

# From empowering consumers to empowering industries



1980: 1G

Voice



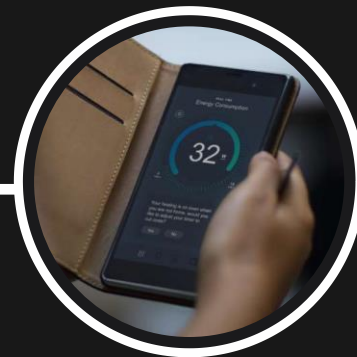
1990: 2G

SMS



2000: 3G

Internet  
browsing



2010: 4G

HD  
streaming



Now: 5G

Real-time  
control



# Den Industrielle Verden

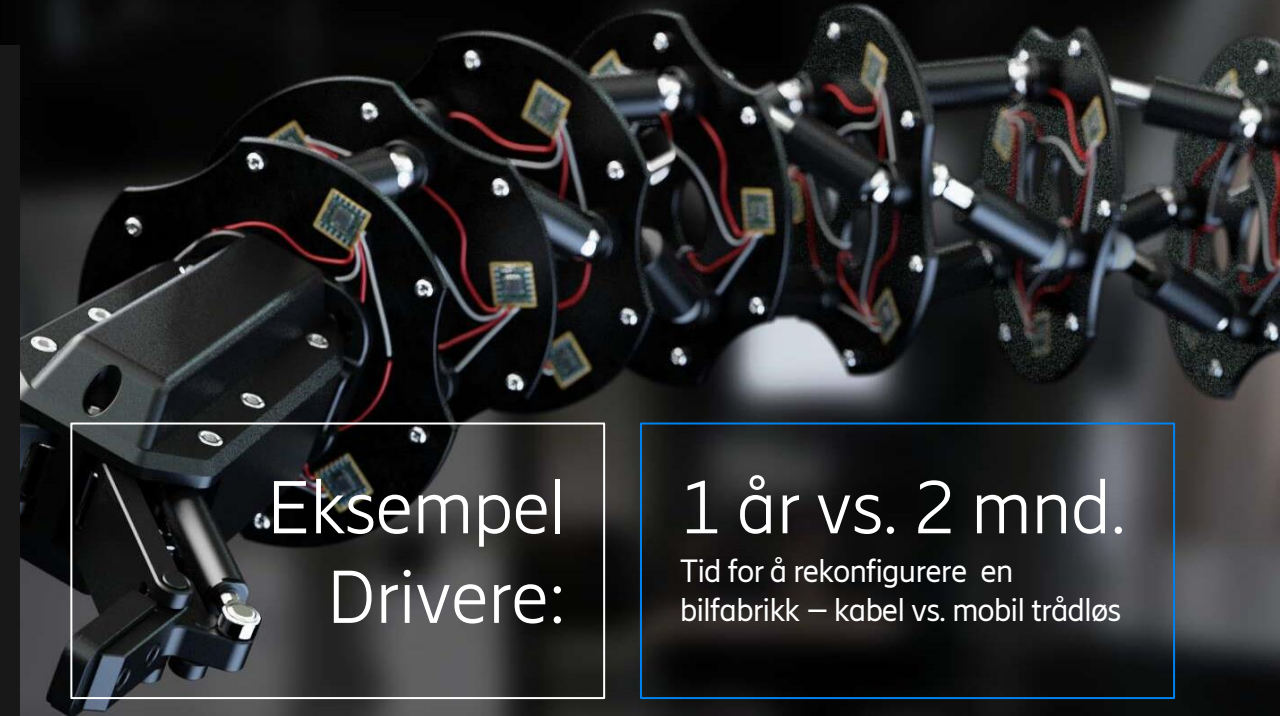
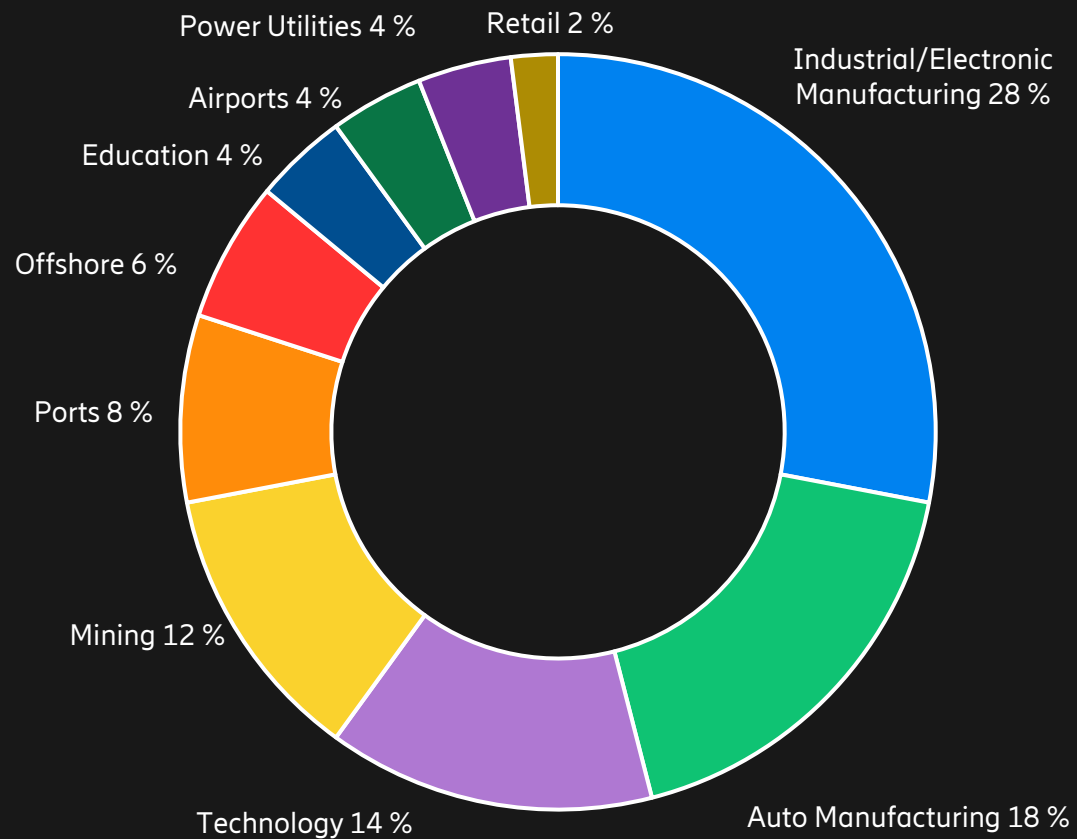
5G

5G

Telco-  
Verden



# Installert base private 5G nett globalt



Eksempel  
Drivere:

1 år vs. 2 mnd.

Tid for å rekonfigurere en  
bilfabrikk – kabel vs. mobil trådløs

5-25%

Effektivitetsgevinst fra AR-overlay  
for plukking og guidet product  
montering

\$30K per minutt

Kost av nedetid i en bilfabrikk

# Mercedes-Benz Factory 56 — flexibility, scale, CO<sub>2</sub> neutral.

## The Challenge

Need for a flexible and connected infrastructure to replace traditional assembly line with driverless transport systems, in order to significantly gain efficiency and flexibility to produce large numbers of very different vehicles

*"With the improved processes, comprehensive data availability and fast decisions based on real-time data, we will increase production efficiency by more than 15 percent by 2022".*

*Jörg Burzer, Member of the Divisional Board of Management of Mercedes-Benz Cars*



## The Solution

Private commercial 5G Network:

- Ericsson Private Network solution with 5G Radio Dot for high performance indoor
- First phase covers 20.000 of the 220.000 m<sup>2</sup> of Factory 56

## The Results

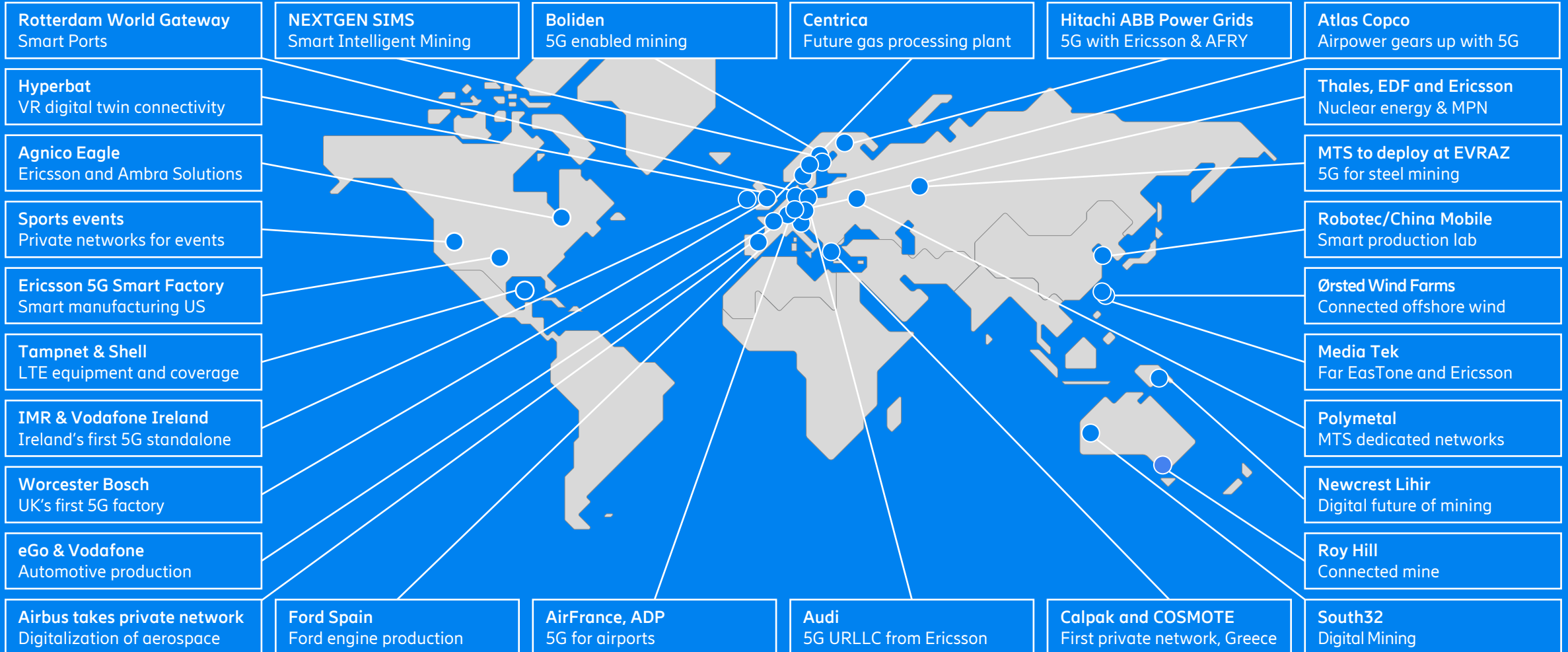
- Maximum flexibility - digital and flexible factory perform all assembly steps for the Mercedes S-class.
- Optimize production processes through data linking and product tracking on the assembly line
- Process optimization, which can be adapted on short notice
- Intelligently linking production systems and machines to support the efficiency and precision of the production process
- Secure data confidentiality with the on-premise cellular network
- Zero carbon factory - CO<sub>2</sub>-neutral with significantly reduced energy requirements

## Partners

- Telefónica Germany
- Mercedes-Benz



# Referanser & Case - 5G & Industri 4.0

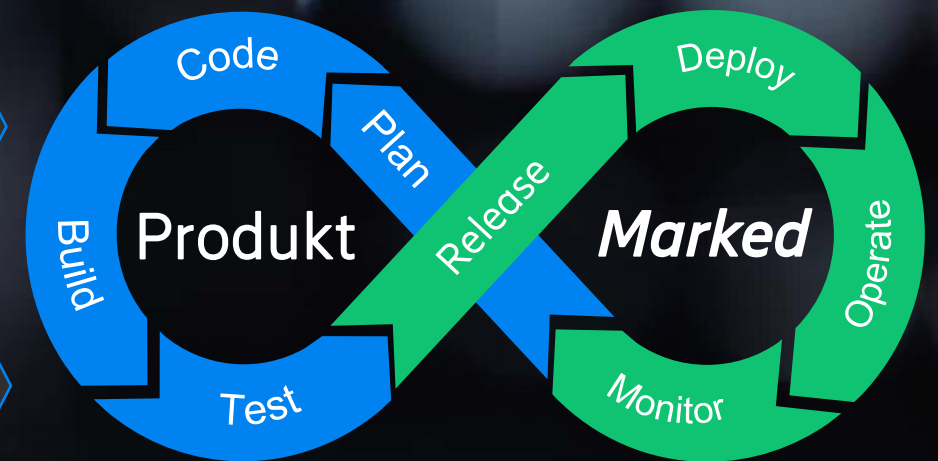
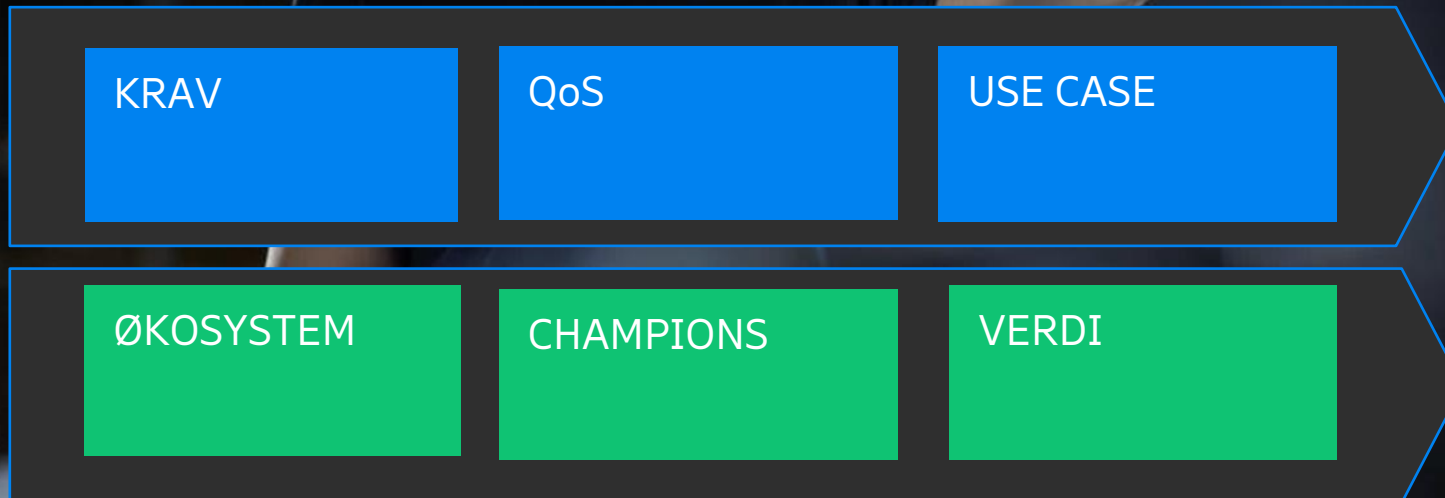




# 5G plattformen krever tettere samspill mellom aktører



- utfordrer eksisterende roller
- finne "product"/market fit



# Ericsson's reise i Industri 4.0 fra 2015 til 2022



"5G for Industry" Forskning,  
Fleksible Roboter

Nedskallering av  
eksisterende portfolio

Ericsson Supply: mål, utfordringer, Factory 73

1

2

3

4

Innhenting av industri-krav, trial-  
system, Unicorn case  
5G Blisk

6

5

"Cost of inaction":  
Investeringsgrunnlag & ROI-fokus

7

Markedsbevis: referanser &  
partner-reiser

Demokratisering: design for resell  
channel, pre-config. "off the shelf".

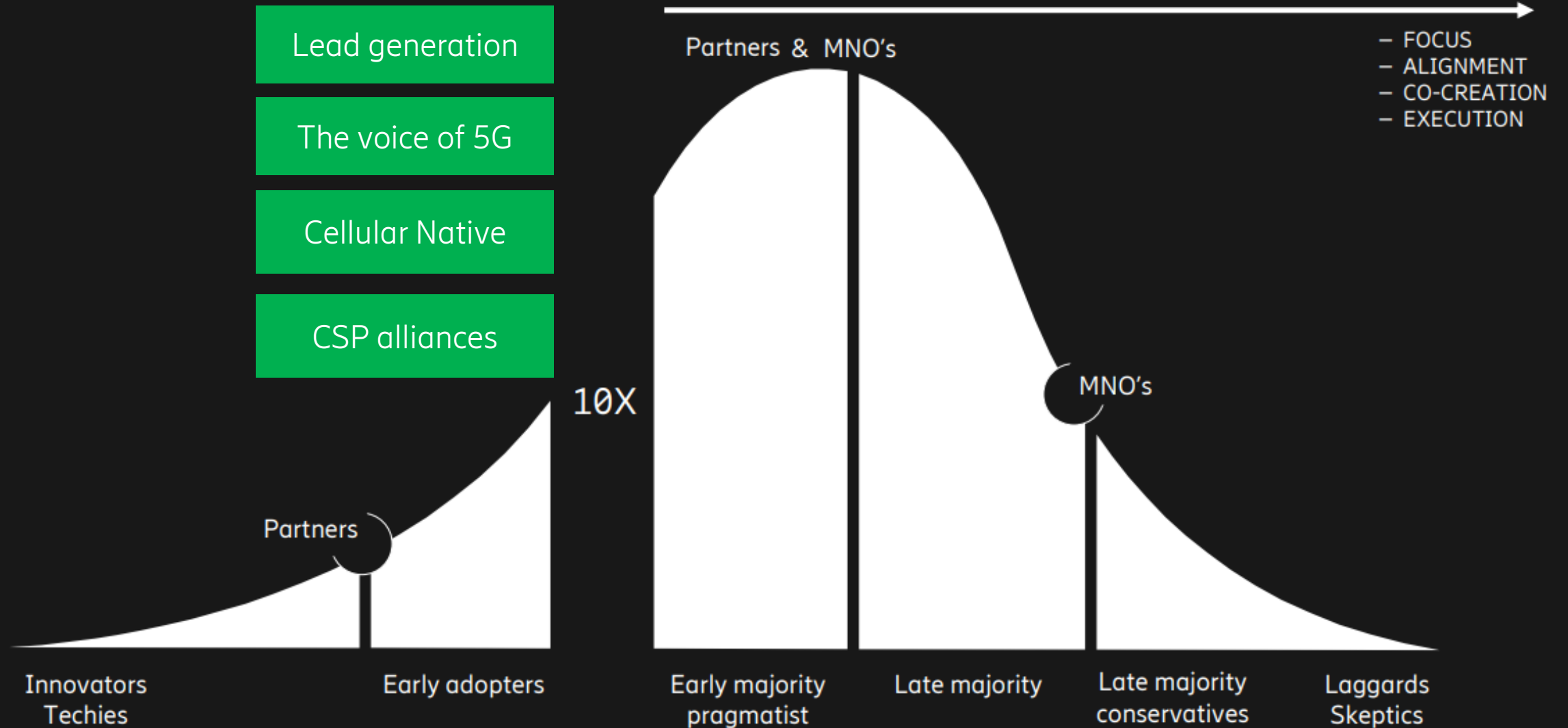
8

9

Center of Excellence, aksellering & automatisering av  
økosystem, starter kits

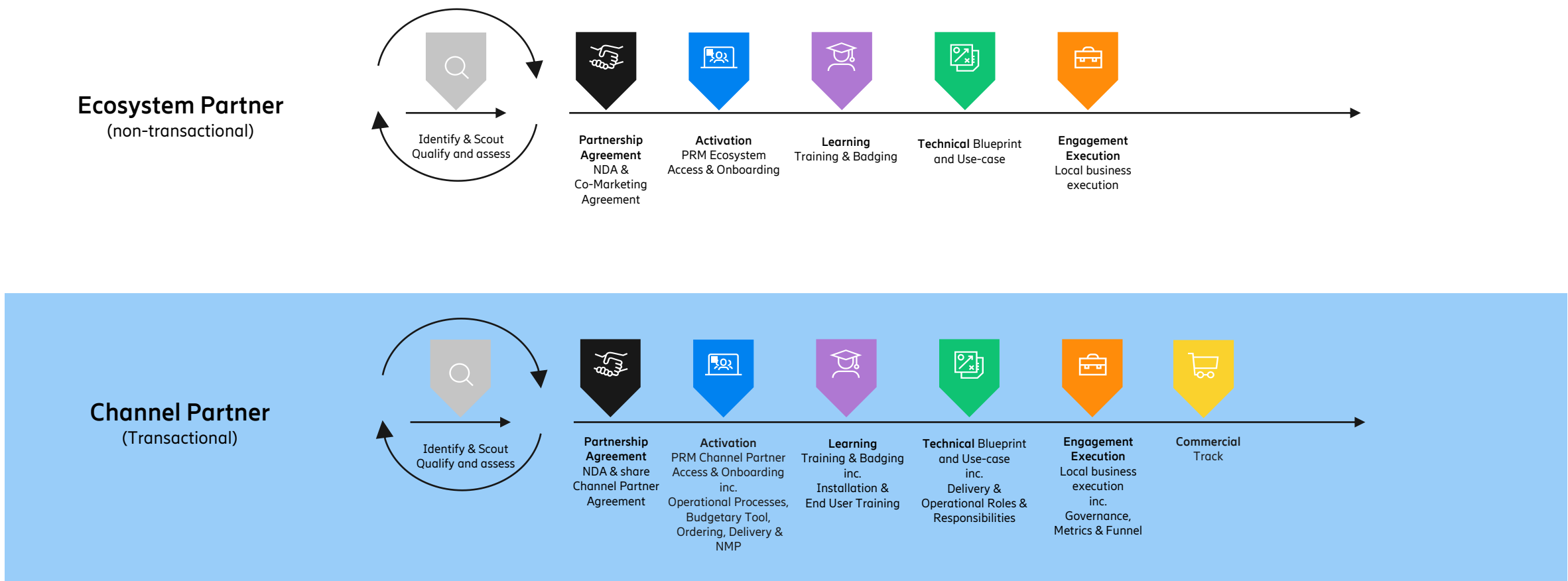
Utvidelse av vertikalkompetanse, hybride nett,  
samhandling, customized pre-config., skallering

# Partnerships: Force Multiplier





# Enterprise Partner Programs to Benefit Parties & Enterprise Partner Lifecycle



# ABB Global Partnership

## The Challenge

Ericsson and ABB share the same vision of wireless industrial automation. Both companies want to automate and connect their sites and products, and offer better solutions to the market.



“Ericsson and ABB already have a strong collaboration in research for 5G and Industrial IoT technologies. With this MoU, we strengthen our partnership to accelerate the industrial ecosystem and realize the full potential of flexible automation, unlocking new business opportunities enabled by combining 5G and Industry 4.0.”

*Börje Ekholm, CEO Ericsson*



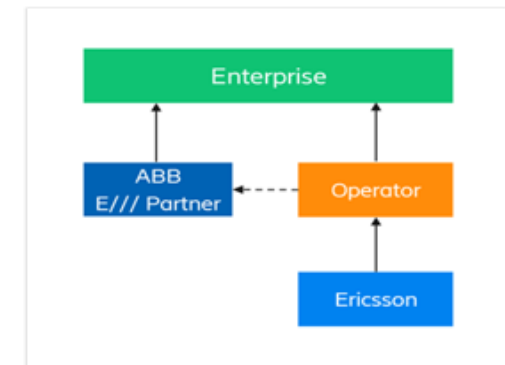
## The Solution

Non-commercial and non-exclusive partnership

## The Result

Global partnership based on 4 pillars

- 1) Research 5G labs, 5G SMART
- 2) Empower our own sites
- 3) New business opportunities
- 4) Joint Industrial Communication

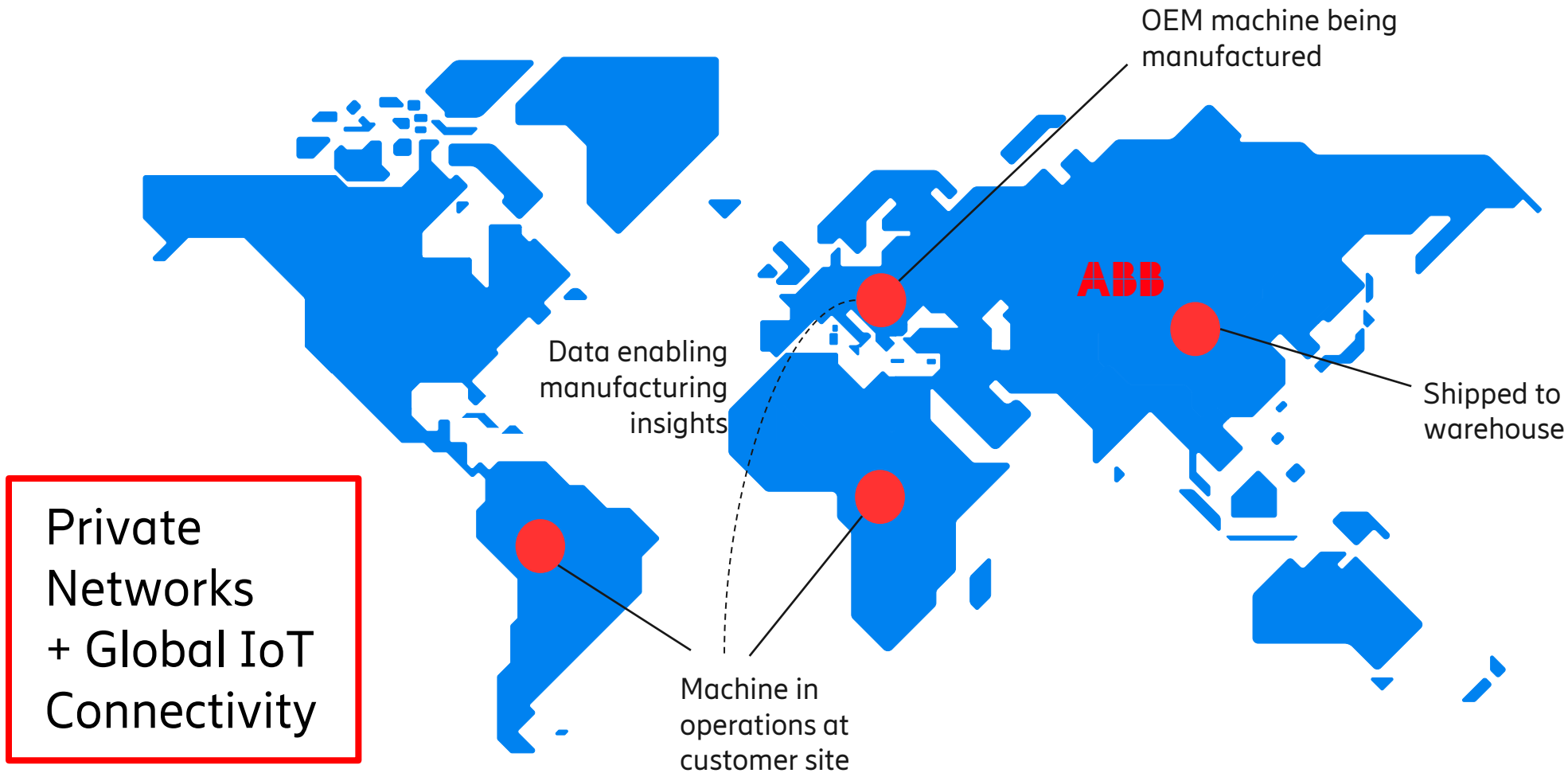


## Partners

- All five ABB business lines

# Our Partner ABB needs 5G in all stages of the life cycle

To deliver the best in class OEM products, services & performance to their customers.



## Energy efficiency

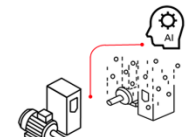
Advanced optimization



40% higher efficiency

## Advanced reliability

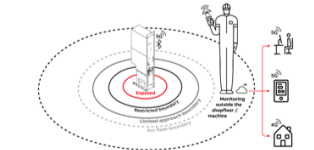
Predictability



70% less downtime

## Safer workplace

Distance increases safety



No accidents



# ABB Factory Powergrids

## The challenge

Improve productivity in Ludvika through smart production initiatives embracing digitalization, 5G, automation opportunities throughout the site

Need to increase flexibility with handheld screwdrivers wireless communication



## Solution

- Industry Connect v1.3 with 8 dots covering 5 000 square meters including production and warehouse of the "Lindningskopplare" factory in Ludvika
- Deployment with AFRY as the local SI and responsible for install and use cases, Telia as the CSP partner and Ericsson taking first, and second line support

## Results

- Connected screwdrivers
- Connected workers
- Future proof shop floor lan

## Partners

- ABB Power Grids
- Afry
- Telia



# Enterprise Challenge: Harvest Data From factory floor to cloud in flexible way

ERICSSON 

## Devices



Choose the product of the powertrain you want to digitize – drive, motor, bearing, pump

## Software



Data from those products is transferred via the cloud into your monitoring portal via ABB Smart Sensor

## Services

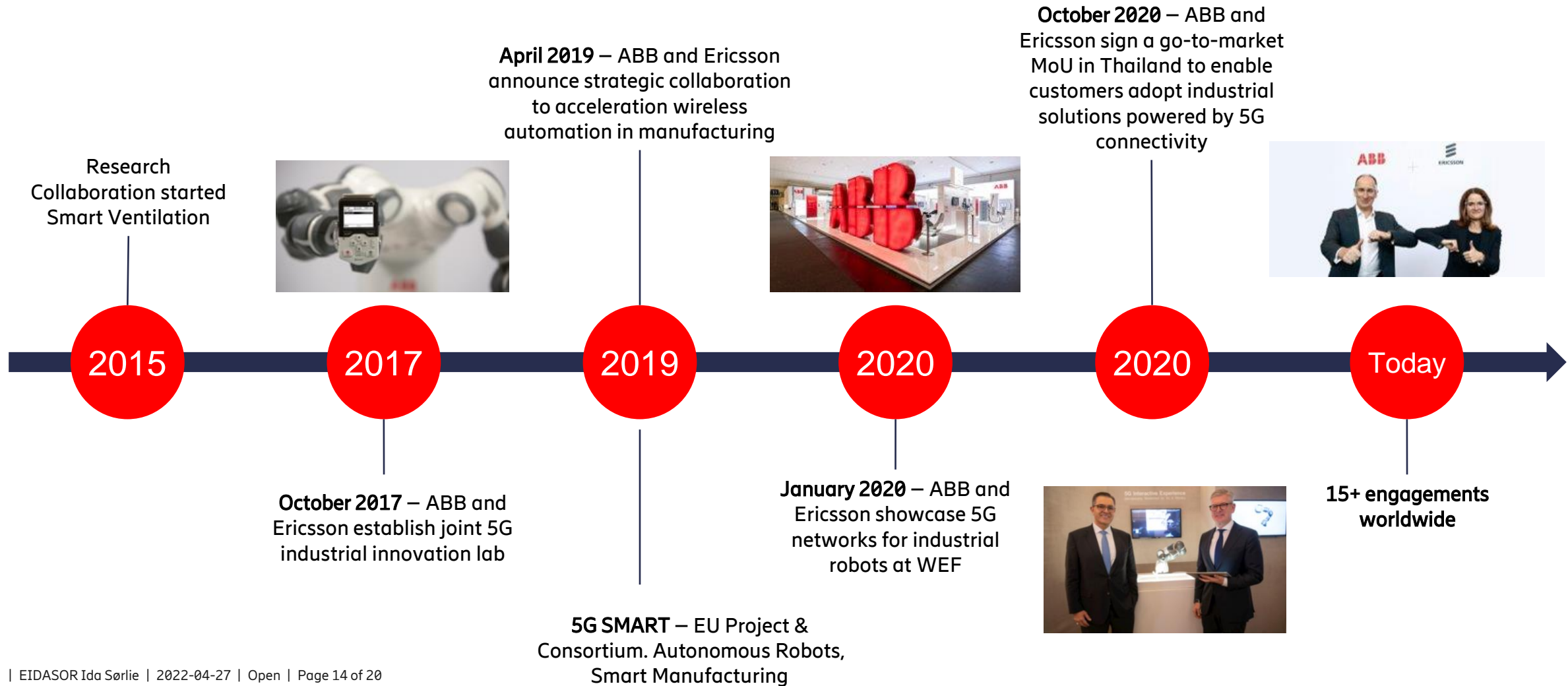


Choose the basic level of service or select from optional service features



# Ericsson & ABB Partnership

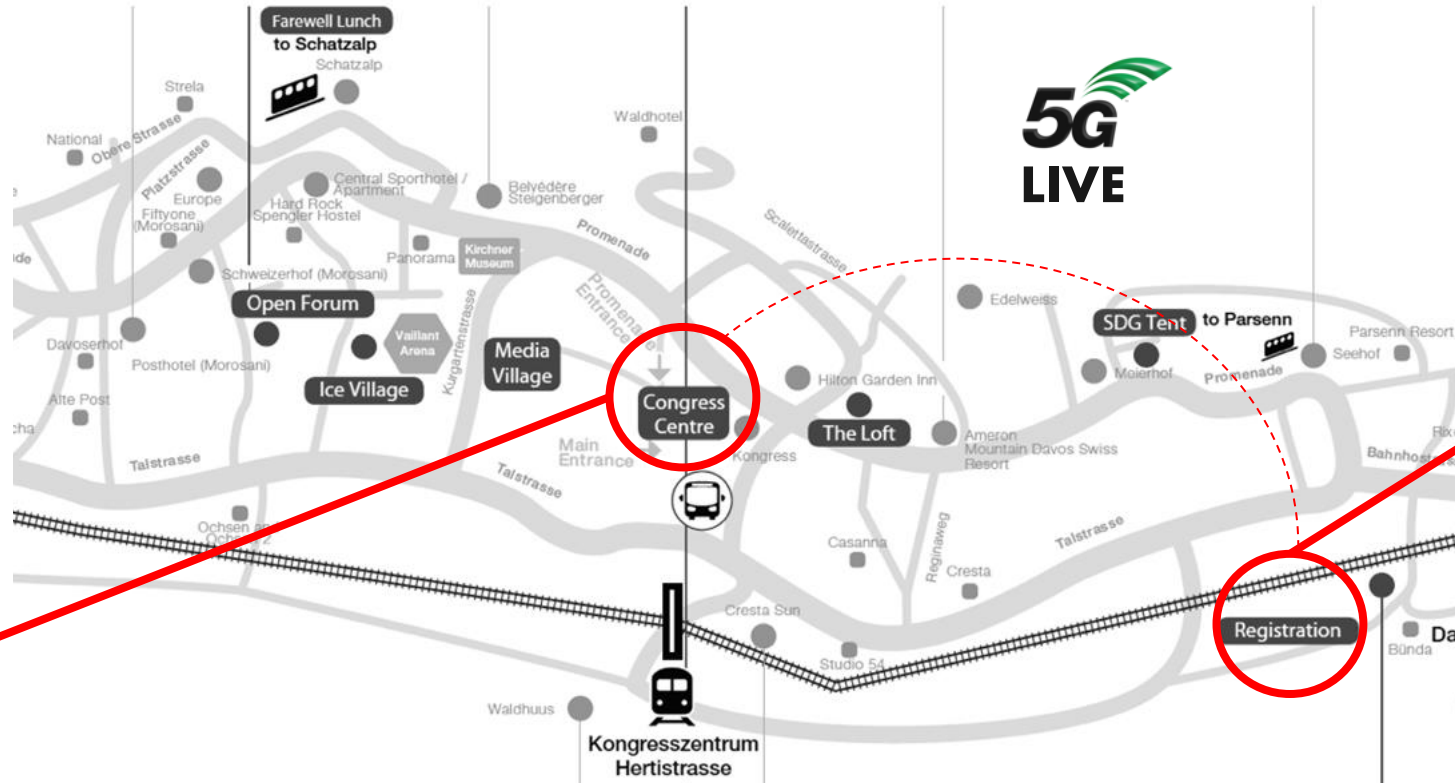
A global partnership to develop digital OT solutions enhanced with 5G technologies



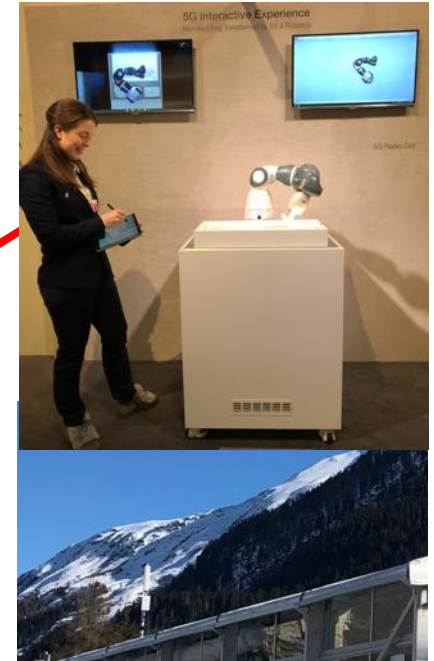


# SAY 5G Interactive Experience

Human/Robot Remote Control at World Economic Forum



**5G**  
LIVE



# SAY 5G

## Case: ABB, Ericsson Swisscom

### The Flexibility Challenge:

Increasing need for robot fleets to be remotely serviced, programmed & mobile to reach adaptable, efficient, customized production

**The Computing Challenge:** Network platforms needed to support real-time Digital Twins & cloud-based virtual controllers that simplifies set ups & access, maximizing floor space, reducing IT costs, effectively lowering entry barriers in automation.

**Future of Work Challenge:** Empowering field workers & leveraging experts world-wide, focusing more on value adding activities such as improving operational design & Overall Equipment Efficiency.

**The Clean Room Challenge:** ensures intelligent remote automation for Electronics & Pharmaceutical segments for zero contamination



### The Solution

Collaborative robot Single Arm YuMi (SAY) connected over live 5G public network. Solution using Swisscom fixed wireless router and Ericsson 5G for reliable wireless communication, mirroring human command remotely 1,5 km away.

### The Result:

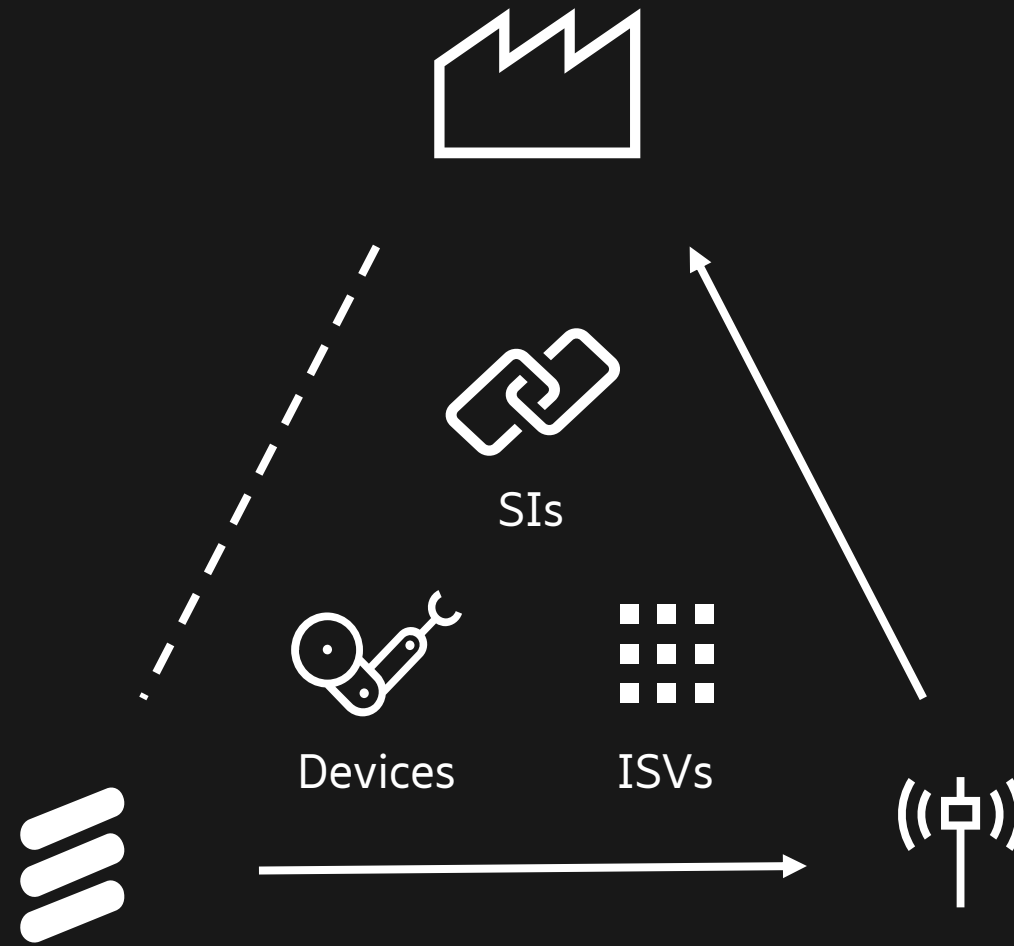
- External Guided Motion (EGM)
- 1200MB/s video transfer
- 4ms package delivery
- Seamless virtual programming

### Partners

- ABB
- Ericsson
- Swisscom



# "Triangle of Trust" for raskere markedsadopsjon:





A large white ABB industrial robot arm is shown in a factory setting, working on a complex electronic assembly. The assembly is a dense cluster of circuit boards and components, held by the robot's gripper. The robot is positioned on the left side of the frame, and its arm extends towards the center. In the background, a worker in a high-visibility yellow vest and dark pants stands observing the process. The factory floor is visible with various equipment and structures.

Where the  
magic  
happens

Comfort  
zone





# Industry 4.0 wireless ecosystem



<http://ericsson.com/industry4.0>

## Independent software vendors

Applications ecosystem  
Application enablement Platforms  
Manufacturing Execution Systems (MES)  
Enterprise Resource planning System (ERP)



## Cellular Network 4G /5G (public, sliced, Private Network)



## Device partners & HW



## Modules

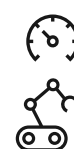
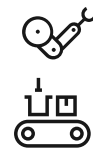


## Cellular Gateways



Current loop  
Ethernet  
RS232  
Analog I/O  
Digital I/O

Machinery  
Sensors  
Actuators  
Handhelds  
Wearables  
Cameras  
Drones



Wired via Gateway or  
Integrated Module, grid power

Integrated with Cellular Module or  
Chipset, battery



## Professional services

System Integrators & business advisors

