



Towards the 5G era

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About the GSMA

THE GSMA
WAS FOUNDED IN
1987

15 OFFICES
WORLDWIDE



SHANGHAI



SAN FRANCISCO



BEIJING



SAO PAULO



NAIROBI



NEW DELHI



LONDON



DUBAI



ATLANTA



BRUSSELS



BARCELONA



HONG KONG



BRASILIA



BUENOS AIRES

Connecting everyone and everything to a #betterfuture



The mobile industry is the first to formally commit to the UN Sustainable Development Goals



The GSMA represents the interests of mobile operators worldwide



UNITING NEARLY
800
MOBILE OPERATORS



WITH ALMOST
300
COMPANIES
in the broader mobile ecosystem



The world's leading mobile industry events, Mobile World Congress and Mobile World Congress Shanghai, together attract

160,000+
people from across the globe each year

The GSMA works to deliver a regulatory environment that creates value for consumers by engaging regularly with:



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TELECOMS REGULATORY AUTHORITIES



INTERNATIONAL & NON-GOVERNMENTAL ORGANISATIONS



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Exclusively for GSMA Members, InfoCentre² is your place to connect with a global community of industry experts

GSMA Working Groups provide frameworks and standards in commercial, operational and technical matters that help maintain and advance mobile industry ecosystems



8.1 BILLION+

MOBILE CONNECTIONS
WORLDWIDE



Agenda: 6 Questions on 5G

- ✓ **What** is 5G?
- ✓ **Why** do we need 5G?
- ✓ **When** is 5G coming?
- ✓ **Where** is 5G happening?
- ✓ **Who** is active with 5G?
- ✓ **How** can 5G be delivered successfully?





INTELLIGENT CONNECTIVITY

The Fusion of 5G, AI and IoT

INTELLIGENTLY CONNECTING EVERYONE AND EVERYTHING TO A BETTER FUTURE

T O M O R R O W



5G ERA: INTEROPERABLE NETWORKS

5G / 4G / 3G / MOBILE IoT / WIFI / FIXED BROADBAND / SATELLITE



ARTIFICIAL INTELLIGENCE

COMPUTER IQ: 10,000+



INTERNET OF THINGS

25 BILLION CONNECTED DEVICES



Flexible, reliable, high-speed, low latency, high capacity networks

Smarter platforms for enhanced decision making & automation

Everything will be securely connected enabling rich new products & services

T O D A Y

4G / 3G / MOBILE IoT



HUMAN GENIUS IQ: 140+



9 BILLION CONNECTED DEVICES

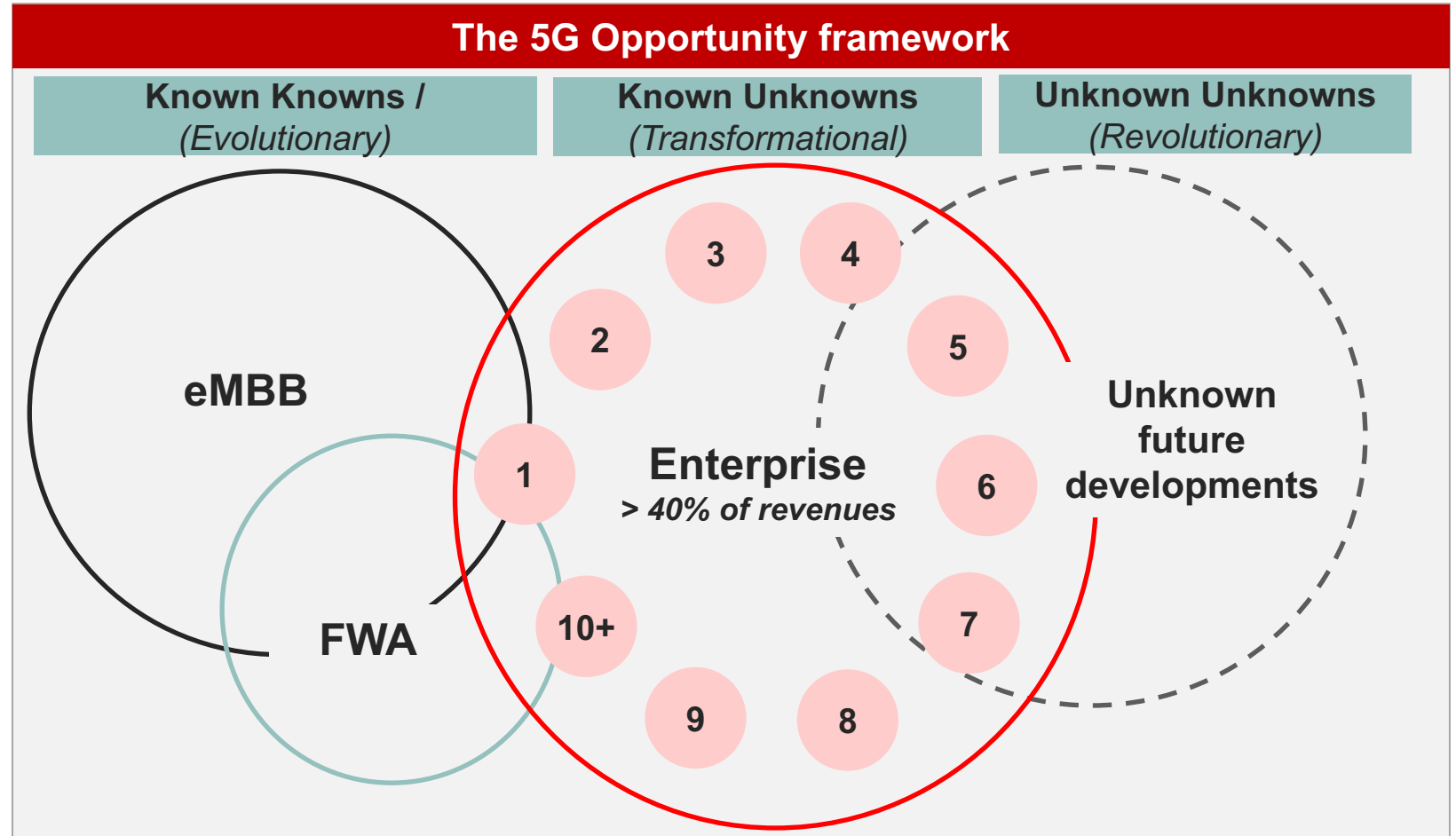




5G is an inevitable network evolution, and will create huge opportunities if the right conditions are in place

...deployment will depend on ...

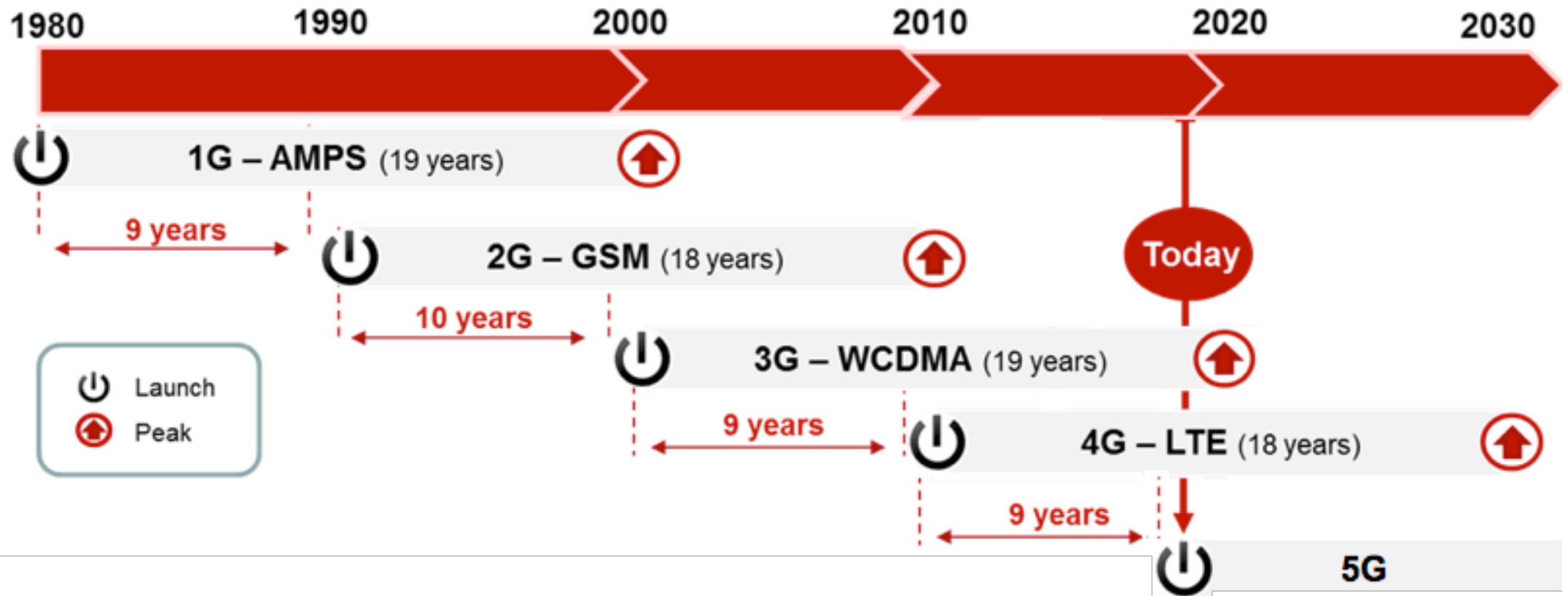
1. Enabling market conditions and triggers
2. Supportive policy framework (incl. spectrum availability & pricing)
3. Technology readiness



Enabling market conditions include: Monetisable 5G use cases, 4G penetration levels, ARPU levels, fixed BB penetration etc

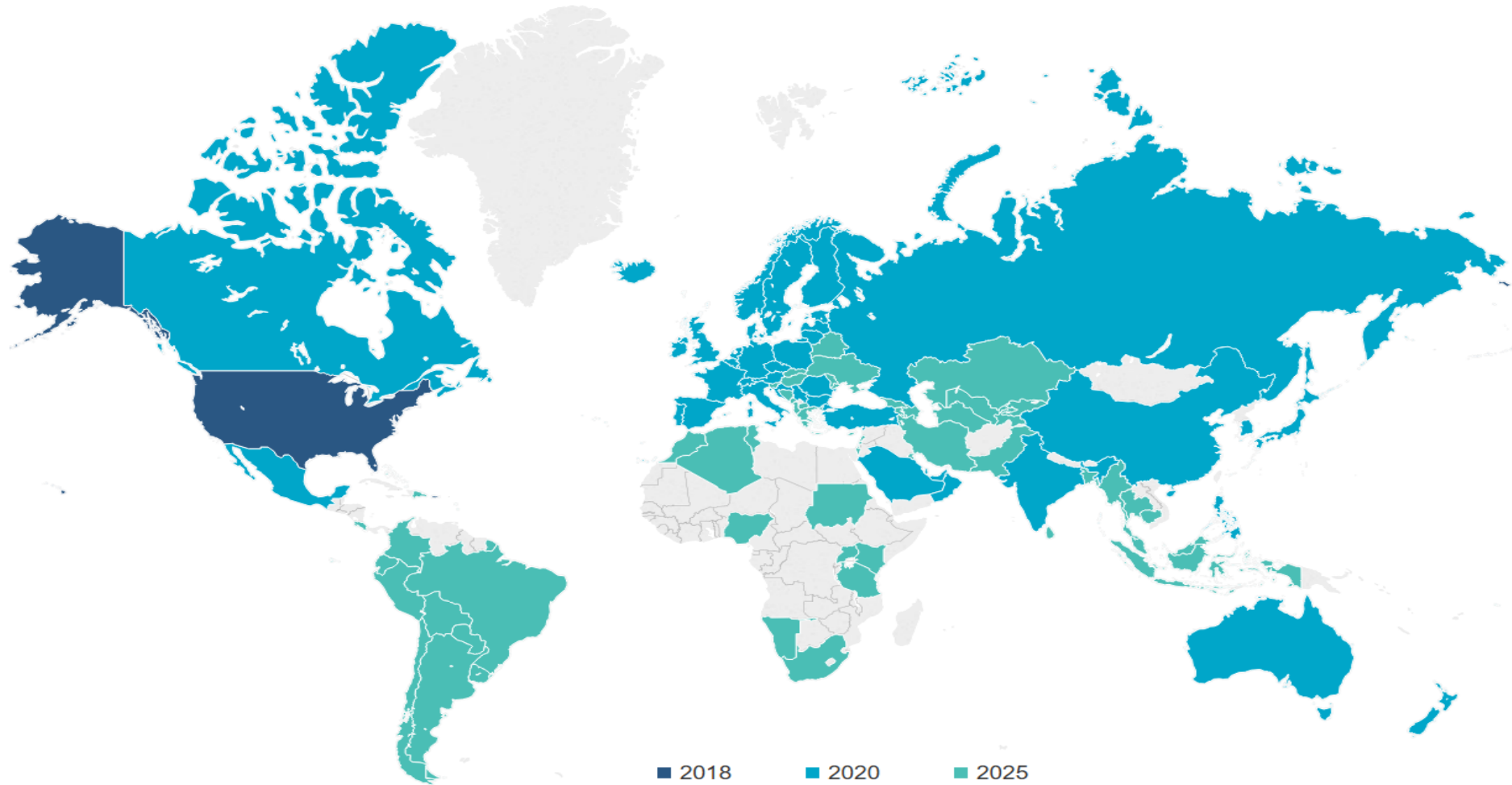


Towards the 5G era



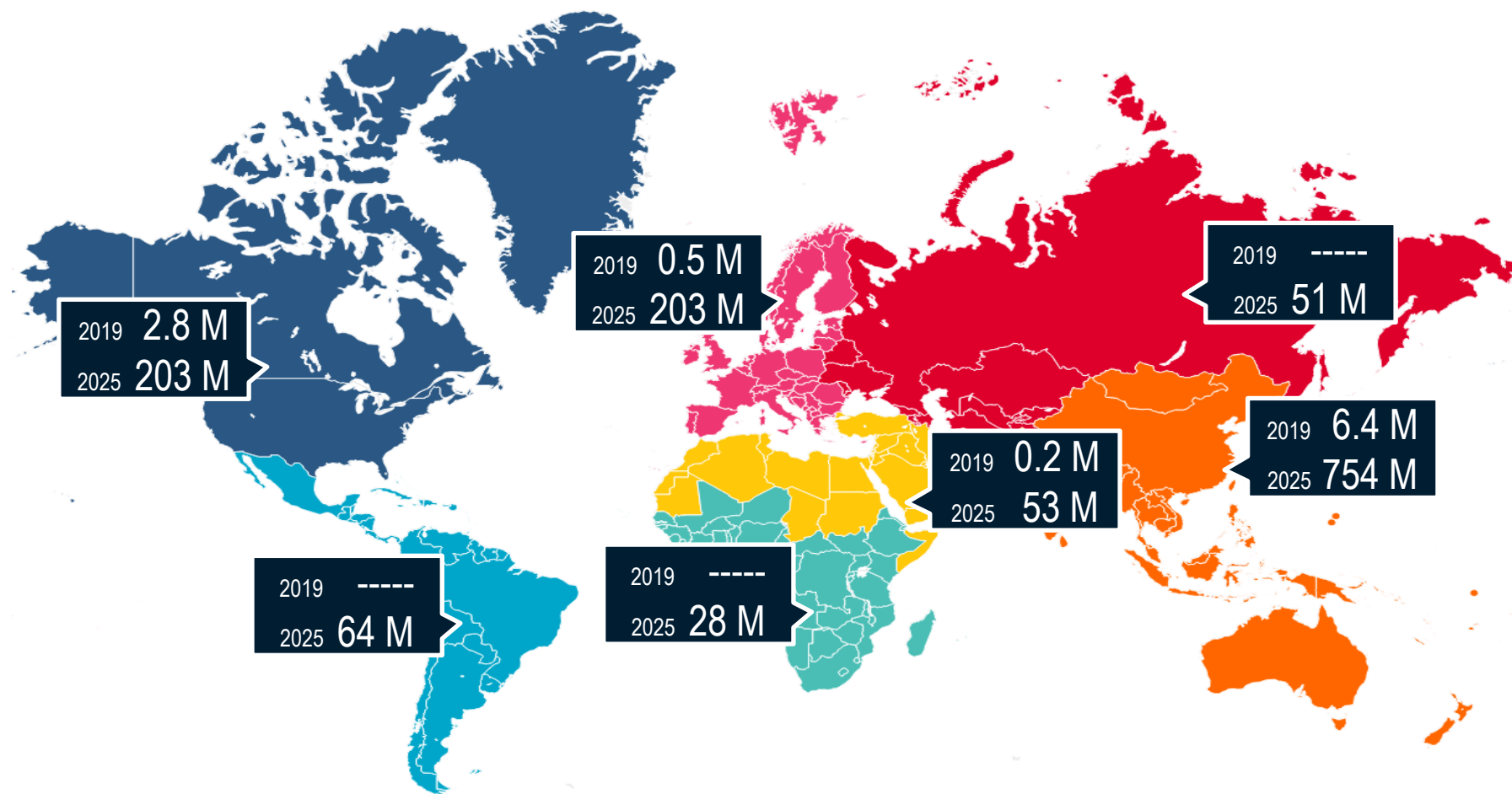


Around 50% of countries will have 5G by 2025





5G connections* will reach nearly to 1.4 billion by 2025



*Connections excl. Cellular IoT



Mobile operators are getting ready for 5G

South Korea – KT has announced it will launch commercial services in 2019

Japan – NTT DoCoMo has announced it will launch commercial services in 2020

US – operators have been testing and developing fixed-wireless solutions using mmW technologies. AT&T has recently launched 5G for mobile devices.



China – China Mobile plans to deploy 10,000 base stations by 2020

Europe – in July 2016, the major operators published a 5G manifesto, which indicated a target of launching 5G in at least one city in each of the member states by 2020

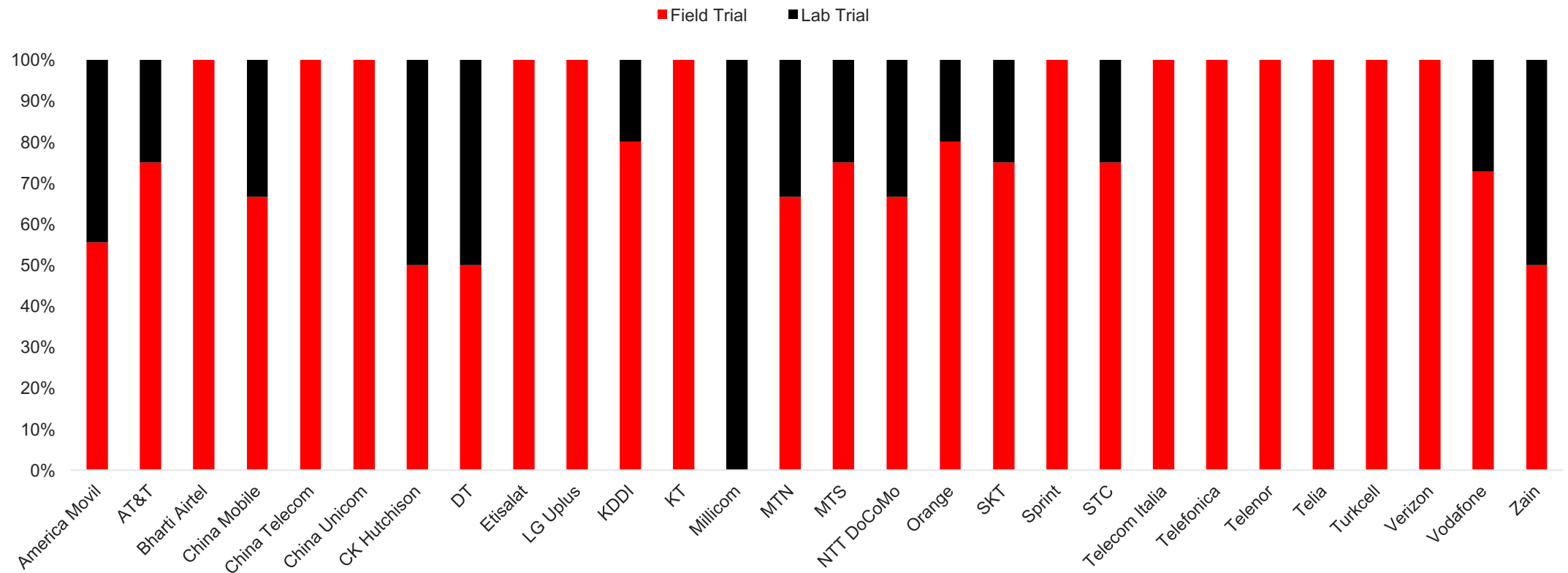
Middle East – Etisalat has indicated that it will launch a nationwide 5G network in time for Expo 2020 in the UAE



All the leading operators are conducting field and lab trials

NOTES

- Best effort data collection based on 110 publicly verifiable trials as of May 2018
- The trials include both group and individual level.



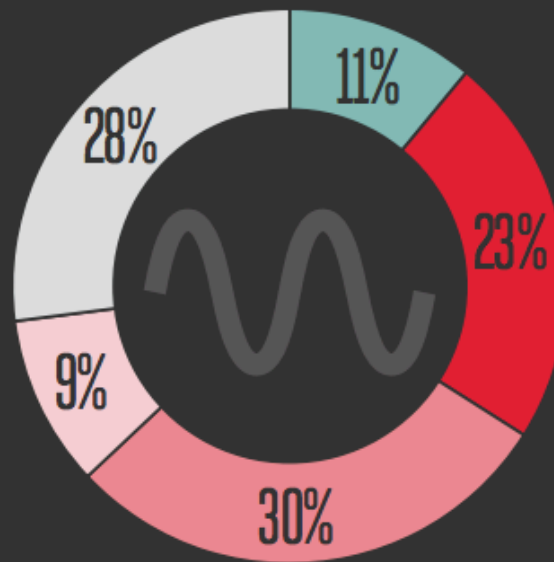


3.5 GHz and 26/28 GHz are emerging as the primary 5G bands

Trials in a range of spectrum bands

5G TRIALS IN DIFFERENT BAND RANGES

<3 GHz
3-6 GHz
6-30 GHz
>30 GHz
Unconfirmed



BANDS EMERGING AS KEY TO 5G

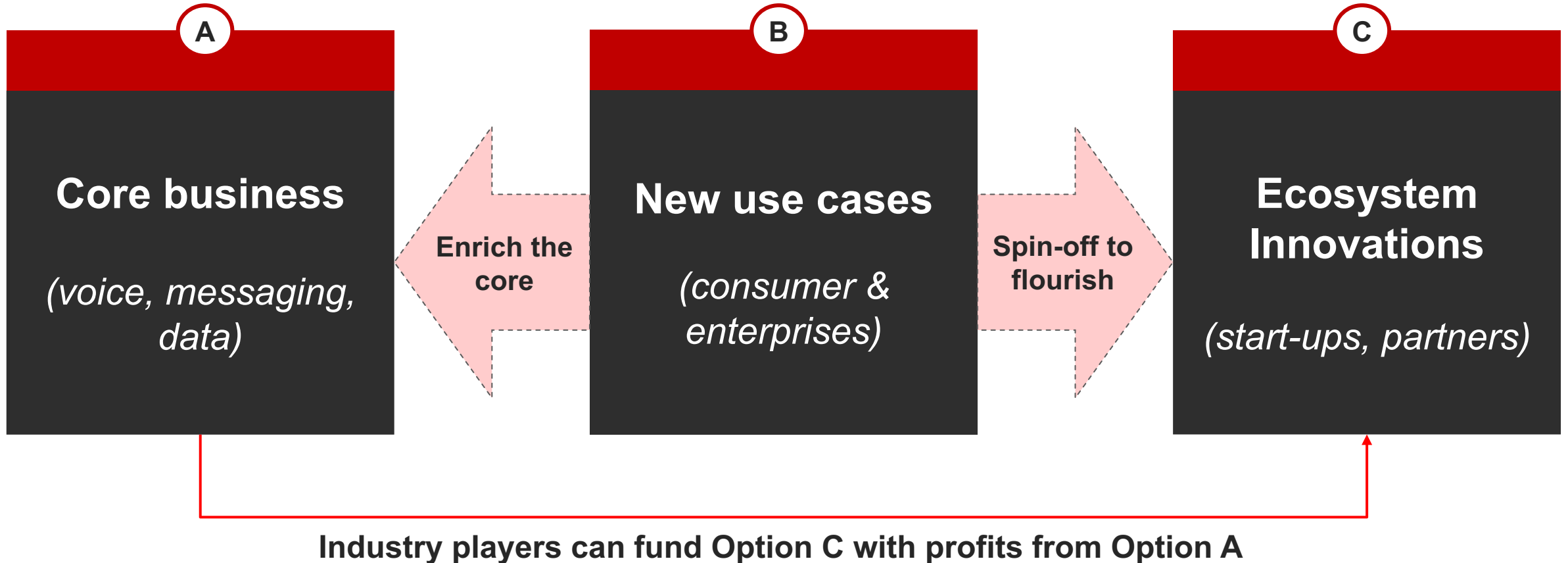
3.5 GHz

16% of total number
of trials

26/28 GHz

19% of total number
of trials

 5G will create value in the core business, in new use cases, and in innovative start-ups & partners





Non-smartphone devices and terminals will provide big opportunities for manufactures from 2020

**5G Fixed Wireless
Access equipment**

From 2018

*Not linked to legacy
network*

5G Smartphones

From 2019

*Initially on Non-
Standalone 5G (NSA)*

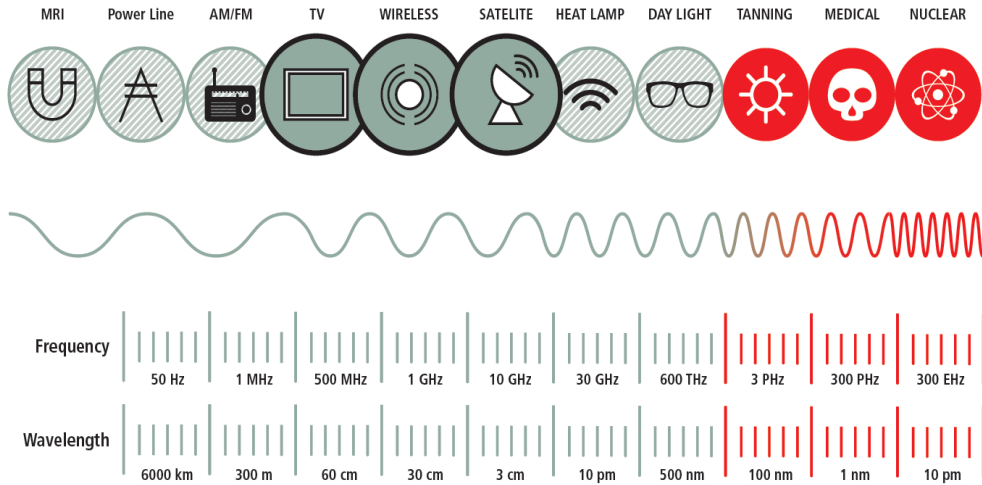
5G IoT devices

From 2020

*Take advantage of features
of Standalone 5G (SA)*



Sufficient harmonised and affordable spectrum is needed



Sub-1 GHz
1-6 GHz
 AND ABOVE
6 GHz

1

SIGNIFICANT NEW WIDELY HARMONISED MOBILE SPECTRUM NEEDED TO ENSURE 5G SERVICES MEET FUTURE EXPECTATIONS AND DELIVER FULL RANGE OF POTENTIAL CAPABILITIES

2

5G NEEDS SPECTRUM WITHIN THREE KEY FREQUENCY RANGES TO DELIVER WIDESPREAD COVERAGE AND SUPPORT ALL USE CASES
 SUB-1 GHz; 1-6 GHz; ABOVE 6GHz

3

SIGNIFICANT POTENTIAL FOR COEXISTENCE OF 5G AND OTHER WIRELESS SERVICES (E.G. SATELLITE AND FIXED LINKS) IN HIGHER FREQUENCY BANDS (E.G. ABOVE 24 GHz)

4

TECHNOLOGY NEUTRAL SPECTRUM LICENCES ESSENTIAL TO ALLOW EXISTING MOBILE BANDS TO BE EASILY REFORMED FOR 5G



Thank you

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