

# Technologies for Network 2030...

The Ericsson 5G Evolution Journey



# 5G – An Outlook

# Mobile Subscriptions - Q3 2019



8 billion

Mobile subscription in Q3 2019

61 million

Subscriptions added in Q3 2019

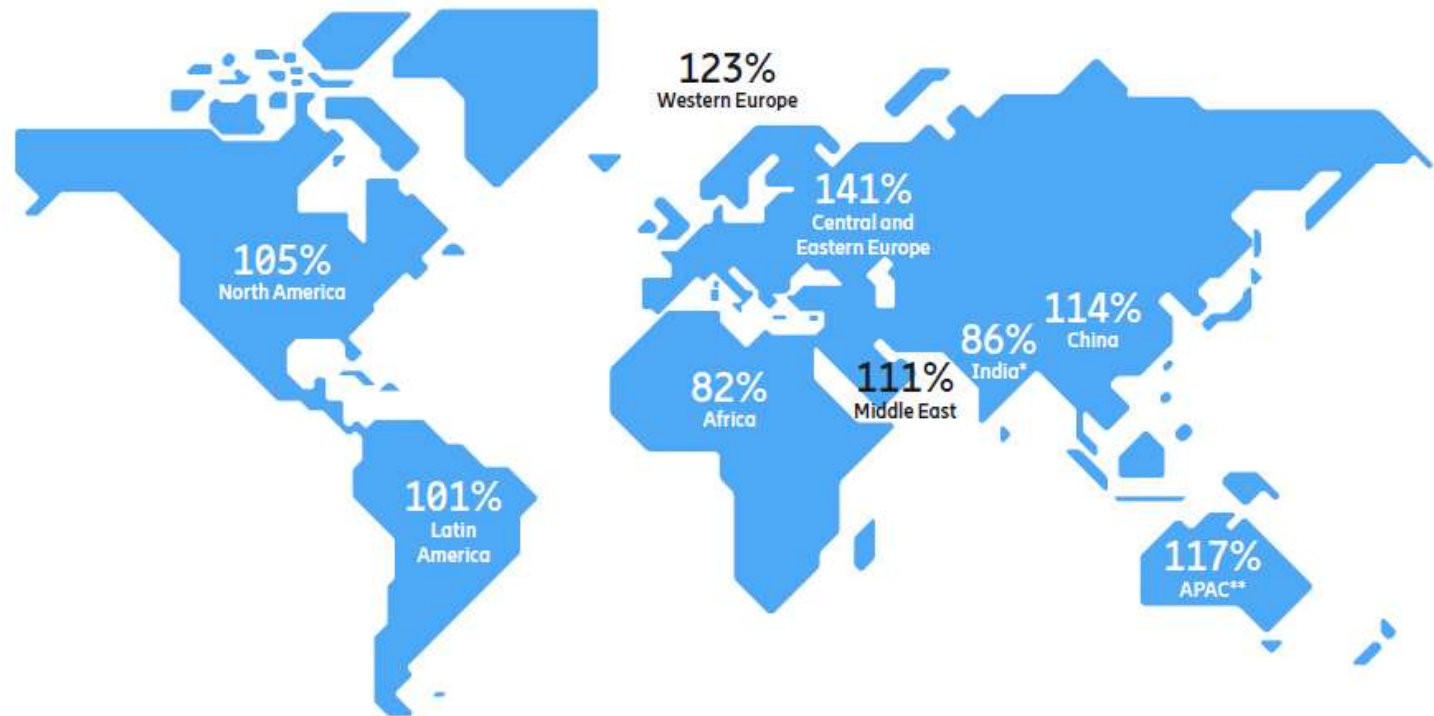
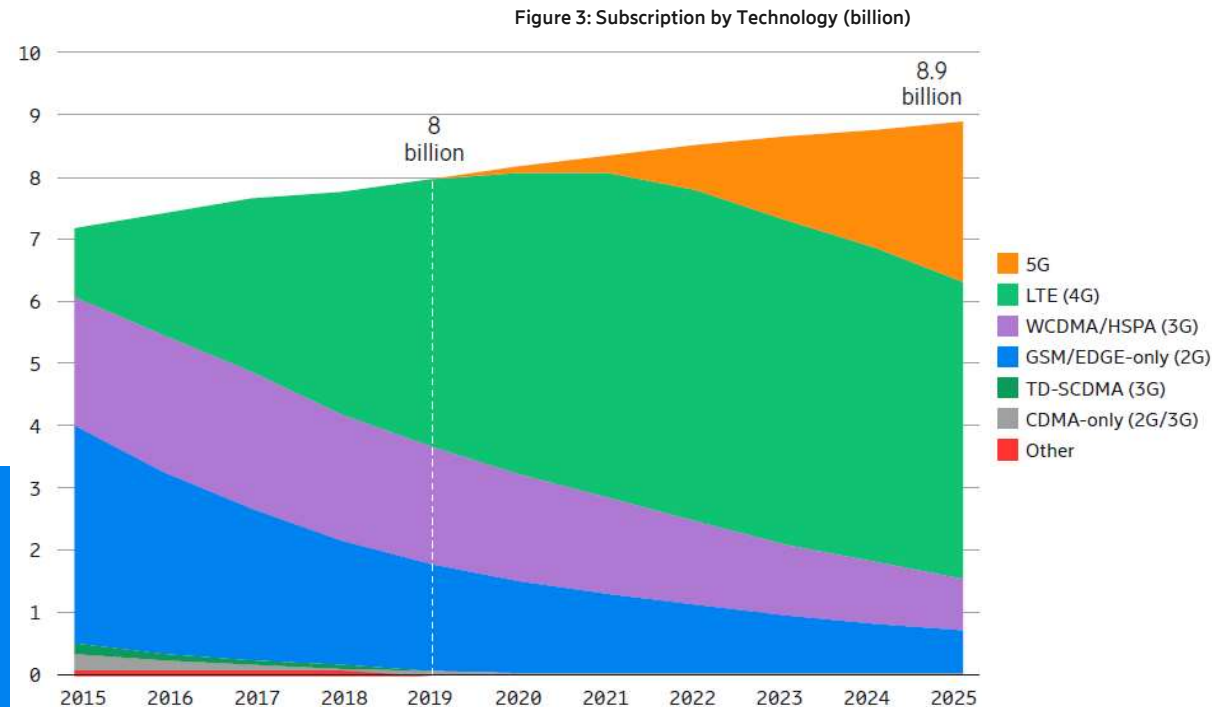
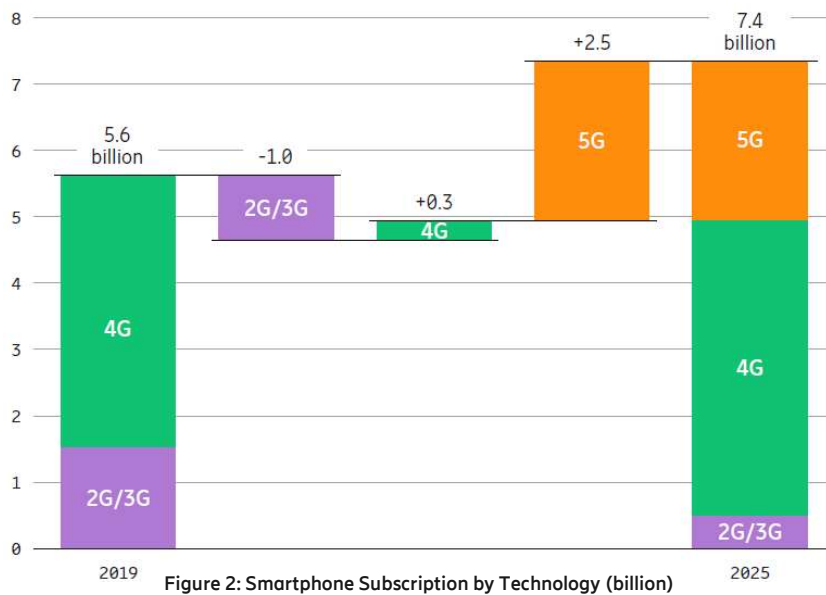


Figure 1: Subscription penetration Q3 2019

# Mobile Subscriptions – 2025 Forecast



- 2025 forecast:**
- LTE dominant access technology (4.8 bn)
  - 5G uptake (2.6 bn)
  - Slower decline for 2G/3G

# Mobile Subscriptions – 2025 Forecast

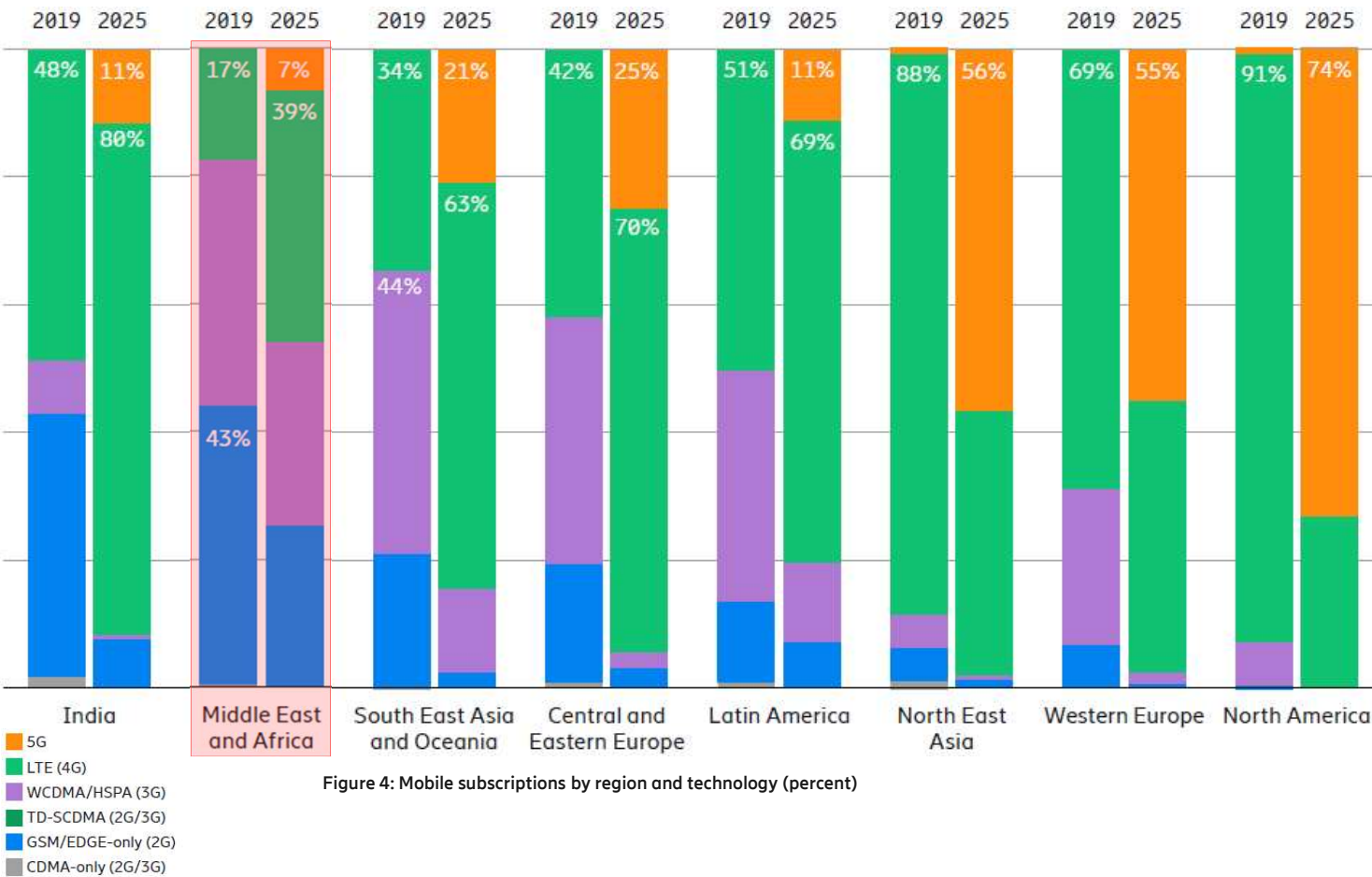


Figure 4: Mobile subscriptions by region and technology (percent)

**70%**  
 subscriptions in Mobile Broadband (subscriptions that advertise data speeds of 256kbit/s or greater and allows access to the internet) in 2025 (Sub-Saharan Africa)

- Driving factors for this shift:
- Young and growing population with increasing digital skills
  - Affordable smartphones



# 5G Today

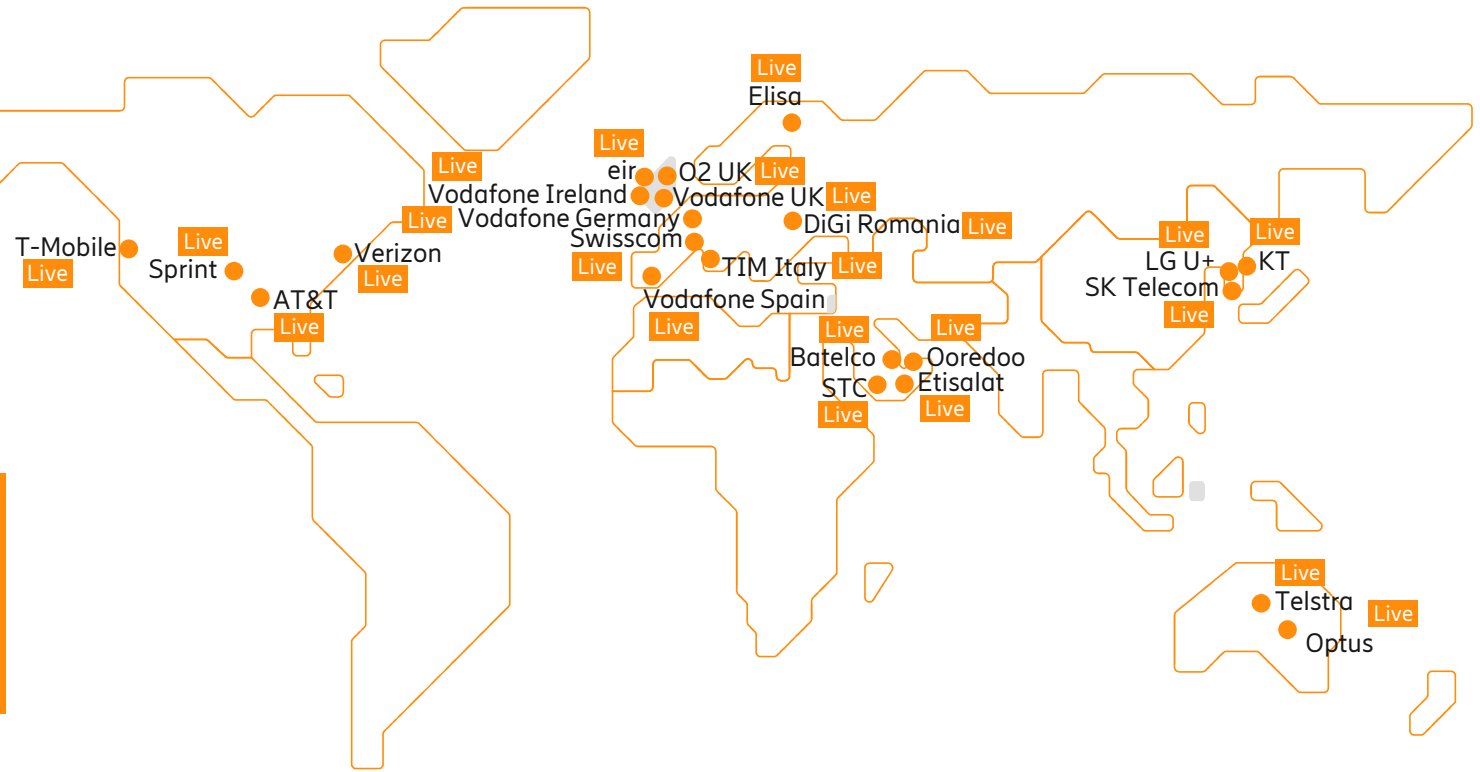
# First with commercial 5G live networks in 4 continents



78

Commercial 5G agreements or contracts with unique operators

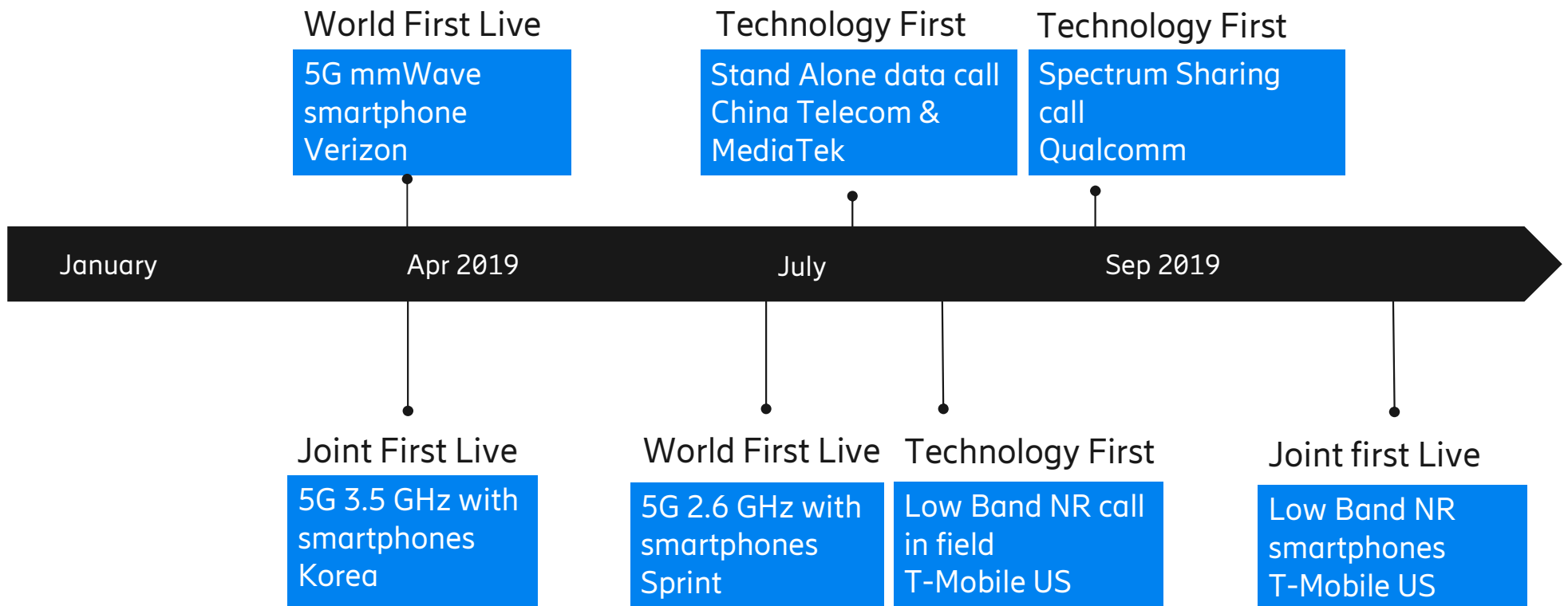
24 Live networks



\*As of Oct 2019

# 2019 – A year of Ericsson 5G Firsts

Commercial launches and technology milestones

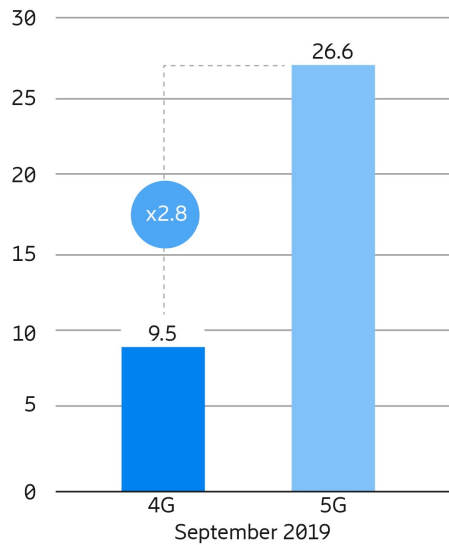




# 5G drives increase in average mobile data consumption

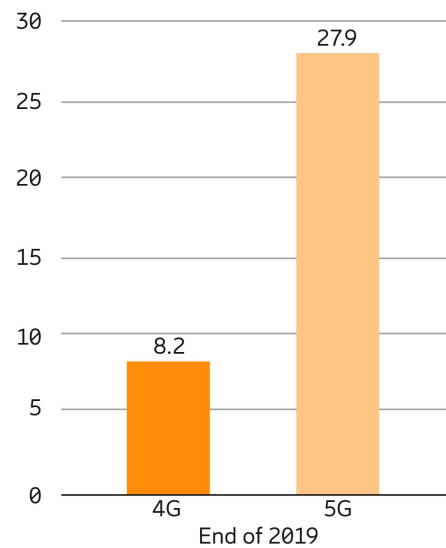


South Korea's mobile data traffic per subscriber (GB per month)



Source: Ministry of Science and ICT, South Korea  
Note: All three service providers subscribers included

SK Telecom's forecast mobile data traffic per subscriber (GB per month)



Source: SK Telecom forecast  
Note: Only SK Telecom subscribers included

## 25%

By the end of 2019, 25 percent of total mobile data may be carried over SK Telecom's 5G network



Immersive formats contribute to traffic growth. For example:

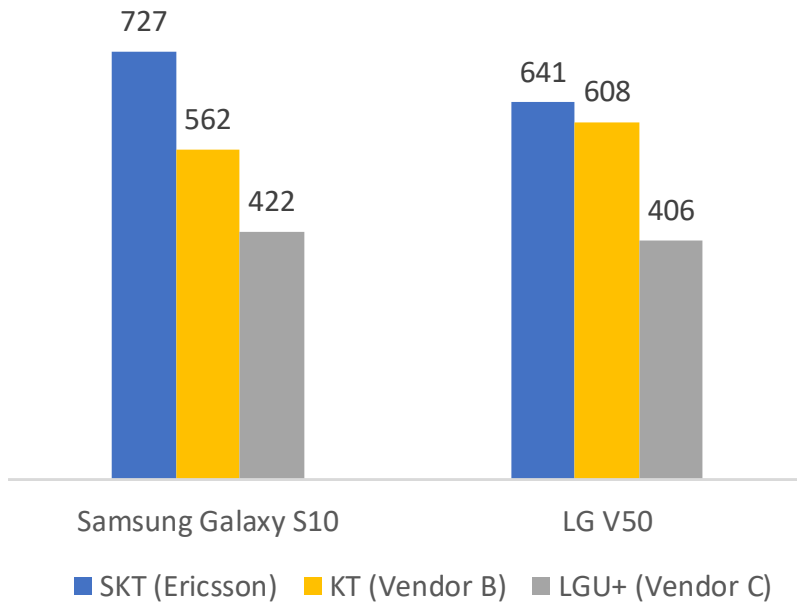
- High quality AR/VR content could consume 12GB per hour
- e-streaming sports event could consume 7GB per hour

# 5G Network Performance in South Korea

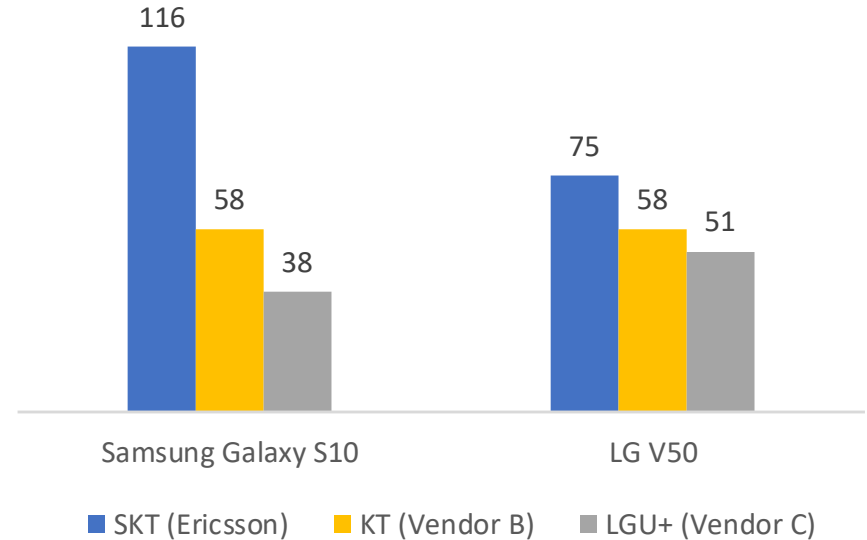
2019 November



### Downlink Throughput [Mbps]



### Uplink Throughput [Mbps]



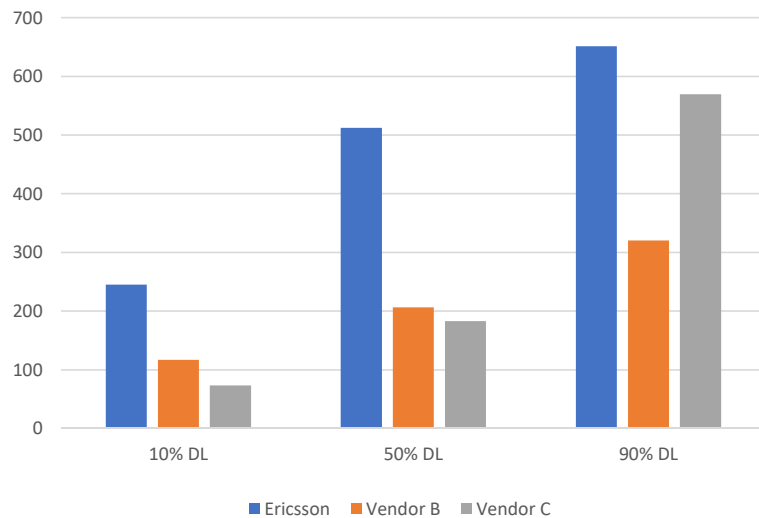
**Busan: Unique environment for head-to-head performance benchmarking  
Ericsson consistently provides leading UL and DL performance across terminal types**

# 5G 2.6GHz Network Performance – North America

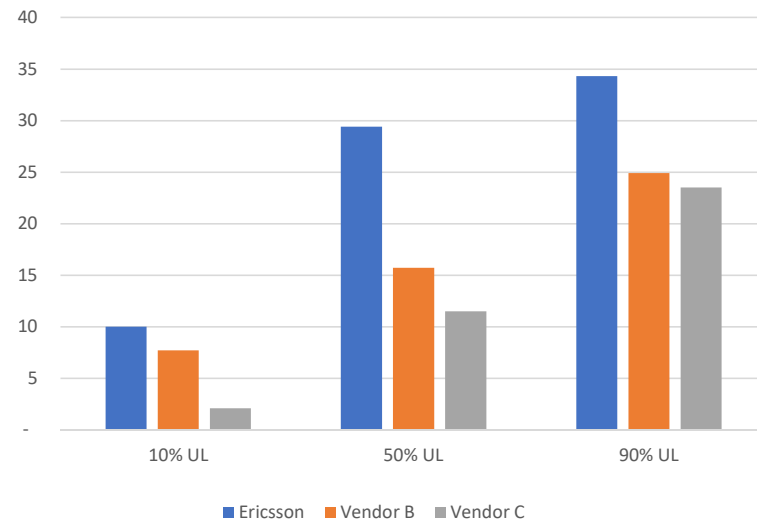
Ookla Speedtest, Oct 7-14, 2019



DL performance \*



UL performance \*



\* Best city per vendor

Ericsson provides the best 5G performance leadership in US



# Network Evolution to 5G

# The 5G spectrum opportunity



# The 5G need from operators



Ubiquitous  
Coverage

Capacity &  
Peak Speeds

Latency &  
Network Slicing

# Key 5G building blocks



Ubiquitous  
Coverage

Capacity &  
Peak Speeds

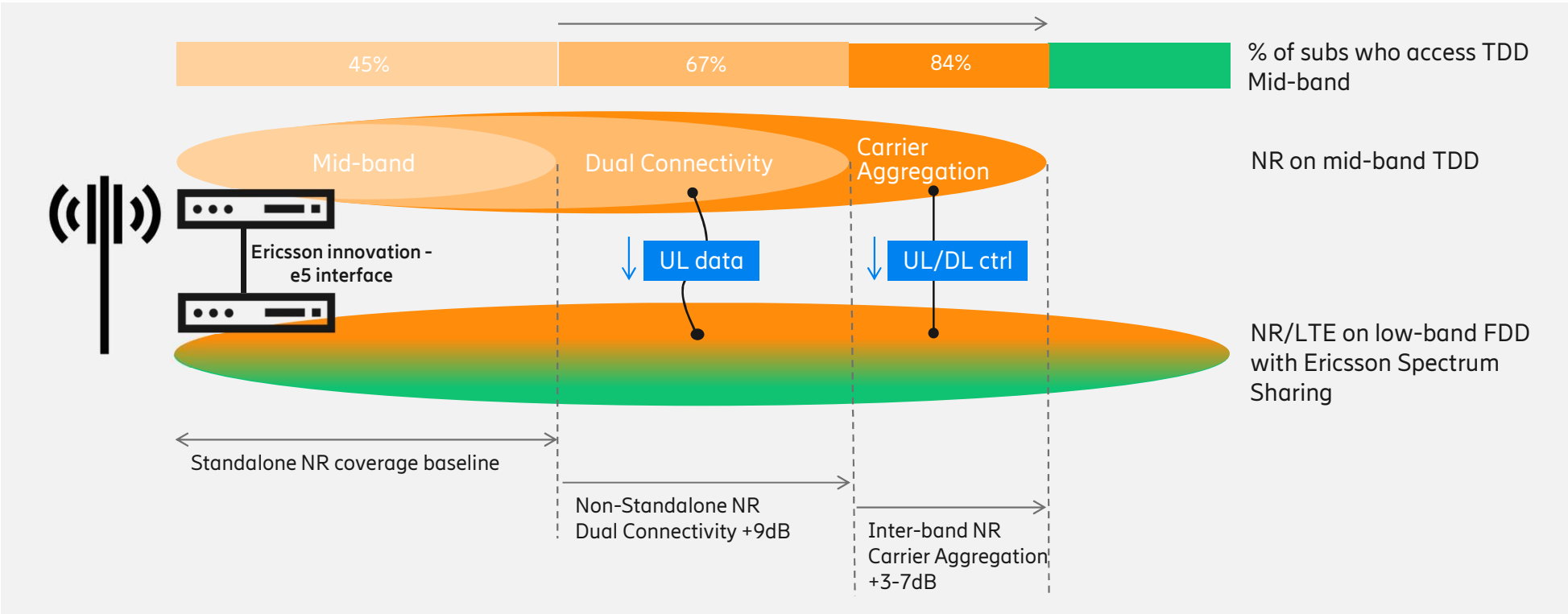
Latency &  
Network Slicing

Low band

Carrier Aggregation

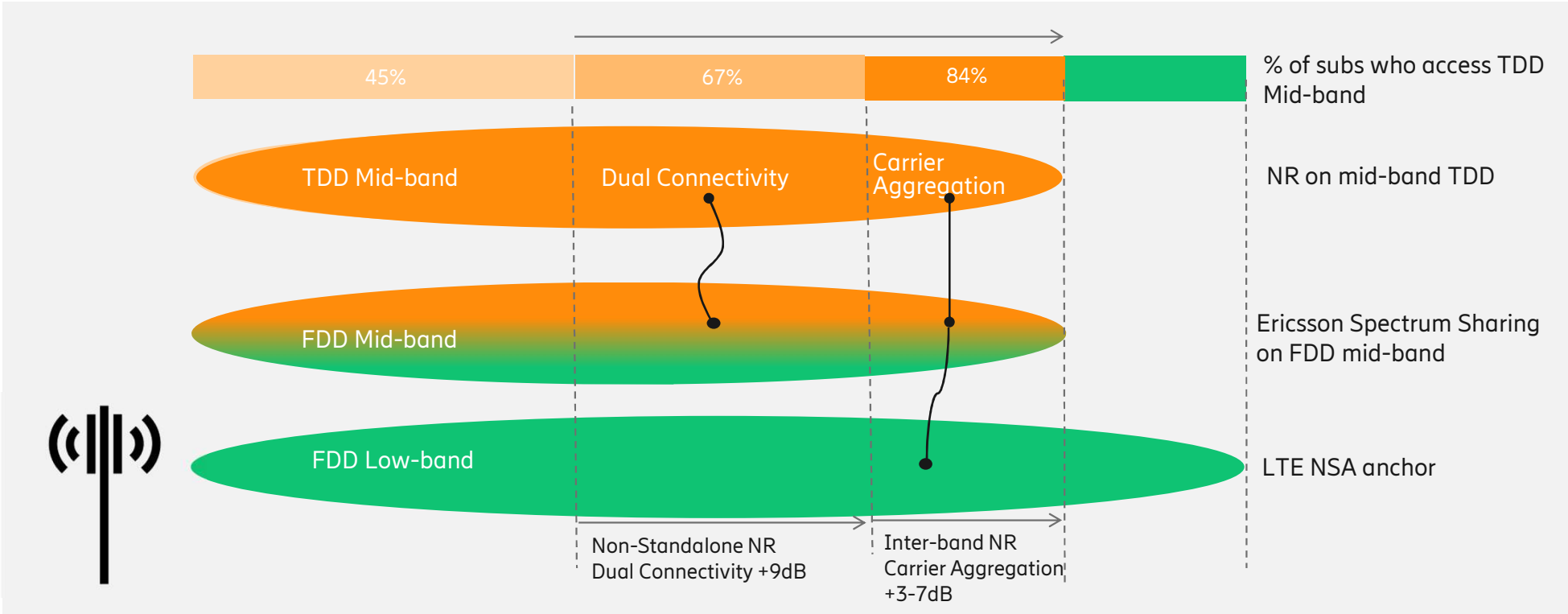
Standalone 5G

# Carrier aggregation: Using low band to maximize mid band coverage



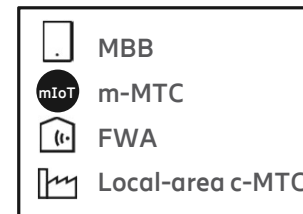


# Carrier aggregation: Using low band to maximize mid band coverage

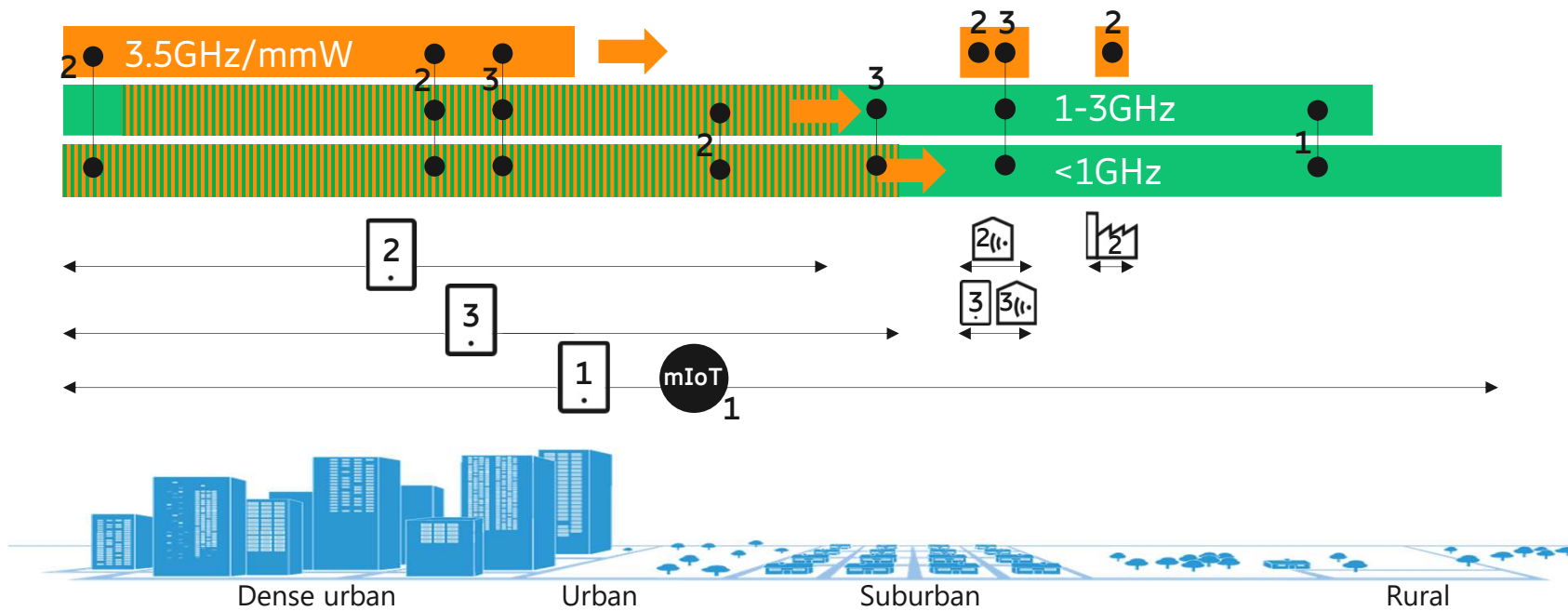
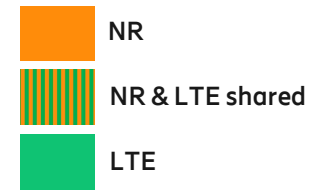


# Spectrum evolution example

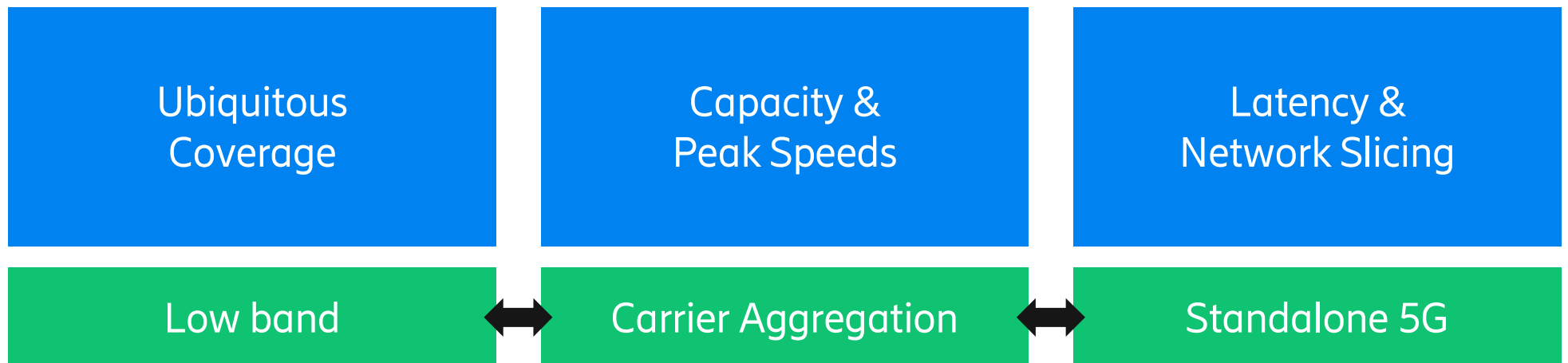
## Use cases



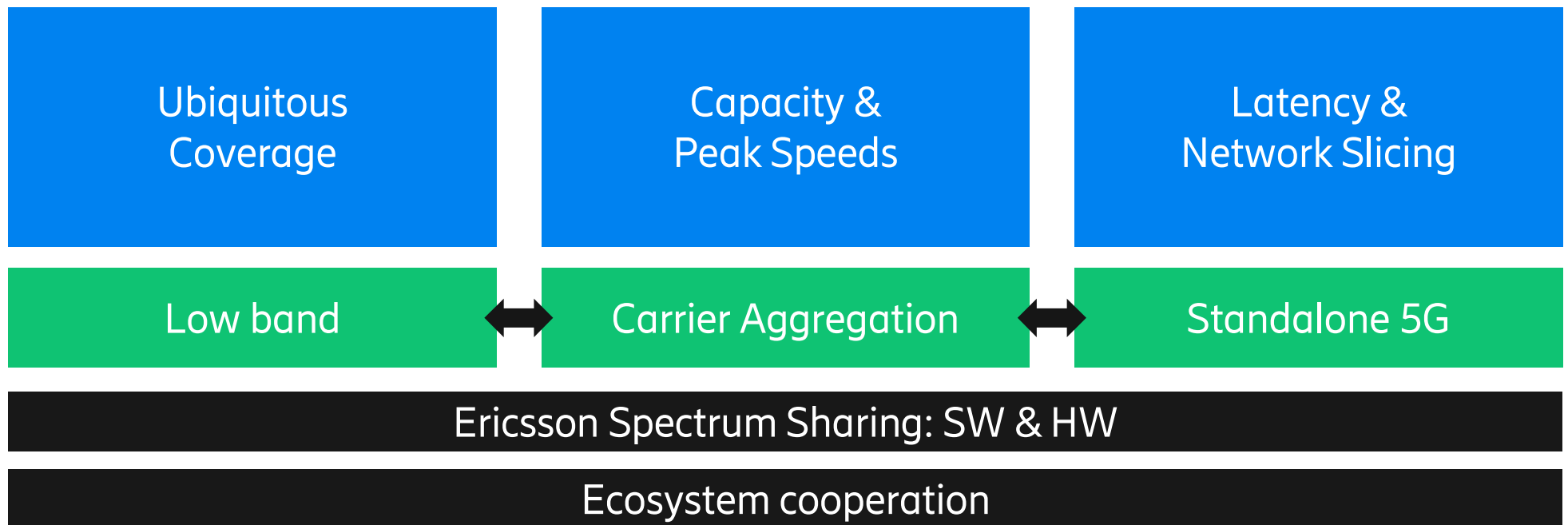
## Spectrum



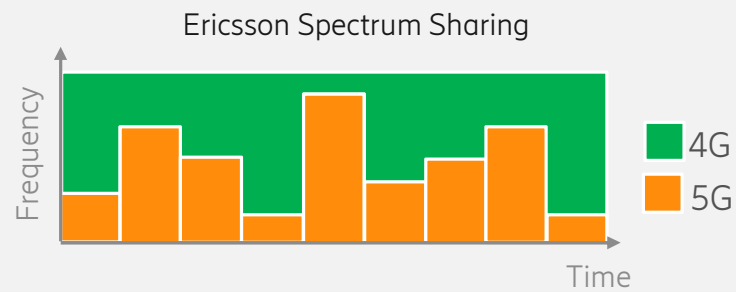
# Key 5G building blocks



# Ericsson unique enablers



# Ericsson Spectrum Sharing



NR carrier scheduled over LTE carrier

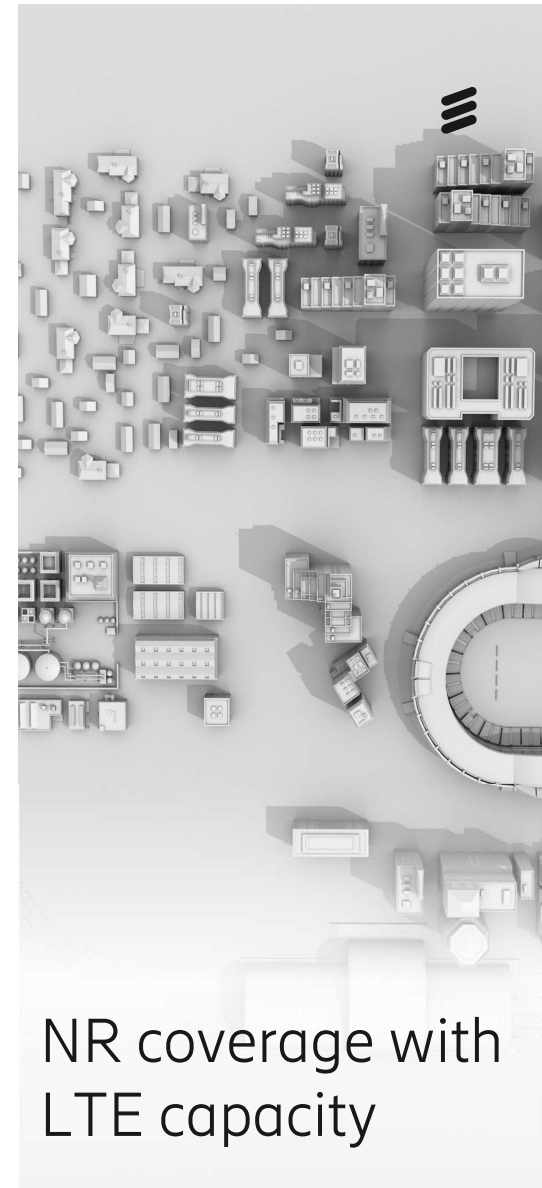
Scheduling lends resources to NR based on traffic

NR avoids symbols used in LTE for cell specific signals

Unique scheduler to dynamically share spectrum between 5G and 4G

Nationwide 5G coverage – with minimum impact to LTE performance

Increase the value of mid/high-band spectrum - increase coverage and capacity



# Ericsson Spectrum Sharing

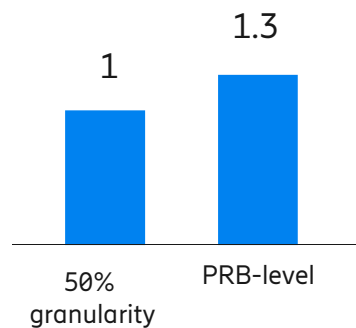


## Live experience

- SW delivered to 26 customers
- Commercial launches Q1 2020

## Value of PRB and 1ms sharing

- User throughput improvements



- 1ms argumentation being prepared for MWC

## Strong ESS evolution

- DSS/ISS
- LTE/NR/CDMA spectrum sharing
- SA support
- Support for FDD Active Antenna System
- LTE/NR/Cat-M/NB-IoT spectrum sharing
- Optimizations for NR performance and spectral efficiency
- Radio support

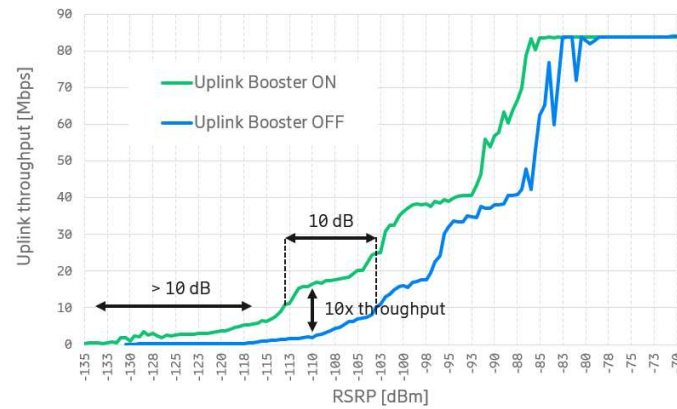
# Ericsson 5G



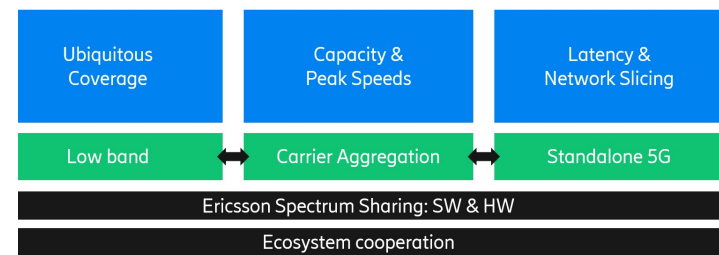
## Strong market position in 2019



## Performance and Differentiators



## Lead in 5G evolution in 2020

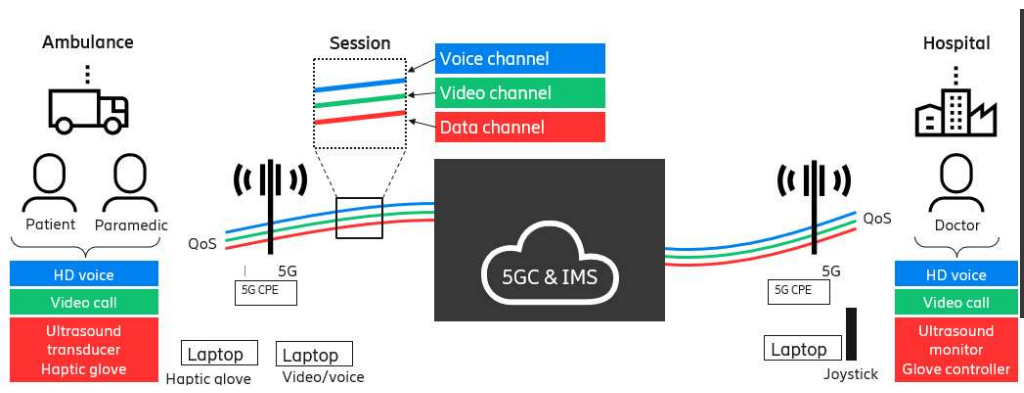




# 5G Trial with MTN Nigeria



# MTN Nigeria use case - Connected Healthcare



A Haptic glove is used to guide a paramedic to perform an ultra sound on a patient, showcasing real-time interaction capabilities over 5G with IMS data channel concept.

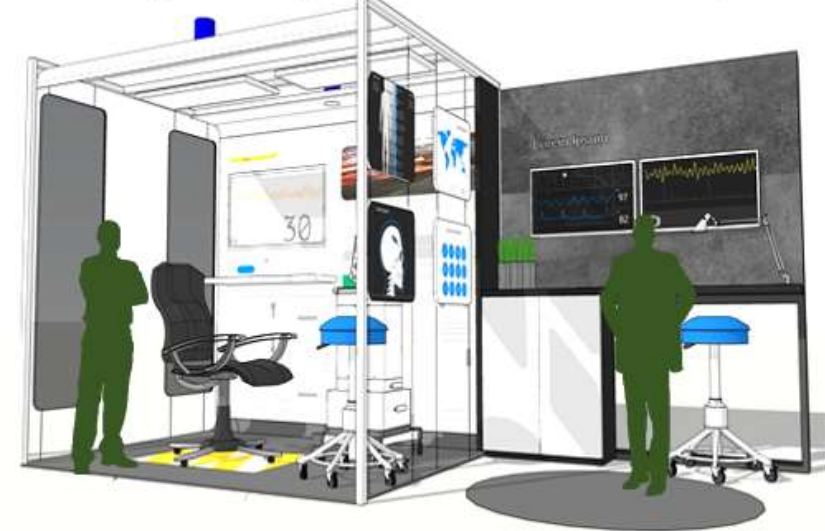


## Remote haptic control

Paramedic has a haptic glove and an ultra sound probe

The ultra sound image is shown on a screen both in the ambulance and in the hospital.

## Ambulance driving towards Hospital



## Doctor in the Hospital

## Remote Examination

HD voice and video call is set-up

Ultra sound image coming from the ambulance in real time

Doctor has a joystick to steer the haptic glove remotely

# MTN Nigeria use case – Speedtest result



Lagos Speedtest – Event Day

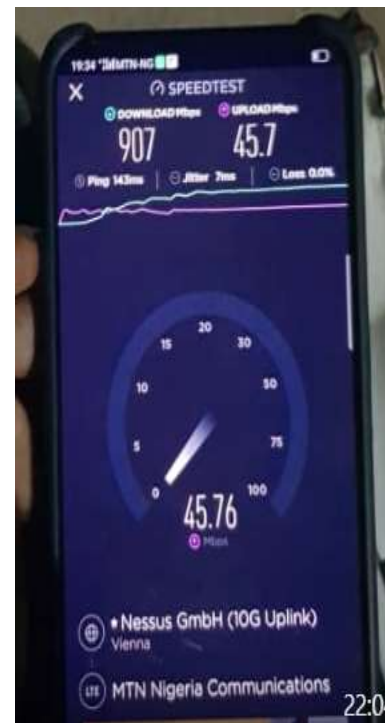


5G only (20 MHz)

Calabar Speedtest – Event & Post Day



Dual Connectivity 4G + 5G (20 MHz)



5G only (100 MHz)



Dual Connectivity 4G + 5G (100 MHz)

# Q & A





[ericsson.com/en/industry-analysts](https://ericsson.com/en/industry-analysts)