

5G

Why 5G ?

- Speed
- Low communication latency
- New use cases

VERTICALS IN TRANSFORMATION

FACTORIES OF THE FUTURE

- 1 Time-critical process control
- 2 Non time-critical factory automation
- 3 Remote control
- 4 Intra/Inter-enterprise communication
- 5 Connected goods

ENERGY

- 1 Grid access
- 2 Grid backhaul
- 3 Grid backbone

e-HEALTH

- 1 Assets and interventions management in Hospital
- 2 Robotics
- 3 Remote monitoring
- 4 Smarter medication

MEDIA & ENTERTAINMENT

- 1 Ultra High Fidelity Media
- 2 On-site Live Event Experience
- 3 User/Machine Generated Content
- 4 Immersive and Integrated Media
- 5 Cooperative Media Production
- 6 Collaborative Gaming

AUTOMOTIVE

- 1 Automated driving
- 2 Share My View

- 3 Bird's Eye View
- 4 Digitalization of Transport and Logistics
- 5 Information Society on the road

5G IS USE CASE DRIVEN



Massive MTC



LOW COST, LOW ENERGY
SMALL DATA VOLUMES
MASSIVE NUMBERS

Enhanced mobile broadband



Critical MTC

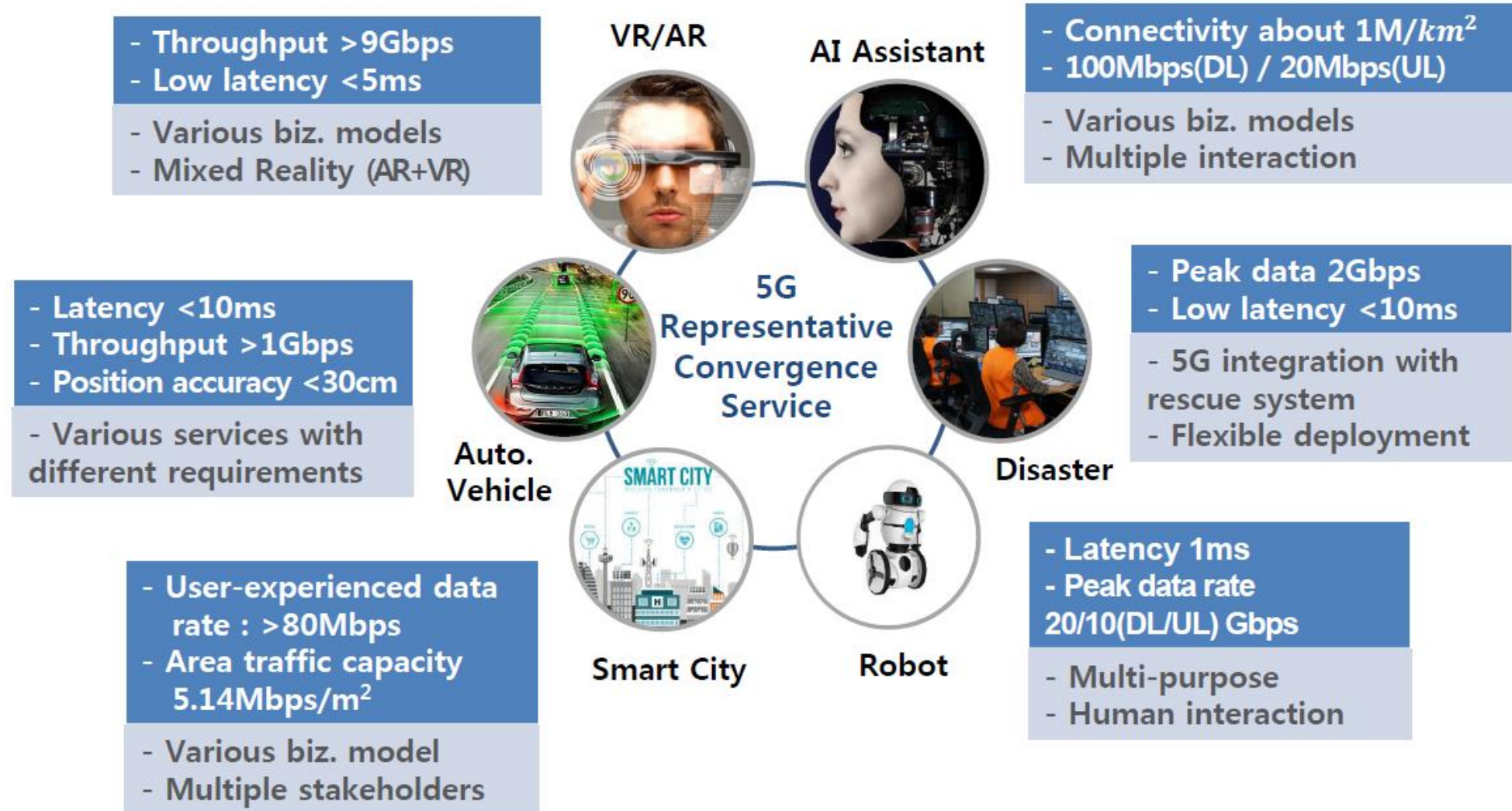


ULTRA RELIABLE
VERY LOW LATENCY
VERY HIGH AVAILABILITY

5G Usage Scenario

- Enhanced Mobile Broadband (eMBB)
- Ultra Reliable Low Latency Communications (URLLC)
- Massive Machine Type Communications (mMTC)

5G SERVICE REQUIREMENTS



5G Technologies

- New radio frequencies
 - Frequency range 1 (< 6 GHz)
 - Frequency range 2 (> 24 GHz)
- Massive MIMO
- Edge computing
- Small cell
- Beamforming
- Radio convergence
- NOMA (non-orthogonal multiple access)
- SDN/NFV
- Channel coding
- Operation in unlicensed spectrum

1G, 2G, 3G, 4G, 5G

The G in 5G means it's a generation of wireless technology. While most generations have technically been defined by their data transmission speeds, each has also been marked by a break in encoding methods, or "air interfaces," which make it incompatible with the previous generation.

1G was analog cellular. 2G technologies, such as CDMA, GSM, and TDMA, were the first generation of digital cellular technologies. 3G technologies, such as EVDO, HSPA, and UMTS, brought speeds from 200kbps to a few megabits per second. 4G technologies, such as WiMAX and LTE, were the next incompatible leap forward, and they are now scaling up to hundreds of megabits and even gigabit-level speeds.

5G brings three new aspects to the table: greater speed (to move more data), lower latency (to be more responsive), and the ability to connect a lot more devices at once (for sensors and smart devices).

The actual 5G radio system, known as 5G-NR, won't be compatible with 4G. But all 5G devices, initially, will need 4G because they'll lean on it to make initial connections before trading up to 5G where it's available.