

# The new 5G era: How can the Universities take advantage?



Ermoupolis Information Society Seminar 2018

George Pappas

Head of Ericsson Greece & Cyprus

2018.07.14

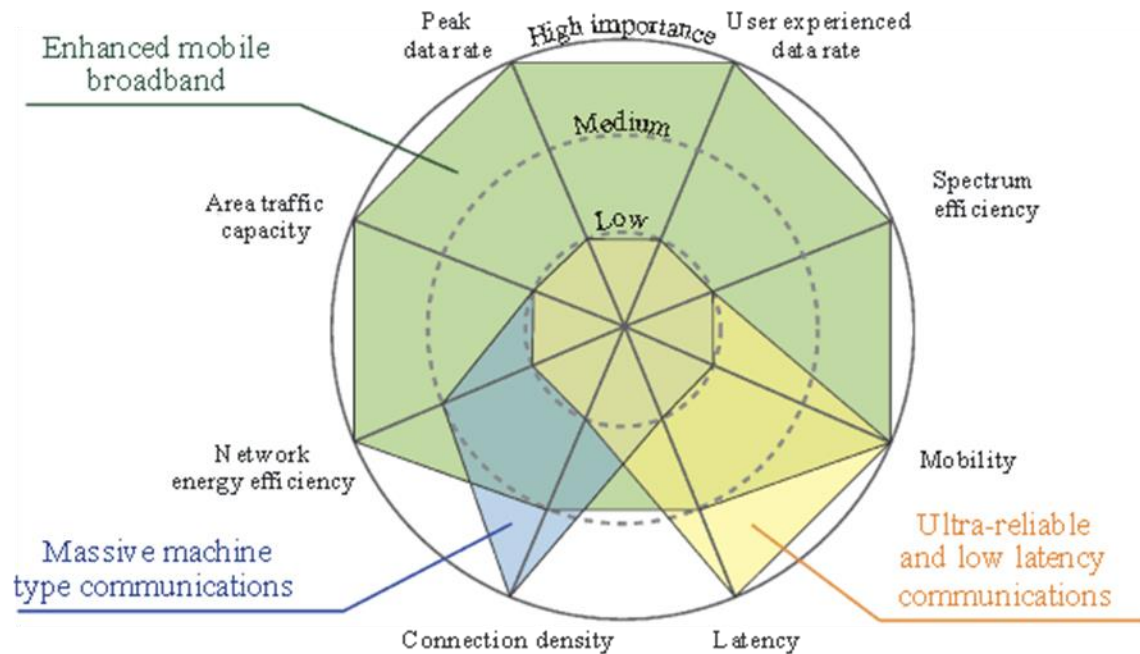


# Comparing 5G to 4G

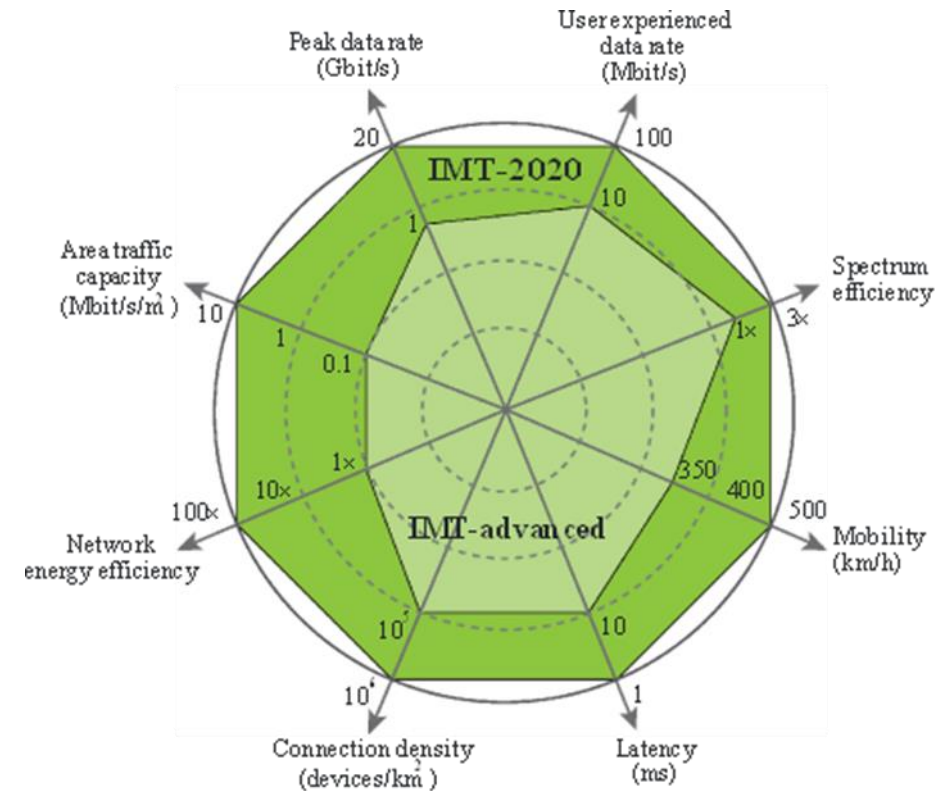
## Capabilities and use-case requirements



### Possible use-case requirements



### NR Technology potential compared to LTE



Source: ITU-R requirements for NR (IMT-2020) and LTE (IMT-Advanced)

# 5G enabled manufacturing – real-time control case study



Ericsson and Fraunhofer IPT  
Research Centre





Fraunhofer  
IPT



# 5G Enabled Mining

PIMM – Pilot for Industrial Mobile Communication in Mining

- Increased productivity
- Improved Safety
- Understand ecosystem, business models etc.

The project was coordinated by RISE SICS, the leading Swedish Research Institute for applied Information & Communication technology in areas strategic for the Swedish industry

Partners:

 TeliaSonera

 VINNOVA

 VOLVO

 SWEDISH ICT

 SICS

 ABB

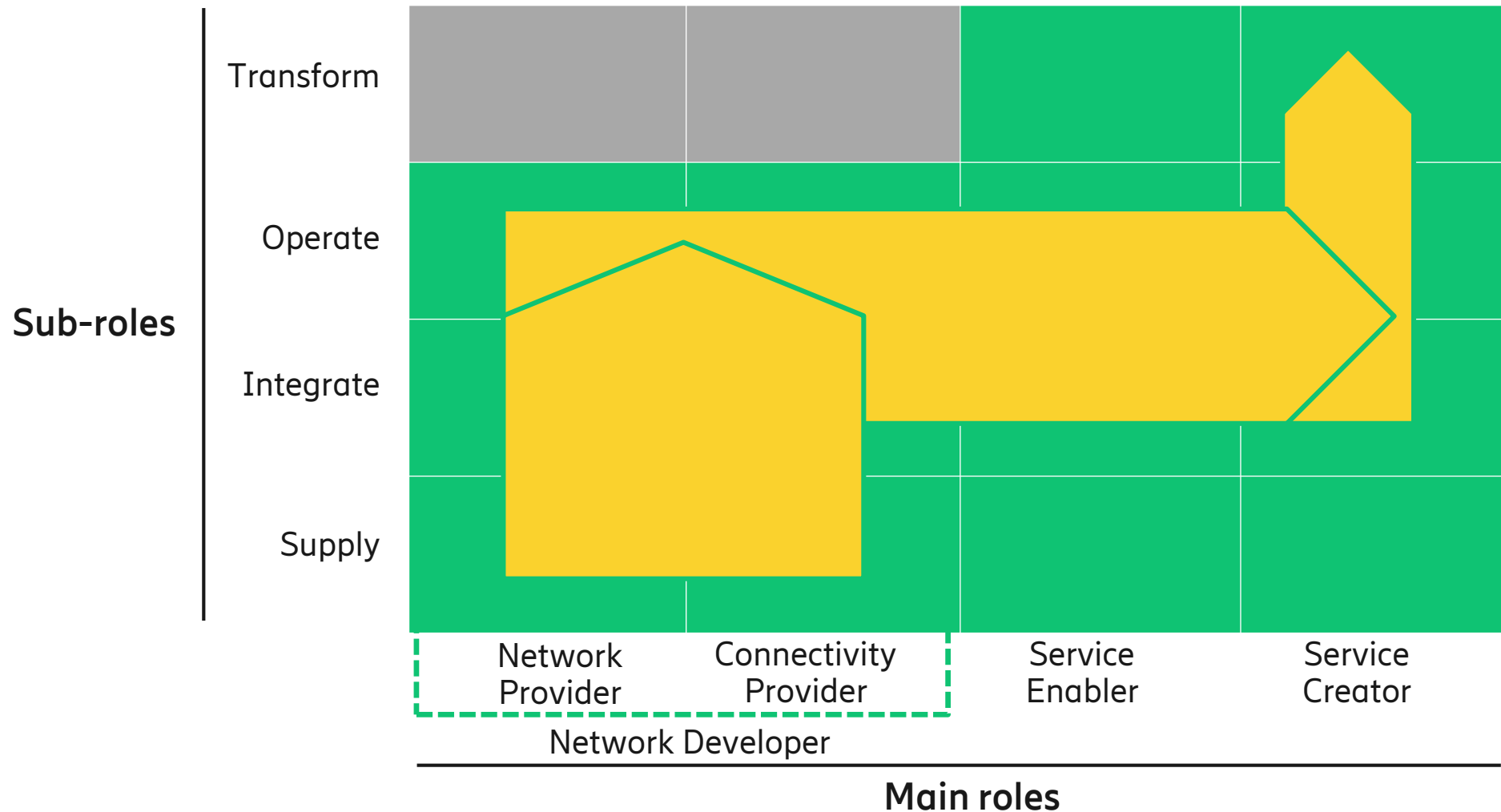
 BOLIDEN

 ERICSSON

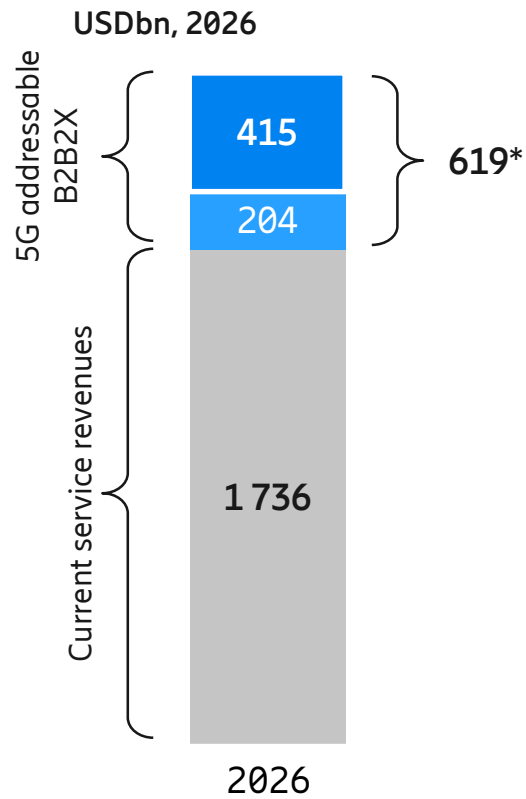
 LULEA  
TEKNIKA  
UNIVERSITET

 WOLFIT  
 PIA  
INNOVATION & RESEARCH

# Roles for service providers in 5G / IoT

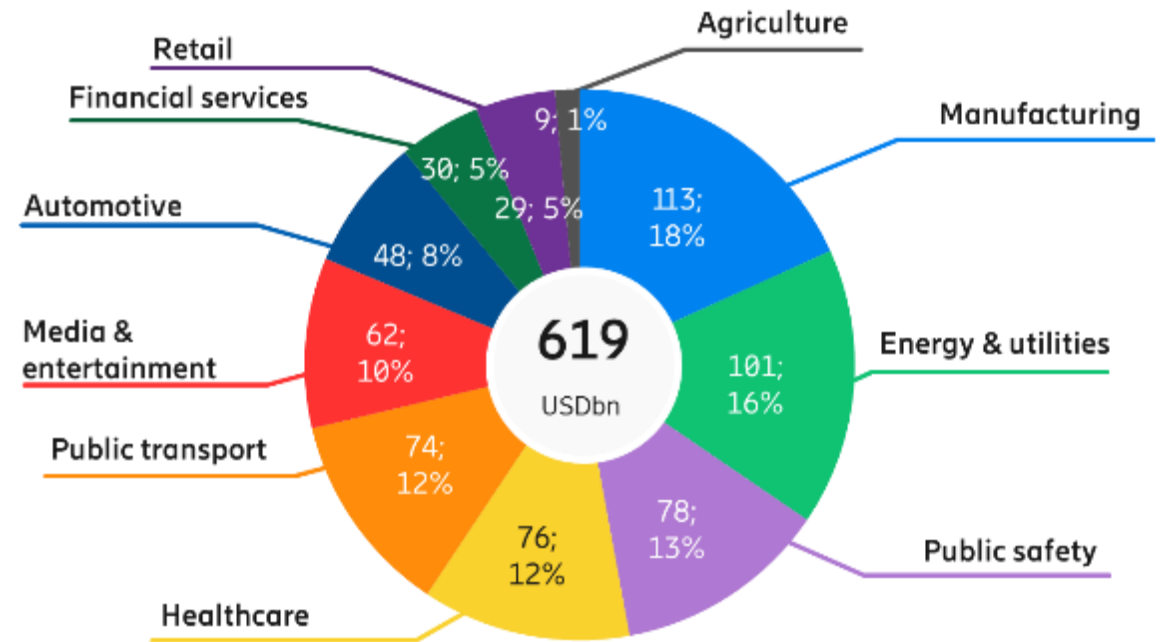


# 5G revenue potential for operators addressing industry digitalization



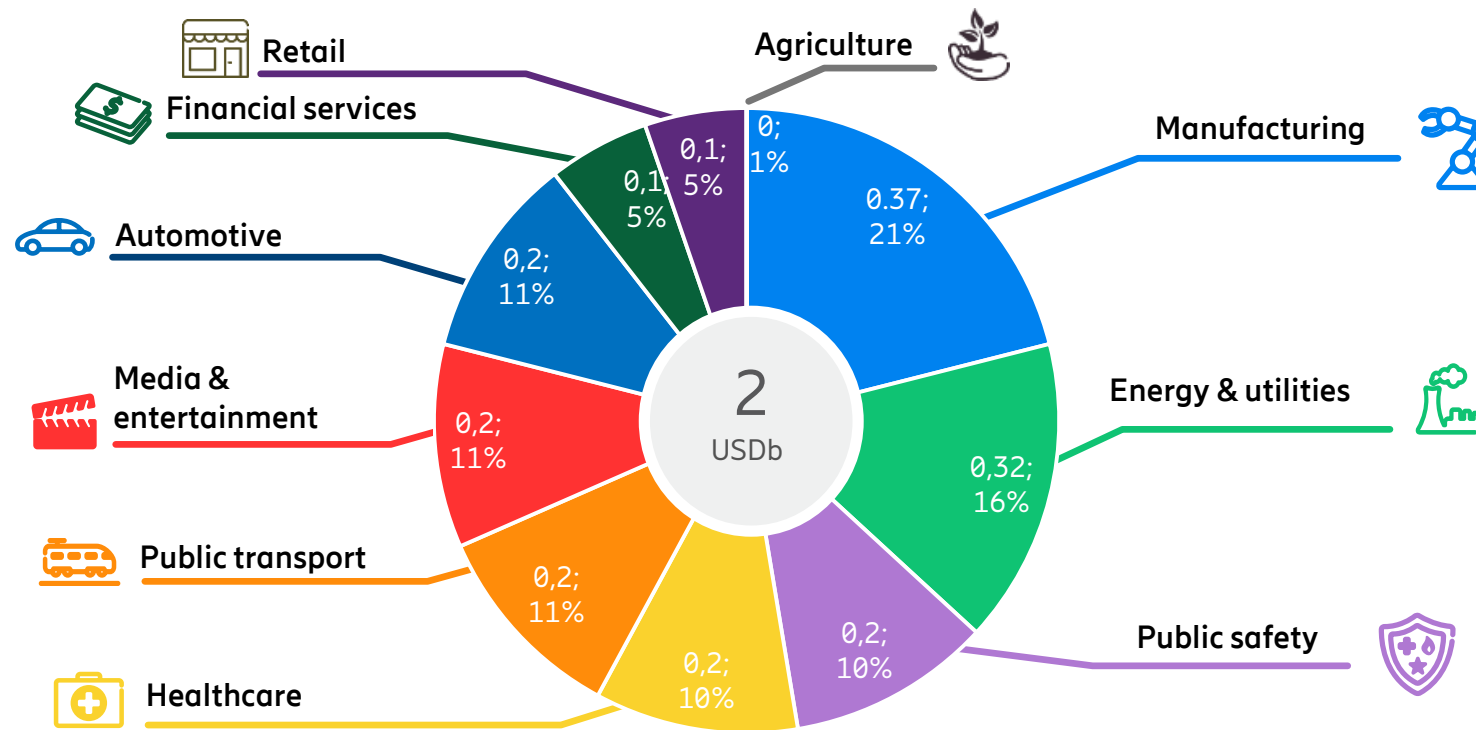
Adding an addressable  
**36%**  
revenue growth potential

- Service enabler and service creator revenue potential
- Network developer revenue potential



\*Total addressable as Service creator operator role

# 5G revenue potential for Greek operators addressing Industry Digitalization – year 2026

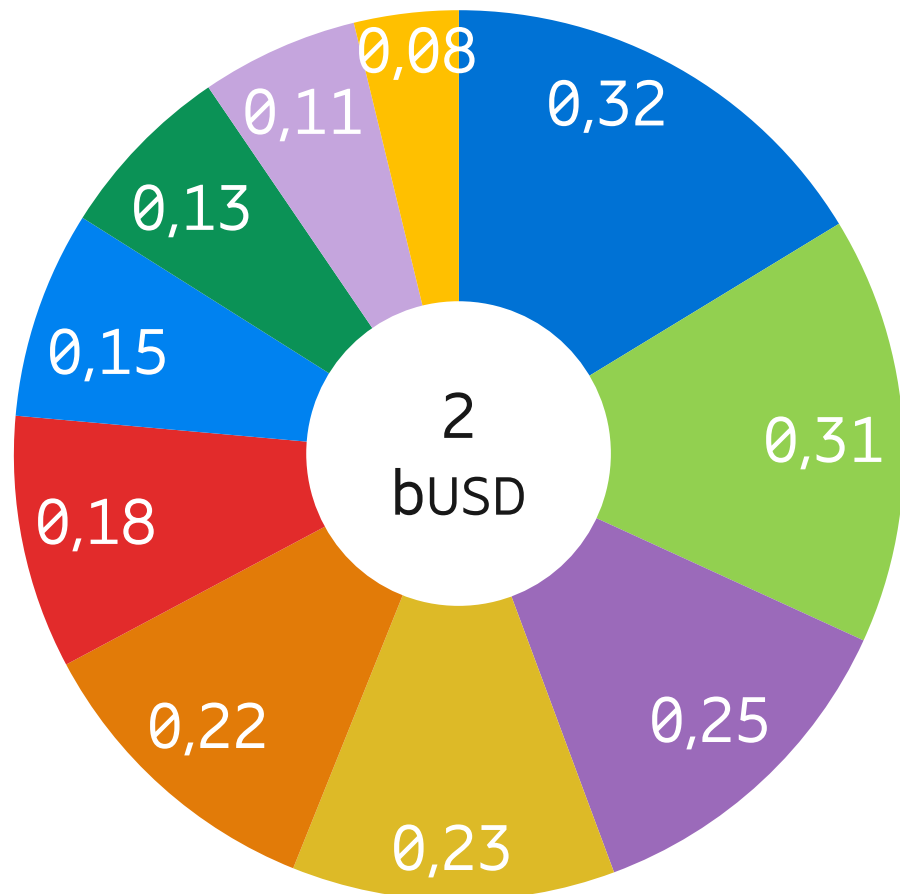


Industry View

Source: Ericsson and Arthur D Little Industry digitalization revenue model  
Note: 5G operator addressable revenues as Service Creator operator role

# Greek Operators 5G Business Potential 2026

## Use Case Cluster view



| Operator Addressable 2026      | MUSD | % of Total |
|--------------------------------|------|------------|
| Real-time Automation           | 322  | 16%        |
| Enhanced video services        | 307  | 15%        |
| Other                          | 247  | 12%        |
| Monitoring and tracking        | 232  | 12%        |
| Connected vehicle              | 220  | 11%        |
| Hazard and maintenance sensing | 182  | 9%         |
| Smart Surveillance             | 149  | 8%         |
| Autonomous Robotics            | 129  | 7%         |
|                                | 113  | 6%         |
|                                | 75   | 4%         |

Source: Ericsson and Arthur D Little Industry digitalization revenue model  
Note: 5G operator addressable revenues as Service Creator operator role

# Conclusions



## **Technology Innovation (as 5G use cases) closely connected with Academia**

Use cases future developments within Ericsson always with the involvement of Universities

## **Universities /Research Centers can be assigned as 'coordinators' for New 5G Roles**

That way they support the quick development of the Market towards 5G adoption.

The successful procedure: Business need and/or pain point – Use case development as an answer

Students need to elevate their business administration understanding – shift focus on business education

## **Limited Time Window and Globalization are the main 5G development characteristics**

Threat to local Universities the competition in a global environment – limited time window opportunity

Likely to Import use cases developed from tier 1 Universities if no timely engagement

# Thank you!



Please reach out with any questions.





# Backup slides



# 5G INDUSTRY COLLABORATION EXAMPLES

## CHRONOS C-ITS Test & Validation for future transportation systems

- › Establish an open and controlled test arena for validation of Connected Driving (C-ITS)
- › Increase knowledge on use cases and business drivers

## 5G NETMOBIL 5G solutions for the connected mobility of the future

- › Explore 5G technology for ITS use-cases in detail, extract requirements, and develop a system architecture
  - Platooning – OnRoad and OffRoad
  - Connected driving in urban environment
  - Coexistence of C-ITS and infotainment traffic

## CMA Test Site for Future Automated and Shared Mobility Systems

- › Exploring the use of 5G networks for intelligent transport systems
- › Investigating "as-a-service" offerings for network operators and automotive OEMs
- › Reduced vehicle fleet operations cost
- › Better service awareness and reduced travel time for passengers
- › Usage of cellular networks in new markets

Partners:  
**SCANIA** **ERICSSON**  
ITIL-Integrated Transport  
Research Lab  
KTH Royal Institute of Technology

## KOI Coordinated Industry Communication

- › Low latency & high reliability wireless industrial communication
  - Radio interface design for local communications in production units
  - Coordination system
  - for realistic large scale deployments in the factory

## REMOTE OPERATION Robot remote control with haptic feedback over LTE

- › Evaluate mobile communication in industrial remote operation
  - Remote operations in mines – an industrial use case with strict requirements on reliability and latency.

## 5GEM 5G Enabled World Class Manufacturing

- › Evaluate 5G technology in a manufacturing industry
- › Understand ICT opportunities and solutions



- › Improved production efficiency
- › Increased flexibility
- › Excellent traceability
- › Social and environmental sustainability

Partners:  
**SKF** **CHALMERS** **ERICSSON**  
Industry Collaborations | Commercial in confidence | © Ericsson AB 2017 | 2017-08-01

## WITool Wireless Internet of Tools

- › Enable IoT for construction equipment OEM (Husqvarna) and rental companies (Cramo)
- › Capillary network connectivity, cloud, service enablement and machine analytics capabilities

## CONNECTED ENERGY

- › Infrastructure for surveillance of distribution transformers for the power grid
- › Secure IoT Cloud platform solution
- › Industrial grade sensors

## PIMM Pilot for Industrial Mobile Communication in Mining

- › Explore future 5G Use Cases in underground mining
- › Evaluate mobile communication infrastructure in an industrial context

- › Increased Productivity and Improved Safety
- › Industrial 5G requirements
- › Understand eco system, business models, etc.

Partners:  
**TeliaSonera** **VOLVO** **ABB** **BOLIDEN** **ERICSSON** **SKF** **SKF**  
Telcel - Industry Collaborations | Commercial in confidence | © Ericsson AB 2017 | March 2017

Transport

Manufacturing

Process Industries

# Ericsson at a glance



Enabling the full value of connectivity  
for service providers

## Business areas:

- Networks
- Digital services
- Managed services
- Technology and emerging business

## By the numbers:

- 180+ countries
- 201.3 b.sek in sales
- 100,700 employees
- 45,000 patents

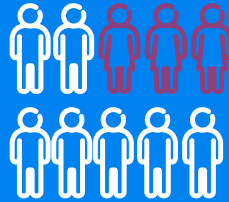
Image: Ericsson headquarters, Kista, Sweden

# ERICSSON Hellas at a glance



Established  
**1979**

 **187**  
employees

 **28%**  
women



## Selected Ericsson firsts in Greece:

- 1993: 1<sup>st</sup> mobile call
- 2003: 1<sup>st</sup> Managed Services contract
- 2007-9: First 13 Smart Cities (Trikala one of them)
- 2008: 1<sup>st</sup> end-to-end IPTV solution to a fixed network operator worldwide
- 2012: 1<sup>st</sup> Evolved Packed Core Network
- 2015: 1<sup>st</sup> 500mbps LTE Advanced demo
- 2017: 1<sup>st</sup> commercial launch of VoLTE and VoWiFi
- 2017: 1<sup>st</sup> industrial IoT use cases demo on the way to 5G

## Our customers



**400**  
R&D engineers  
through local  
partner

# Realizing smart manufacturing

With the new standards in cellular connectivity, almost every asset in a factory can be connected and managed in order to solve operational challenges.

## The BLISK\* case

Introducing 5G mobile communications into industrial manufacturing processes

5G provides the 1 millisecond ultra-low latency needed for real-time control of the BLISK manufacturing process.

5G enables EUR 360 million of annual savings in BLISK production

The manufacture of bladed disks (BLISKs), which are important components of turbines such as aircraft jet engines. Consisting of a rotor disk and multiple blades around its edge, BLISKs are one of the most demanding metal processing applications.

