



ERICSSON

# APTE — 5G Workshop

March 2021



To start with, what is 5G for you?



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# What does 5G bring ... to Engineers?

Security

24

09

09:21

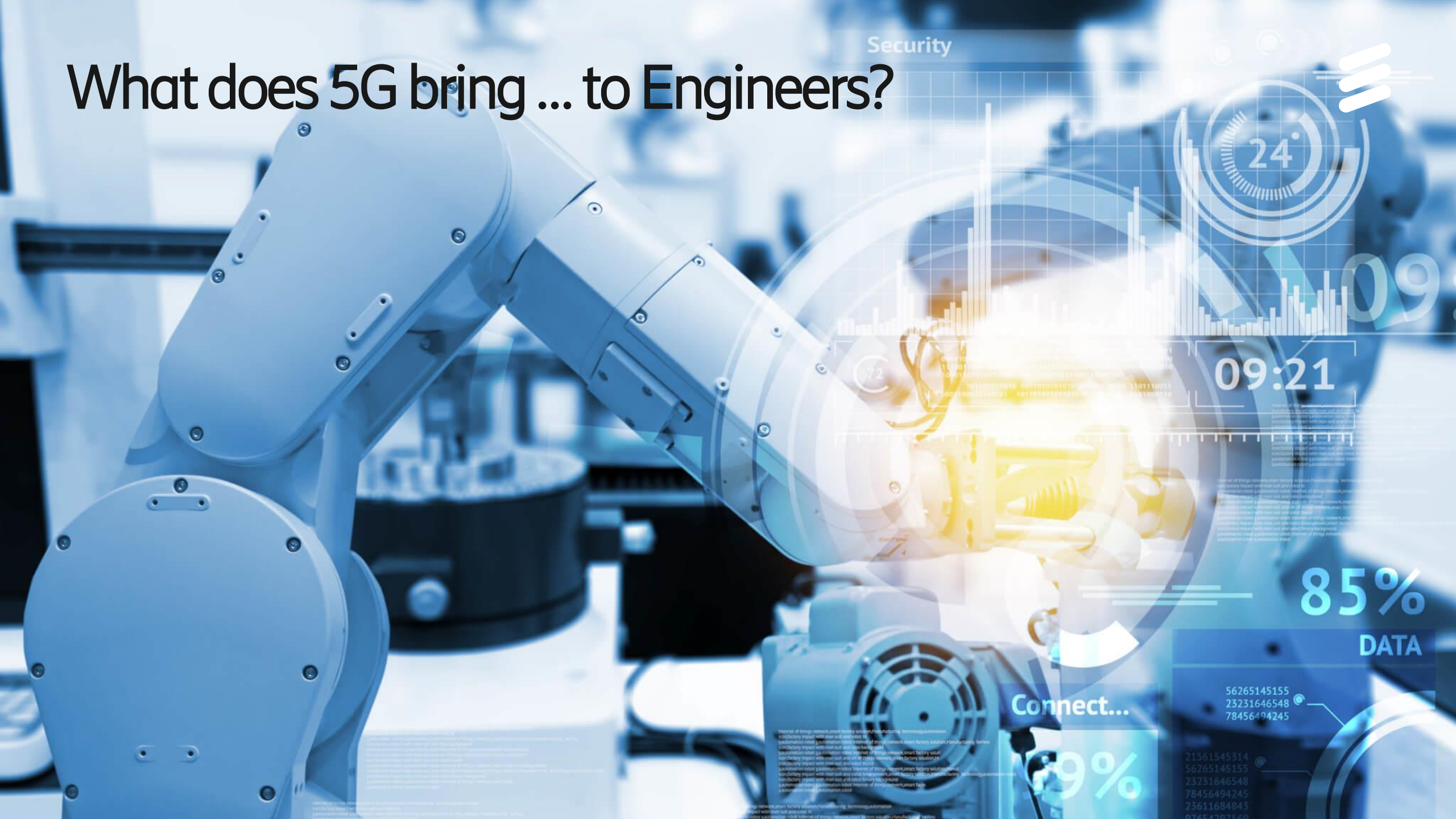
85%  
DATA

Connect...





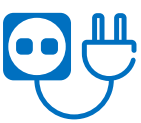







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97654297569



# What does 5G bring ... to Engineers?

	Peak Data Rate	1 - 20 Gbps		Connection Density	10k - 1m devices / km <sup>2</sup>		Reliability	99.999% (of packets)
	User Experienced Data Rate	10 - 100 Mbps		Network Energy Efficiency	x1 - x100		Latency	1 - 10 ms
	Spectral Efficiency	x1 - x3		Area Traffic Capacity	0.1 - 10 Mbps / m <sup>2</sup>		Battery life	10 years*
	Mobility	350 - 500 km/h		Availability	99.999% (of time)		Security	Strong subscriber authentication, user privacy and network security

Connect...

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9%

# What does 5G enable ... for businesses and society?



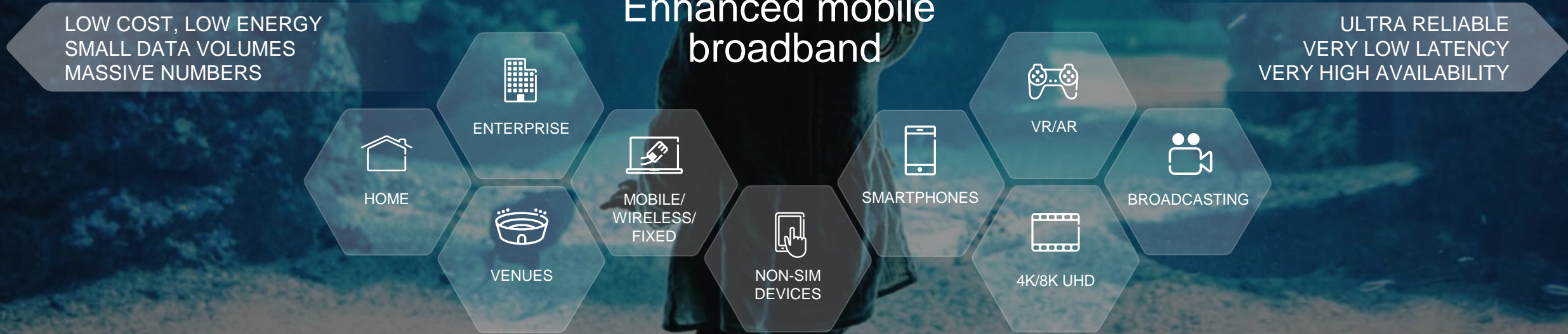
## Massive MTC



## Critical MTC



## Enhanced mobile broadband



LOW COST, LOW ENERGY  
SMALL DATA VOLUMES  
MASSIVE NUMBERS

ULTRA RELIABLE  
VERY LOW LATENCY  
VERY HIGH AVAILABILITY

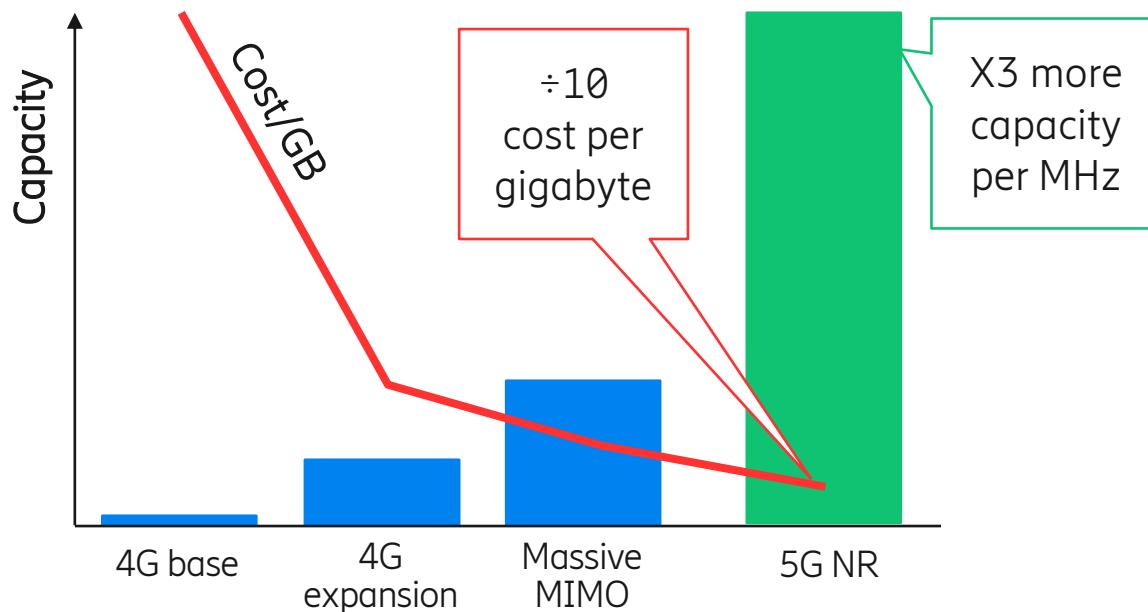
# 5G —the first standard to be developed with a key aim to support future developments



5G allows from moving from an initial focus on cost-efficiency for enhanced MBB, ...

... to addressing new use cases by incremental additions of functionality

Relative capacity and cost-efficiency per step



Adding new use cases by software...



... and new technologies

# Mobile cloud gaming – an evolving business opportunity



22%



Of the 106 communications service providers with commercial 5G, 22 have a mobile cloud gaming offering

6



Cloud gaming is bundled with 5G data plans by 6 out of the 22 communications service providers

19



The cloud gaming service subscription model is used by 19 out of the 22 CSP

3



Premium data plans for 3 of the 22 CSPs include zero-rating for gaming

6-19

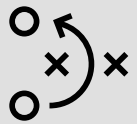


Cloud gaming monthly subscription fees average USD 6–18 among the 22 CSPs





# Ericsson USA 5G smart factory bringing manufacturing into the future



En2end digital thread for radio HW production



AR for remote support



Drones for outdoor security operations



Energy management



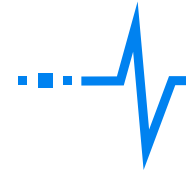
Environmental monitoring



Digital material tracking and visualization



5G Private Network at the Smart Factory in Lewisville, TX



28GHz (5G network), AWS (anchor)\* and CBRS\*\*

RBU 6701



DOT 2242



Radio 2203



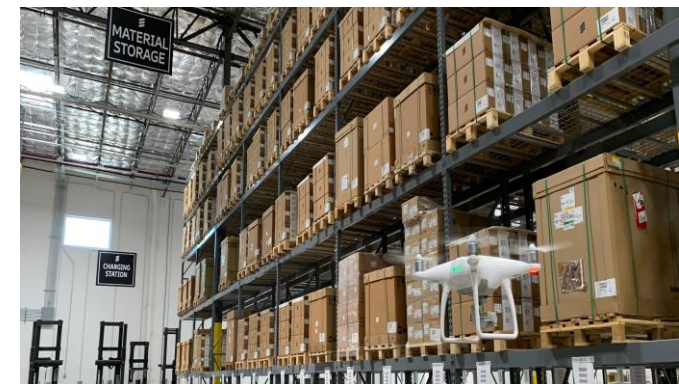
DOT 4402



AR for work instructions & Expert Info



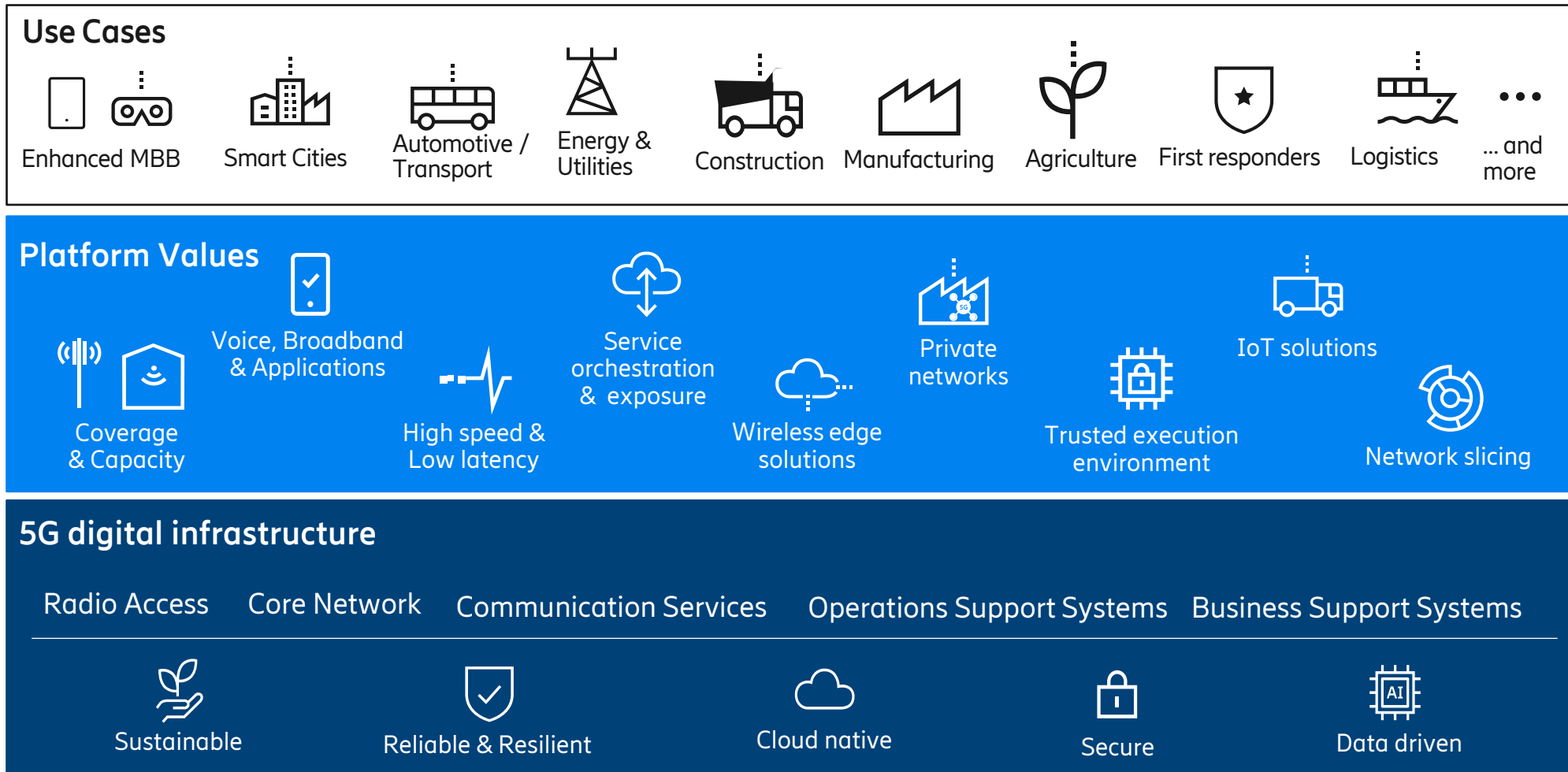
AMR (Autonomous Mobile Robot) moving SM6701 to OTA



Drones for outdoor surveillance and indoor warehouse inventory and inspection

Note. \* The AWS band uses [microwave frequencies](#) in several segments: from 1695 to 2200 MHz. \*\* Citizens Broadband Radio Service (CBRS) is a 150 MHz wide broadcast band of the 3.5 GHz band (3550 MHz to 3700 MHz) in the US

# We are building a connected innovation platform



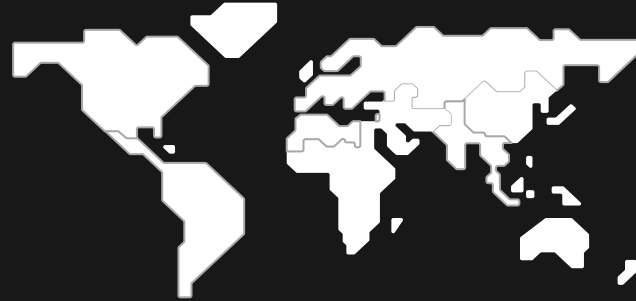
# First 18 months of 5G in numbers



as of Dec 2020

~110

commercial  
networks



~50

countries

190 m subs globally by end 2020

+108 m  
5G devices



- +108 m 5G devices sold Jan-Sep 2020
- China Telecom and China Mobile: 19% and 12% 5G take up (Sep'2020)
- ..., 200 m subs on 5G plans (70% also had 5G devices)

13.7  
million



- 5G subs forecasted in USA by the end 2020
- Only 9 months for all 4 CSPs to launch 5G (vs 30 months for 4G)

90%  
pop



- Swisscom achieved its target of 90% coverage with 5G leveraging ESS

+10  
million



- 5G subs > 15% of customer base (Sep 2020)
- +29% of traffic on 5G network
- Avg 5G user 38.1 GB/m vs 18.8 GB/m in 4G

+400  
devices



- Sep'2020: +220 5G devices available, +400 announced
- ASP > \$1,000, now at ~\$600
- 5G iPhone to accelerate ecosystem build-out

# Korea 5G fun facts



- 121k 5G mid band base stations already deployed
- 1,275 indoor facilities connected to 5G
- 76% 5G availability on public transportation services
- 98% of 4G sites have been upgraded to 5G vs. 1% in EU27
- 1,500 5G sites / m pop in Korea vs. just 10 / m pop in EU27



- All spectrum priority bands assignments already finalized.
  - 2,680 MHz total spectrum assigned on Mid/mmWave bands
  - Target is to assigned additional 3,000 MHz by 2026



- 15% of all users are on a 5G network
- 10 m subscribers on 5G with 94% availability



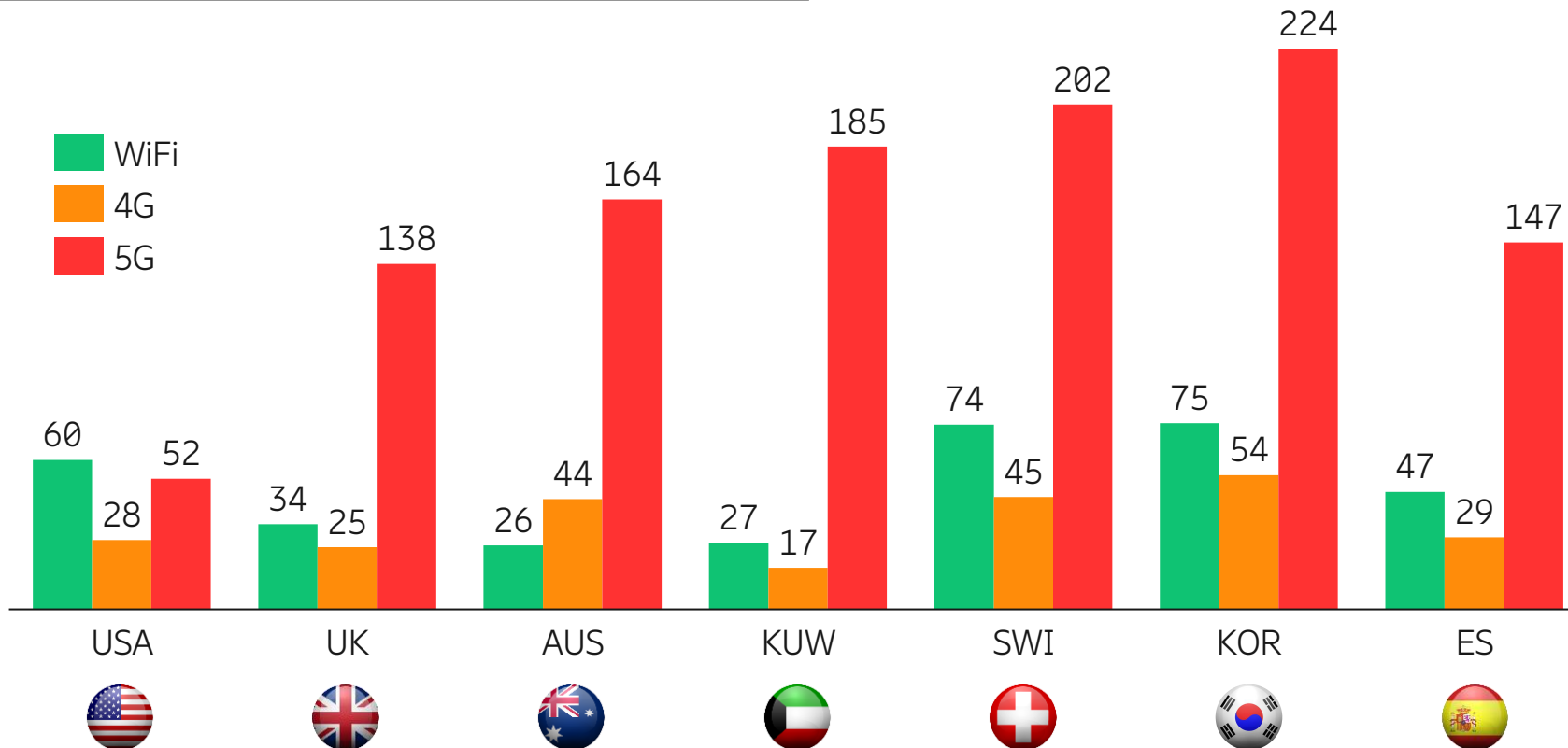
- 4x faster speed than 4G
- 2x more traffic per user reaching 38.1 GB/Month (vs 18.8 GB/m in 4G)
- 7x more data usage on VR devices
- 2.5x more data usage on cloud games
- 29% of total mobile traffic runs on 5G networks



# During the pandemic — 5G download speed much faster than Wifi in seven leading 5G countries



Average download speed (Mbps)  
Data collected Jan 22<sup>nd</sup> – Apr 21<sup>st</sup>



“

—5G offers faster average DL speeds than WiFi

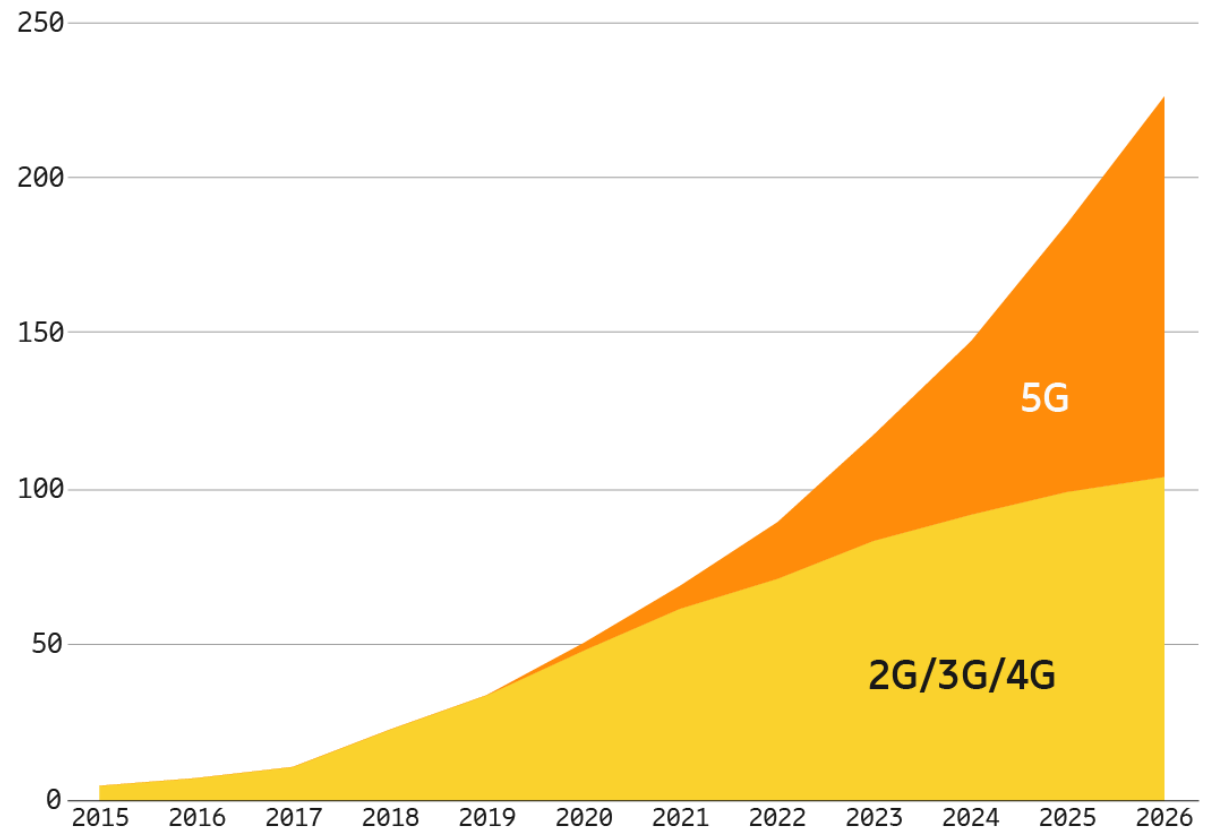
—Importance of not letting the current COVID-19 crisis delay 5G rollouts because the increased capacity and faster speeds that 5G enables are critical to keeping people connected today and in the future with rising network usage

# 5G networks forecast to carry 54 percent of the world's mobile data traffic in 2026



- Significant increase in traffic forecast for North East Asia and South East Asia and Oceania
- Global mobile data traffic is projected to grow by a factor of 4.5 and reach 226EB in 2026
- Video traffic currently accounts for 66% of mobile data traffic and forecast to increase to 77% in 2026

Global mobile data traffic (EB per month)



Note: This graph does not include traffic generated by fixed wireless access (FWA) services.

