

# 5G

THE NETWORK FOR  
NETWORKED SOCIETY



**ERICSSON**

*OR  
THE INTERNET OF THINGS*

**Jan Färjh**

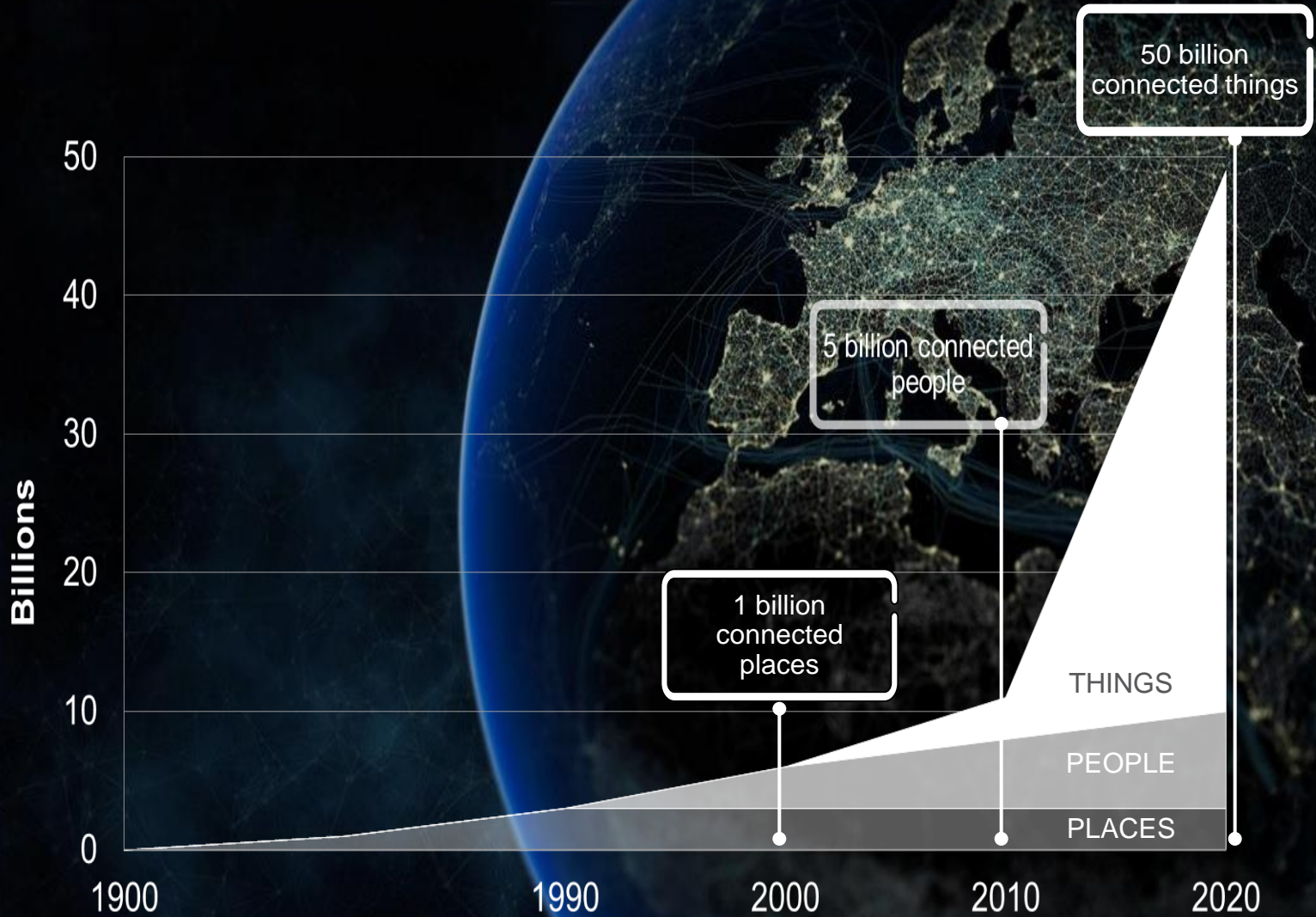
Vice President

Head of Standardization and Industry

Ericsson AB



# PACE OF CHANGE

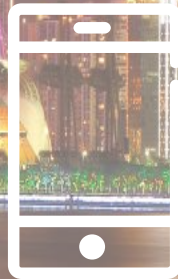


BY 2019



750 M

PCs and tablets



5.6 BN

Smartphone  
subscriptions



8.0 BN

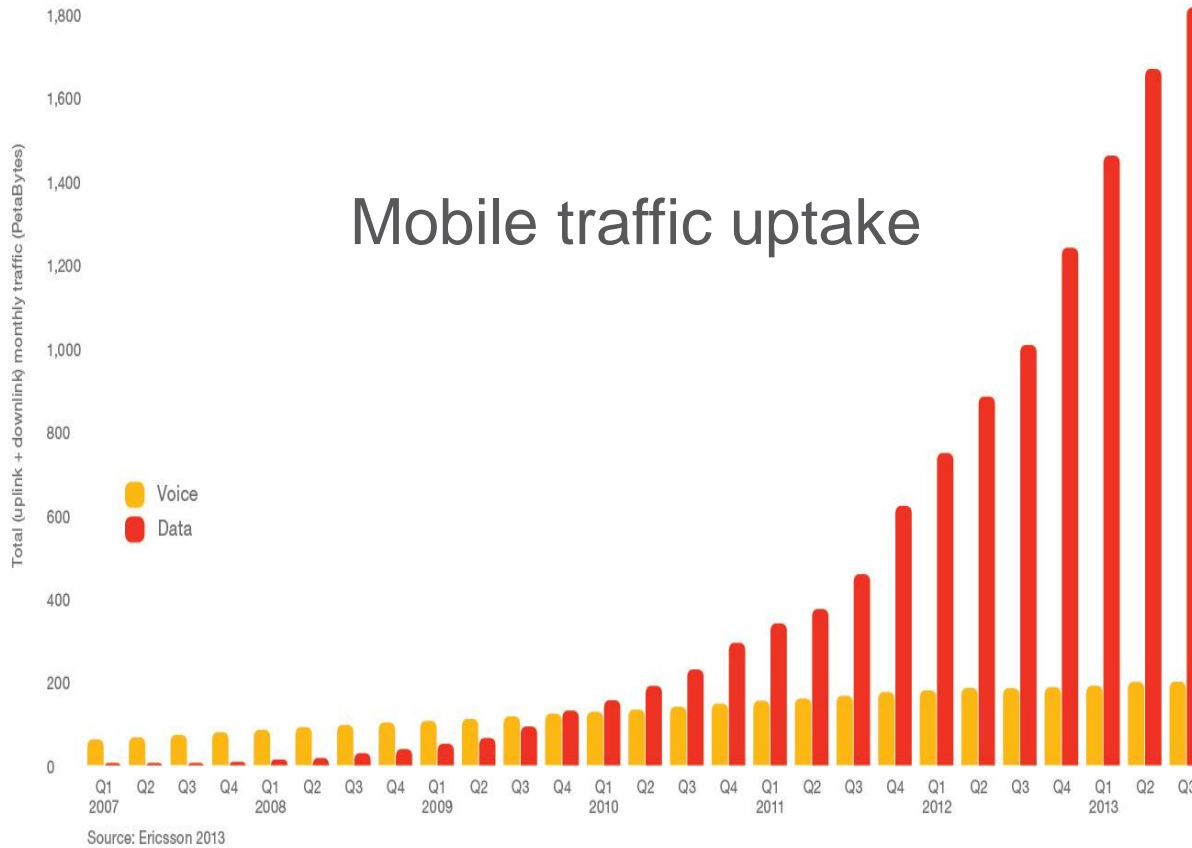
Mobile broadband  
subscriptions



9.3 BN

Mobile subscriptions

# TRAFFIC TREND IN MOBILE SYSTEMS



## Summary of trends

- More subscribers
- More smartphones
- More traffic

...and a lot of other devices

# MOBILE SYSTEM GENERATIONS



Foundation of  
Mobile Telephony

Mobile Telephony  
for Everyone

Foundation of Mobile  
Broadband

Future of Mobile  
Broadband

Networked Society

1G

2G

3G

4G

5G



# USE CASE - EXAMPLES



Broadband experience  
everywhere anytime



Massive machine  
type communication

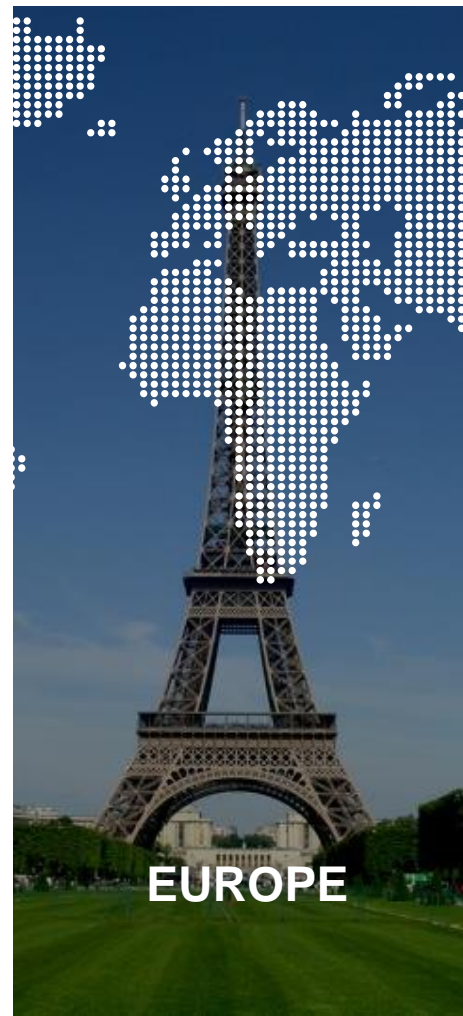


Critical machine  
type communication



Mass-Market  
Personalized TV

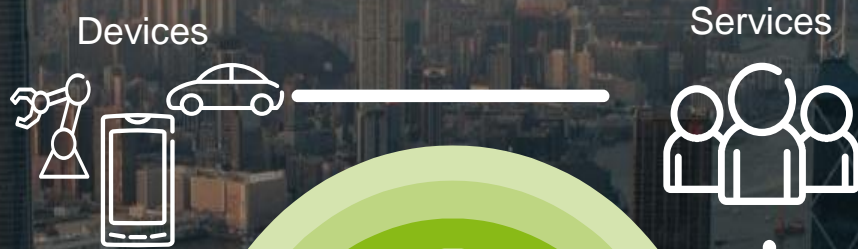
# 5G – A GLOBAL TOPIC



# THE NETWORKED SOCIETY



Usage & user-driven landscape

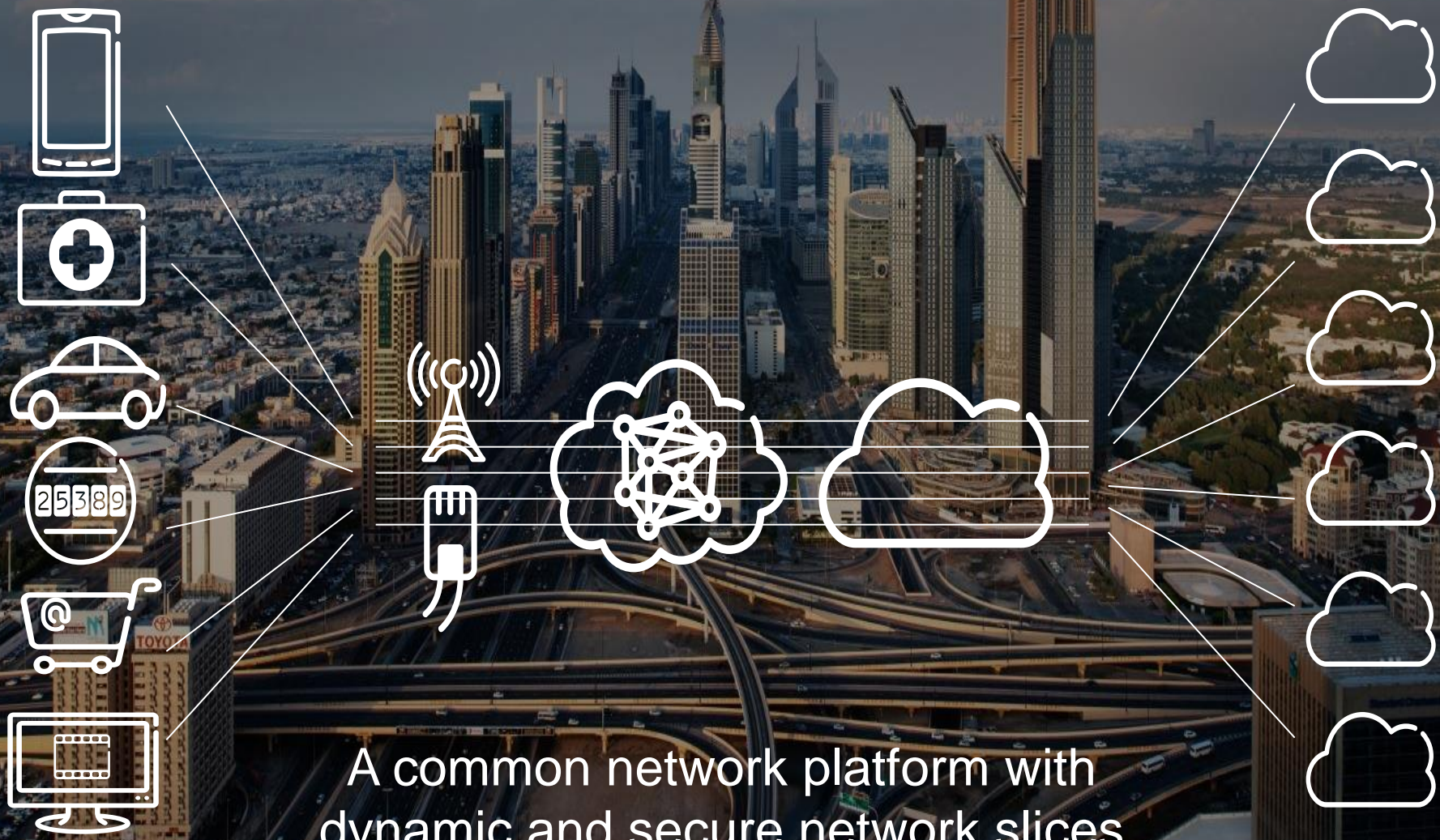


- Connectivity
- Trust
- Performance
- Simplicity
- Sustainability





# ONE NETWORK – MULTIPLE INDUSTRIES



A common network platform with dynamic and secure network slices

# MEETING EXPECTATIONS



User/industry applications

Devices

Management & Orchestration



Sustainable

Radio  
Access

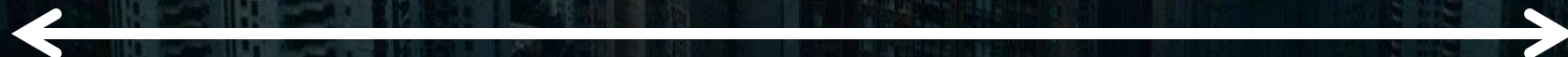
Network Applications

Cloud Infrastructure

IP Infrastructure



Secure



Scope for 5G

# FLEXIBILITY AND ROBUSTNESS



## FLEXIBILITY



Open



Mobile



Programmable



Agile



Sustainable

## ROBUSTNESS



Scalable



Secure

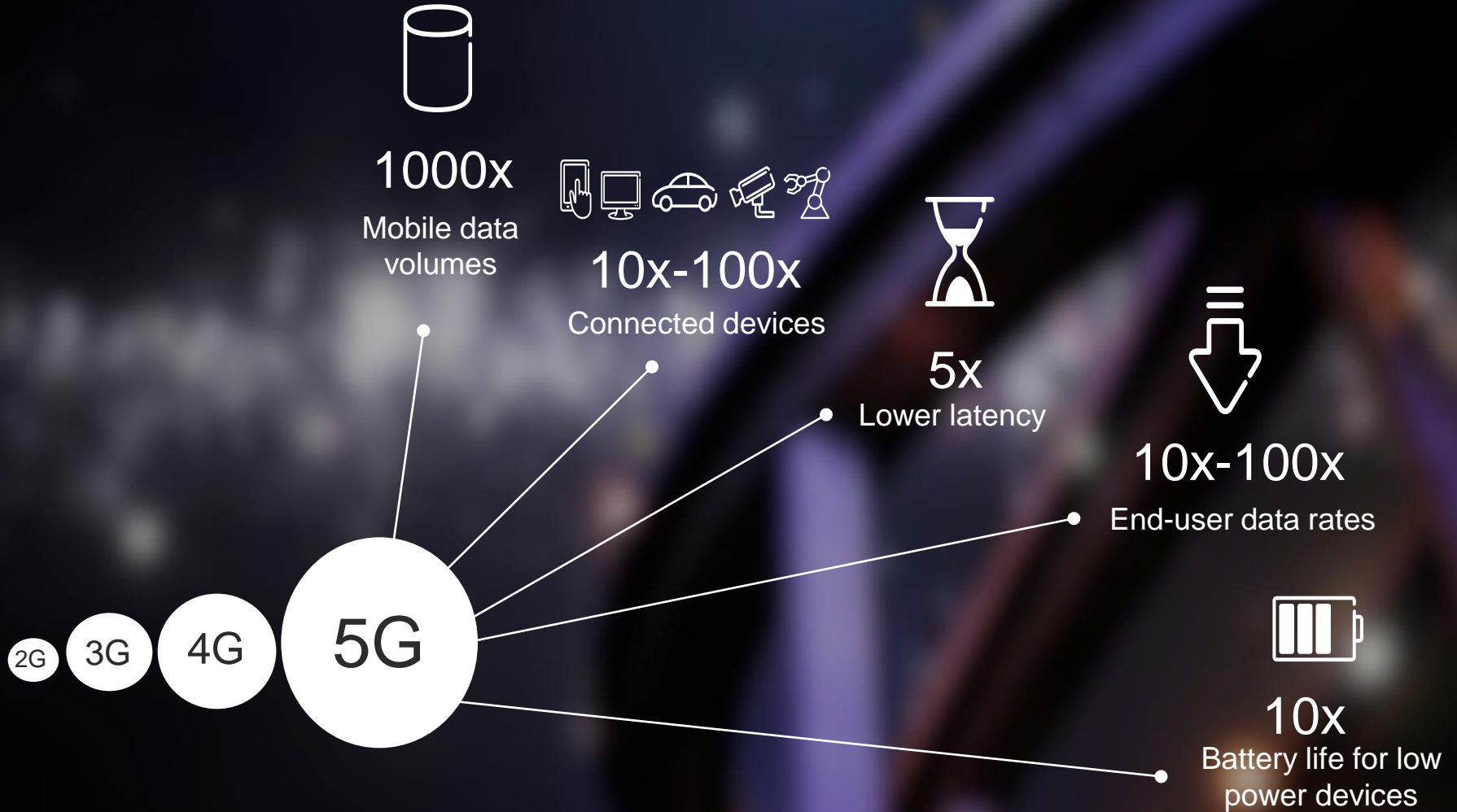


Reliable



Standardized

# EVOLUTION TOWARDS 2020

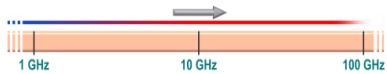


# 5G RADIO TECHNOLOGY AREAS



## Extension to higher frequencies

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



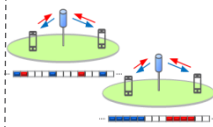
## Spectrum flexibility

### Spectrum sharing

- Unlicensed
- Shared licensed
- Network sharing

Complementing licensed spectrum

### Duplex Flexibility



## Multi-antenna technologies

For higher as well as lower frequencies

Beam-forming for coverage

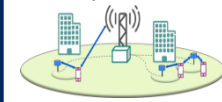


Multi-user MIMO for capacity



## Multi-site coordination

Multi-site transmission/reception



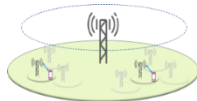
Multi-layer connectivity



## Ultra-lean design

Minimize transmissions not related to user data

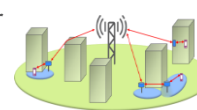
Separate delivery of user data and system information



Higher data rates and enhanced energy efficiency

## Access/backhaul integration

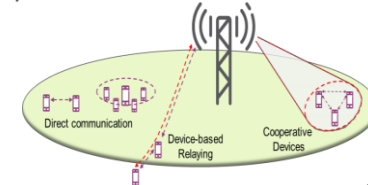
Same **technology** for access and backhaul



Same **spectrum** for access and backhaul

## Device-to-device communication

Direct communication  
Device-based relaying  
Cooperative devices



# ENDLESS OPPORTUNITIES



Consumer electronics



Automotive Transport



Retail Banking



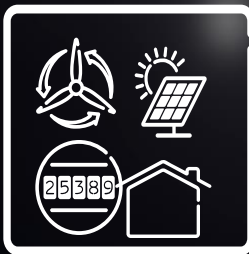
Environmental



Infra-structures



Utilities



Health Well-being



Smart Cities



Process industries



Agriculture



# CONSUMER

## "INSTANT BICYCLING – JUST ADD MUSCLES"



Heart rate



Wireless gears



Cadence

Power

Spinn



Training coach  
Autonomous gear shifting  
Crash/emergency detection  
Realtime route planning  
Virtual racing  
Social media, ...



Internet  
Apps  
Accelerometer  
Gyroscope

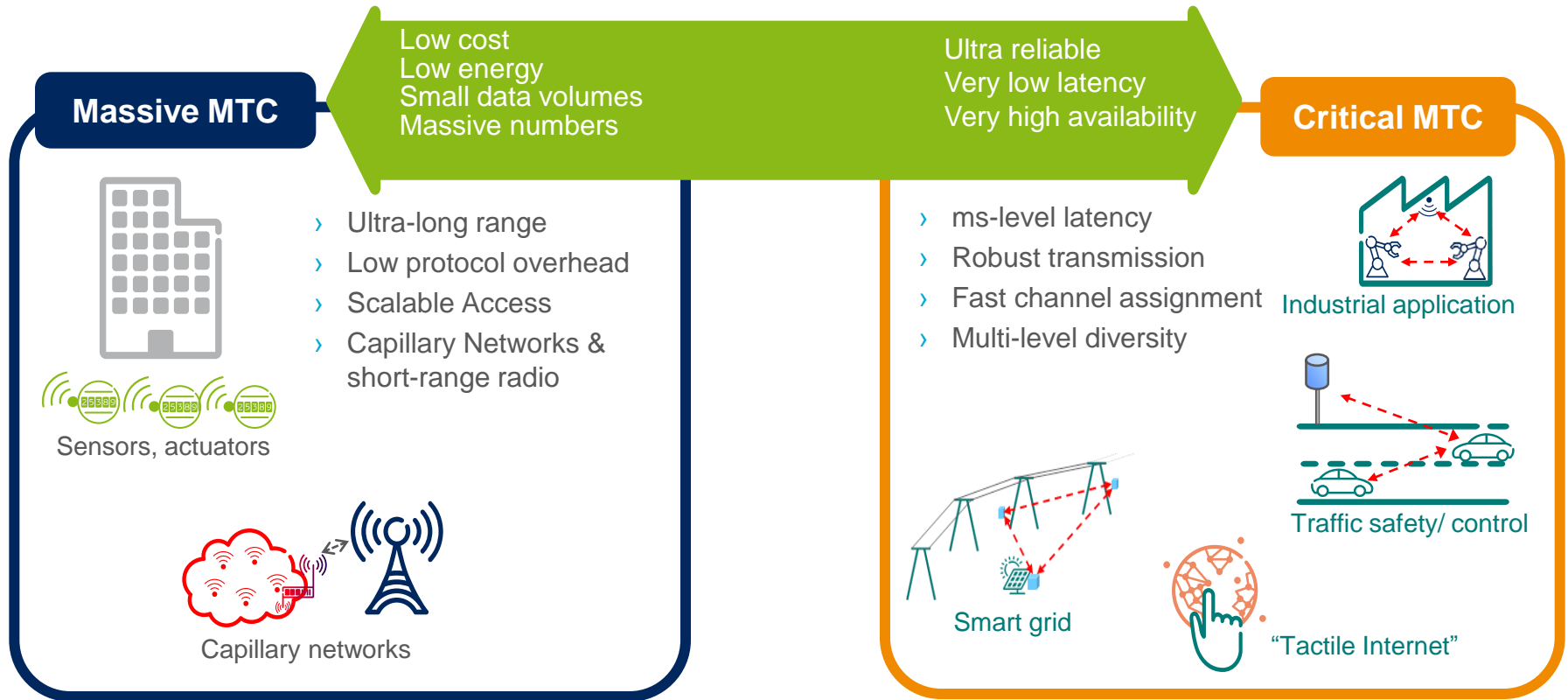


GPS  
Temperature  
Barometric pressure  
Weather forecast  
Navigation

# CHALLENGES AND OPPORTUNITIES



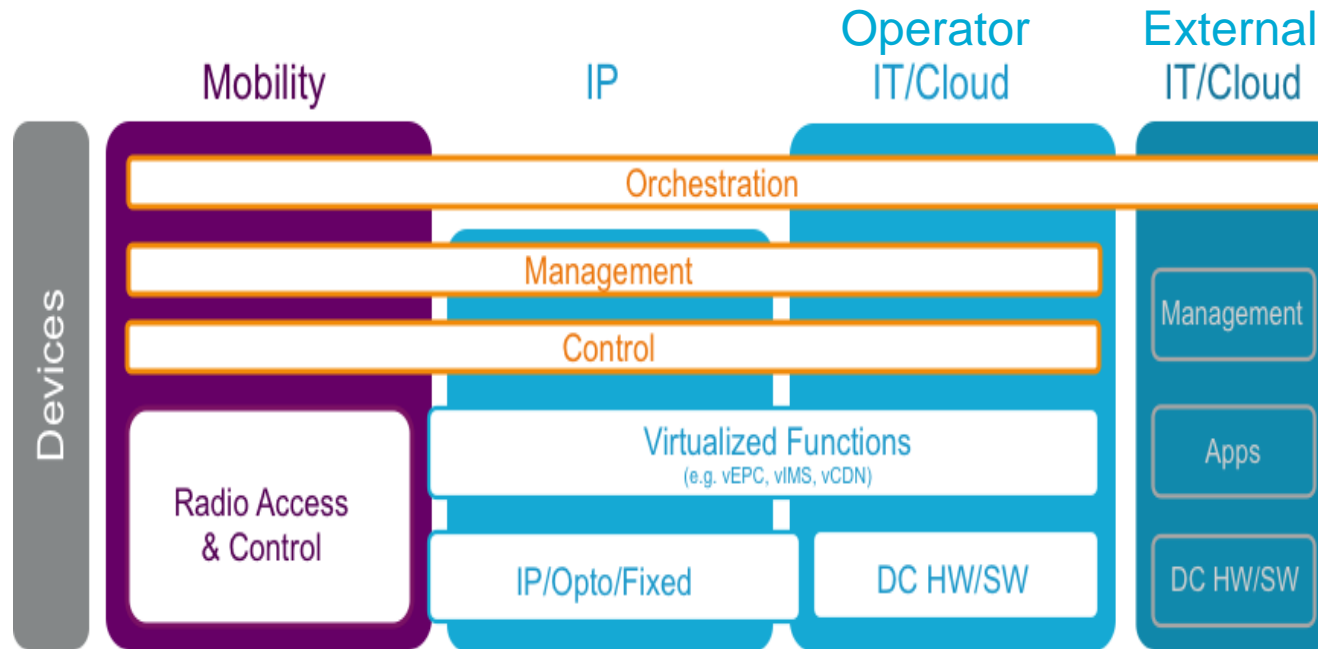
EXAMPLE: MACHINE TYPE COMMUNICATION



Balance complexity, cost, divergent modes, and relevance



# STANDARDIZATION LANDSCAPE



# 5G TIMEPLAN - TENTATIVE



2013    2014    2015    2016    2017    2018    2019    2020    2021



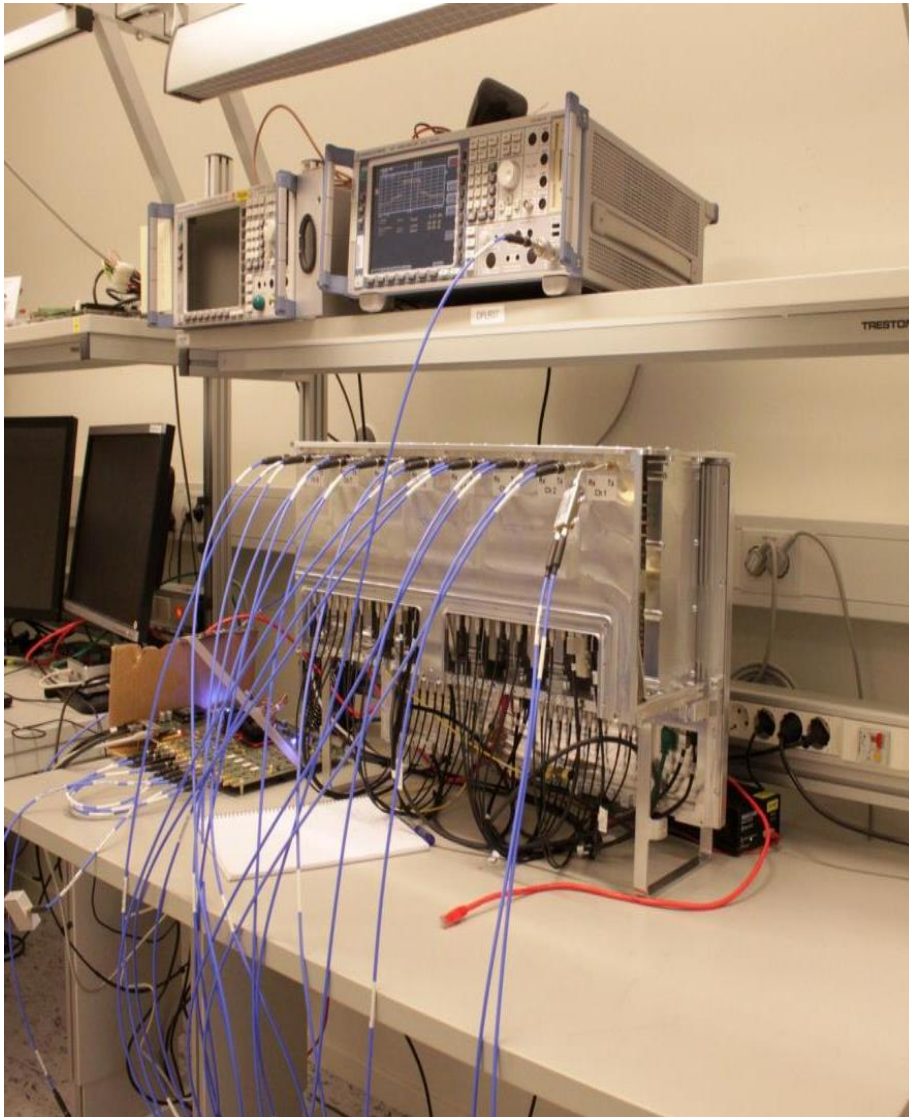
White Paper



**Publication:**

- Mobile World Conference February 2015
- NGMN Industry Conference March 2015

# 5G RADIO TEST BED



**MOBILE**  
EUROPE

INNOVATIVE MOBILE WALLET by

HOME NEWS FEATURES SUBSCRIBE MAGAZINE EVENTS ABOUT VIDEO

Home

## ERICSSON HITS 5GBPS IN 5G TRIAL

ON 02 JULY 2014.



Ericsson has demonstrated download speeds of 5Gbps on the 15GHz band, as it becomes the latest vendor to test 5G technology.

The Sweden-based company said it used a new radio interface and advanced Multiple-Input Multiple-Output (MIMO) technology as part of the trial, which was witnessed by executives from NTT DOCOMO and SK Telecom.

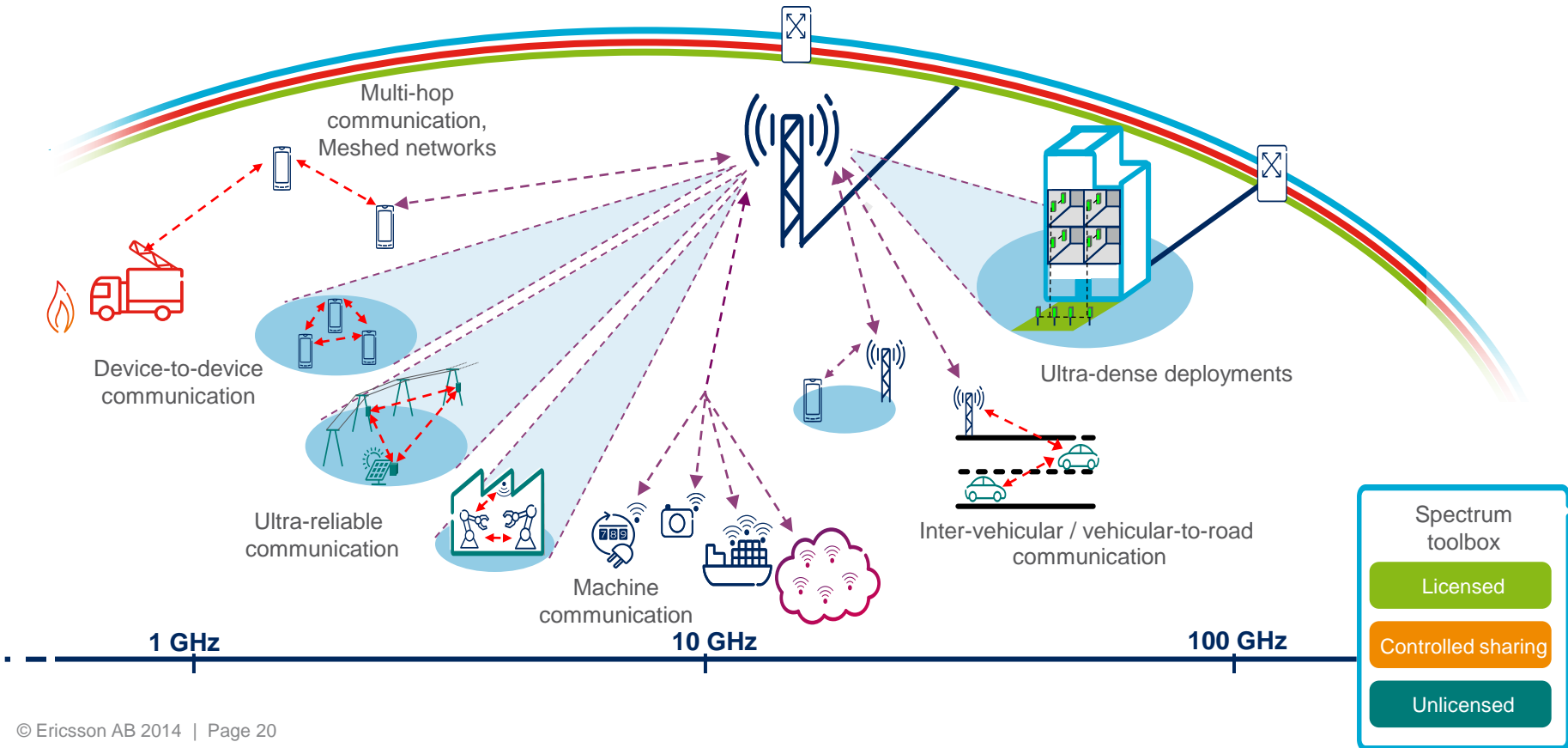
Ericsson is developing new technology for 5G, including new antenna types with wider bandwidths, higher frequencies and shorter transmission times. It is also building new radio base stations with bespoke baseband and radio units.

Other priorities for 5G were placing small cells within hetnets, examining new frequency bands and coming up with new ways of delivering high speed, high capacity backhaul, according to the

# SUMMARY



Multiple integrated wireless/access solutions, connected to a core network utilizing cloud and SDN technologies will enable the deployment of the Networked Society



# A CONNECTED WORLD IS JUST THE BEGINNING



When one person connects,  
their world changes

With everything connected,  
our world changes

5G



NETWORKED  
SOCIETY



**ERICSSON**