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XANTARO SOLUTIONS & SERVICES:

5G-CAMPUS –
A LOCAL NETWORK FOR THE DIGITAL FUTURE

X5G

5G – the 5th generation of Mobile Communications Standard – goes hand in hand with buzzwords such as „Industrial Internet of Things" (IIoT) and „Industry 4.0". The clou: The „private" 5G campus network provides mobile communications capacity locally at the company site. This means that time-and business-critical applications can be mapped flexibly and in the highest quality – the key to digital transformation!

To implement an own wireless infrastructure, the German Federal Network Agency issues mobile communications frequencies from 3.7 GHz to 3.8 GHz and from 24.25 GHz to 27.5 GHz for exclusive use at the company's site under a licensing model, typically with terms of five to ten years.

BUT NOT EVERY COMPANY IS EQUALLY WELL POSITIONED.

• For which use cases is the 5G campus solution suitable and what are the advantages?
• How can a 5G network be implemented – especially if no employees with expertise in mobile technology are available for planning, implementation and operation?

DIFFERENT USABLE MOBILE TECHNOLOGY:
THE XANTARO 5G CAMPUS SOLUTIONS

Specialized in technologies and services for high-performance networks, Xantaro has many years of experience in planning, implementing and operating provider and enterprise networks. Based on this know-how, Xantaro supports companies in the implementation of a modern network strategy with standardized solutions that save operational effort and simplify the utilisation of cloud technologies.

With the 5G Campus Solutions, Xantaro provides a concept for the implementation of customized 5G infrastructures. It doesn't matter whether it's a medium-sized company or a large corporation, whether it's part of the corporate network or a closed campus. This is because the capacities are planned to suit the individual application: for industrial sites with tens of thousands of end devices or for environments with just a few clients and small, flexibly deployable scena-rios – in other words, wherever mobile networking with requirements in terms of performance, range and security is needed.

For the implementation of 5G Campus Solutions, Xantaro assumes end-to-end responsibility and implements projects completely or, in coordination with the customer, only partially itself or via a partner framework.

USE-CASE INDUSTRY:
5G IN THE CORPORATE NETWORK

Automation and digitization are in full swing: Machines and robots take over work steps and commu-nicate, for example, service statuses such as component wear, and „augmented reality" (AR) is also making its way onto the factory floor. Innovative real-time applications, however, require networks with the appropriate capacity for fast and reliable transmission of the increasing data volumes.

The Xantaro 5G Campus Solutions offer flexible networking options for voice and data communication to control and monitor the „Smart Factory". With high bandwidths, short latencies and reliable availability, private 5G technology the-reby exceeds the possibilities of WLAN or LTE enormously both in terms of performance and range, as well as in terms of security as another important aspect.

The Key Players:

- **5G RAN - https://www.nokia.com/networks/radio-access-networks/**
  The Nokia 5G RAN equipment has its origins in the mobile phone/carrier sector and can now also be used by SME customers. A wide range of radios and antennas can be selected to create the optimum combination for every application.

- **Nokia MX Industrial Edge (MXIE) - https://www.dac.nokia.com/mx-industrial-edge/**
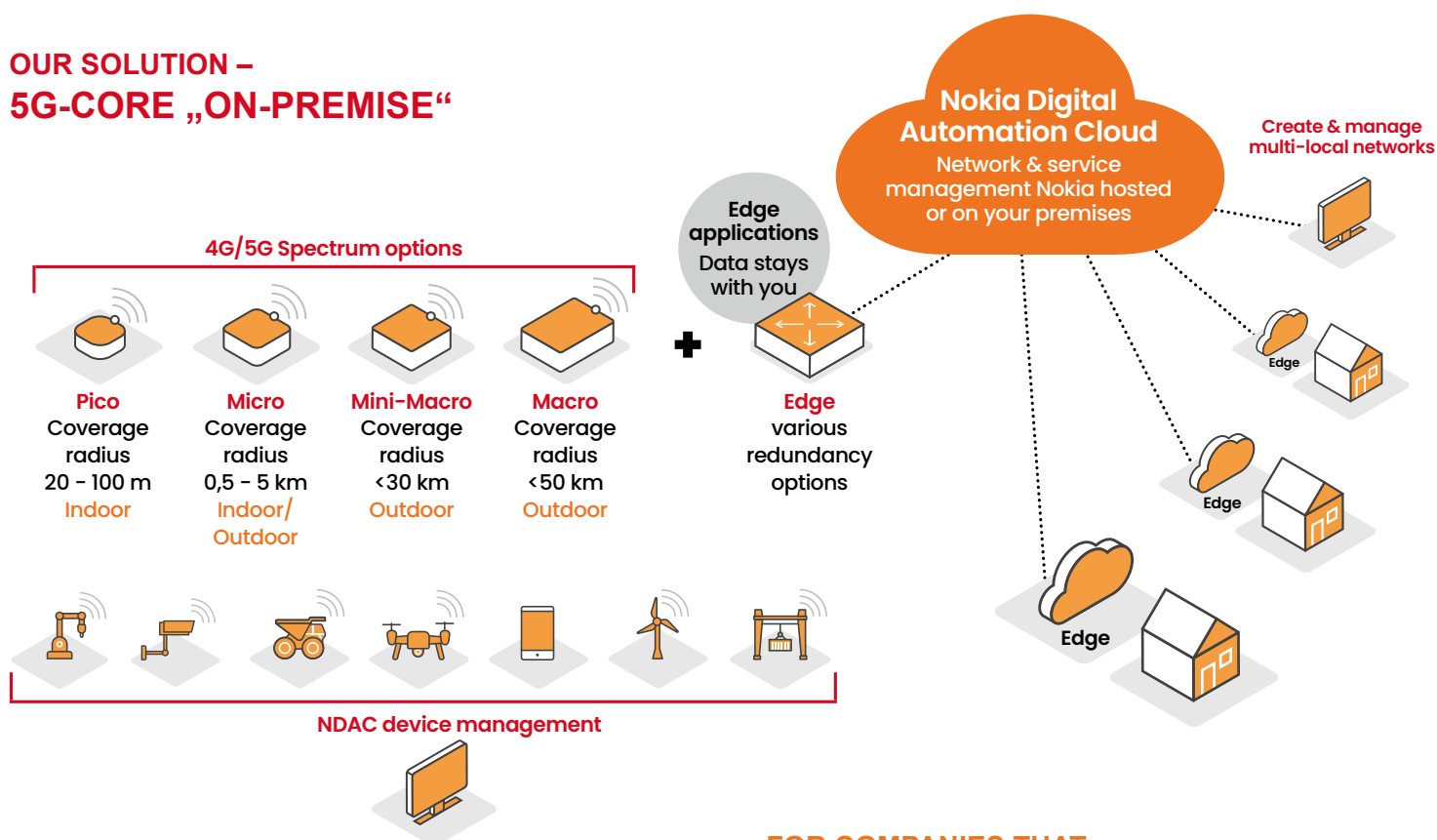 The Nokia MX Industrial Edge is a future-proof on-premise edge solution that can accelerate the digital transformation of your operational technology (OT). It combines the agility and simplicity of an edge-as-a-service model with a powerful, robust and secure edge architecture designed for the mission-critical needs of asset-intensive industrial environments.

- **Nokia Digital Automation cloud (NDAC): Link to Nokia https://www.dac.nokia.com/**
  NDAC is a 5G campus solution as-a-service, built on the 5G RAN and MXIE edge platform, providing a single pane of glass for managing users and monitoring KPIs.

Based on many years of experience in complex mobile and fixed network environments, Xantaro implements 5G campus projects completely or partially itself or via a partner framework: from radio planning, installation of the antennas, integration and commissioning of the 5G technology to the dimensioning of the downstream network infrastructure.

OUR SOLUTION –
5G-CORE „ON-PREMISE"

Nokia Digital Automation Cloud
Network & service management Nokia hosted or on your premises

Create & manage multi-local networks

4G/5G Spectrum options

Edge applications
Data stays with you

+

Pico	Micro	Mini-Macro	Macro
Coverage radius 20 - 100 m	Coverage radius 0,5 - 5 km	Coverage radius <30 km	Coverage radius <50 km
Indoor	Indoor/Outdoor	Outdoor	Outdoor

Edge various redundancy options

Edge

Edge

Edge

NDAC device management

FOR COMPANIES THAT...

- do not want to or are not allowed to store data externally

- want to prevent any way out for sensitive data

- are in the process of setting up infrastructure and (therefore) do not yet have a path to the outside

THE INNOVATIVE 5G TECHNOLGY:
BENEFITS AT A GLANCE

**RELIABILITY &
QUALITY OF SERVICE**

- Fixed transmission quality for critical applications based on licensed frequencies.

- High bandwidth and low latency for high throughput of time-critical and data-intensive applications

- Option for direct connection to the local data center for on-site data processing

- Higher network quality also for employees due to improved mobile coverage

**SCALABILITY &
FLEXIBILITY**

- simple radio networking of the entire company premises for mobile applications and with a large number of clients/devices – even those that are difficult to reach by cable

- Gradual expansion of the environment and combination of different frequencies – also with existing systems

- Connection/expansion, e.g., of own data centers or the cloud

- Addition of monitoring, Wifi, security solutions, etc., as well as a wide range of services

**COST &
EFFICIENCY**

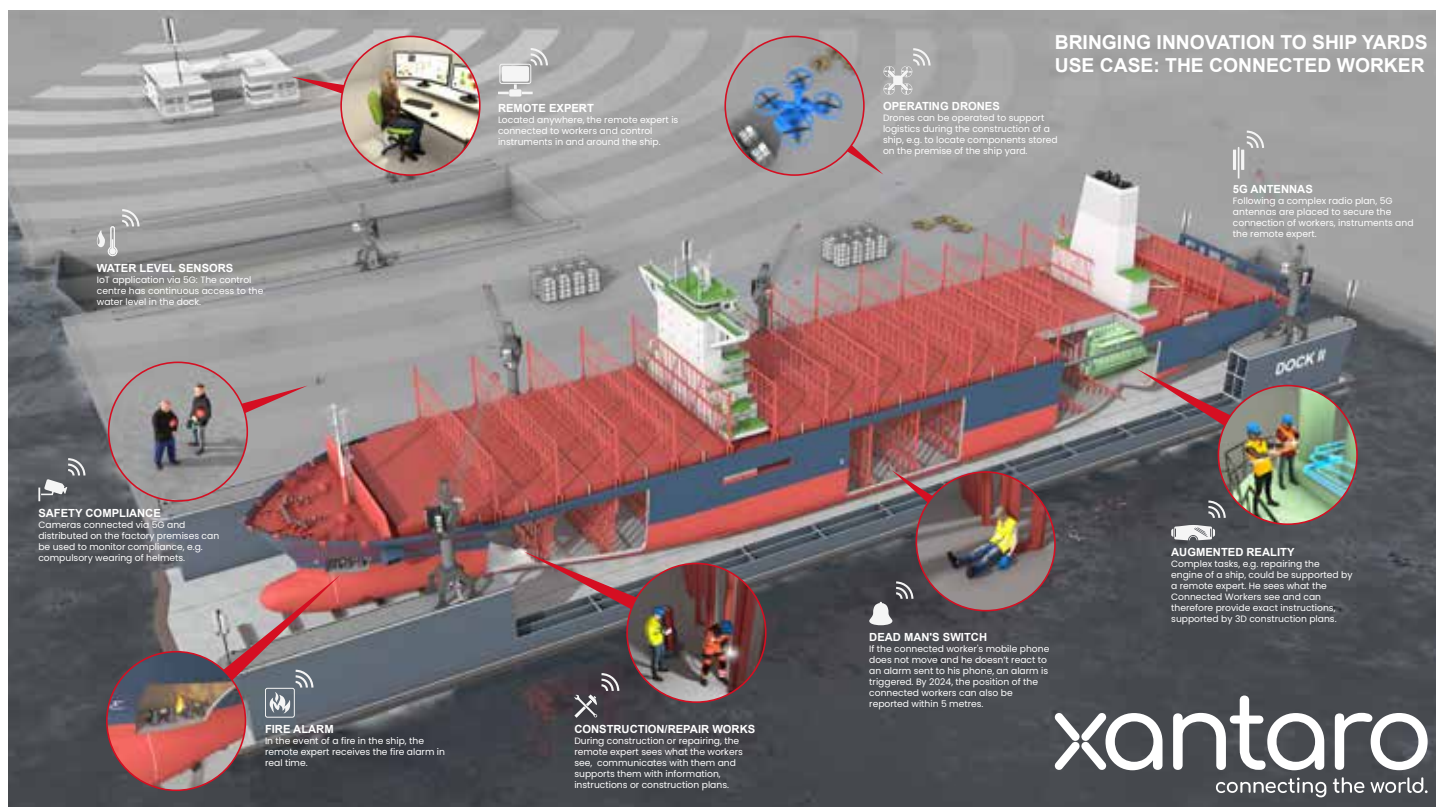- Increased productivity through reliable, fast and automated communication
- Flexible cost design according to individual campus size, capacity requirements, service times, etc.
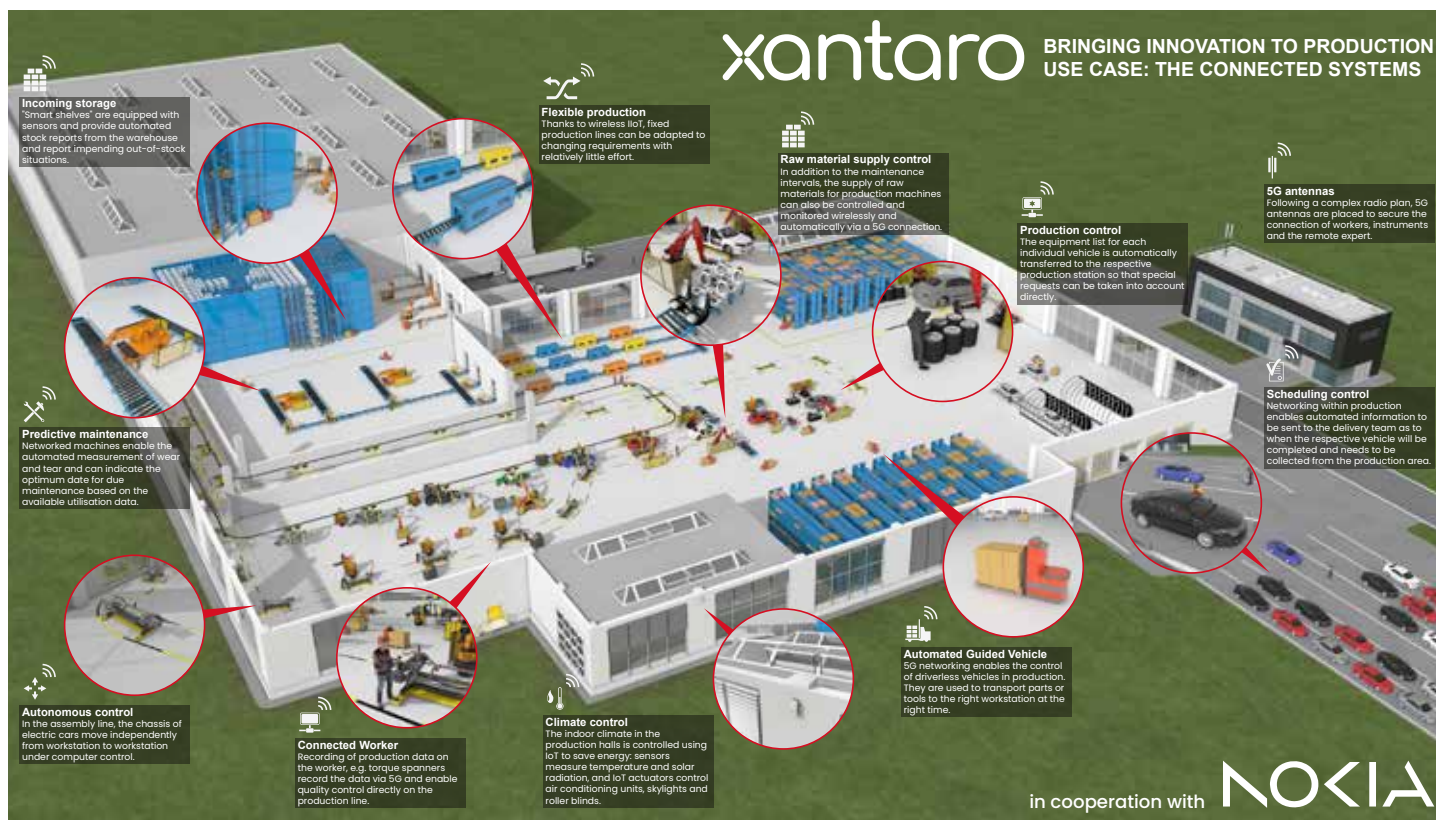
**DATA SECURITY &
COMPLIANCE**

- Critical communication via private, local mobile network with secured resources (licensed frequencies with defined runtimes)

- Protection against external access by separating data transmission from the public network

THE INNOVATIVE 5G TECHNOLOGY:
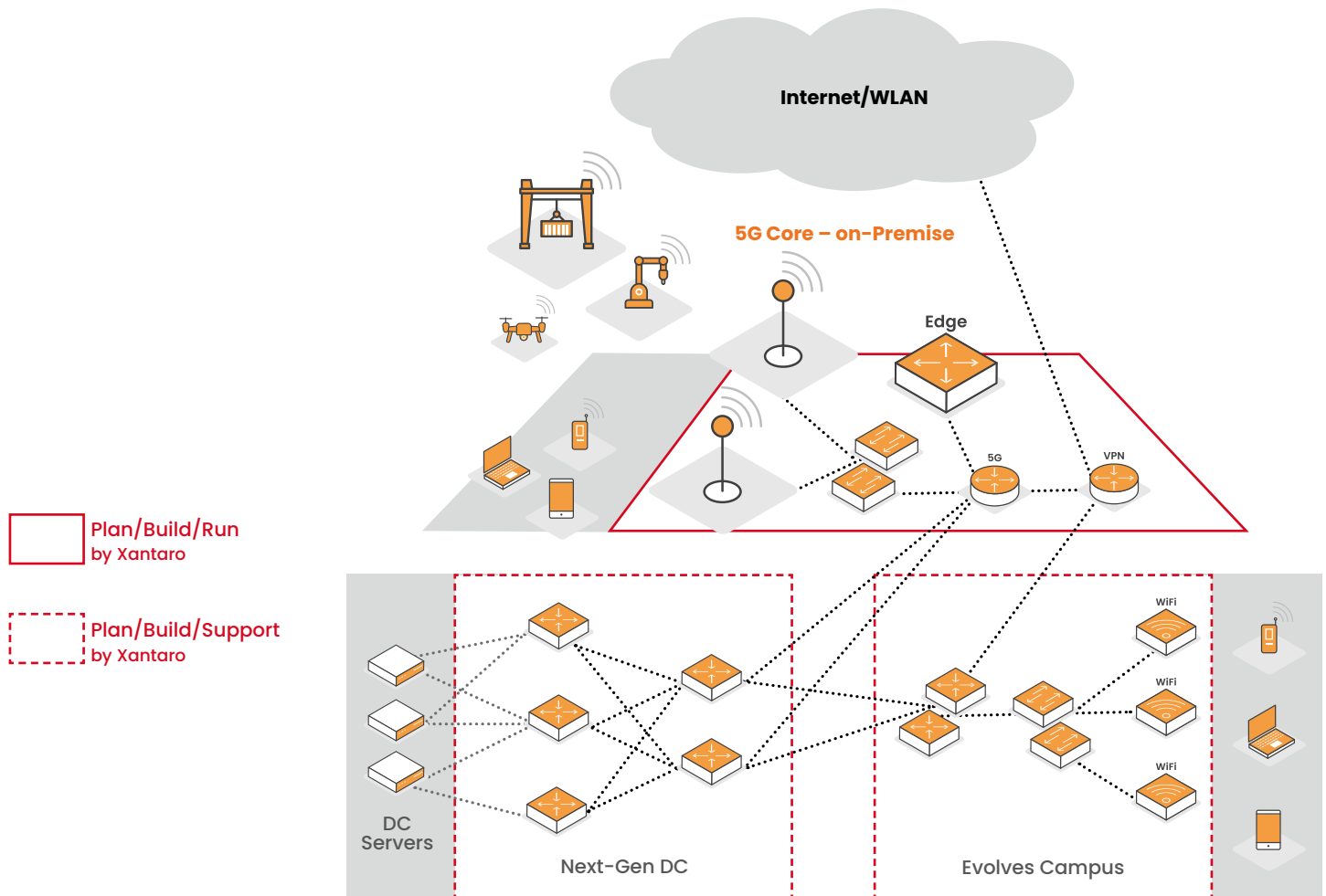# EXAMPLES FROM PRACTICE

THE CONNECTED WORKER

BRINGING INNOVATION TO SHIP YARDS
USE CASE: THE CONNECTED WORKER

REMOTE EXPERT
Located anywhere, the remote expert is connected to workers and control instruments in and around the ship.

OPERATING DRONES
Drones can be operated to support logistics during the construction of a ship, e.g. to locate components stored on the premise of the ship yard.

5G ANTENNAS
Following a complex radio plan, 5G antennas are placed to secure the connection of workers, instruments and the remote expert.

WATER LEVEL SENSORS
IoT application via 5G: The control centre has continuous access to the water level in the dock.

SAFETY COMPLIANCE
Cameras connected via 5G and distributed on the factory premises can be used to monitor compliance, e.g. compulsory wearing of helmets.

AUGMENTED REALITY
Complex tasks, e.g. repairing the engine of a ship, could be supported by a remote expert. He sees what the Connected Workers see and can therefore provide exact instructions, supported by 3D construction plans.

DEAD MAN'S SWITCH
If the connected worker's mobile phone does not move and he doesn't react to an alarm sent to his phone, an alarm is triggered. By 2024, the position of the connected workers can also be reported within 5 metres.

FIRE ALARM
In the event of a fire in the ship, the remote expert receives the fire alarm in real time.

CONSTRUCTION/REPAIR WORKS
During construction or repairing, the remote expert sees what the workers see, communicates with them and supports them with information, instructions or construction plans.

DOCK II

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THE CONNECTED SYSTEMS

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BRINGING INNOVATION TO PRODUCTION
USE CASE: THE CONNECTED SYSTEMS

Incoming storage
"Smart shelves" are equipped with sensors and provide automated stock reports from the warehouse and report impending out-of-stock situations.

Flexible production
Thanks to wireless IIoT, fixed production lines can be adapted to changing requirements with relatively little effort.

Raw material supply control
In addition to the maintenance intervals, the supply of raw materials for production machines can also be controlled and monitored wirelessly and automatically via a 5G connection.

Production control
The equipment list for each individual vehicle is automatically transferred to the respective production station so that special requests can be taken into account directly.

5G antennas
Following a complex radio plan, 5G antennas are placed to secure the connection of workers, instruments and the remote expert.

Scheduling control
Networking within production enables automated information to be sent to the delivery team as to when the respective vehicle will be completed and needs to be collected from the production area.

Predictive maintenance
Networked machines enable the automated measurement of wear and tear and can indicate the optimum date for due maintenance based on the available utilisation data.

Autonomous control
In the assembly line, the chassis of electric cars move independently from workstation to workstation under computer control.

Connected Worker
Recording of production data on the worker, e.g. torque spanners record the data via 5G and enable quality control directly on the production line.

Climate control
The indoor climate in the production halls is controlled using IoT to save energy: sensors measure temperature and solar radiation, and IoT actuators control air conditioning units, skylights and roller blinds.

Automated Guided Vehicle
5G networking enables the control of driverless vehicles in production. They are used to transport parts or tools to the right workstation at the right time.

in cooperation with **NOKIA**

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XANTARO SOLUTIONS & SERVICES:
FROM PLANNING TO OPERATION OF AN HIGH-END SOLUTION

Xantaro's services for the 5G campus infrastructure cover the entire lifecycle and also apply to other areas of the corporate network: from IP connectivity to the WAN to IP-Fabric-based next-generation data centers – including interconnect, wired & wireless solutions in the evolved campus to dedicated cloud services.

Internet/WLAN

5G Core – on-Premise

Edge

5G

VPN

☐ Plan/Build/Run
by Xantaro

┆ Plan/Build/Support
by Xantaro

DC
Servers

WiFi

WiFi

WiFi

Next-Gen DC

Evolves Campus

• CONSULTING SERVICES

Xantaro advises on the selection of hardware and capacity, assists in applying the license, plans, delivers and integrates network designs, provides early-life support and, if required, trains the operating stuff.

• MAINTENANCE SERVICES

As a local interface, Xantaro provides flexible modules for maintenance and support of the network elements of the various vendors – from simple repair to on-site services with the shortest SLAs.

• OPERATIONAL SERVICES

Accompanied by the Xantaro Service Management, Xantaro takes over individual tasks such as regular software updates, etc. for the operation of the network elements and provides the necessary tool landscape.

CONTACT

Xantaro accompanies you as an integration and service partner for your network into the digital future. Concentrate on your core business!

For more information, please contact us by e-mail or by phone at
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„Xantaro has been our Maintenance Services partner for Juniper hardware for many years. The co-operation with XTAC – Xantaro's Technical Assistance Center – proves to be extremely reliable and valuable within day-to-day business. They satisfy in both, network knowledge and effective communication with the vendors which minimises the resolution and recovery times.

For me, XTAC is a reliable complement to our team. Prompt reaction, the understanding of issues and business impacts as well as the responsible handling enables our employees to concentrate on other essential tasks such as the operation and configuration of the Vodafone IP networks. Networkers are collaborating with networks here, and that becomes apparent in the results."

Michael Tanz, Head of Data Network Connectivity & Security – TON, Vodafone GmbH