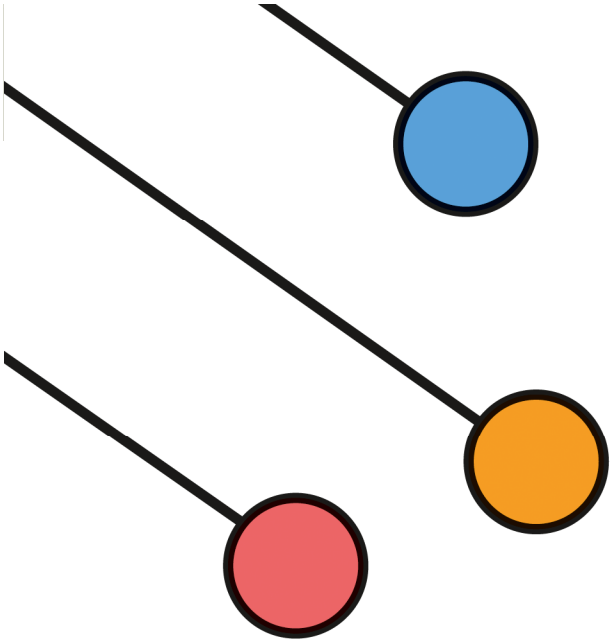


success

securing critical
energy infrastructures

Dr. Fiona Williams
Ericsson

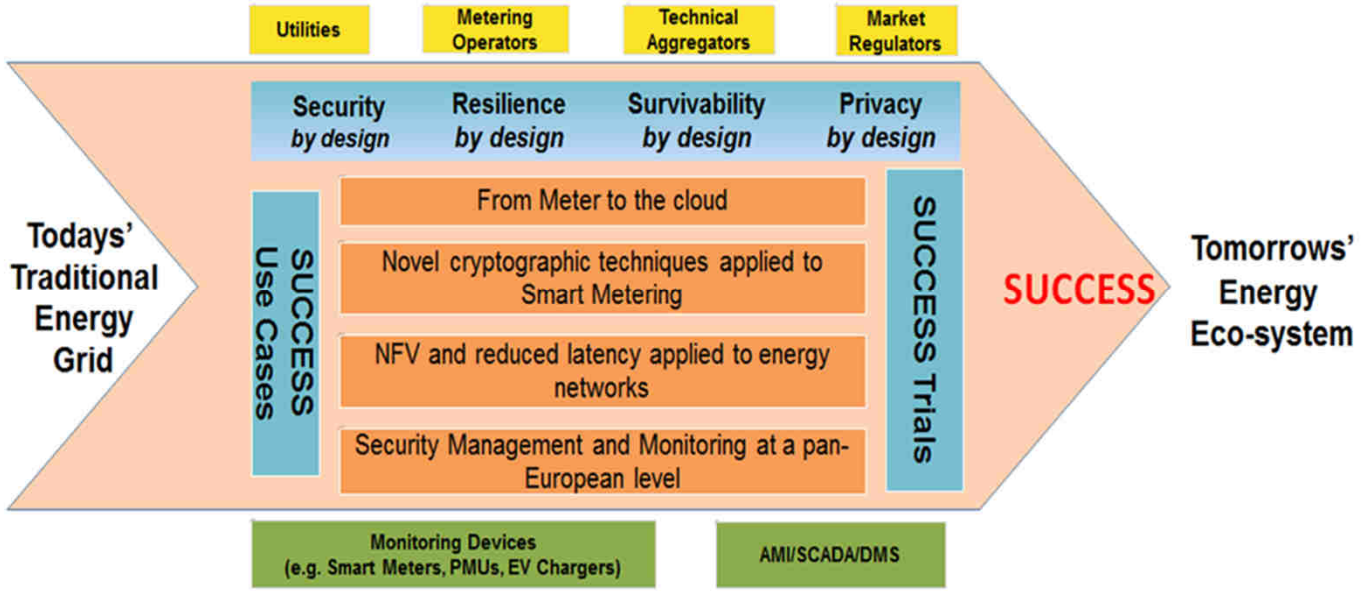
success securing critical energy infrastructures

Safeguarding a new secure energy world

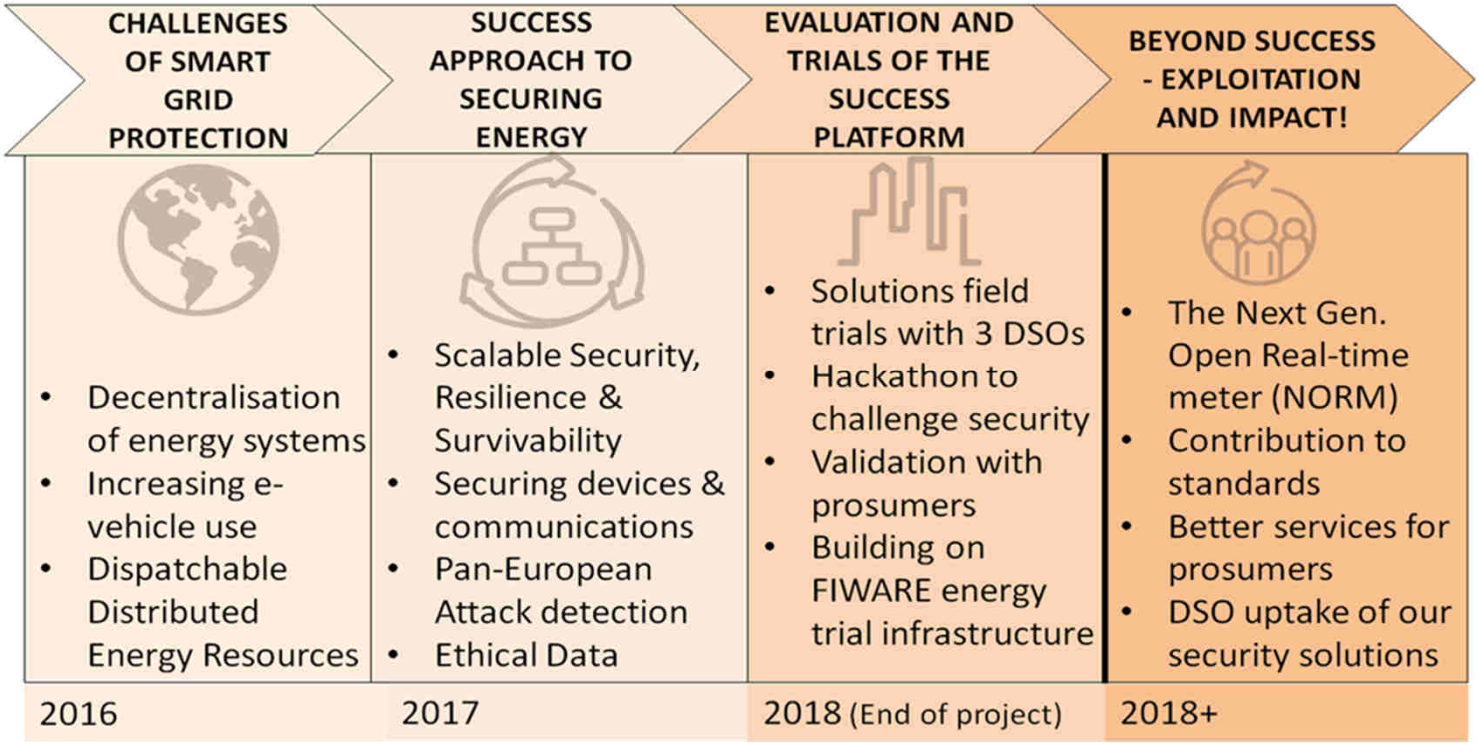
success objective

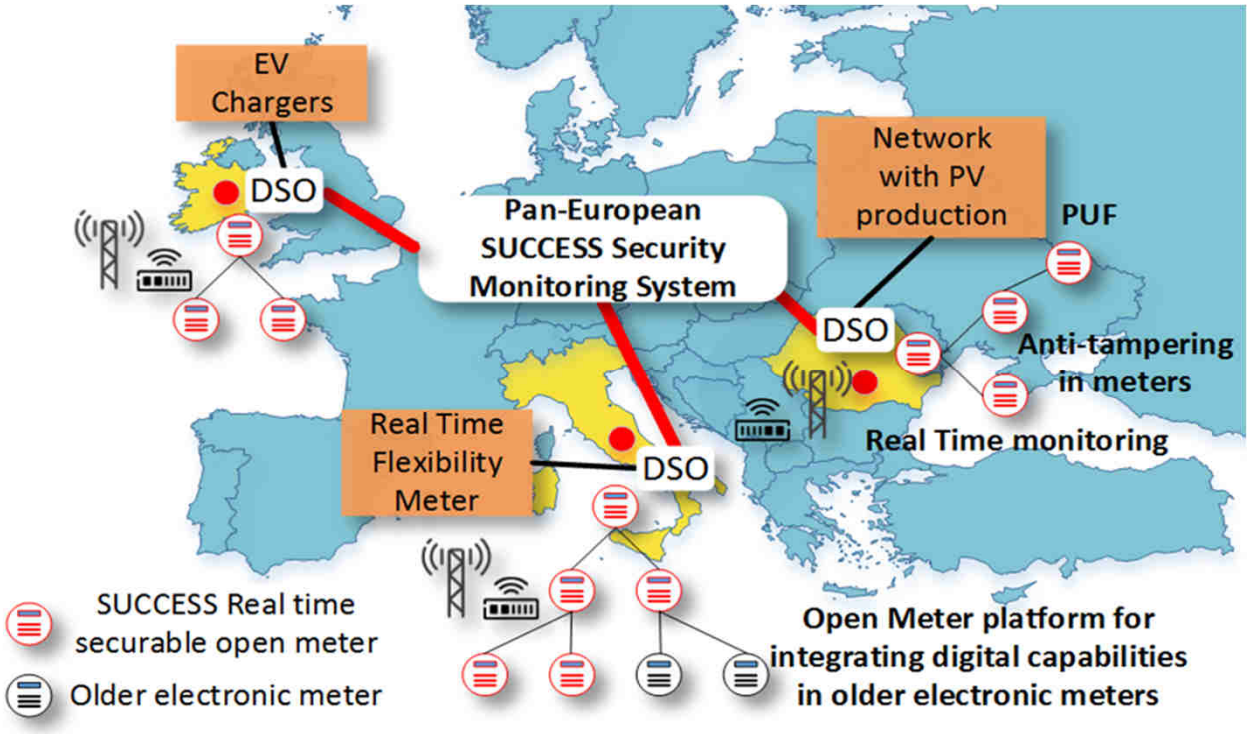
- The success project will develop a comprehensive approach to **threat and countermeasure analysis** for Smart Energy networks with special focus on the vulnerabilities introduced by Smart Meters.
- The project will design, develop and validate a **novel holistic adaptable security framework in small scale field trials**. When next generation real time scalable unbundled smart meters are deployed in smart electricity grid, the risks of potential cyber threats and attacks will be significantly reduced.

- success will achieve this objective by encapsulating the key challenges of **Security, Resilience, Survivability** and **Privacy** in 3 use cases which will demonstrate the success concepts



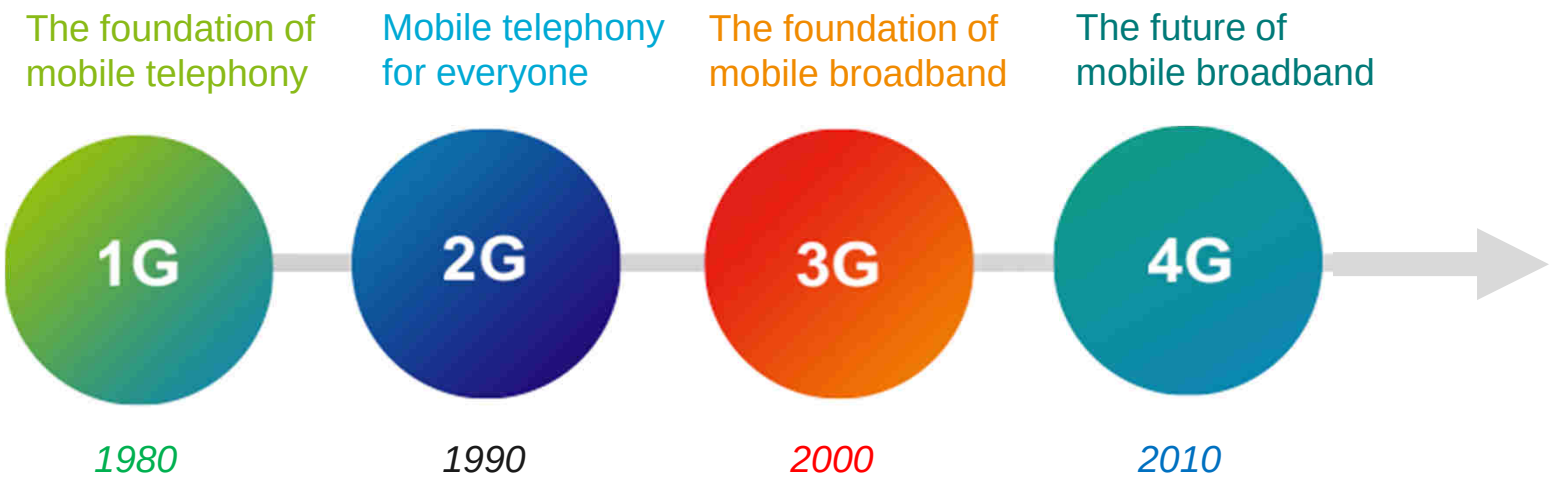
The success summary






ERICSSON
5G – Radio Technology
Research and Concepts

wireless access generations

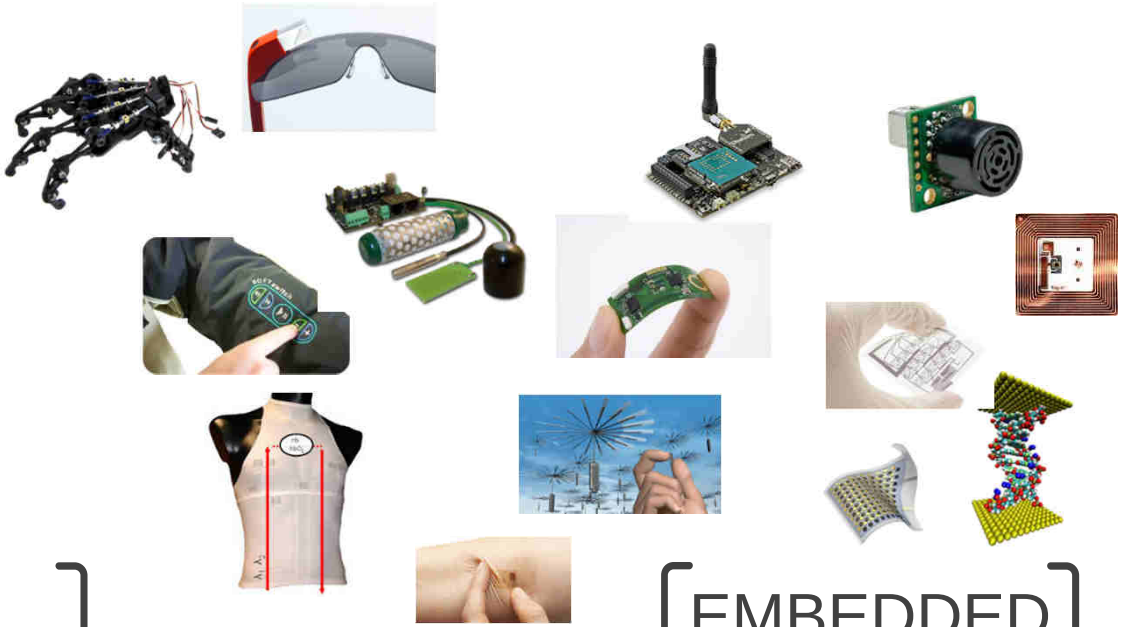


Providing voice to close to 7 Billion and
Mobile Broadboand to more than 2 Billion subscribers
Increasing data rates from 10 kbps to 1 Gbps

Connecting Everything

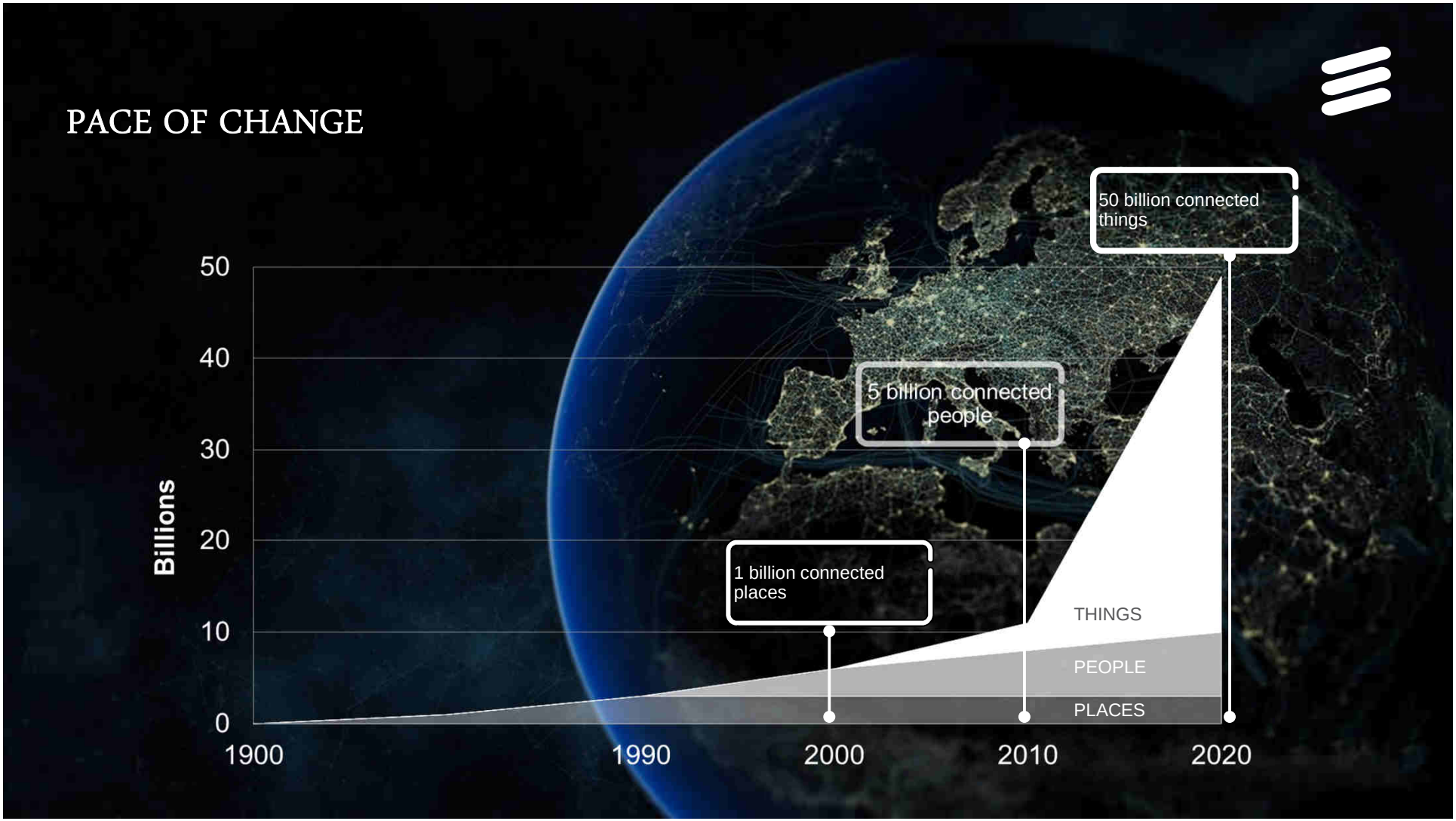
[ROBOTS]

[Devices]

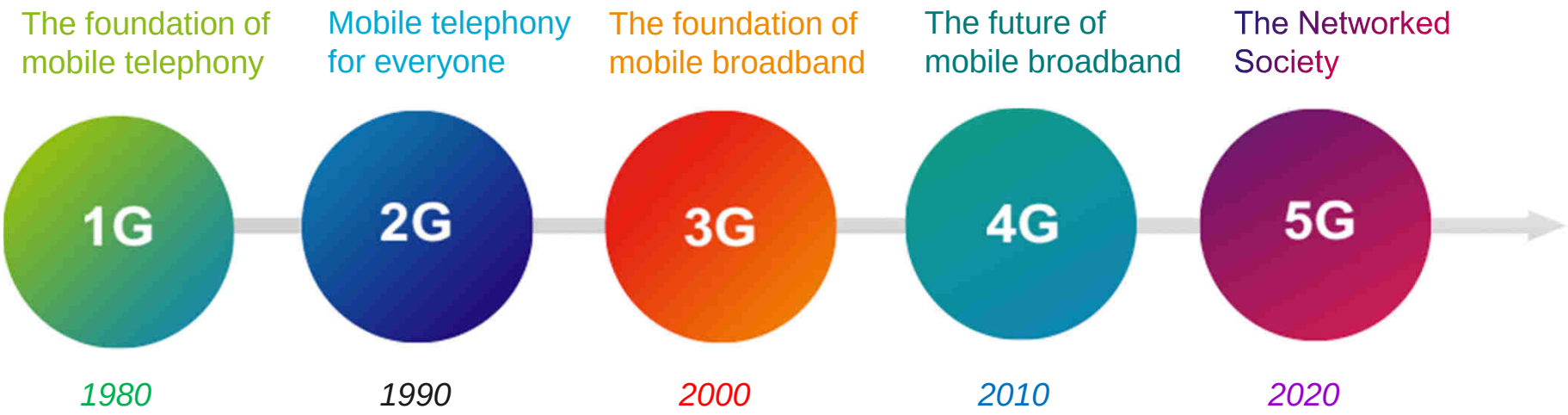


[Machines & Vehicles]

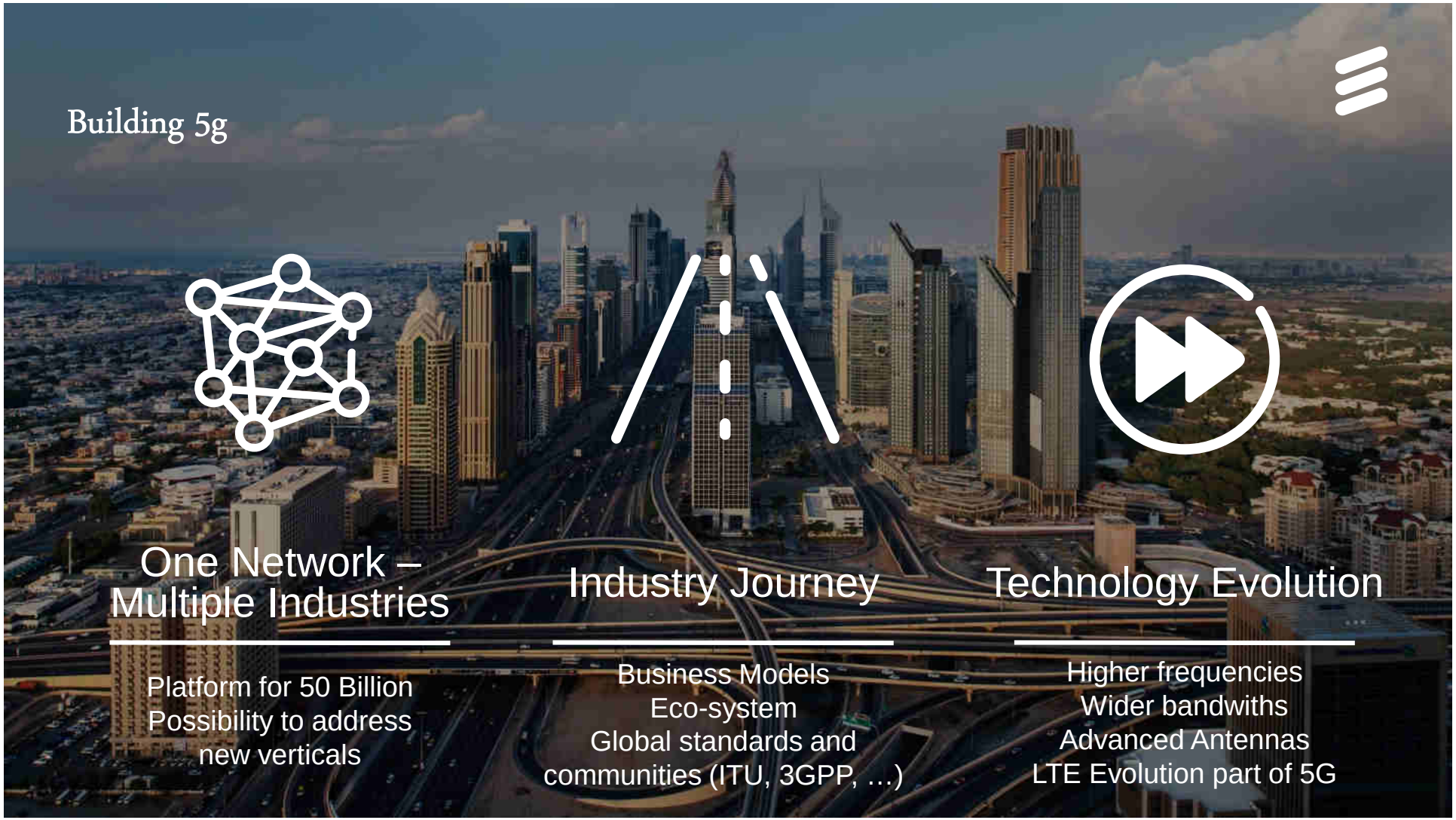
[EMBEDDED]


PACE OF CHANGE
50 billion connected things
5 billion connected people
1 billion connected places
THINGS
PEOPLE
PLACES
Billions
50
40
30
20
10
0
1900
1990
2000
2010
2020

wireless access generations

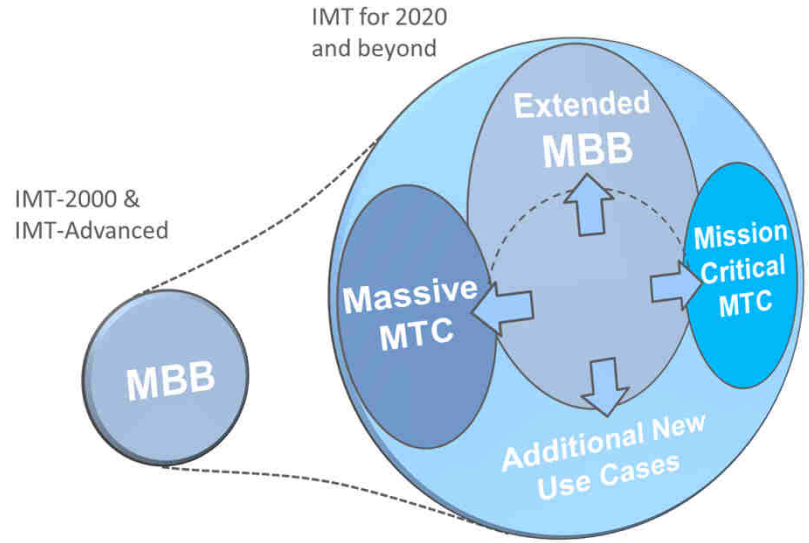


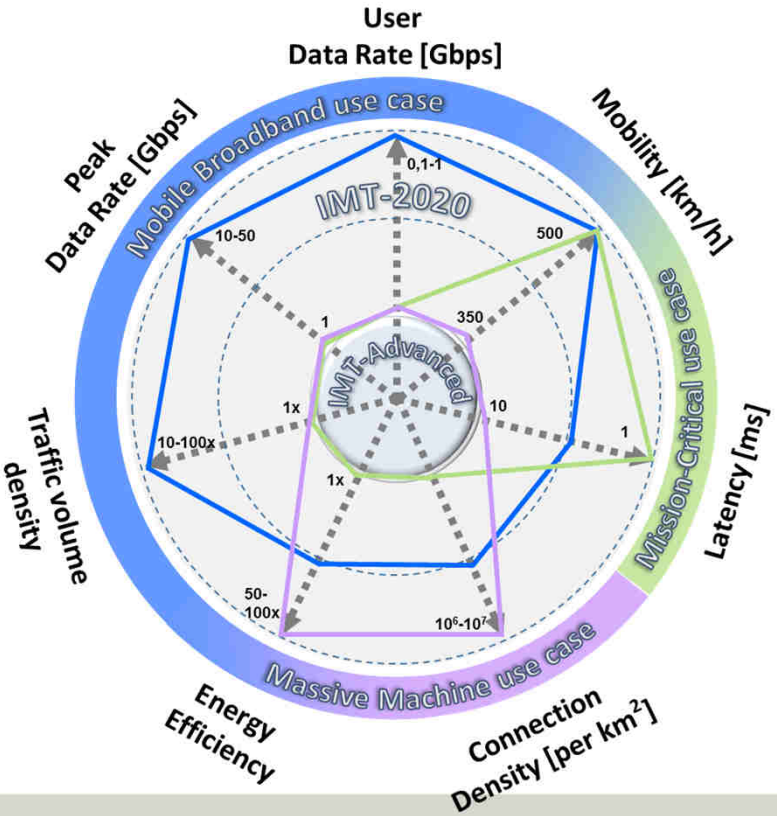
Providing a wireless connectivity platform for the services of the Networked Society

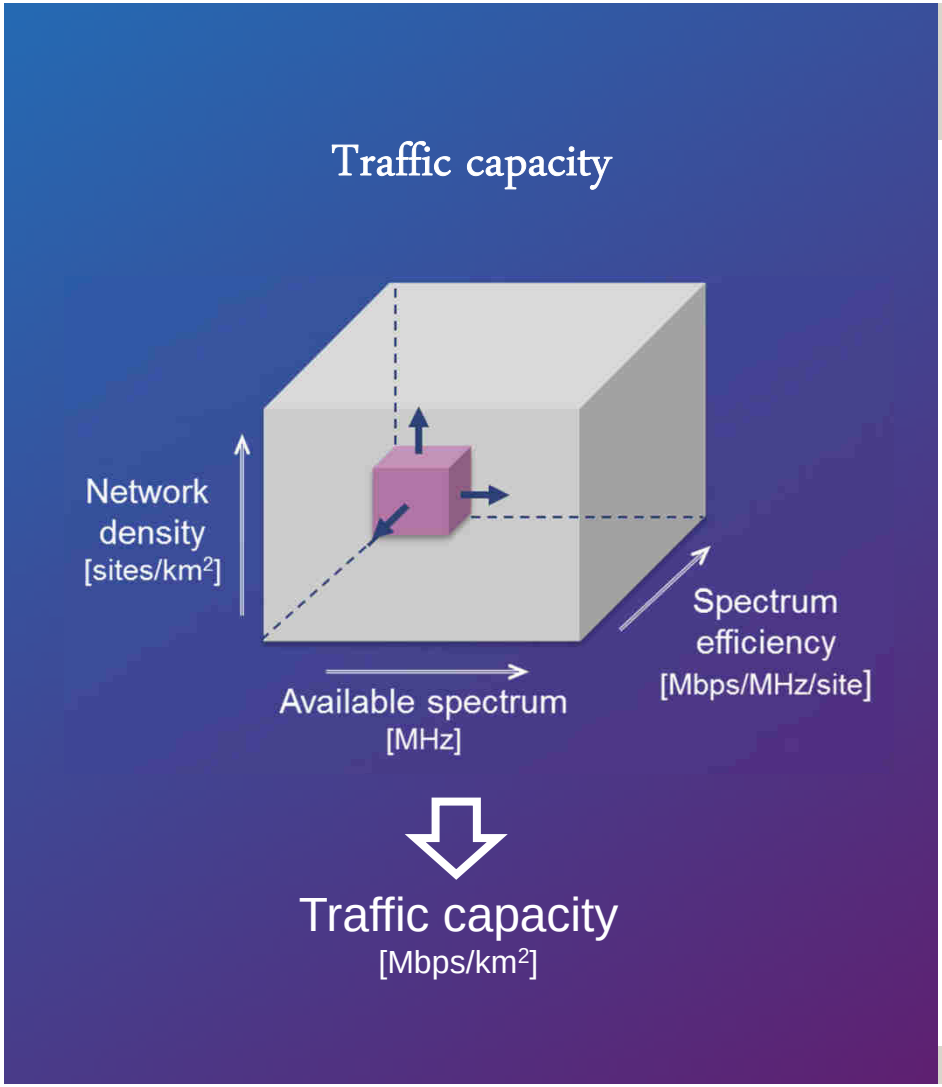

Building 5g
One Network – Multiple Industries
Platform for 50 Billion
Possibility to address new verticals
Industry Journey
Business Models
Eco-system
Global standards and communities (ITU, 3GPP, …)
Technology Evolution
Higher frequencies
Wider bandwiths
Advanced Antennas
LTE Evolution part of 5G

new use cases,

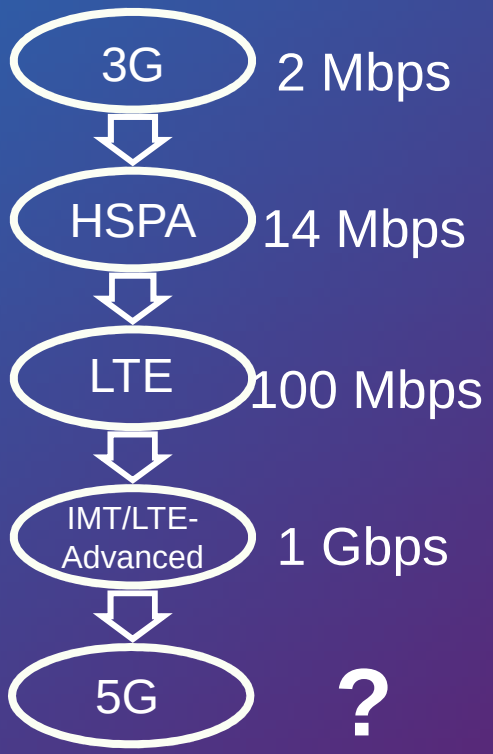
new requirements







- Denser networks
- More spectrum
- Enhanced technology



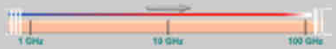
- More than 10 Gbps in specific scenarios
- Several 100 Mbps generally available in urban/suburban scenarios
- Multi-Mbps connectivity essentially everywhere

High data rates everywhere

5G Radio Technology Areas

Extension to higher frequencies

Complementing lower frequencies for extreme capacity and data rates in dense areas



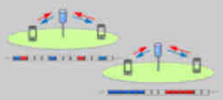
Spectrum flexibility

Spectrum sharing

- ***Unlicensed***
- ***Shared licensed***
- ***Network sharing***

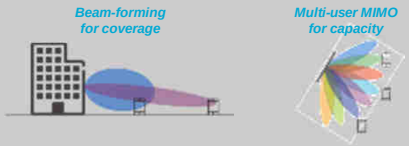
Complementing dedicated licensed spectrum

Duplex Flexibility



Multi-antenna technologies

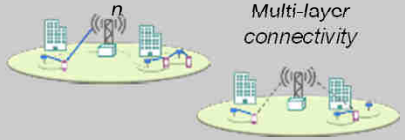
For higher as well as lower frequencies



Multi-site coordination

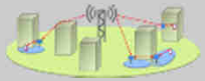
Multi-site transmission/reception

Multi-layer connectivity



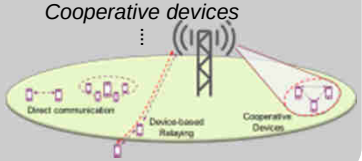
Access/backhaul integration

Same technology for access and backhaul
Same spectrum for access and backhaul



Device-to-device communication

Direct communication
Device-based relaying
Cooperative devices

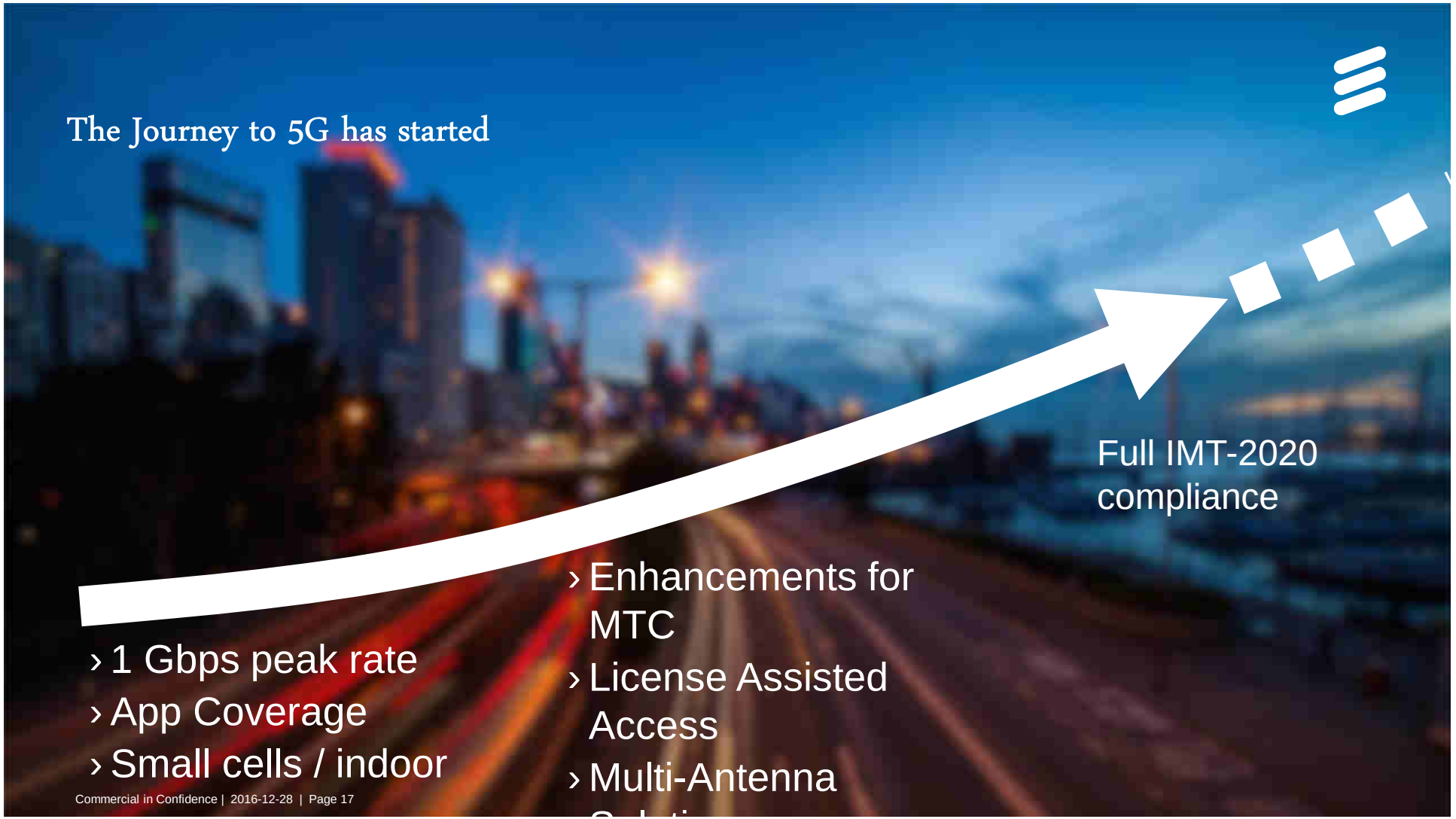


Ultra-lean design

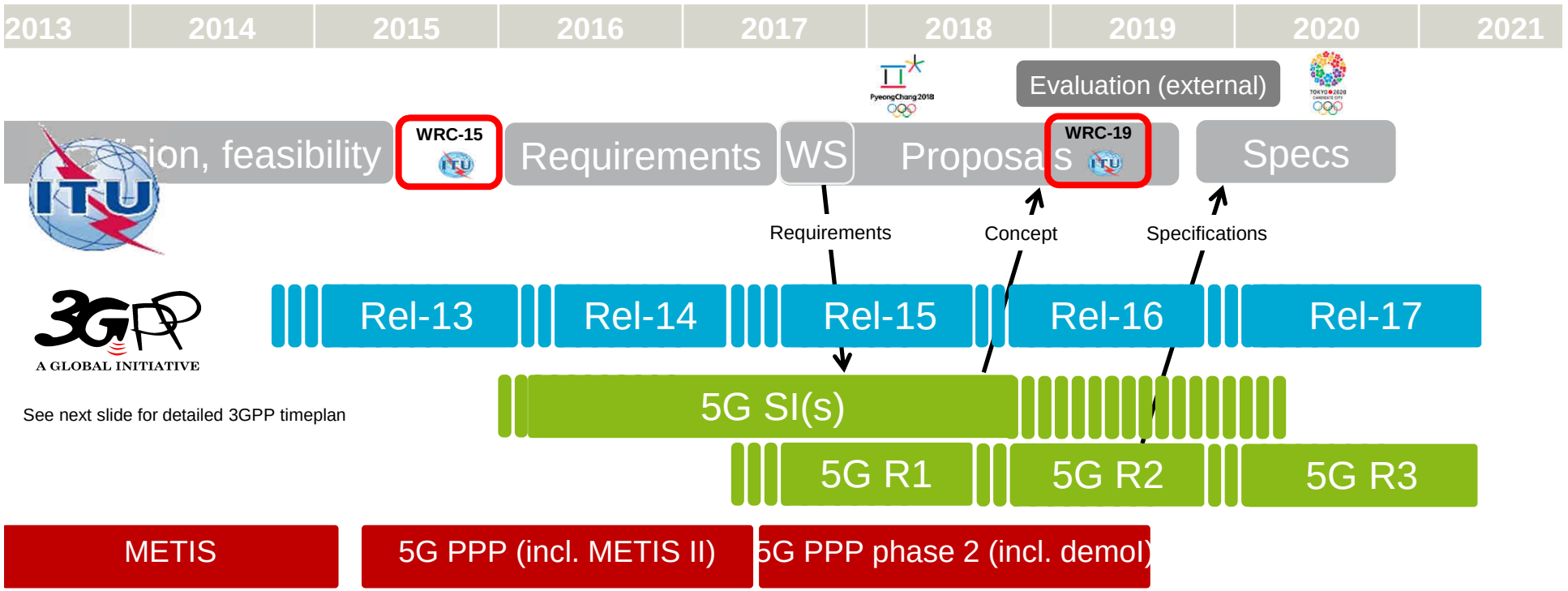
Minimize transmissions not related to user data
Separate delivery of user data and system information

Higher data rates and enhanced energy efficiency

...

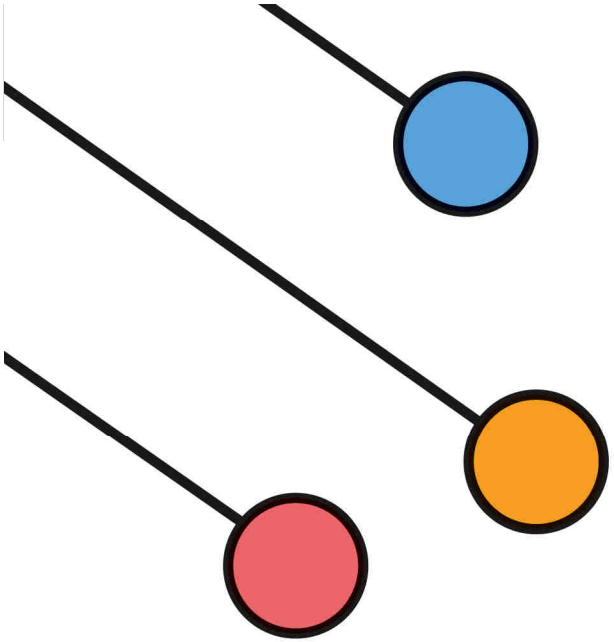

The Journey to 5G has started
› 1 Gbps peak rate
› App Coverage
› Small cells / indoor
› Enhancements for MTC
› License Assisted Access
› Multi-Antenna
Full IMT-2020 compliance

Current 5G timeplan



See next slide for detailed 3GPP timeplan

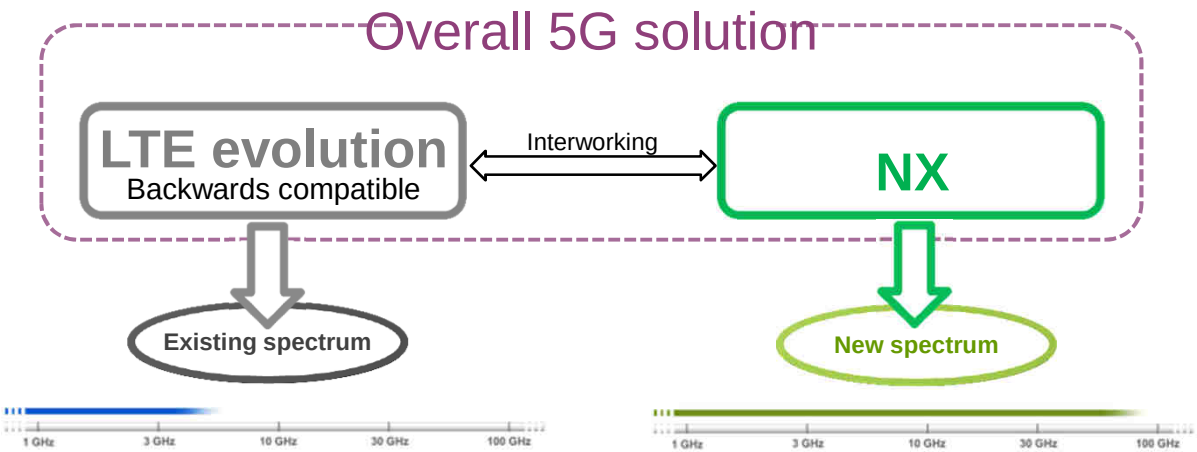
www.success-energy.eu



This project has received funding
from the European Union's Horizon 2020
research and innovation programme
under grant agreement No 700416.

5g WIRELESS ACCESS

Evolution of existing technology + New radio-access technology



Below 6 GHz

Above 6 GHz
Potential new spectrum below 6 GHz

5G network evolution to meet expectations

Sustainability

User/industry applications

Devices

Management & Orchestration

Radio Access

Network applications

Cloud Infrastructure

IP Infrastructure

Security

Scope for 5G

› LTE as part of 5G overall radio solution