

# Digital transformation with 5G

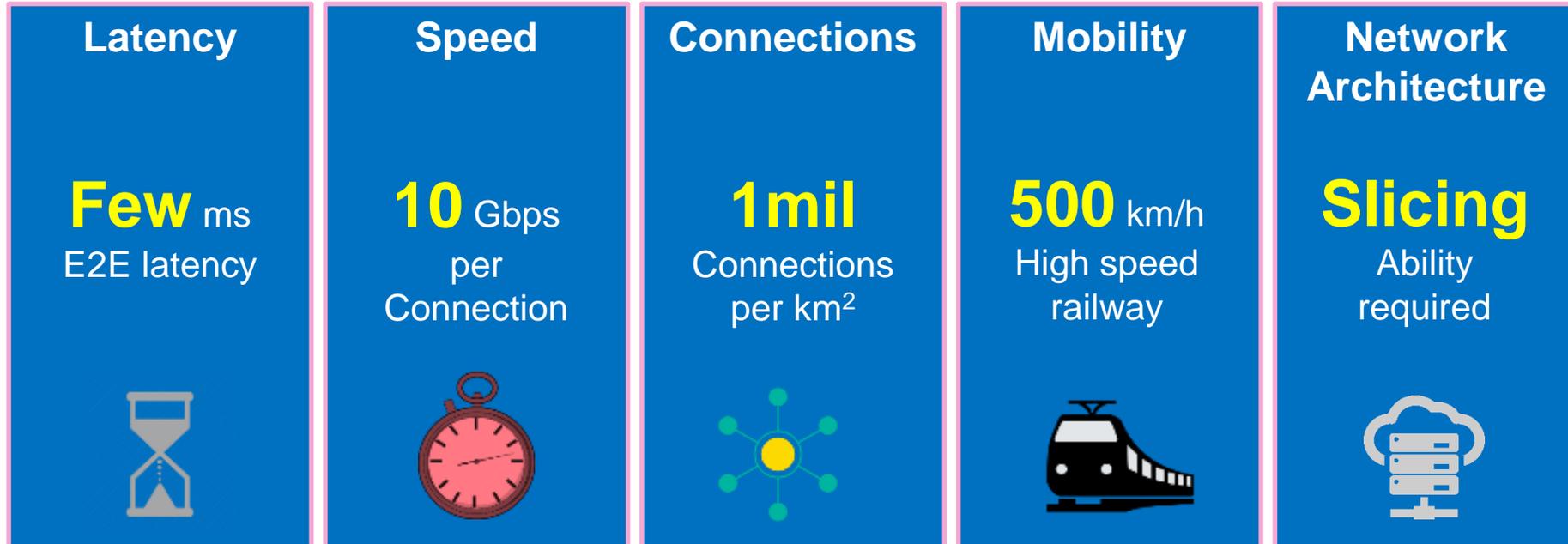
Iskra Nikolova

15/10/2018



# 5G promises to deliver higher speed, density and availability at ultra low latency

## 5G



10x

10x

100x

1.5x

Virtualised  
Network

## 4G

30-50ms

100Mbps-  
1Gbps

10k

350km/h

Inflexible

# Ericsson Mobility Report: 5G insights by 2023

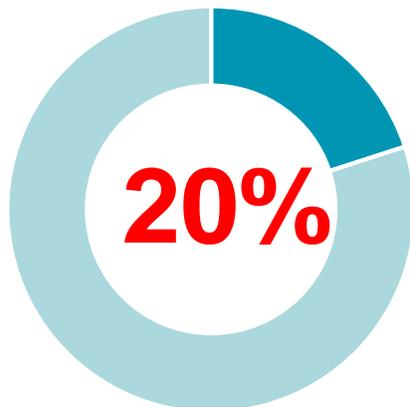
Over

**1 billion**

5G subscriptions for eMBB



5G mobile subscriptions in APAC



mobile traffic via 5G networks



More than

**20%**

of world's population covered by 5G

# Global survey conducted by Ericsson in January 2018 across 10 industries

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**3/4**

**expect their industry and own company to leverage 5G to improve offerings and cost**

**73%**

**have a strategy to leverage first mover advantages.**

**70%**

**expect their first 5G use case to be in production by 2021**

**5**

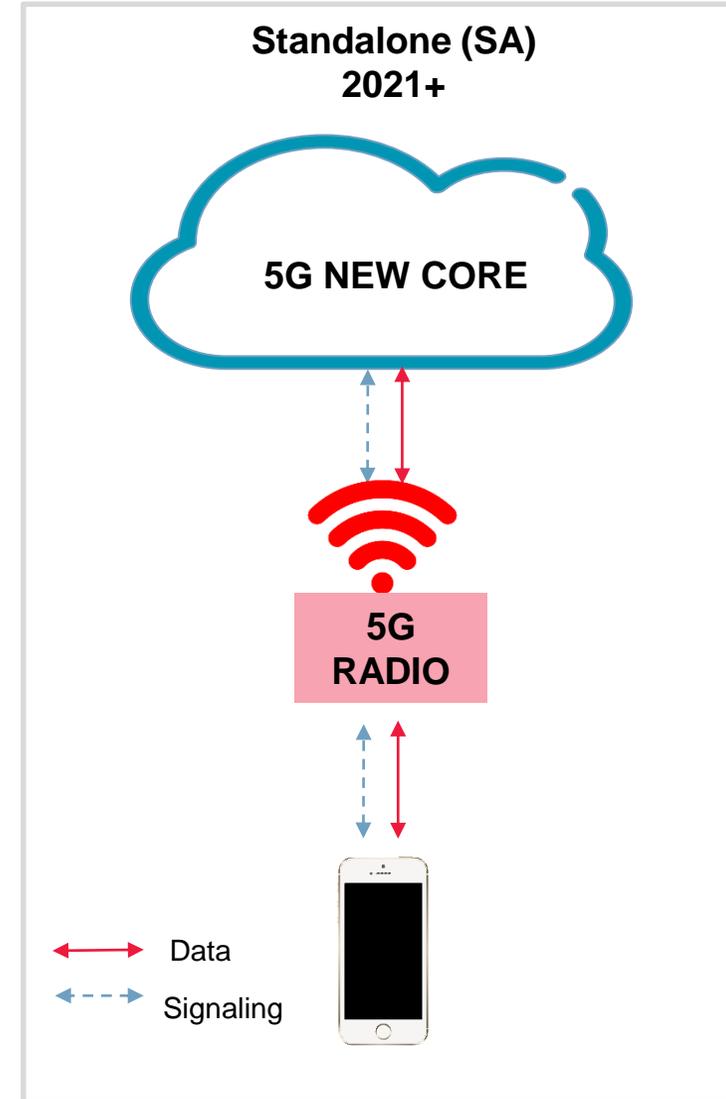
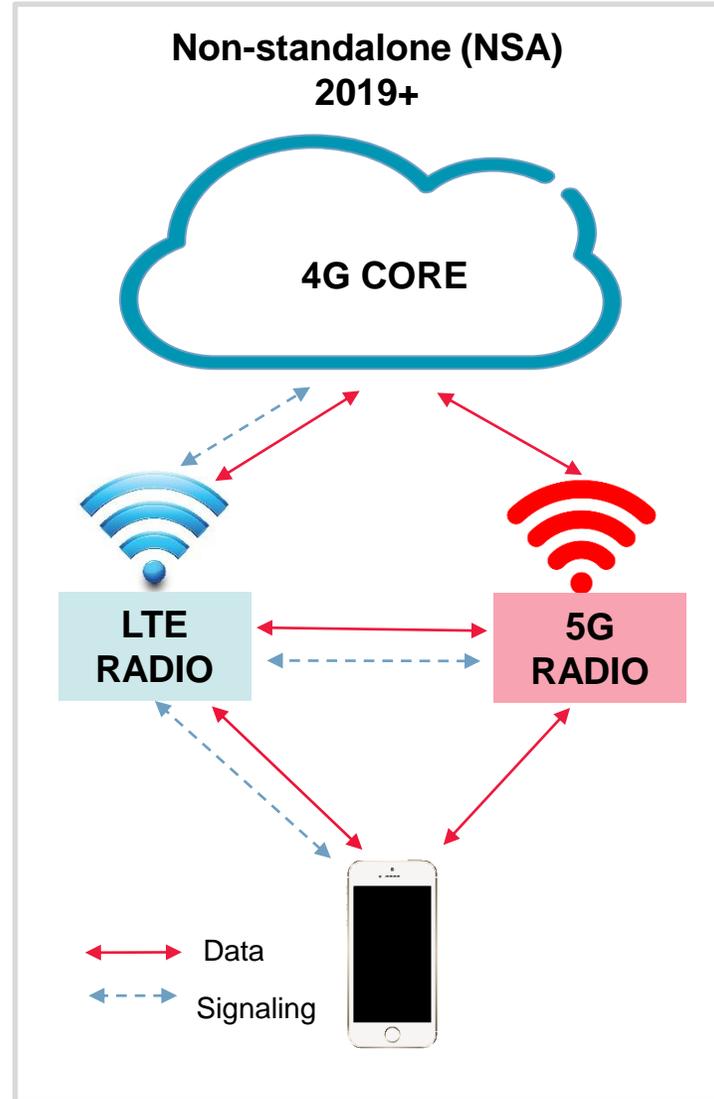
**5G capabilities carrying tied to premium values across industries**

**>50%**

**Expect to be in trials for their first use case in 2019**

- 10 industries covered: Energy & Utilities, Manufacturing, Public Safety, Healthcare, Public transport, Media, automotive, financial services, retail, agriculture

# 5G standards will be progressively introduced to achieve full 5G capability by 2020/2021



# A number of use cases will require a combination of 5G uLLC, mMTC and eMBB through network slicing to realise its potential

## eMBB (Enhanced Mobile Broadband) 2019+

4K Video beamer

High resolution video streaming

3D Holographic presence

Work & game while traveling

VR remote education/training

Real time work in cloud

AR/VR immersive games

Augmented dashboard

1-10 Gbps (Peak tput)

50-100 Mbps (Avg. tput)

50-100 ms (Latency)

3 – 120 kmph (Mobility)

200 – 150000 /km2 (Subs Density)

## mMTC (Massive machine-type comms) 2020+

Logistics

Maintenance optimization

Toll collection

Connected home

Traffic steering & management

Waste mgmt.

Tracking / inventory systems

Smart clothes

< 1 Mbps (Avg. tput)

160 dB (Coverage)

10 years (Battery life)

Mobility on demand (Mobility)

Up to 1 Million /km2 (Subs Density)

## uRLLC (Ultra-Reliable Low Latency) 2021+

Real-time remote control

Factory automation

Assisted driving

Remote Surgery

Smart grids

Self driving

Reliable emergency communications

<< 10 Mbps (Avg. tput)

99.999% (Reliability)

1 -10 ms (Latency)

Static - 200 kmph (Mobility)

10 -1000 /km2 (Subs Density)

# Singtel and Ericsson announced the launch of **5G** Centre of Excellence Program in 2017



Develop 5G technical competence for engineers in Singtel



Provide 5G showcase to create awareness for consumers and enterprises



Enterprise engagement and 5G trials with strategic corporate customers



Engage research and tertiary institutions on potential collaboration opportunities

# 5G Use cases for Enterprise & Consumer segments

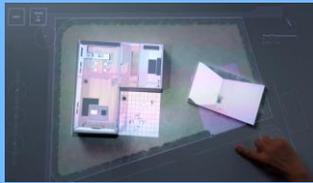
## Enterprise

3D AR calling for remote assistance



C B

Workplace collaboration



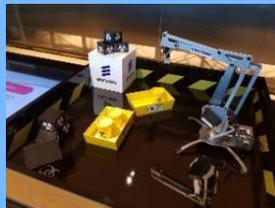
C

Drones for security monitoring, surveillance and logistics



B C

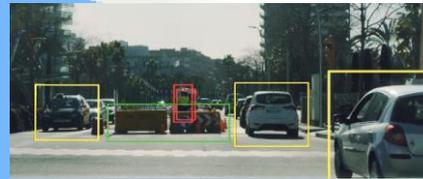
Ultra reliable connected factories



B C

## Consumer

Real-time 3D Mapping for AV



A D  
C

New learning experience anywhere



C

Real-time Cloud Gaming



A C

Low latency interactivity on any surface



A C

# 5G

A Ultra High Speed

B Network Slicing

C Low Latency

D Massive Connectivity

## In Summary

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- ✓ 5G promises to deliver higher speed, density and availability at ultra low latency
- ✓ It is gaining momentum in the industry and it is use case driven
- ✓ Virtualised, programmable core network is an integral part of 5G and it is ultimately based on open source technologies. Thus accelerating the digital transformation for telcos



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