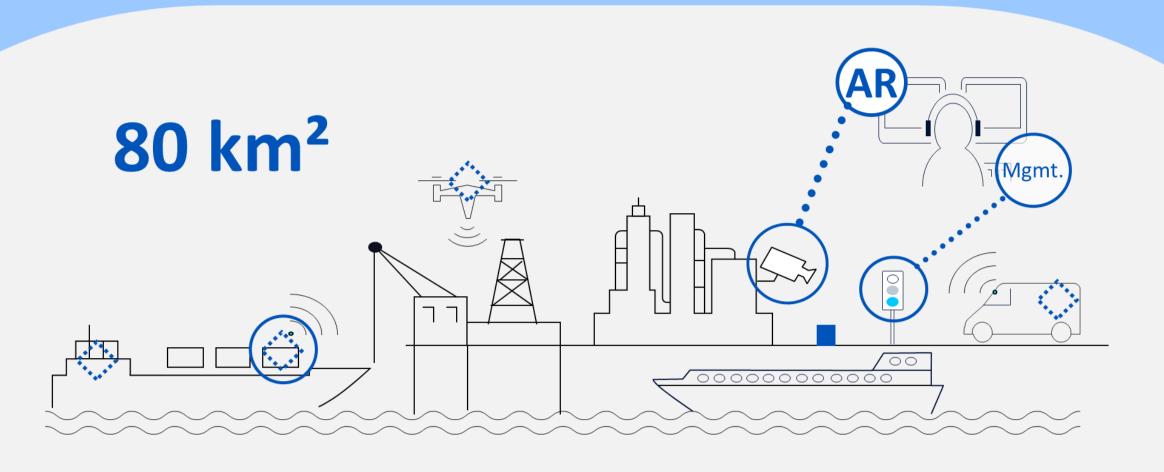


Hamburg 5G Smart Sea Port

Challenges by 2025

18 Mio containers/year Several 10K trucks/day Self driving/flying vehicles 100,000+ sensors



Focus on 3 use cases

Improved port operations

Better traffic flow

Improved pollution control

Ensure efficient operations & logistics

Share data between shippers, vehicles, terminals, companies

Emission supervision Real-time info on cargo temperature, location or humidity Connect cruise ship tourists coming in "batches"



Data Plane Nuremberg Design &

placement Full lifecycle management

Activation < 1 min

NOKIA

Local Control & Data Plane Hamburg

Base Station Core Network & Data Centres & Antennas

Hamburg



Slicing enabled 700 MHz FDD

NOKIA

Network Slice Management

Improved Pollution Control (MTC)

High resilience & reliability

Mobile sensors on HPA ships live measuring air quality

Fast sensor network deployment anywhere





Reliable & secure connectivity

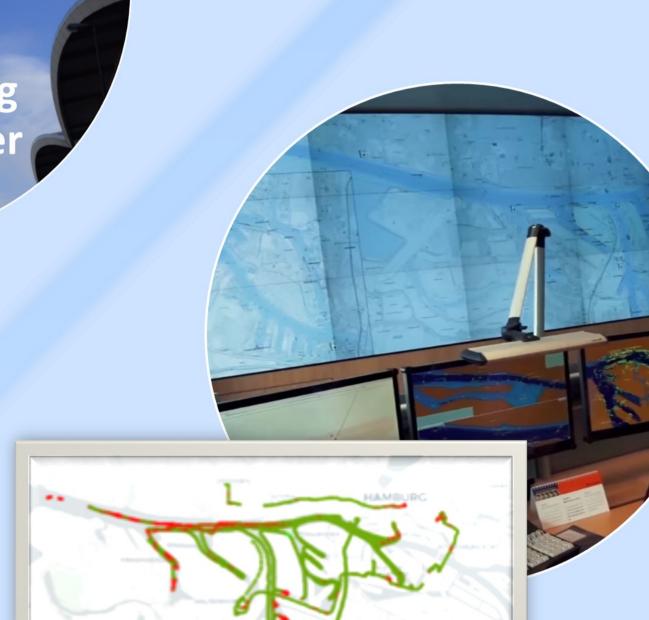
Deployment flexible & fast

Integrated temporary sites



Connected traffic lights

Central live control and status



Port Control **Port Control** Centre **Applications**

HPA

Improved Port Operations (eMBB)

High performance, secure and low latency

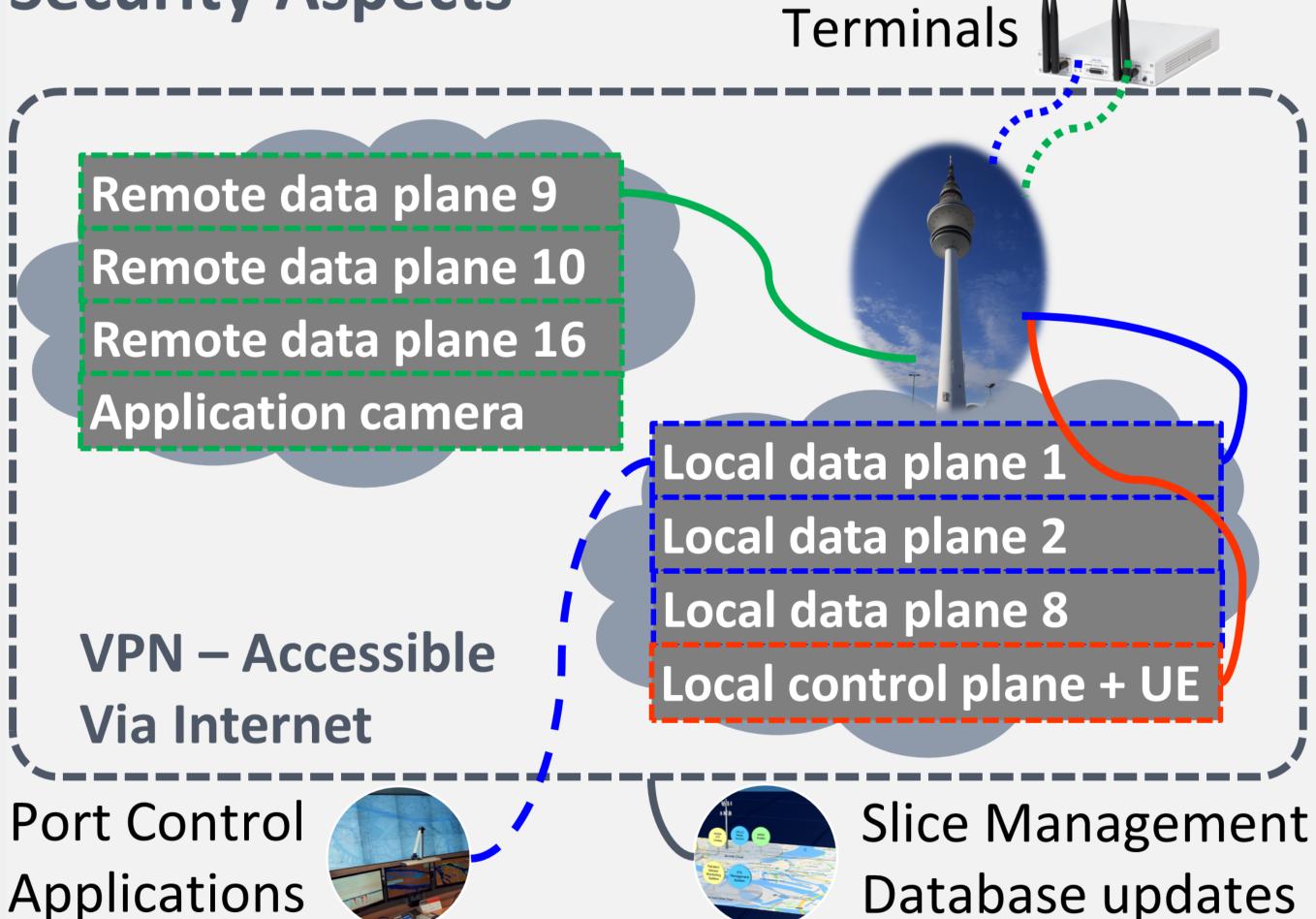
Connected VR/AR headsets for engineering teams Remote live expert

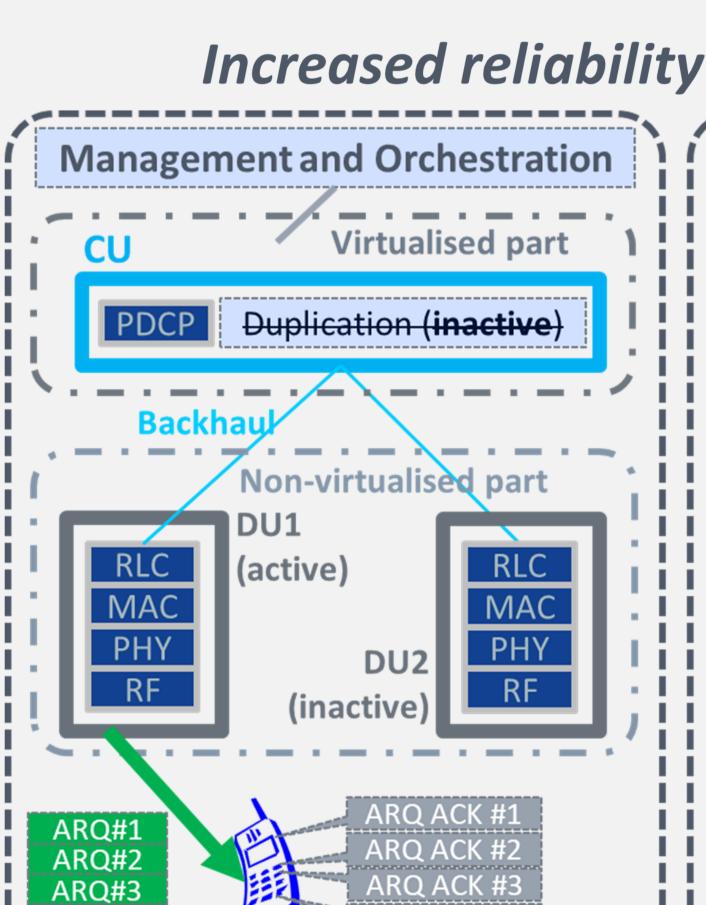
> Customised slices for latency-critical apps

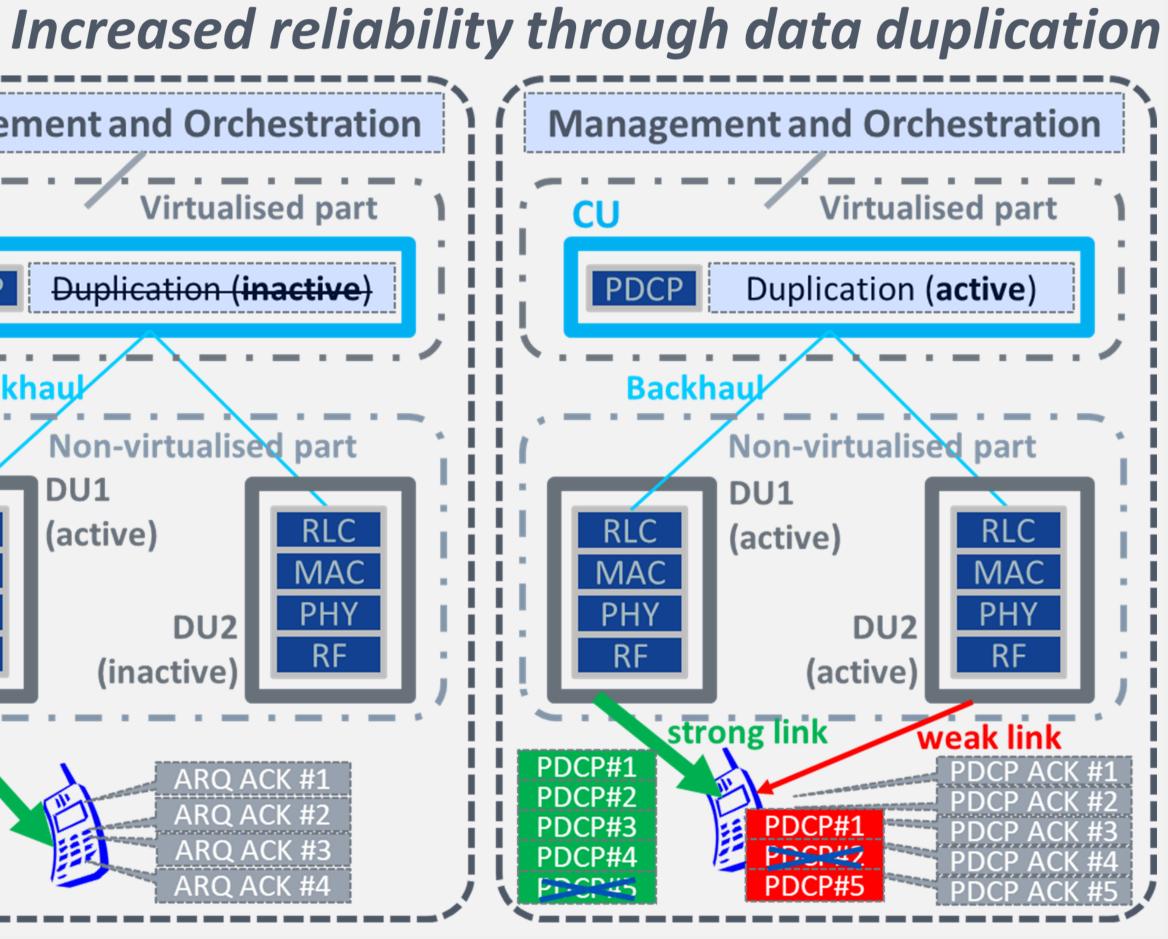


Dual Connectivity









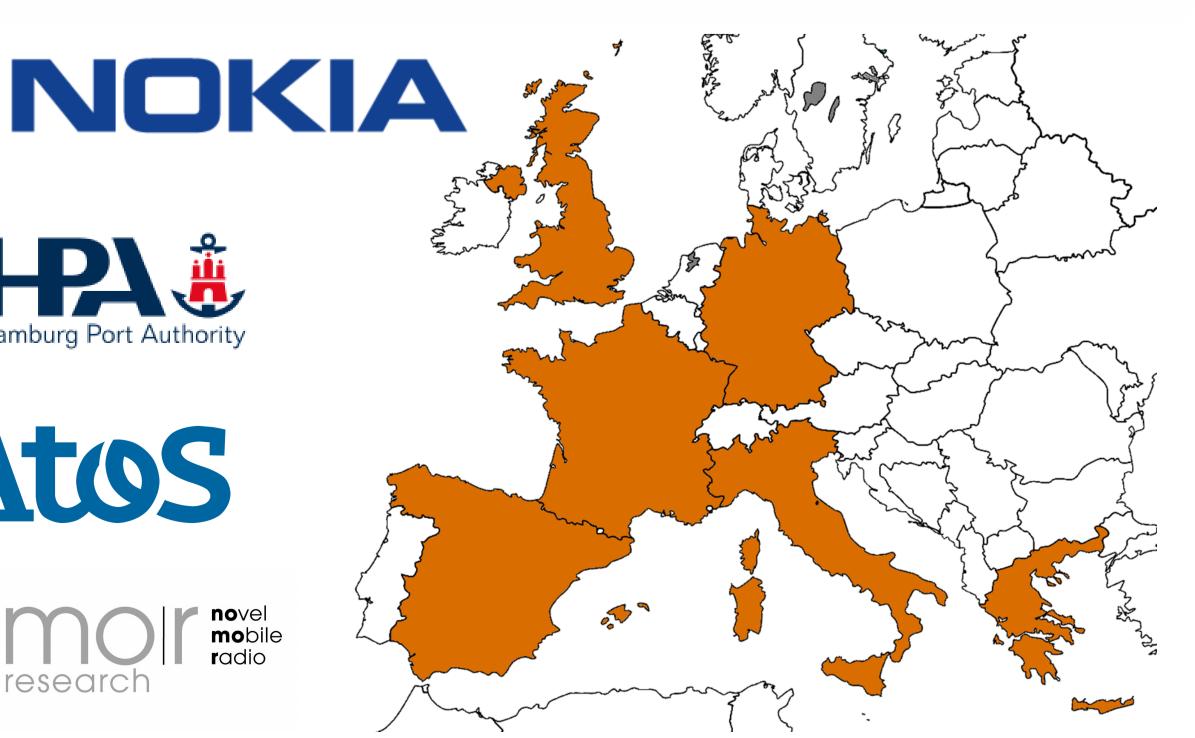




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ARQ#4















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