

TECHNOLOGIES

IN THE NETWORKED SOCIETY



ERICSSON

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Senior VP & Group CTO





Outlook 2020

The Digital Crossroads

Sustainable Innovation

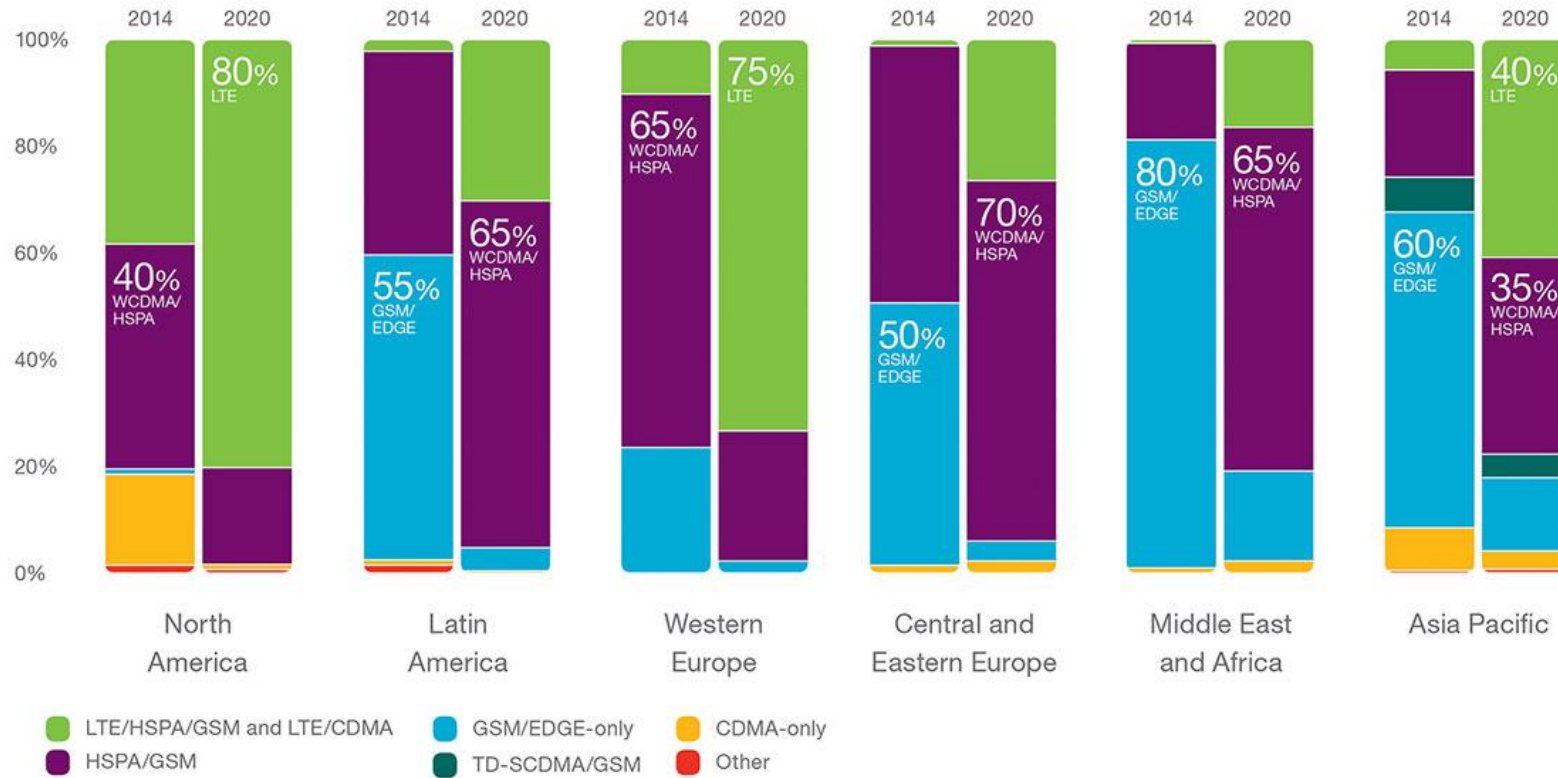
Trusted Networks

The Journey to 5G

TECHNOLOGY BY REGION



Mobile subscriptions by region and technology



85%

of Asia Pacific mobile subscriptions will be 3G/4G in 2020

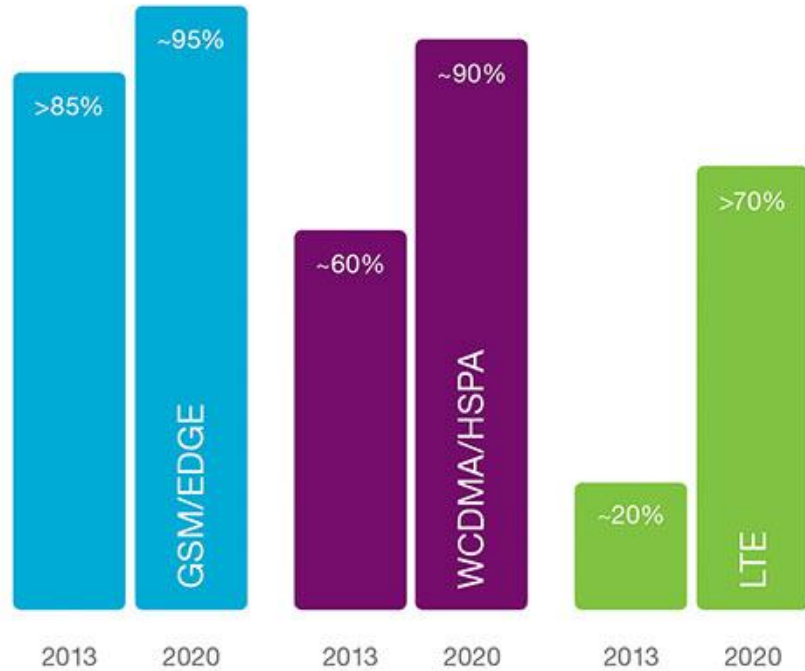
85%

of Middle East and Africa mobile subscriptions will be 3G/4G by 2020

POPULATION COVERAGE



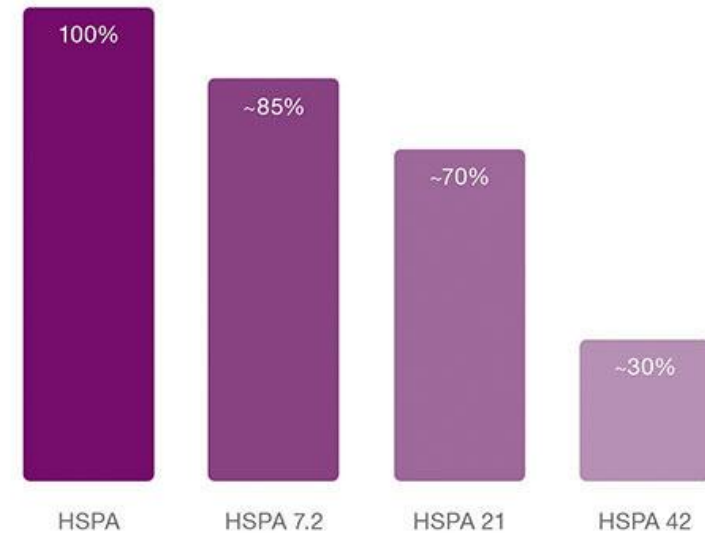
World population coverage by technology



>70%

of the global population will be covered by LTE in 2020

Percentage of WCDMA networks upgraded to HSPA and to 7.2, 21 and 42 Mbps



Source: Ericsson and GSA (October 2014)

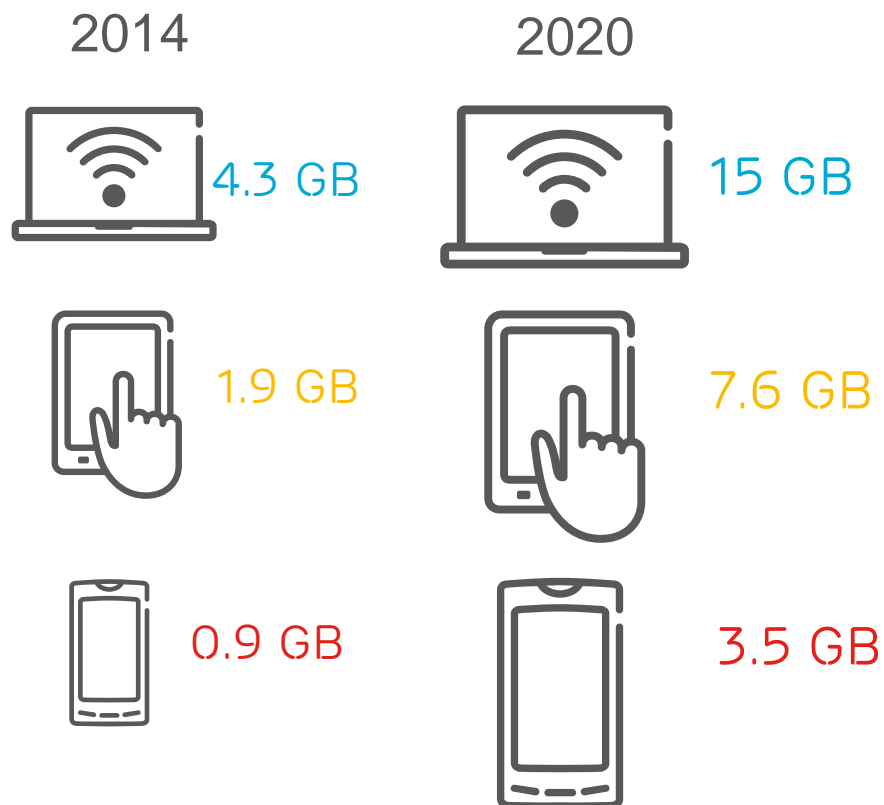
166

HSPA 42 Mbps networks have been commercially launched in 86 countries

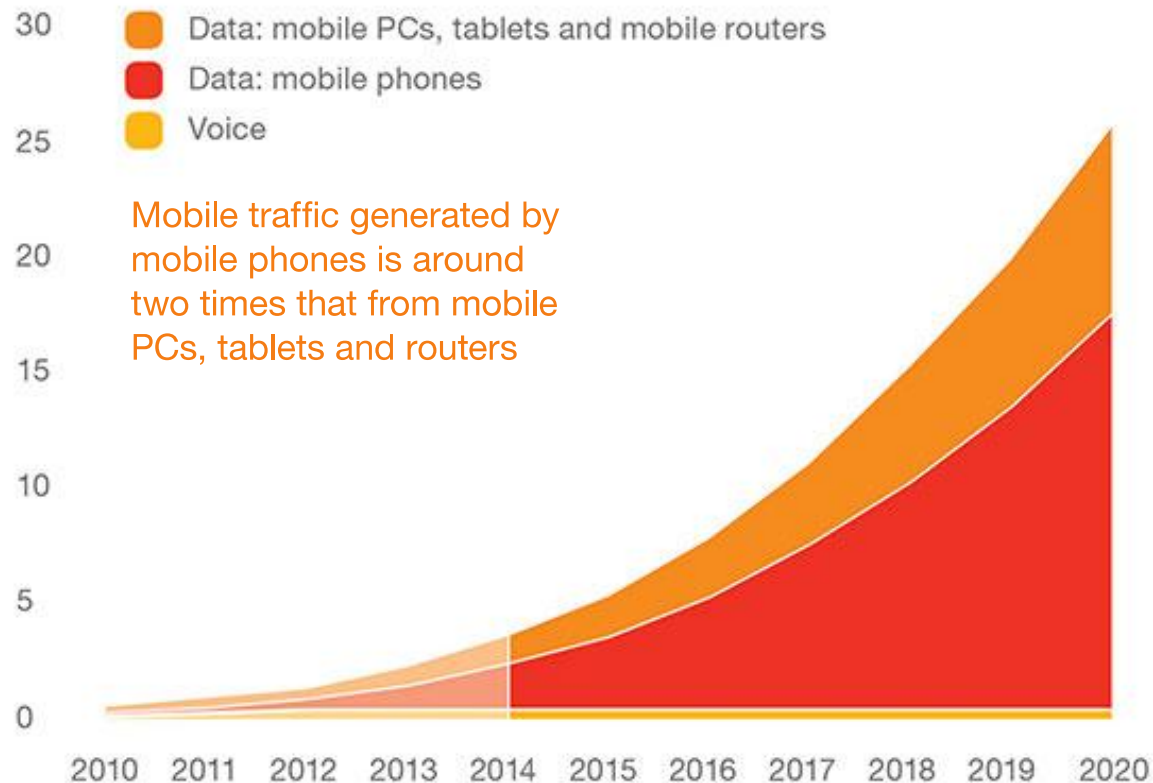
8X MOBILE DATA TRAFFIC BY END OF 2020



Monthly consumption per device type



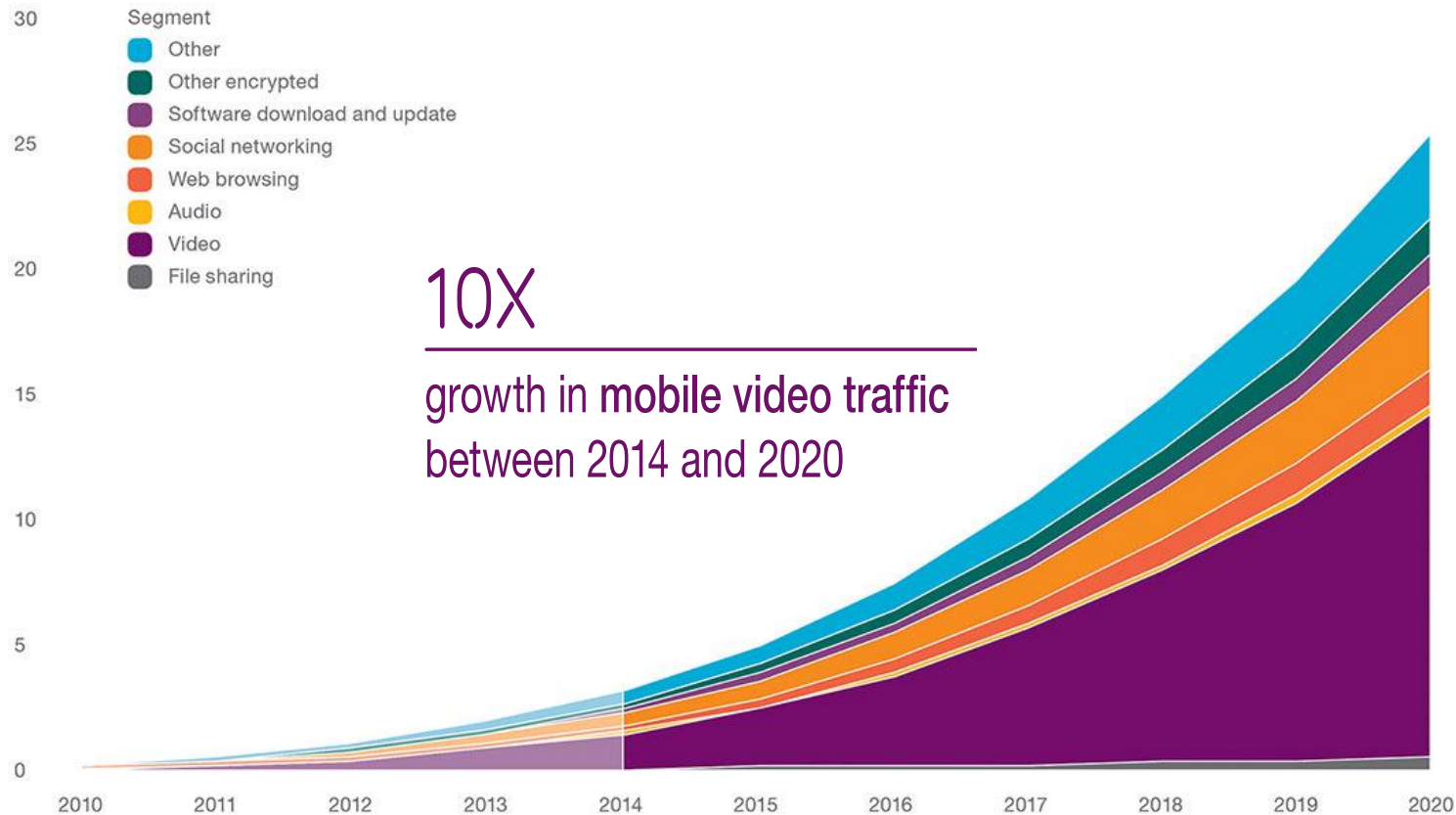
Global mobile traffic (monthly ExaBytes)



10X VIDEO TRAFFIC IN 2020



Mobile data traffic by application type
(monthly ExaBytes)



- › Video is largest and fastest growing segment
 - Video everywhere; news, advertisements, social media.
 - Streaming video is growing strongly, primarily driven by OTT providers
 - Devices with larger screens, resolutions and 4G deployment drive traffic
 - Multi-screen behavior in mature markets

MOBILE APPLICATION TRAFFIC OUTLOOK 2014-2020

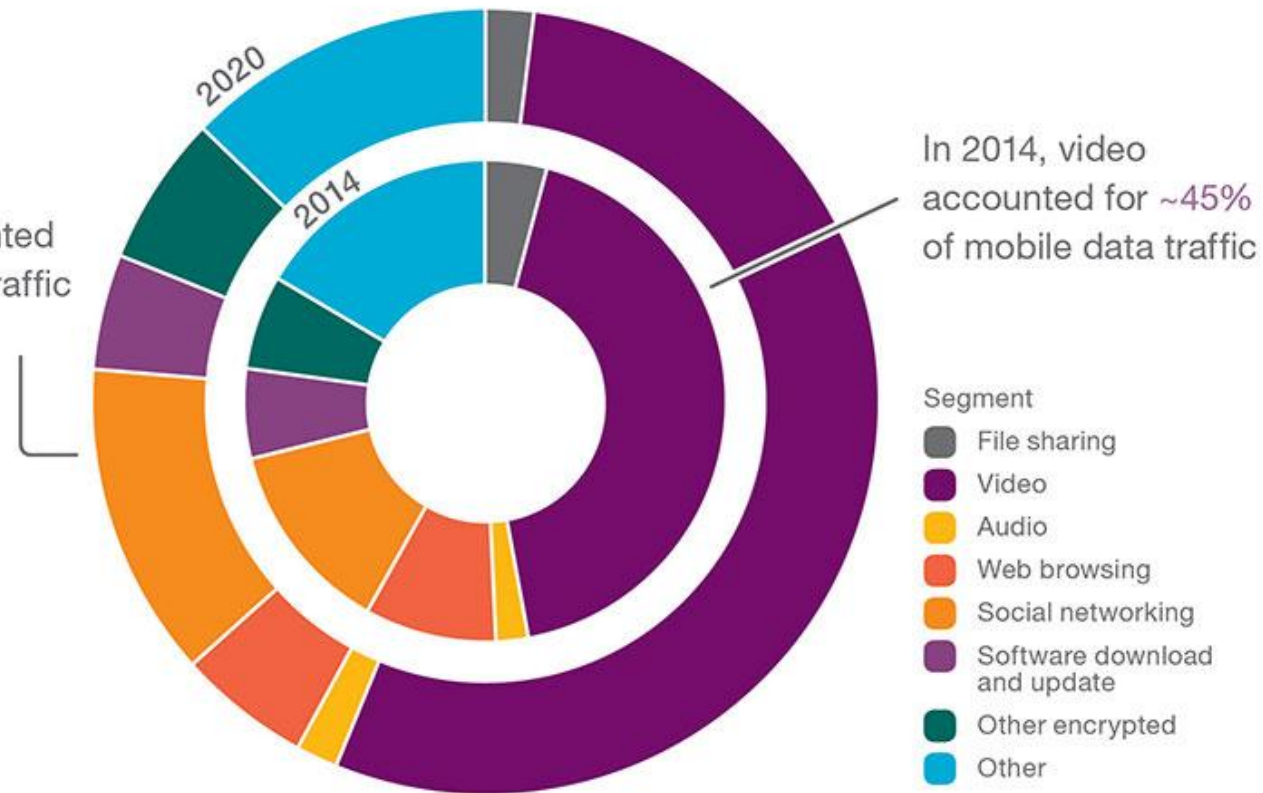


Share of mobile data traffic by application type (percentage)

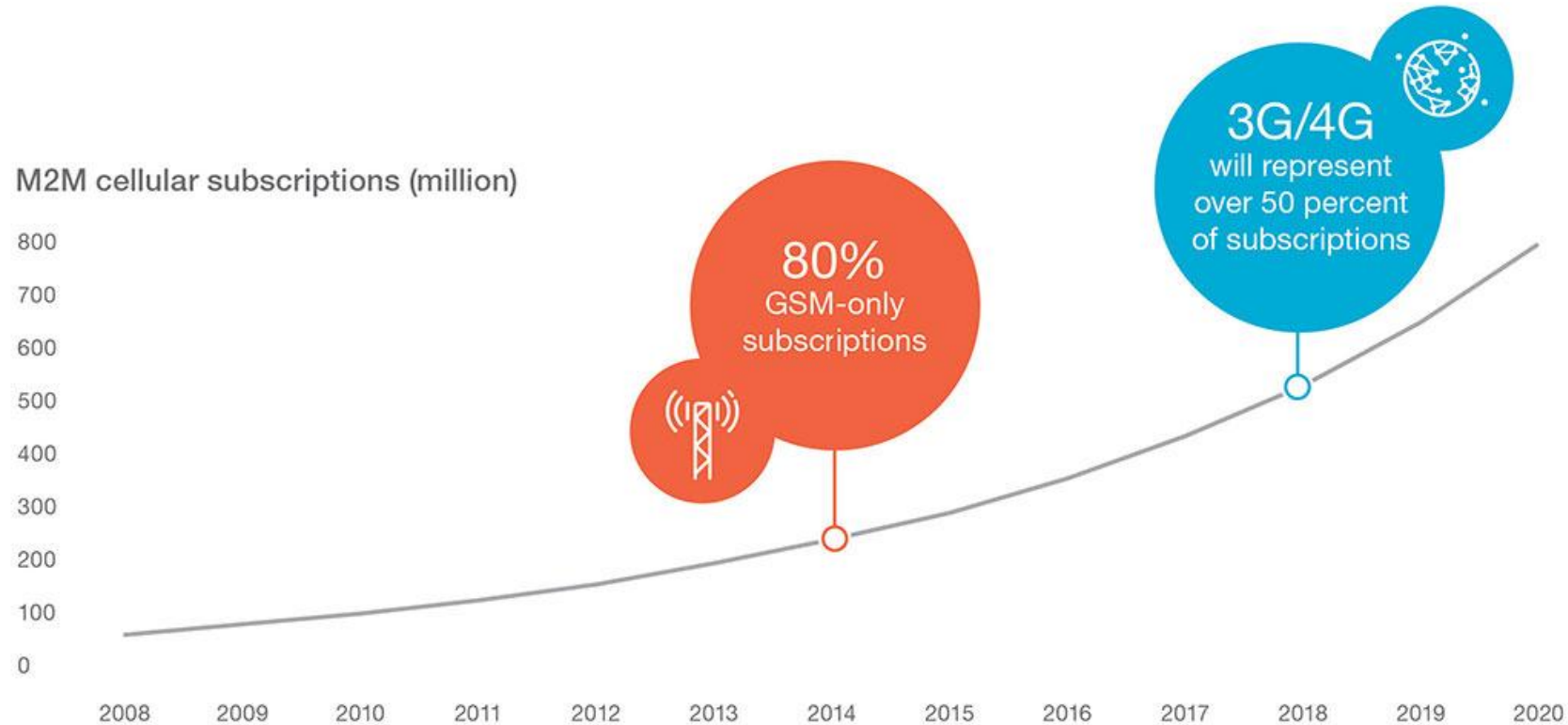
Social networking accounted for **~15%** of mobile data traffic in 2014 and will have the same share in 2020

~55%

of mobile data traffic will come from video in 2020



CELLULAR M2M OUTLOOK



- › 230 million cellular M2M subscriptions by end of 2014, majority 2G; 800 million by 2020
 - › By 2018, 3G/4G will represent over 50 percent
 - › M2M represents only 0,1% of mobile data traffic

SPECTRUM USAGE PRINCIPLES



Licensed Dedicated



Mainstream approach for MBB
350 MHz now, need 1500-2000 MHz

- Efficient for large area and population coverage
- Predictable quality of service
- Reliable at high load at all times
- Affordable, economies of scale, high valuations

Licensed Shared Access

Complementary for MBB

- Fast unlocking of mobile spectrum
- Either-or usage between incumbent and licensee
- Predictable quality of service
- Protects incumbent, lends investment security

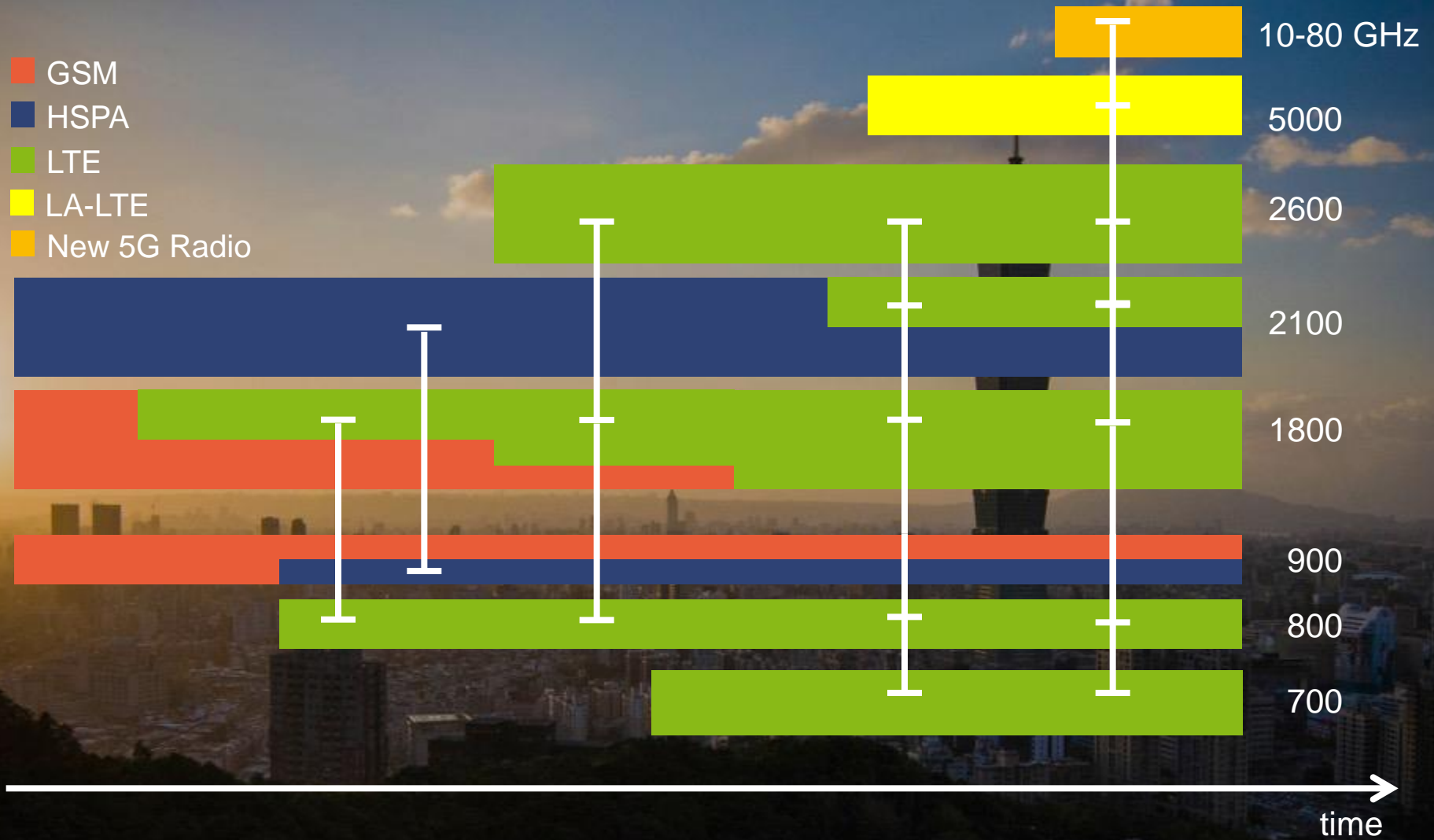
Unlicensed

Dedicated to Wi-Fi
>500 MHz today

License Assisted Access

- Efficient for indoor / controlled environments and short ranges
- Unpredictable quality of service
- Reliable at low load, unreliable at high load

FREQUENCY EVOLUTION





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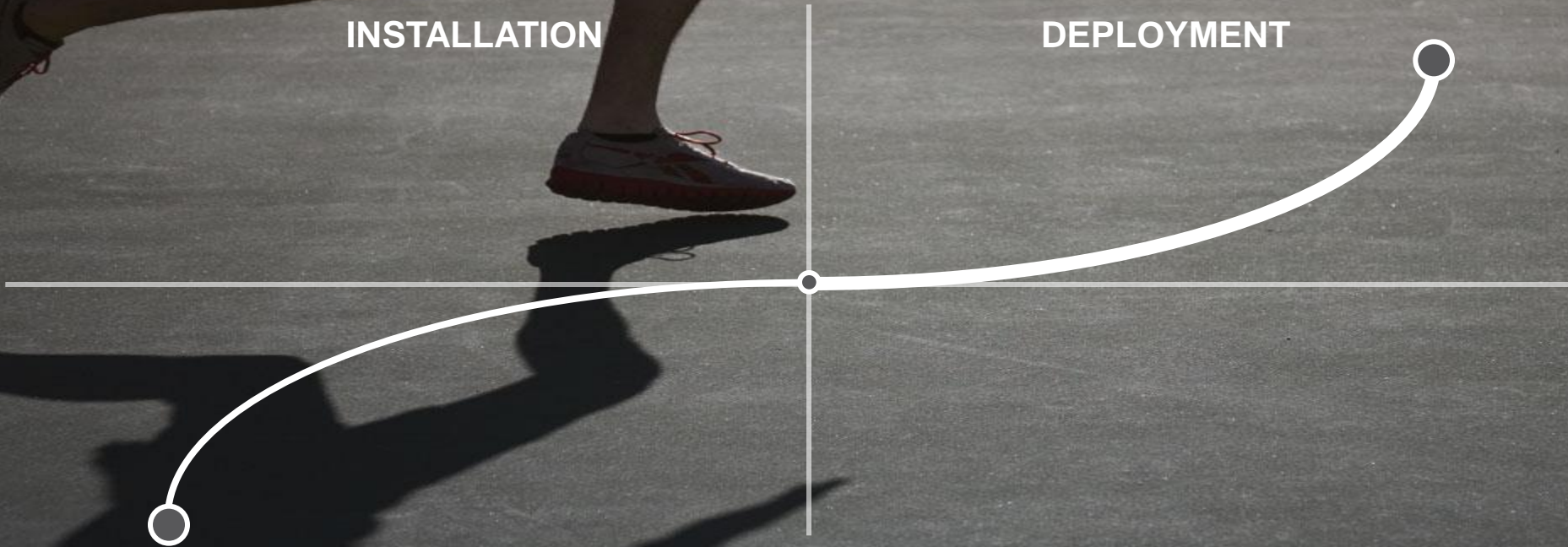
The Journey to 5G

NETWORKED SOCIETY THE 5TH TECHNOLOGY REVOLUTION



INSTALLATION

DEPLOYMENT



MOBILITY

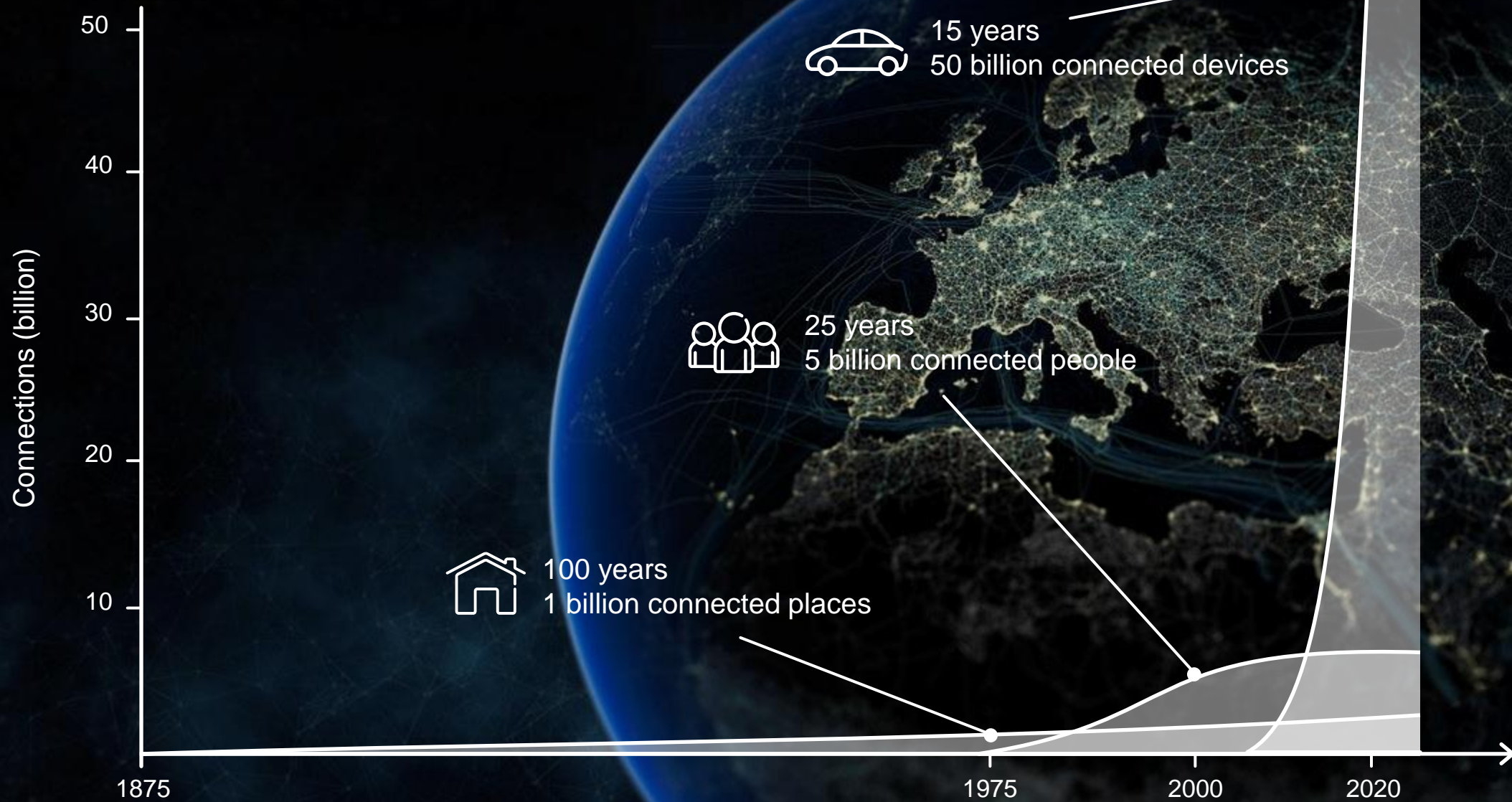


BROADBAND




CLOUD

PROGRESS




MACRO TRENDS



Connected & Conscious Consumers 



Increasing numbers & types of Connected Devices

Dominance of Data in all Applications 



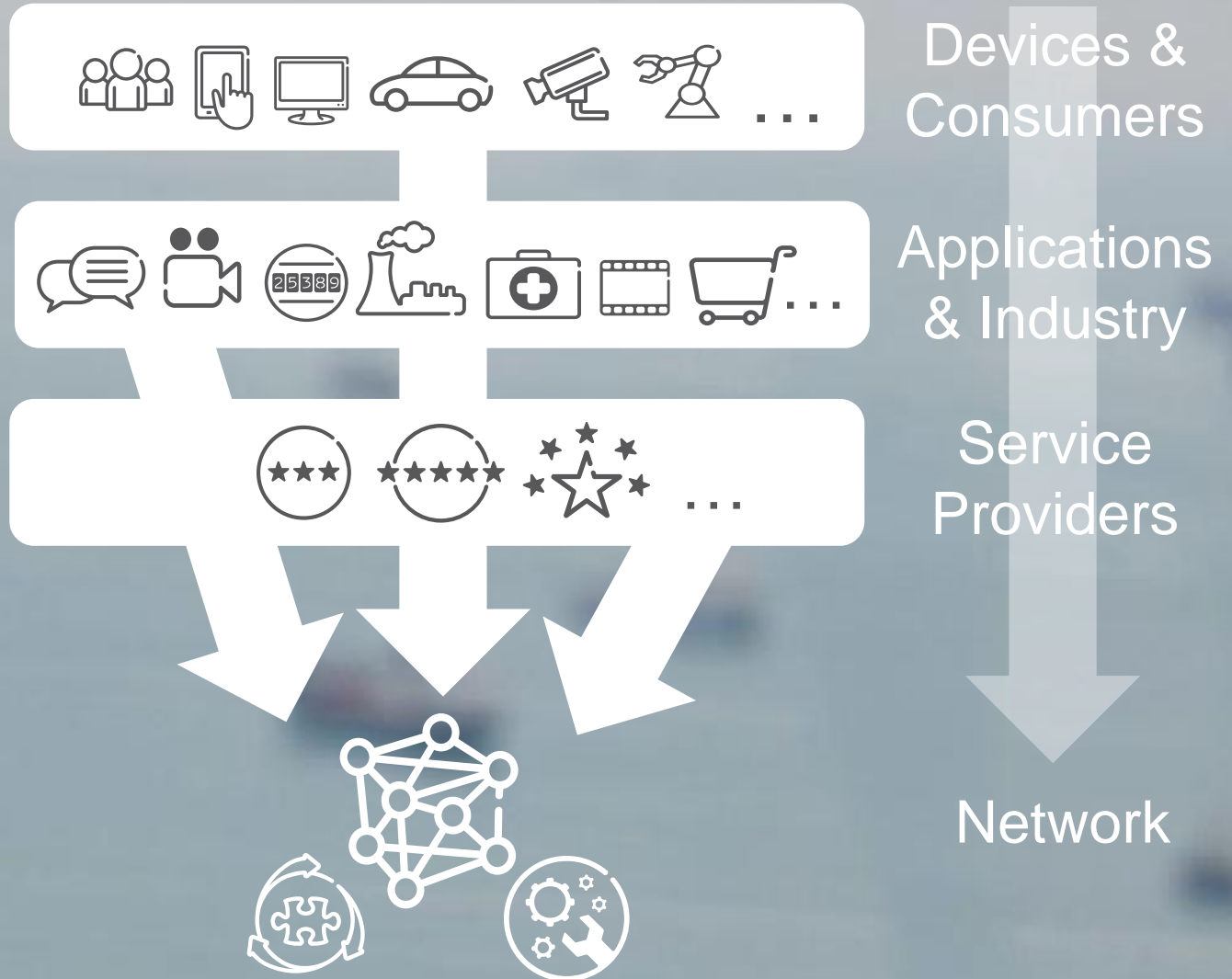
Software Centricity & the Cloud

Shift in Geo-political Landscape 

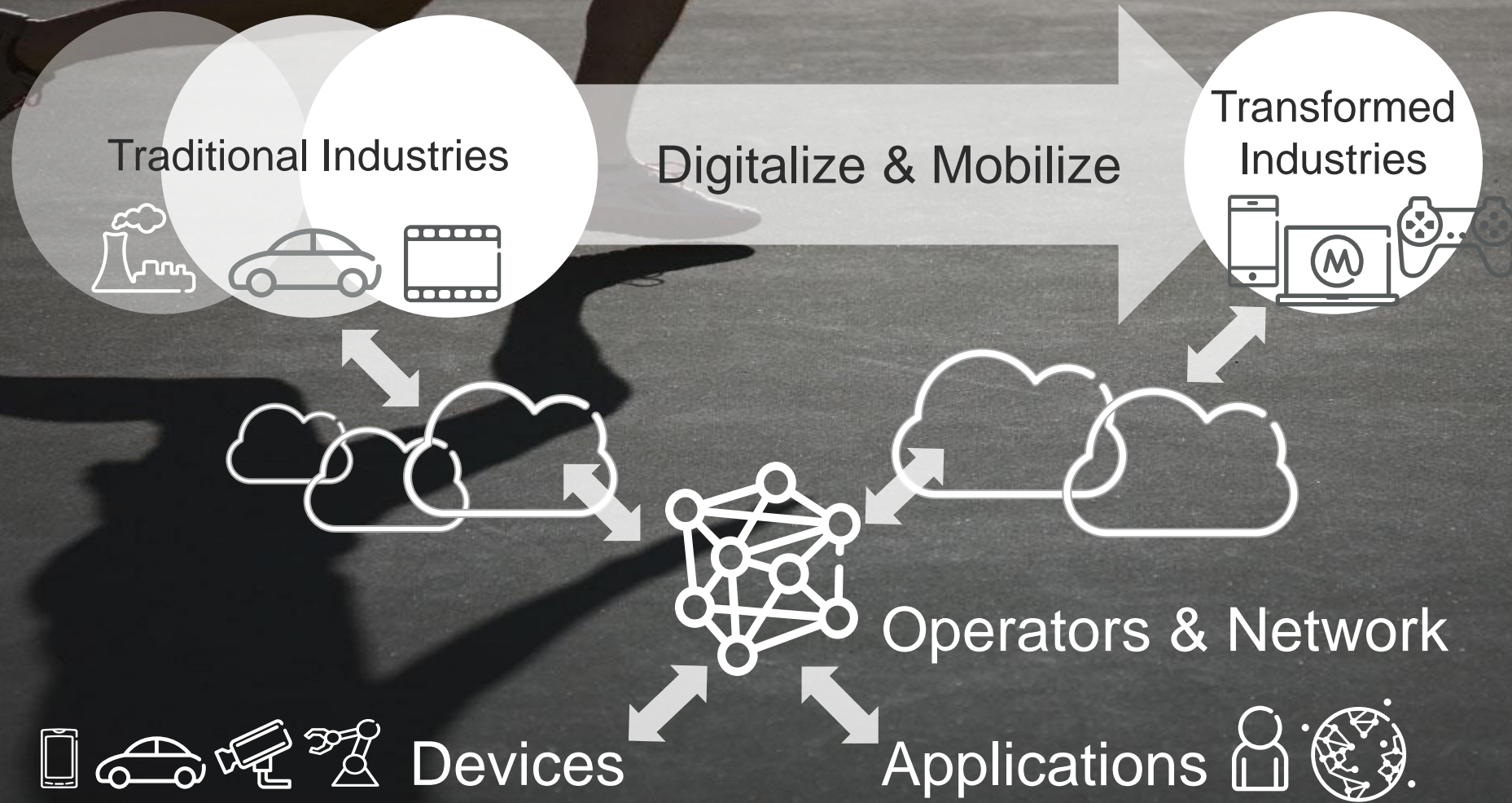


Enhanced focus on Security & Privacy

DEMAND 2020








INDUSTRY TRANSFORMATION

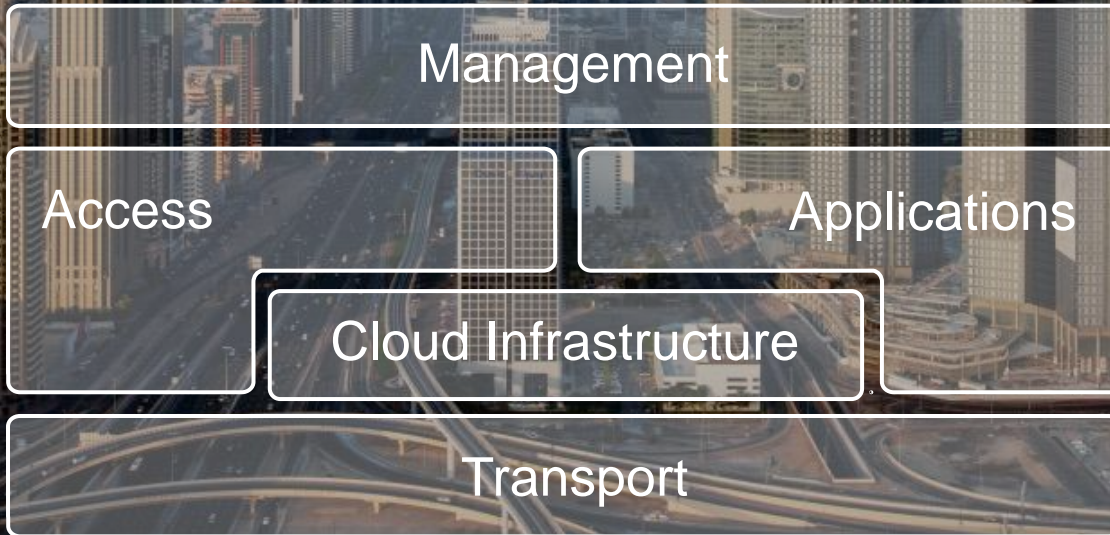


AREAS OF MOMENTUM



-  Heterogeneous Radio Networks
Co-ordination, Multi-standard, Small cells, Indoor
-  Cloud, IP and Applications
Service Provider SDN, Cloud, Virtualization, Communication Evolution
-  OSS / BSS
Real-time Analytics, SON, Orchestration & Management
-  TV/Media
Multi-screen/platform, Video, Media Aware Networks
-  Technologies for Industries
Service Enablement, IoT, Industry-specific technologies

NETWORK EVOLUTION



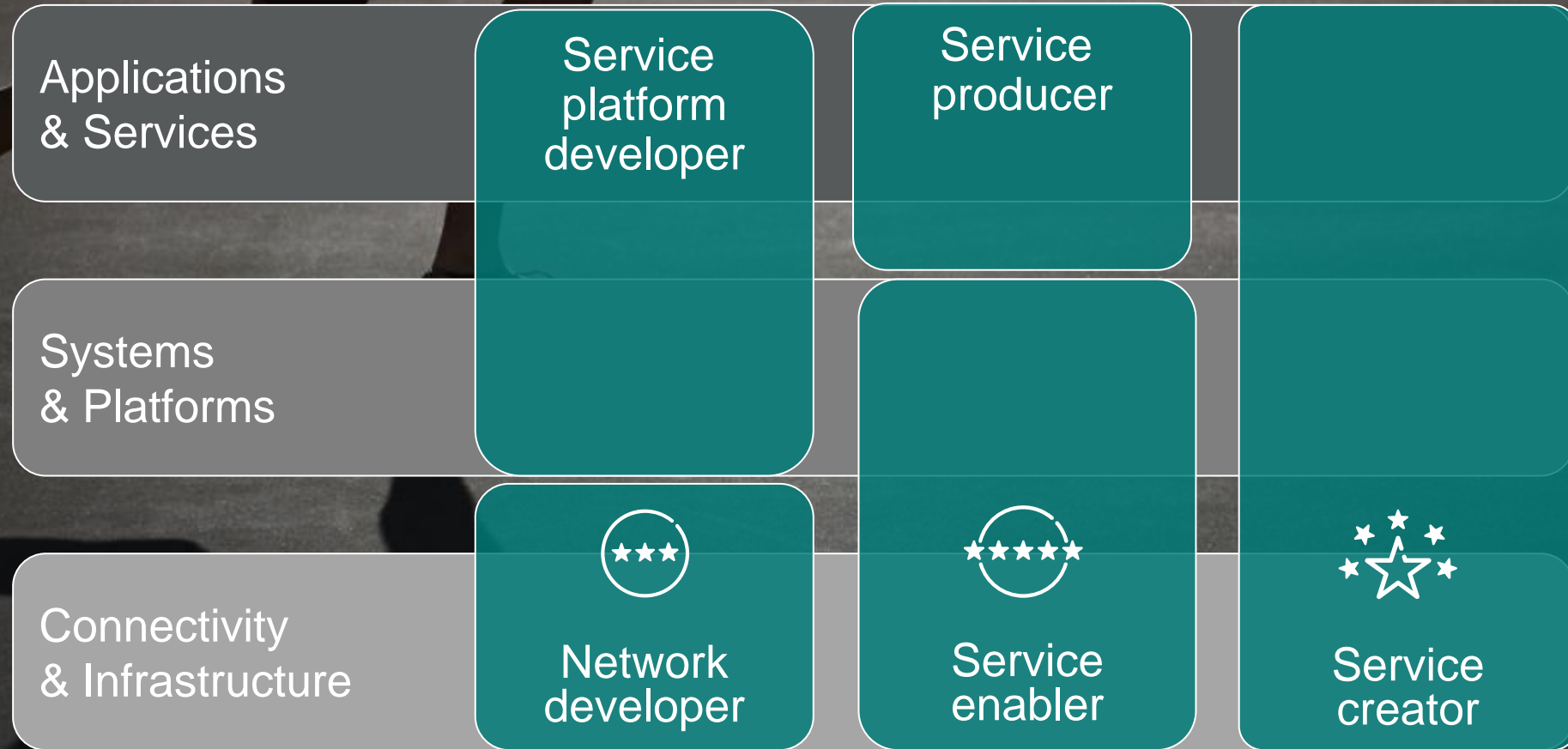
Sustainable



Secure



Users, Content & Devices



OPERATOR EVOLUTION



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SOCIETAL IMPACT



+10% BROADBAND
PENETRATION



~1% OF GDP

DOUBLING OF
BROADBAND SPEED



0,3% GDP GROWTH

+1% BROADBAND
PENETRATION



3.8% START UP OF NEW BUSINESS



TODAY.
2.7 BILLION
PEOPLE HAVE
ACCESS TO
THE INTERNET.
JUST OVER
A THIRD OF
THE WORLD'S
POPULATION.

IMPACT AND OFFSET



IMPACT ON
98%

2%
CONTRIBUTION



-16.5%

GLOBAL CO₂
EMISSIONS

SMARTER
USE OF ICT



20%

EU target for energy savings by 2020

80%

EU customers should have smart meters by 2020

630,000

Smart meters to be deployed by Ericsson for Elektrilevi, the major Estonian electricity distribution network operator, by 2016





1 in 2

Customers would switch car brands to get connected car features today

75%

Vehicles would be autonomous by 2024 (IEEE prediction)

Volvo & Ericsson

Partner to reshape the connected car – Infotainment, Navigation, Safety features delivered via the Ericsson Connected Vehicle Cloud



A nighttime cityscape featuring a highway with light trails from cars, a marina with many sailboats, and a city skyline with illuminated buildings. The sky is a deep blue with some clouds. The text is overlaid on the image in white boxes.

Outlook 2020

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SECURITY FOCUS AREAS FOR THE ICT INDUSTRY



Keep unwanted
traffic at bay

Secure software
practices

Building trust in clouds

Security assurance

Secure virtualization

Security for big data

Device and platform
security

Identity management



OUR FOCUS



Large-Scale Security

System scale

Very large

Multiple Networks

Large

Telecom Networks

Moderate

Enterprise

Add-on

Integrated security

Users

Thousands

Millions

Billions

OUR PRINCIPLES FOR SECURITY IN THE NETWORKED SOCIETY



Multi-stakeholder
Approach

Industry, Policymakers, Regulators,
Civil Society Organizations

Integrated
Security

E2E - From products to
networks and operations

Continuous
Process

Adaptive to changing environment,
technology & threats



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PERFORMANCE REQUIREMENTS



1000X

Mobile Data Volumes

5X

Lower Latency

10X

Battery Life

10-100X

End-user Data Rates

10-100X

Connected Devices



Critical Communications

Massive Communications

← Extreme availability

<5ms e2e delay
99.999% transmission reliability
500Kmph relative velocity

>10yrs battery lifetime
>80% cost reduction
20dB better coverage

→ Scalability and flexibility

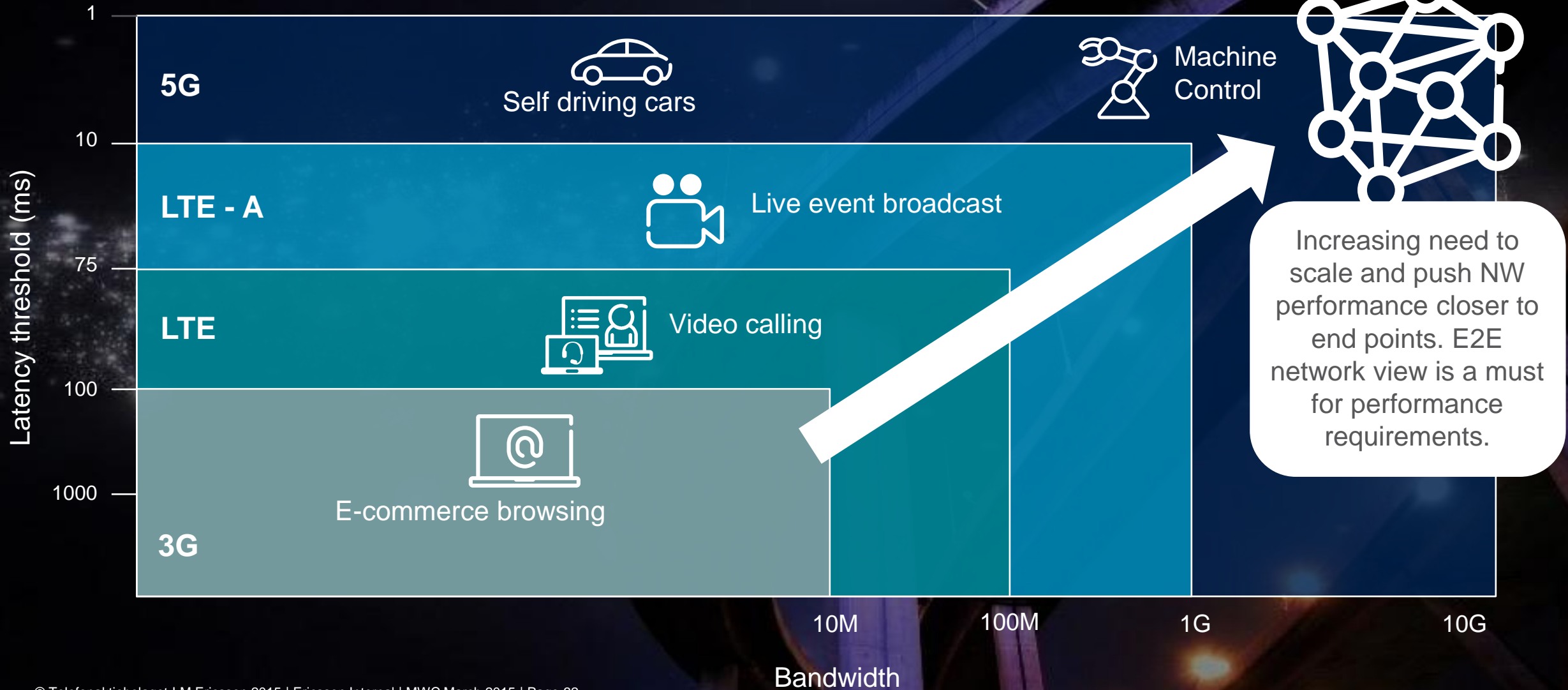


Intelligent Transport Systems



Connected Sensors

LATENCY & BANDWIDTH



BUILDING 5G



One Network – Multiple Industries

Platform for 50 Billion
Open Innovation



Industry Journey

Global developments
Global standard



Technology Evolution

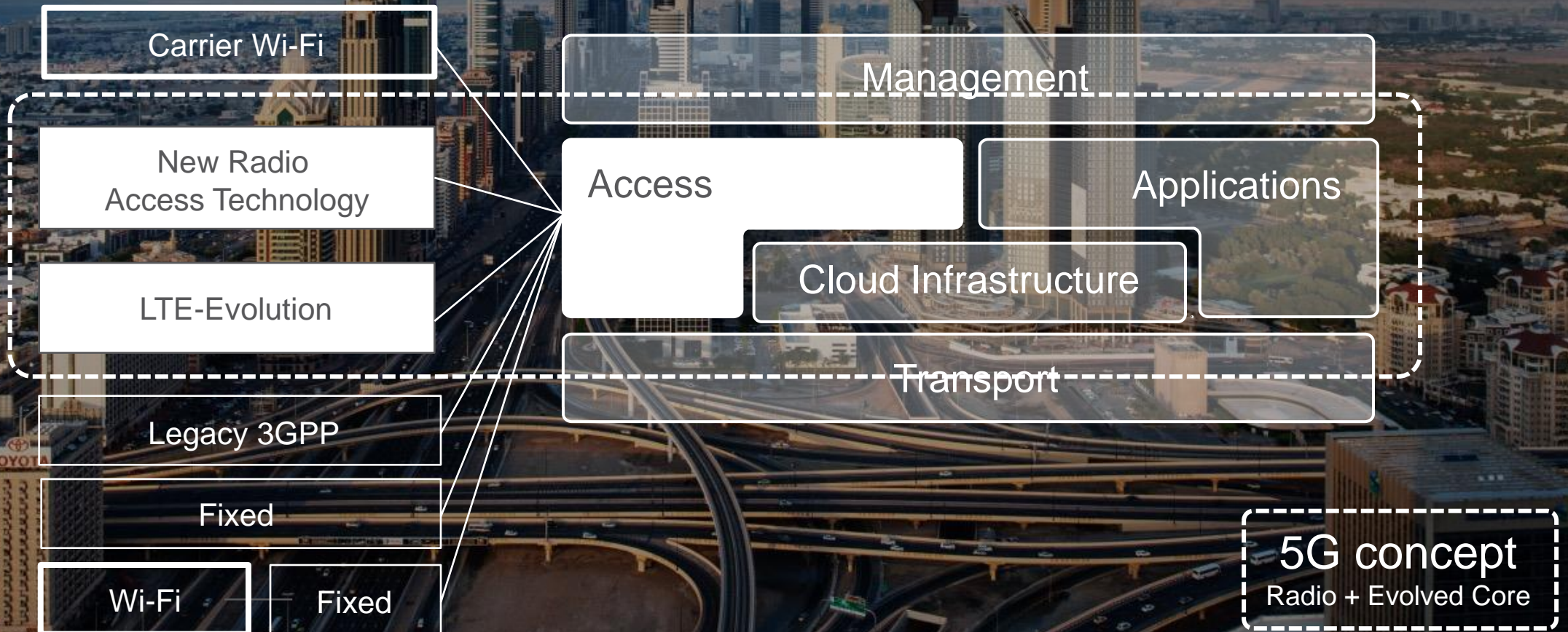
Milestones every year
Research & Development
5G System View

ONE NETWORK – MULTIPLE INDUSTRIES

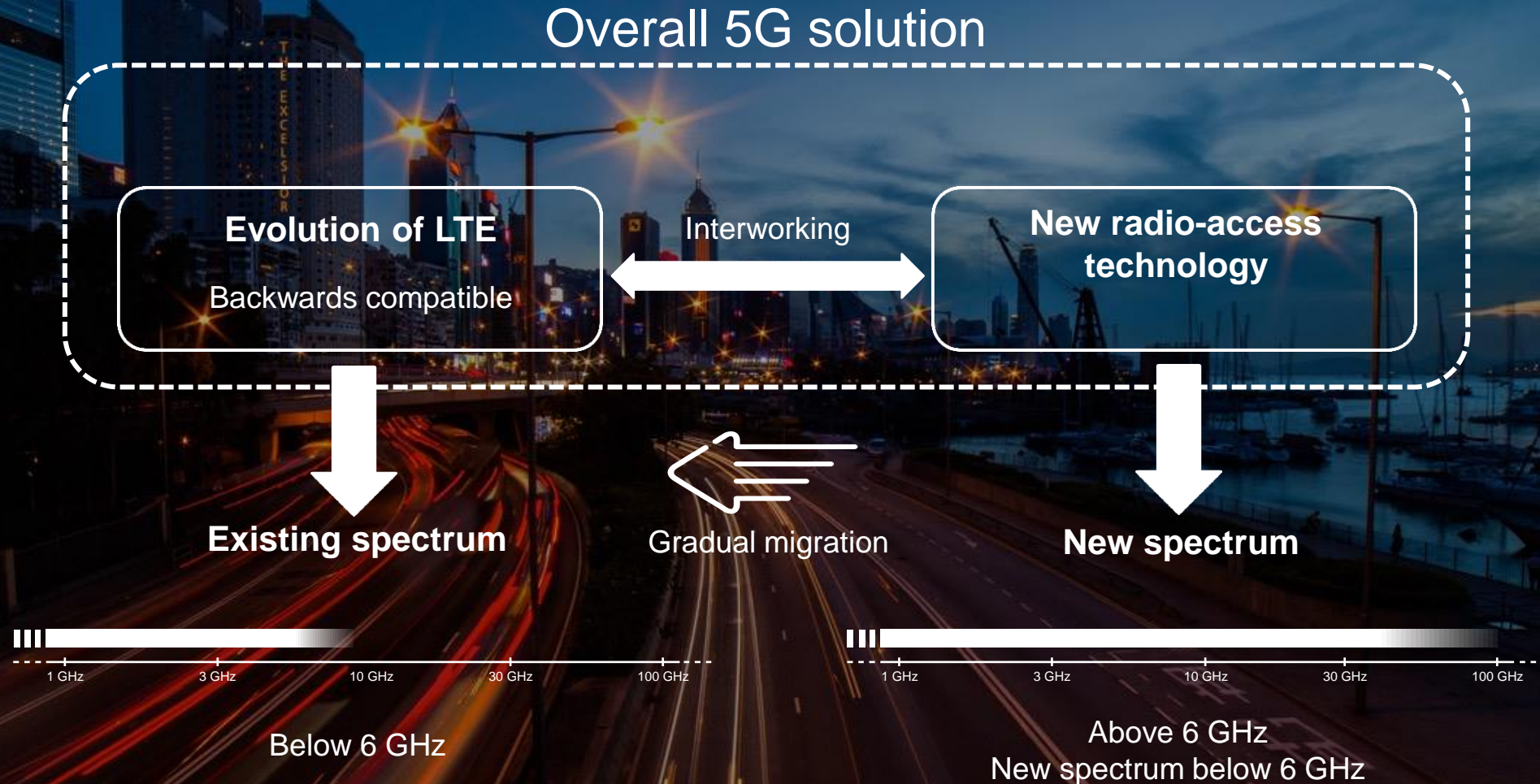


A common network platform with
Dynamic and Secure Network Slices

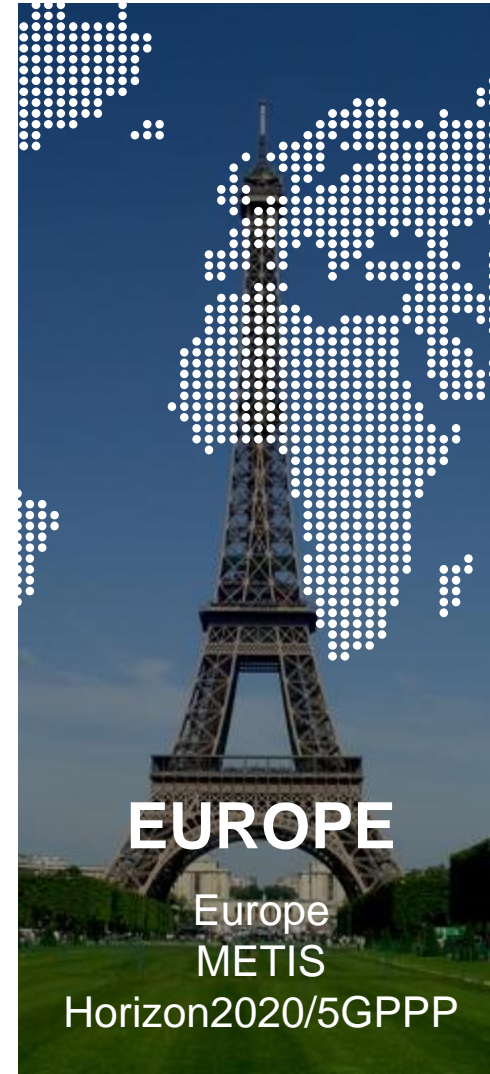
NETWORK BEYOND 2020



5G RADIO AND SPECTRUM



WE DRIVE A GLOBAL STANDARD



FAIR USE OF TECHNOLOGY



2G, 3G, 4G
commercialization & scale has worked well



A need for the same in 5G

Incentive to continued investment
in future technologies

Creates more value for everyone in the value chain,
including the end-user

FRAND

Fosters collaboration in various open ecosystems
and sharing technology within our industry

EVOLUTION TO 5G



Industry
Collaboration

Global
Activities

Engaging
Academia

Accelerated
Innovation

2014-15

ITU Vision
3GPP Rel 13
WRC 15
Test Beds
Evolution

2016-18

ITU Requirements
3GPP Rel 14 & 15
5G Req/Tech SI
5G initial WI
Advanced Test Beds
Cont'd Evolution

2019-2020

ITU eval + specs
WRC 19
3GPP Rel 16
Cont'd Evolution



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