

the next technology business driver



Mobile Market trends



Mobile industry set to reach major milestones to 2025



4G will become the leading mobile network technology in 2019



Internet of Things, 25 billion connection by 2025



Innovation, fast-evolving ecosystem of the digital edge



Artificial intelligence as next frontier



Global Market overview

Unique mobile subscribers



2017
5.0bn



2025
5.9bn



YoY 2017 -2025

Mobile Internet users



2017
3.3bn



2025
5.0bn



YoY 2017 -2025

SIM connections



2017
7.8bn



2025
9.0bn



YoY 2017 -2025

Global Market overview

Smartphones % of connections

2017
57%

2025
77%



Internet of Things



2025
25.1bn



Mobile Operator revenues

2017
1.05tn\$

2025
1.10tn\$



Mobile industry contribution to GDP

2017
3.6tn\$



2022
4.6tn\$

Employment jobs

2017
29m



*GSMA

Mobile technology timelines

The next revolution is here

1980s
1G

mobile voice

1990s
2G

mobile coverage
voice plans



2000s
3G

smartphone adoption
data usage
segmented data plans



2010s
4G

unlimited voice / SMS
the smartphone is king
same network for all
multi SIM
multi screen
family offers
convergent bundles
Wi-Fi for intensive use



2020s
5G

Connectivity
Internet of Things

Business Models
Agility

Technology
Programmability



5G vision & mission



“5G is an end-to-end ecosystem to enable a fully mobile and connected society. It empowers value creation towards customers and partners through existing and emerging use cases, delivered with consistent experience, and enabled by sustainable business models.” *

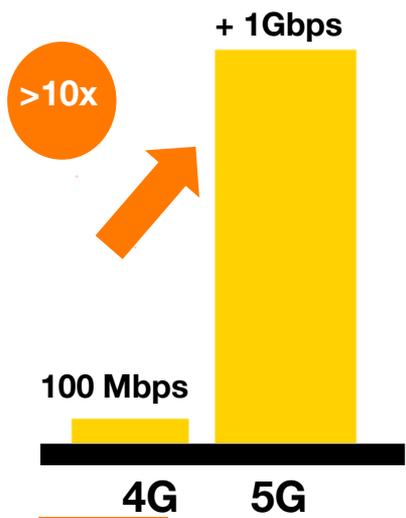


5G is intended to deliver solutions, architectures and techs for the next coming decades with huge potential to revive existing verticals and create new markets such as Smart Cities, e-Health, Intelligent Transport, Education, Agriculture, Media and Entertainment.

5G promises: faster, higher

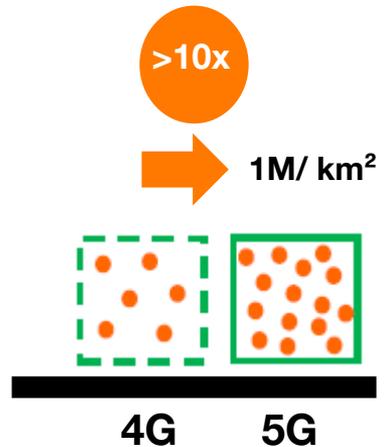
Faster data rate

5G wireless speeds compared with fiber



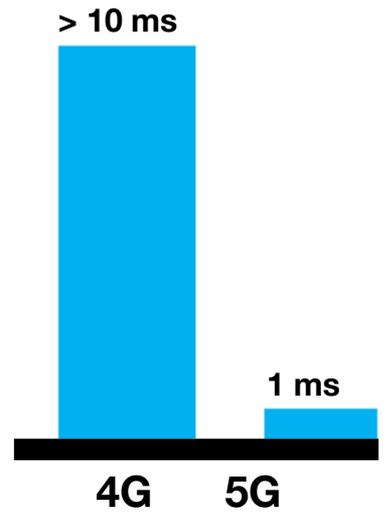
Higher device density

IOT enabler



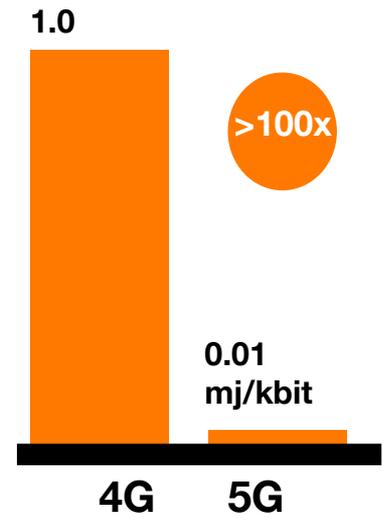
Reduced latency

Real-time application



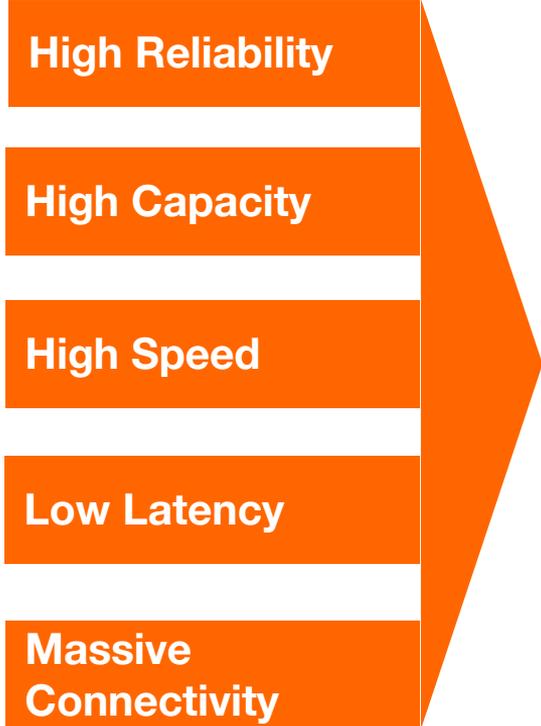
Lower Energy

Network Efficiency
Network slicing



*www.bain.com

5G new services panel



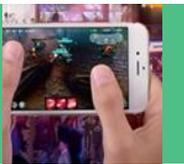
Broadband Access in Dense Areas
service availability in densely-populated areas



Higher User Mobility
services at speeds greater than 500km/h



Broadband Access Everywhere
50+ Mbps everywhere at ultra-low cost



Ultra-reliable Communications
robots control e-Health



Lifeline Communications
natural disasters



Massive Internet of Things
low-cost / long-range / low-power



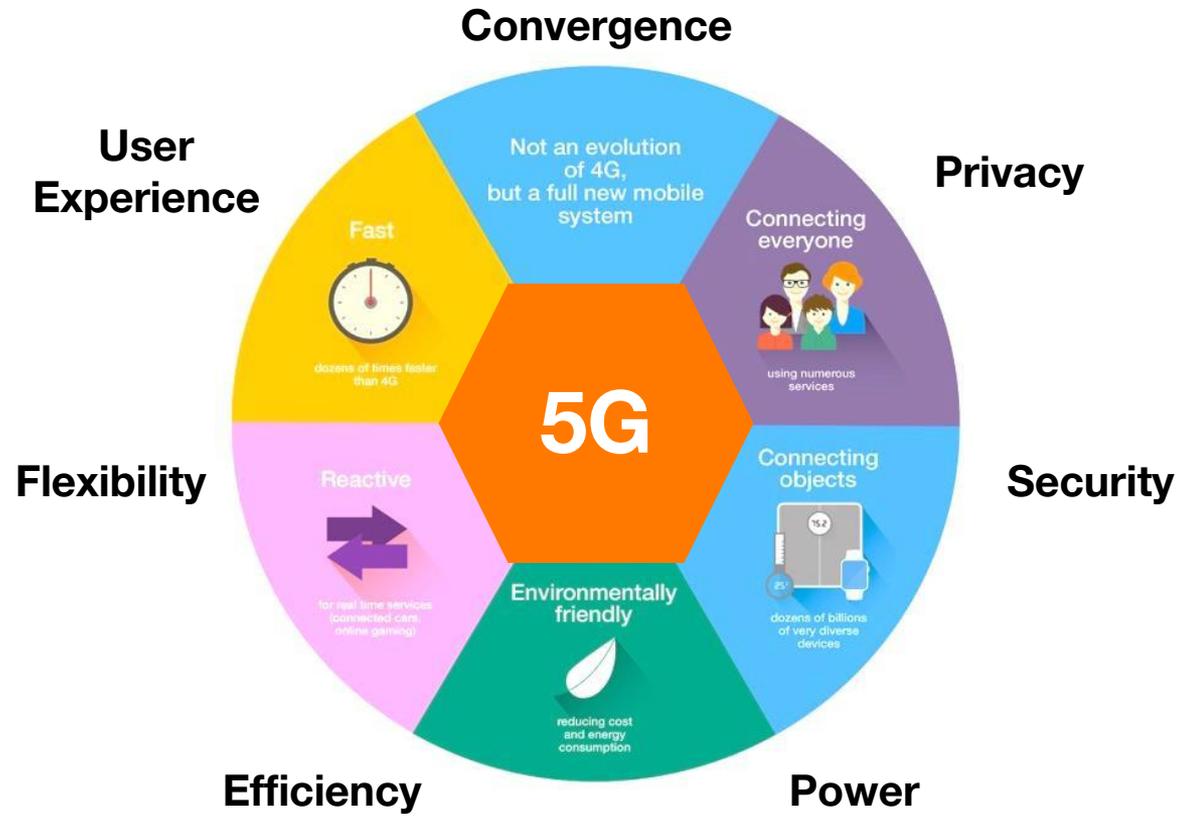
Extreme Real-Time Communications
autonomous driving & AI



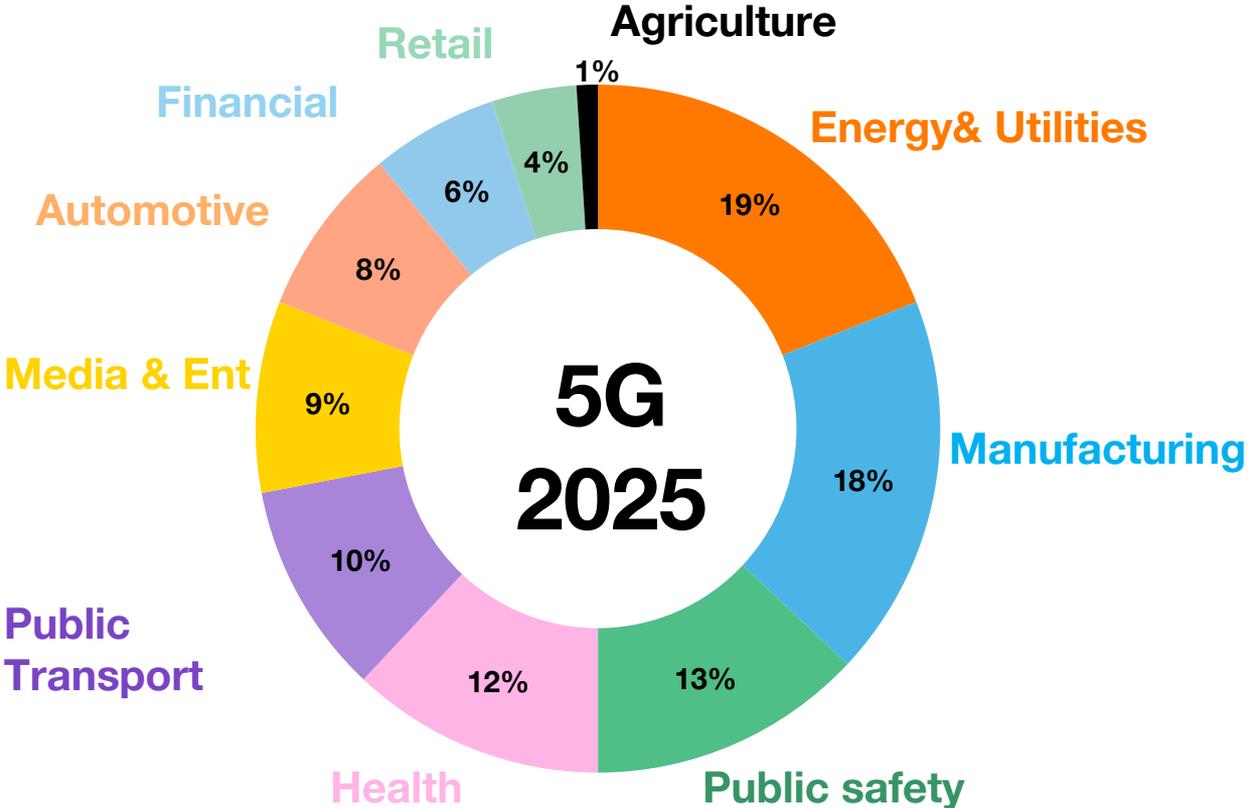
Broadcast-like Services
8K & mobile TV
AR / VR



5G key features



5G B2B opportunities



5G technical principles

Radio

Network

Operation

Cloud Apps

1

eMBB
(High to Very High
Broadband Mobile
Access)

2

FWA
(Fixed Wireless
Access)

3

Specialized Services

URLLC (Ultra Reliable, Low Latency Communications)	Massive IoT (Low Power, Long Range / M2M Communications)
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Standards

Devices

Spectrum



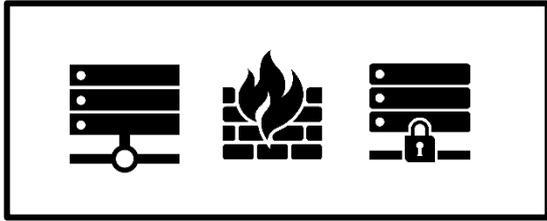
Efficiency: Power, Latency, Resiliency, Secured ICT, Costs

Future network transformation

From dedicated network functions

to Software network functions

service configuration



Virtualization



SDN



Automation



Business Model	Online Self Services Real time customer journey Transformation through automation
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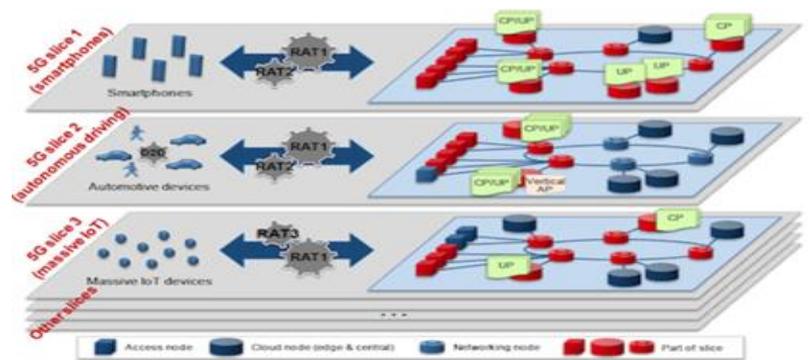
Network	Fast deployment Reduce Time-to-Market Savings-> reducing costs of operations
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5G network slicing

Economic context for deploying

- One big network for all services types
- Separate dedicated core networks per service type
- Network slice per service type (Service n slice)



*NGMN

Slicing motivation

Less Opex

Increase revenue

Benefits Services



5G security threats & mitigation

Devices

- Malware
- DDoS Attacks
- Firmware Hacks
- Device Tampering
- MitM attacks

Radio network

- MEC Vulnerability
- Rogue nodes
- Jamming
- MitM attacks

Core Network

- Malicious Apps
- CP & UP Sniffing
- API vulnerabilities
- Slice&Virtualization
- DDoS attacks

External

- API vulnerabilities
- App vulnerabilities
- IoT Apps

Identity

Authentication

Confidentiality

Integrity

Availability

Privacy



Infrastructure

Users

Network

Application

5G Intelligent Connectivity

Fusion of 5G, AI and IoT



Smart Platforms with AI



5G Network



IoT – Everything Connected



Smarter and productive

Applicability

Entertainment - Gaming

Autonomous Transportation

Enhanced Public Services

Industry

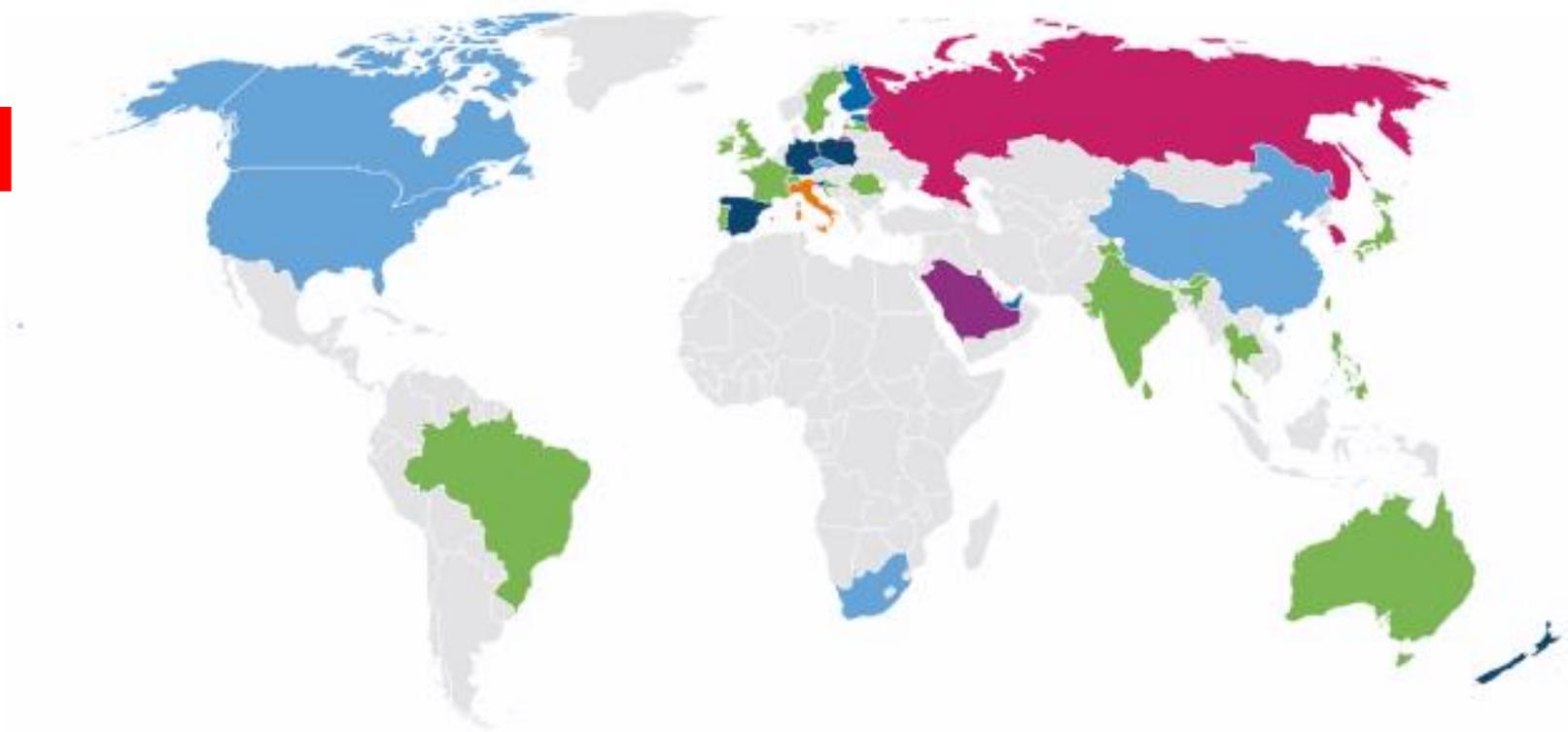
Sustainability

Connectivity

5G worldwide deployments plans

2025

14%
of connections



Expected 2020
Expected 2019

Expected 2021
Event services

*<https://uk5g.org> GSA Report August 2018

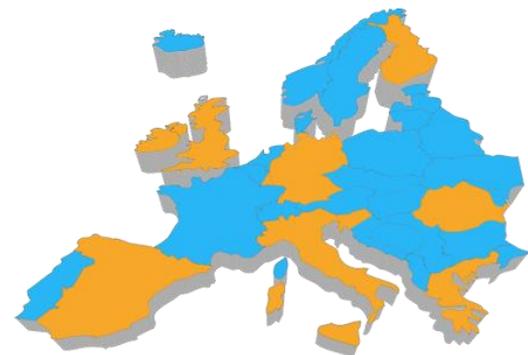
ORANGE 5G R&D Activities

5G-PPP Activities



MATILDA

A holistic, innovative framework for the design, development and orchestration of 5G-ready applications and network services over sliced programmable infrastructure



The vision of MATILDA is to design and implement a holistic 5G end-to-end services operational framework tackling the lifecycle of design, development and orchestration of 5G-ready applications and 5G network services over programmable infrastructure, following a unified programmability model and a set of control abstractions.

H2020 grant no. 761898, 18 partners from 11 countries, 6.6 mEuro budget (383kE ORO), 30 months

<http://www.matilda-5g.eu>



Orange FAB Romania

to make technology available to everyone and innovation enables us to do this

Program tracks

Smart Territories

Future of life

Networks of the Future

Security



Community outreach efforts



15 one-to-one sessions with 70 startups in Bucharest, Cluj, Iasi and Piatra Neamt



Breakfast events with startups and managers from Orange



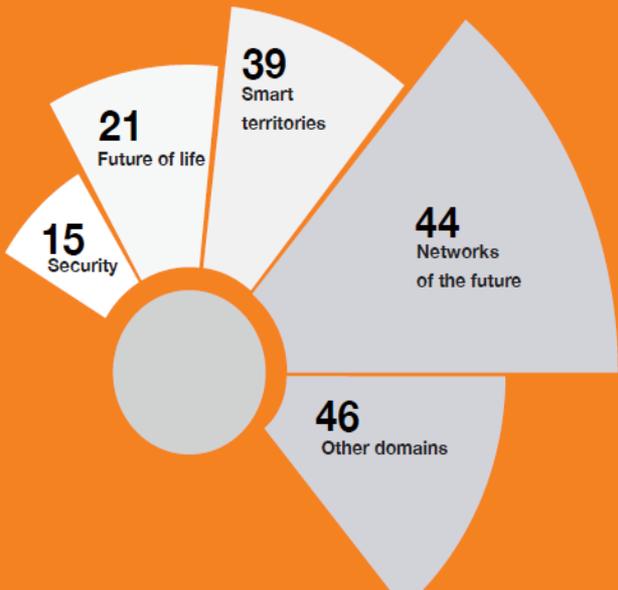
Demo Nights with a total of 30 startups pitching



visibility and support in approximately **300 community meetups** all over the country

Over the past year, we have evaluated and discussed with **156 startups** in various domains. Here is distribution following the tracks of the Orange Fab program.

Out of these we have further selected the 10 best startups that we are currently working with.



5G key messages



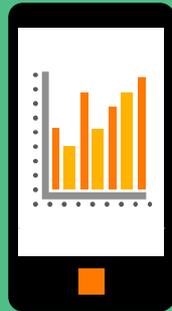
5G

major challenge for future

smart and ultra connected

new business opportunities

development of smartphones and apps



2025

anticipation

Internet users

mobile data traffic

connected things

5G Innovation

features, progressively rolled out

performance

technology valorization

Thank you

