

Learnings from Early 5G rollouts

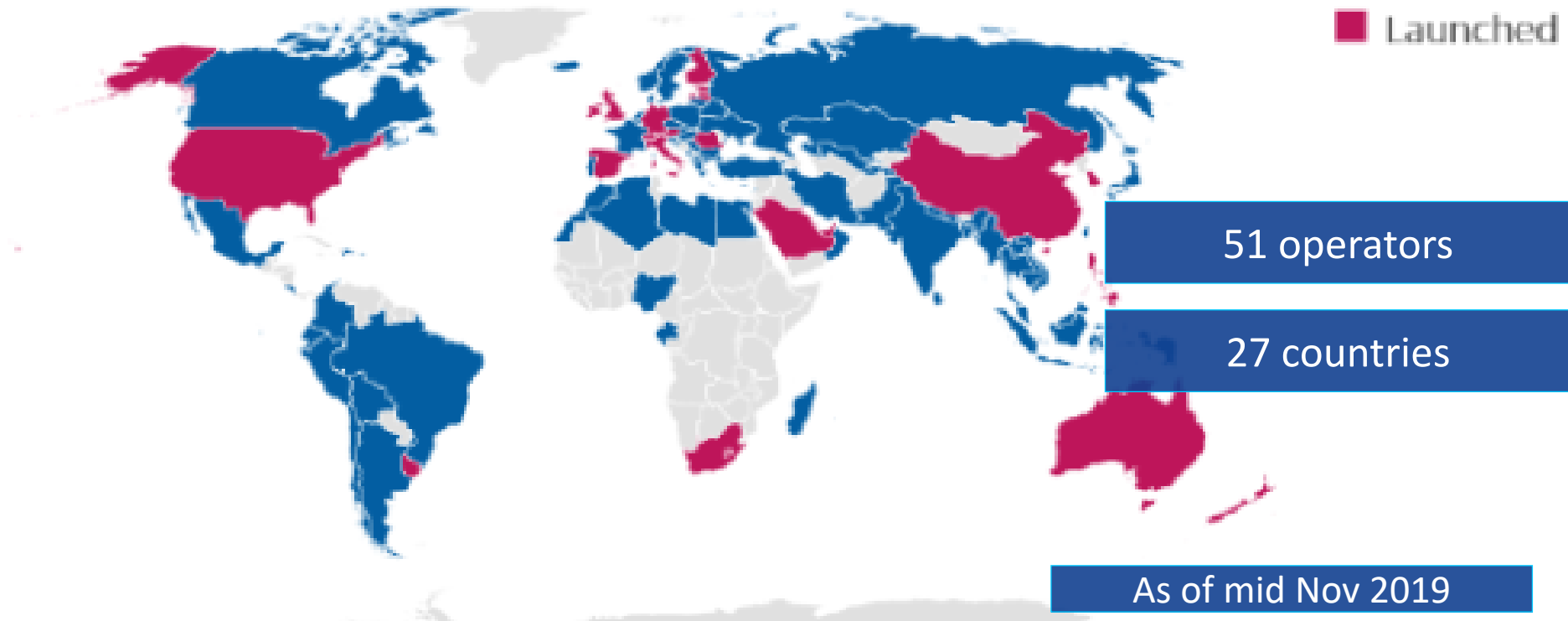


Aji Ed

CTO, Middle East and Africa

Early 5G rollouts globally

- Investing
- Launched



Learnings from early 5G rollouts



1
5G generates more traffic

2
5G works better with EN-DC

3
5G Indoor coverage

4
Is 5G all about massive MIMO?

5
5G Spectrum strategies

1

5G generates more traffic

2000
TB/day

Share of 5G
traffic

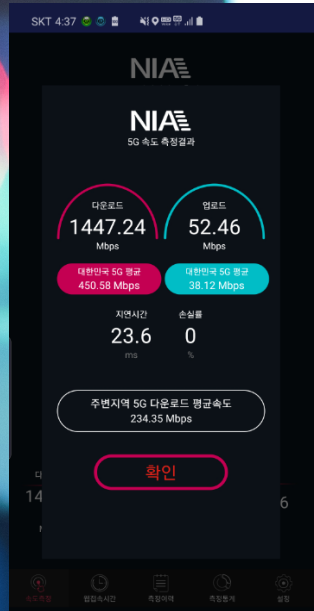
>10%

Sectors in
3.5 GHz band

>150k

Planned population
coverage by end of
2019

80%



NOKIA

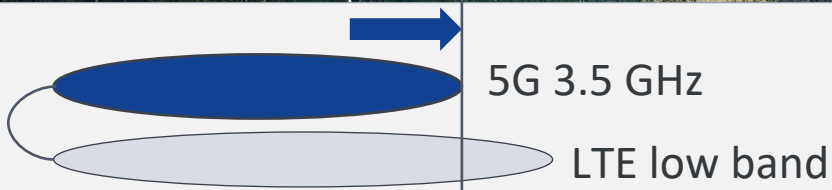
5G works better with EN-DC



Reference case 3.5 GHz alone

3.5 GHz for downlink and uplink user plane

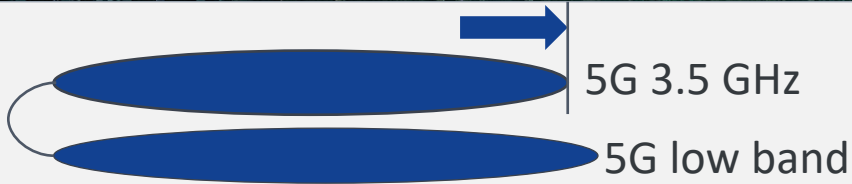
+6 dB



Dual connectivity

Low band LTE for uplink user plane

+3-6 dB



Carrier aggregation

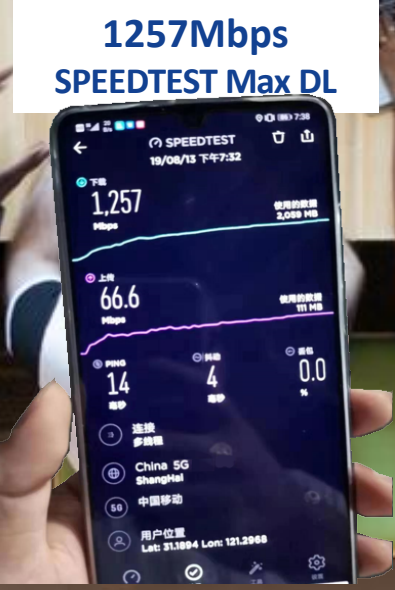
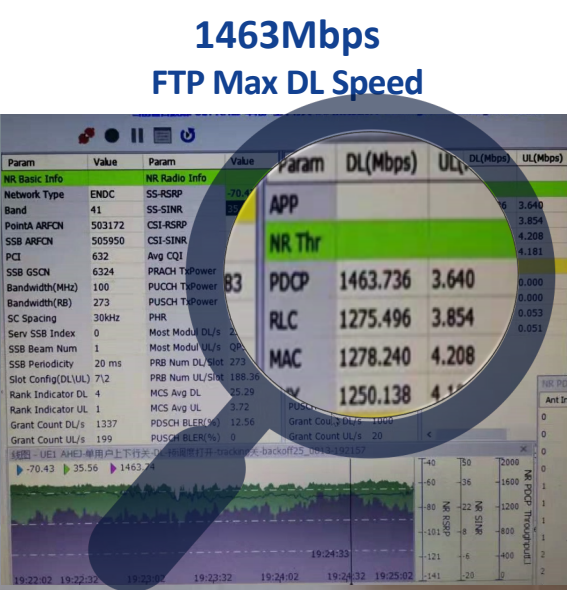
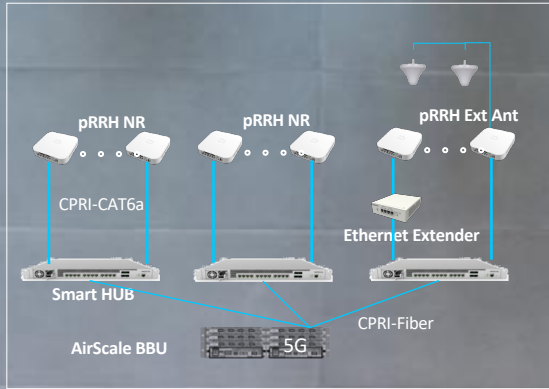
Low band 5G for uplink signaling

3
5G Indoor coverage is an issue !

> 60-70 % traffic indoors

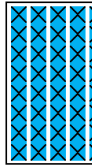
5G indoor small cells solutions are a MUST

AirScale Indoor Radio



Is 5G all about massive MIMO?

8T8R

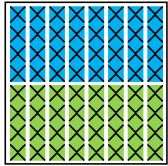


Coverage

Horizontal BF

Rural/Highways

32T32R

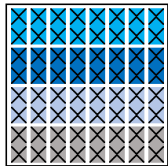


High Capacity

Horiz + lim Vert BF

Residential

64T64R



Extreme Capacity

Horiz + Vert BF

High Rise

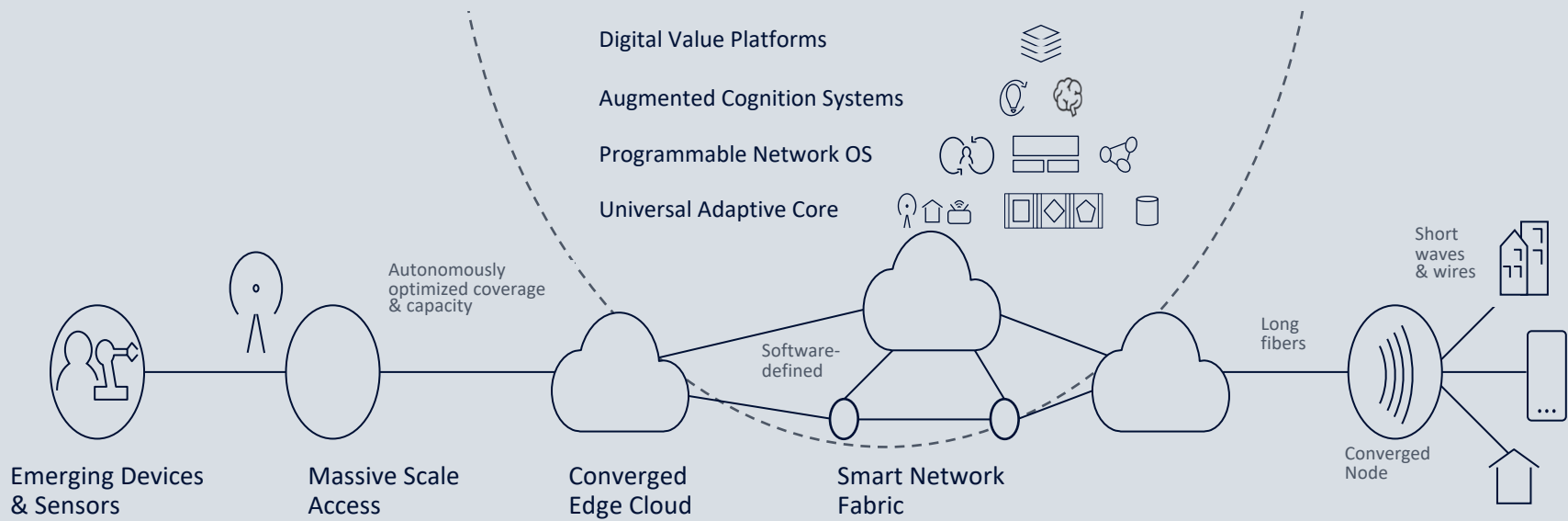
200-500m ISD

500-1000m ISD

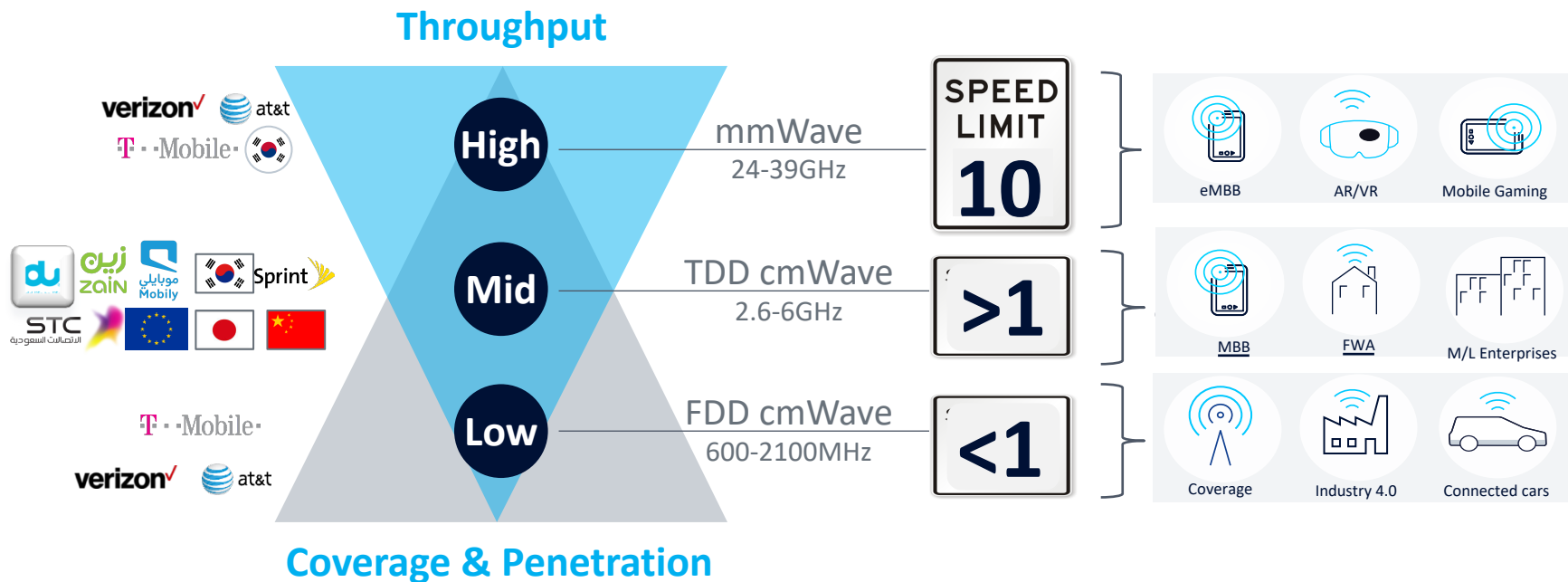
1000m ISD

Is 5G all about massive MIMO?

5G is really E2E , much more than radio



Spectrum strategies



5G Leadership needs mix of all

5G is not a Sprint – it's a Marathon ...

1

2019 Early Adopters - NSA

2

2020 Mass Market NSA; SA initial deployments

3

2021 Migration to SA; Rel 16 initial deployments

4

2022 Mass Market SA, Rel 16

