

Imagine Live Korea 2022
- 5G for enterprises



Imagine Possible

-
호칸 셀벨
CEO of Ericsson-LG



Imagine a world where limitless
connectivity means limitless possibility

Our purpose

To create connections that make
the unimaginable **possible.**

Our vision

A world where limitless connectivity
improves lives, redefines business and
pioneers a sustainable future



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Our vision

A world where limitless connectivity improves lives, **redefines business** and pioneers a sustainable future

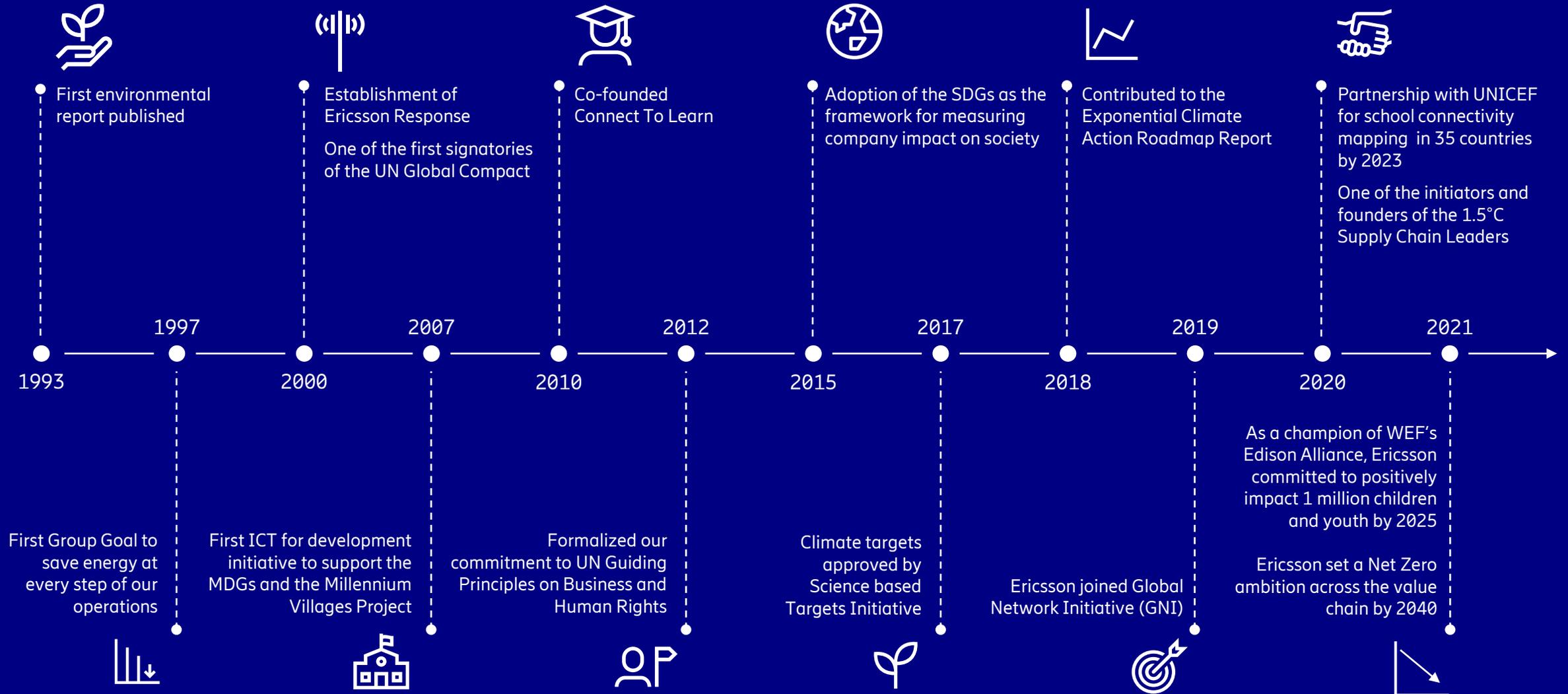


Our vision

A world where limitless connectivity
improves lives, redefines business and
pioneers a sustainable future



Sustainability pioneer in the private sector



Net zero journey across society



Own activities

Reducing emissions to ultimately reach Net Zero by 2030

Supply chain

Halving emissions by 2030, and increase climate action in global supply chains

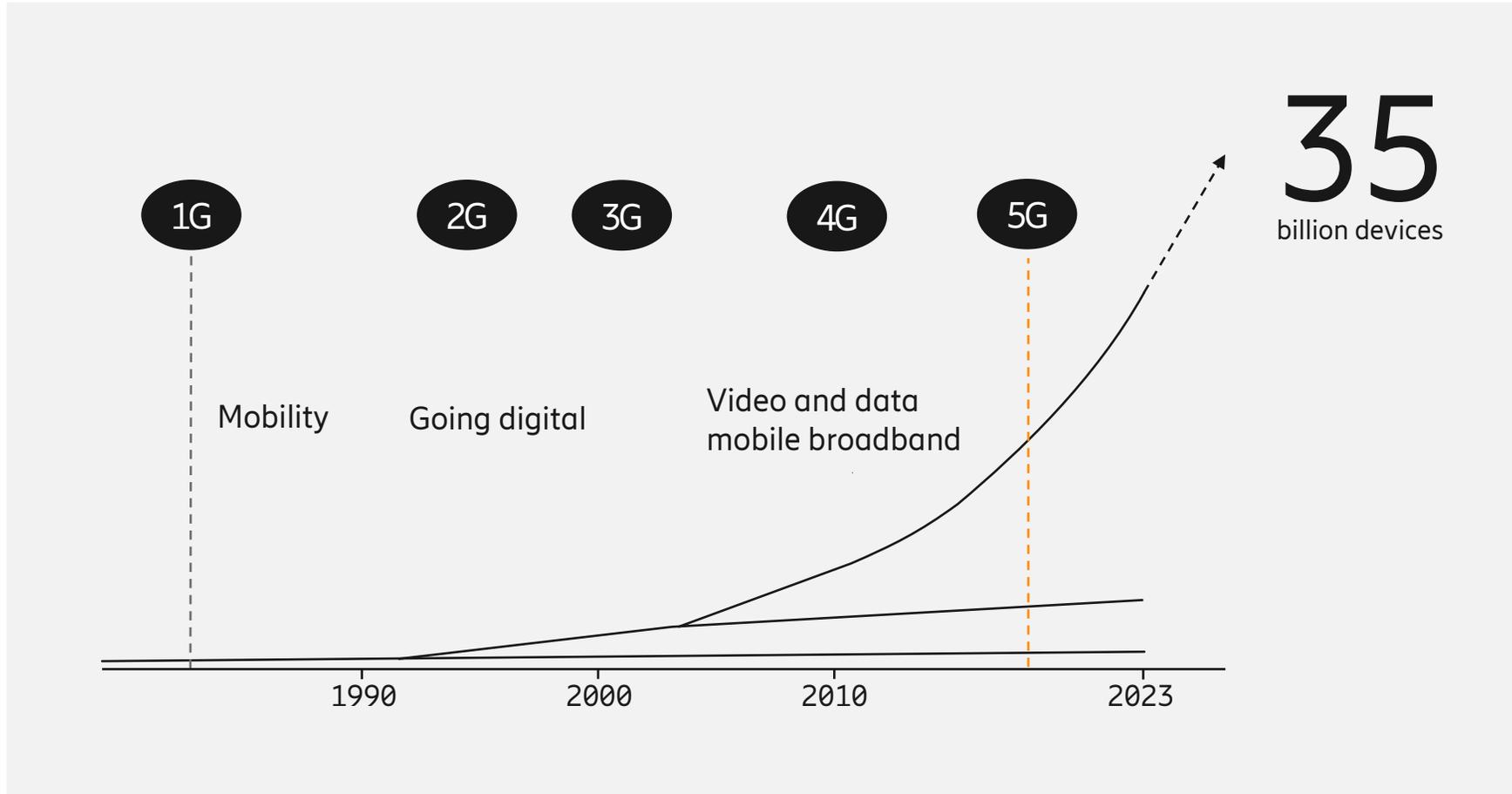
Portfolio

Develop and innovate our portfolio to halve emissions by 2030 and support climate action in society

Industries and society

Decarbonizing industries and society globally through ICT solutions. Digitalization can potentially enable a 15% reduction in global emissions by 2030

5G – enabling digitalization and transformation



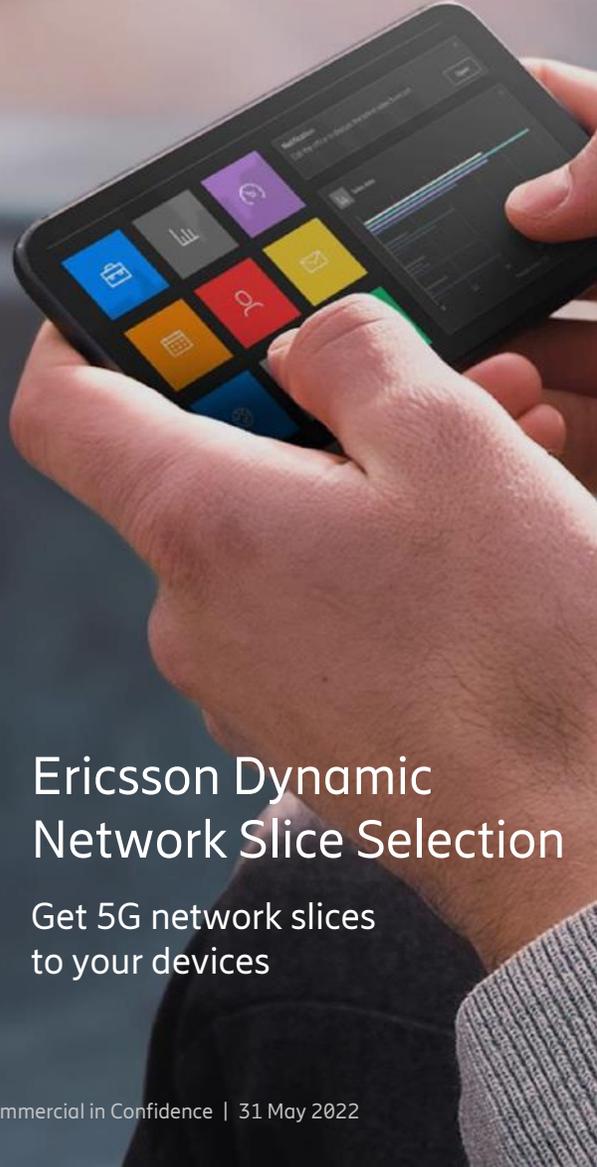
The rising adoption of a private network for IoT applications, industrial use cases, and the Industry 4.0 revolution are some of the critical factors responsible for market growth.

What's new



Ericsson 5G RAN portfolio update

Realize 10x more capacity while reducing power consumption



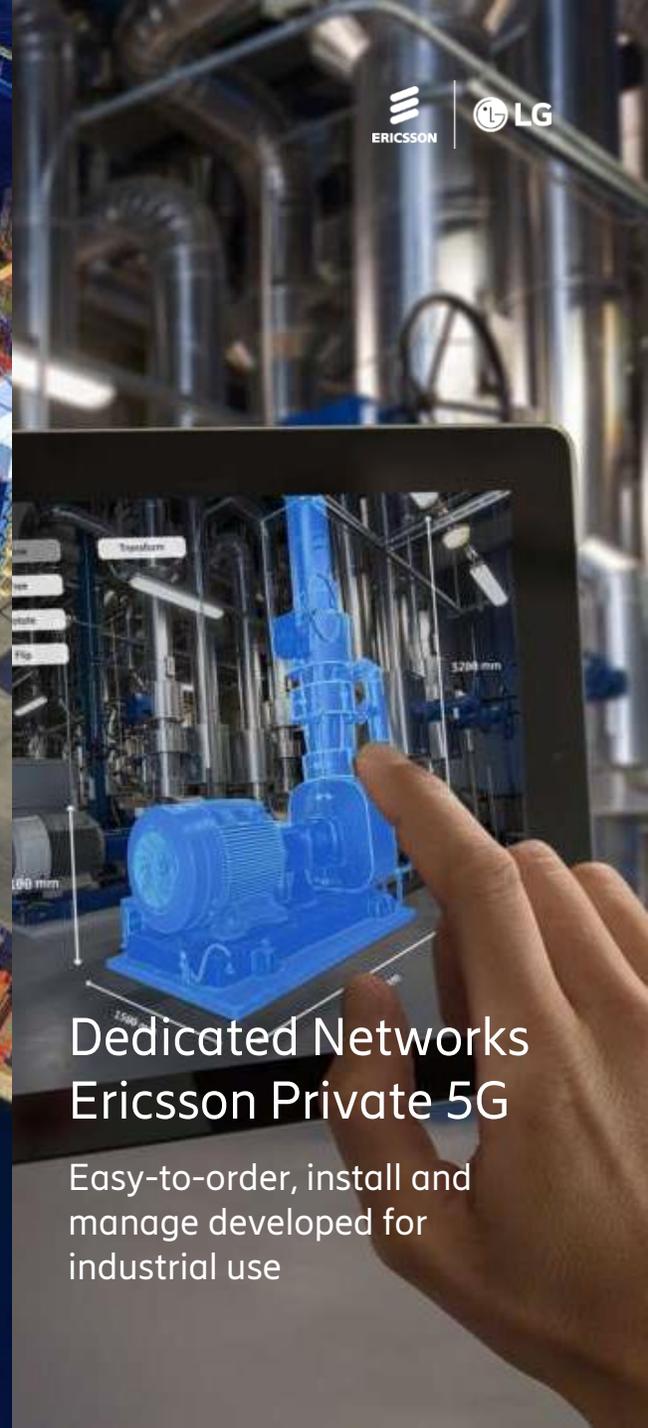
Ericsson Dynamic Network Slice Selection

Get 5G network slices to your devices



Ericsson Edge Exposure Server

Make it easier to scale edge business



Dedicated Networks Ericsson Private 5G

Easy-to-order, install and manage developed for industrial use

Imagine Possible



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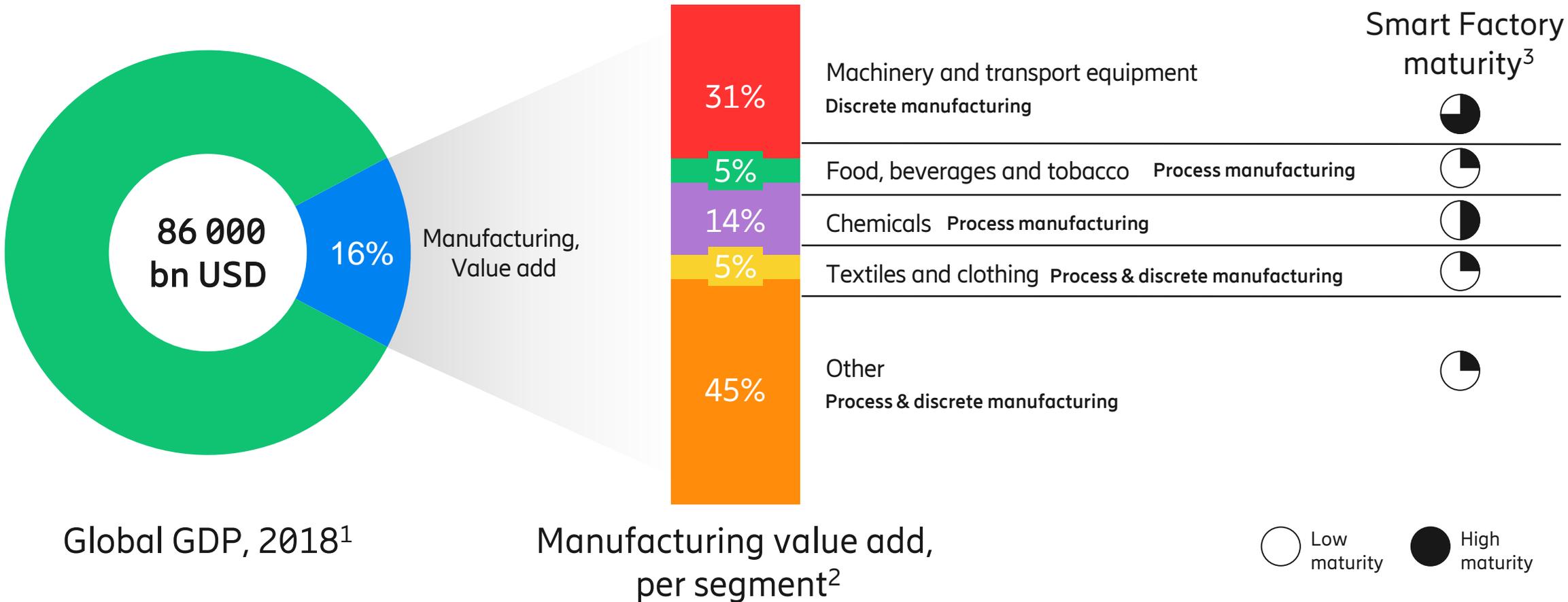


5G 산업 스토리

강지훈 시니어 컨설턴트



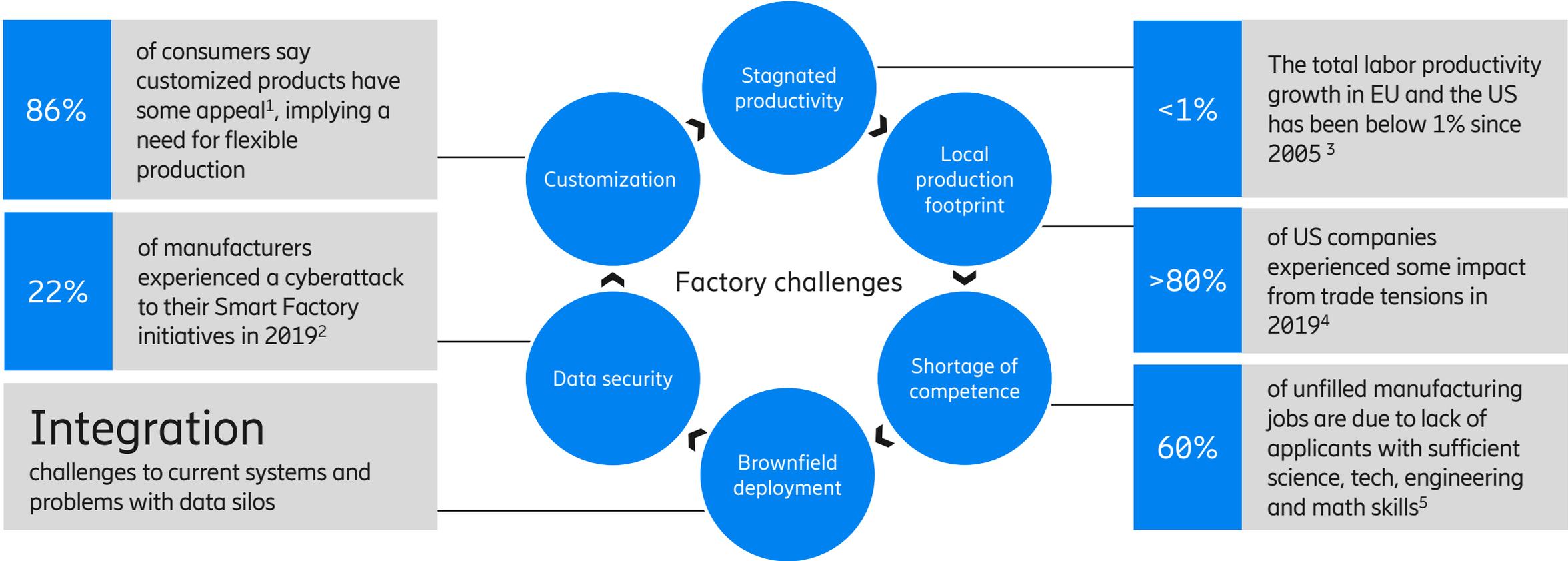
The manufacturing industry has a large potential to become smarter



Source: World bank, Grand View research, Arthur D. Little

1. World Bank, Global GDP 2018, 2. World Bank, Structure of manufacturing 2016, 3. Smart Factory maturity assessed based on Smart Factory market size per segment related to contribution to GDP.

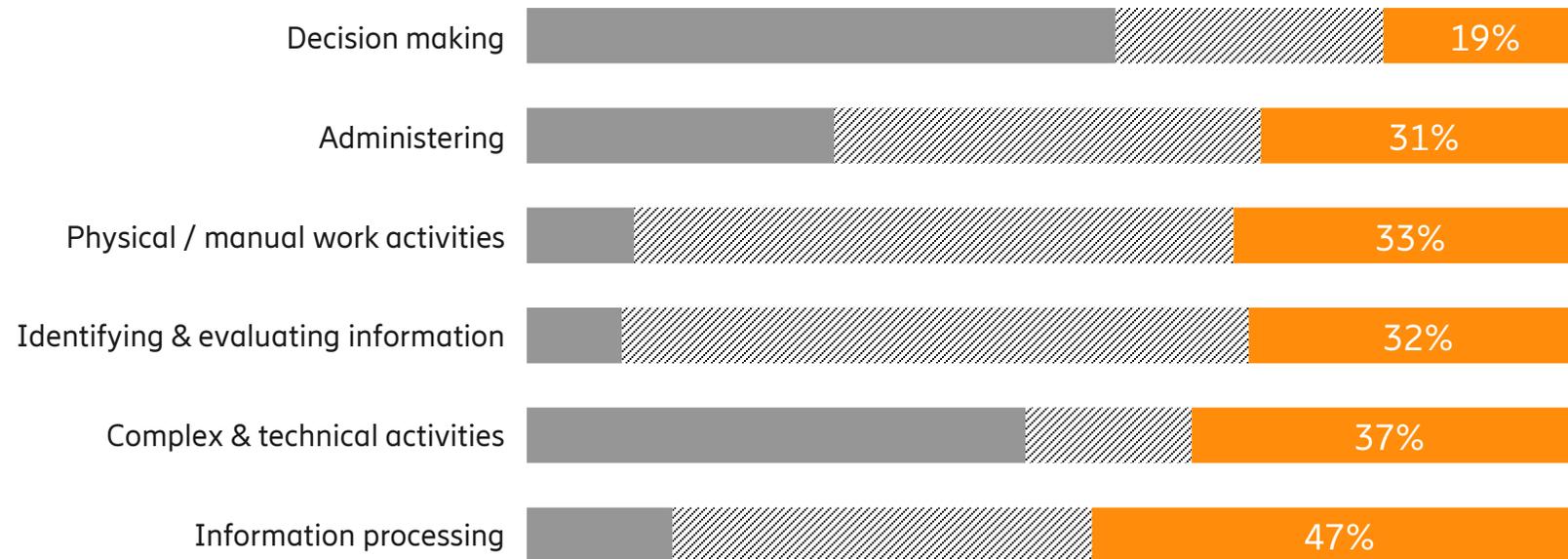
Manufacturers face several challenges in their current operations...



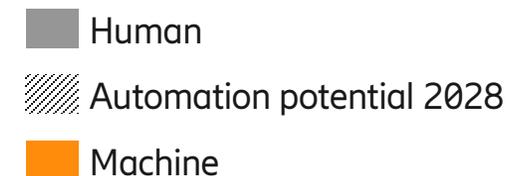
Source: Protolabs, Capgemini, WeatWork, VOX EU, The Manufacturing Institute/Deloitte, US-China business Council, interviews, Arthur D. Little
 1. "The numbers reveal consumers want more options on demand"; Protolabs (2018); 2. Smart Factories @ Scale, Capgemini Research Institute (2019); 3. The industry anatomy of the transatlantic productivity growth slowdown: Similarities outweigh the differences, VOX EU (2019); 4. US-China business Council (2019); 5. The skills gap in U.S. manufacturing 2015 and beyond, Manufacturing Institute & Deloitte (2015).

... and 86% believe smart factory initiatives will be necessary to remain competitive

Share of human vs. machine working hours
Manufacturing industry, 2018²



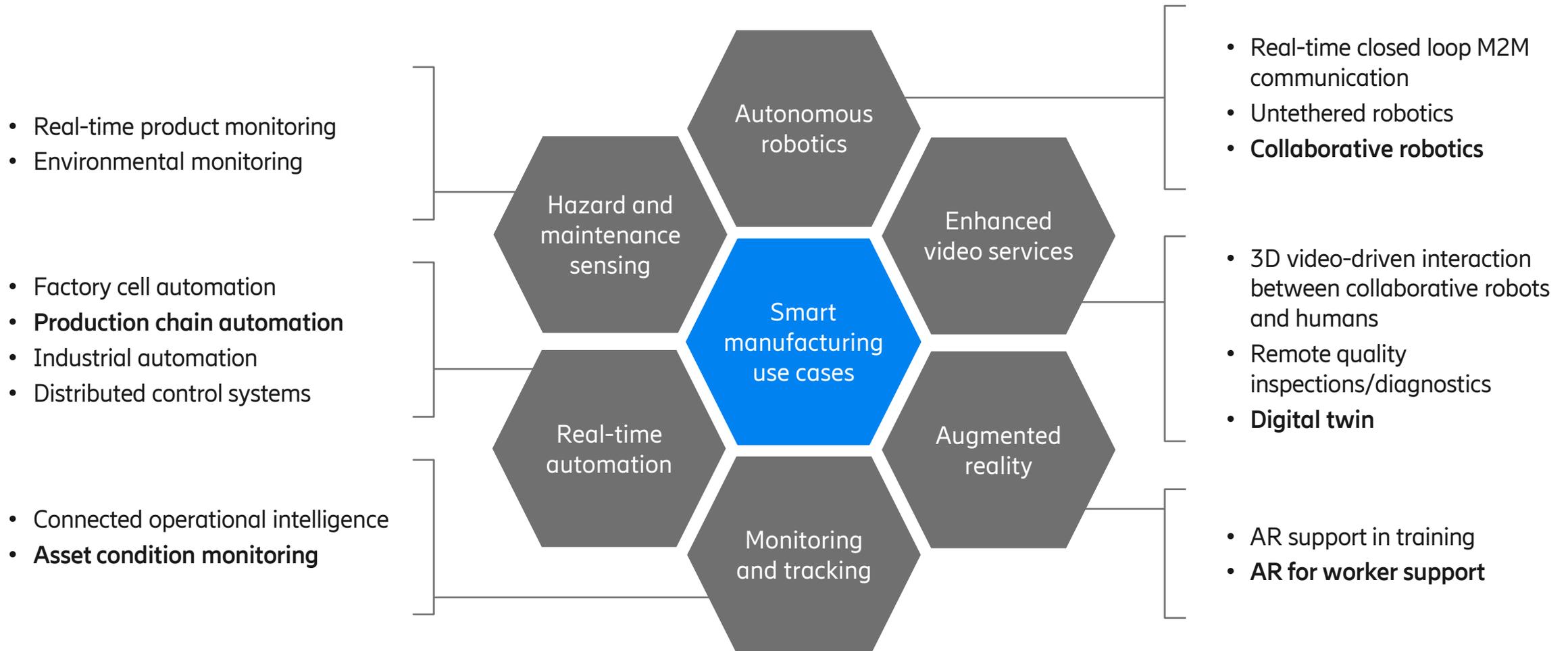
86%¹
believe Smart Factory initiatives will drive competitiveness in the next 5 year



Source: Ericsson, MAPI/Deloitte, Arthur D. Little analysis

1. Respondents in 2019 Deloitte and MAPI Smart Factory Study, Deloitte & MAPI (2019); 2. Arthur D. Little analysis based on: RPA: Robotic Process Automation, Arthur D. Little (2019), with contribution from industry experts.

There is a wide range of use cases within the concept of the Smart Factory...



Source: Ericsson, Arthur D. Little

... but manufacturers experience some uncertainties in how to get started

Industry concern

We already have well functioning processes in our factory, why would I want to change these?



What is the **economics** of the Smart Factory use cases?

Which use case is the one that actually justifies the deployment of a cellular network in our factory?



How to get started?
Which is the **first use case** to deploy?

How do we actually realize the benefits from the use cases?



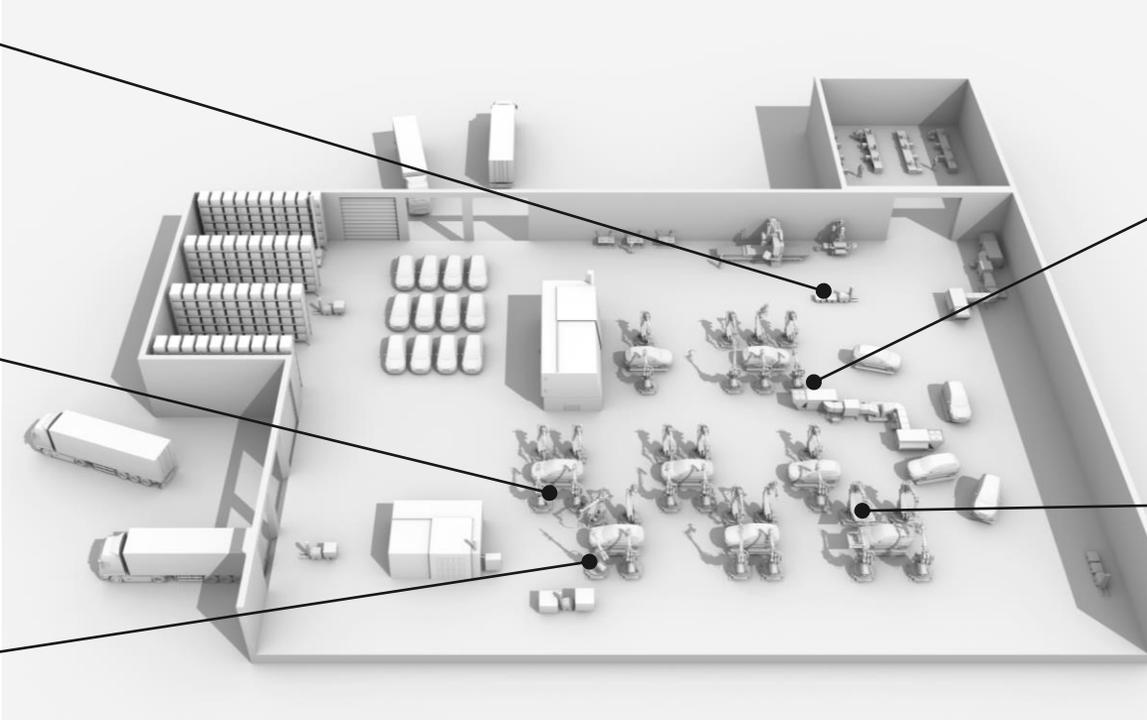
How to **implement** the Smart Factory use cases?

The five selected use cases could be your starting point

 Autonomous mobile robots (AMR) for real time production chain automation 

 Collaborative robots for efficient operations

 AR for efficient quality inspections



Use cases for discrete manufacturing

 Asset condition monitoring for decreased downtime

 Digital twin for optimized operations

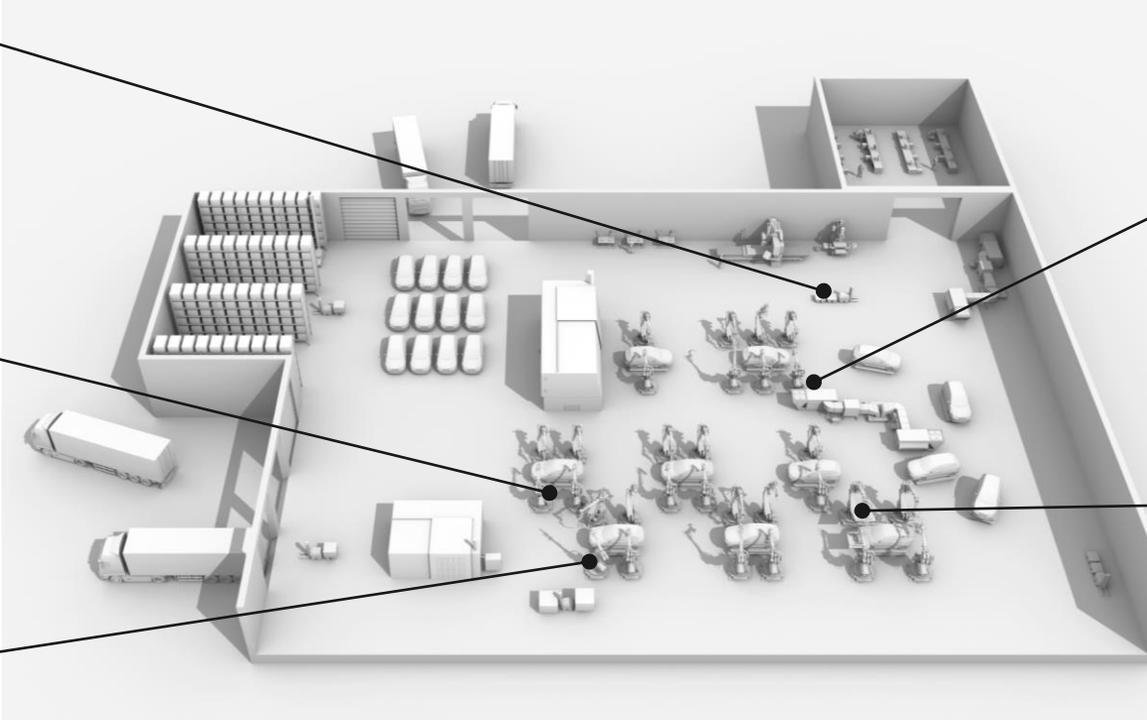
 Anchor use case

The five selected use cases could be your starting point

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 AR for efficient quality inspections



Use cases for discrete manufacturing

 Asset condition monitoring for decreased downtime

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 Anchor use case

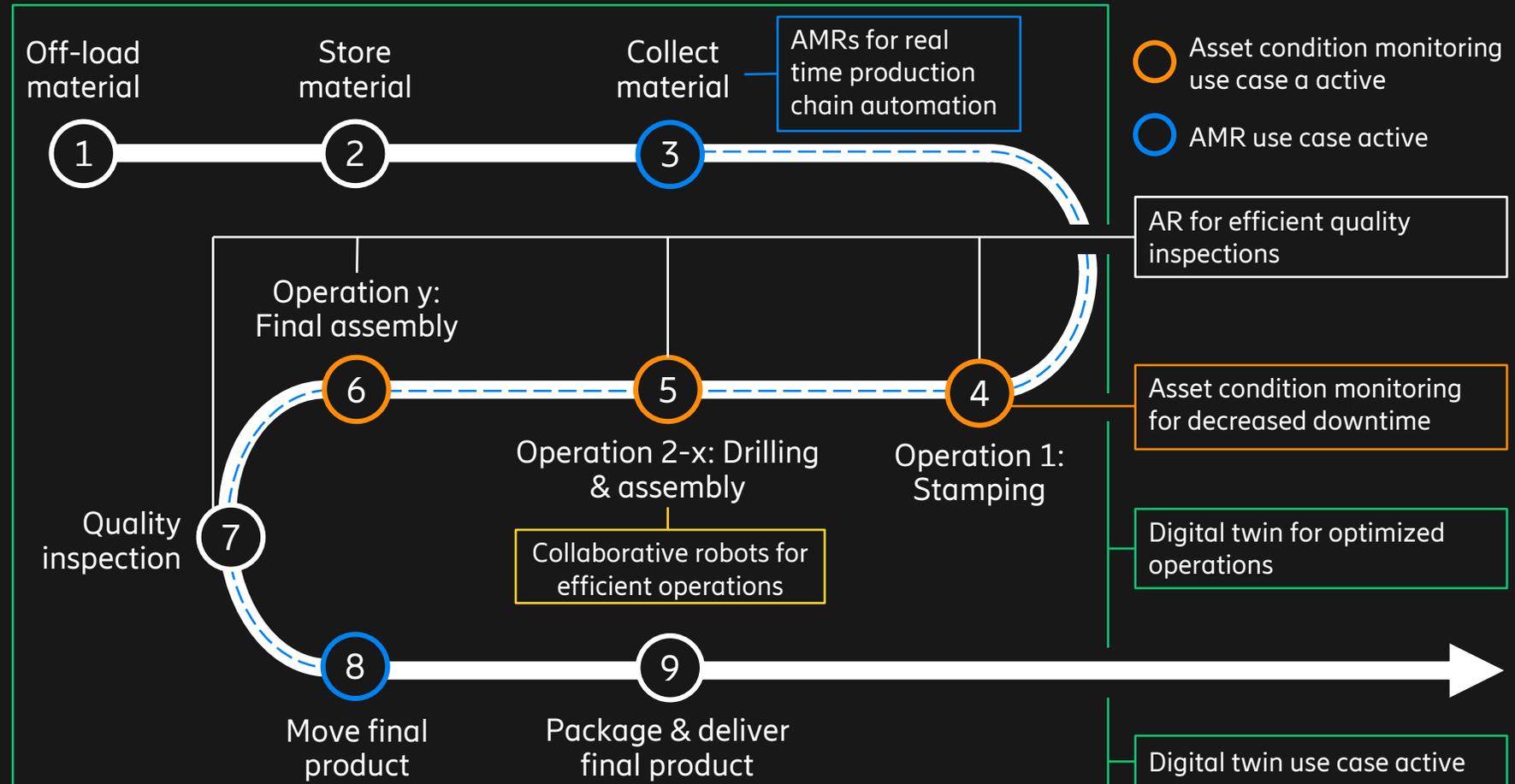
The use cases are represented across the in-factory production chain

Baseline factory

Automotive supplier

Mainly stamping & assembly operations

Revenue: 100 MUSD
Gross profit: 10 MUSD



Source: Ericsson, Arthur D. Little

Industry use case references

20+
Industry use case
References

6 Industries



- | Manufacturing
- | Energy and utilities
- | Mining
- | Ports
- | Healthcare
- | Networking Enterprises

Cosmote AGV for warehouses	Hexagon Smart Wireless Manufacturing	Ambra Solutions 5G-ready connectivity in Mines
Comau & TIM Comau factory of the future	Telenor Connexion, Grundfos Connected Pumps	Newcrest, Telstra Lihir gold mine, Papua New Guinea
Comau VR Monitoring of production lines via Digital Twins	Hitachi, Mobile Network Operator, Global System Integrator Smart Manufacturing	Boliden, ThingWave, LTU Business, Telia. Narrowband IoT for Smart Rock bolts
RoboTechnik, China Mobile Jiangsu company Private 5G/LTE for industry digitalization	Hitachi, Mobile Network Operator Ideal energy usage	Port Qingdao, China Unicom, Shanghai Zhenhua Heavy Industries Co. 5G Automated Port
Ericsson and Telia Tallinn Smart Factory	Southern Linc Private LTE network in Southeastern US	Arkessa, Gemalto Brighter is building a global healthcare IoT ecosystem
eGO, Vodafone Germany Automotive 5G manufacturing production: eGO	Landis+Gyr, Telia, E.ON. Driving rapid adoption of cellular IoT in smart meters	Verizon Virtual Network Services for Enterprise business
Mercedes Benz & Telefónica Germany Mercedes-Benz Cars increase efficiency and flexibility	Hitachi, Mobile Network Operator, AI/ML Provider Improved logistics for oil and gas	
MTU Aero Engines, Fraunhofer IPT 5G monitored manufacturing of bladed disks	Bell Canada, BeWhere BeWhere delivers cost-effective cellular IoT asset tracking solution	

5G/3GPP¹ powered use cases are reshaping the factory of the future

Real-time automation

Real-time production chain automation



Autonomous robotics

Collaborative robots



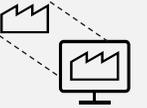
Augmented reality

AR troubleshooting



Hazard and maintenance sensing

Asset condition monitoring



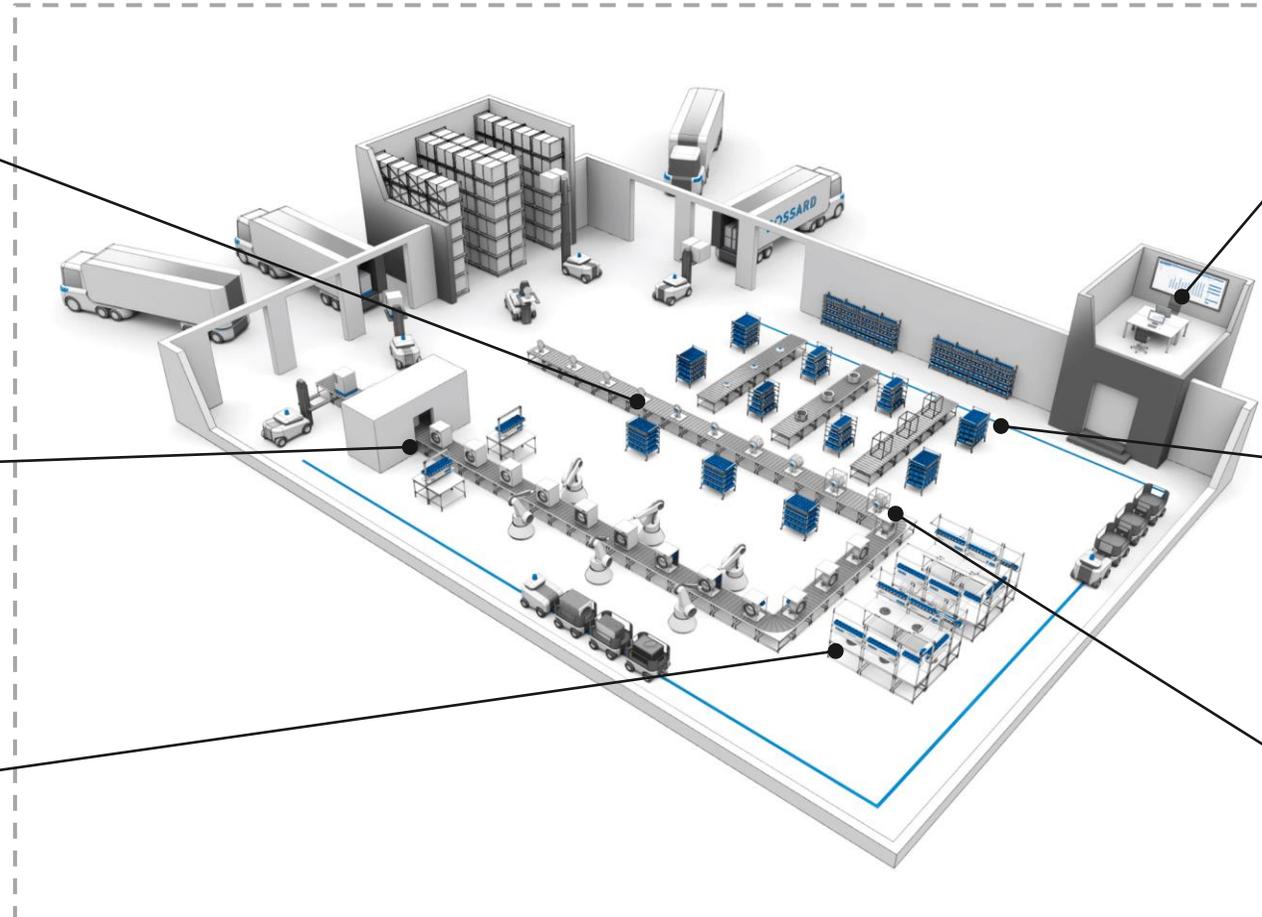
Monitoring and tracking

Connected screwdrivers enabling monitoring of real-time data

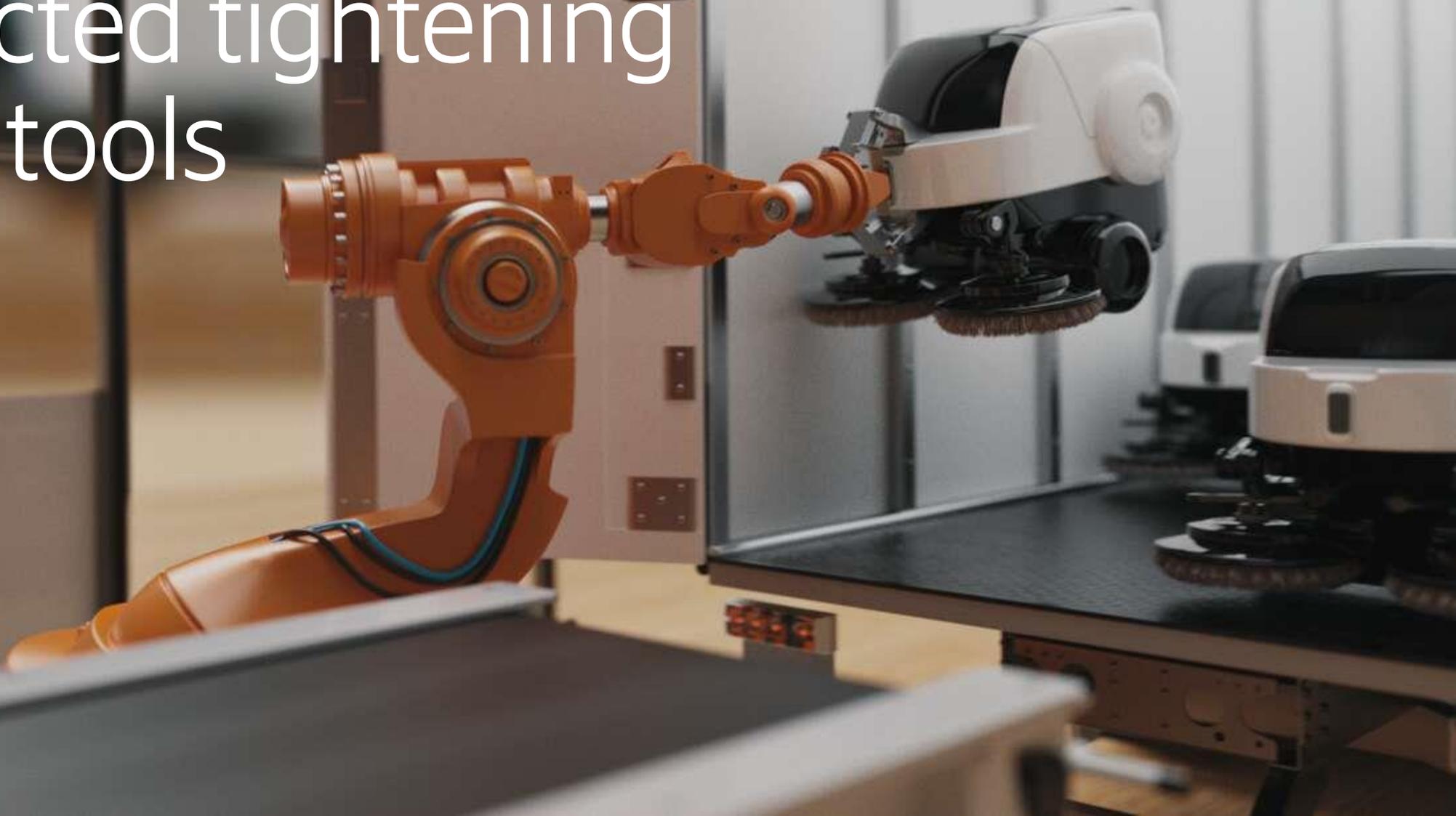


Enhanced video services

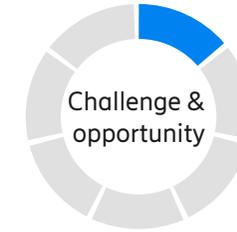
VR training, planning and design



Smart factory use case Connected tightening power tools



Electric corded and battery tightening tools can be connected



Out of scope

Tightening equipment in scope

Electric - can be connected

Torque wrench

Tools used to tighten nuts and bolts to predetermined torque levels

Different types include click, breaking and slipping wrenches

The tools can be manual or digital, meaning that they tell how much twisting force has been used via a digital display



Pneumatic

Run by a pneumatic drive, and require a constant pressurized air source in terms of a compressor

Different types include pistol, angle and straight torque screwdrivers

Can be used for high torque level applications



Electric corded

Run by an electric motor and powered by cord

Different types include pistol, angle and inline torque screwdrivers

Enable torque control and storage of tightening data required for critical applications



Battery (cordless)

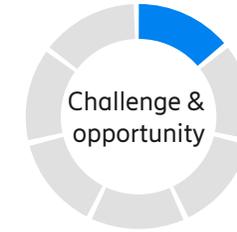
Run by an electric motor and powered by rechargeable batteries

Pulse screwdrivers enable torques up to 150 Nm

Enable torque control and storage of tightening data required for critical applications



Scania can benefit much from connecting its tightening tools



Environment

Current production at Scania in Sweden¹ uses over **5 000 torque screwdrivers**, including pneumatic, electric and battery tools

- Approximately **2 000 tools are electric corded**, **500 are battery tools** and **2 500 are pneumatic**
- **600 electric tools** are connected to Atlas Copco's smart tool system "Tools net"



Challenges

Scania faces multiple challenges with current tightening tools setup:

- **Controllers** are needed for all wired tools, limiting flexibility in factory
- Tools that are not connected contribute to more **quality issues** in tightening than connected tools
- Battery tools can get **lost** if lacking a location system add-on
- Fast **readjustments** are needed to meet future production demands



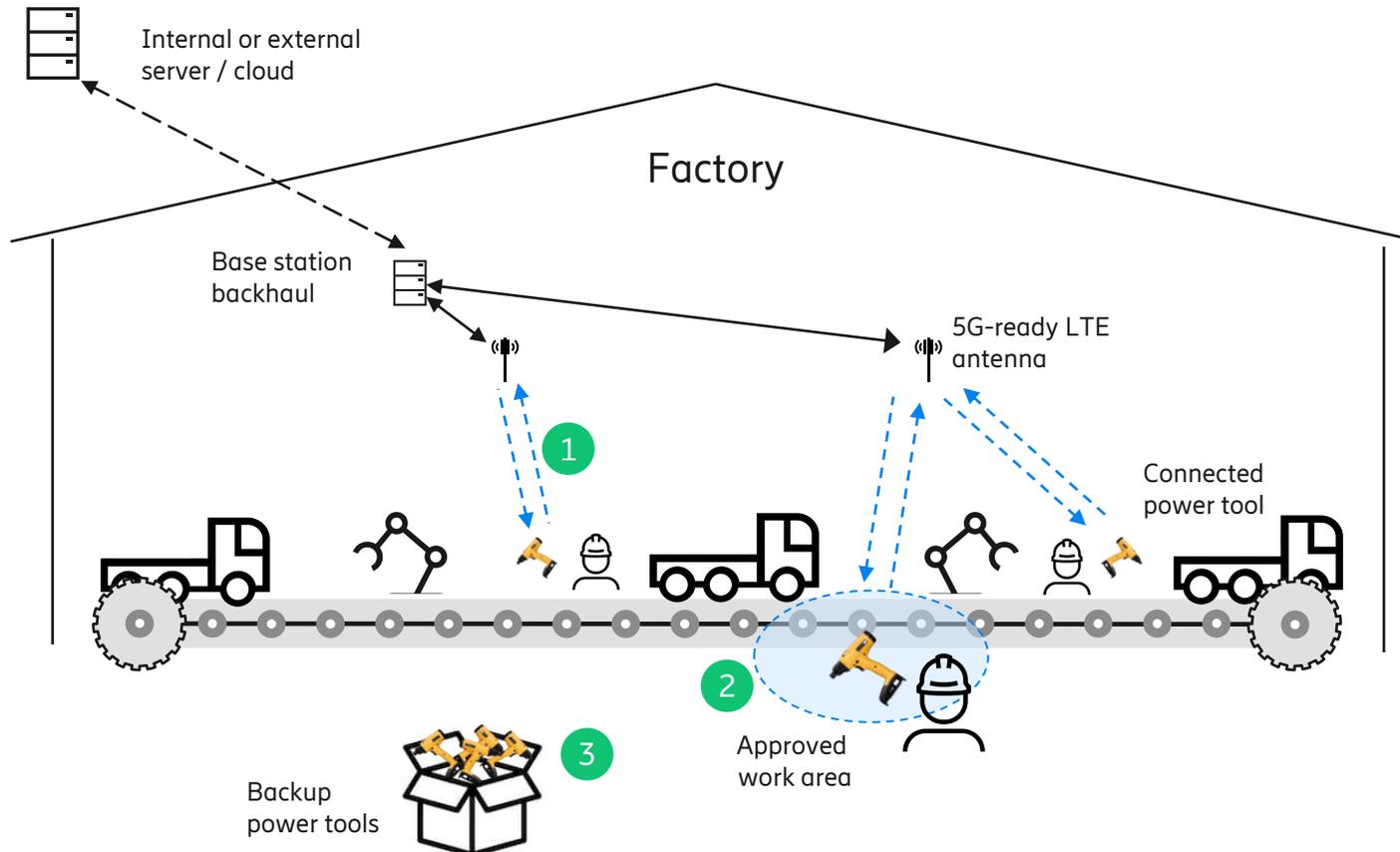
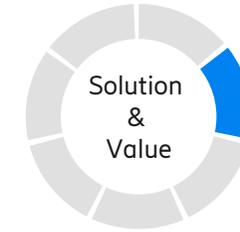
Stake

Main stakes include three following areas:

- **A large share of tightening quality issues** are due to changing friction conditions
- **20 maintenance workers** focus on tightening tools, mostly based on service instructions
- **Pneumatic tools use more than 5 times more energy** compared to electric tools



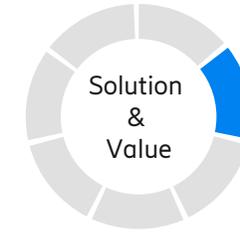
Connected tightening power tools transfer data in real time



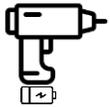
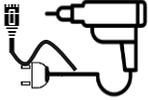
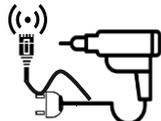
Connected tightening power tools

- **Battery tightening power tools** transfer data to a **cloud control application** over a **cellular network** in the factory with
 - **Real-time data transmission**
 - **One network** with multiple antennas covers the entire factory
- This setup enables
 - 1 **Fast tool configuration** in case of tool task reallocation and automatic **software updates**
 - 2 Definition of an **approved work area** for each tool which tool lock when outside of
 - 3 **Rapid use** of back-up tools when needed
- Solution can be implemented in brownfield or greenfield environments

Scania expects tightening tools to become connected and electrically powered



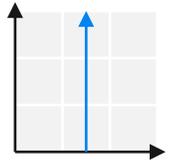
Tightening tool distribution at Scania

Power	Connectivity		
	Not connected	Connection via wires	Wireless connection
Battery driven	 490		 10
Powered by cord	 1400	 600	
Pneumatic	 2500	N/A	N/A

Tightening tool trends and evolution

Moving to electric:

- **Sustainability** increase with lower energy consumption
- **Data** gathering enabled
- **Quality** improvement with electric tools

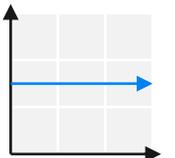


Moving to cordless:

- **Flexibility** increase without cables
- **Lower torques** required on EVs production lines due to smaller fasteners compared to traditional engines
- **Better autonomy** provided by LiIon batteries as power density increases (~5% annually since 1990)
- **Supply** increase as manufacturers invest in battery tools

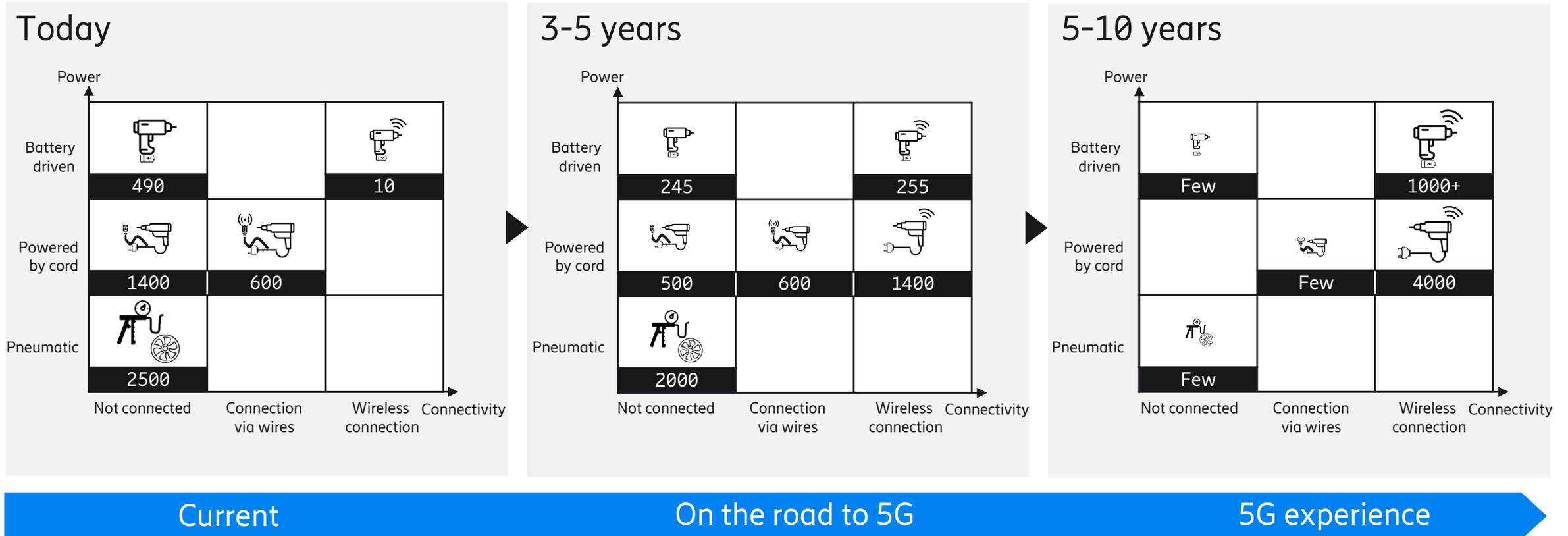
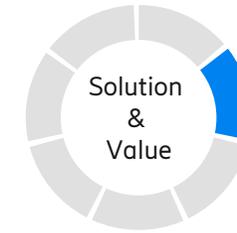
Getting connected

- **Regulation** requires tightening to be recorded
- **Quality** increase with data analytics identifying abnormalities before they occur
- **Safety** improvement with embedded sensors reducing risk of injuries caused by kickbacks

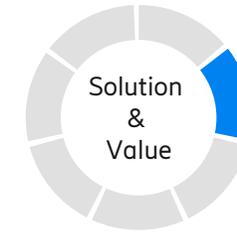


Source: Scania, HVP Magazine, Covest, Fastener World, Mrs Bulletin, Atlas Copco, Arthur D. Little

Scania will move away from pneumatic and get its tightening tools connected

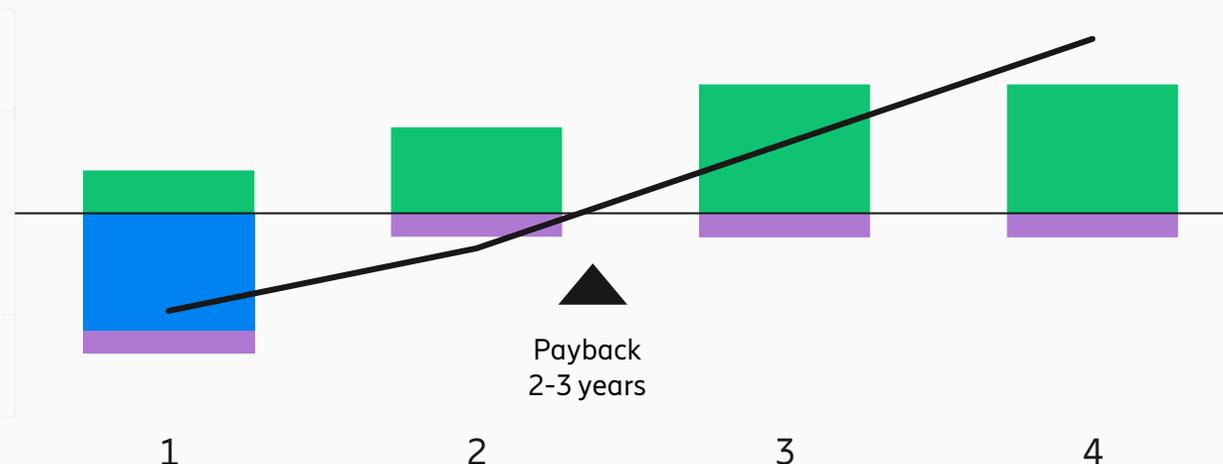


Connecting tightening tools covers network deployment cost with a payback below 3y



Cash flow profile (kUSD)

- Value
- CAPEX
- OPEX
- Acc. Value



Accumulated value (kUSD)	-500	-180	350	880
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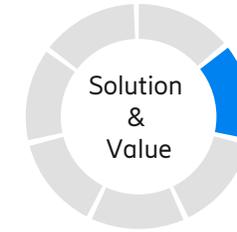
Annual value (steady state): 530 kUSD

Key assumptions

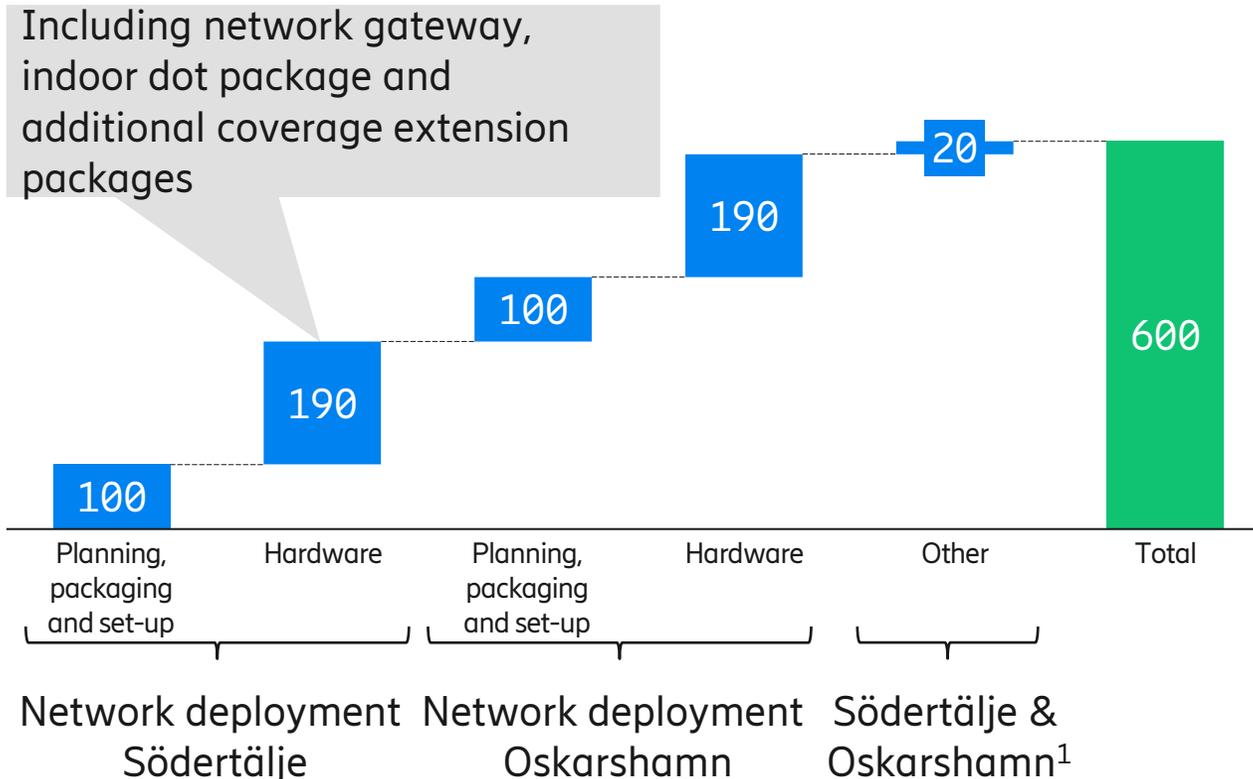
- Only costs and benefits generated from the use case included, i.e. costs for "business as usual" such as machine renewal or IT FTEs are not included
- Value includes both cost savings and cost avoidance
- All capex investments (network deployment, spectrum access etc.) assumed to happen year 1
- The business case is supporting deployment of two entirely new networks
 - Full network deployment in Södertälje, covering 30 000m²
 - Full network deployment in Oskarshamn, covering 30 000m²

Leveraging the network to deploy additional use case over the period will reduce the payback time

Total cost breakdown year 1 – Scania connected screwdrivers



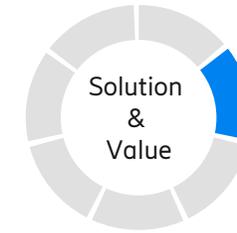
[kUSD]



Network deployment details

- Network deployment costs cover the initial network setup for the use case, including **planning, packaging and installation**
- **Coverage extension packages** are included in the cost, resulting in total coverage of 30 000 m² per site
- **Hardware warranty** is included, but maintenance is excluded and purchased with a yearly fee
- Additional investments in **tools will be needed**, but these costs are considered as “business as usual” and are thus not included in the business case

The use case brings a triple value with multiple drivers on the economic level



Benefits

 **13%**
less energy consumption

 **Improved**
working environment

 **0,5 MUSD**
annual value year 3

Details of economic impact

Energy consumption Instant effect

- **Decreased electricity consumption** when moving from pneumatic tools

6%

Maintenance cost savings Conditional effect¹

- **Decreased maintenance cost from condition based maintenance** on tools and controllers
- **Decreased cost for maintenance material**

26%

Quality improvement Conditional effect

- **Less need for quality inspections**
- **Improved safety and working condition**
- **Reduced claims**

34%

Tool/installation cost avoidance Conditional effect

- **Reduced installation cost** of controllers
- **Fewer add-ons** (e.g. for tool location) needed

34%

Reduced product introduction effort Conditional effect

- **Faster switches** to new product variants
- **Instant upgrade** of instructions, work areas and software

Limited

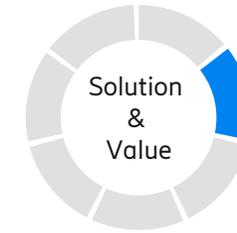
Increased productivity

- **Increased productivity and uptime**
- **More flexible production**

Effect of other benefits

Source: Scania, Atlas Copco, Ericsson, Arthur D. Little

Business case details



Energy consumption

Assumptions		
Pneumatic & electric tool efficiency	0,5	horsepower
Tool run time	400	hours/year
Average CFM usage of pneumatic tool	20,7	cfm
Compressor air generation efficiency	0,16	kW/cfm
Industry price/kWh (2018)	6,84	eurocents/Kwh
Electric motor efficiency	65%	
Battery charger Average Energy Ratio	2,5	
Output		
Energy cost Pneumatic tool	100	USD/year
Energy cost Electric tool	20	USD/year
Energy cost battery tool	60	USD/year

Maintenance cost savings

Assumptions		
Current maintenance personnel	20	FTE
Cost per maintenance worker	100 000	USD/year
Tool lifetime	10	years
Guarantee life	2	years
Maintenance reduction	25%	/connected tool
Maintenance material cost	100	USD/tool/year
Maintenance material cost reduction	10%	/connected tool
Output		
Maintenance work saving per tool	90	USD/year
Maintenance material saving per tool	10	USD/year

Quality improvements

Assumptions		
# improvement groups	1000	groups
Minimum people per group	3	People
Maximum people per group	20	People
Time spent on quality inspections	0,5	h/week
# hours/week, 1 FTE	40	hours/week
Average cost/FTE	100 000	USD/year
% spent on tightening quality control	4%	
Output		
Quality inspection saving per tool	140	USD/year

Tool/installation cost avoidance

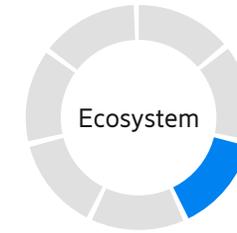
Assumptions	
Cost per RTLS add-on	4 000USD
Easy cabin installation cost	500USD/controller
% battery tools with RTLS	20%
% where cabinet installation is needed	17%
Output	
Average cost/installation	90USD/cab. Tool
Cost RTLS (for tools were needed)	400USD/batt. Tool

Reduced product introduction effort

Assumptions	
New product introduction cost	3000USD
Potential decrease	57%
Average new products per year	1 New product
Output	
Reduction new product introduction per tool	0,5 USD/year



Depending on deployment choice, there are two different ecosystem setups

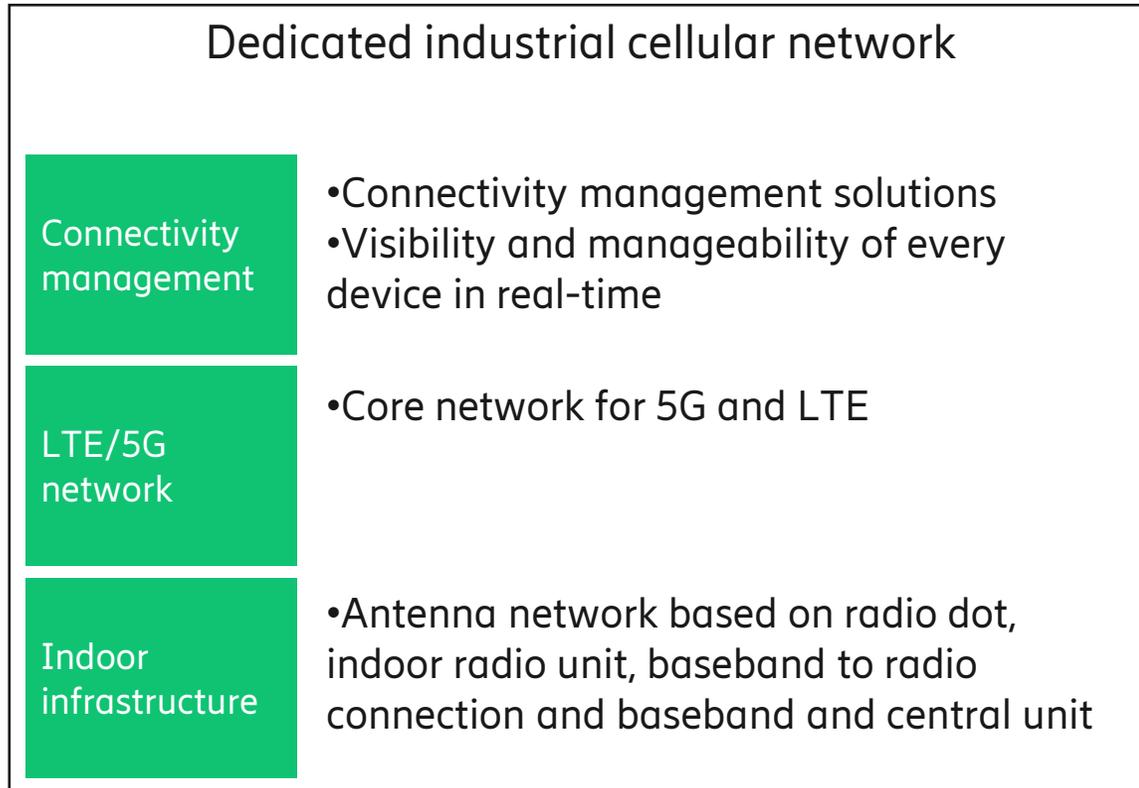


	Setup 1: Scania operates network	Setup 2: CSP operates network
Scenario description ●●	<ul style="list-style-type: none">•Scania owns the right to use the network and operates the network with internal resources•Scania buys the network equipment directly	<ul style="list-style-type: none">•Scania outsources the network deployment and operations to a CSP•CSP owns the right to use the spectrum
Implication for Scania →	<ul style="list-style-type: none">•Setup can potentially cost less for Scania given that there is one less intermediary•Scania has a tradition of doing things in-house	<ul style="list-style-type: none">•CSPs can add additional services and contribute with competence that could increase the network uptime•Network equipment provider will sell network equipment through CSPs
Obstacles ✕	<ul style="list-style-type: none">•Sourcing all components can be challenging, as new suppliers that lack established sales channels might have to be found•Building new competencies to run the network requires much resources for Scania	<ul style="list-style-type: none">•No CSP has yet articulated an offering that seems appealing to Scania

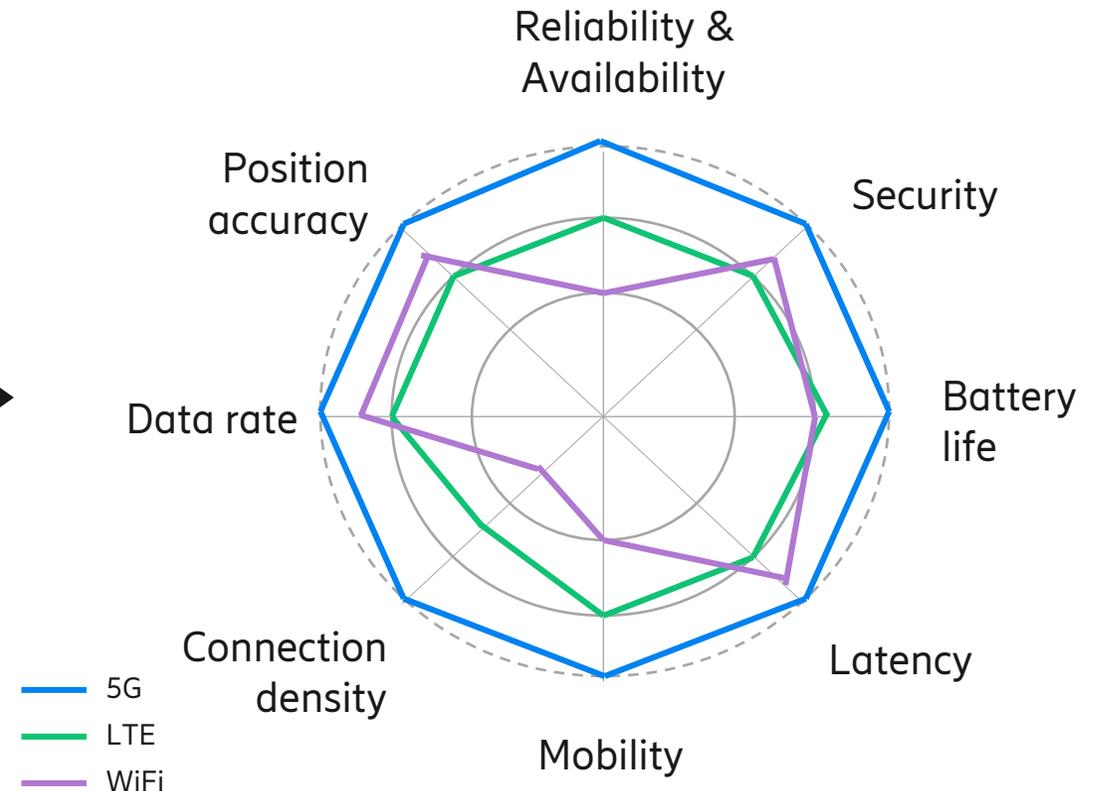
A dedicated industrial cellular network solution will enable the use case



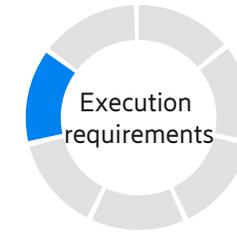
Network solution description



Technical characteristics of solution



6 steps for Industry player to implement the use case and become truly smart



Develop company-wide strategy for connectivity

Identify use case to focus on

- Collect ideas and suggestions from internal organization and externally
- Prioritize and shortlist ideas
- Select use case to focus on

Conduct use case pre-study

- Build business case
- Explore potential ecosystem setups, technical requirements etc.
- Engage most critical partners (e.g. industry hardware providers)

Execute PoC in lab environment

- Lab environment can be accessed internally or through partner
- Test, adapt and evaluate the technologies

Prepare and pilot

- Results from pre-study and PoC used for pilot and further implementation
- Engage all partners
- Pilot the use case
- Evaluate pilot

Develop standards & training

- Develop standards, work instructions and training material
- Train personnel

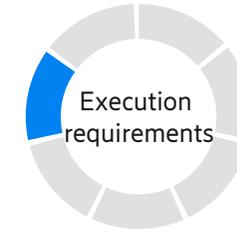
Implement

- Invest in infrastructure
- Implement the use case



Continuous iteration and evaluation

The industry player faces several GTM and execution challenges



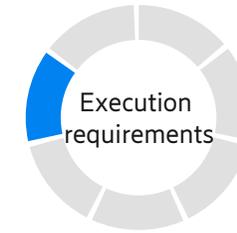
Go-to-market challenges & capabilities

- Regulatory environment** ▶ Although **industrial spectrum is becoming available** in more countries, there is **poor harmonization** between different countries. Extended **regulations on storage of data** from safety critical tightening can drive the use case adoption.
- Partnership management** ▶ **Partnerships between many players required** for use case execution. The industry is mature in terms of understanding that partnerships are needed and being willing to partner.
- Sales channels** ▶ Scaling of the use case has **high dependency to new channel partners**, which increases the uncertainty. New channels and work agreements **need to be created in a structured way**.
- Customer engagement** ▶ Generally **little knowledge of 5G** and what to expect from it, but **high willingness to learn more**, driving customer engagements.
- Go-to-market replicability** ▶ The use case has **high go-to-market replicability** and suits most industries and factories.

Execution challenges & capabilities

- PoC specifics** ▶ The use case is **difficult to prove in proof-of-concepts** due to challenge in measuring benefits to entire systems and difficulty of “try and learn” implementations in manufacturing industry
- Sourcing capabilities** ▶ The use case is built on **standardized products** (power tools and network equipment), giving limited supplier power.
- Integration capabilities** ▶ **A service integrator is required to provide a holistic solution.** When scaling up to a larger system, data needs to integrate with several existing systems and hardware.
- Installation capabilities** ▶ **A new ecosystem with integrators** to install and integrate is required.
- Operations capabilities** ▶ **Yet undefined roles for daily operations.** The use case is designed so that the **factory can operate day-to-day** and integrator or operator can take second line support.

Total global value opportunity for use case reaches 5 BUSD



Total value opportunity



2000 factories with ~5 000 tightening tools
X
2,5 MUSD value per factory in full use case deployment

Scalability of use case opportunity

Scalability of demand

Use case applicable in **all industries** and strong trend that **tools are getting connected**. Similar use case drivers throughout different industries, and **high scalability**.



Scalability of technical solution

The technical solution is **easily replicable and scalable**, since it is building on **standard solutions** from Ericsson and other partners.

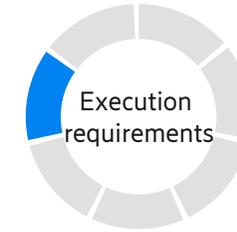


Scalability of execution and go-to market model

New partnerships need to be created and ecosystem players need to accept and adapt to new ecosystem setup. When adapted, **execution and go-to-market models are replicable** as there is limited need for industry specific adaptation.



Calculations for total value opportunity



Input

- Total manufacturing GDP 2017: 13 trillion USD
- Scania Group revenue 2017: 13 billion USD

Calculations:

- Scania Group share of global manufacturing GDP: ~0,1%
- Scania Södertälje + Oskarshamn share of manufacturing GDP: ~ 0,05 %
- Number of factories globally of Scania size= $1/0,05\%=2000$ factories
- Based on presented assumptions, the Global Manufacturing GDP can be seen as built up by 2000 factories similar to Scania

Model output:

- Model output based on assumed transition year 5: 2,5 MUSD

Total market potential:

- 2000 factories * 2,5 MUSD=5 BUSD

Assumptions:

- All factories globally are similar to Scania
- Transitions assumed to go 50% to connected, power cord and 50% to connected, battery
- CAPEX/OPEX same as BC
- Scania Södertälje + Oskarshamn is 50% of Scania Group's production

	Not connected	Connection via wires	Wireless connection
Battery driven	0		2500
Powered by cord		0	2500
Pneumatic	0		



Source: World bank, Ericsson, Arthur D. Little



Imagine Live Korea 2022
- 5G for enterprises



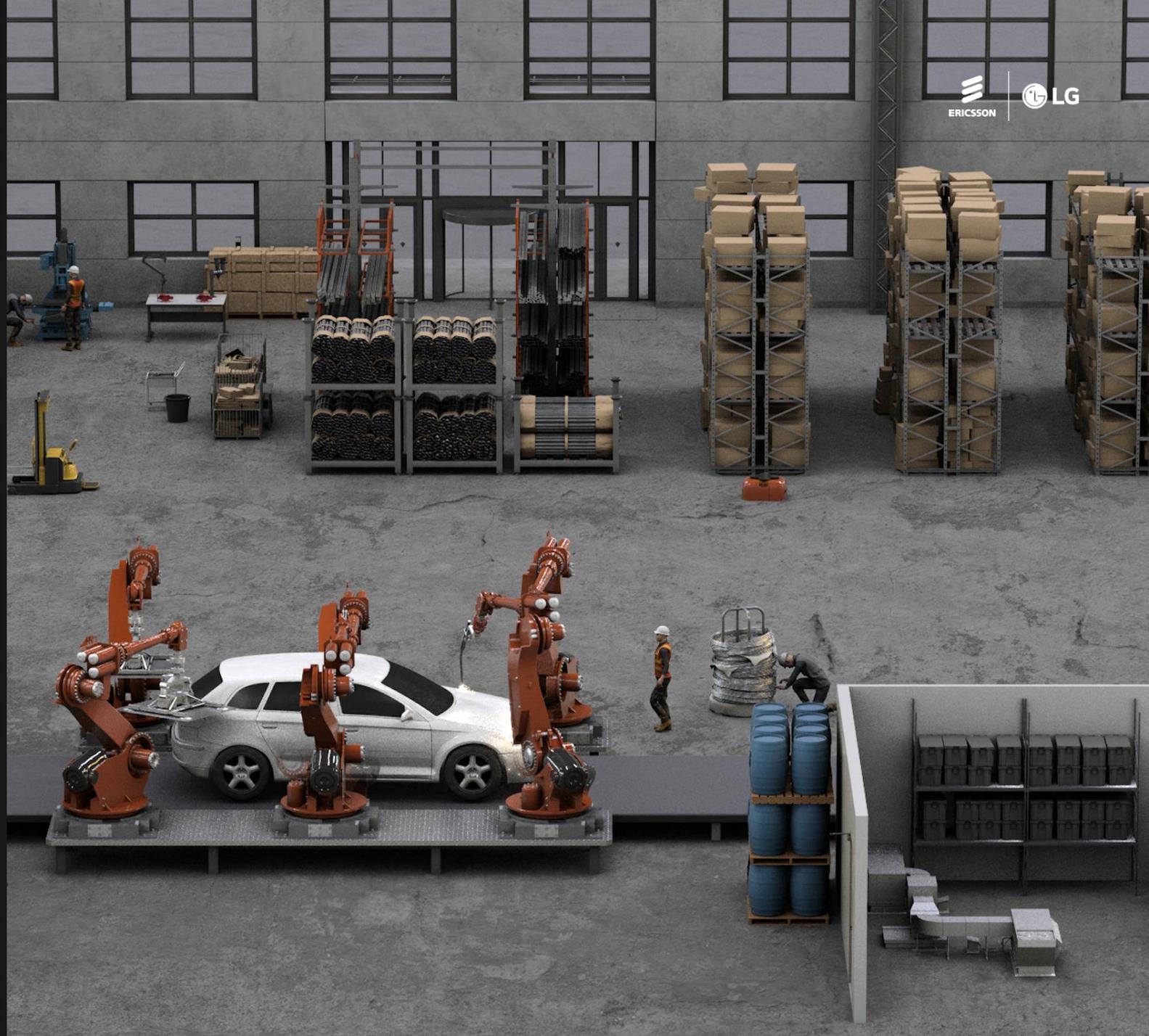
5G 특화망 EP5G 솔루션 소개 및 데모

양대영 기술 영업 팀장



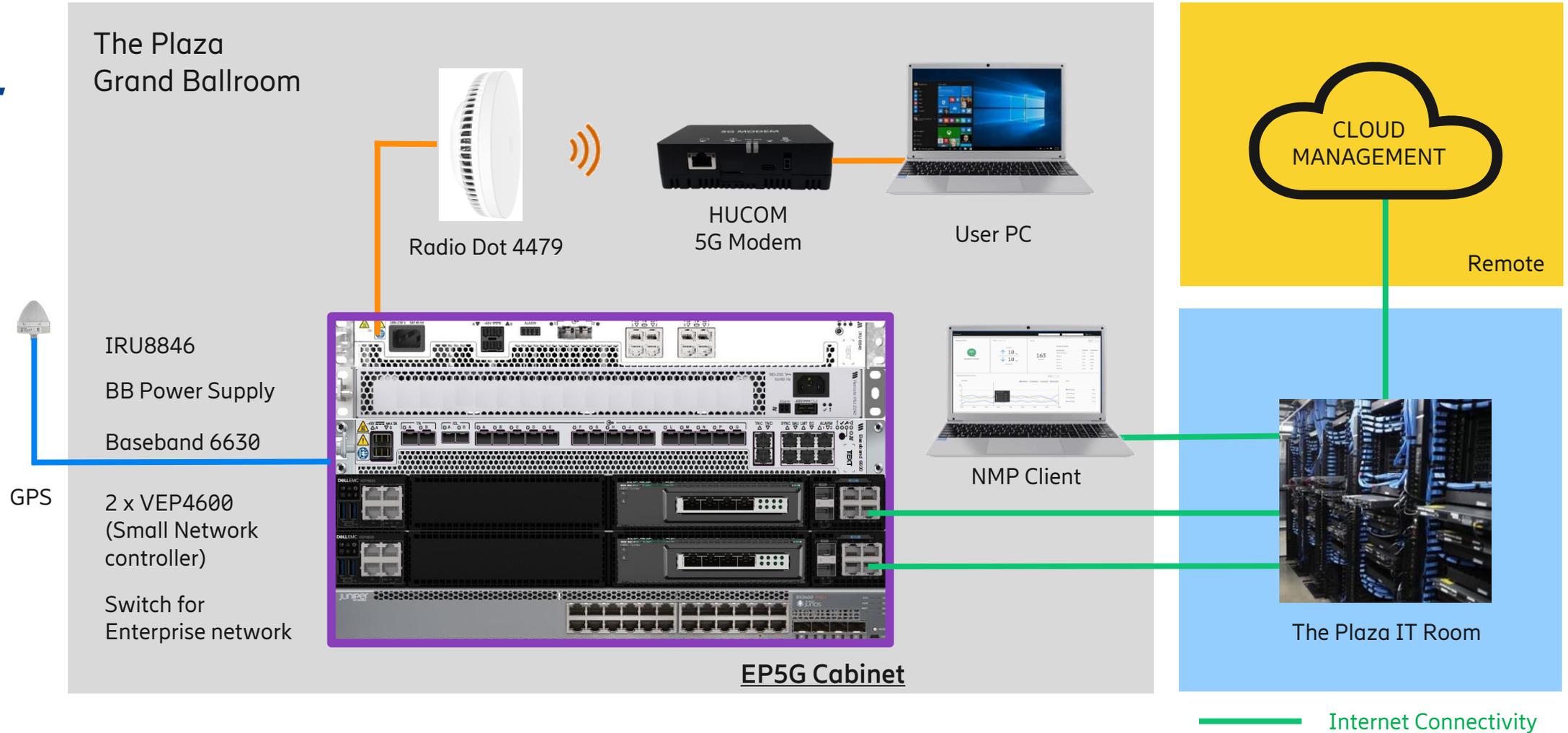
Agenda

- 데모 소개
- Ericsson Private 5G Live Demo
by EP5G 공식 파트너사 지엔텔
- Ericsson Indoor Planner Demo
by EP5G 공식 파트너사 뉴젠스



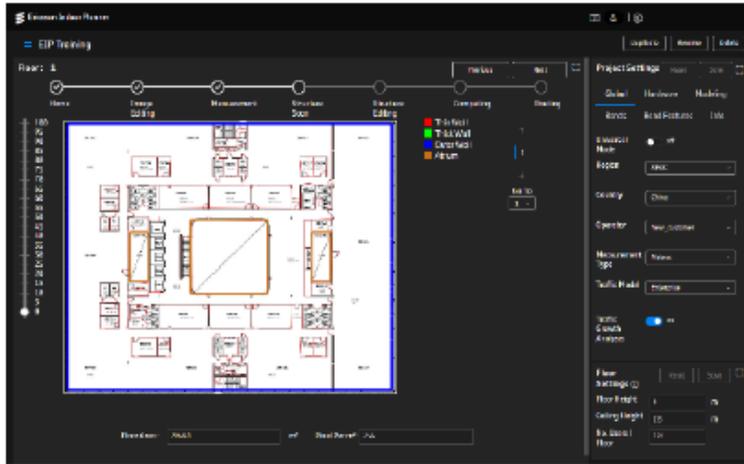
EP5G Live demo system diagram

In partnership with
GNTTEL



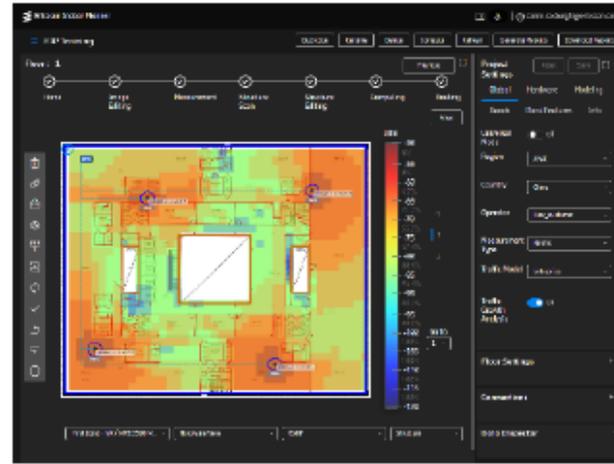
Ericsson Indoor Planner demo

In partnership with



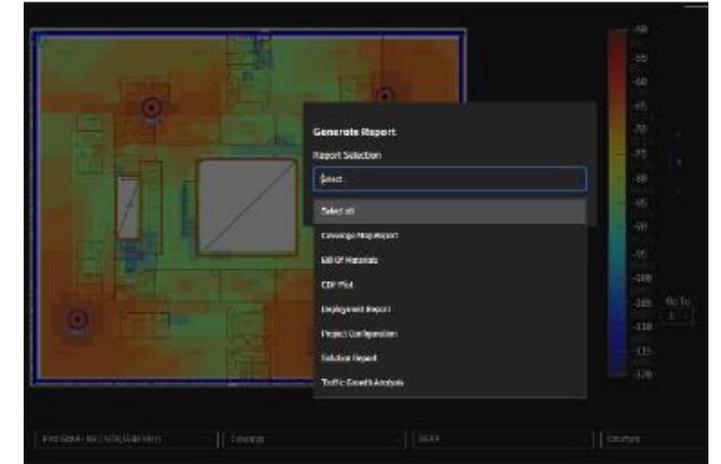
Input

- Floor plan, No. of floors
- Spectrum, BW, technology, FDD/TDD, TDD ratio
- Wall materials, Ceiling height, Installed height
- RF hardware model



Computation

- Location of Radios
- Cable and routing between nodes
- Coverage map



Output

- Coverage map report
 - Signal strength
 - Cell coverage
 - Throughput
- Solution and deployment report

Fast & simple indoor design – Reduced cost & time, and HW resource forecasting



Imagine Live Korea 2022
- 5G for enterprises



EP5G 기술 리더십

박동주 테크니컬 디렉터



Evolving enterprises and industry trends

Drives the need for robust connectivity

Enterprise connectivity challenges

Multiple separate networks for communication



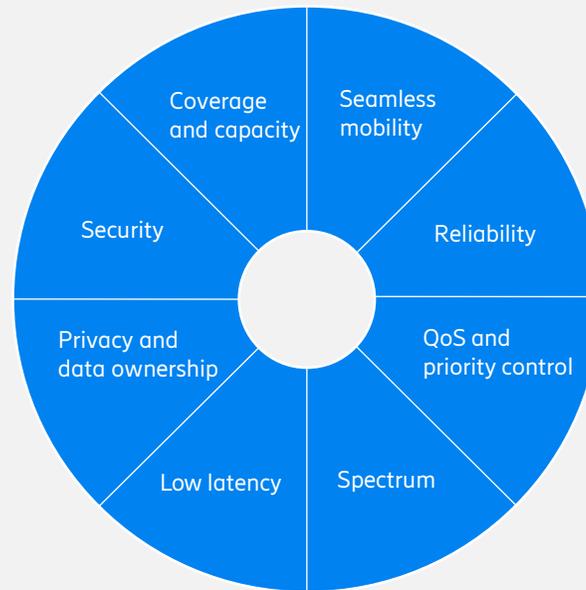
High cost of ownership



Performance limitations: Reliability, coverage, security, mobility



Data speeds: Throughput, latency



Dedicated 5G network

Industry trends

Innovation shifts from core applications to the edge



Growing demand for high-speed secure data applications



Industry 4.0 transformation C&M



Industry needs

Manufacturing



- Easy integration with IT/OT systems
- Easy installation and management
- High reliability and availability
- Easy operation and maintenance
- Additional use cases like positioning, voice

Mining



Ports



Offshore and process industries



Power utilities



- Coverage at multiple sites
- Local survivability
- High security and privacy
- Data stays local
- Low latency, high capacity (UL)

Airport



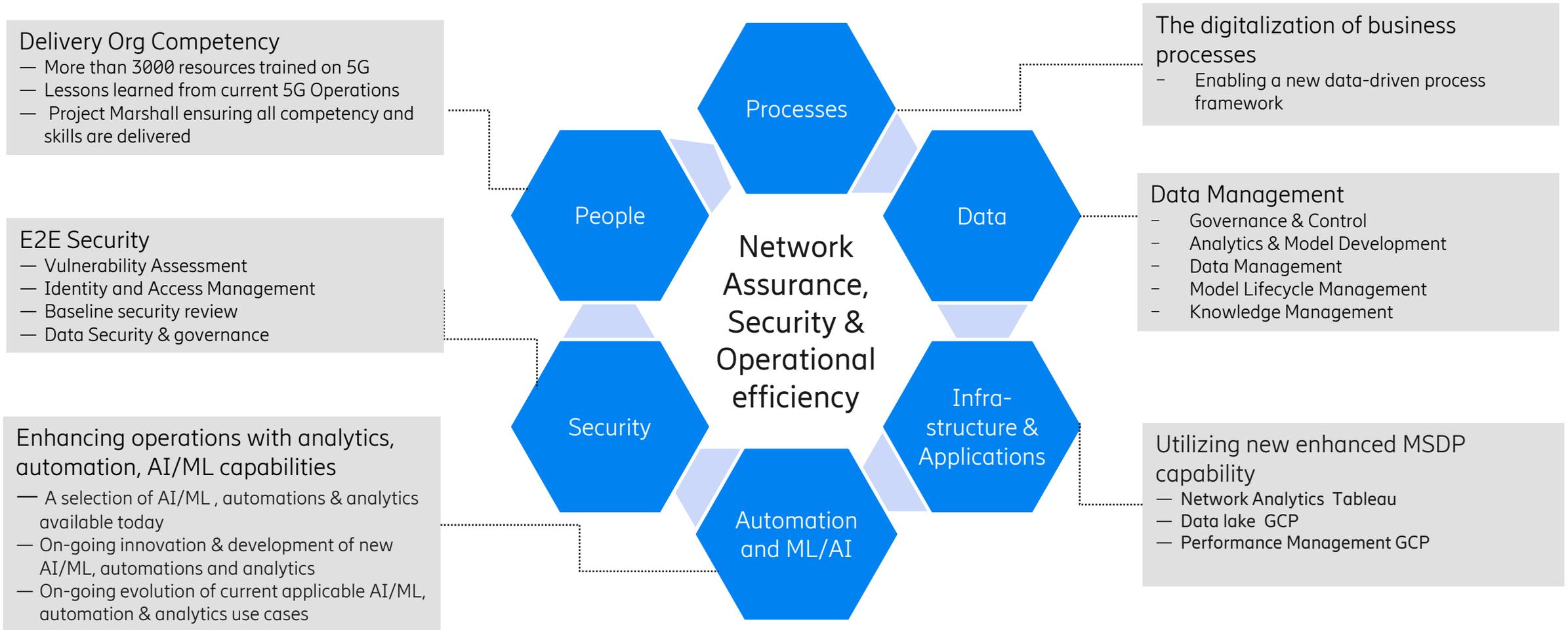
Ericsson Private 5G, Pre-packaged



Easy operation

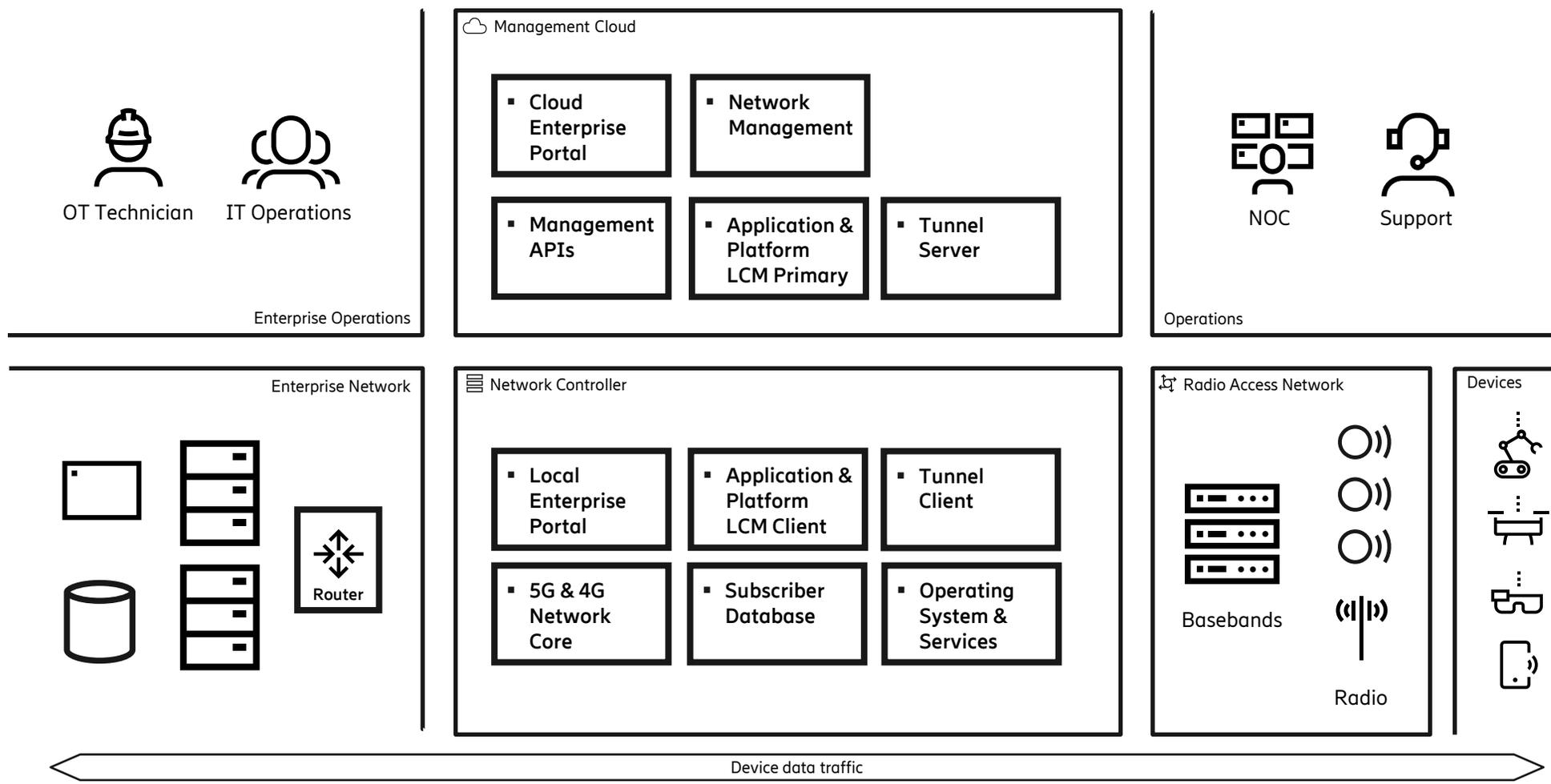


5G Network Operations



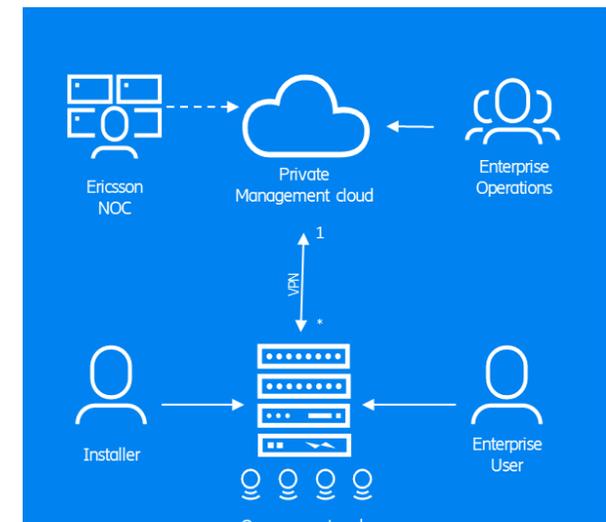
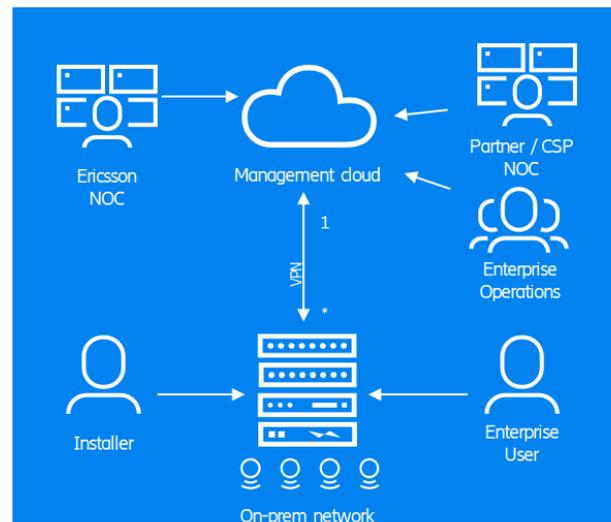
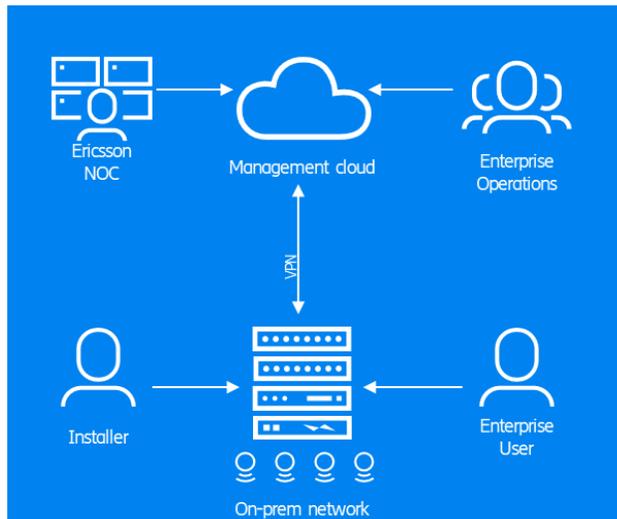
Cloud Based Management - EP5G

Functional Overview



Cloud-based Management for different deployment modes

- Multi Tenant:** For the Multi Tenant Management scenario Ericsson provides a managed service using a centralized public cloud-based Management with clear network separation.
- Dedicated:** In the dedicated scenario, a dedicated public cloud instance is used to allow management towards Partners/CSPs Network Management Systems
- Integrated:** In the Integrated Management Scenario the management cloud SW can be deployed on a private customer cloud.



Ericsson Private 5G support services subscription

Extensive service portfolio offered at your needs. End-to-end services or pick based on needs



Online self-service portal

Single pane for site management



Escalation services

Responsive and secure remote escalation support



Online self-service support

Single source for all support content



Proactive monitoring

Automated network and event monitoring



Software updates

Touchless site upgrades



Problem, fault, and incident tools

State-of-the-art omnichannel support and notifications system



Self-healing and notifications

Automated network issue recovery and stakeholder notifications



Onboarding

Online training for all support and deployment training needs

Additional assets



Hardware services

Additional services available for warranty, spares, and delivery

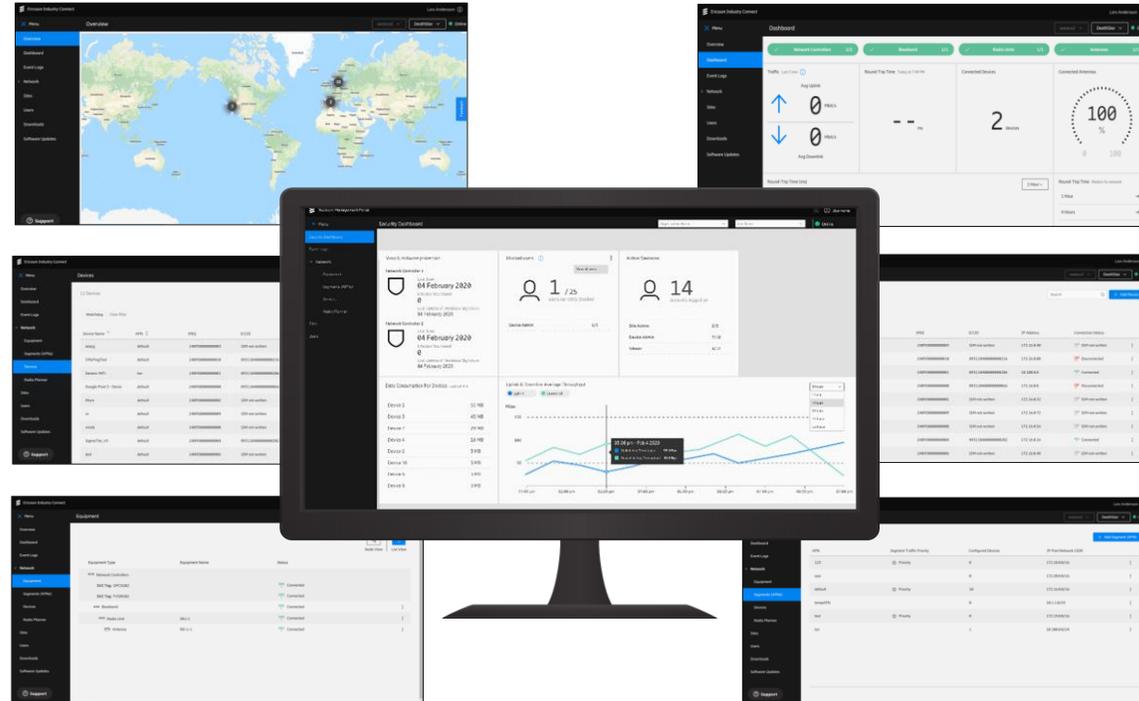


Deployment services

Industry-leading radio deployment experts

EP5G Network Management Portal (NMP)

Central dashboard providing single pane of glass overview of all sites



Per site analytics with counters and KPIs

Overview and management of all provisioned devices

Management of users and role-based access rights

Overview and configuration of all network equipment including self-discovery

Management of network segments to separate device traffic and manage up- and down-link traffic quotas

Intuitive UI based on user experience research

Watchdog Application

Customer Challenge

Getting detailed information about the network quality and the device data consumption.

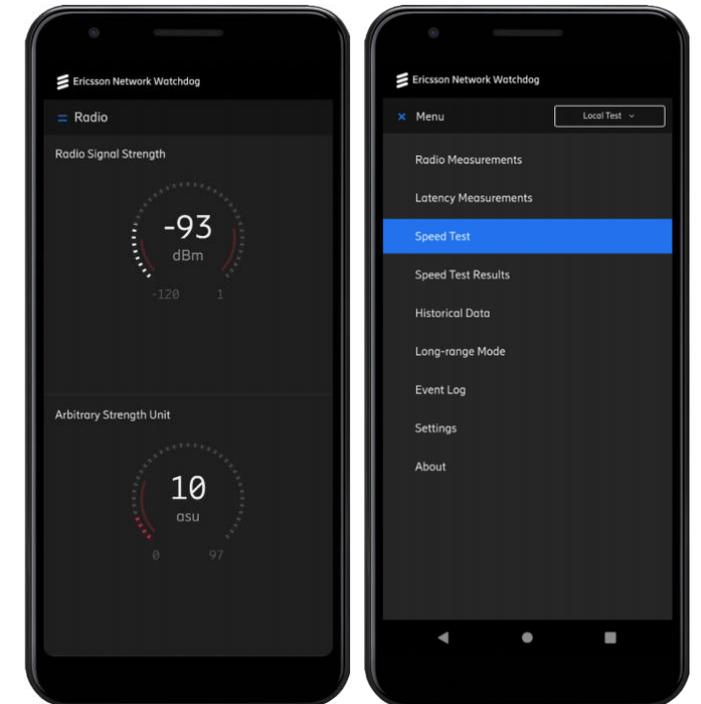
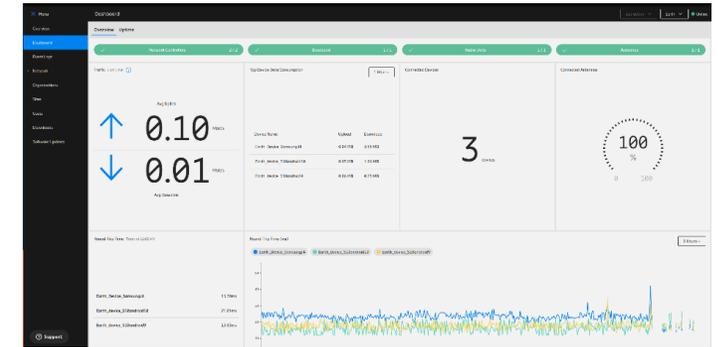
Lifecycle management of the Watchdog application.

Solution

On the Devices page in the NMP, users can access device-specific details like consumption data about the top consuming devices and connection status change events.

The Watchdog app is a mobile probing tool installed on your preferred Android device. The app provides access to information about latency, signal strength, and speed test capabilities.

The Watchdog app can even provide a long-range mode, with visual traffic lights indicating the network status. When installed in owner mode, the Watchdog app automatically applies updates locally.



Backup and Restore

Customer Challenge

After critical incidents or full hardware swap, operations need to be restored. That requires the capability to restore subscriber records, configuration and other site-specific data.

As critical incidents could affect the complete site, backups should be storable outside the site with full data privacy secured.

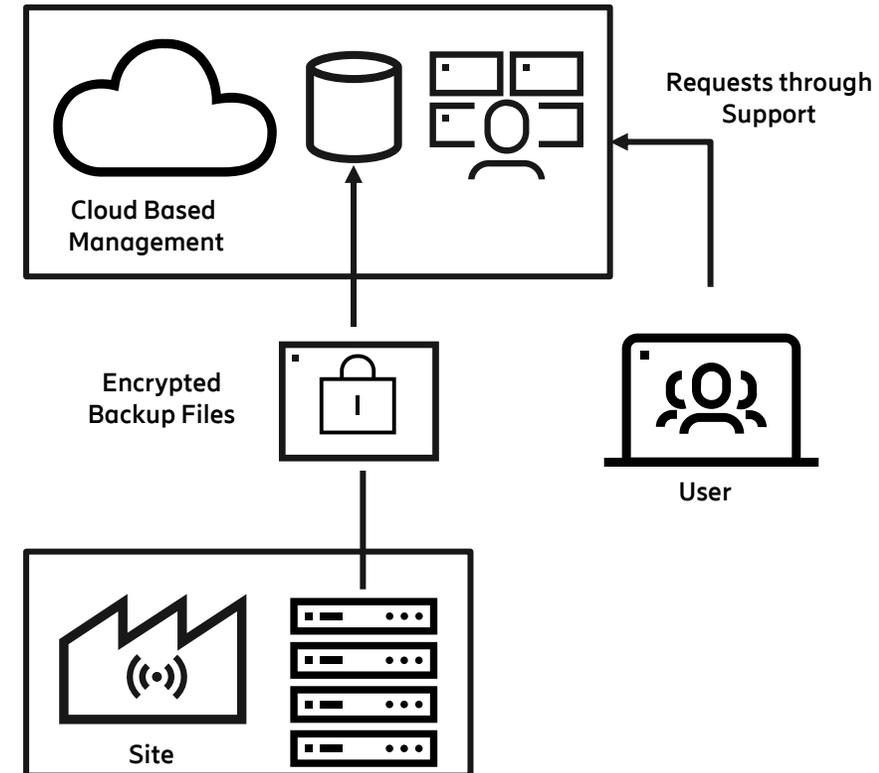
Restoration of backups should take a minimal amount of time, to restore operation in a timely manner.

Solution

Ericsson Private 5G provides automatic backups to the cloud. The site configuration and SIM data are secured. Backups can be created periodical or on demand (for example, during upgrade operations).

To ensure data backup, files are encrypted, transmitted, and stored in the cloud.

Backup restoration is done on request through support. Backups are kept in different intervals, but no longer as five weeks.



Easy installation

Ericsson Private 5G

More than just a 5G SA Network-in-a-Box



Order

Install

Operate

Dedicated Networks

Introduction to 5G private networks in various industries. Get an industrial digitalization experience, so does the demand for the advanced connectivity that private cellular networks can deliver and that liberates industrial enterprises to unlock the potential of automation, control, and exponential growth.

Mining, manufacturing, ports, airports, oil & gas, and energy plants are some enterprise sectors enabling connectivity to create value with a private cellular network. A private cellular network is an on-premise network designed for an enterprise's exclusive use and unique requirements. Today these cellular networks are offered over both 4G and 5G.

Ericsson has a complete portfolio for local cellular connectivity with 4G and 5G dedicated networks supplying...

Dedicated Networks Budgetary Quote Tool

The Dedicated Networks Budgetary Tool is a service that helps you get an estimated price for Dedicated Networks offerings, based on a set of questions and answer choices.

The Budgetary Quote Tool is suitable for rough order of magnitude estimates during the early stages of sales engagements.

Please click here to request access.

Easily create Quotes and order in the online tool

Hardware

Offering catalogue

Product Type

- GATEWAY & ROUTERS
- HANDHELD & WEARABLES
- MODULE & CHIPSET

Vertical Markets

- AIRPORTS
- ENERGY PLANTS
- MANUFACTURING
- MEDICAL
- OIL & GAS
- OTHER
- PORTS
- WAREHOUSE

Region

- AMERICAS
- ASIA-PACIFIC
- EUROPE
- LAM
- MEA
- OTHER

Products listed include ZEBRA L12W, ZEBRA TC26 CBRS, and LYNKBASE.

Navigate the enterprise ecosystem on Partner Marketplace

ERICSSON

Page Administration Controls

Home

Welcome, Staffan

Find what's new, events, training and evolving tool available for your business model.

Quick Links

- Resource Center
- Onboard Guide
- Training & Accreditation
- Product Management & Marketing Material

Installation process and trainings easily accessible on Partner Portal

Network Management Portal

Security Dashboard

Network Controller 1

04 February 2020

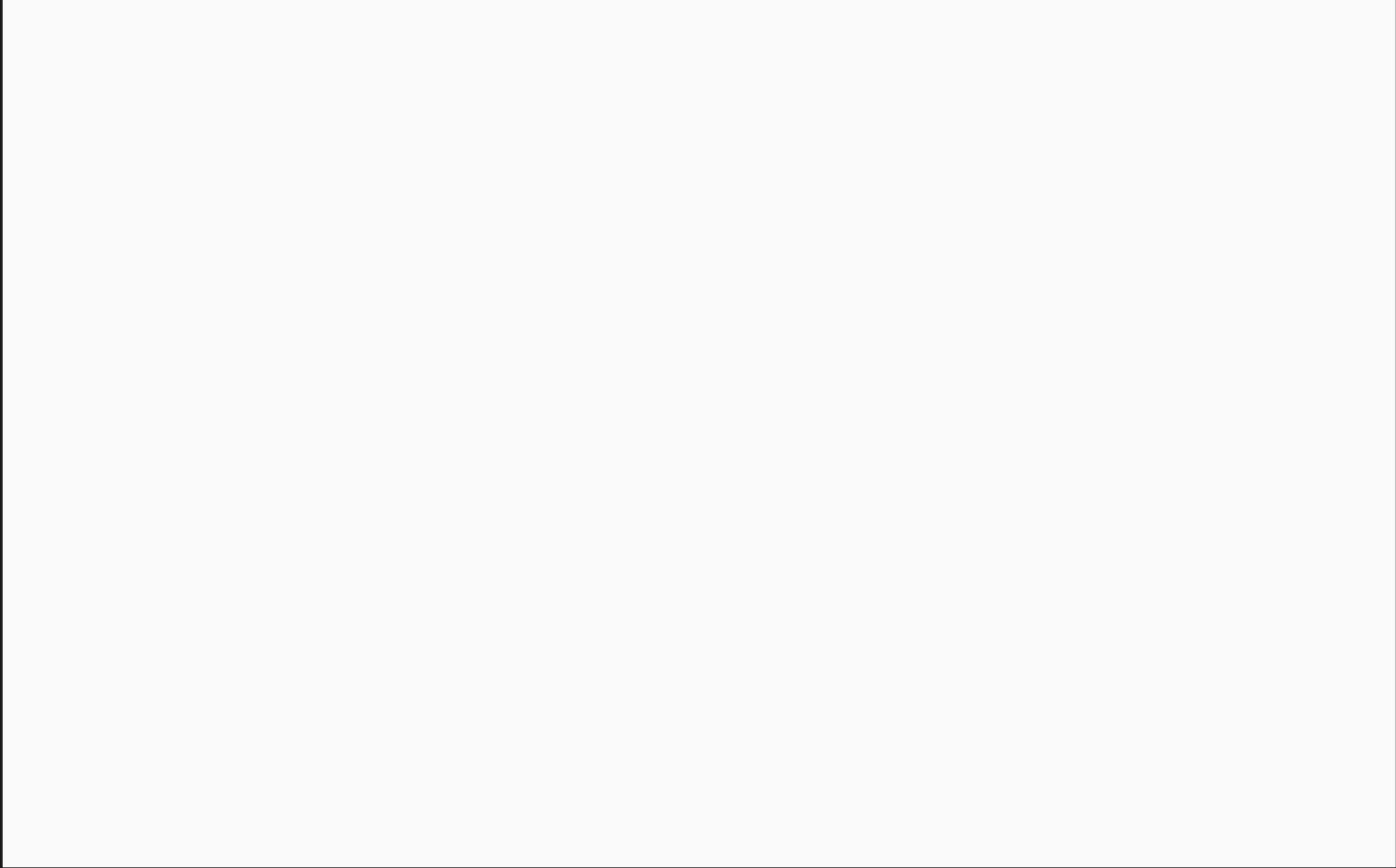
Network Controller 2

04 February 2020

Device Consumption For 2020

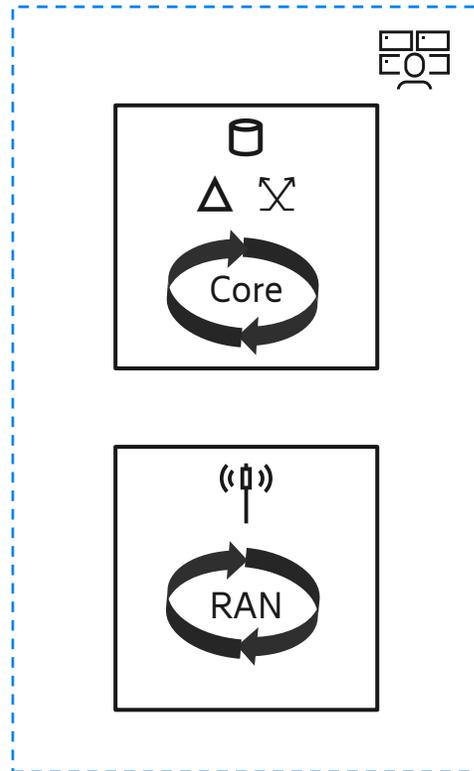
Device	Consumption
Device 1	35 MB
Device 2	45 MB
Device 3	28 MB
Device 4	18 MB
Device 5	3 MB
Device 6	5 MB
Device 7	3 MB

Network Management Portal
Trouble Ticket Management
Extending functionality with APIs

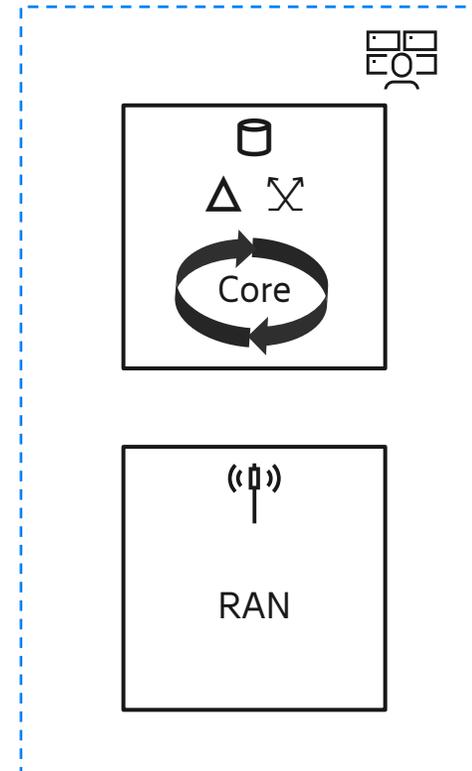


Ericsson Private 5G modes of operation

Click-to-Deploy



Flexible



Total cost of ownership
Configurations supported



Lifecycle management
 Automated configuration

Easy to order, install and manage

Easy to order

- Online ordering
- Base package and expansion kit
- Simple price list

Easy to set up

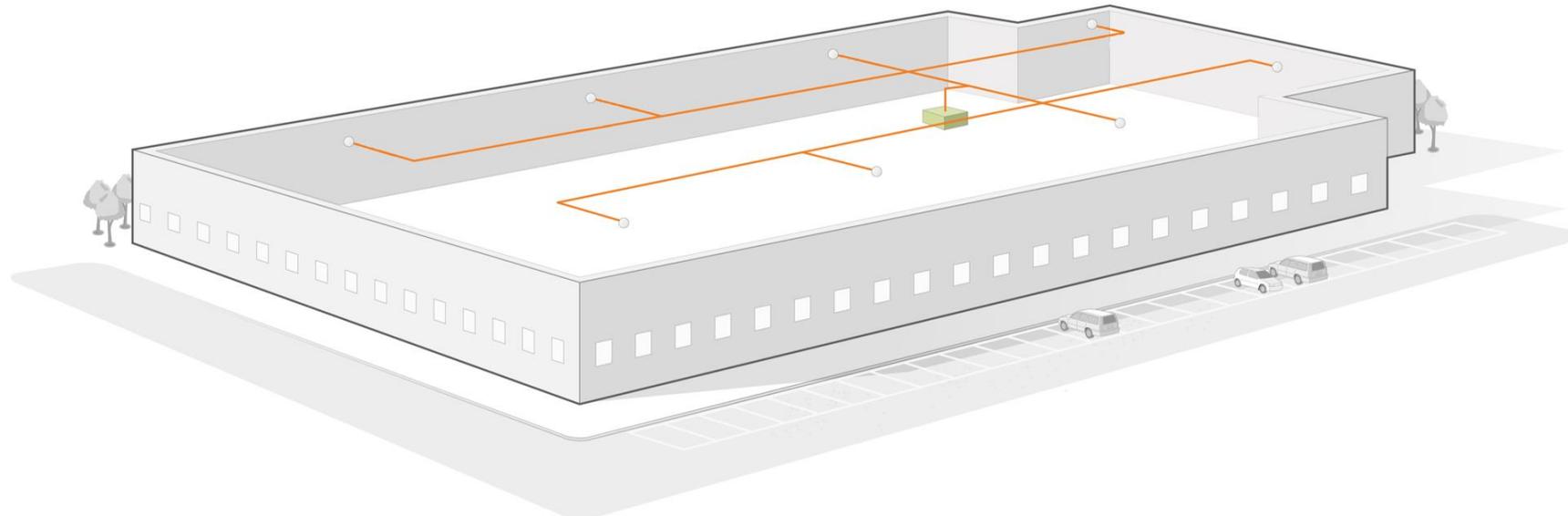
- Set up in less than an hour
- Equipment is pre-configured for the environment
- Automatic discovery of equipment

Easy to manage

- Cloud-based portal with all the information you need
- No telco experience needed
- Cloud-based lifecycle management

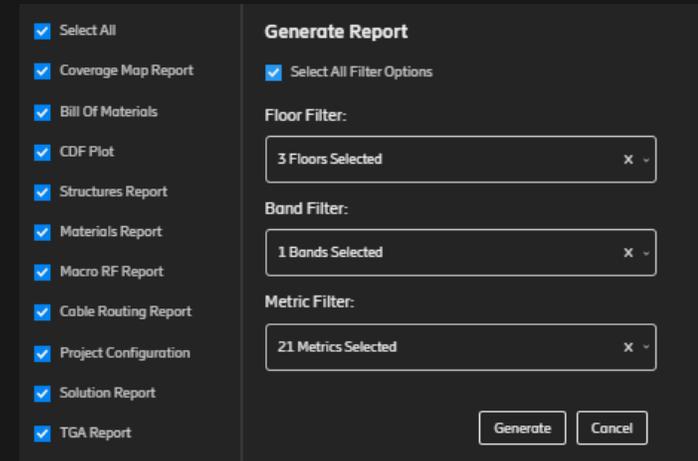
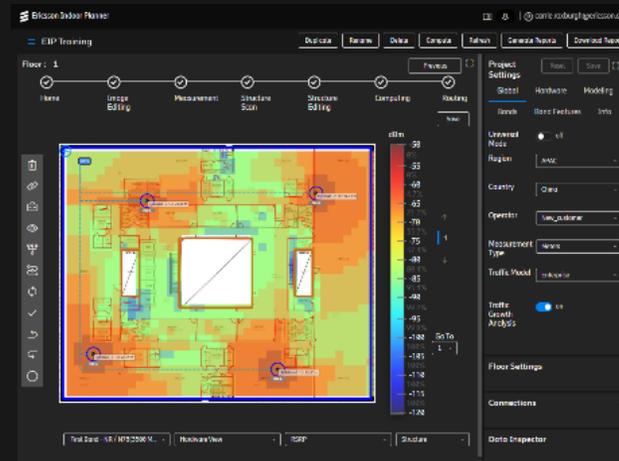
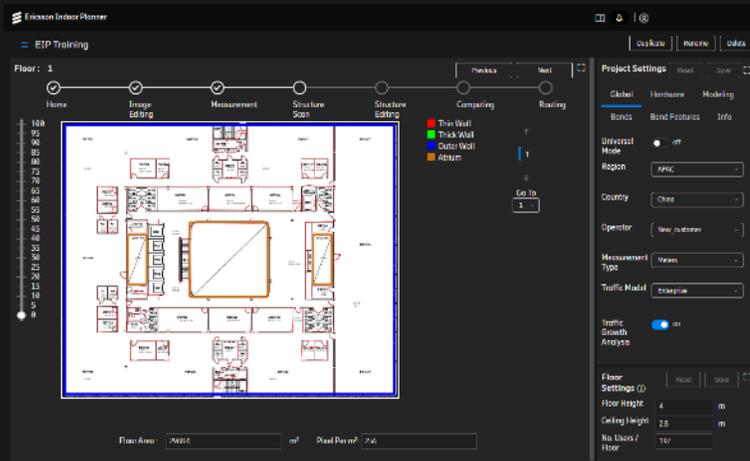
Small footprint

- Fewer than 5 rack units, less than 40 cm deep
- Ericsson Radio Dots



Ericsson Indoor Planner

Indoor Planner enables fast and simple indoor design (reduced cost and time for design)



Input

- Floor plans, number of floors
- Network settings (bands, technology, mode, traffic model)
- Structure, wall materials, macro RF
- Hardware (equipment rooms and risers)
- Ceiling height, deployment height

Computation

- Location of Radio Dots
- Cable and routing between nodes
- Coverage maps
- 3D propagation prediction models

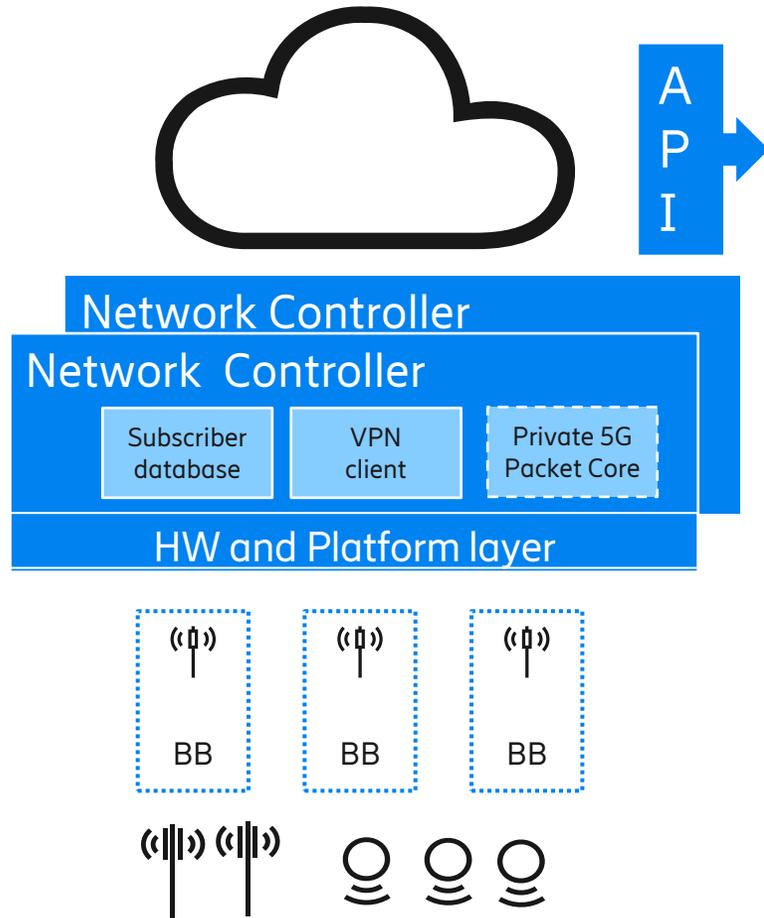
Output

- CDF and Coverage map reports (signal strength, cell coverage, throughput)
- Bill of Materials
- Solution and deployment reports
- Project Configuration
- Traffic Growth Analysis

Open API for IT/OT integration

Ericsson Private 5G Cloud APIs

For integration with Operator Management



System requires limited management:

- Subscriber Management API
- APN/DNN Management API
- Quality of Service API
- Onboarding of new Enterprises via portal
- High level monitoring of networks via portal

Provided as a service:

- Enterprise Network Monitoring
- Advanced Trouble Shooting
- Upgrades/Updates
- Managing the Management Cloud

Performance and other features

Multi-Site Deployment

Customer Challenge

Larger enterprises with more than one location see a need for having private networks in different locations.

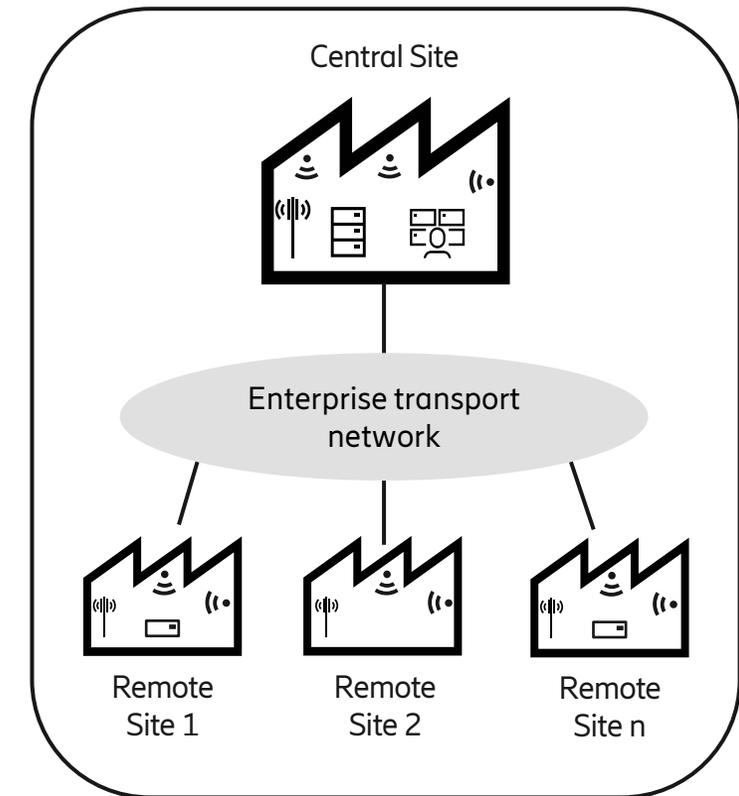
These enterprises need to have lower OPEX in running and managing several distributed sites.

- Enterprises expect that devices can be taken from one site to the other and they should seamlessly connect to the private network without requiring to change SIM card.
- The enterprise admin also expect a unified operational view and subscription handling for all the private network systems across different locations.

Solution

Ericsson Private 5G multi-site enables enterprises to deploy Private 5G across different locations.

- For enterprise locations without local IT/OT applications (centralized IT applications), Ericsson Private 5G gives the possibility of deploying Distributed RAN.
- For enterprise locations with local IT/OT applications (distributed IT applications), Ericsson Private 5G offers a reliable remote site system with database synchronization across systems in different sites.



Time-Critical Communication

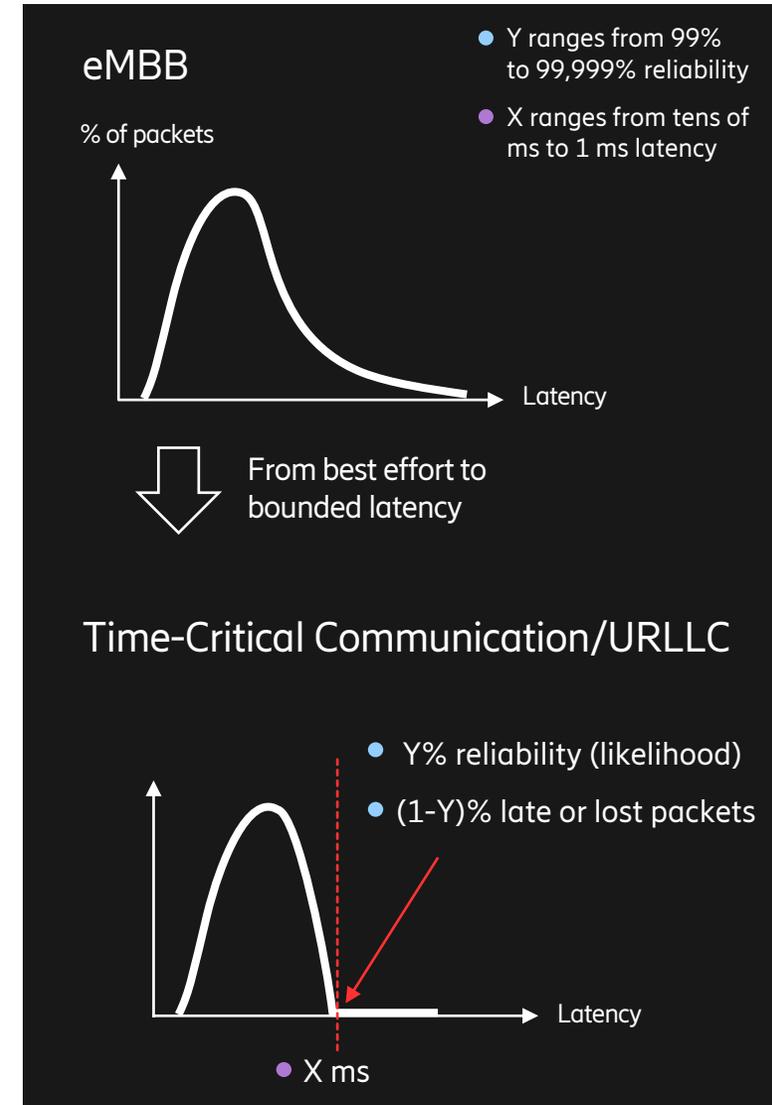
Customer Challenge

Mobile broadband type best effort latency behavior over the wireless channel causes latency peaks that can be interpreted as a lost connection in the industrial application.

Many industrial applications require a consistent latency behavior that mimics the legacy wired technologies, such as, different real-time ethernet variants.

Solution

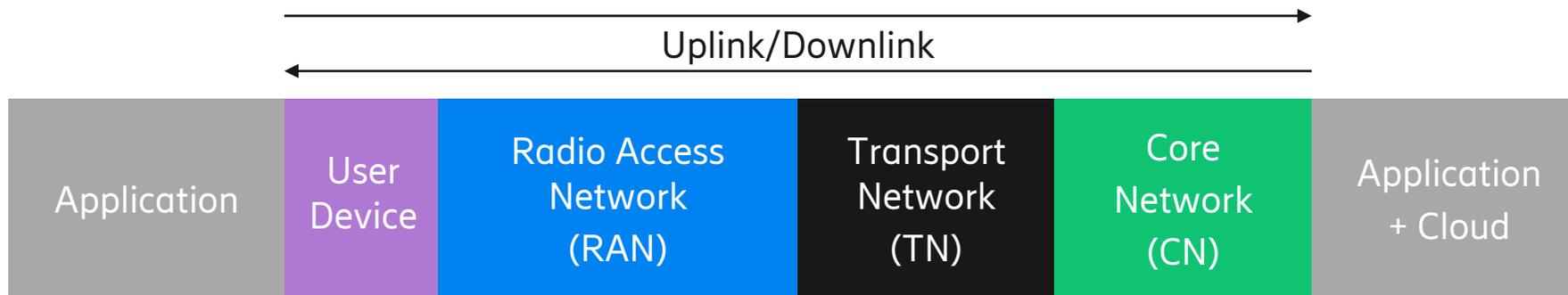
The new Critical IoT for Private 5G software product, and specifically the Time-Critical Communication feature set as part of it, brings new features to the RAN and CN that start enabling consistent latency. This software product can be deployed on Ericsson Private 5G.



End to end latency & reliability



A systematic end-to-end co-development is essential in ecosystem

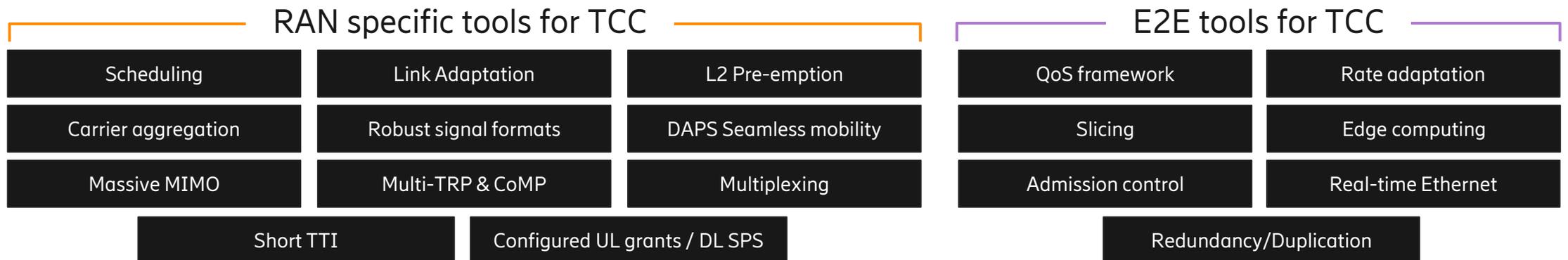
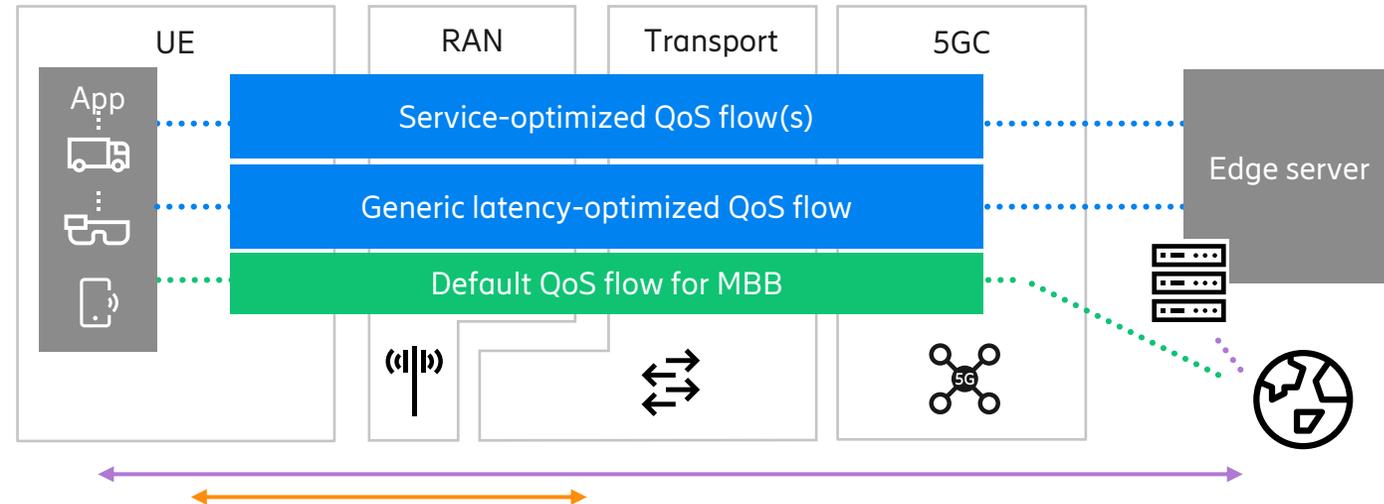


E2E latency budget
= RAN + TN + CN

E2E reliability – will be slightly lower than the individual reliability of the worst performing entity

Ericsson's holistic approach for realizing TCC

- Service separation
- Addressing causes of latency
- Maximum performance



Precise Indoor Positioning

Customer Challenge

Some customers need indoor positioning for different use cases:

- Asset tracking
- People tracking
- Real-time positioning of AGVs, trucks
- Security, for example, geo fencing
- Tool setup

Satellite-based positioning systems do not provide indoor positioning.

Solution

Ericsson Private 5G uses radio dots to provide accurate location in an indoor environment.

The technology is device agnostic and positions any 5G device without any extra software or hardware needed on the device.

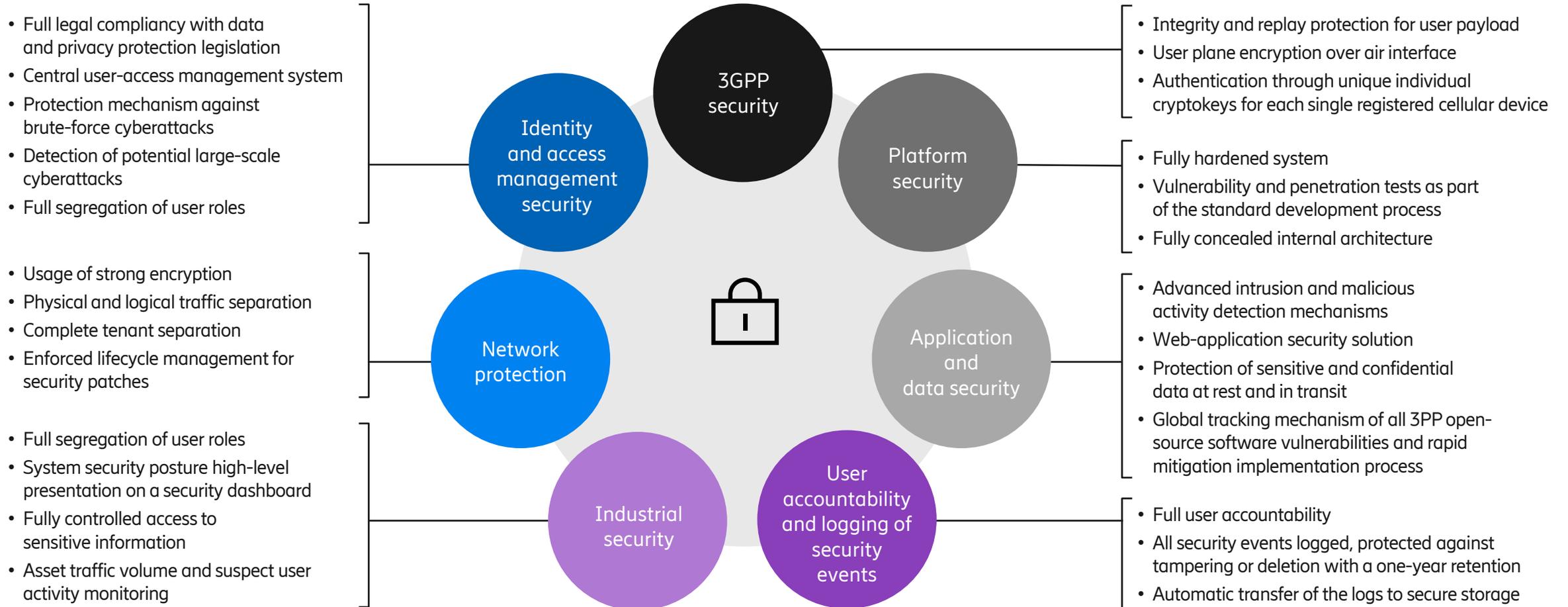
The positioning is a software feature that runs on the network controller.

The position is made available through an open API that can be used to integrate into existing applications.

Not all frequency bands, dots, IRUs, and or basebands support this feature at launch.



Overview security features



Ecosystem benefits partner, channel, and enterprise

For ecosystem partners

For channel partners

For enterprise

“Leading partners across device and hardware, professional services, and Independent software vendors realizing End-to-End use cases and business impact”

- Exposure to reselling partners
- Training on Ericsson offering and 5G
- Design and testing support of use cases and devices
- Enable partners to provide 5G as an easy-to-use and pre-packaged solution

- Global insights and experience from enterprise engagements
- Jointly pursue leads and opportunities from ecosystem partners
- Translating industry needs into E2E solutions from market-leading partners
- Modular approach enabling collaborating with the right partners

- Open ecosystem for best-in-class enterprise solutions
- Collaborate with the 5G leader to evolve and scale for future-proof solutions
- Worldwide solution reach and configuration
- Ecosystem solution blueprint to shorten time to value and scale

Ericsson Private 5G product offering

Value and benefits

Prepackaged
and pre-integrated



Ericsson market-leading
network products in one
box



Globally consistent
for multinationals



Common
SLAs globally



Easy to plan, install
and operate



Straight forward
to scale



Open APIs
for easy integration



Add-on features:
Positioning and PTT
Two server solution
with redundancy



