NETWORK SHARING
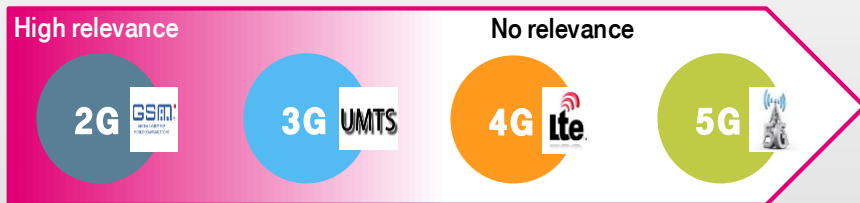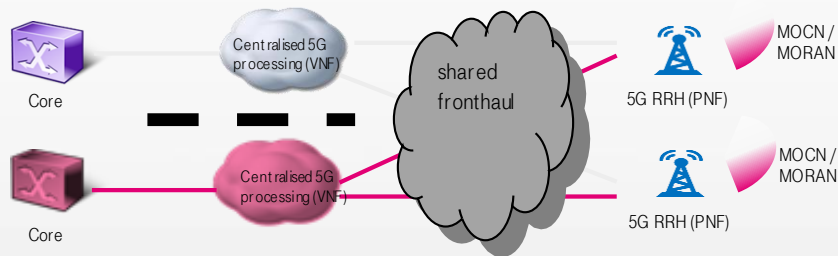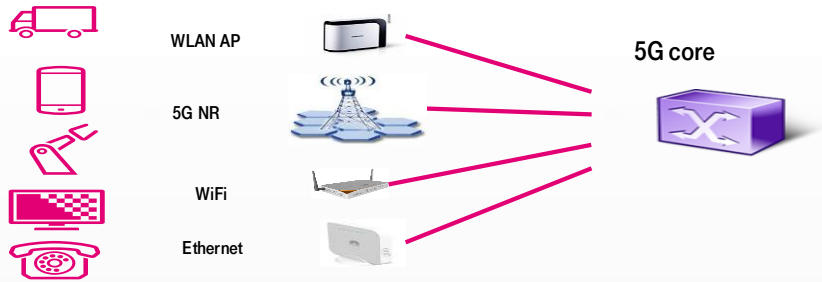
Brussels, November 16, 2020

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LIFE IS FOR SHARING.

5G REDUCED IMPORTANCE OF RAN FOR DIFFERENTIATION

- WLAN AP
- 5G NR
- WiFi
- Ethernet
- 5G core

- Core
- Centralised 5G processing (VNF)
- shared fronthaul
- MOCN / MORAN
- 5G RRH (PNF)
- Core
- Centralised 5G processing (VNF)
- MOCN / MORAN
- 5G RRH (PNF)

High relevance ———————————————— No relevance

2G GSM | 3G UMTS | 4G Lte | 5G

- **With 5G access technologies becomes interchangeable**
  - 5G joint core network provides same services and service experience over different access technologies
  - Network slicing enables new infrastructure sharing models

- **Virtualization further reduces importance of RAN infrastructure**
  - With software-defined and cloudification of networks the infrastructure becomes commodity (generalized HW)
  - Differentiation, if needed, on software layer

- **Services become RAN agnostic**
  - Access layer transforms over generations towards an IP pipe.
  - Services are IP based and thus agnostic to the RAN part of the network
  - Services are produced in data center agnostic to the access technology

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NETWORK SHARING – GROWING IMPORTANCE

- **Dramatically increased network costs in future**
  - 5G reduces costs per bit, but cannot compensate the rising costs due to traffic explosion (app. 30-55% yearly)
  - 5G uses higher frequency bands with reduced coverage resulting in the need for network densification
  - High 5G peak rates require indoor installments due to penetration loss of building for higher frequency bands

- **Historic parameters not relevant in 5G**
  - Urban/rural distinction outdated since sharing in urban areas could become more relevant given scarcity of rooftops sites and involved costs
  - Passive/active distinction less relevant with virtualization and open RAN as intelligent SW is moved to centralized data center. At RAN sites only generalized radio equipment is kept. Differentiation is provided by RAN SW in the cloud, which can be adapted individually in sharing context.

- **Technology trends in 5G**
  - Equipment is technology agnostic providing flexibility even with network sharing, eg. multi-standard RAN
  - Multiband radio module enabled better and wider NWS, providing more capacity for each player
  - Open-Ran and virtualization leads to 'off the shelf' radio hardware without differentiation possibilities at radio sites

NETWORK SHARING - CONCLUSION

- Necessity of cooperation in form of network sharing are recognized at EU and national levels:
  - Active RAN sharing is "*an essential element for the deployment of new 5G networks*", in relation to which Europe lags behind the US and Asia (IDATE Digiworld Consulting, December 2017)
  - European Parliament recommends on 5G to "*Promote infrastructure sharing for 5G: Policy for 5G networks should be based on encouraging infrastructure sharing* "
  - DG Comp in case M.7612: "*network sharing can have pro-competitive effects by achieving cost synergies in the deployment and operation of mobile networks which in turn can enable MNOs to achieve better coverage and higher network quality, promoting effective competition and thereby benefiting consumers and society as a whole*."

- Due to their benefits and procompetitive nature the network sharing agreements should generally be regarded as permissible:
  - Regulatory framework needs to adapt to technological changes, in particular with regard to the changing role of active RAN and the necessity of urban sharing
  - Competitive assessment should focus more on following parameters of the horizontal guidelines:
    - Limited cost communality
    - Safeguards on information exchange
    - There remains room for technical differentiation towards the customer

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