WIRELESS PROFINET AND BEYOND

DECT NR+ FOR INTRA-LOGISTICS

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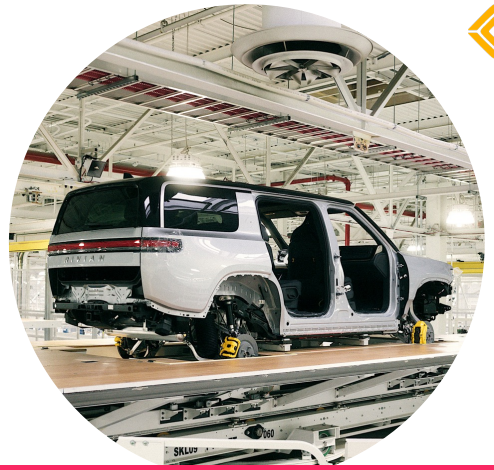
Dr. Mathias Bohge, R3 Solutions GmbH

WE AR3 FAMILY

We are a Berlin-based company that has set itself the goal of building industrial radio technology for the future.
We cooperate with Texas Instruments, NXP and Nordics to provice the worlds most advanced WiFi-based Ultra-Reliable Low-Latency Communications (URLLC) Technology: **EchoRing**

BRIDGE E

- Dedicated OT[1] network that operates parallel to Wi-Fi
- 1000x more reliable than Wi-Fi
- Guaranteed channel access
- Designed safety & control data traffic



RIVIAN

COMPATIBLE WITH PROFINET PROFIsafe EtherNet/IP CIP Safety EtherCAT Safety over EtherCAT

EDGE X

- Wi-Fi 6E client & Micro Access Point
- Powerful iMX-8 processor with ML accelerators
- Soft PLC for various industrial protocols
- Various I/Os and additional two CAN interfaces
- Highest security and TSN-ready

Rockwell Automation

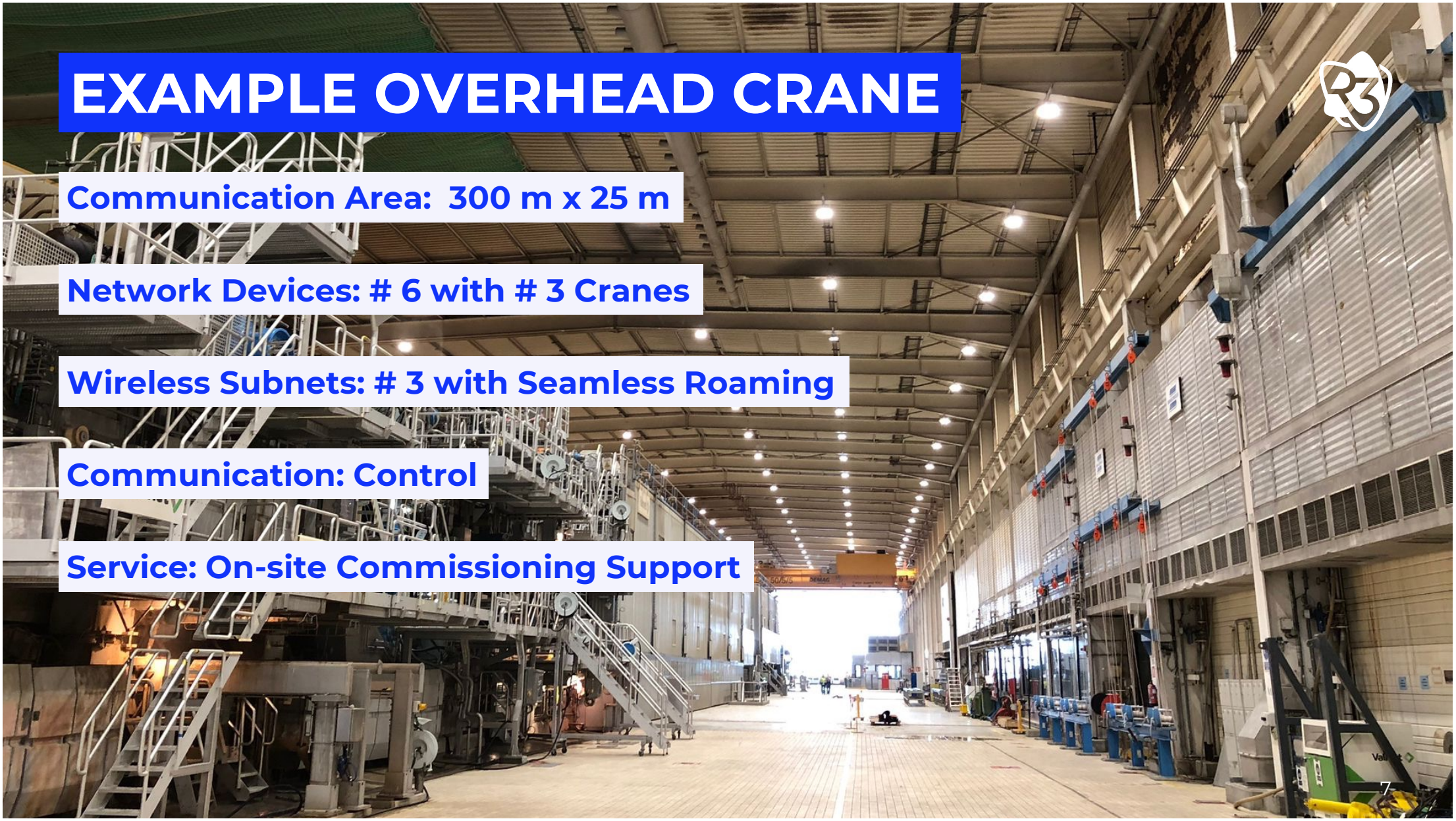
Automation Fair®

1 – OT: operational technology, 2 – PLC: programmable logic controller


EXAMPLE SKILLET LINE
RIVIAN
System Length: 660 m incl. repatriation
Network Devices: # 124 (among #80 skillets)
Wireless Subnets: # 12 with seamless roaming
Communication: Control + Safety + Monitoring
Service: Full-Service Package


Solutions


EXAMPLE WAREHOUSE SOLUTION
Solution Size: 30 m x 10 m
Network Devices: # 18 thereof # 16 shuttles
Wireless Subnets: # 1 per Machine
Communication: Control
Service: Solution Development Support


EXAMPLE OVERHEAD CRANE
Communication Area: 300 m x 25 m
Network Devices: # 6 with # 3 Cranes
Wireless Subnets: # 3 with Seamless Roaming
Communication: Control
Service: On-site Commissioning Support


EXAMPLE AMR SOLUTION
Communication Area: 30 m x 30 m
Network Devices: # 20 thereof # 16 AMRs
Wireless Subnets: # 4 dedicatec Safety Zones
Communication: Safety
Service: Solution Development Support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SAFETY

CAMERA AMR

GÖTTING

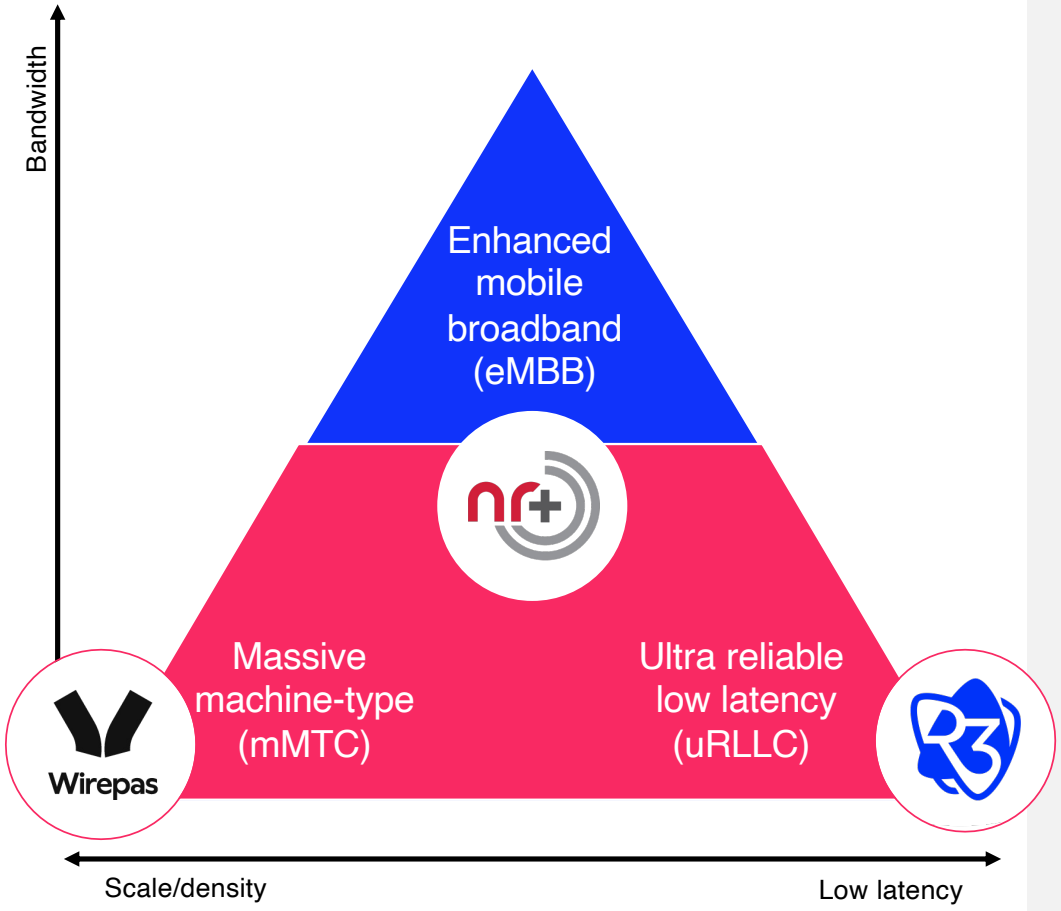
A camera-mounted robot moves around the artist, capturing a dynamic 360-degree immersive video

Stationary LiDAR unit
- SLAM-based localization
- Person tracking
- Virtual stage for the person
- Obstacle detection
- Robot trajectory planning

10ms communication cycle for control data exchange between LiDAR unit and robot

Not receiving control data for **50ms** triggers emergency stop on the robot

MERCI PROJECT



MERCI

The MERCI project is developing solutions for private 5G networks based on **ETSI DECT-2020 NR**, a new standard that has been approved by the ITU-R as IMT-2020 technology.

In collaboration with German and French companies, hardware and software solutions are being built based on system-in-package solutions from the NRF91 series from the manufacturer **Nordic Semiconductor**.

R3 is building a **URLLC stack** for the AGV manufacturer **Götting** based on EchoRing technology to control its AGVs.

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Solutions

EDGE D

STARTING 2026

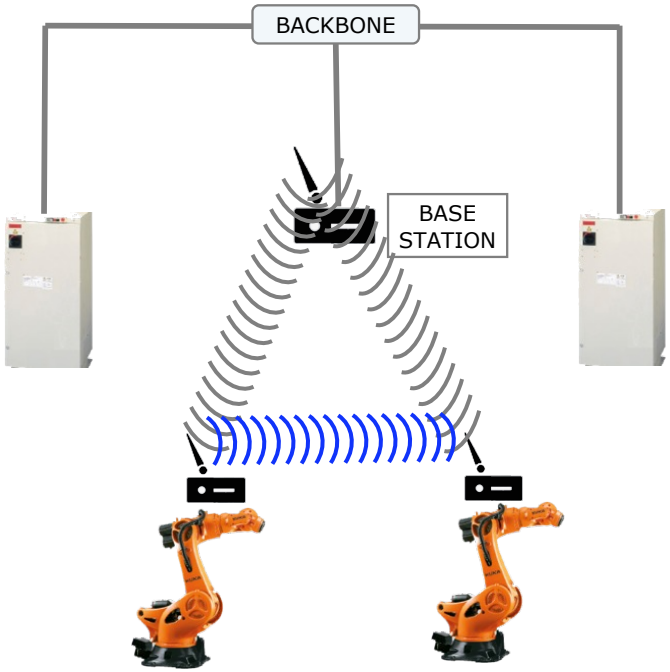
Based on latest YANG-model architecture (borrowed from its Wi-Fi brother EDGE X), EDGE D will become the first **fully managed DECT NR+ client** on the planet.

Its compact form factor is ideal for small AGV/AMR units and optimizes space utilization. Advanced power management features improve duty cycles and reduce power consumption, making **EDGE D** the ideal solution for OEMs looking to integrate **DECT NR+** into their **AGV/AMR systems**.

Wireless safety support / URLLC will be available via software add-ons.

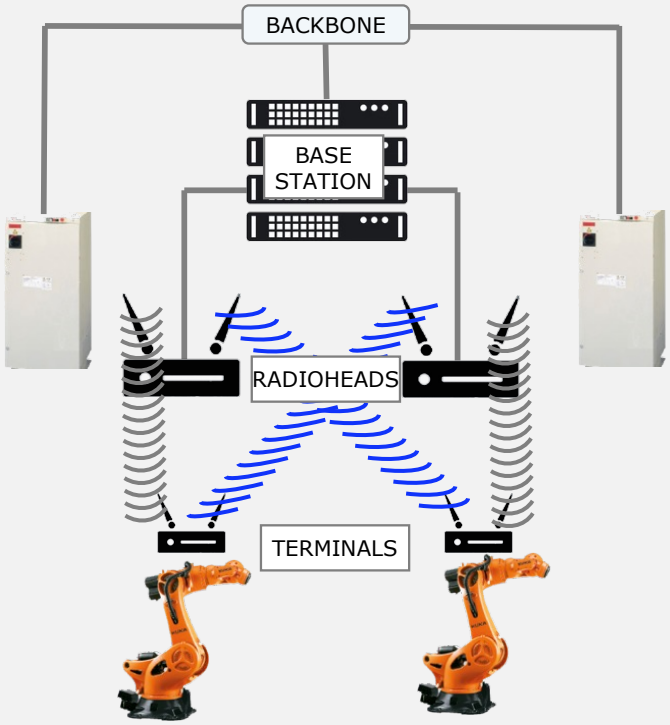
EDGE D URLLC ADD-ON

DECT NR+: DISTRIBUTED MESH URLLC
(based on massive cooperation)



FREQUENCIES	
5G + DECT	5G
NETWORK SETUP	
use-case centric	infrastructure
MIMO	
NO	YES
RADIATED POWER	
low	high
OVERALL COST	
low	high

3GPP NR: CENTRALIZED URLLC
(based on coordinated multipoint)



SUMMARY

EDGE D IS STARTING IN 2026

- fully managed DECT NR+ device
- designed for **intra-logistics**
- YANG-model architecture
- gNMI / netconf interfaces
- wireless safety / URLLC add-ons

approach us for further information

THANK YOU!

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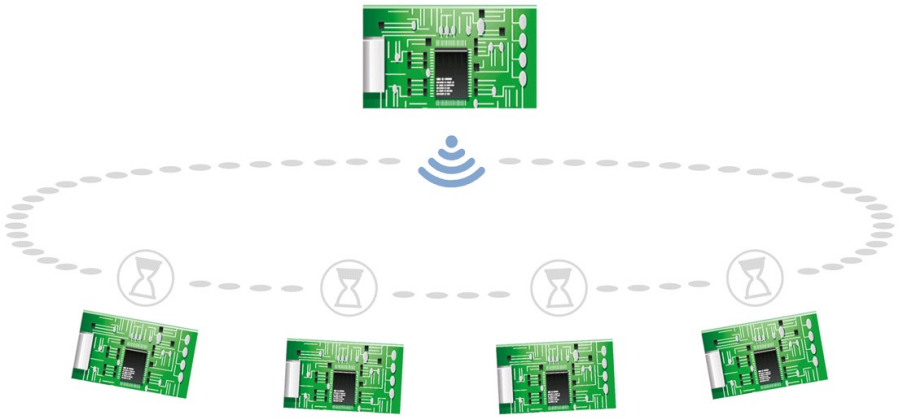
DETERMINISMUS

DER RING IM ECHORING



KOOPERATION

DAS ECHO IM ECHORING