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Qualcomm

5G Fully Connected Factory

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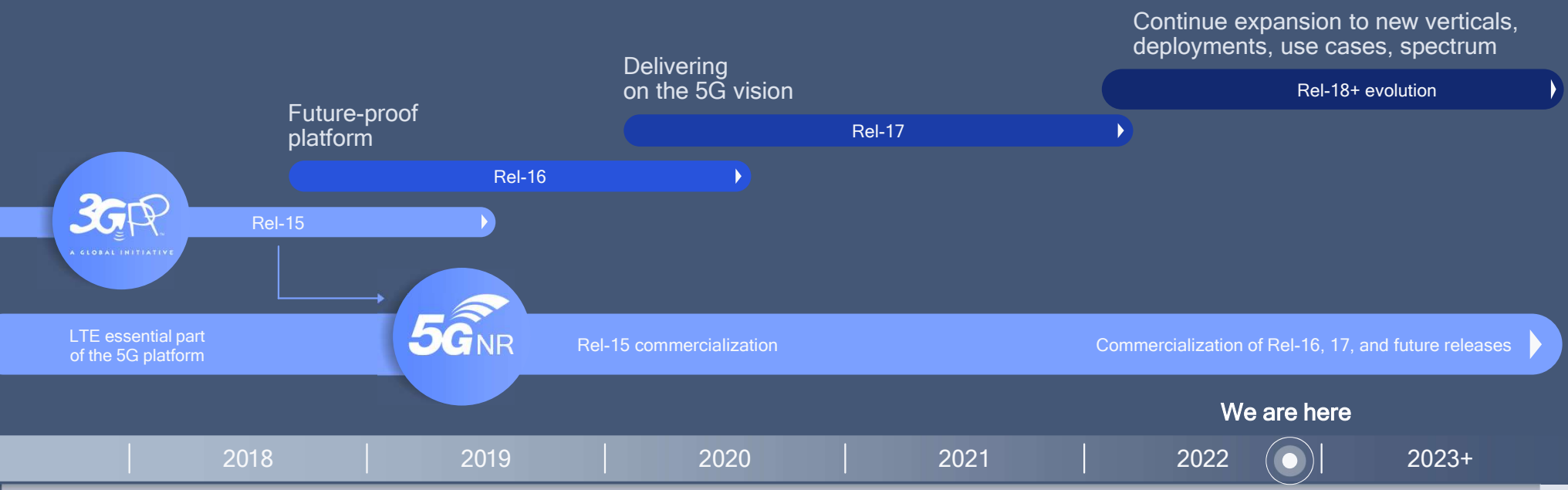
Driving the 5G technology evolution



Rel-15 eMBB focus

- 5G NR foundation
- Smartphones, FWA, PC
- Expanding to venues, enterprises

Rel-16 industry expansion

- eURLLC and TSN for IIoT
- NR in unlicensed (NR-U)
- Positioning
- 5G V2X sidelink
- In-band eMTC/NB-IoT

Rel-17+ long-term expansion

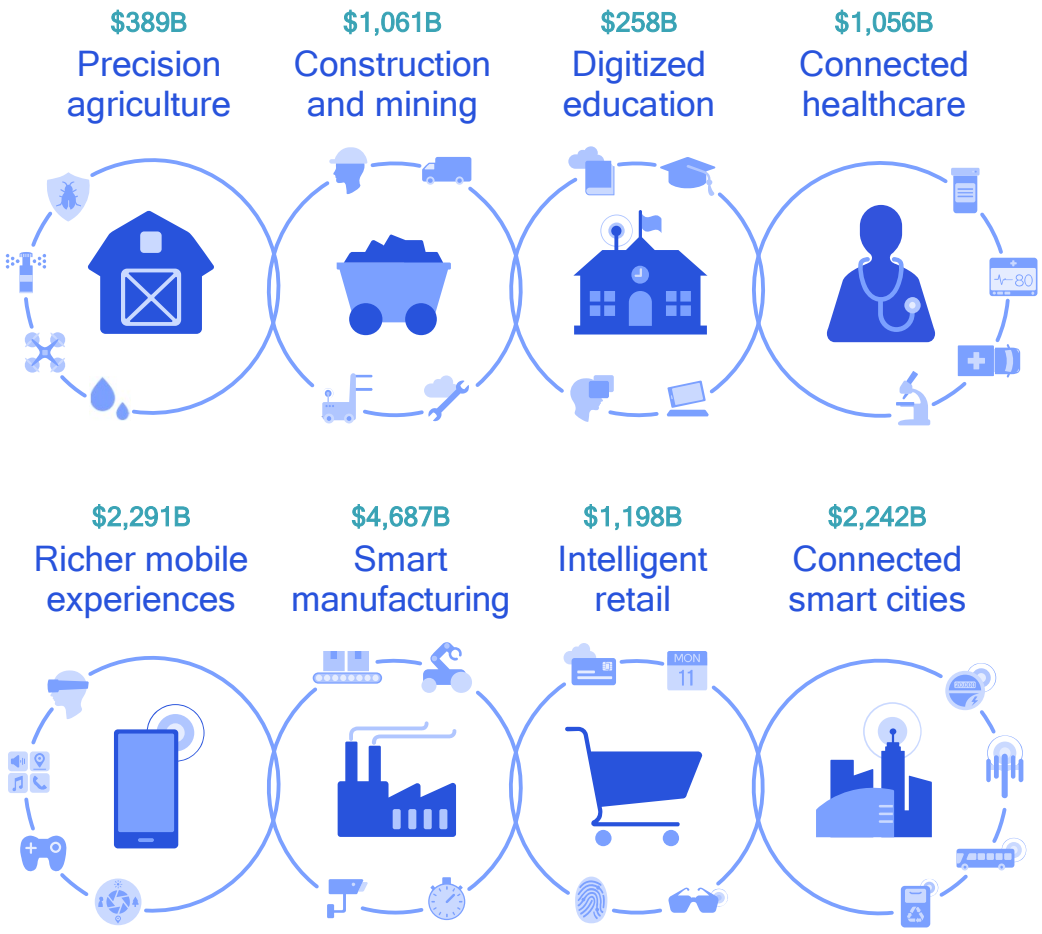
- Reduced Capability NR devices
- Boundless extended reality (XR)
- Higher precision positioning and more…

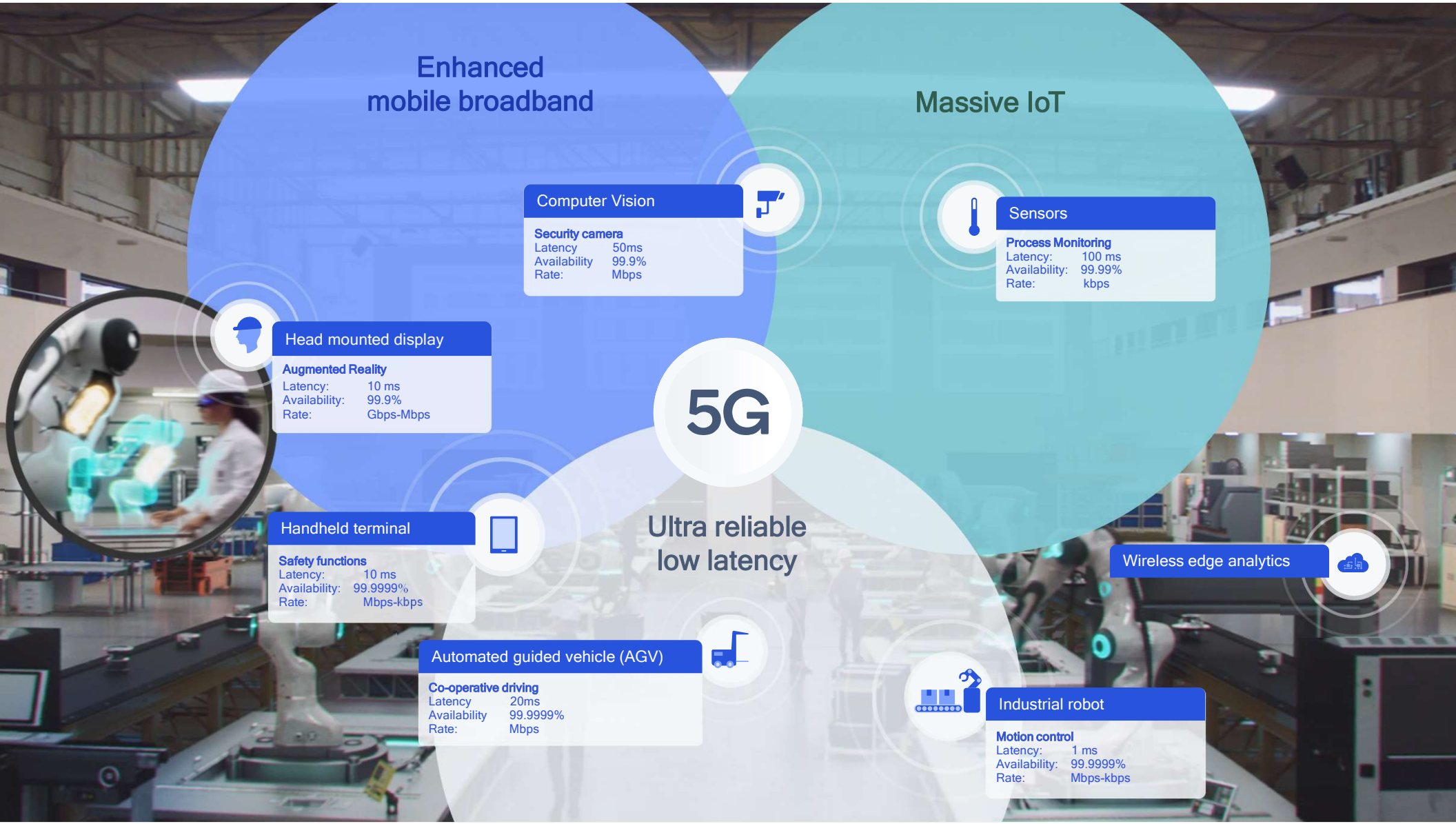
5G

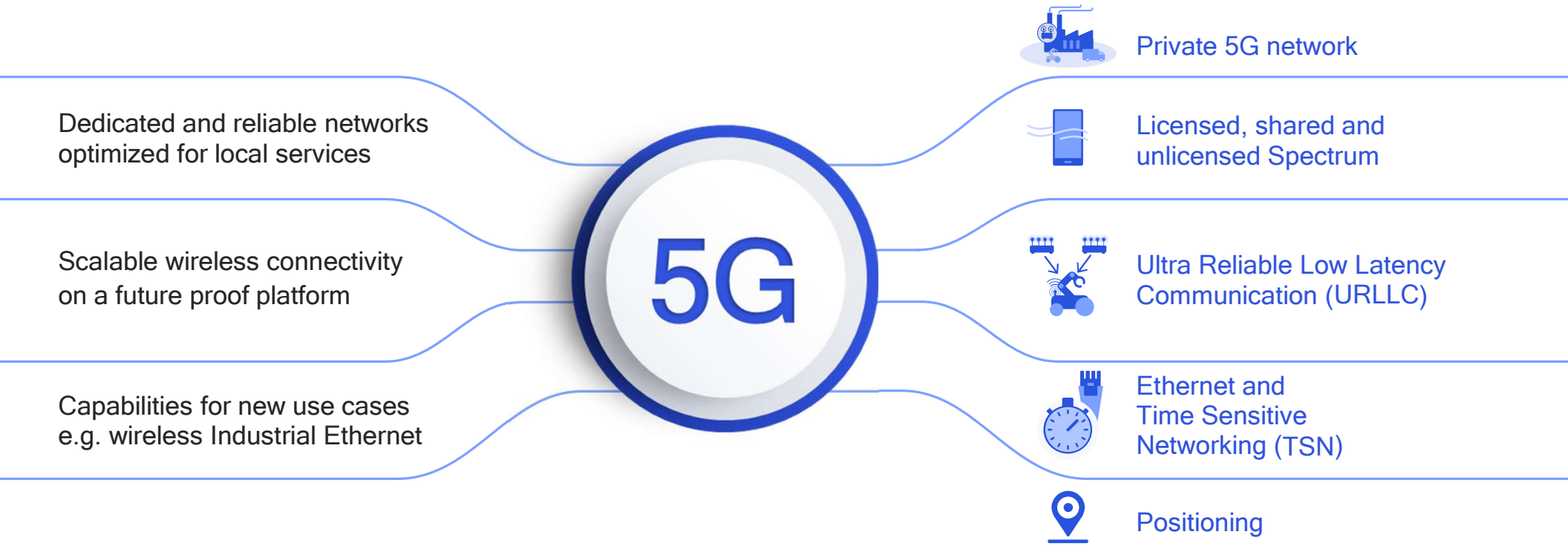
5G will expand the mobile ecosystem to new industries

Powering the digital economy

$13.2 Trillion In global economic value by 2035*




Enhanced mobile broadband
Massive IoT
Computer Vision
Security camera
Latency 50ms
Availability 99.9%
Rate: Mbps
Sensors
Process Monitoring
Latency: 100 ms
Availability: 99.99%
Rate: kbps
Head mounted display
Augmented Reality
Latency: 10 ms
Availability: 99.9%
Rate: Gbps-Mbps
5G
Ultra reliable low latency
Handheld terminal
Safety functions
Latency: 10 ms
Availability: 99.9999%
Rate: Mbps-kbps
Wireless edge analytics
Automated guided vehicle (AGV)
Co-operative driving
Latency 20ms
Availability 99.9999%
Rate: Mbps
Industrial robot
Motion control
Latency: 1 ms
Availability: 99.9999%
Rate: Mbps-kbps



Designing 5G to meet industrial IoT requirements

Private 5G network

- Unique network ID
- Integrated and independent architectures
- Seamless fallback to public networks

Spectrum

With NR-U, 5G NR will support:

- Licensed spectrum
- Shared spectrum
- Unlicensed spectrum

URLLC

- Low latency
- Ultra-reliability
- CoMP multi-TRP
- Service multiplexing
- Enhanced mobility

Ethernet and TSN

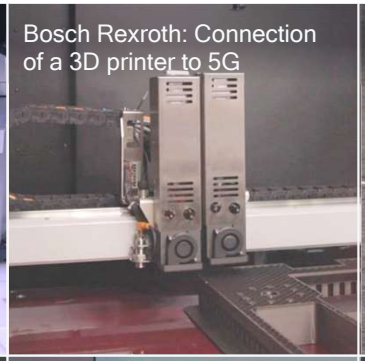
- Ethernet over 5G with PDU session support
- Deterministic networking
- Device time synch.

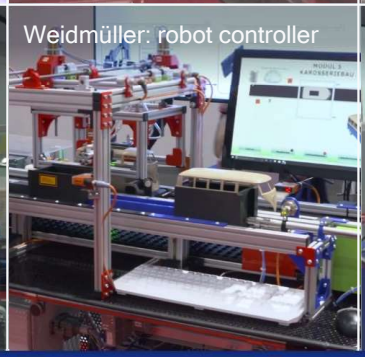
Positioning

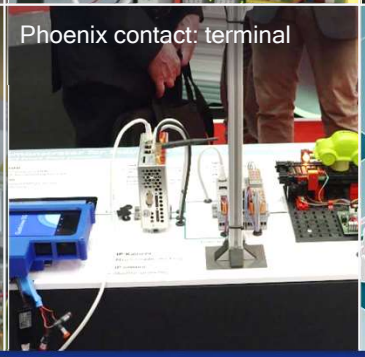
- Network & device based
- Industrial IoT requirements

5G NR supports many industrial IoT use cases today

Strong industry collaboration around 5G Industrial IoT







Kickstarted 5G for Industrial IoT with 10+ live ecosystem demonstrations at Hannover Messe

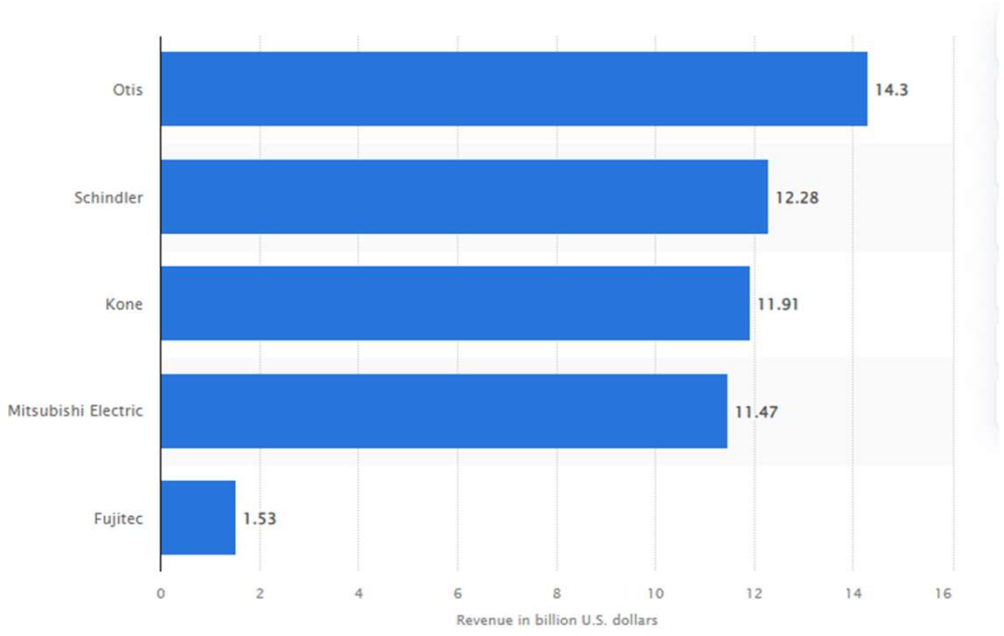
Research collaboration with Bosch

5G Alliance for Connected Industries and Automation (5G-ACIA)–advancing 5G for the industrial domain

5G Fully Connected Factory for KONE

About KONE

- KONE is a global leader in the elevator and escalator industry. In 2021, KONE had annual sales of EUR 10.5 billion, and at the end of the year over 60,000 employees. KONE are listed on the Nasdaq Helsinki Ltd. in Finland.



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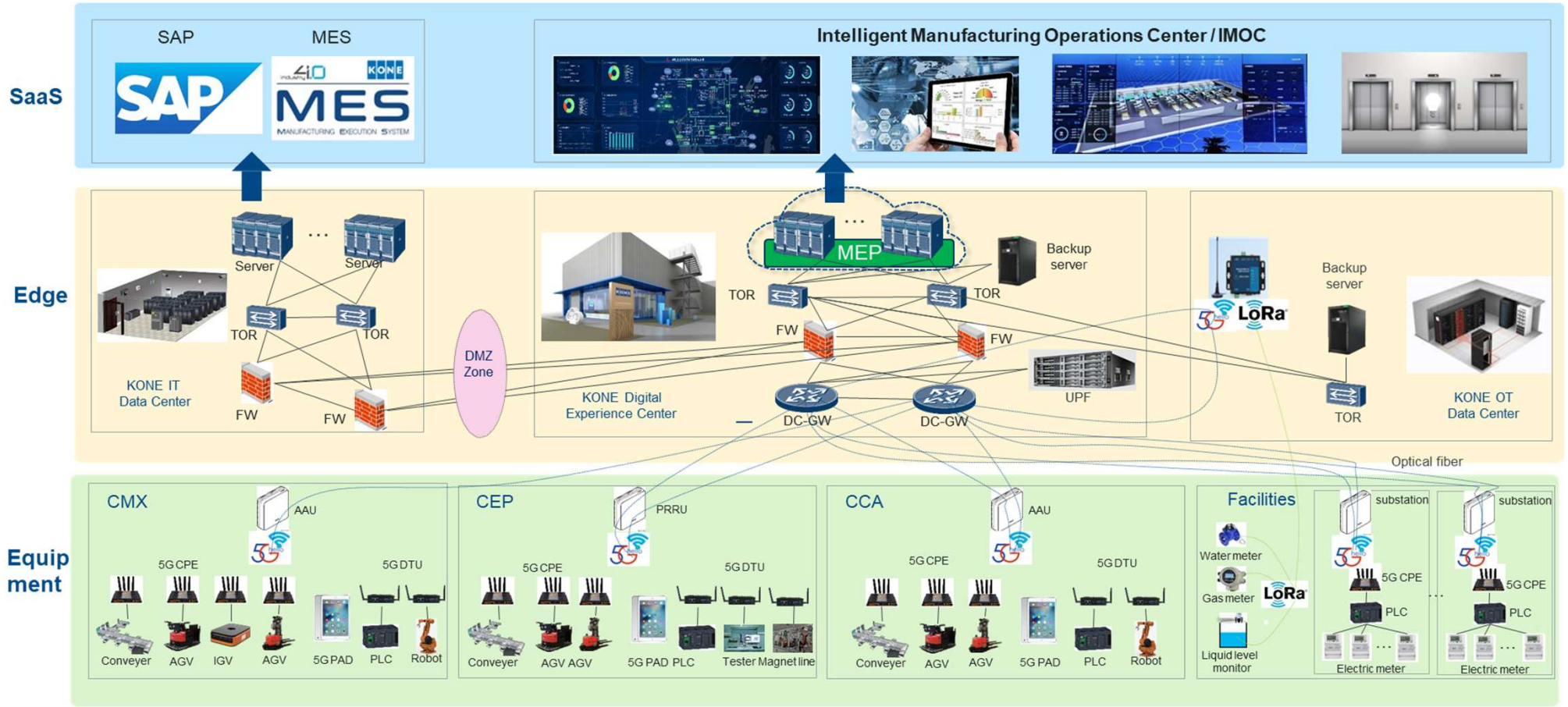

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