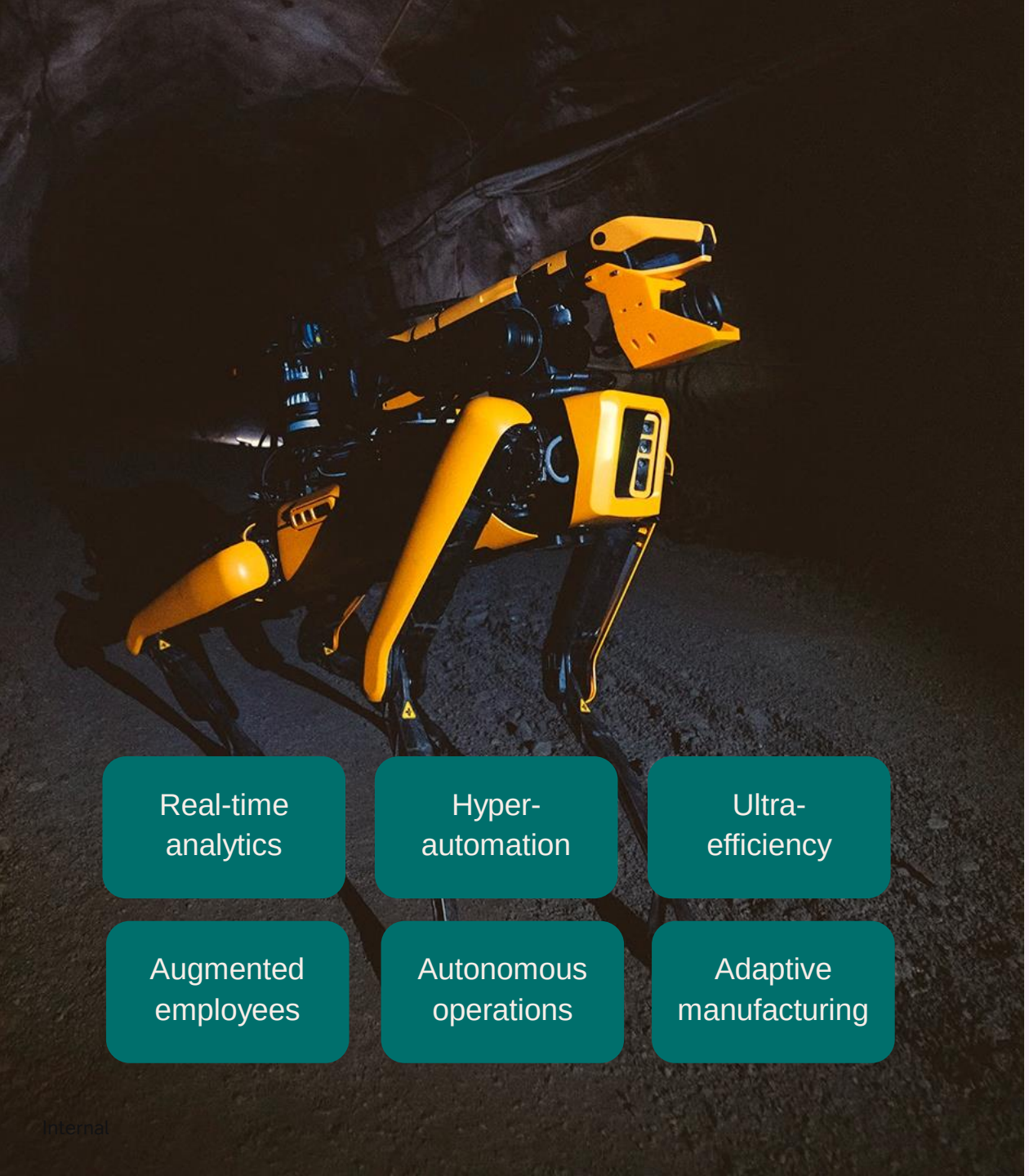
Private Wireless Networks and Edge Computing as Enablers for Industrial Digitalization

FIIF event 30.11.23

Marko Lepola
Business Lead, Telia Industrial Solutions

Telia Company



Industrial Customers

- 24/7 production with automation
- Operational efficiency
- Industrial Health&Safety
- Future proof investment and TCO

All industrial customers are on this same journey

Typical roadmap

- Field work access to IT systems
- Video analytics – safety and efficiency
- Remotely controlled and autonomous machinery

Remote work in industrial context is soon reality

Connected Worker

Coverage in industrial sites
- Mobile and Private NWs 4G/5G

Hands free operations
- Use of voice
- New device types

Video as communication and analytics tool
- Video management

Communication tools & virtual assistants
- Meeting tools
- Translation services
- Task management

Access to information
- AI based search engines & operations support
- 3D models and digital twins
- Document management

Advanced analytics
- Operations analytics

Automated logistics or remotely controlled heavy machinery

Tools for remote support and field work

Video analytics for Quality Control or Industrial Safety

Industrial tablets for production management

Public and Private 5G NWs as basis

Telia Image Recognition

AI based observations – turning analog events into digital data

Real time event tracking, actions, guidance and alerts

Reliable data, APIs and analytics

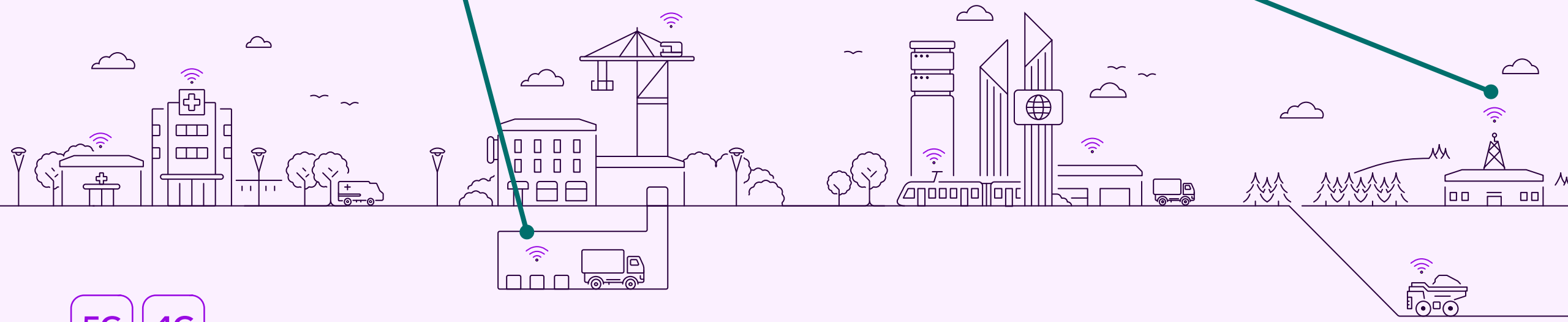
Private Wireless Networks

Virtual private network

High Availability configurations
Regional breakouts
Committed service levels

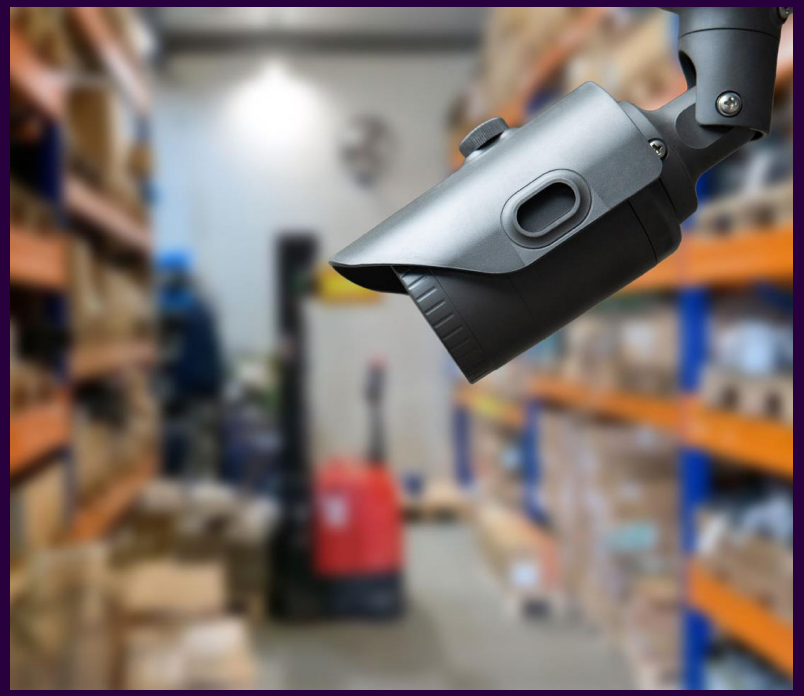
Dedicated private network

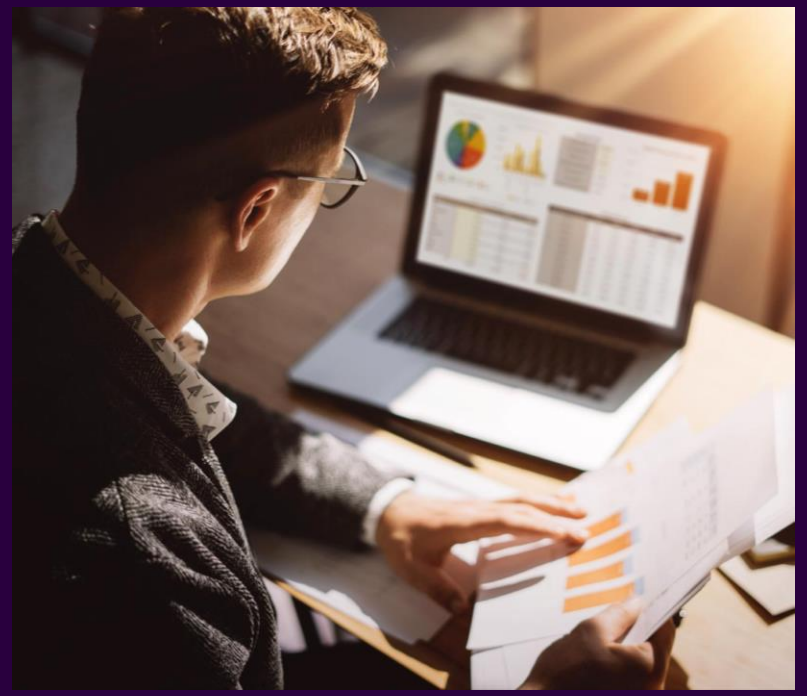
Customer dedicated network plan and implementation
Own core and radio



5G 4G

Telia Image Recognition





AI based observations – turning analog events into digital data

Real time event tracking, actions, guidance and alerts

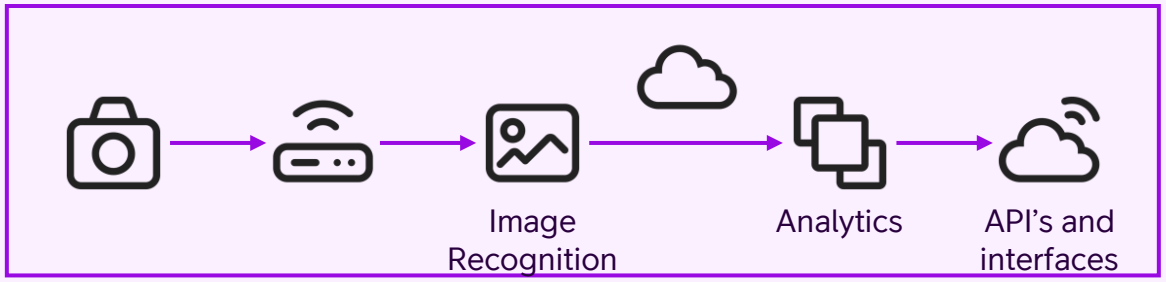
Reliable data, APIs and analytics

Telia Image Recognition

Typical use case scenarios

- Warehouse and logistics operations
- Heavy vehicle near accidents and incidents
- Use of personal protective equipment
- Behavior models and working practices
- Security operations
- Leaks, fire safety and dangerous substances

Flexible camera placements, mobile cameras on 5G



Warehouse utilization

Shelf 1	Shelf 2	Shelf 3	Shelf 4
Full: 5/10 (50 %)	**Full:** 7/10 (70 %)	**Full:** 5/10 (50 %)	**Full:** 6/10 (60 %)
Available: 5/10 (50 %)	**Available:** 3/10 (30 %)	**Available:** 5/10 (50 %)	**Available:** 4/10 (40 %)

Full: 23/40 (58 %)
Available: 17/40 (42 %)

Shelf 1 updated:	16.6.2023 klo 17:23:14
Shelf 2 updated:	16.6.2023 klo 17:23:19
Shelf 3 updated:	16.6.2023 klo 17:23:22
Shelf 4 updated:	16.6.2023 klo 17:23:28

Telia Company optimizes Transval's logistics services by combining virtual private 5G networks and AWS edge computing

Connected Worker concepts

Coverage in industrial sites
- Mobile and Private NWs 4G/5G

Hands free operations
- Use of voice
- New device types – smart glasses & XR headsets

Video as communication and analytics tool
- Video management

Communication tools & virtual assistants
- Meeting tools
- Translation services
- Task management

Access to information
- AI based search engines & operations support
- 3D models and digital twins
- Document management
- Location data - indoor positioning

Advanced analytics
- Operations analytics
- Location and movement analytics

Telia’s innovation cycles in Multi-purpose Robotics

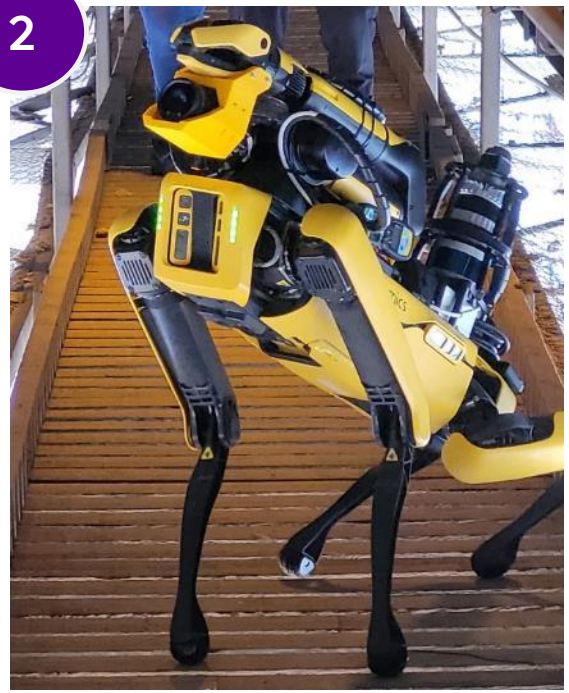
1

Food delivery robot

Autonomous delivery operations, including ability to use elevators and to navigate the busy shopping mall independently

5G connected Edge computer - video analytics capabilities to support various tasks in footfall analytics and facility management

2

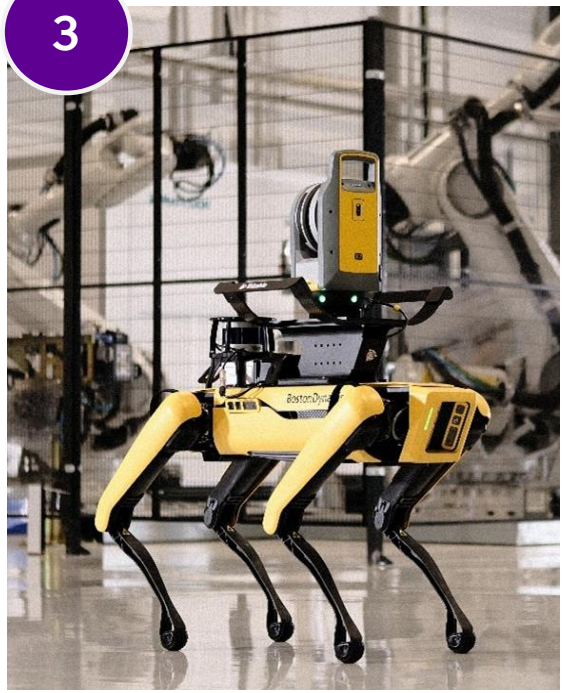


Industrial Robotics

4-legged mobility in industrial sites (construction, process industry and mining) with extensive data capture (Lidar, thermal camera, gas detectors) capabilities over 5G and with Edge processing

Remote presence and video analytics

3



Industrial Metaverse with service robots

A path towards industrial metaverse solutions. Autonomous, up-to-date digital twin creation for industrial maintenance in factories. People from different locations can view information that is relevant for their work, use audio from the site and interact within the model. Different UI’s from VR glasses to PC and tablet.


VALMET AUTOMOTIVE

Real Industrial Metaverse example

Valmet Automotive Innovation Center,
Uusikaupunki, Finland

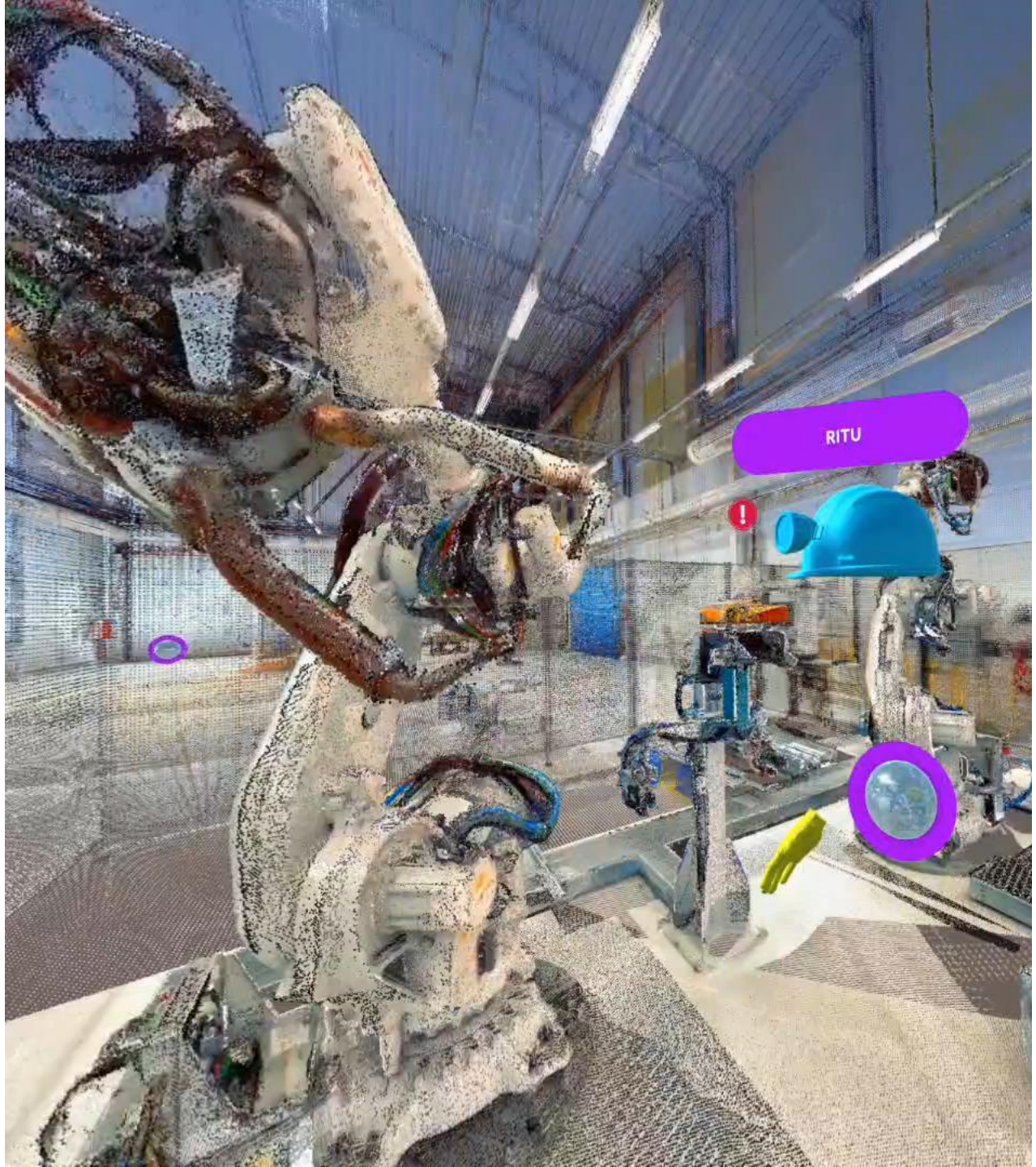
Robot scanning the real environment
& operations data

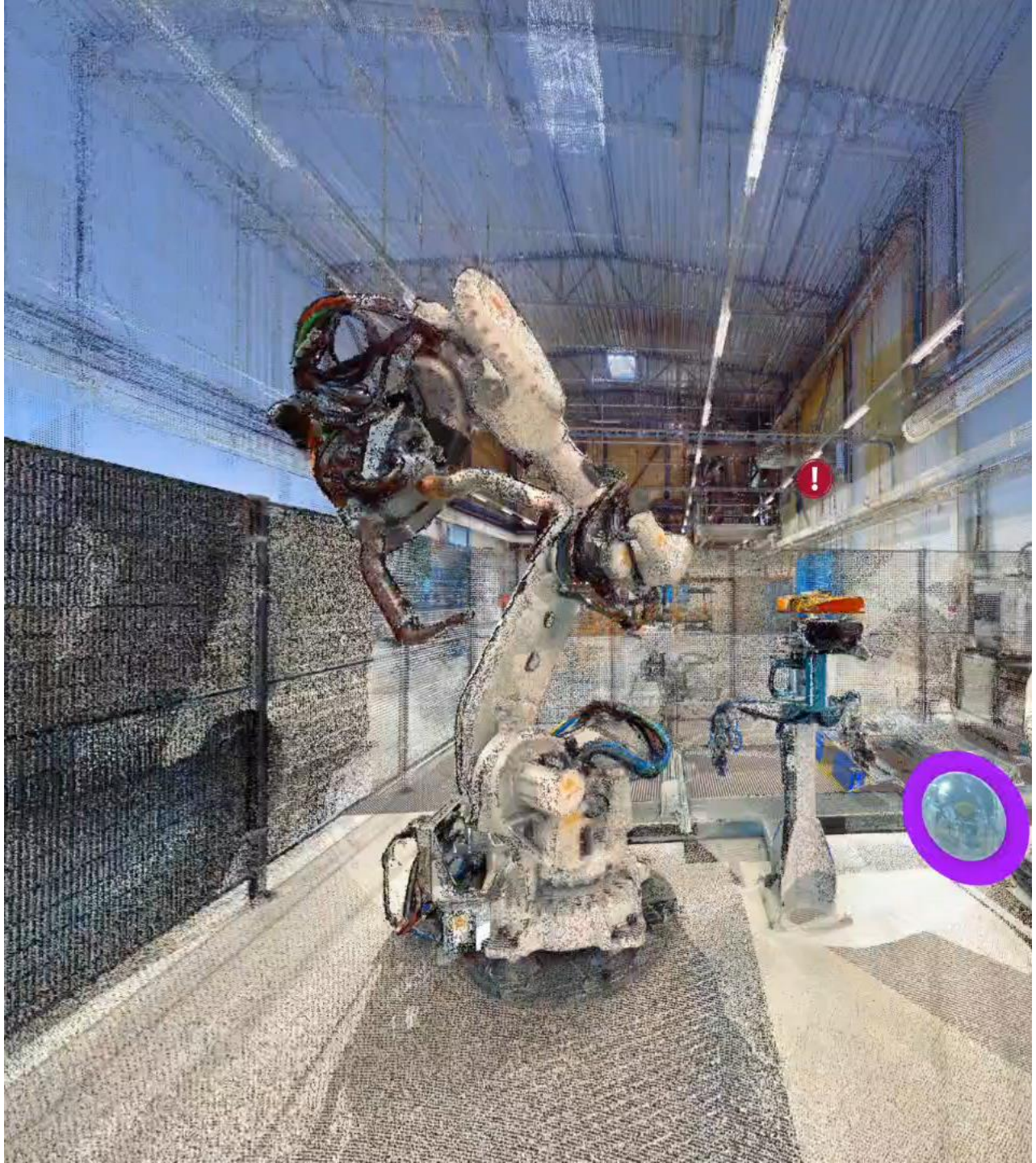
VR presence and virtual meetings

New data analytics

VTT

Telia


RITU



VTT Telia

Connected Worker

Coverage in industrial sites
- Mobile and Private NWs 4G/5G

Hands free operations
- Use of voice
- New device types

Video as communication and analytics tool
- Video management

Communication tools & virtual assistants
- Meeting tools
- Translation services
- Task management

Access to information
- AI based search engines & operations support
- 3D models and digital twins
- Document management

Advanced analytics
- Operations analytics

Automated logistics or remotely controlled heavy machinery

Tools for remote support and field work

Video analytics for Quality Control or Industrial Safety

Industrial tablets for production management

Public and Private 5G NWs as basis

Telia Image Recognition

AI based observations – turning analog events into digital data

Real time event tracking, actions, guidance and alerts

Reliable data, APIs and analytics