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
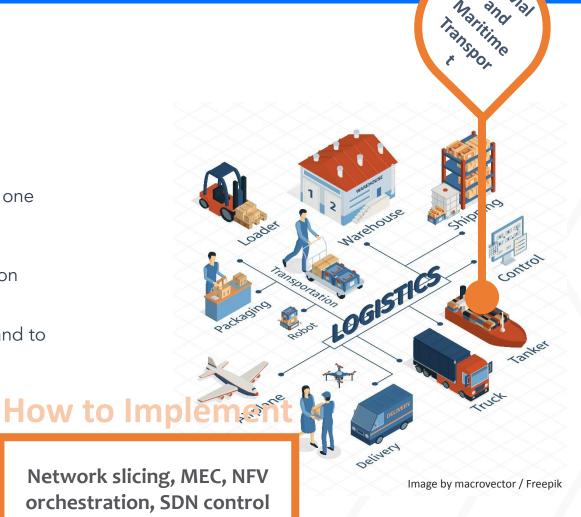
5G T&L Use Cases

5G as a Booster in T&L

- ◆ **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
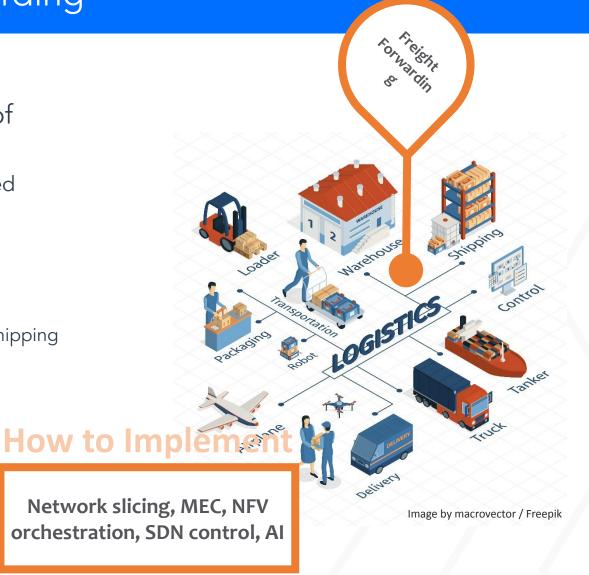
T&L Use Cases: Fluvial and Maritime Transport

- ◆ 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

Fluvial and Maritime Transport

How to Implement

Network slicing, MEC, NFV orchestration, SDN control
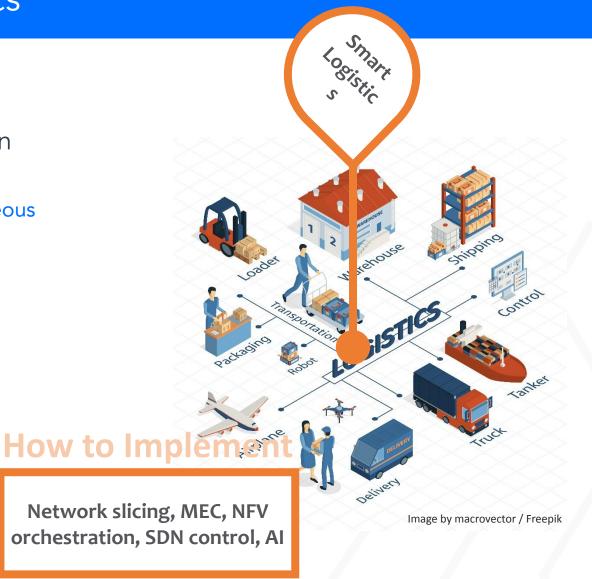
Image by macrovector / Freepik

- ◆ 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

Freight Forwarding

How to Implement

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

Image by macrovector / Freepik

- ◆ 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 facil

Smart Logistics

Image by macrovector / Freepik

How to Implement

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

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

Business opportunities as technology providers for 5G solutions

- **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…

Business opportunities with vertical industries

- ◆ 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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