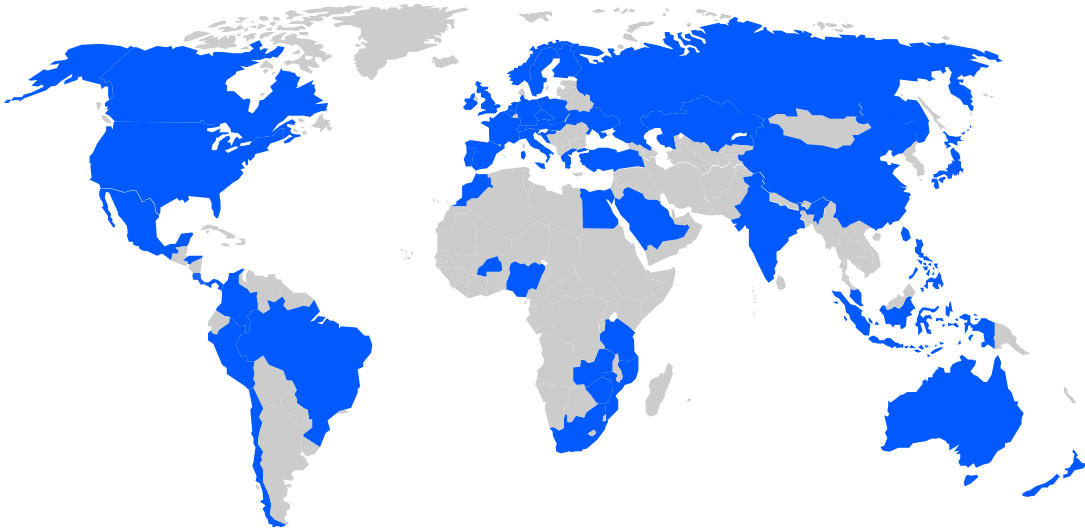# CEATEC 2024
5G International Workshop

Ray Tseng
Head of Enterprise Campus Edge Sales APAC

October 2024

NOKIA

#1 market leader in Private Wireless with 730+ campus customers across the globe

NOKIA

Industry4.0 will massively increase the productivity and value creation for all industrial segments

Sustainability
efficiency helps lower environmental impact

Increase
worker safety & productivity
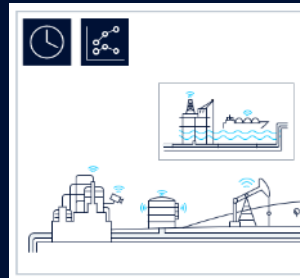
Enhance efficiency
with process automation

Increase agility
to meet fast changing requirements

Better decision
making via intelligent insights

...while maintaining asset heavy industries "Must-have" needs

Continuous operation

Efficiency & Safety

Security

NOKIA

Communications challenge and approach
Private wireless

Customer challenge

- Provide an autonomous and reliable data and communications network covering all the offshore wind farm aread including the transit route
- Provide reliable voice communication between workers offshore and onshore, on vessels to Aero terminals and external companies

Nokia approach

- Private wireless network to cover the offshore wind farm area
- Self-contained, independent and resilient Private Wireless network
- Push-to-Talk and Push-to-Video group communications solution
- Voice gateway connectivity with PBX and Tetra/VHF systems
- On-site drones for visual inspection

Business benefits

- Improved safety and security of offshore building and maintenance staff
- Real-time data of turbines, pitch motors, weather, staff presence, vessel proximity…
- Reduced time to deploy and maintenance costs thanks to end-to-end communications across teams and organizations

NOKIA
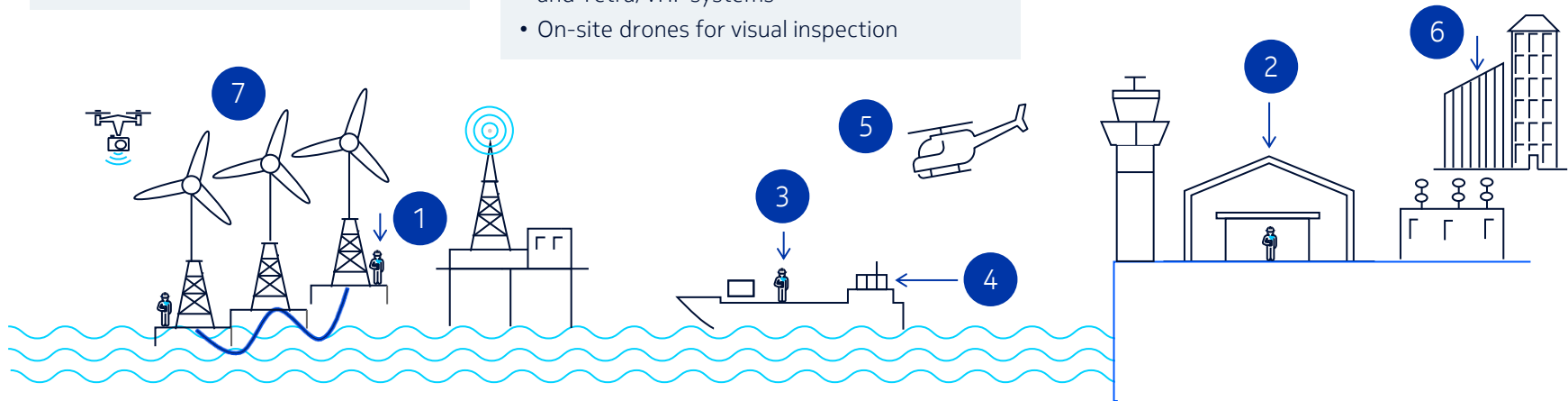
Communication needs
Different needs at different stages

During construction phase

Provide voice communications
- Push-to-Talk group communications
- Between workers in turbines, vehicles, cranes and other service equipment
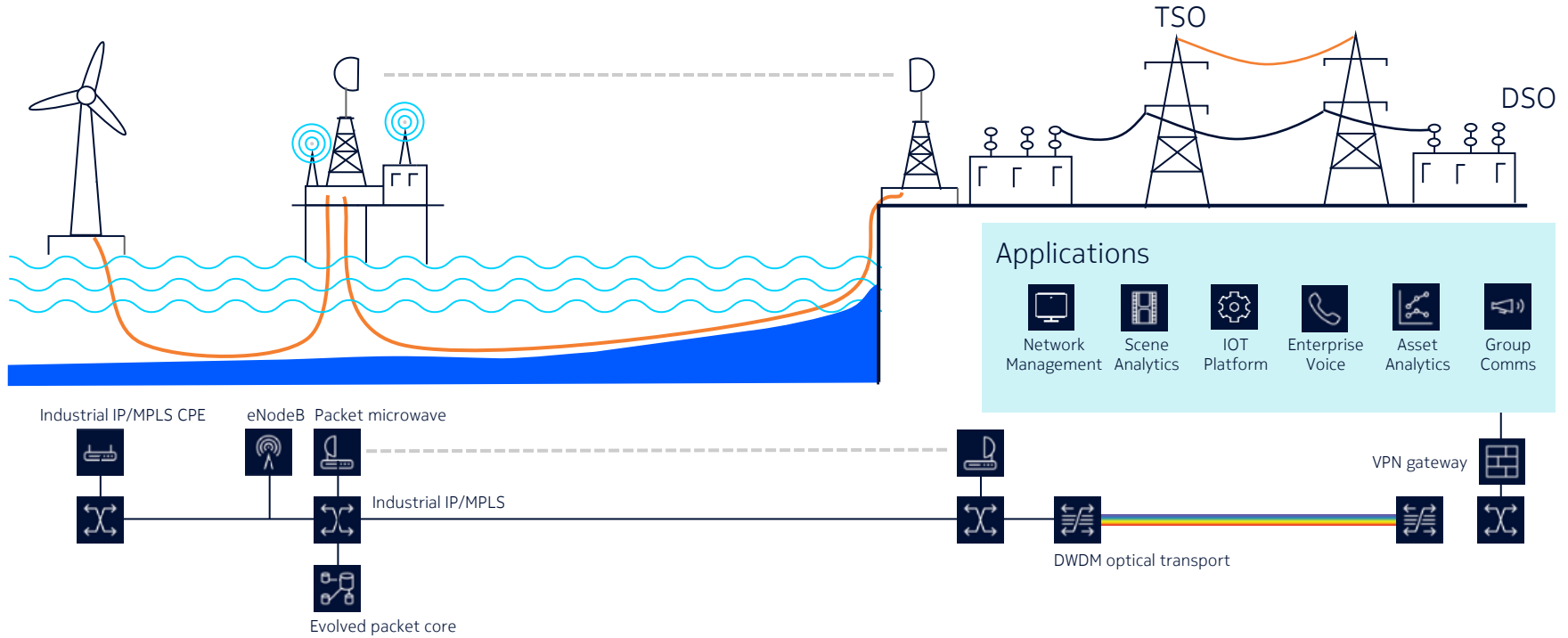
Provide communications back
- Wind farm operator headquarters
- Turbine vendors and suppliers
- Emergency services
- Temporary power generators

During production phase
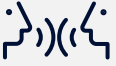
Provide voice and data communications
- Service personnel
- Turbine performance and analytics
- SCADA and protection services
- Emergency services
- Resilience to the optical cable

Nokia's Solution Blueprint for wind farms

TSO

DSO

Applications

Network Management

Scene Analytics

IOT Platform

Enterprise Voice

Asset Analytics

Group Comms

Industrial IP/MPLS CPE

eNodeB

Packet microwave

VPN gateway

Industrial IP/MPLS

Evolved packet core

DWDM optical transport

NOKIA

Rich set of digitalization enablers

Nokia Industrial Application Catalog

Wireless connectivity
- Nokia Digital Automation Cloud (DAC)
- Nokia DAC WiFi
- Nokia CBRS domain proxy
- Nokia MX Boost

Communications
- Nokia Team Comms
- Nokia Group Communications*

Solution O&M
- Nokia Network Digital Twin
- Nokia Industrial device management

Video analytics
- Nokia Scene Analytics
- ATOS Quality Inspector

Tracking and positioning
- Nokia High Accuracy Indoor Positioning (HAIP)
- Visual Position Object Detection

Robotics & mechatronics
- Nokia Drone Networks*

Connected worker & XR
- Taqtile Manifest
- Secapp
- Portalify
- Alcon Smart Badge

Enterprise security
- Zscaler Private Access
- Palo Alto NGFW

Industrial connectivity
- PTC ThingWorx Kepware Edge
- Siemens MindConnect Software Agent

IIoT & digital twin
- Nokia Integrated Operations Center (IOC)
- Litmus Edge
- Crosser Node

Video enabler
- Smart Mobile Labs EVO

Cloud connectivity
- Azure ARC
- Azure IoT Edge

Pre-configured industrial applications accessed from the catalog

Automated provisioning and life cycle management for apps on MXIE edge

Includes Nokia and 3rd party applications – offering growing

Applications brewing within many categories such as Security, IIoT and digital twin and Robotics & mechatronics

Nokia Industrial Application Catalog

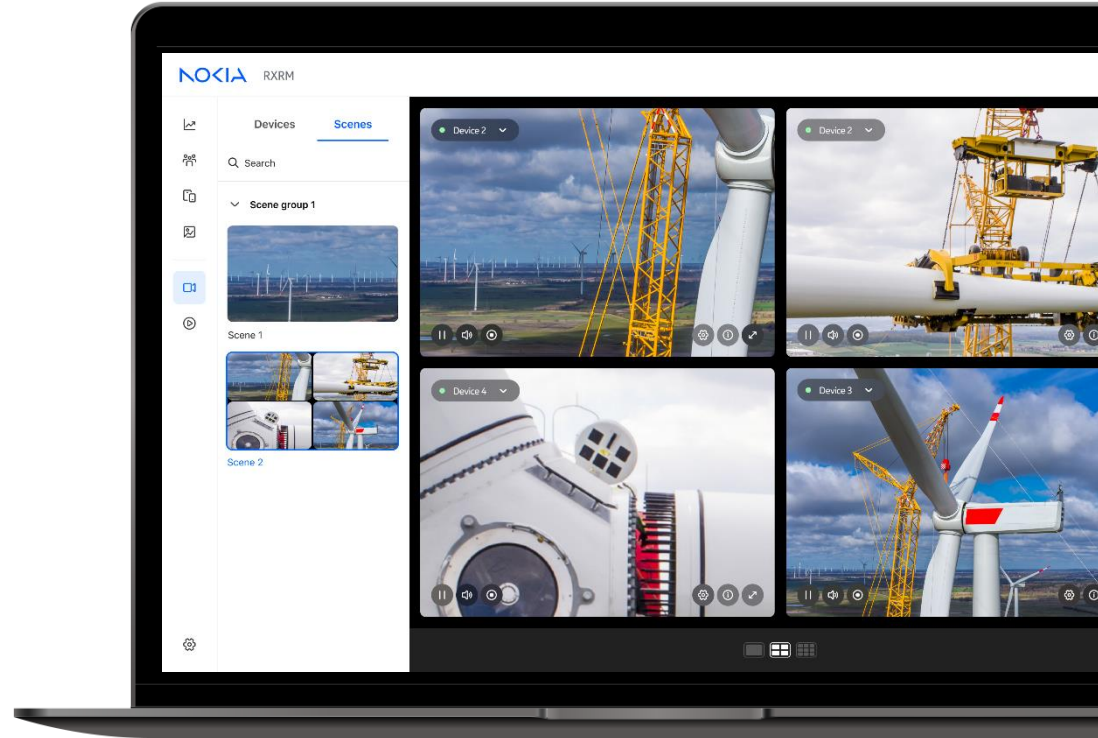* Not on MXIE

Remote Monitoring and Predictive Maintenance

Nokia RXRM provides comprehensive remote access to hard-to-reach sites, resulting in significant savings in manpower and travel times.

Drones and fixed cameras monitor unmanned infrastructure to assess if the situation requires a physical visit. This saves on unnecessary downtime and eliminates the need to travel back and forth.

Continuous remote monitoring also provides security and acts as a deterrent against potential misdeeds, including vandalism, sabotage or theft.

Fixed 2D cameras

Drones with 360° cameras

Fixed 360° cameras

Roaming security personnel

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NOKIA
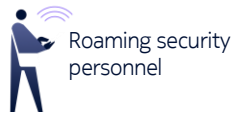
Reliable connectivity for operational teams between offshore wind farms in UK

netnordic **equinor**

Private wireless technology offers reliability, capacity, security and low latency for collaboration between teams

Communication and information sharing between on-shore, vessel and off-shore teams across Equinor's installations.

LTE Nokia private 4.9G and 5G-ready network to support teams across Equinor's installations in UK.

Industrial user equipment, Nokia DAC team comms, Nokia Drone Networks, edge with complete EPC core

Reliable connectivity with security and low latency to support applications and collaboration between teams across windfarms

NOKIA

Enhanced connectivity to improve production operations in offshore and onshore facilities in Brazil

Telefónica | **PETROBRAS**

Enhanced connectivity to improve production efficiency, reduce costs, and prevent failures and workforce accidents.

Operations improvement in platforms in the offshore Campos and Santos basins and onshore units covering refineries, gas processing plants, warehouses, and ports.

LTE Nokia private 4.9G and 5G-ready network to support Petrobras connectivity improvement in Brazil.

Modular Private Wireless (MPW) using LTE network powering digital transformation

Reliable connectivity with security and low latency to optimize operations, boost productivity and efficiency

NOKIA

https://www.nokia.com/industries/renewable-energy/