

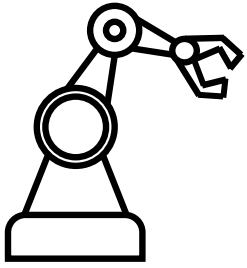
# 3GPP Release 17 and Release 18 support for industry verticals

3GPP MRP Workshop: Industry Verticals and Rel-18 RAN  
23 June, 2021

Matthew Webb, Huawei

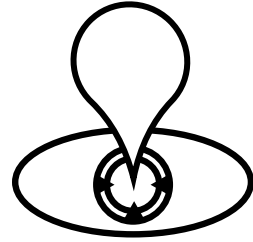


# 3GPP RAN verticals up to Release 17



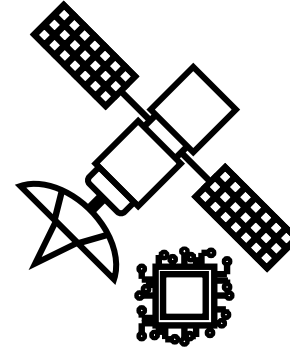
URLLC/IIoT

- 1 ms air-interface delay
- $10^{-6}$  reliability
- Time-sensitive networks
- Synchronicity  $\leq 1 \mu\text{s}$



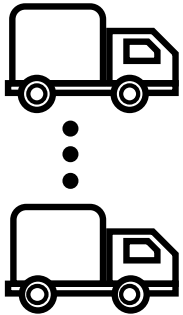
Positioning

- eMBB accuracy:  $<10$  m outdoor,  $<3$  m indoor
- IIoT accuracy:  $\sim 0.2$  m indoor
- 10 ms latency



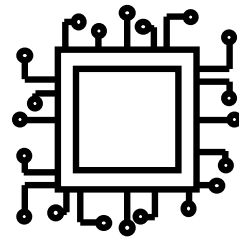
NTN & NTN-IoT

- LEO and GEO
- Transparent payload
- Long propagation delays and large Doppler
  - 540 ms RTT (GEO)
  - $\sim 24$  ppm Doppler (LEO)
- LTE IoT via satellite



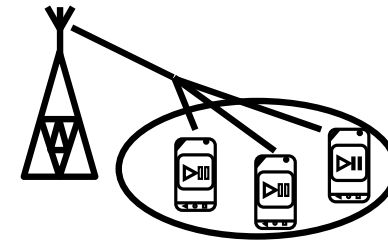
V2X & sidelink

- 3 ms latency
- $10^{-5}$  reliability
- 400 Mbps data rate (in 40 MHz)
- Unicast, groupcast, broadcast
- Power saving for VRUs (i.e. V2P)



RedCap

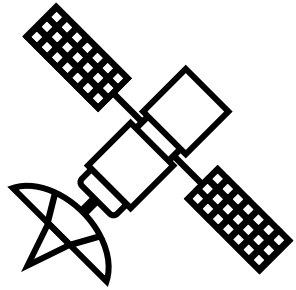
- Cost saving: 65 – 70%
- Reduced BW, 1 Tx / 1Rx, HD-FDD, optional 256-QAM
- Data rates
  - Eco. video: 2 Mbps,  $\sim 10^{-3}$
  - IWSN:  $<2$  Mbps,  $10^{-4}$
  - Wearables: DL 10-50 Mbps, UL 5 Mbps



Multicast / broadcast

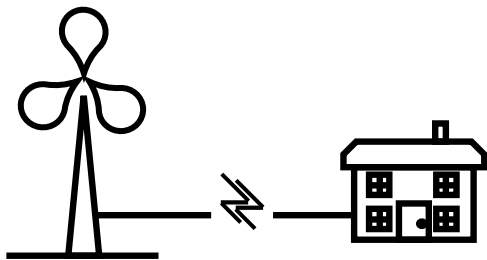
- Group-scheduling of control channel
- HARQ for multi- & broadcast
- Public safety, MCX
- V2X (downlink)
- IPTV
- Firmware updates

# 3GPP SA1 verticals in Release 18 (1/2)



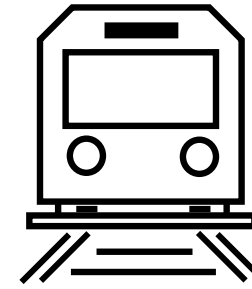
5GET

- **Extra-territorial satellite regl'n**
- Regulatory requirements for 5G when satellite coverage spans beyond national borders and/or public waters
- [TR 22.867](#)



'5GSEI'

- **Smart energy and infrastructure**
- 5G support of smart grid services
- 5G support new energy services, e.g. on-demand power supply, distributed power supply system...
- 5G support renewable energies
- Deployment requirements when considering utility constraints
- [TR 22.926](#)



RAILSS

- **Smart railway station scenarios.** emergency communication and remote control
- [TR 22.890](#)

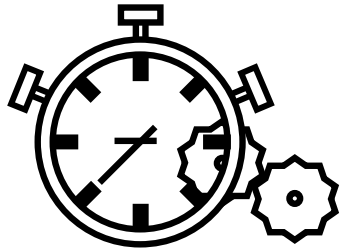
OFFNETRAIL

- **Off-network railway communication use cases**
- [TR 22.990](#)

eFRMCS

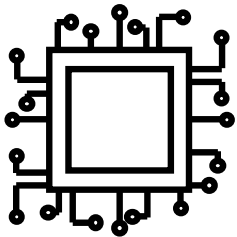
- **Future railway mobile communication system enhancements**
- Localization service
- Application authorization
- [TR 22.989](#)

# 3GPP SA1 verticals in Release 18 (2/2)



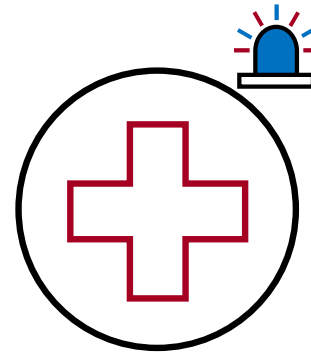
5TRS

- **5G timing resiliency services**
- Connecting 5G to fiber and terrestrial timing systems
- Provide resilient timing services to, smart grid utilities, financial sector, ...
- [TR 22.878](#)



PIN

- **Personal IoT networks**
- Wearable personal network
- Smart home automation network
- [TR 22.859](#)



SACI\_MCS

- **Sharing administrative configuration information between interconnected MCS systems**
- Enhanced MCX services by interconnecting different MCSes in different countries/regions
- [TR 22.881](#)

# Thank you.

Bring digital to every person, home, and organization for a fully connected, intelligent world.

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