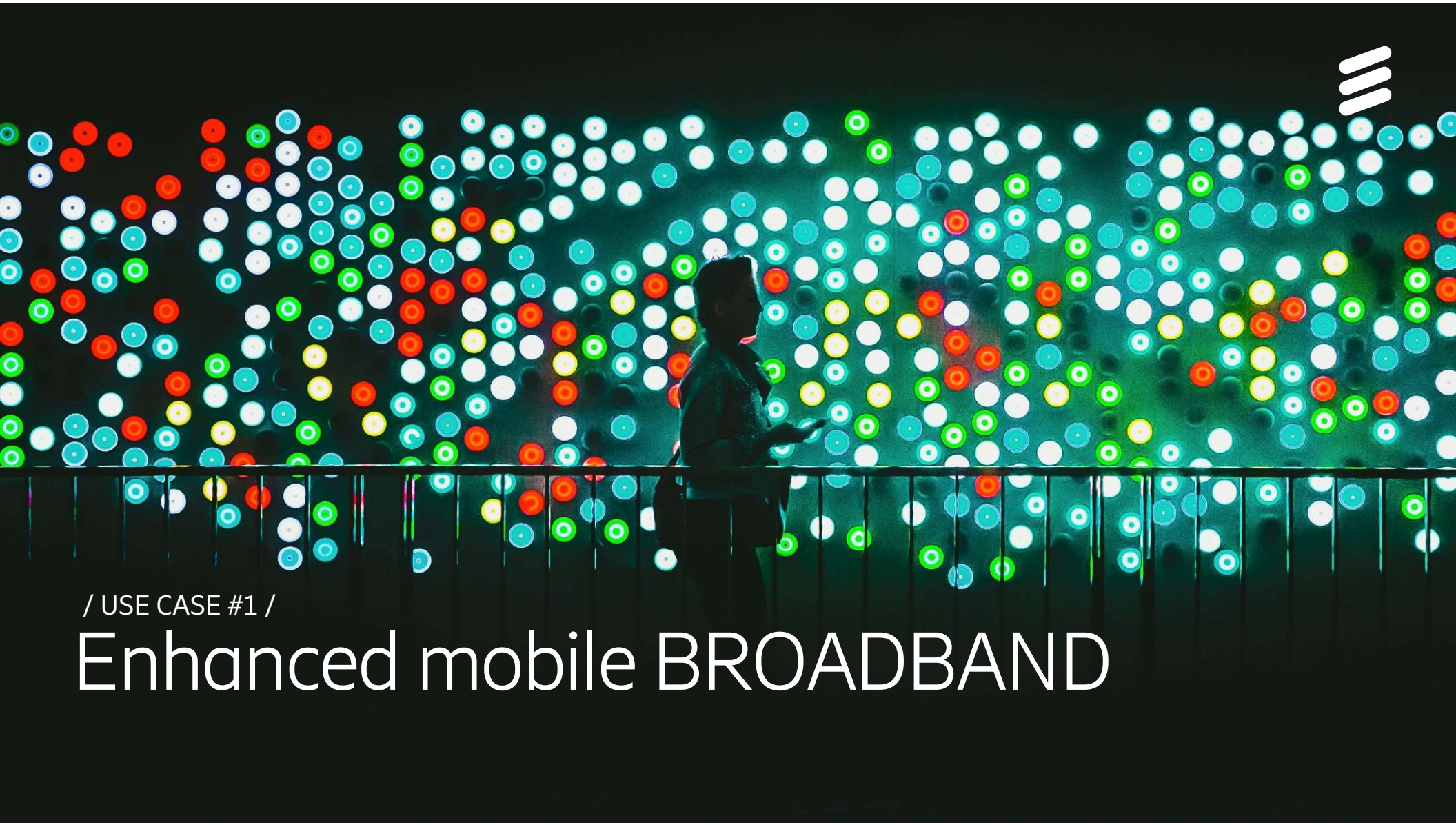
Tehnika revolutsioon: uudsed targad lahendused, mis viivad interneti lõpptarbijani!

Kasutades 5G mobiilsidet

Urmas Ruuto Ericsson Eesti AS 29.11.2018

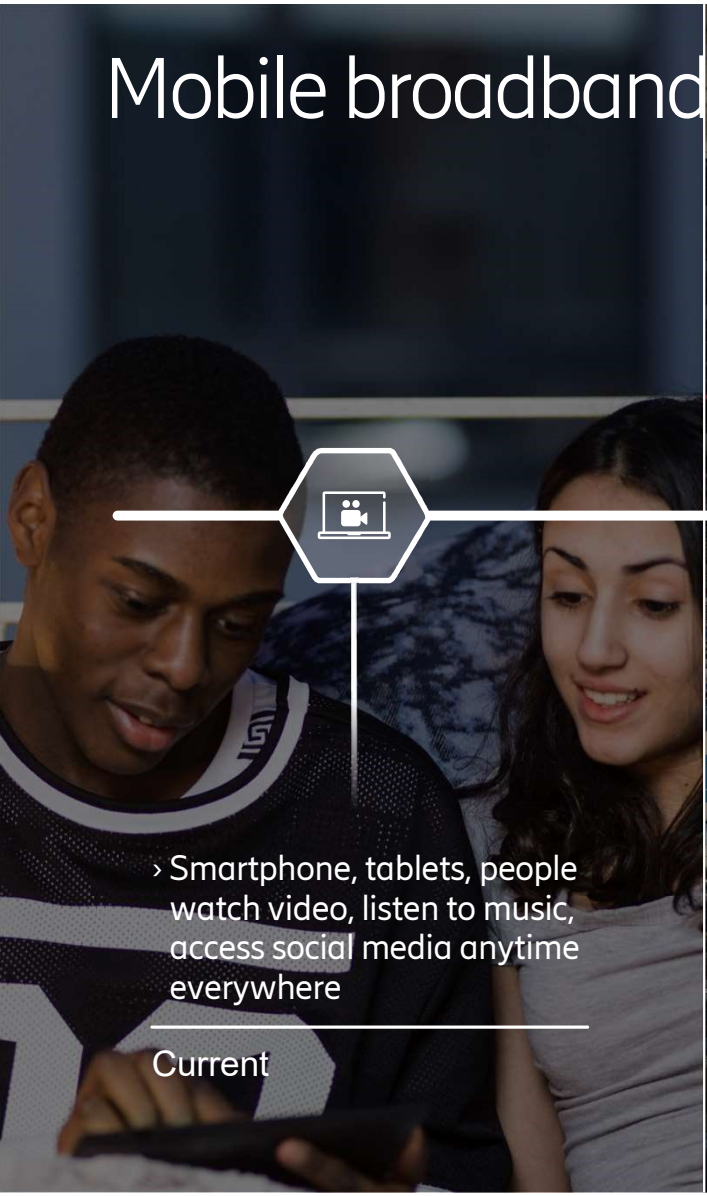

5G is use case driven
Massive MTC
LOGISTICS
SMART AGRICULTURE
FLEET MANAGEMENT
SMART METER
TRACKING
Critical MTC
TRAFFIC SAFETY & CONTROL
INDUSTRIAL APPLICATION & CONTROL
REMOTE TRAINING
REMOTE MANUFACTURING
REMOTE SURGERY
LOW COST, LOW ENERGY
SMALL DATA VOLUMES
MASSIVE NUMBERS
Enhanced mobile broadband
ULTRA RELIABLE
VERY LOW LATENCY
VERY HIGH AVAILABILITY
ENTERPRISE
HOME
MOBILE/ WIRELESS/ FIXED
VENUES
NON-SIM DEVICES
SMARTPHONES
VR/AR
BROADCASTING
4K/8K UHD



/ USE CASE #1 /

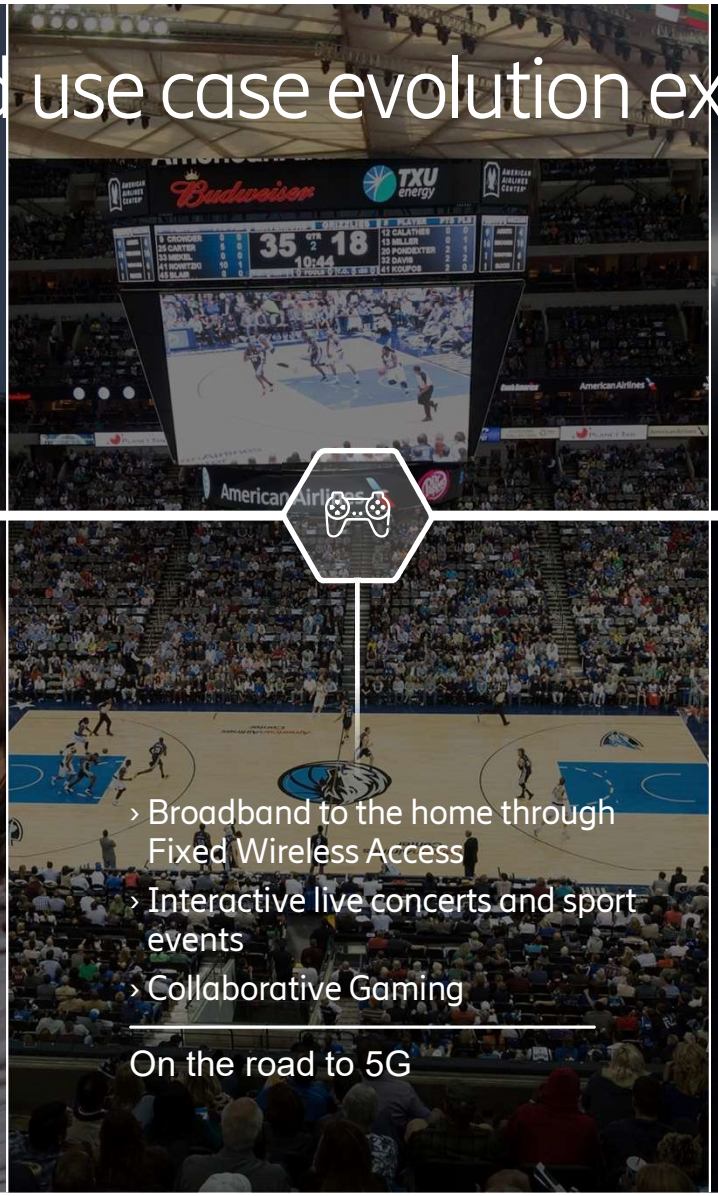
Enhanced mobile BROADBAND

Mobile broadband use case evolution explained



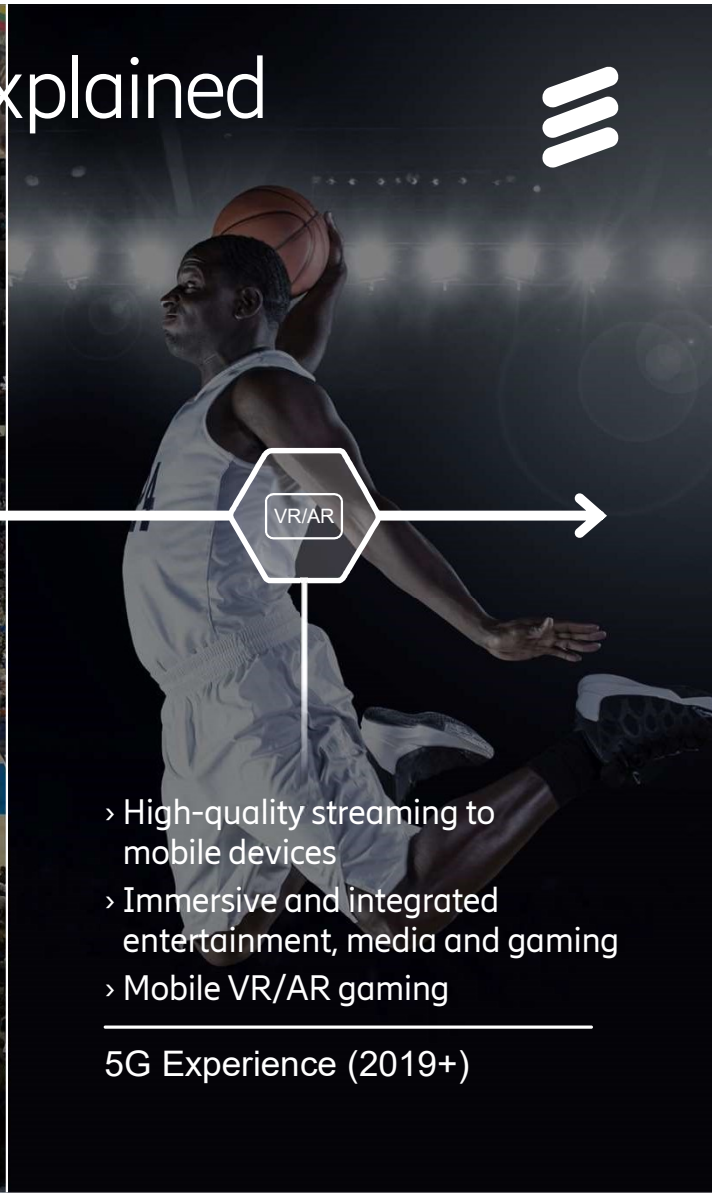
› Smartphone, tablets, people watch video, listen to music, access social media anytime everywhere

Current



› Broadband to the home through Fixed Wireless Access
› Interactive live concerts and sport events
› Collaborative Gaming

On the road to 5G



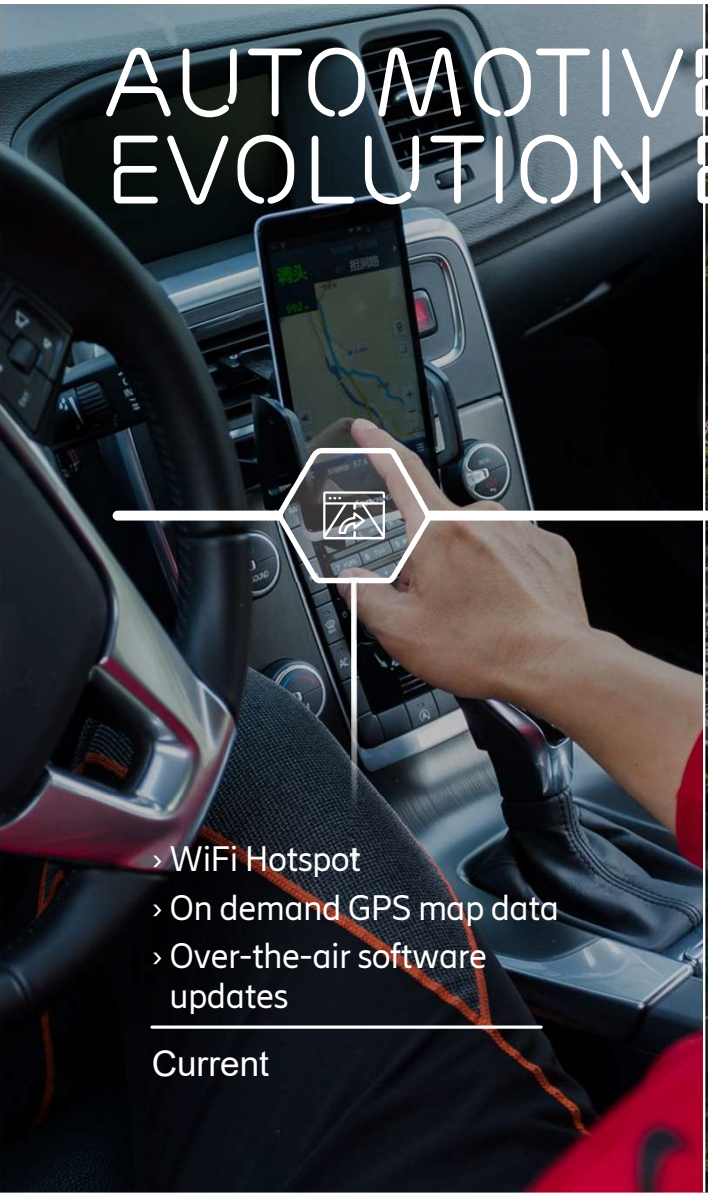
› High-quality streaming to mobile devices
› Immersive and integrated entertainment, media and gaming
› Mobile VR/AR gaming

5G Experience (2019+)

/ USE CASE #2 /

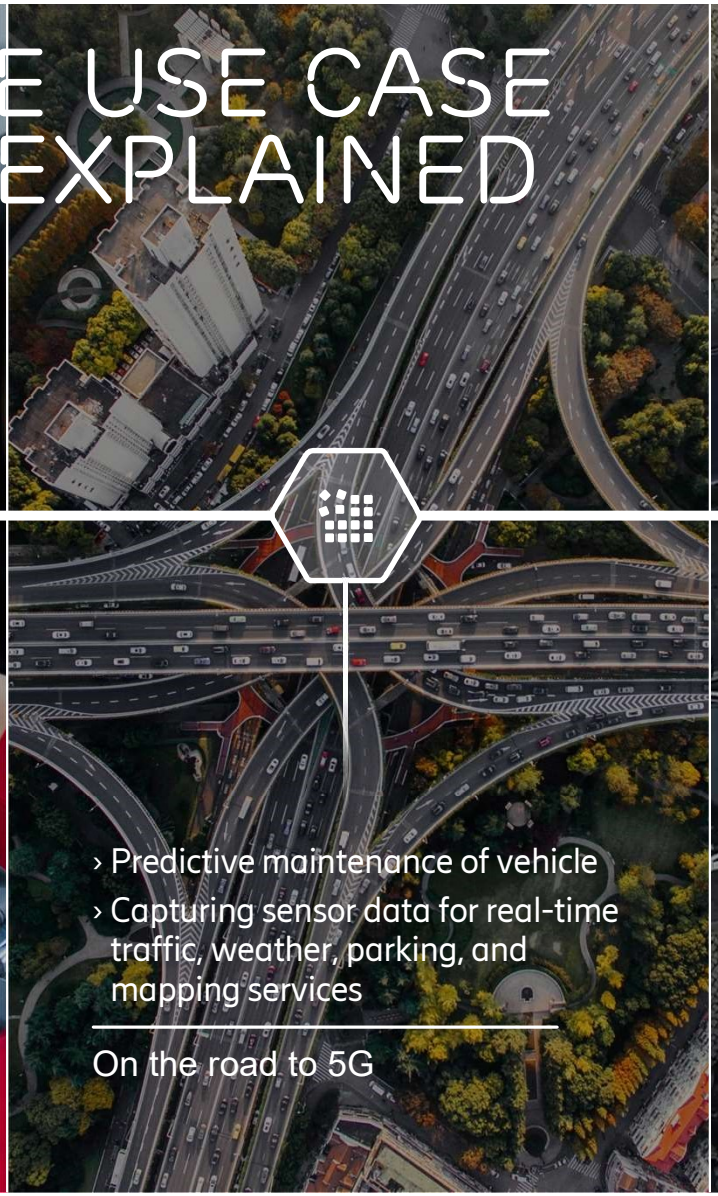
automotive

AUTOMOTIVE USE CASE EVOLUTION EXPLAINED



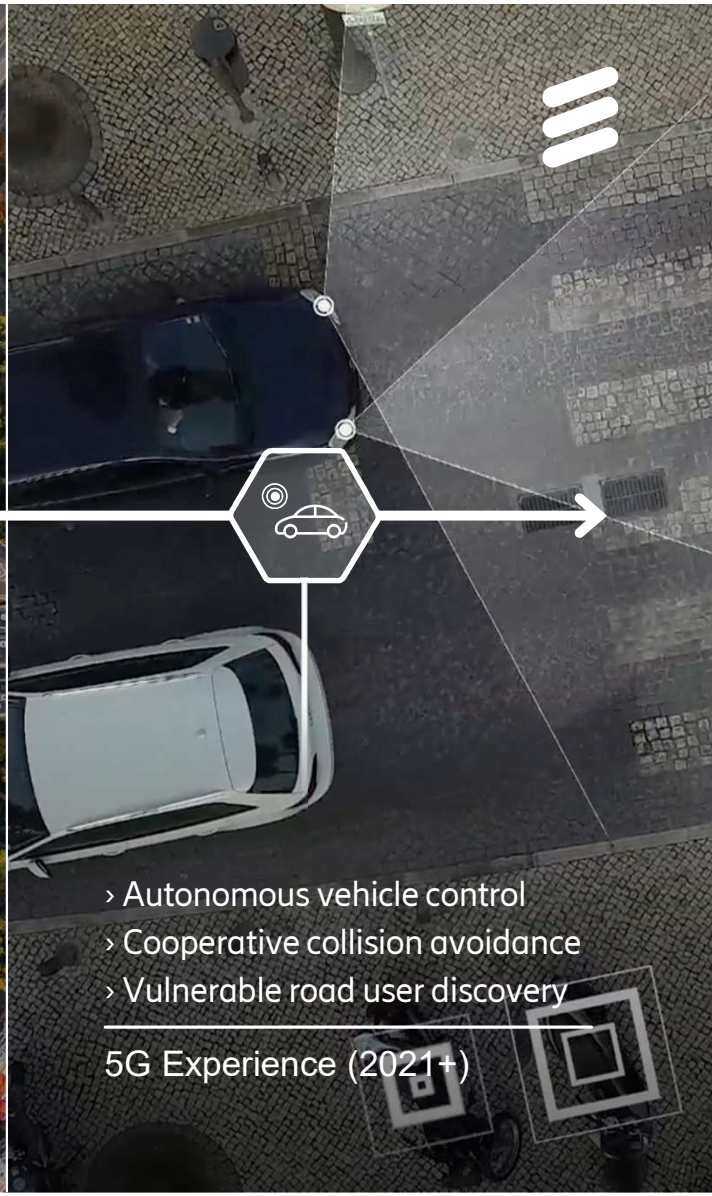
› WiFi Hotspot
› On demand GPS map data
› Over-the-air software updates

Current



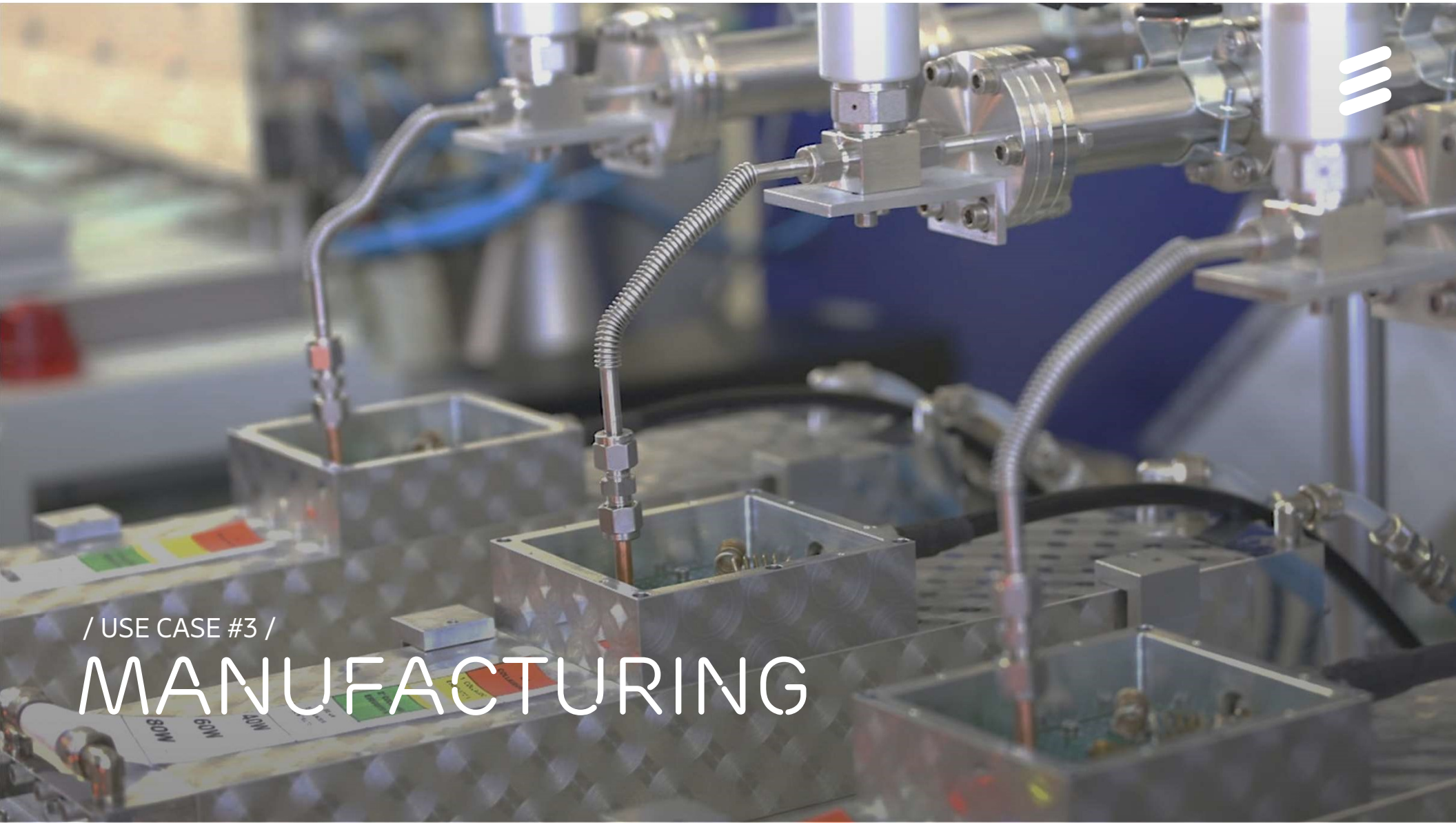
› Predictive maintenance of vehicle
› Capturing sensor data for real-time traffic, weather, parking, and mapping services

On the road to 5G



› Autonomous vehicle control
› Cooperative collision avoidance
› Vulnerable road user discovery

5G Experience (2021+)



/ USE CASE #3 /

MANUFACTURING

Manufacturing use case evolution explained

› Intra-/inter enterprise communication
› Connected goods

Current

› Collaborative robots
› Distributed control system
› Remote quality inspection

On the road to 5G

› Remote control of robots
› Augmented reality support in training, maintenance, construction and repair

5G Experience (2022+)

AR[1] ASSISTED FACTORY MAINTENANCE

KEY CHALLENGES /TRENDS

1. **Costly breakdowns** – extra components, material, labor and buffers
2. **Production down-time** – causing reduced utilization, lead-times and bottle necks
3. **Operational inefficiencies** – imperfect maintenance planning, failure diagnostics and training

UP TO 25%[2] cost reduction

- ☑ Reduced oper. down-time
- ☑ Reduced repair time spent
- ☑ Less human-made errors

Role and key dimensions of 5G

LATENCY | PEAK DATA RATE | CONNECTION DENSITY

1) Augmented reality; 2) S. Henderson and S. Feiner, "Exploring the benefits of augmented reality documentation for maintenance and repair," IEEE Trans. Vis. Comput. Graphics

/ USE CASE #4 /

ENERGY & UTILITIES

Energy & utilities use case evolution explained

› Dynamic and bidirectional grid
› Smart metering

Current

› Distributed energy resource management
› Distribution automation

On the road to 5G

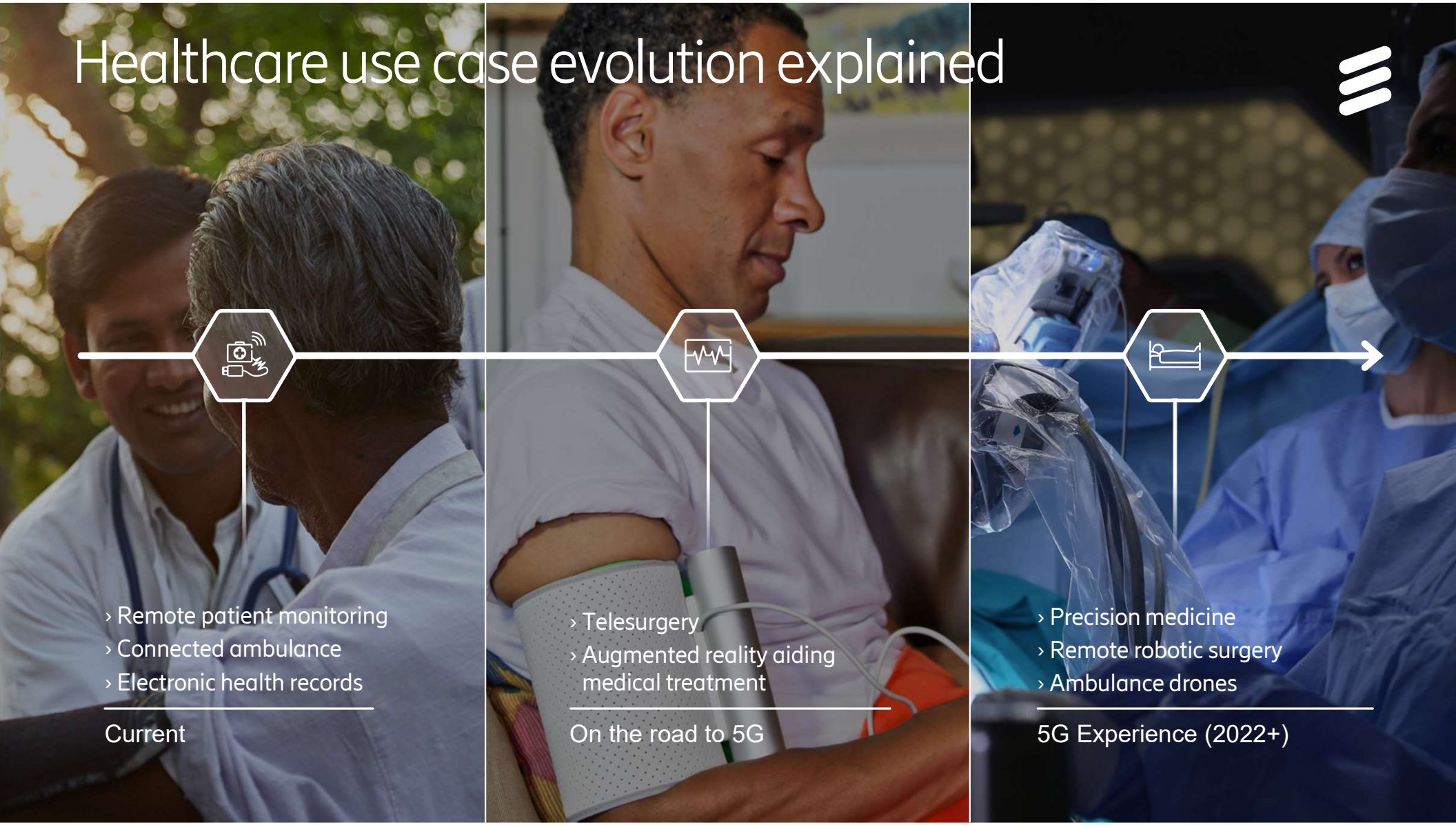
› Control of edge-of-grid generation
› Virtual power plant
› Real time load balancing

5G Experience (2023+)

/ USE CASE #5 /

Healthcare

Healthcare use case evolution explained



› Remote patient monitoring
› Connected ambulance
› Electronic health records

Current

› Telesurgery
› Augmented reality aiding medical treatment

On the road to 5G

› Precision medicine
› Remote robotic surgery
› Ambulance drones

5G Experience (2022+)