

Μεταφορά αγαθών από λιμάνια σε πελάτες, η νέα γενιά

Enabling next-gen container terminal automation with LTE / 5G private wireless

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NOKIA

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"Intelligent Transport Systems in Greece: Latest developments"

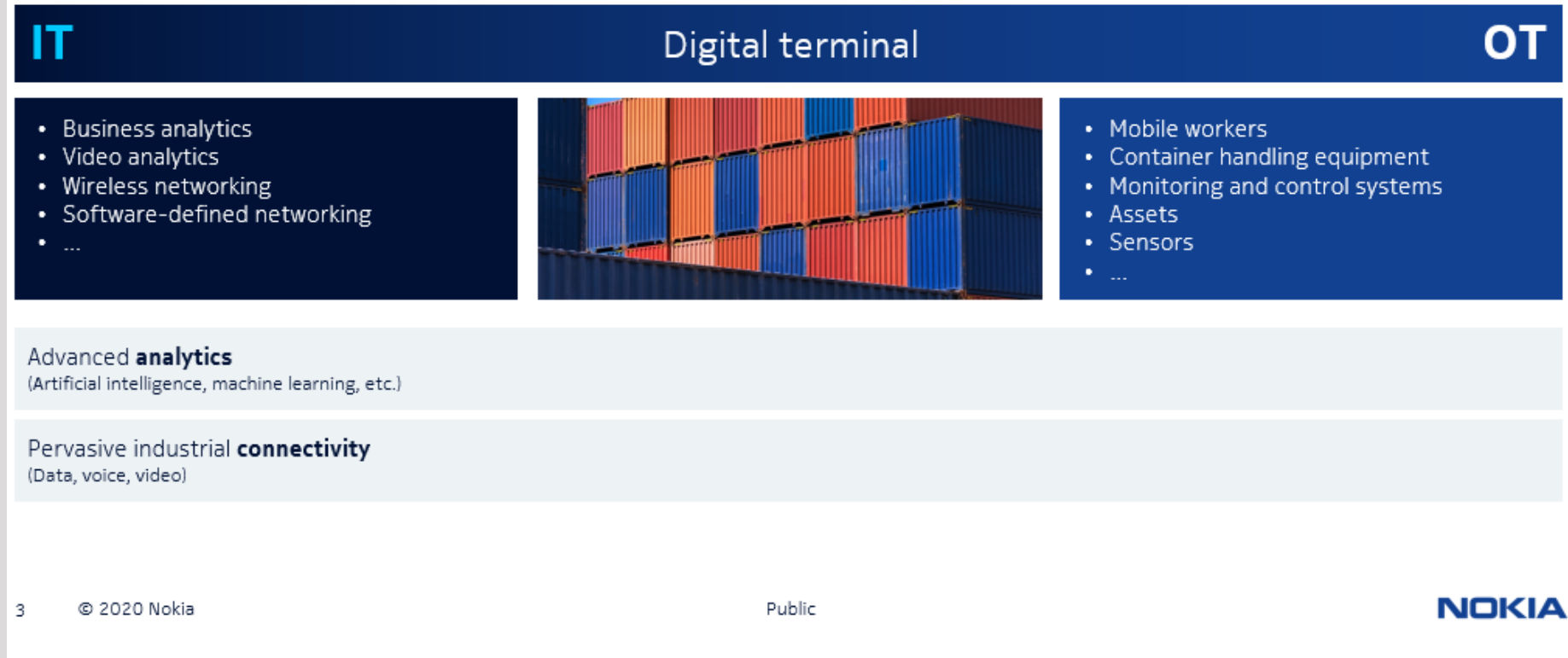


How to increase
move per hour?

How to reduce
cost per move?

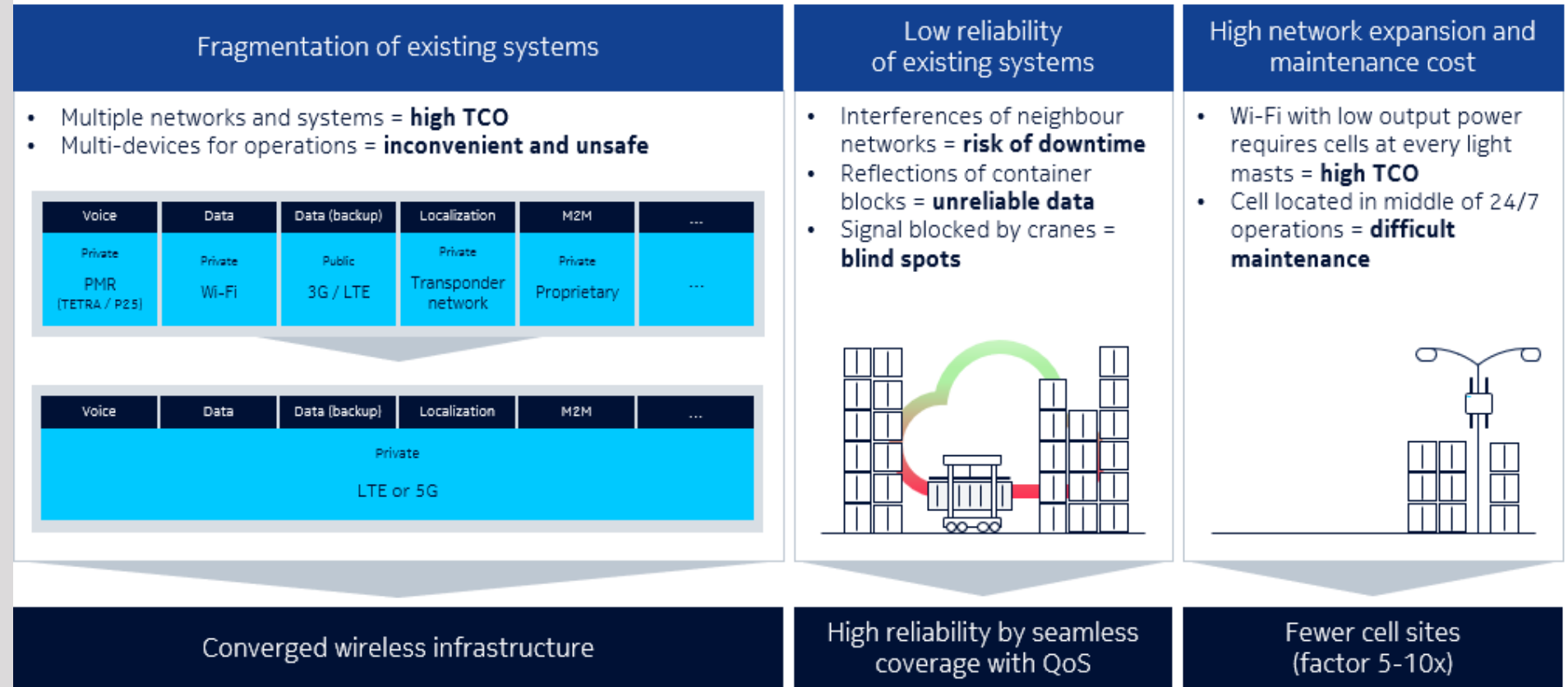
Big picture for digital transformation of terminal operations

IT / OT convergence for data-informed, real-time and longer-term decisions to respond accurately, effectively, and proactively to customers, partners and stakeholders



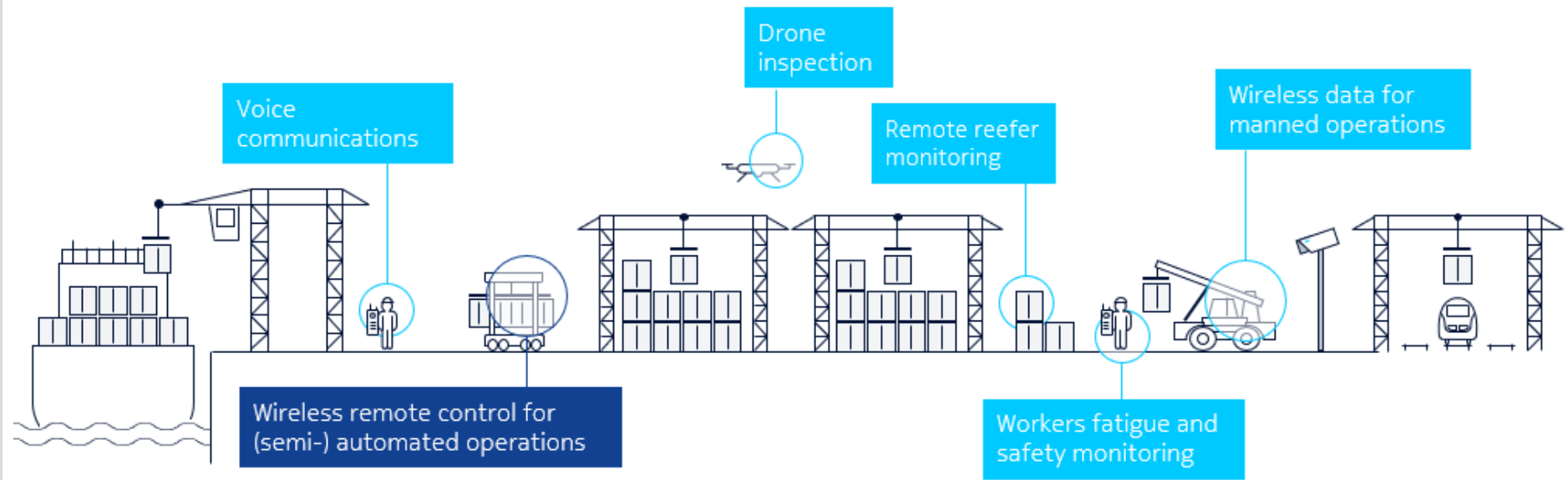
Wireless in port terminal operations today

Private LTE or 5G as future wireless technology of choice



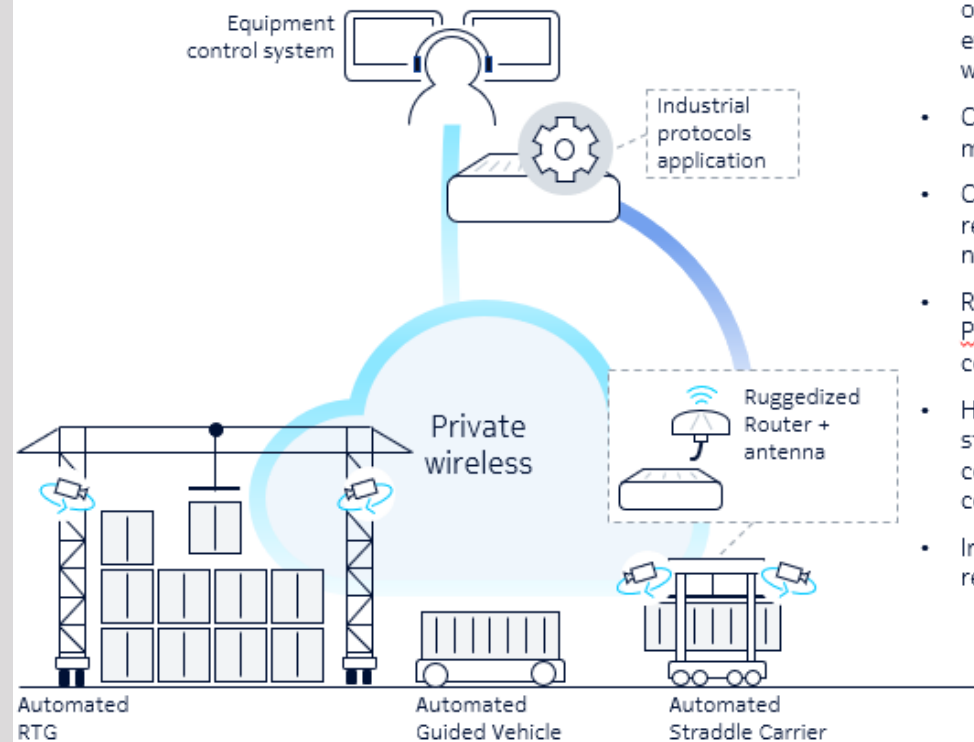
Digital transformation of terminal operations

Exemplary automation use cases



Use case:
Wireless remote control for (semi-) automated operations

Description



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Public

Customer challenge

- Remote controlled yard operations require – more than ever – highly reliable and available wireless
- Current wireless not designed to meet needs of remote control
- Consistent low latency requirement with mobility while navigating yard
- Required support of Profinet / Profisafe protocol for remote control
- High uplink requirements for video streaming as feedback to human controller: 8-18 cameras per container handling equipment
- In future, even further low latency requirement for haptic data

Nokia response

- Purpose-built private LTE or 5G network powered by Nokia DAC in dedicated spectrum
- **Highly available, reliable and low latency wireless connectivity** across whole yard with **Quality of Service (QoS)**
- End-to-end system with user equipment, industrial protocol gateways, and end-to-end use case commissioning

Business benefits

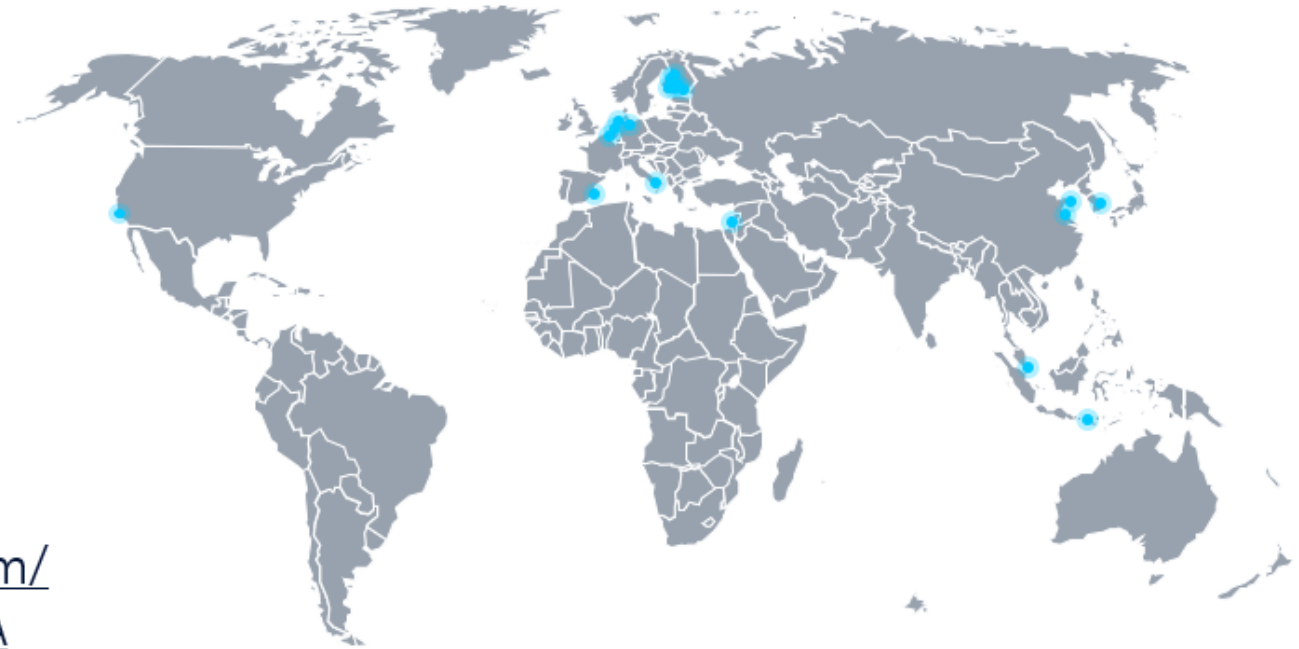
- **90% less emergency stops**, zero system related accidents or injuries
- **28% typical yard productivity increase**, with 860.000 additional automated container annually
- Increased workers health and safety

Port authorities, terminal operators and partnerships with industrial players

180+ private wireless
customers worldwide

Including **20+** port
customers

[https://www.youtube.com/
watch?v=TDWX1XmBb7A](https://www.youtube.com/watch?v=TDWX1XmBb7A)



A global track
record of
reference
projects



6th ITS Hellas Virtual Conference 2020

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Thank you!

Any questions?