Understanding 3GPP Bearers

LTE / HSPA / EPC
'*knowledge nuggets*'

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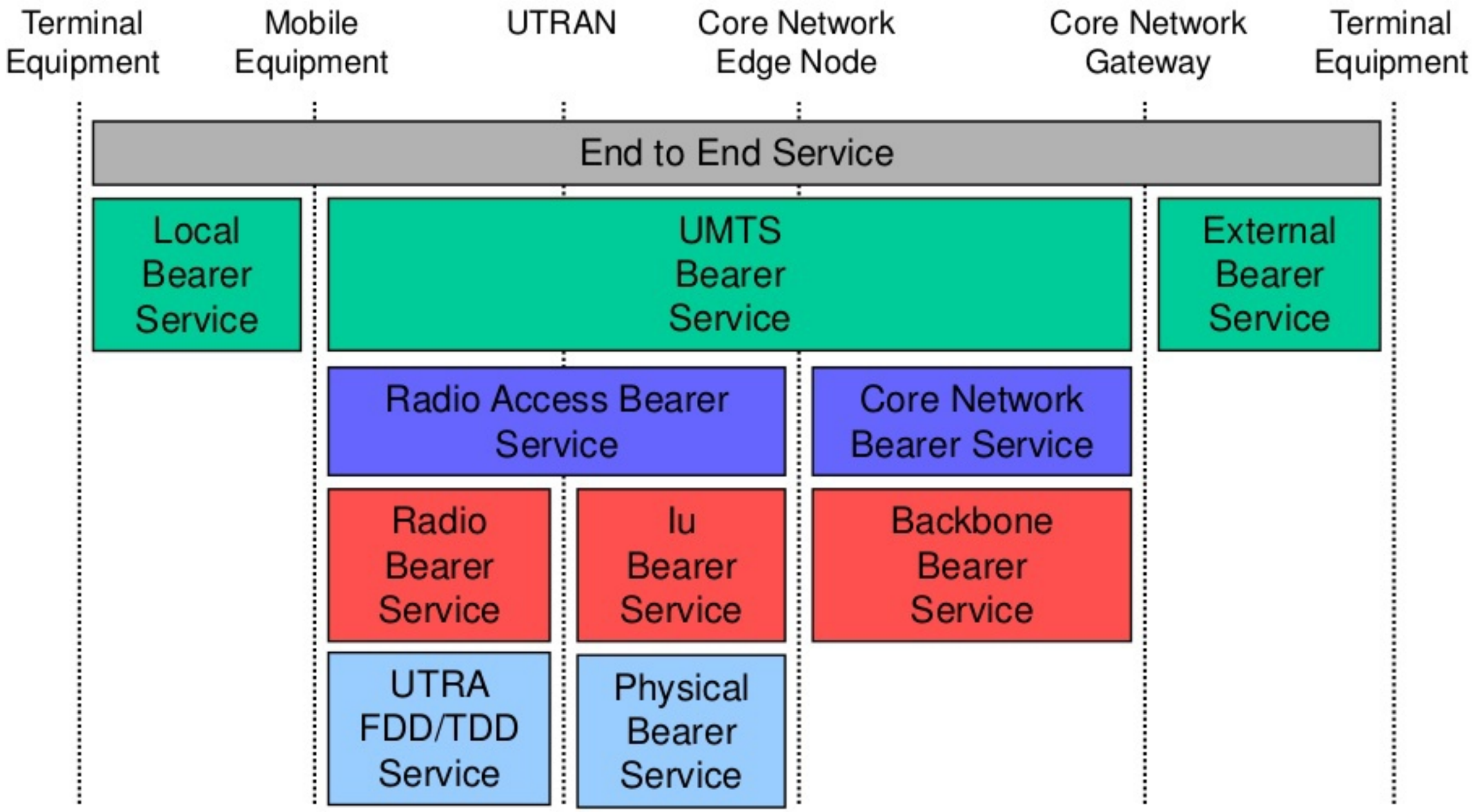
More free downloads at www.red-banana.org

Public Seminar details – www.4g-seminar.com

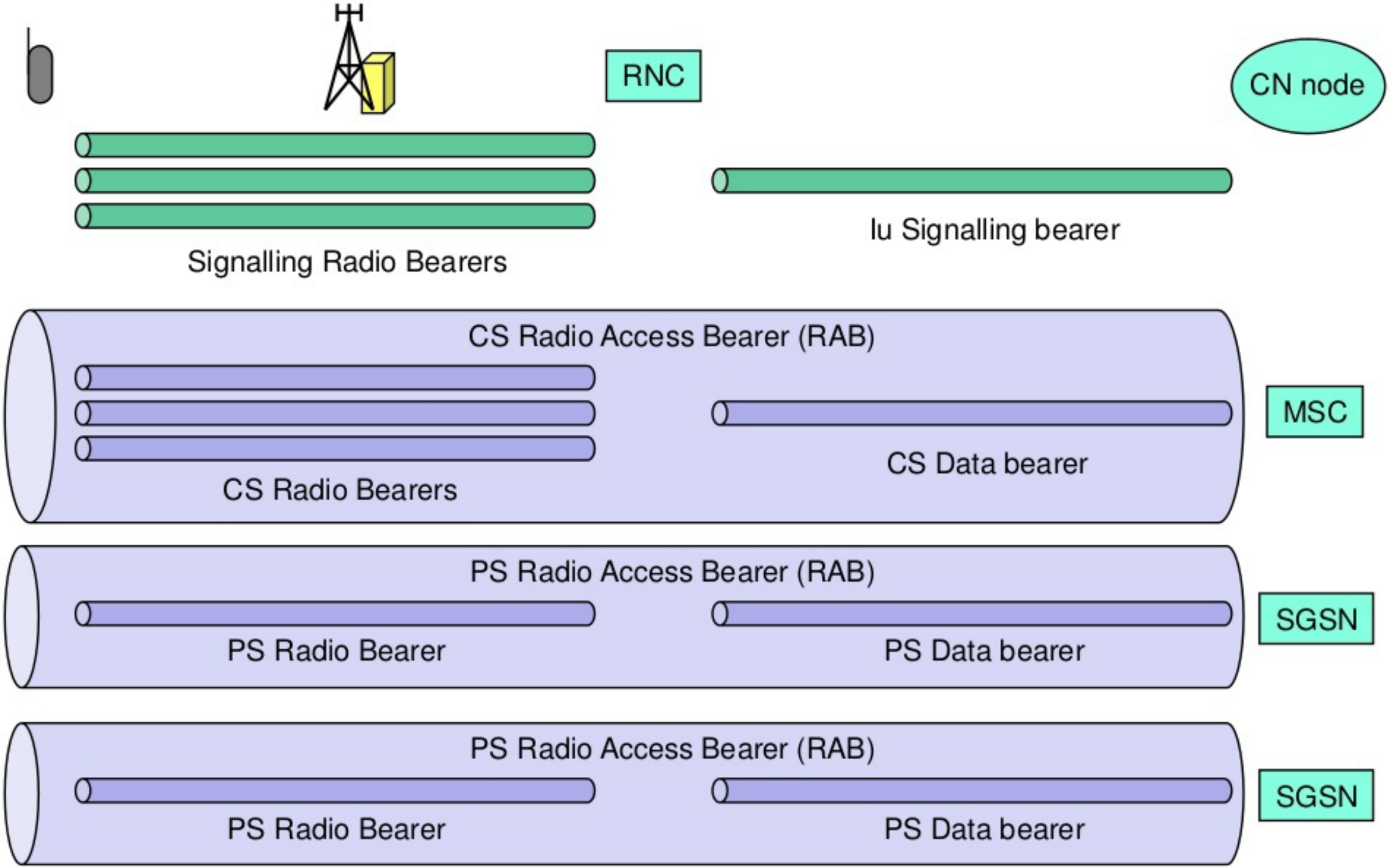
Bearers for Quality of Service

Traffic class, bit rate, delivery order, reliability, delay characteristics, priority etc.

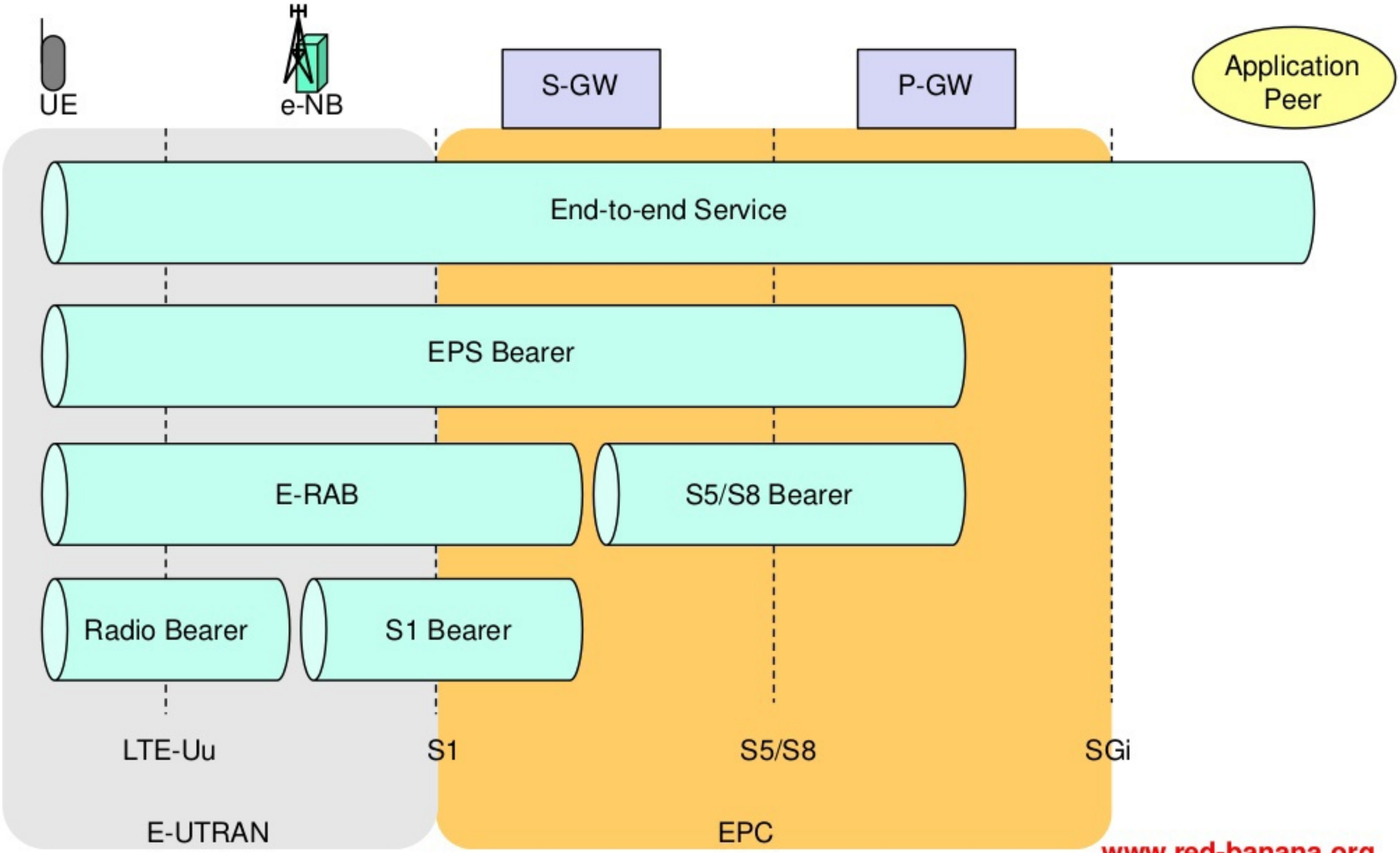
UMTS Bearer Hierarchy



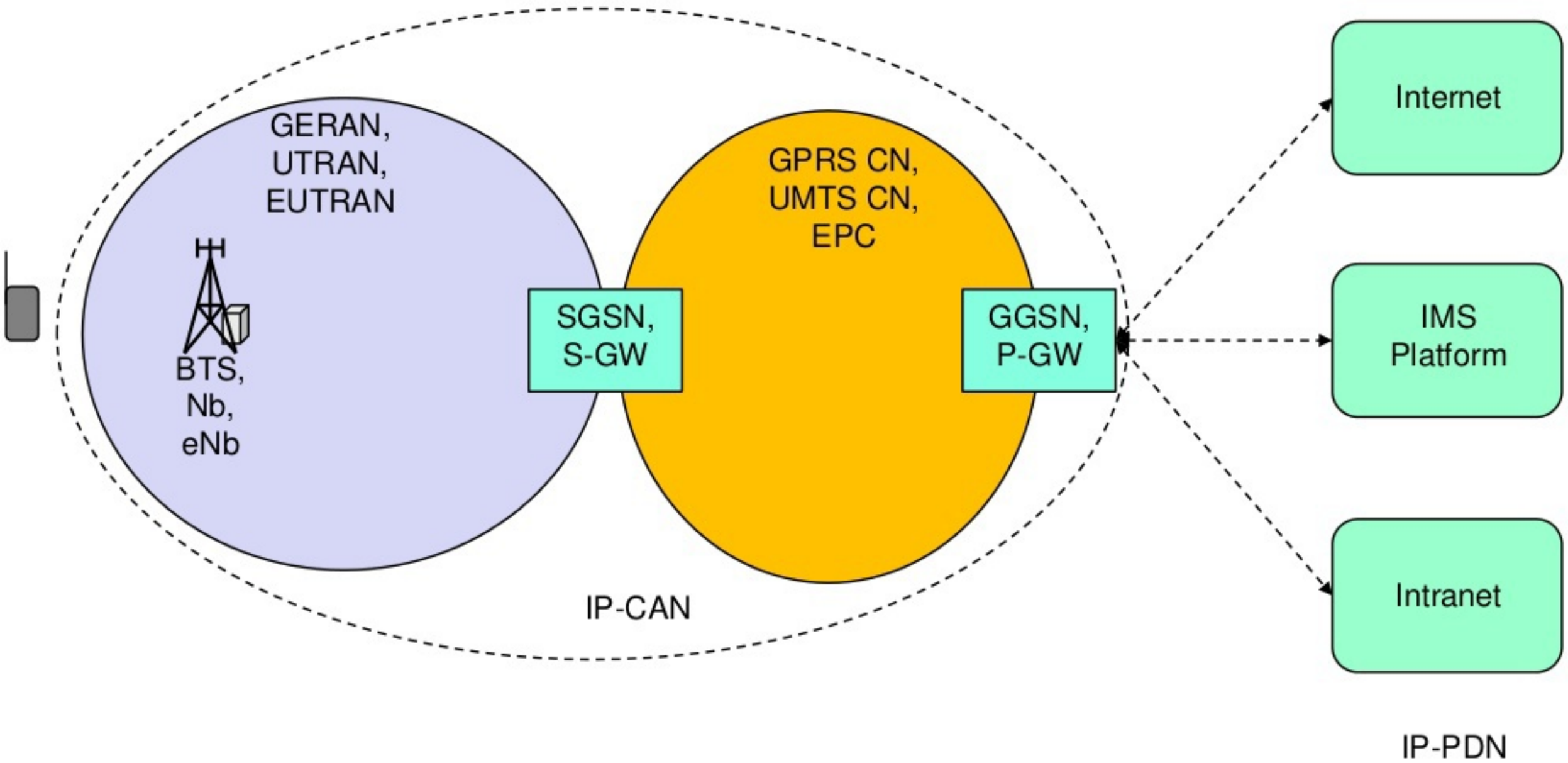
UMTS Bearer Components



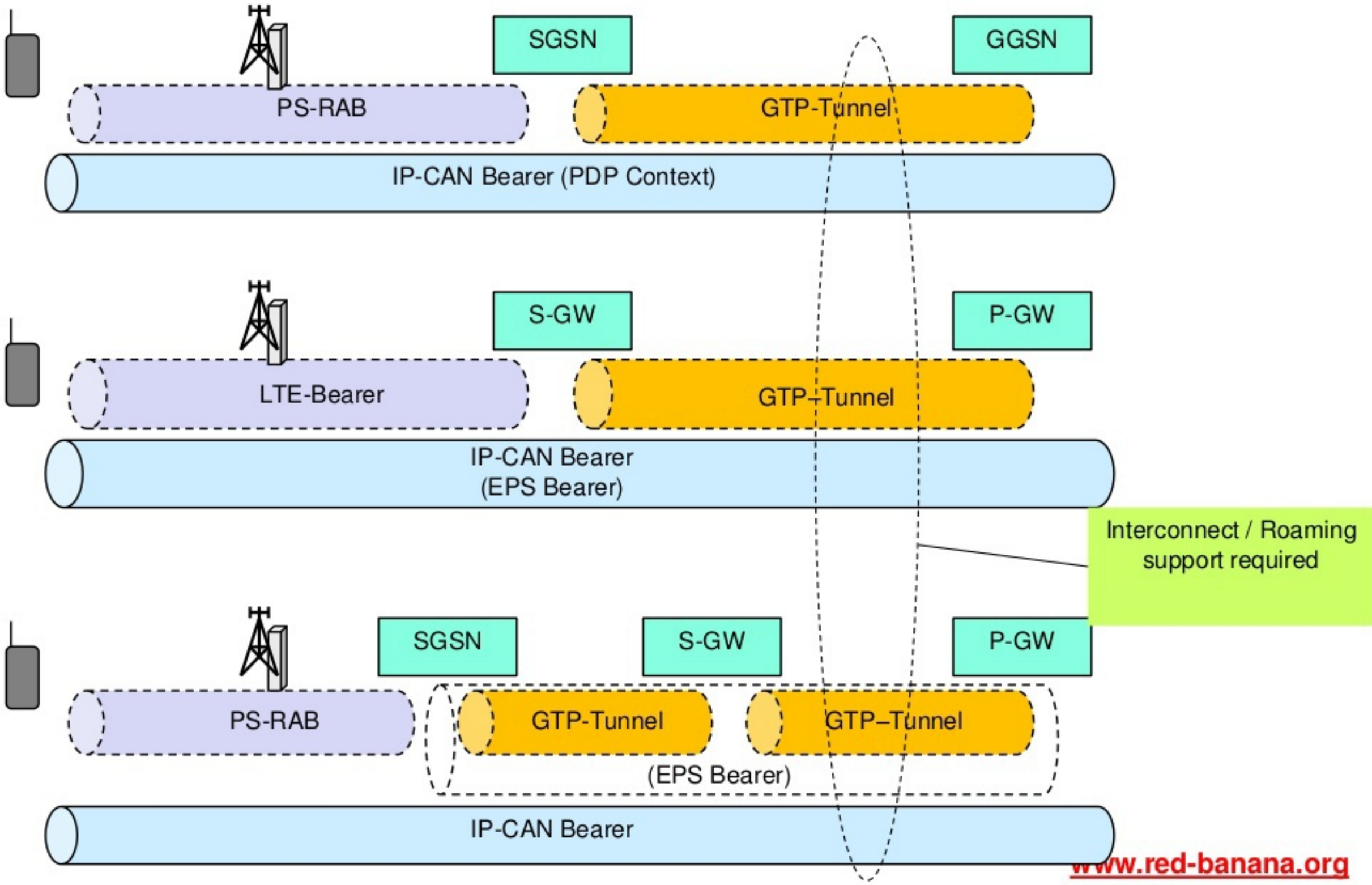
EPS Bearer Hierarchy



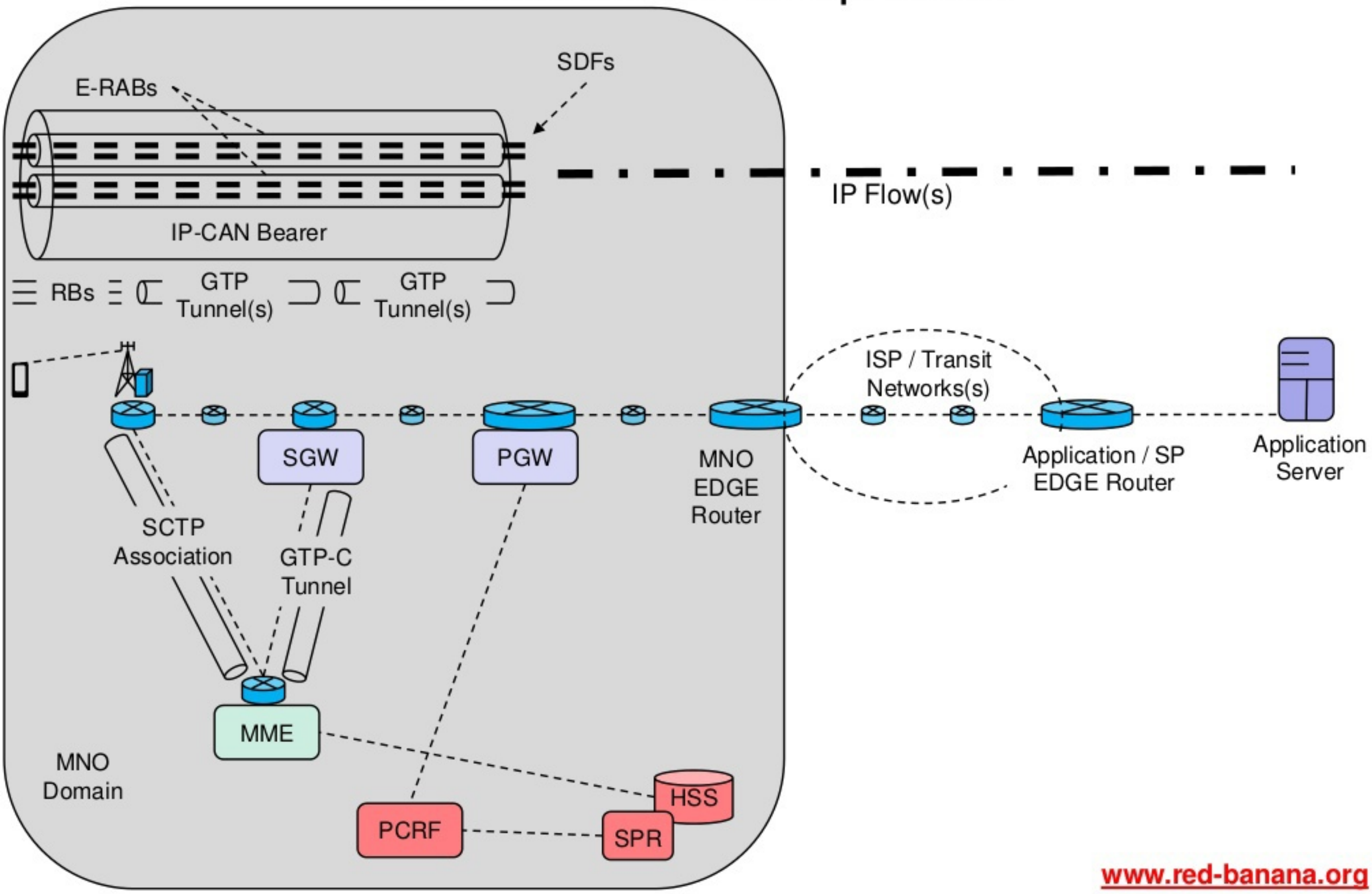
IP-Connectivity Access Network



IP-CAN Bearers



LTE Connection components



Radio Bearer (RB)

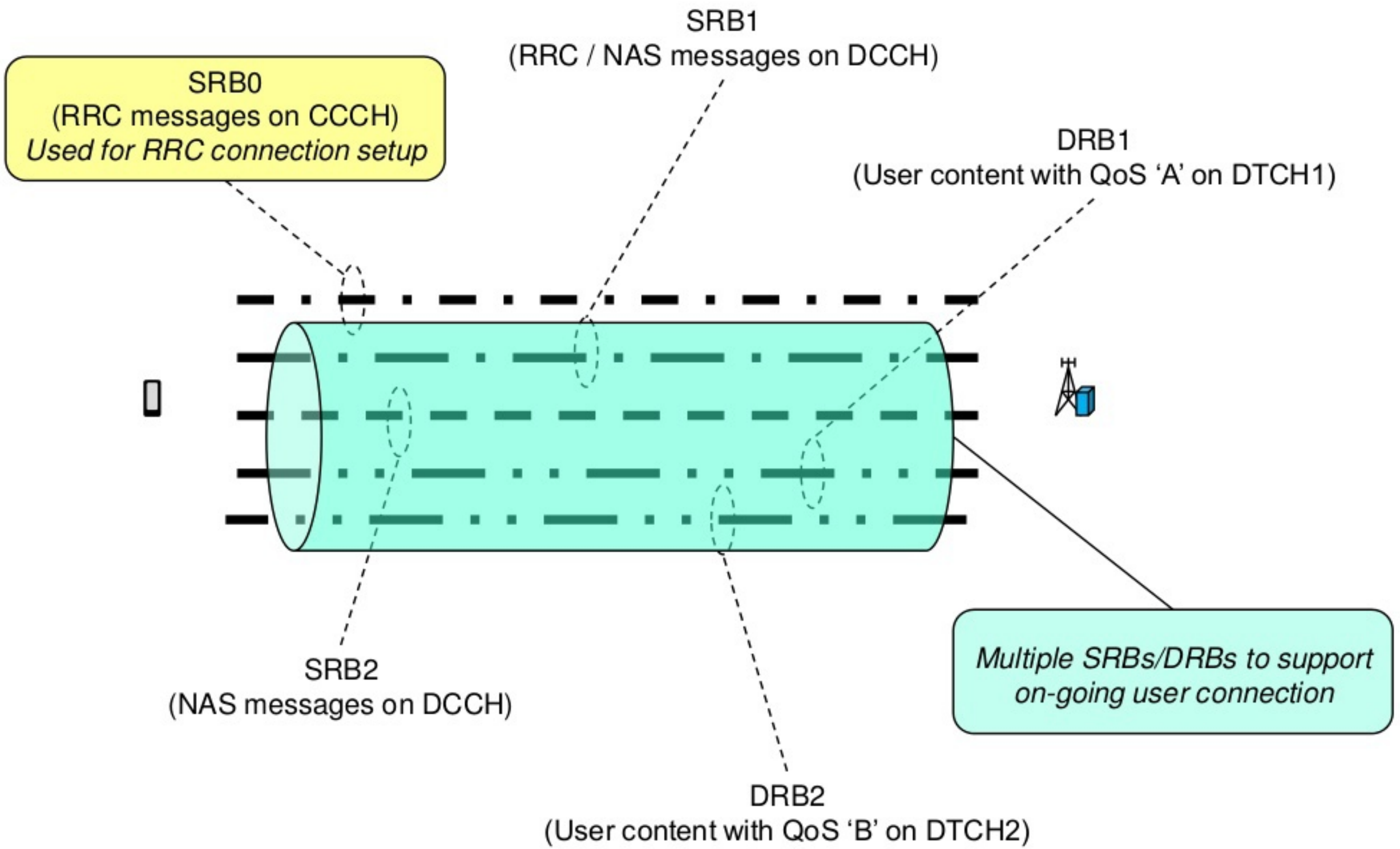
- Radio Bearer
  - L2 service provided for transfer of info on the Air Interface
  - Describes L2 processes per *bit-stream (flow)*
  - Different QoS requirements supported by different RBs

- Example
  - Flow A requires low latency but can tolerate packet loss of 10^{-2}
  - Flow B has less stringent latency requirements, but can only tolerate a packet loss of 10^{-6}
  - Flow A and B must be supported by 2 separate Radio Bearers

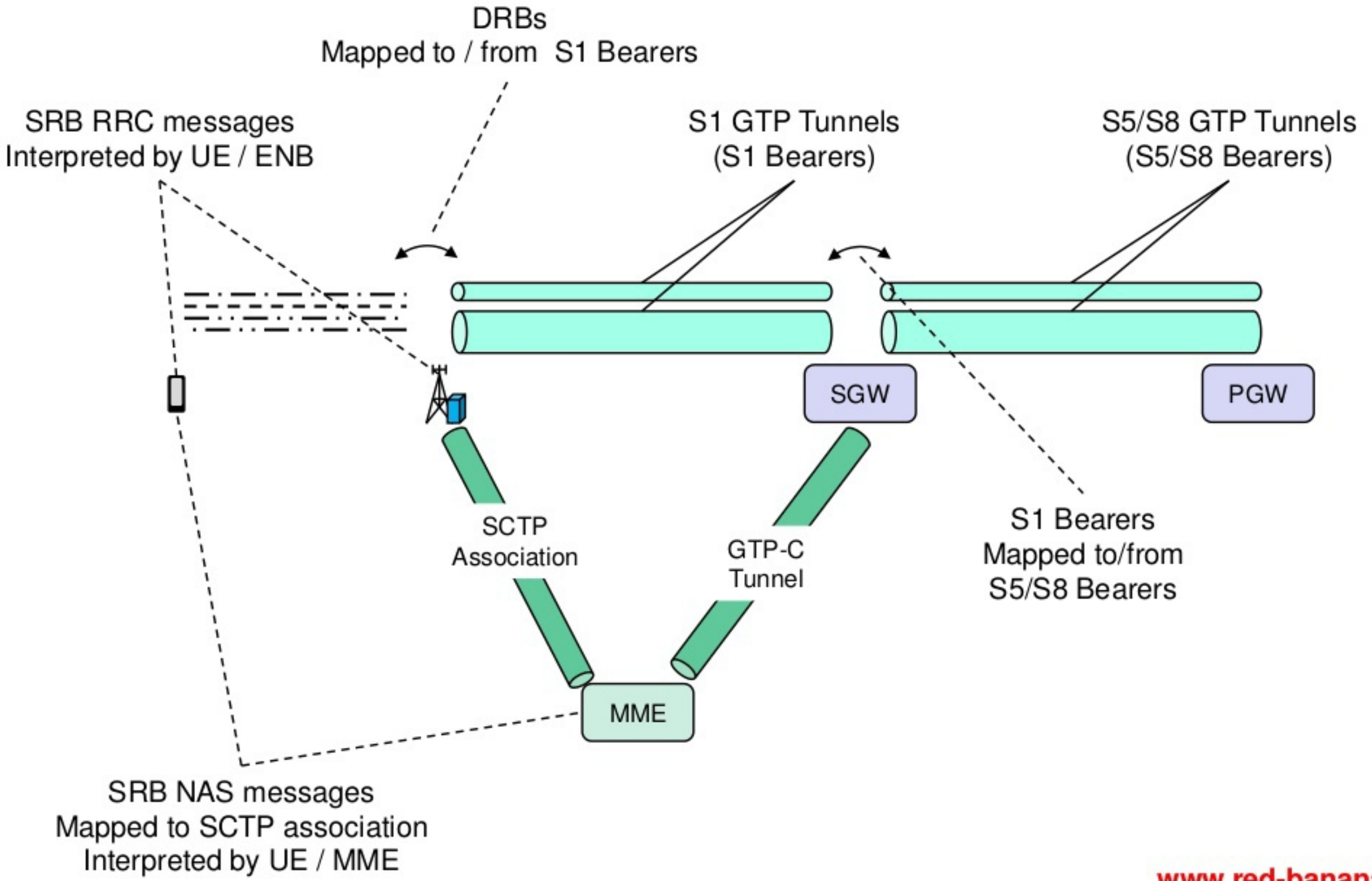
LTE Radio Bearer categories

- Signalling Radio Bearers (SRB)
  - SRB0 is for RRC messages
    - Using the CCCH logical channel
  - SRB1 is for RRC / NAS messages
    - Used prior to the establishment of SRB2
    - Using DCCH logical channel
    - NAS messages may be piggybacked inside RRC messages
    - All messages are Integrity Protected and Ciphered after security activation
  - SRB2 is for NAS messages
    - Using DCCH logical channel
    - May be contained in RRC messages, but with no RRC control content
    - All messages are Integrity Protected and Ciphered after security activation
    - Lower priority then SRB1
- Data Radio Bearers (DRB)
  - Carry User Plane content on the Air Interface

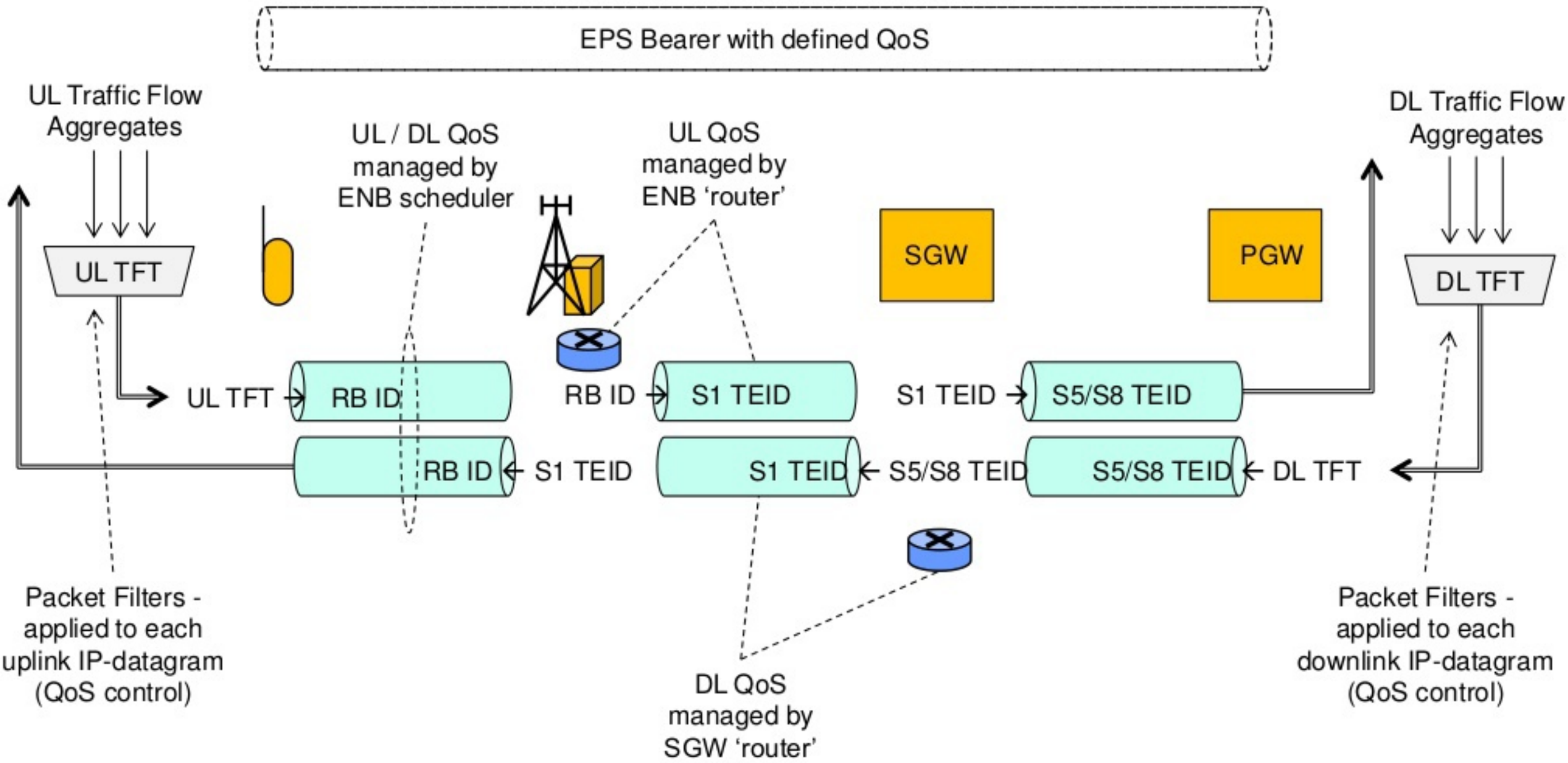
Radio Bearers



Bearer Mapping



QoS and TFT



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