

# Private 5G network use cases discussion



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Business Enterprise Wireless Solution

# Ericsson is a world leader in mobile networks

Maintaining a leading position in 5G



Ericsson presence

50 % market  
share in 5G  
networks

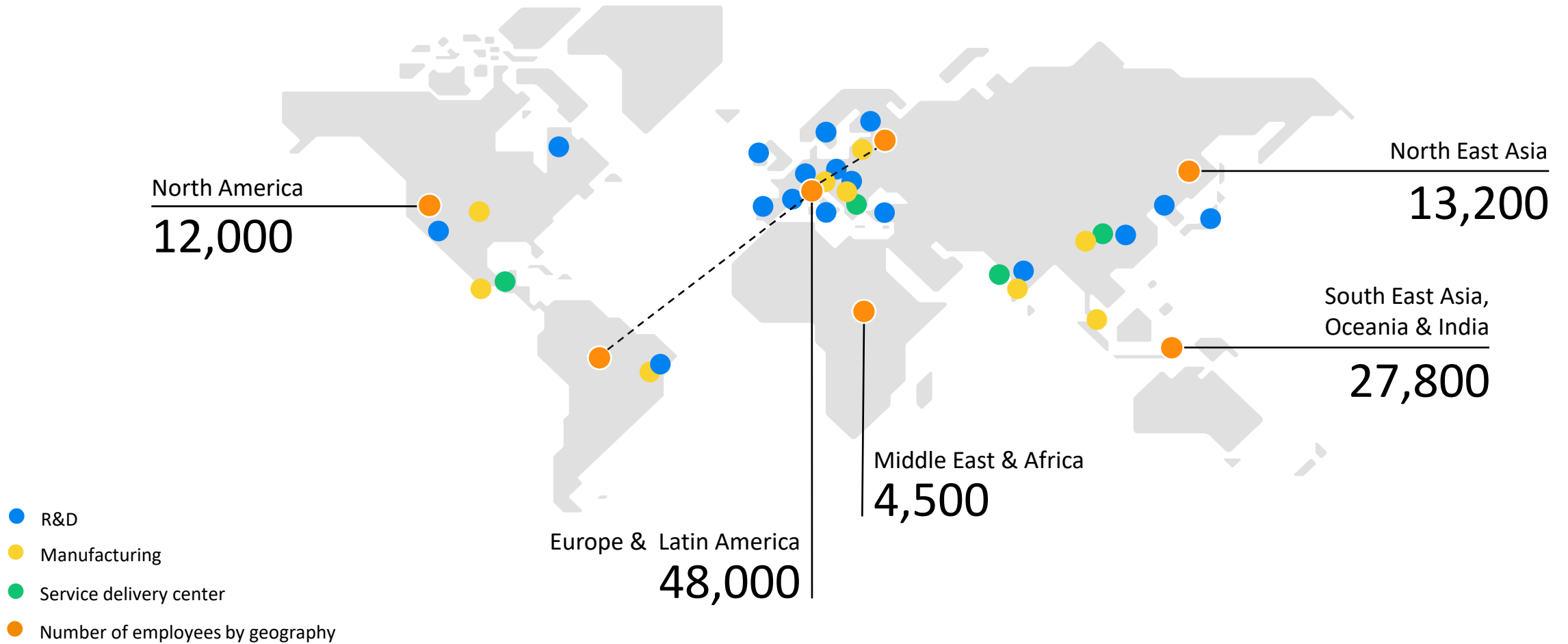
Granted patents

60,000

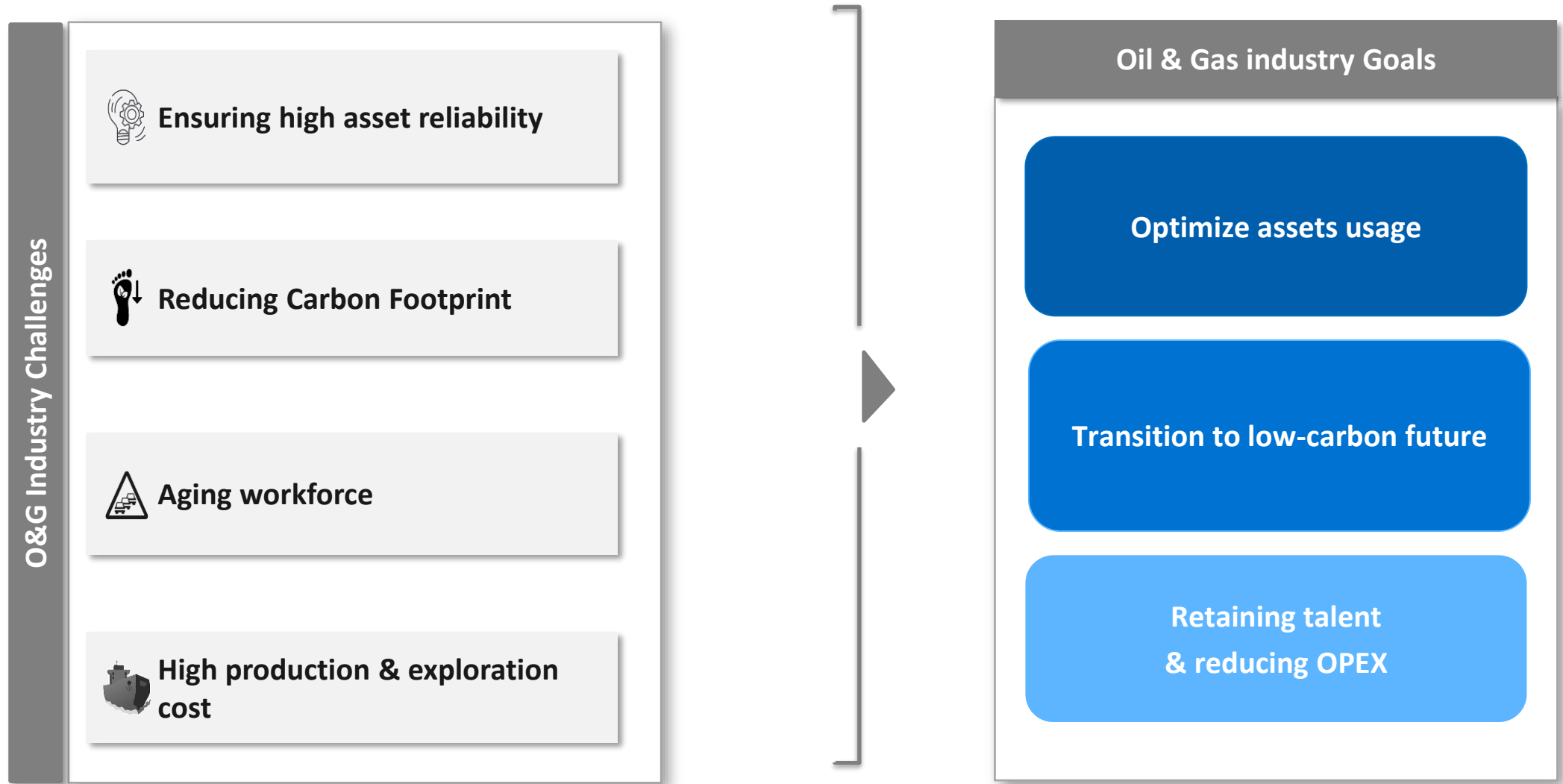
R&D budget  
(USD b)

4.7

# 105,500 employees serving customers worldwide



# Oil & Gas Industry challenges and goals



# O&G players use cases trials and implementation



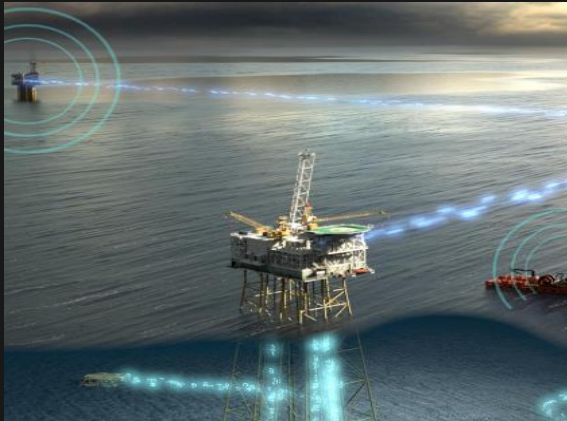
O&G player	IT/ICT Solutions Tested/Implemented							Key Insights
<b>ExxonMobil</b> Market Cap \$360B Revenue \$279B	Real time Automation  Digital Twin	Autonomous Robotics  Autonomous Drilling	AR/VR  AR/VR for Training	Smart Surveillance  Drones for Surveillance	Enhanced Broadband  Connected Workers	Hazard and Maintenance Sensing  Methane Leak detection	Smart Surveillance  Intelligent Video Analytics	<ul style="list-style-type: none"> <li>Start by: Test, Adopt, Scale</li> <li>Main use case: Digital Twin, Autonomous Robots and AR/VR are the most frequently trialed</li> <li>Partnerships is key for success</li> </ul>
<b>Shell</b> Market Cap \$195B Revenue \$262B	Real time Automation  Digital Twin	Autonomous Robotics  Autonomous Inspection	AR/VR  AR/VR for Training & Maintenance	Real time Automation  RT Production Optimization	Enhanced Broadband  Connected Workers	Monitoring & Tracking  Predictive Maintenance	Others  Inventory Optimization	
<b>ارامكو السعودية Saudi Aramco</b> Market Cap \$2129B Revenue \$346B	Real time Automation  Digital Twin	Autonomous Robotics  Robots for Underwater & steel surface inspection	AR/VR  AR/VR for Training & Inspection	Hazard and Maintenance Sensing  Drones for flair monitoring	Real time Automation  Advanced Analytics	Smart Surveillance  Intelligent Video Analytics		
<b>bp</b> Market Cap \$91B Revenue \$156B	Real time Automation  Digital Twin	Autonomous Robotics  Autonomous Inspection & Logistics	AR/VR  AR/VR for Training & Maintenance	Hazard and Maintenance Sensing  Drones for Methane leakage detection	Monitoring & Tracking  Worker Health Monitoring			
<b>equinor</b> Market Cap \$103B Revenue \$89B	Real time Automation  Digital Twin	Autonomous Robotics  Robots for Underwater Maintenance	AR/VR  AR/VR for inspection & Maintenance	Hazard and Maintenance Sensing  Drones for Methane leakage detection	Enhanced Broadband  Connected Workers	Others  Inventory Optimization		
<b>Partnerships</b>								

Legend ■ Trials ■ Implementation ■ IT Solutions

# Addressing Oil & Gas challenges with our solution



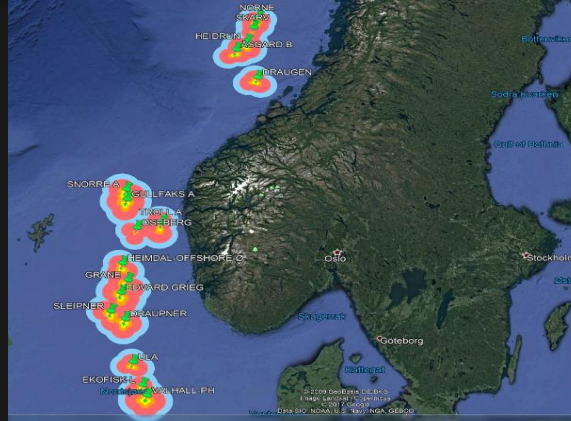
USA



## Safety, efficiency

- Workers & visitors tracking
- Drone border monitoring
- Push To Talk

Norway



## IOT use cases

- Asset condition management
- Connected worker
- Push To Talk

Gayana



## Safety & IOT use cases

- Connected, safe worker
- Drone Detection aaS
- Push To Talk

Europe



## Efficiency & productivity

- Collecting health and performance data
- Actionable insights to offer pumps as a service
- Global management and control



# S. East Asia Oil company



## Challenge

- Safety, efficiency
- Reliable and secure infrastructure
- Use cases: Assets condition monitoring, robotics
- Future applications: ML, AI, Digital Twin

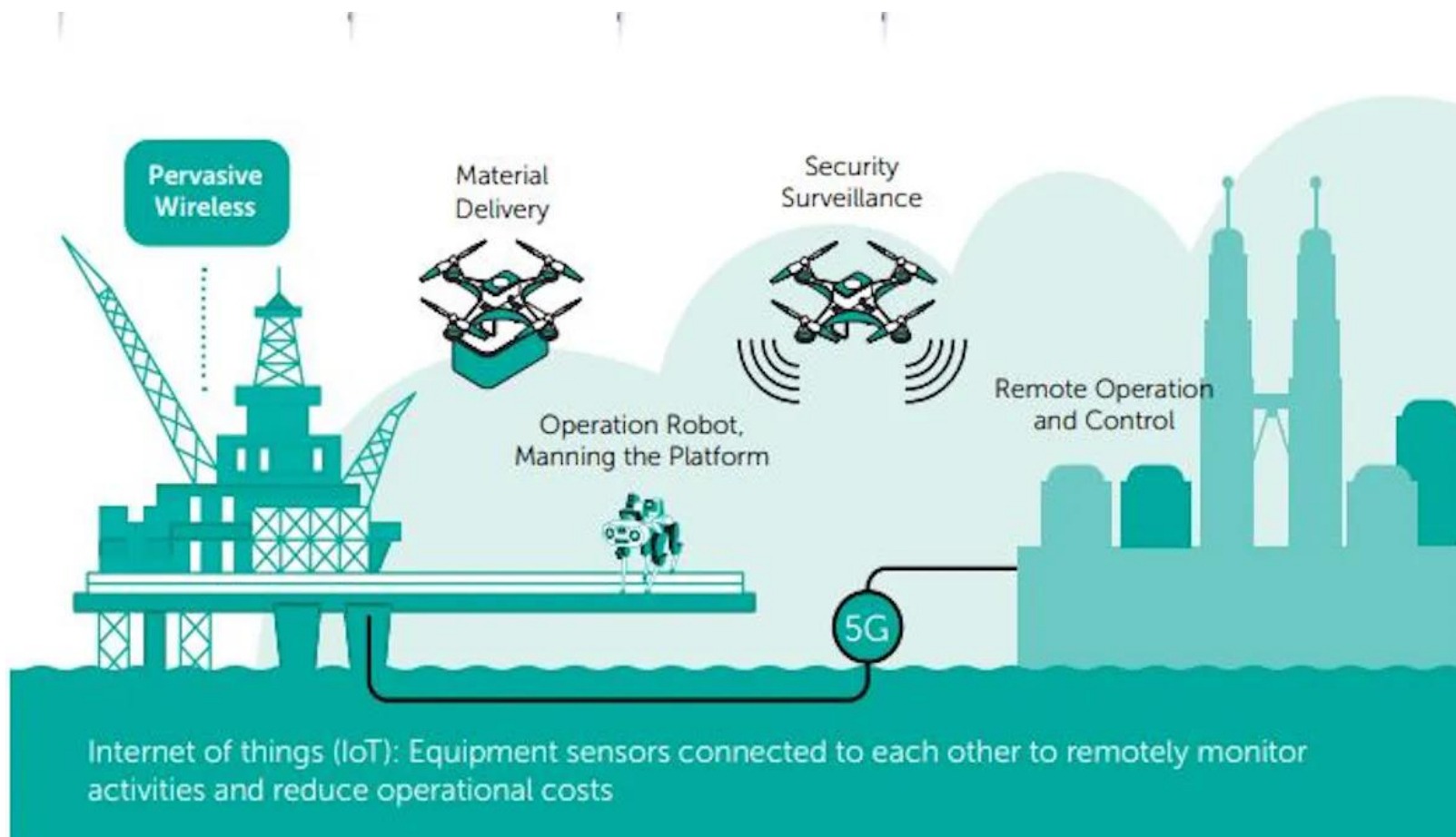
## Solution

- Private 4/5G network fully under Customer control.
- Operations Support System (OSS) and Network Operating Center (NOC)
- Industry partners for trials and implementation

## Result

- Enhanced communication using PTT solution over LTE
- Drone surveillance solution
- Collaboration for assets condition monitoring is being tested
- Remote Operating Vehicle undersea is being tested

# Petronas experience with 5G



Bacho Pilong, senior vice president for project delivery and technology at Petronas, said "Our strategic adoption of 5G technology sets us ahead in the energy industry. **By combining 5G with Internet of Things, artificial intelligence and automation**, we're putting Petronas among the leaders in the global technological race, while ensuring we meet the demands of supplying safe, reliable, cost-optimized and emission-abated energy solutions for Malaysia and our customers globally," he added.



# Cellular connectivity brings a new dimension of Mobility & Reliability



## Cellular

- Built for mobility
- Security built in from start
- High and predictable performance under load
- Low latency
- High reliability
- Built for M2M communication

## Land mobile radio

- Voice + data + video
- 9.6K data
- Systems getting old with high costs to operate
- Device ecosystem not as developed

## Cables

- High speed and predictability
- Less flexibility when you need to do changes in your operations
- No mobility for moving devices e.g. combined indoor/outdoor use cases
- breakages or erosion can occur
- Harder to scale and to deploy devices that were not planned for
- Some places are hard to reach for cables

## Wi-Fi/Wi-Fi 6

- Less stable performance and latency under load
- Unlicensed spectrum only
- Not so good in combined indoor/outdoor use cases
- Harder to build good outdoor coverage

# Ericsson Private Cellular Networks

How does it solve for oil and gas:



## LTE and 5G system in a box

Easy to operate, small footprint, fast to deploy, future proof

### Management



### Core network



### Radio portfolio



## Private cellular networks fully enable digital transformation efforts for oil and gas

- **Coverage reach:** 10s of miles instead of 100s of feet.
- **Multiple applications:** voice, cameras, sensors, robotics, all on one common infrastructure.
- **Commercial off-the-shelf:** no customization, no vendor lock-in.
- **Reliability:** More reliable than Wi-Fi and public cellular.
- **Practical bandwidth:** Capable of 100Mbps, instead of 10-100 kbps.
- **Security:** Fully encrypted and close-ended system.

AI/ML

Robotics

Cloud compute

IoT/sensors

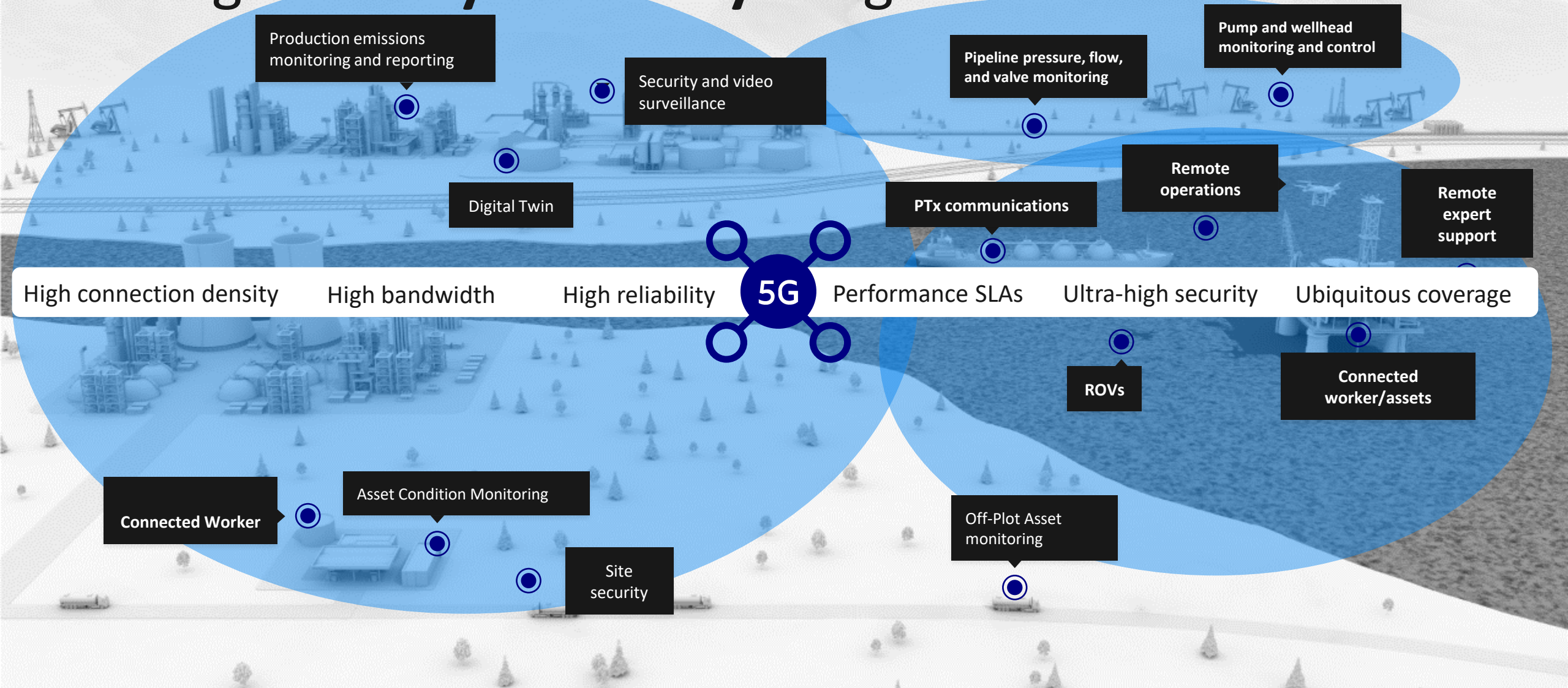
Digital twin

AR/VR

Private networks

# Oil & Gas industries of the Future

## Driving **Efficiency** and **Safety** using Cellular networks



# Private network for the ROI for the IT team

With 5G PN IT teams can

- Deploy and manage a cost effective network
- Ensure high-performance, secure, and mission critical connectivity
- Future proof connectivity



IT



# Wi-Fi is 22% higher in total cost per square foot than cellular



## Cost Breakdown – Wi-Fi

Equipment, cabling, and install (CAPEX)

**43 %**  
of total cost

Product support, helpdesk, onsite IT (OPEX)

**57 %**  
of total cost

Based on the following equipment:

160 Wi-Fi APs  
10 PoE switches  
Router

Wireless Access Controller  
Server (network/user mgmt)  
Install, cabling, racks etc



## Cost Breakdown - Cellular

Equipment and install (CAPEX)

**65 %**  
of total cost

Product support, helpdesk, onsite IT (OPEX)

**35 %**  
of total cost

Based on the following equipment:

15 small cells

vEPC distributed LTE core  
Install, cabling, racks etc

Source: Ericsson internal studies

# Private network for the ROI for the OT team



With 5G PN OT teams can

- Perform predictive maintenance of assets
- Enhance operational efficiency and safety
- Achieve real-time data access and information
- Achieve Autonomous operations

A photograph of an industrial worker from behind, wearing a white hard hat, safety glasses, a grey long-sleeved shirt, and a safety harness. The worker is holding a black handheld device to their ear. The background shows an industrial facility with tall towers and pipes under a clear sky. A large red circle is drawn around the worker, and the letters 'OT' are written in red over the worker's back.

OT

# Implementing OT use cases over cellular networks can yield substantial returns



## 1. Asset Condition Monitoring



Real-time Asset monitoring can result in

**25 %** reduced number of maintenance sessions needed per asset, per year

**80 %** lesser workers needed to monitor equipment

**35 %** reduction in unplanned downtime, compared to a maintenance schedule only program

Source: Ericsson Analysis

## 2. Connected Workers



Connected Helmets have shown

**33 %** faster maintenance

**89 %** faster audits

**70 %** Increase in safety compliance

Source: RealWear

## 3. Autonomous Robots



Robots & Drones can result in

**90 %** less inspection time

**65 %** less downtime costs caused by manual inspection

**35 %** Reduced cost due to health and safety incidents

Source: Ericsson Analysis

Private network is driving value for the IT and OT teams



OT

5G

IT



# Our industry 4.0 partners



## Ecosystem

Professional Services



Devices & Hardware



SW & Apps



## Industry



Processing



Offshore

# Ericsson test lab with industry partners

## Effectively solving industry pain points



Surveillance deployment was reduced from 2 days to 15 minutes



Remote operation of equipment in a Refinery



Reduce project cycle time by 5% and reduce expert travel costs by 1/3



Digital twin to control machinery from the lab

# Why Ericsson for private networks?



## Values and benefits



4G+5G at same time

**Existing and  
future proof**



Licensed spectrum

**Reliability in  
operations**



Trusted brands  
**Ericsson is over  
145 years old**



Expansive reach  
**Global to match  
your operations**



Easy to plan, install & operate

**Low learning curve  
for your IT staff**



Public cellular offering  
**(Basic cellphone coverage  
for employees and guests)**



Extensive partnerships  
**Bring variety of global  
mobile operators to table**



Two server solution  
with redundancy  
**(Carrier grade)**

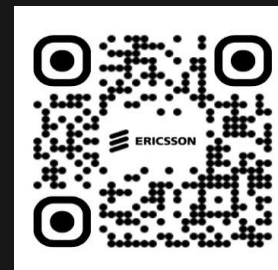
# Thank you



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[Ericsson Oil & Gas](#)

