

5G and Industry - an overview

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5G? What is different?

5G is already here

The journey so far towards 5G and Industry

Use cases

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“Live Link” to Centre of Excellence

Summary



What is 5G ?



5G in numbers

213

Live 5G networks
(GSA Apr 2022)

21

Live 5G standalone
networks
(GSA Apr 2022)

35%

Population coverage
by the end of 2022
(Ericsson Nov 2021)

27GB

Monthly mobile data
traffic per sub
South Korea (Mar 2022)

68%

Of traffic on 5G network
South Korea (Mar 2022)

12

64

15

12

9

11

- Global Figures
- Ericsson Figures
- Ericsson live networks

123

Ericsson live
5G networks

54

5G countries

174

Commercial 5G
agreements

12

Ericsson live 5G
standalone networks

8 M

5G-ready radios shipped

Key 5G messages - June 2022

• Amend to make it more acceptable for audience



**1
Billion**
Connections by the
end of 2022

Demand

**doubled in the
last two years**

**New forms of
connecting**
Estimated to be 20% by
end of 2022

Devices
Use of new generation
sensors/monitors to be
larger than legacy
systems by 2023

5G is growing at an incredible rate and accelerating the introduction of new services and applications



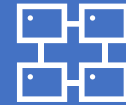
Why 5G ?



Flexible, scalable solutions to cover indoor and outdoor requirements



Reliable and predictable performance



Thriving Ecosystem and Future Proof solution



Growing and rich device ecosystem



End-to-end security



Support for multiple use-cases on the same network

Why use 5G instead of WiFi?



Predictable
latency

Guaranteed
prioritization

Seamless
mobility

Controlled
performance

Scalable
capacity

Licensed
spectrum
use

Device
Density

Reliable
ecosystem

Full security
stack

In build
add-on
benefits



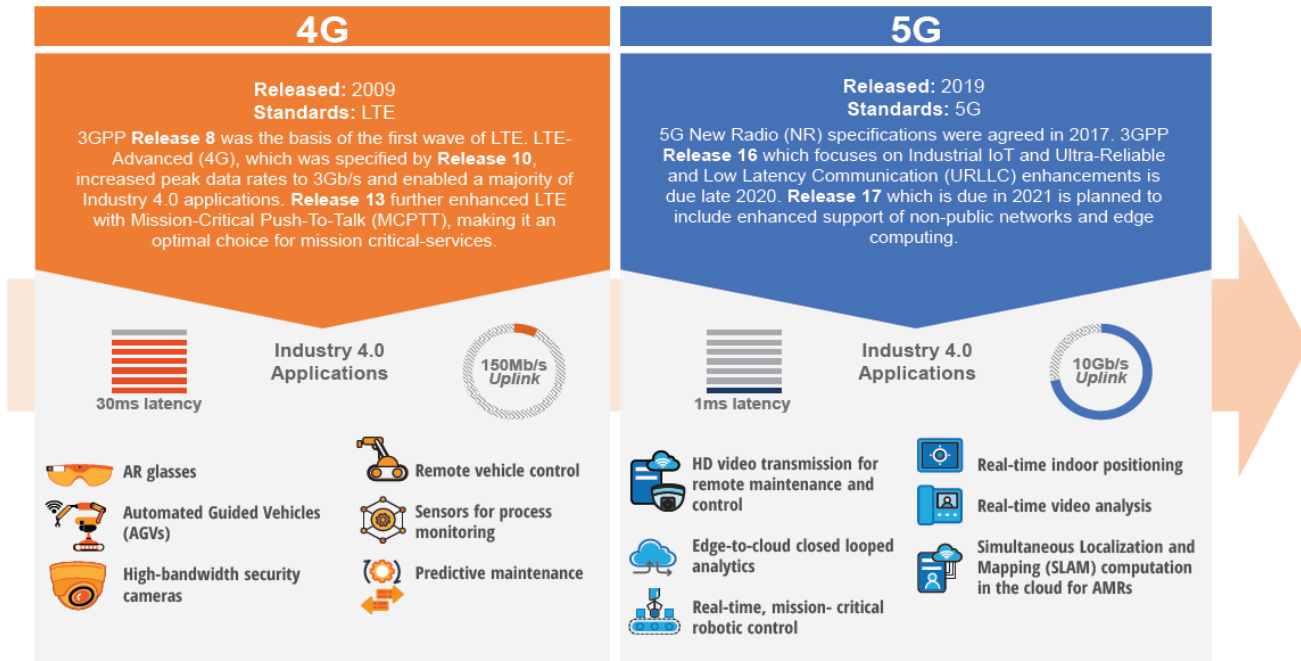
Evolution of Smart Manufacturing

ABI Research Dec'19

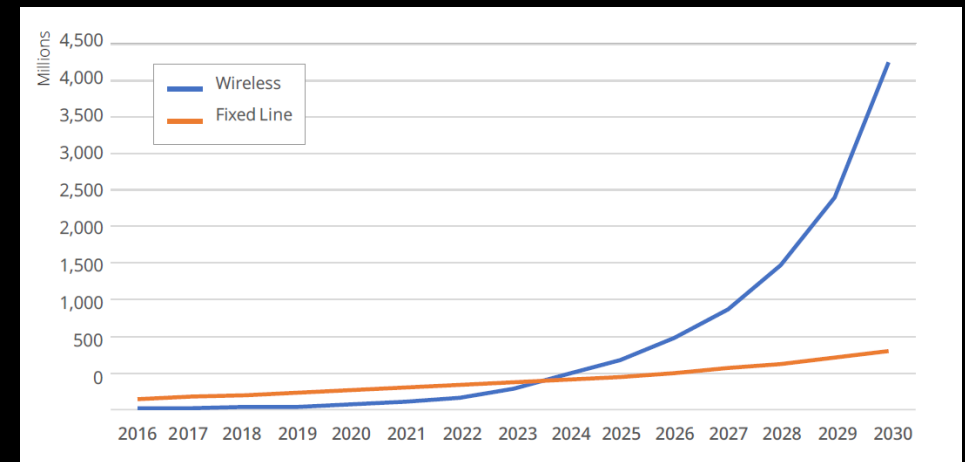


Figure 2. Private LTE as a Road to 5G

(Source: ABI Research)



Global Digital Factory Connections, 2016 to 2030

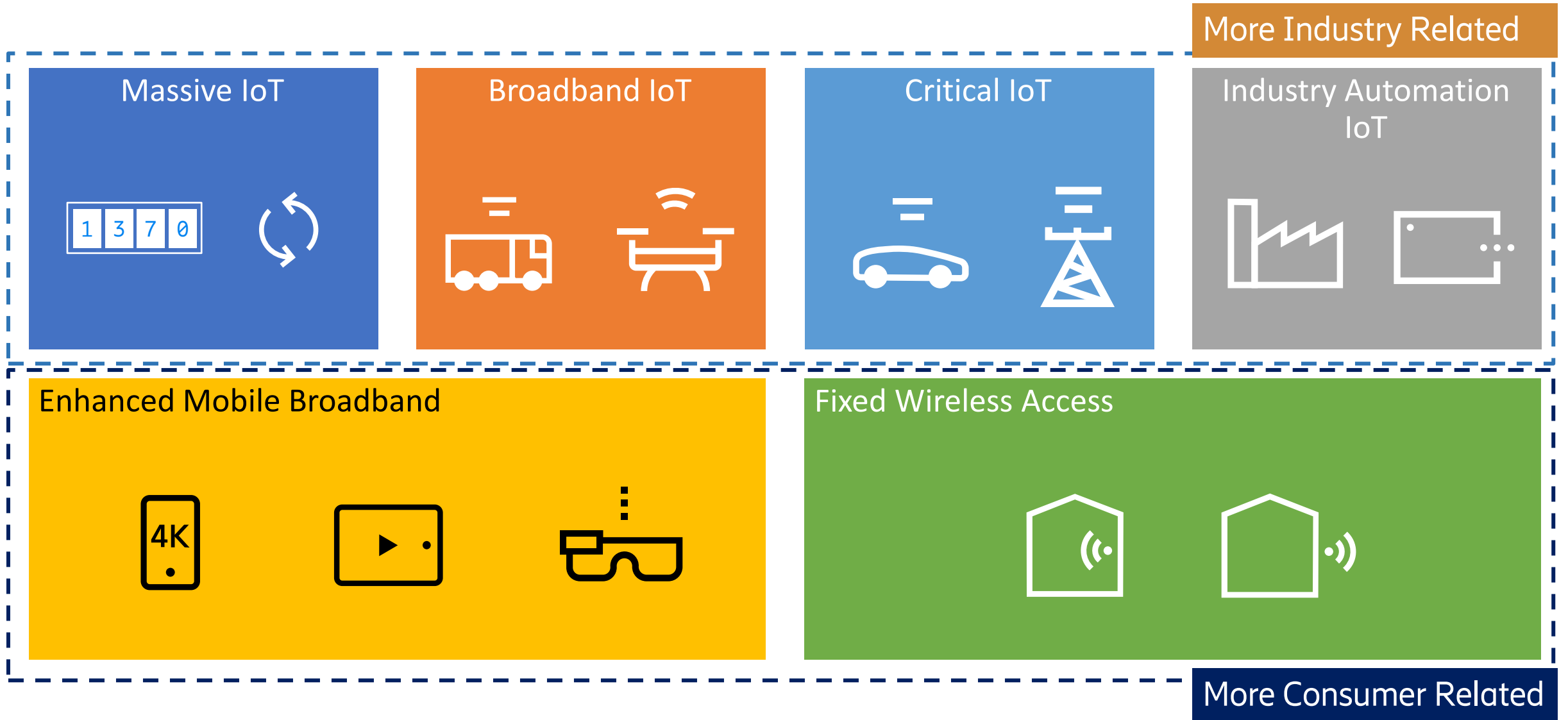


Benefits of cellular connectivity calculated based on existing use cases across the globe or:

1. Automotive
2. Logistics
3. Electronics

Within the next 10 years strong adoption of new and enhanced services provided by 5G forecasted

5G use case landscape



Numerous examples that have started with 4G and evolved to 5G



Massive
IoT

Broadband
IoT

Critical
IoT

Industrial Automation
IoT



PLC data
collection



Asset
sensors



Inventory
management



AR/ VR
instruction



AGV
guidance



Remote
control



Collaborative
robotics



HA collision
avoidance



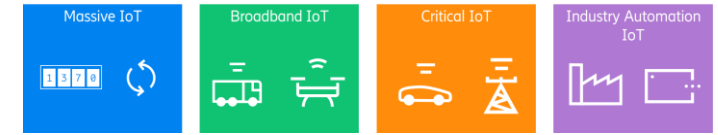
Advanced
Automation and
Control

4G

5G



Factory of the future - Use Case Evolution



Real-time automation

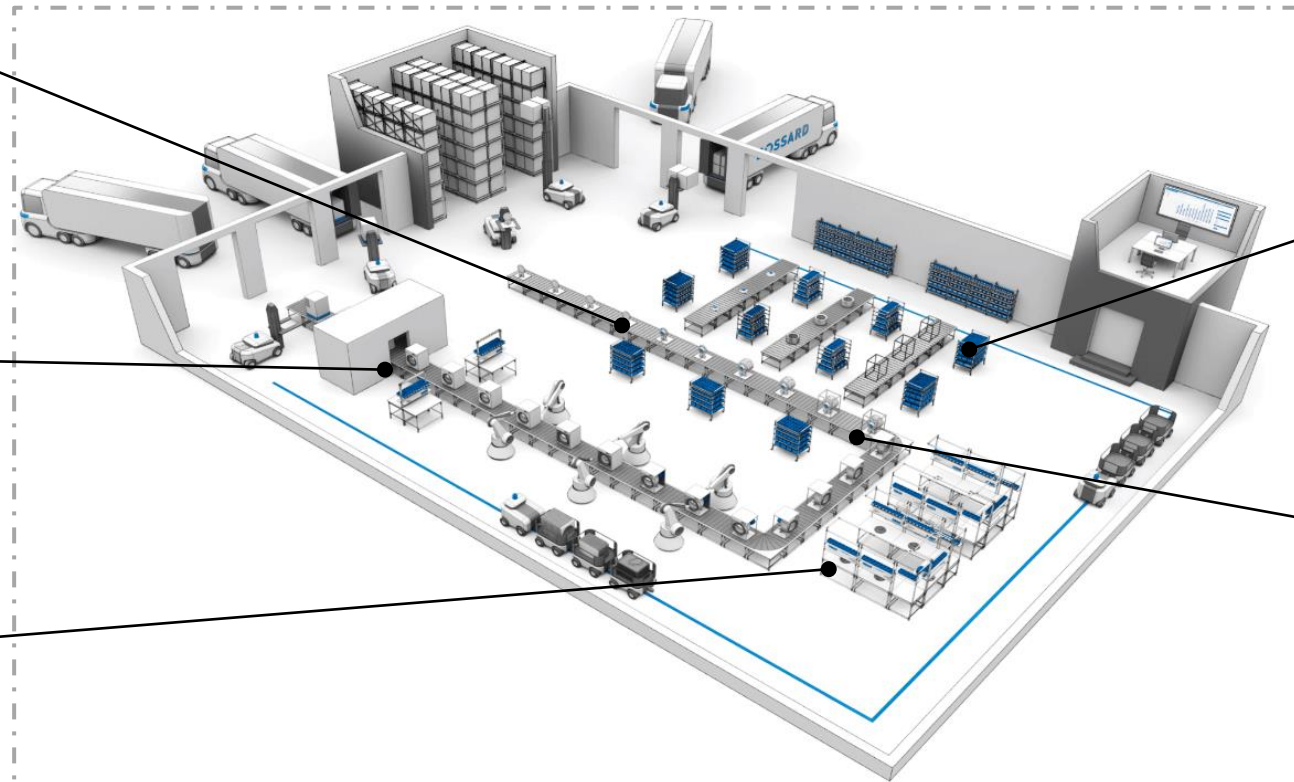
Real-time production chain automation with autonomous mobile robots (eGo)

Autonomous robotics

Collaborative robots

Augmented reality

AR asset diagnostics



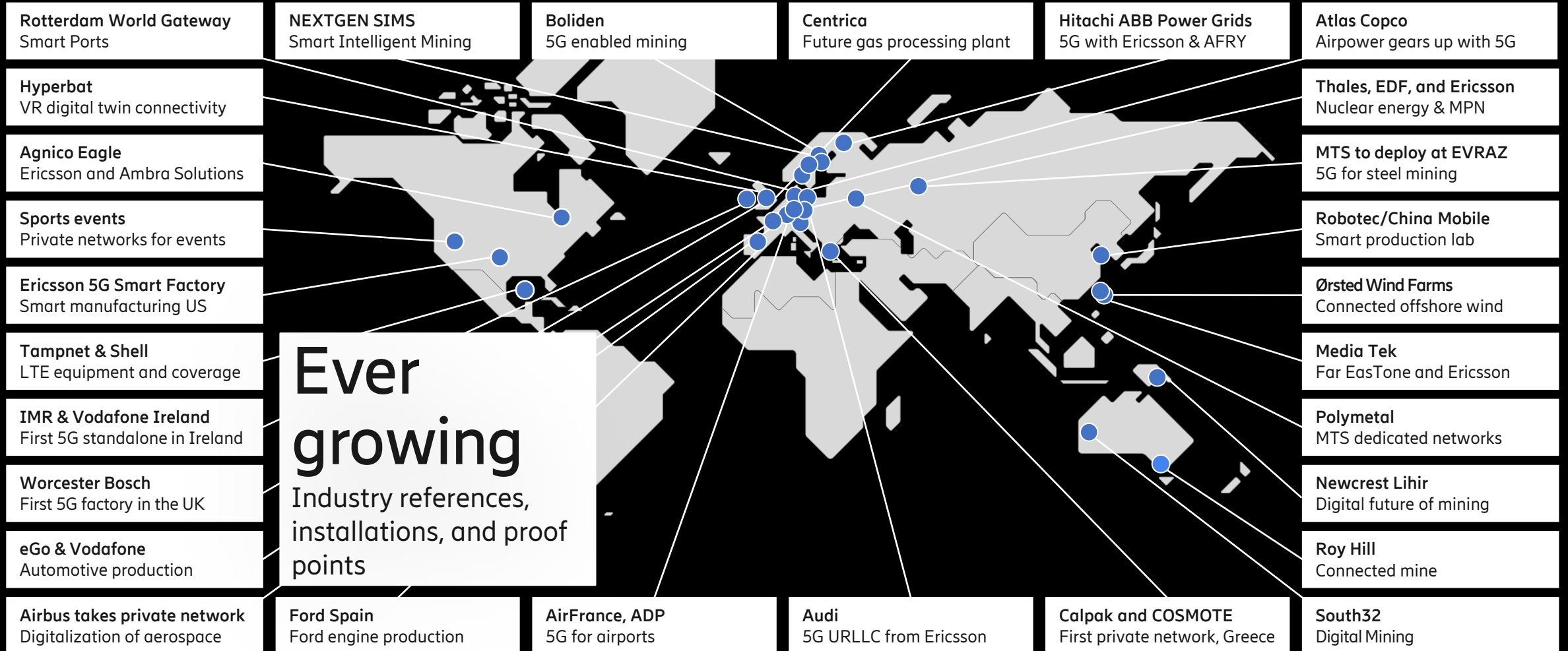
Monitoring and tracking

Asset condition monitoring

Enhanced video services

Digital twin for remote operations

Industry reference cases



US 5G Factory Use Case Summary



Energy monitoring and management



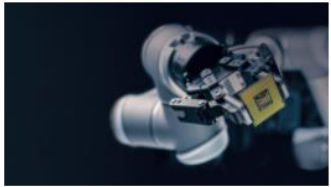
Augmented reality for remote support



Drones for inspection rounds



Digital adherence for safety and quality



Environmental monitoring within the factory



End-to-end digital thread for radio production



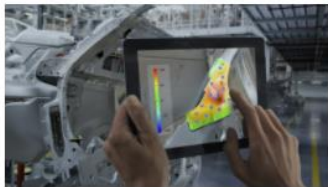
Alerting and escalation using wearable devices



Digital material tracking and visualization within the factory



Digital performance management



Machine learning based visual inspection



Automated unpacking process inspection



Control tower to showcase plant dashboards

USD 100m
investment

>200
new jobs created

300,000
sq. ft.

>200
robots in operation

Factory Facts

25%
more energy-efficient
than baseline

17%
of power required is
produced by onsite
solar panels

40,000
gallon tanks to collect
and reuse rainwater

Up to 5x
reduction in shipping
distance

Sustainable manufacturing

5G Private Network empower Ericsson Nanjing factory



Automated
manufacturing



5G Drone inventory counting – No.1



5G Cloud AGV

More efficient
production



5G surveillance camera



5G AR training

Increased
quality



5G industrial computer



5G AR remote assist

Won the 2020 ICT China Innovation Award
and the 2020 Blooming Cup National Award

Industry 4.0 is a journey, not an endpoint



Use case examples as the facility matures

Short Term Use Cases

- Connected machines with real-time OEE tracking & mobile alerting
- Paperless operations including scheduling, workflows & work instructions
- Repetitive tasks are automated on the shop floor
- Live material tracking across the facility

Medium Term Use Cases

- Optimized production planning, resource scheduling and workflows
- Real-time modeling and simulation of plant processes
- Augmented reality for training and production
- Real-time performance benchmarking across the network

Long Term Use Cases

- Automated planning of daily production based on artificial intelligence algorithms
- Self-tuning equipment leveraging machine learning to drive quality
- Predictive analytics to prevent machine failure
- Intelligent routing of material across the entire network

5G is constantly evolving

 *important to create a long-term goal which is built on a series of steps to get there*

Recent Manufacturing Use Case Examples



Robotics

Porsche

First deployment of a private 5G network at any of Porsche's production complexes, heralding in a new remote production era for the high-performance car manufacturer

Enable the control of robotics in real time without cables and transmission of massive amounts of data between other on-site machines, production workers and vehicles in real time.



Augmented Support

5G Steel

4G/5G connectivity at ArcelorMittal's industrial sites in France over the next three years.

Objective is also to enable the digital transformation of the French value chain ecosystem for industrial use cases

Includes autonomous rail vehicles in Dunkirk and Florange, autonomous road vehicles, remote maintenance with feedback from the field, virtual or augmented reality and safety devices are also relevant use cases



Remote collaboration

5G VR and Automotive *

Primary objective is to simultaneously working on the same complex product with colleagues in multiple distant locations while everyone sees the result of the work right before their eyes

Simultaneously working on the same complex product with colleagues in multiple distant locations while everyone sees the result of the work right before their eyes

* Image courtesy of Masters of Pie

Key takeaways



1 Significant momentum during the first years of 5G – now a desire for scale !

2 5G provides an incredible toolbox to create new opportunities

3 Culture Shift required to get the most out of 5G

4 Growing interest from broad portfolio of different industry segments and geographies

5 Significant benefits already shown through collaborative use cases – importance of ecosystems



