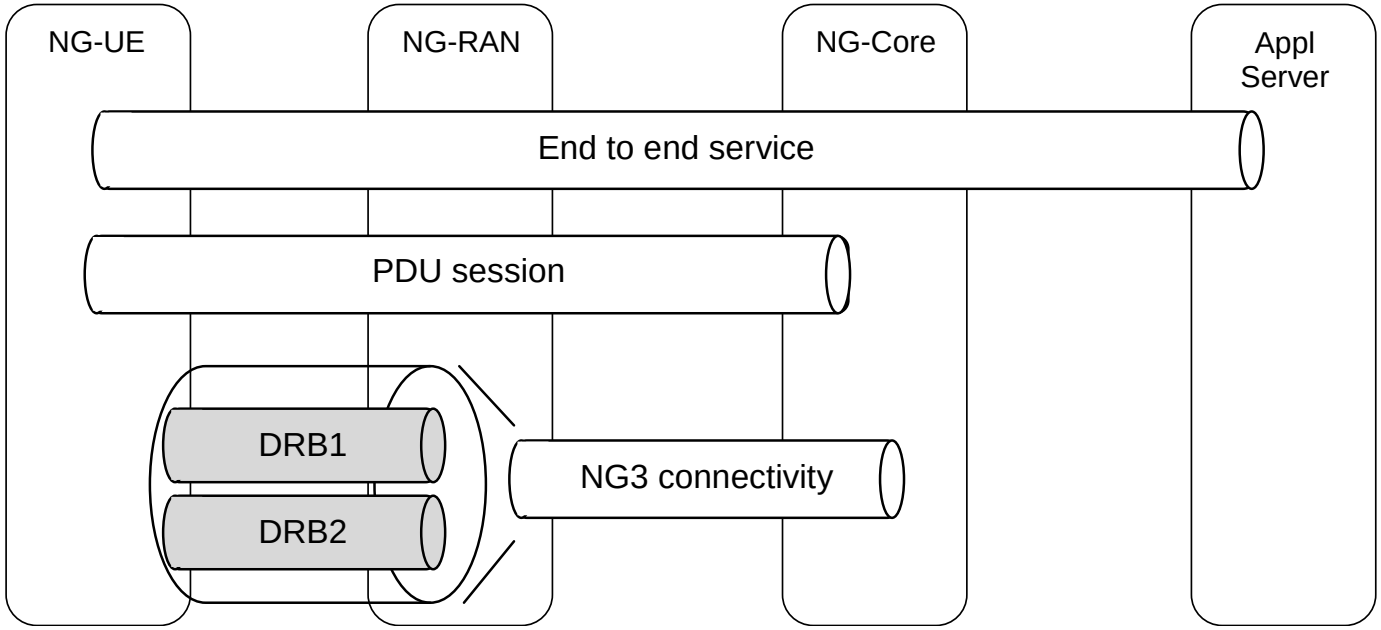
Functional Network Architecture



This is **NOT** (yet?) the 3GPP 5G System Architecture.

This is a snapshot of the ongoing work where the here shown and other principles and network functions are under discussion.

QoS model and QoS services



This is another example of the ongoing discussions taken from the study TR 23.799, which represents somehow the idea of a lighter QoS session or bearer model compared to earlier generations, e.g. by using packet marking. Other impacts may come from commonalities with fixed or WLAN accesses.

Outlook

- 3GPP Release 15 will be very busy with providing the Phase 1 system definition, including all that is needed for deploying a base system.
- The release 15 Next Generation Architecture will support mobile broadband and a few other services and features.
- The flexible function design will allow deployments to use state of the art techniques and it will allows for flexible allocation or distribution of functions and resources within the network.
- The new architecture allows customization of the slices for different services and characteristics. For example, multiple data sessions per UE that are fully independent from each other and may terminate at different locations in the network.
- Subsequent releases will provide further features and service capabilities, enhanced means for exposing those and thereby enhanced support for applications or 3rd parties to easily use the capabilities and information that the 3GPP 5G system provides.

Thank You!