5G Innovation and Business Potential

Javier Garcia Gomez,
CTO Europe & Latin America
Ericsson

November 21, 2018

5G Expectations

20Gbps Peak rate downstream to users	**1 ms** Latency	**500 km/ h** Mobility	**1M/ km²** Device connection density
10 Gbps Peak rate upstream from users	**1 m** Position accuracy	**99.999%** Availability and Reliability	**10 years** Battery life

5G Key Technologies

Ultra-Wide Band Radio

Serviceability

Massive MIMO

Active Antenna systems and beam forming

Virtualization

Infrastructure sharing

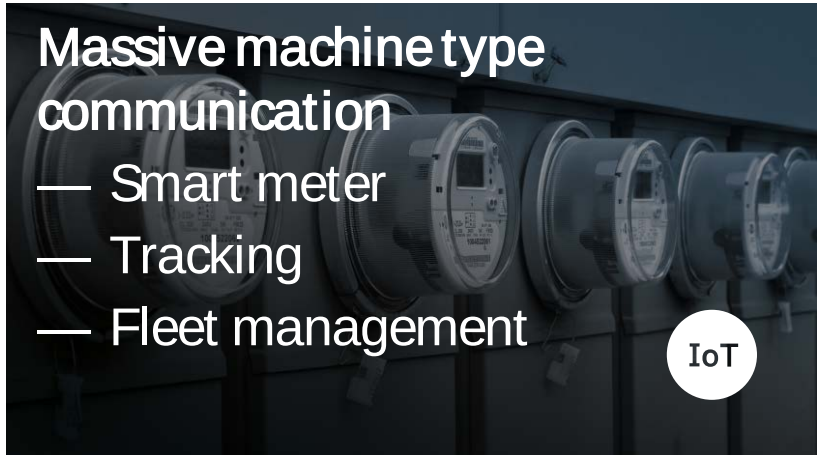
Advanced interference & spectrum management

Machine Learning, Artificial Intelligence

5G use cases

Platform for addressing industry and society transformations

Cost effective delivery of increased data traffic



5G enabled manufacturing – real-time control case study

Ericsson and Fraunhofer IPT Research Centre

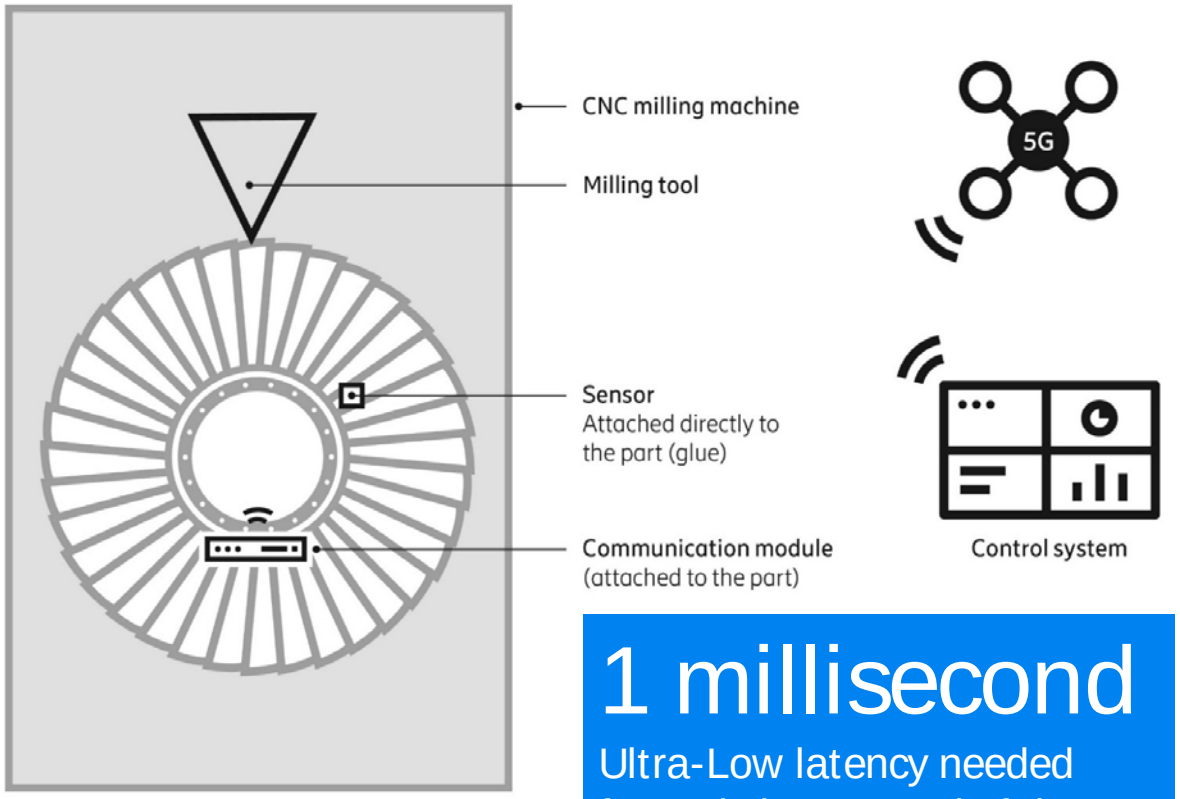
5G enabled BLISKs (BLade Integrated diSKs) manufacturing

The challenge:

25%

rework needed

The solution:



1 millisecond

Ultra-Low latency needed for real-time control of the BLISK manufacturing process

EUR 360m

annual savings through 5G-enabled real-time monitoring & control

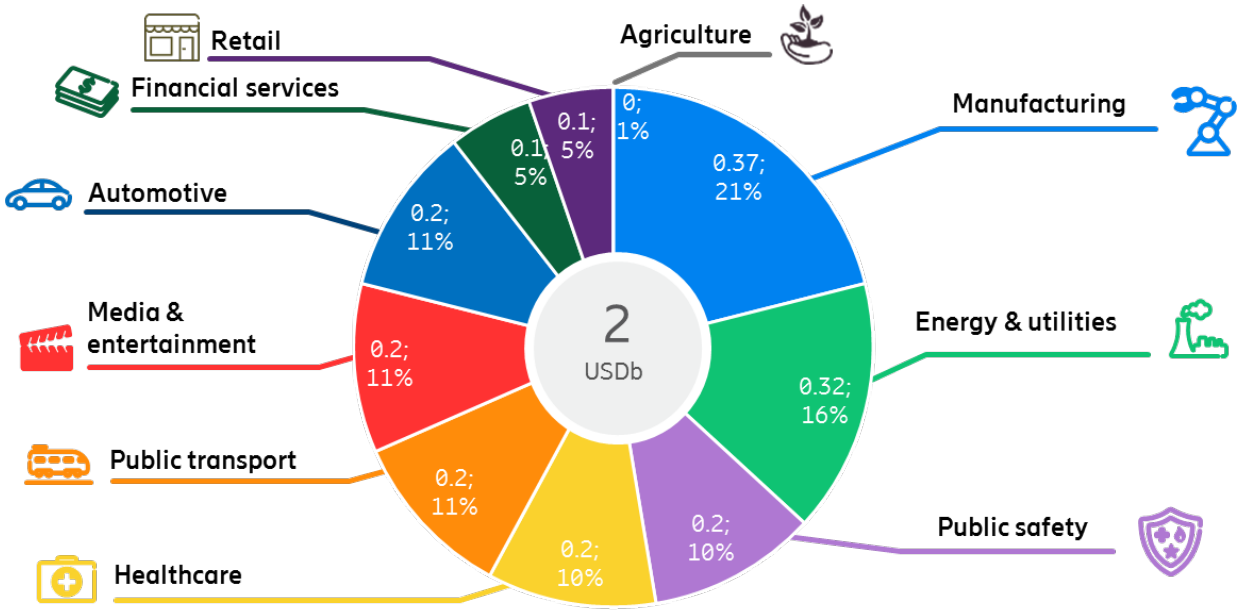
16 million

metric tons potential reduction of global CO_2 emissions*

**: assuming 2% more efficient jet engines resulting from higher quality BLISKs*

Greek Operators 5G Business Potential 2026

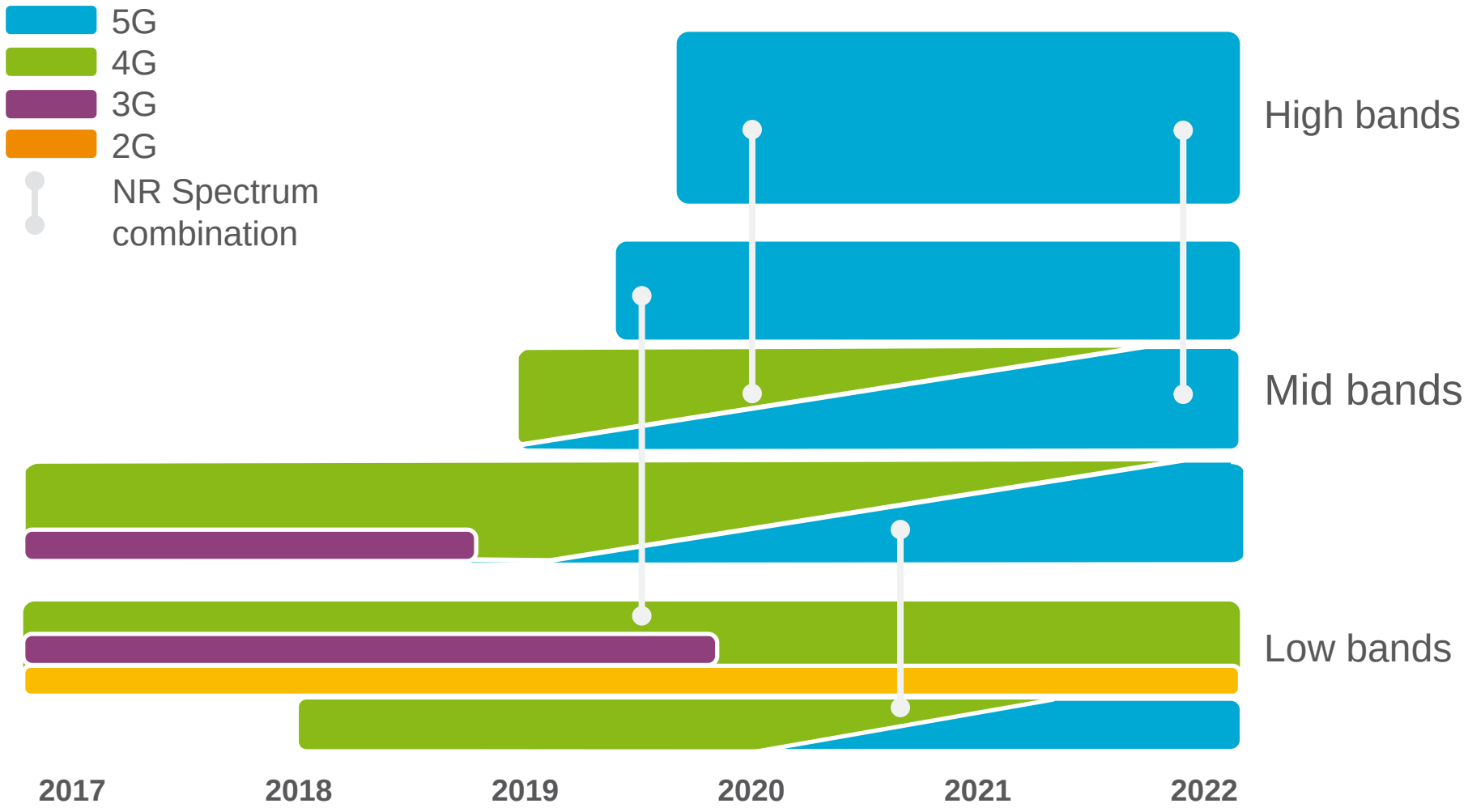
Use Case Cluster view



Operator Addressable 2026	MUSD	% of Total
Real-time Automation	322	16%
Enhanced video services	307	15%
Other	247	12%
Monitoring and tracking	232	12%
Connected vehicle	220	11%
Hazard and maintenance sensing	182	9%
Smart Surveillance	149	8%
Autonomous Robotics	129	7%
	113	6%
	75	4%

Source: Ericsson and Arthur D Little Industry digitalization revenue model
Note: 5G operator addressable revenues as Service Creator operator role

Spectrum usage overview



Technology drivers

Deployment drivers

Beam-forming Integration

Massive MIMO

Multi-Band

Local Area Capacity

Throughput

Wide Area capacity

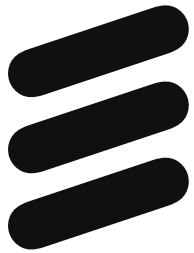
Coverage

Initial 5G launch focus per region

North America:
- 2018 launches on mmW
- Mobile broadband and FWA
- Low-band FDD NR early 2019

Europe:
- Initial focus on mid-band
- Focus on industry use-cases
- High-band as capacity booster

Asia:
- Australia and Korea early movers
- Initial focus on mid-band
- China and Japan driving volumes in 2020

Common Trends:

Early deployments will focus on eMBB	Low-band NR and spectrum sharing for NR coverage	Initial focus on mid-band with mmW coming in as capacity booster (USA exception)