

COLLABORATIVE INNOVATION DAY
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5G T&L Use Cases & Business Opportunities for SMEs

NEXTWORKS
HEADING THE FUTURE

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ORGANIZED BY:



Base

Pisa

Ideal location for the development of advanced technologies

Nextworks maintains excellent links with the local academia

Established

2002

Core team with more than 20 years of experience in ICT, telecommunications, control & automation

Team Profile

95 % MSc

Know-how and skills of employees are the main strength and asset

Staffed ~ 60

R&D Expenditure

~25%

(out of 6,5 M€ turnover)
The time gap between technological innovation and obsolescence is narrowing, so it's mandatory to invest in research and innovation

5G T&L Use Cases



- ◆ **5G real-time communication** to improve supply chain **operations' safety** and **efficiency**
 - ▶ End-to-end latencies down to 5ms, data rates of up to 20Gbps, and ultra-high reliability of 99.999%
- ◆ **New technologies** to increase **employee productivity, safety** and **supply chain efficiency**
 - ▶ For drivers, operators, and workers, communication (seamless connectivity) and data are critical assets
 - ▶ Automations and optimization of processes and used resources
 - Network slicing, MEC, NFV orchestration, SDN control and AI/ML
- ◆ 5G-powered solutions and **produced data** to **save costs, reduce risks** and further advance in T&L
 - ▶ **Minimal** and more **deterministic delay** in exchanged information among parties or machines to ensure that tasks are completed and data are transferred seamlessly from one point to another
 - ▶ **Data-driven decision making** to help operators and managers make informed/real-time decisions that speed up operation and generate value
 - Delivery of data from sensors to improve safety by preventing accidents
 - AI-driven automations to create efficiency and reduce costs

X T&L Use Cases: Fluvial and Maritime Transport

- ◆ Automation of vessel-based logistics transport
 - ▶ **Remote control** and (semi-)autonomous navigation
 - ▶ one operator may remotely control more than one vessel
 - ▶ Navigation **speed optimisation**
 - ▶ schedules and speeds built upon data collection
 - ▶ Real-time **fleet** and **port control**
 - ▶ Digital Twin to assist in real-time port control and to foresee short-term future port status
 - ▶ Advanced fleet management
- ◆ Improvements
 - ▶ Infrastructure and personnel safety
 - ▶ Reduce dwell time in port areas
 - ▶ Enhanced management and planning

How to Implement

Network slicing, MEC, NFV orchestration, SDN control



X T&L Use Cases: Freight Forwarding

- ◆ Automation and Remote Operation of Freight Forwarding
 - ▶ **Warehousing operations** through Automated Guided Vehicles (**AGVs**)
 - ▶ Remote monitoring of the field
 - ▶ Remote control of assets
 - ▶ **AI-driven optimizations**
 - ▶ Inspection of goods and automated routing/shipping
 - ▶ AGVs manoeuvres coordination
- ◆ Improvements
 - ▶ Increased productivity and revenues
 - ▶ Personnel safety
 - ▶ Optimized planning



How to Implement

Network slicing, MEC, NFV orchestration, SDN control, AI



T&L Use Cases: Smart Logistics

- ◆ Awareness and predictive approach in Smart Logistics
 - ▶ **Aggregation** and **processing** of **heterogeneous data**
 - ▶ Situational understanding of sensors' data in maritime ports and terminals
 - ▶ **Predictive models**
 - ▶ Optimized trucks turnaround time
 - ▶ Infrastructure maintenance
- ◆ Improvements
 - ▶ Optimized trucks routing
 - ▶ Infrastructure and personnel safety
 - ▶ Enhanced management and control of facilities





T&L Use Cases: ...many others

Assets Tracking across different facilities (integration of satellite backhaul)

Remote Driving of trucks for long-distance transports

Autonomous Operations on the apron



Image by macrovector / Freepik

Assets Predictive Maintenance for optimized utilization

Optimized Delivery of Perishable Goods to save costs

Alternative Distribution Methods (e.g., drones)

Business Opportunities for SMEs



- ◆ **Custom solutions** for 5G management and orchestration
 - ▶ Integration of **specific data plane** technologies
 - E.g., optical backhaul, satellite-based access or backhaul, ...
 - ▶ **Service-driven** 5G management
 - Specialized CSMF logic, service-to-slice translation, vertical-driven slice composition, service arbitration
 - ▶ Enhanced **resource orchestration** and management
 - AI-driven placement, slice LCM, slice subnet sharing, ...
 - ▶ **End-to-end** 5G solutions based on **open-source** components
 - Open-source NFVOs, O-RAN CU/DU and RIC, 5G Core Networks
 - ▶ Custom deployments for **stand-alone non-public networks (SNPN)**
- ◆ Potential **customers**: vendors, small operators, verticals interested in SNPNs, ...
- ◆ Potential **roles**: system integrators, 3rd party software providers, consultancy as software developers, technical project management...

- ◆ Consultancy and system integration services for 5G deployments
 - ▶ Custom **Standalone Non-Public Networks**, for Industry 4.0, smart campus, smart agriculture, etc.
 - ▶ Integration with vertical-driven, specialized solutions, e.g., **edge computing, IoT platforms, TSN networks**, etc.
- ◆ Consultancy and 3rd party software development
 - ▶ Development of **5G-enabled vertical applications** in specific sectors
 - ▶ Engineering, customization and tuning of 5G-enabled vertical services, with **support from design to testing** phases
 - ▶ Consulting for **design and modelling** of 5G-enabled vertical services
 - Virtualization and cloud-native patterns, edge/cloud decomposition, integration of 5G and edge services (e.g., localization, network analytics, ...), network slice customization
- ◆ Evolution of the **company product portfolio** in the sectors of **smart yachting, smart building, smart factory**

Thanks! Questions?

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