

**BUSINESS  
FINLAND**

# **RAIL SOLUTIONS FROM FINLAND**



# WHY FINLAND

**#1**

FIRST OPEN URBAN  
RAIL LIVING LAB IN  
THE WORLD

**#3**

IN SUSTAINABLE  
DEVELOPMENT, (UN  
SUSTAINABLE DEVELOPMENT  
REPORT 2020)

**#1**

IN RAILWAYS TO TRULY  
DIGITALIZE OPERATIONS WITH  
FUTURE PROOF TECHNOLOGY  
(FINNISH DIGIRAIL PROJECT)

**#1**

IN DIGITAL  
COMPETITIVENESS IN THE  
EU DIGITAL ECONOMY AND  
SOCIETY INDEX (DESI) 2019

THE TOP CREATOR OF "MARKETS OF TOMORROW",  
ESPECIALLY IN AREAS THAT REQUIRE PUBLIC  
PRIVATE COLLABORATION, (WORLD ECONOMIC  
FORUM, GLOBAL COMPETITIVENESS REPORT 2020)

THE BEST DIGITAL SKILLS IN THE  
WORLD, (GLOBAL  
COMPETITIVENESS REPORT 2020)

# WHY FINLAND

- Leading country in digitalization
- Outstanding capabilities in data-driven mobility solutions
- World class vehicle technologies towards sustainable, attractive and safe mobility
- Ideal testbed for new rail centric mobility concepts
- Necessary enablers in place:
  - Buzzing mobility scene
  - Excellent solution building competencies
  - Cities offering their infrastructure for testing
  - Piloting and experimentation friendly legislation
  - People receptive to try and adopt new concepts and solutions
  - Cooperative way of development and strong testing and piloting culture





**FINNISH COMPANIES  
REINVENTING RAIL  
TRANSPORT SOLUTIONS  
FOR SUSTAINABLE,  
ATTRACTIVE AND ENERGY  
EFFICIENT FUTURE**

# VEHICLE TECHNOLOGIES EXPERT

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- Leading country in digitalization
- Forerunner in data-driven mobility solutions
- Champion in evolution of rail centric infrastructures towards automation and autonomy
- Ideal testbed for new rail centric mobility concepts
- World class vehicle technologies towards sustainable, attractive and safe mobility

# WORLD-CLASS RAIL INNOVATION ENVIRONMENT

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- **Open Innovation and Research**
- **Cross Industrial Collaboration**
  - Mechanical and electrical engineering
  - Mobile communication technologies
  - Several branches of ICT industry
  - Solution and service integrators
- **Growth Acceleration**
  - Regional development organizations
  - Business Finland
    - **Open Innovation and Research**



# CASE

# SMARTRAIL

# ECOSYSTEM

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- Co-operation community for companies, academia, cities, authorities and other organizations
- From a tramway to a highly automated and autonomous rail centric urban mobility solution
- Shared co-creation initiatives in a Private-Public-People-Partnership setting
- Addressing future-oriented challenges related to mobility in an urban environment
  - Climate change, sustainability, urbanization, digitalization, cybersecurity, data sharing, infrastructure requirements, etc.
- Attention on involving citizens in the development process early on
  - Realistic understanding of needs, desires, and expectations
- Focus areas
  - Pathways to safe automation including digitalization, cyber security, connectivity, infrastructure
  - Sensing the environment and situational awareness
  - Rail centric urban mobility system and services beyond the rails
  - Urban rail technologies, i.e., vehicles
  - Virtual technologies and simulations
- Open for new members
- Additional information: <https://smartrailecosystems.com>

# CASE URBAN RAIL MOBILITY LIVING LAB

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- A real-life operational tram system equipped for experimenting, testing, and promoting next generation urban mobility solutions
- Unique, one of a kind testbed for urban mobility actors to develop, test and benchmark their ideas and concepts in a closed, simulated or live environment
- Link to emerging city mobility, services, and structures
- Open for users on commercial basis
- Features
  - Technology verification and validation platform
  - Access to real-world operational tram environment, passengers and personnel
  - Urban rail specific data available for solution development
  - Tools for developing safe autonomous rail mobility in a controlled setting
  - Possibility to join ecosystemic development and business creation
- Additional information: <https://tamperetestbed.fi/testialue/lyyli/>



# CASE AUTONOMOUS TRAIN

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- Pioneering project to create a safe, green, and economically competitive industrial logistics solution
- GoA4\* train unit and associated infrastructure for industrial environments
- Step-by-step approach
  - Co-operation with Finnish steel and forest industry to identify their current logistics solution challenges - safety, sustainability and cost
  - Pre-study about requirements and capabilities of autonomous train in industrial environment
  - Concept formulation
    - Battery driven
    - Shunting free
    - GoA4 Autonomous Train Operation (ATO)
    - Autonomous train as an important and integrated part of supply chain
  - System verification – first live concept demonstration on 31.5.2022
  - Industrial pilot – 2024-2025
- An industry consortium lead by Proxion
  - Proxion Plan Oy, Steel Wheel Oy, Electric Power Finland Oy, VTT Technical Research Centre of Finland Ltd
- Location for industrial pilot tbc

\*) GoA4 = Grade of Automation 4 (the highest level)

# CASE

# **DIGIRAIL**

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- EUR 1.7 billion programme to modernize and digitalize the railways in Finland
- Early implementation of future proof FRMCS\* solution
  - Helping to solve the GSM-r to FRMCS migration issues
  - Assure easy development of future railway communications implementations
  - Using commercial mobile network operators as service providers
- ERTMS test track
  - Real ERTMS architecture to help ready to use products
  - Opportunity for ideas to be tested in real ERTMS environment
  - Test track commissioning during 2023
- Upcoming digital railway laboratory
  - Laboratory testing environment especially for railway digitalisation solutions
  - ERTMS development with the help of digital twin
- Innovative procurement
  - Highlighting co-operation, with possibilities for joint development
  - Looking for the best innovations and solutions from the industry
- In co-operation between Finnish Transport Infrastructure Agency and Fintraffic

BUSINESS  
**FINLAND**

\*) FRMCS = Future Railway Mobile Communication Systems

\*) ERTMS = European Rail Traffic Management System

**BUSINESS  
FINLAND**

# **WORLD-CLASS RAIL INNOVATIONS FROM FINLAND**

# 3D TALO FINLAND OY

[www.3dtalo.fi](http://www.3dtalo.fi)



## ABOUT US

3D Talo offers virtual reality solutions to develop your business. As a leading technological partner, we make sure your business has the latest and most innovative solutions in use.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland 3D Talo Finland offers

- Virtual solutions for design and development projects and new way to train your employees.
- Virtual reality connects real life situations to visualizations, 3D models and gaming technology.
- We help your company to reduce costs of development and production.
- Virtual reality is a visual way of presenting difficult-to-understand plans and models.
- It´s also effective way to train or familiarize new and old employees.

## COMPETITIVE ADVANTAGE

- As a technological innovator and a leader within the field we are the top choice to be your businesses partner in industrial and factory planning, product and area development, design, development of virtual training.
- We can clone your production plant into a virtual reality environment and enrich the model with IoT data, so you can lead your operations effectively, regardless of your location.
- By simulating your equipment and machinery with real-world physics, you can train your employees safely.
- We build prototypes, model environments and visualize your products and ideas so that reality never again catches you, your team or your customers by surprise.

## CUSTOMERS AND REFERENCES

- 3D Talo has executed hundreds of successful projects and has thousands of satisfied users in various customer industries
- Some of our reference customers include e.g.
  - Junttan
  - Ponsse
  - Metso Outotec
  - Mevea

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## ABOUT US

Cinia is a diversified Finnish telecommunications and IT company providing secure high-availability data network, cyber security and software solutions. Our operations are based on our solid expertise in modern software development, data network technologies and critical operating environments.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Cinia offers

- Modern and high-usability communications, WAN, LAN and Wireless solutions
- Maintenance for the Trains monitoring system
- Service Desk 24/7 , NOC and SOC
- The future rail standardization
- Smart AI identification and monitoring solution
- The Rail voice communication operate service
- Cyber Security and software solutions

## COMPETITIVE ADVANTAGE

- Cinia owns and operates a 15.000 km backhaul network
- Rail specific expertise
- Comprehensive solutions for the Rail telecommunications
- More than 15 years experience of delivering data communication for moving vehicles.
- 24/7/365 service desk support

## CUSTOMERS AND REFERENCES

- The Rail specific customers are Finnish Transport Infrastructure Agency, VR Group, Skoda Transtech
- Some references:
  - Tampere Tram/Skoda Transtech: SD-Wan network and remote connection management
  - Expert service The Rail standardization, UIC and FRMCS group
  - The Track number identification, smart AI
  - Railways WAN and LAN network in Finland area
  - RAILI-service operator
  - The train WIFI devices delivery

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# COMATEC MOBILITY OY



<https://www.comatec.fi/en/rolling-stock/>

## ABOUT US

The Comatec Group is an engineering company that provides engineering design, project management and expert services. It employs nearly 600 experts in Finland, Poland, Sweden, Estonia and Romania. Whether you need help with ideas for a new product, basic design or project management, we can provide the expertise and manpower needed to resolve challenges in many industries. Comatec Mobility Oy is specialized in commercial and rail vehicles & mobile machinery R/D services.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Smart Rail solutions Comatec Mobility offers:

- Engineering excellence to reach your project goals: budget, schedule and quality wise.
- Knowhow of nordic environment: winter conditions, railway system and different rolling stock types and models.
- Product- and system development for rolling stock related equipment or complete machines
- Documentation-, safety-, and technical calculation services to support product development
- Acceptance services for rolling stock: NoBo- and DeBo-processes, consulting work and related development services
- Life cycle cost and reliability calculations (LCC, Rams)

## COMPETITIVE ADVANTAGE

- Comatec Mobility has history of rolling stock product development since the beginning of 1990's.
- Comatec has a team of engineers focusing on rolling stock projects. We work with latest technology, industry trends and standards.
- If needed, we can use resources through the group. This ensures we can handle both big and small projects efficiently.

## CUSTOMERS AND REFERENCES

The customer base of Comatec Mobility varies from train manufacturers and system suppliers to train maintenance organisations and authorities.

Our customers examples:

- VR Fleetcare, Eurofins, Junakalusto Oy, Skoda-Transtech, Steelwheel, Tamware,

Reference project examples:

- Electric and electro-mechanical engineering of Tampere Tram (Skoda-Transtech)

<https://www.comatec.fi/en/reference/skoda-transtech/>

- Upgrade & retrofit projects to VR Fleetcare: VY Tåg, Edg cargo wagon, Sm4 passenger information systems assembly and definition

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# CREANEX OY



<https://www.creanex.fi/en>

## ABOUT US

Creanex is Finnish technology company specializing in customer specific simulator solutions. Over 600 simulator solutions delivered world-wide are used for vehicle operator training and R&D testing.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Creanex Oy offers simulators for training and R&D.

- Realistic simulation including vehicle control system with authentic user interface and functions
- Ready-made exercises and personalized training curriculums accelerate learning
- Real control system software and components enable training of the service and support personnel
- Cost-effective environment for developing and testing new features of the vehicle
- Comprehensive integration testing capabilities and automated testing scripts:
  - Accelerate system development
  - Increase safety
  - Decrease cost

## COMPETITIVE ADVANTAGE

- The same simulator investment can be used for multiple use cases. Creanex state of the art simulator solutions with real control systems offer wide range of advantages for training, marketing, development and integration testing.

## CUSTOMERS AND REFERENCES

- Tram depot training simulator, TRO Tampere
- Testlab in Skoda Transtech, Oulu
- Test simulator for VTT research Tampere
- Multiple test systems for Skoda in Prague

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# DA-GROUP

[www.da-group.fi](http://www.da-group.fi)

**ABOUT US** - "Turning technical problems into simply everyday solutions."

DA-Group is a provider of advanced electronics and high technology solutions. We serve industrial, defence and space sector customers on a global scale. We are experts in embedded software solutions, FPGA designs, electronics, mechanics, simulations in naval technology, as well as RF, microwave and millimeter wave engineering. DA-Group offers a complete range of services from research, product development and design, testing and manufacturing to product lifecycle management.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland DA-Group offers

- User Interfaces and Onboard Computers, which are designed for use of public transportation operators at metros, trams and trains
- The most modern and slimmest LED displays including full color RGB-technology
- LCD/TFT displays, which present information for ease of travel, such as destinations and next stops with connections
- CCTV System, which offers recording functionality as well as live view possibility and intercom services
- Audio System offers crystal clear sound informing passengers as well as displays

## COMPETITIVE ADVANTAGE

- All our products are IP based, with open IP architecture and can be easy integrated with 3rd party solutions. This is an important issue especially in retrofitting projects.
- LDC/TFT displays are designed for indoor applications and they have one of the lightest and robust casing structures. They can be customized for tight and special installations.
- We have the most modern and ultra slim LED Displays, which are well suited for modernization or new installation in railway sector. They can be designed for indoor and outdoor applications.
- The displays are designed to have a low lifecycle cost: durable and light weight displays with low energy and maintenance requirements.
- Touch screen User interface helps the driver to control the vehicle with visualized information and can be customized for different use by configuring.

## CUSTOMERS AND REFERENCES

DA-Group is the market leader in Finland and we have managed major projects in Finland. That's why we are a supplier for companies such as: Skoda, VR Fleetcare, Škoda Transtech, Tampereen Ratikka, HKL, Cinia in new and modernization projects for train, metro and trams of Onboard Passenger Information systems. Read our references [from here](#)



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# EKE-ELECTRONICS LTD



<https://www.eke-electronics.com>

## ABOUT US

**EKE-Electronics Ltd** is the leading provider of Train Control and Management System (TCMS) and Condition Based Monitoring (CBM) products, platforms and turn-key solutions.

We have 35 years' experience in railways, working with high-speed trains, commuter trains, metros, trams, passenger coaches and locomotives in 6 continents, 31 countries, thousands of trains and over 35 000 systems installed.

EKE-Electronics is IRIS and ISO 9001 certified company, with safety functions on SIL-2 level.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

EKE offering consists of two product lines to increase train efficiency and optimize maintenance:

- **The EKE-Trainnet®** TCMS platform provides the infrastructure for data exchange throughout the train. It includes solutions with configurable hardware and software for sub-system integration, automation, communications, diagnostics and safety functions.
- **SmartVision™** is an advanced system for remotely monitoring the health of trains, their subsystems and track infrastructure. It provides a complete condition monitoring solution enabling the implementation of condition-based maintenance.

## COMPETITIVE ADVANTAGE

EKE-Electronics is an independent supplier providing proven technology, product platform or tailored solutions to meet customer needs for sub-system integration, train automation, train communications, train diagnostics and improved safety. Our products are designed ensure reliable and stable train operation for the lifecycle. We can build and deliver complete TCMS solution with turnkey project management, including open interfaces to all available sub-systems.

SmartVision's™ IOT based monitoring system brings the power of cloud computing to enable access to sophisticated analytics for the remote collection and analysis of on board train systems and track infrastructure. We have an open data policy giving customers access to the measured data.

## CUSTOMERS AND REFERENCES

EKE serves customers with the highest quality and reliability through out the system life cycle. Our solutions and technologies are currently in use by over 150 customers, including the leading rolling stock manufacturers. Our references include train operating companies such as London Underground and Queensland Rail.

Our customer base includes also system integrators and rail fleet maintenance companies as well as infrastructure owners and fleet and infrastructure maintainers.

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# ELECTRIC POWER FINLAND OY



<https://www.epf.fi>  
<https://www.epf.fi/erocs/>

## ABOUT US

We are a professional in demanding electricity distribution and railway infrastructures.

Our customers are power plants, energy companies, hospitals, industry, data centers, ports, and railway infrastructure.

We serve the entire area of Finland.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Electric Power Finland offers

- digitalized track solution: EROCS – EPF Railway Online Controlling System
- the necessary means for cloud-based wireless and modern turning of railway points and automatic level crossing facility – online from any device
- wireless communication with GoA4 the autonomous train unit using 5G technology or alternatively, the solution can be utilized manually e.g., in the older railway environment
- management software, hardware system and graphical user interface for digitalized track

## COMPETITIVE ADVANTAGE

- The solution enable automation of private shunting yards and facilitates for shunting operation work
- Easy-to-use Graphical User Interface for mobile
- The overall pricing of the solution is significantly lower, and the installation time is about 60% faster than usual
- Automatically operating level crossing facility utilizes radar technology in its operations
- We have developed our system with innovative technology to be completely safe and independent entity. The system's sensors measure its data non-stop e.g., measuring the relative behavior of points under load

## CUSTOMERS AND REFERENCES

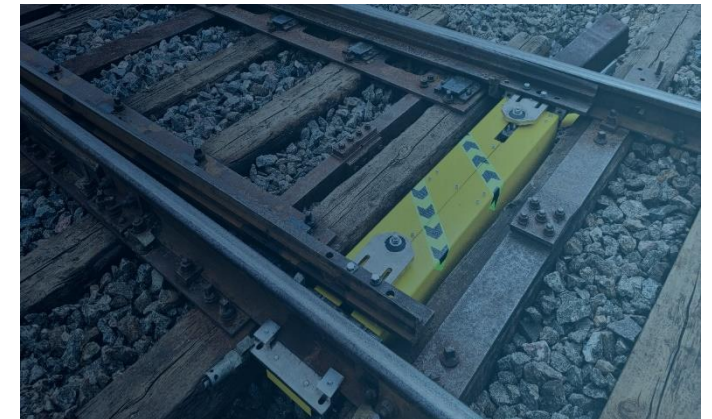
- The solution is intended for private railway shunting yards e.g., in ports, mines and manufacturing industry

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# EUROFINS ELECTRIC & ELECTRONICS FINLAND OY



<https://www.eurofins.fi/ee>

## ABOUT US

Eurofins Electric & Electronics Finland Oy is Notified Body and Independent Safety Assessment Body under the railway interoperability and safety directives.

Eurofins Electric & Electronics Finland is part of the Eurofins network of companies. We offer comprehensive expert, certification, testing and inspection services.

We employ around 50 experts in a variety of fields. Our Finnish offices are located in Espoo, Tampere, Salo and Oulu.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Eurofins Electric & Electronics Finland offers

- Railway Notified Body services
- Independent Safety Assessment (ISA) services
- Railway Designated Body (DeBo) services
- Third-party expert services

## COMPETITIVE ADVANTAGE

- Our services help railway actors with inspections when implementing significant changes to railway system, entering the market and commissioning new systems and evaluating technical suitability and lifecycle.
- Eurofins Electric & Electronics Finland Oy is type A inspection body (truly independent third party) accredited by FINAS (I006) and designated by Finnish Transport and Communications Agency Traficom. Our expertise in various sectors ensures the technical competence required and research information on various technical domains.

## CUSTOMERS AND REFERENCES

- We offer assessments for all railway structural subsystems (infrastructure, energy, control, command and signaling) and rolling stock.
- We are happy to give more detailed information about our customer references and services, please contact us for further information.

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# THE FINNISH GEOSPATIAL RESEARCH INSTITUTE FGI OF THE NATIONAL LAND SURVEY OF FINLAND NLS



<https://www.maanmittauslaitos.fi/en/research>

## ABOUT US

The Finnish Geospatial Research Institute FGI conducts innovative research and offers expertise within the field of spatial data. Our core competences consist of spatial data solutions supporting digitalization, dynamic earth, smart environments and interaction, and robotics and intelligent transport systems.

FGI is part of the National Land Survey of Finland NLS which is the governmental organization safeguarding the land ownership and credit system in Finland by maintaining information about properties and housing company shares in its registers and taking care of the registration of ownership and mortgages. NLS has offices in 36 localities across Finland, FGI situated in a university campus area in the capital region in Espoo, Otaniemi.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Smart Rail solutions FGI offers expertise on, for instance,

- geodetic reference system requirements, such as, coordinate transformations between global and national systems
- precise, robust and resilient positioning, navigation and timing, and applications requiring 'Trusted PNT' as a service
- geographic data management, processing, analysis, and visualization, high-performance geocomputing, web mapping and interactive spatial data exploration
- mobile laser scanning -based digital twins of railroad network

## COMPETITIVE ADVANTAGE

- Our research is top-class. In terms of scientific impact, the Academy of Finland has ranked FGI number one among Finnish research institutes three years in a row in 2020–2022.
- We have versatile research infrastructure we can use in rail research, including, FinnRef GNSS Permanent Network offering real time RTK correction data, GNSS-Finland service for GNSS signal quality monitoring, anomaly detection and reporting, software-defined receiver FGI-GSRx for detecting and mitigating both jamming and spoofing interference, state-of-the-art navigation and geovisualization laboratories, laser scanning equipment, remote sensing test field, drone test areas and drone fleet equipped with RGB, thermal, LiDAR, multi- and hyperspectral sensors and AI analytics pipelines.

## CUSTOMERS AND REFERENCES

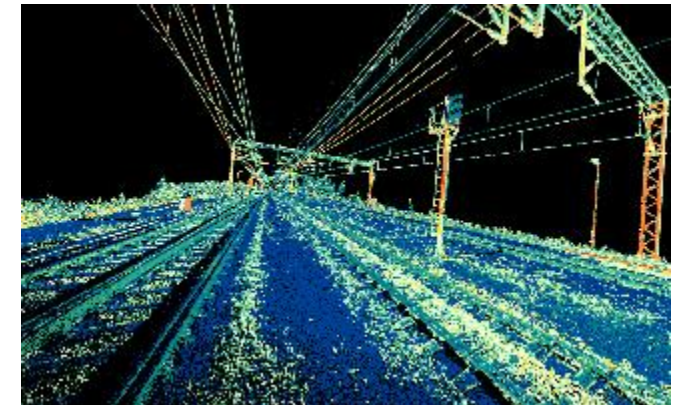
- We co-operate nationally and internationally with businesses, universities, research institutes and public agencies to transfer our spatial data knowhow into society in all levels.
- We are constantly looking for new funding opportunities and partners to develop the best possible spatial data solutions to transport, built environment, bioeconomy, welfare, spatial planning, and to any other field where location matters.
- We have previously worked in several international smart transport projects in road, maritime and aviation contexts and are eager to extend our geospatial expertise to rail sector.

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Mobile laser scanning -based point cloud by prof. Antero Kukko NLS FGI.

## ABOUT US

We are an independent consultancy specialized in strategic transportation planning and risk management. We believe the solutions of future require a multidisciplinary analytical approach and an unafraid attitude. As the world around us evolves, the importance of evidence-based decision-making is paramount. We provide you with independent, unbiased impact assessments. We believe that a responsible actor identifies the facts, manages risks, anticipates threats, understands the economic and social impacts, sustainability requirements and the big picture - and acts on the right information accordingly. In this, we are your best partner.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland FLOU offers

- Transport forecasts and demand modelling
- Feasibility studies, cost-benefit analysis
- Impact assessments, including wider economic impacts
- Project management and risk management services

## COMPETITIVE ADVANTAGE

- We are an unbiased partner for transport analysis, impact assessment and risk management.
- Our working methods emphasize innovation, engagement and inclusiveness of different stakeholders.
- When necessary, new methods are developed based on the existing theory to answer even the most challenging questions

## CUSTOMERS AND REFERENCES

- Our customers include national agencies & ministries, Finnish high speed rail project companies, cities, municipalities and infrastructure project alliances. A few of our references:
- Comparison of railway routes for Finland Railway (Finnish Rail Ltd)
- Cross-border rail transport in the Bothnian Bay region (Finnish Infrastructure Agency)
- Project dashboard and risk management services supporting the management of the Kalasatama – Pasila tramway alliance (City of Helsinki, & Metropolitan Area Transport Ltd)
- Several cost-benefit analyses for the Finnish Infrastructure Agency

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# INDAGON OY

<https://indagon.com/>

## ABOUT US

The company that puts you and your assets on the map. Literally. Indagon is a professional positioning and communication technology house with own and partnered subsystems and solutions for enterprises, authorities and integrators.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Indagon offers

- The **APU** (Auxiliary Positioning Unit) real-time positioning unit provides continuous, reliable, and rail-accurate positioning of locomotives. With position information, rail operators' customer service can be improved, productivity can be increased, costs can be saved, and traffic safety improved. APU incorporates accurate positioning modules, an integrated communications terminal, an internal CPU, and several inputs. Dead Reckoning (DR) supports tracking in tunnels and other blind spots of the GNSS service area. APU has been designed to stand the extreme conditions of locomotives as specified in the railroad standards and directives. The robust structure shields the unit and gives a long product life cycle. Easy installability and product variations enable using APU units in various train and locomotive models. Installation to a 19" rack is possible with easiness and speed. Positioning information is transmitted to Indagon Positioning Gateway, from where any application can access it through a standard interface.

The **VCU** (Vehicle Computing Unit) is designed for continuous operation in harsh environments with functionalities supporting private 4G/5G mobile networks' exceptional use cases. Keeping an extended operating temperature range and a flexible input voltage range makes it suitable for various conditions and applications. Mechanical casing and electrical enclosure comply with IP-68/69. The possibility to process local data saves bandwidth on connectivity. IoT gateway is a service that collects data from IoT sensors and reports data in a processed way to the cloud server. Beyond routing and creating connectivity with back office applications IoT gateway, RTK positioning extends use cases and local capability to analyse data speed-up information sharing.

## COMPETITIVE ADVANTAGE

Our strengths are proven in authority solutions, railroad systems and in mission critical high availability enterprise solutions.

## CUSTOMERS AND REFERENCES

- Finnish railways – VR
- Siemens
- Stadler
- Fintraffic



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VCU –unit



APU-unit



# JUKOVA CORPORATION OY



[www.jukova.com](http://www.jukova.com)

## ABOUT US

Jukova was founded in 1958. The company, first as a family business manufacturing aluminum fittings and faucets, has grown up to an international company that provides solutions for passenger transport industries.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Jukova Corporation Oy offers

- Jukova Corporation Oy provides turn-key deliveries and easy-to-install solutions for the rolling stock.
- Our rolling stock product line, concentrates on complete interior systems including modularly constructed ceiling systems, luggage racks, handrails and partition walls.
- Wide range of interior components and sub assemblies , such as driver's desk and furniture, sliding and hinged doors, air ducts, grabrails and different fittings.

## COMPETITIVE ADVANTAGE

- Jukova Corporation is a certified system supplier for the passenger transport industry. High quality, continuous product development, high-performance process improvement, as well as a close co-operation with the customer – also after finishing the project – are the key elements of our total offering.
- We can create tailor made turnkey interior solutions based on customer requirements
- Certificates: EN/ISO 9001&14001 IRIS TS22163, EN 15085-2, DIN 6701-2 EN1090

## CUSTOMERS AND REFERENCES

- Alstom
- Bombardier
- Skoda
- Knorr Bremse
- Stadler
- VR
- Transtech

### CONTACT DETAILS:

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### CONTACT PERSON:

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[www.lico.fi](http://www.lico.fi)

## ABOUT US

LICO is the leading system supplier of composite solutions for transport equipment industry. We design and manufacture tailor-made composite products in close cooperation with our customers. Our aim is to lead our customers to success together with our products.

Our expertise over twenty years and ability to understand our customers' needs result in superior technical solutions, procedures and comprehensive deliveries.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland LICO offers from glassfiber

- Interior panels and walls
- Ceiling and floor structures
- Interior panels and floors with integrated heating
- Structural walls
- Stairs for double deck coaches
- Beds for double deck sleeping coaches
- Front and rear masks
- Exterior roof and sidewall constructions
- Toilet and shower modules
- Sleeping cabins
- Cabin modules for passengers and Crew

## COMPETITIVE ADVANTAGE

- Modelling and 3D design.
- Structural know-how
- Materials know-how
- Over 130 certified product structures
- Fire resist structural know-how

## CUSTOMERS AND REFERENCES

- **Skoda Transtech**
- **VR Fleetcare**
- **Siemens**
- **Scania**
- **Carrus Delta (Volvo)**
- **Piikkiö Works**
- **Alstom**
- **Stadler**

## CONTACT DETAILS:

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# LUMIKKO OY

*Lumikko*

<https://www.lumikko.fi/>

## ABOUT US

Lumikko Oy, established 1970, is Finland's leading company focused on the design and production of energy-efficient HVAC solutions for railway applications.

Lumikko is a flexible company specialized in development and production of customer tailored HVAC systems for challenging environments.

In 1992 Lumikko designed its first railway solution. It was HVAC system for locomotive driver's cabin unit. After that Lumikko has delivered more the thousand units for different light rail and main line applications.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Lumikko offers

- High technology knowledge and experiment for energy efficient HVAC system development for railway applications
- With web based remote monitoring systems all needed service data can be collected, saved and used for preventive maintenance activities
- Advanced air filtering solutions for small particles and viruses filtration from circulation air.

## COMPETITIVE ADVANTAGE

- Energy efficient HVAC solutions with low life cycle costs
- Clean air filtering against dust, pollution and viruses
- Web based service data monitoring for preventive maintenance activities
- Passenger area and driver's cabin's accuracy temperature control

## CUSTOMERS AND REFERENCES

- Lumikko is an experienced partner and has installed HVAC-systems (Heating-, Ventilation and Air Conditioning) for rail vehicles for both renovation projects and new railway solutions.
- Reference customers in railway segment include e.g.
  - Skoda Transtech
  - Stadler
  - VR Fleetcare
  - Tampere Tramway
  - Helsinki Metropolia Area Transport Ltd

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## CONTACT PERSON:

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<https://www.lut.fi/en>

## ABOUT US

We develop and enable new approaches to the **train-track activity** and provide **digital tools** that will contribute to **sustainable, advanced, and easy-to-operate** railway transport operation and maintenance system.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland LUT University offers

- Physical-based real-time train-track simulation model helps Finnish companies to benefit from business opportunities in:
  - ✓ **Smart-maintenance.** Computer simulation outputs will provide essential parameters for the maintenance of tracks and vehicles.
  - ✓ **Digital twin.** Real-time simulation will promise the ongoing data analysis are proceeded automatically on in-service train.
  - ✓ **Autonomous trains.** Estimation of the wheel-to-rail contact forces contributes to decision-making algorithms and safety prediction for autonomous trains.
- Time–frequency technology for track geometry inspection based on the measured signals from axle box accelerations (ABA). It will contribute into:
  - ✓ **Advanced track inspection technology** for track geometry health monitoring in the railway operation and maintenance

## COMPETITIVE ADVANTAGE

- Over **25-years' experience** on the **real-time physics-based multibody simulations** in the heavy mobile machinery used in industries.
- A physics-based **railroad vehicle simulation code/tool** was developed in the “SmartRail Ecosystem” project (2019-2020).
- Broad **world-wide academic and industrial collaboration** in railroad field. In co-operation with Skoda Transtech (Finland), University de Sevilla (Spain), Delft University of Technology (Netherlands), Universidade de Lisboa (Portugal) and Universidade do Minho (Portugal).

## CUSTOMERS AND REFERENCES

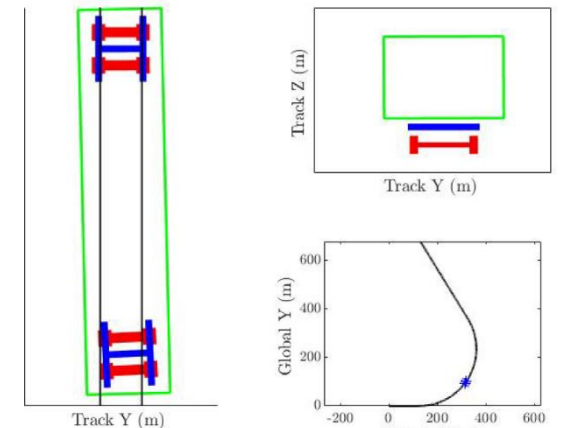
- **Finnish and European railway system operators** (VR, ProRail, Adif,...)
  - Efficient way to accomplish the maintenance and extend the life cycle of the railway system
- **Finnish and European railway vehicle manufacturer** (Skoda Transtech, Renfe, Talgo, SNCF,...)
  - Reduction in manufacturing cost while optimizing product performance and development.
- **Railway infrastructure manager** (The Finnish Transport Infrastructure Agency)
  - Ensures the railway traffic on the railway network takes place in a complete safety environment.

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# MATTERSOFT OY



[www.mattersoft.fi](http://www.mattersoft.fi)

## ABOUT US

We are a Finnish software company, focusing on intelligent transport systems. We specialize in public transport information management and traffic signal priorities. Since 2018, we have been a member of the INIT Group, who provide public transport information systems worldwide.

Our products help hundreds of thousands of public transport users every day by making public transport more fluent, punctual and easier to use. Moreover, public transport authorities and operators get precise information of the transport in real-time, enabling them to monitor and manage the public transport operations accordingly.

In addition to our products, we are also involved in various national and international research projects related to intelligent transport systems and smart cities.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Mattersoft offers

- Real-time fleet monitoring and management solutions
- Transit signal priorities (TSP) in urban transit
- Real-time passenger information (RTPI)

## COMPETITIVE ADVANTAGE

- Web-based solutions are quick and easy to deploy
- Modular and scalable solutions
- Existing interfaces to multiple 3<sup>rd</sup> party systems
- Software as a Service (SaaS)
- No expensive hardware investments
- System roll-out in weeks
- High customer satisfaction

## CUSTOMERS AND REFERENCES

- Our solutions are commonly used by public transport authorities for managing public transport and providing real-time passenger information and transit signal priorities
- Also public transport operators use our solutions for fleet monitoring and management
- Our solutions are used for example in Helsinki metro system and in tram traffic in Helsinki and Tampere

### CONTACT DETAILS:

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[www.mermecgroup.com](http://www.mermecgroup.com)

## ABOUT US

MERMEC is a world-leading and innovative company specialising in the development of integrated solutions for diagnostics, safety and asset management of railways and metro systems.

The company is headquartered in Italy and has international offices in 19 countries through which it provides technical support to its customers worldwide.

MERMEC is part of ANGEL, the high-tech holding company that includes some of Italy's most innovative companies in the transport, aerospace and digital mechatronics sectors.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland MERMEC offers

- Track recording cars and measuring and inspection systems for the monitoring of railway assets.
- Wide range of advanced rail measuring, inspection, inventory and asset management services.
- Wayside train and wheel monitoring systems.
- ETCS; Multi-station Interlocking; Centralized Traffic Control Systems (CTC), Radio Block Centre (RBC).
- Engineering services.
- MEERI track measuring wagon operates in Finland, the most modern and comprehend one unit system in the world.

## COMPETITIVE ADVANTAGE

- MERMEC is the world's largest supplier of advanced technology for railway infrastructure operations and maintenance.
- With about 1400 highly qualified employees (of whom, 1000 Engineers), MERMEC boasts an unmatched technical know-how.
- Around 12% of the total turnover is invested annually in research and development activities.
- Founding member of Europe's Rail Joint Undertaking (EU-Rail), actively participate in UNISIG, UNIFE, CEN, ERRAC, AREMA.

## CUSTOMERS AND REFERENCES

- MERMEC has more than 200 customers among the world's most important railways and rapid transits.
- MERMEC solutions are currently in use in 71 countries.
- More than 500,000 km of railway lines are monitored each year with MERMEC technology.
- 90% of the high-speed measuring trains currently operating in the world are equipped with MERMEC monitoring technology.

### CONTACT DETAILS:

#### MERMEC Finland

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<https://www.mipro.fi/>

## ABOUT US

Mipro is a transport safety system specialist and pioneer with over 40 years of experience in developing and supplying **signalling and traffic control solutions** for **railway and metro** networks.

We build **CENELEC SIL4 certified interlocking systems** for demanding railway infrastructure in areas of main line and low-density line networks, level crossings, marshalling yards and depots.

Our **modular and flexible system solutions** can be customised to specific needs when modernising existing railway and metro lines or building up a new line.

Mipro is a privately owned company headquartered in Finland with offices in Mikkeli, Espoo, Oulu and Tallinn.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

- CENELEC SIL4 certified interlocking systems for both railway and metro networks
- Highly scalable traffic management systems (TMS) for railway and automatic supervision and control systems (ATS) for metro networks
- Level crossing systems
- Situational awareness systems
- Comprehensive and long-term life cycle management services for the delivered systems.

## COMPETITIVE ADVANTAGE

- Mipro solutions meet the **customer's needs and local regulations**, specialised in Nordic and Baltic conditions and specifications.
- Mipro rail solutions ensure a cost-efficient way to **increase the capacity** of metro, passenger and freight networks **without compromising on safety**.
- **Complete set of project services:** system design, complete deliveries, safety assessment and verification, long-term life cycle management to support customer operations for decades.
- **ETCS-ready SIL4 interlocking systems** with COTS components and a redundant 2oo2 system architecture, ensuring high availability and efficient use of railway capacity.
- Our highly scalable **TMS supports ETCS Level 1 and Level 2 interfacing with EULYNX protocol**, enabling a smooth evolution in the future for existing track sections.

## CUSTOMERS AND REFERENCES

- Dozens of delivered interlocking, traffic management and level crossing systems on the Finnish and Estonian railway networks and the Helsinki metropolitan area metro network
- Our customers include FTIA, Fintraffic, Helsinki Metro, VR and Estonian Railways.
- For main references, please see: <https://www.mipro.fi/en/rail-traffic/Railway-solutions-and-references/>

### CONTACT DETAILS:

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# PROMEKO GROUP OY

**PROMEKO**

<https://promeco.fi/>

## ABOUT US

Promeco is an experienced contract manufacturer of high-quality electromechanical systems and services for leading companies. Over 40 years, Promeco remains a customer-oriented, family-owned business that today operates from three locations in Finland and one in Poland.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Smart Rail solutions Promeco offers

- We have done electromechanical manufacturing for the railway industry since the 1990s.
- Promeco manufactures various welded and riveted structures for the rail industry (rolling stock, railway sector, tram, metro, and locomotive) in steel and aluminium, such as:
  - traction converter housings
  - heating, ventilation, and air conditioning enclosure solutions
  - collision-proof tables for train coaches
  - service elevators
  - wall and door structures.
- Electrification is another area we service. Especially electrical panels, heaters and control centers.

## COMPETITIVE ADVANTAGE

- Certified EN15085 welding standard with level CL1 to ensure quality and enabling welding of load bearing structures.
- Friction stir welding (FSW) allows joining aluminium profiles or aluminium sheets together. It provides fast process and minimizes deformation and need for post-processing.
- Promeco can supply structures with various raw materials and processes.
- Engineering supports customer on industrialization and specifying production methods which makes ramping up projects faster and more cost effective.

## CUSTOMERS AND REFERENCES

- Alstom – more than 20 years of cooperation around various enclosure structures and cooling systems, as well as interior products.
- Siemens – Various interior products
- Skoda Transtech – Service elevators, heaters, control centers, e.g., heating and lighting
- VR – Finnish railway company VR has been one of Promeco's biggest end customers since the 1990s. We have manufactured structures for nearly every train in Finland.

### CONTACT DETAILS:

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# PROXION



[www.proxion.fi/en](http://www.proxion.fi/en)

## ABOUT US

Proxion is a fast-moving company focusing on safety critical infrastructure and intelligent mobility. Proxion is a Finnish leader in the development of smart rail traffic usability and agility.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Proxion offers

- Utilization of the data enables better planning of rail traffic and infrastructure as well as decision-making on how to proceed.
- We are appreciated as experts of safe rail traffic and railway infrastructure.
- Our mission on tracks is to double the rail transport and to develop more sustainable solutions to rails.
- Developing ways to minimize shunting and maximize uptime and payload.
- We serve companies in all matters regarding to planning, designing, constructing or operating on rails.

## COMPETITIVE ADVANTAGE

- The most important thing for us is that our customers succeed and rail traffic develops.
- Utilization of the data enables better planning of rail traffic and infrastructure as well as decision-making on how to proceed.

## CUSTOMERS AND REFERENCES

- SmartRail products

**5G Lab Mobile 5G laboratory**  
**Autonomous Train**  
**ProX-LX Smart level crossing system**  
**ProX-Rail Situational awareness application**

### CONTACT DETAILS:

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# RAIN (LEMPEA OY)



[rain.global](http://rain.global)

## ABOUT US

We help industries, government, the public sector, commercial services and consumers take the best advantage of their data.

Our experts have skills sets at 5G telecommunications, edge computing, cloud infrastructure, IoT connectivity, artificial intelligence, data science, and Software as a Service business models.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland RAIN.global offers

- RAIN is part of Tampereen Raitiotie Oy, VTT and Skoda Transtech ecosystem. RAIN to every streetcar to:
  - Collect data from many different origins
  - From data to information to passengers, streetcar vendor, Tampereen Raitiotie Oy, and all other interest parties from the ecosystem partners.

## COMPETITIVE ADVANTAGE

- RAIN, our enterprise data platform is very easy to use. Anyone will be able to pull in real-time data sources of their own, then drag and drop ready applications on top of those data flows to start making KPI-driven, AI-assisted business decisions. No coding skills required.
- We have implemented IoT data gateways for industrial manufacturers to connect their equipment with embedded systems running C and C++ software to the cloud. This allows them to create data visualization and analytics applications simply by dragging and dropping data flows onto a canvas.
- We've installed cameras at retail and hospitality chains, using AI algorithms at the edge of the network to analyze crowds – anonymously -, so that property management at shops and restaurants, as well as their guests, are continuously informed of social distancing with a view to COVID-19.

## CUSTOMERS AND REFERENCES

- SOKOTEL
- ABB
- Siili Solutions

### CONTACT DETAILS:

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### CONTACT PERSON:

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# RELESOFT OY

<https://www.relesoft.io>



## ABOUT US

Relesoft is Finnish railway software and technology company specializing in EULYNX, RastA and ETCS specific software solutions. Europe's first EULYNX gateway in operational use is delivered by Relesoft. Helping companies across Europe to get their systems EYLUNX compatible.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

Our offering is following:

- 1) EULYNX gateway; enables connectivity based on EULYNX SCI-CC protocol and provides simple upgrade for existing relay based interlockings to EULYNX interoperability towards TMS (Traffic Management Systems)
- 2) EULYNX Object Controller; is reference software and hardware solution which can be used in object controller development. Software is certifiable up to SIL 3-4 level during hardware development process.
- 3) Consultation and co-development services in EULYNX, RastA and ETCS challenges.

## COMPETITIVE ADVANTAGE

- We have working EULYNX implementation from TMS down to object controllers. We master all the relevant protocols and documentation. We are fast track to implementation with the new European signalling standard.
- We provide open access to software for our clients. Source code is part of the delivery.

## CUSTOMERS AND REFERENCES

- RELYNX Gateway is highly respected reference and the first commercial implementation of CSI-CC in Europe
- Our references are from Spain, Finland and Netherlands.
- Contact us to learn more.

### CONTACT DETAILS:

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## ABOUT US

Škoda Group is a leading European rolling stock manufacturer specialized in supplying low-floor trams and double-deck coaches.

Currently Škoda Group North Region is supplying state-of-the art light rail vehicles to a.o. Helsinki region, the city of Tampere and railway coaches for Finnish Railways.

Škoda Group develops, produces and supplies mobility products customized to the needs and wishes of its customers.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

Škoda Group supplies smart solutions for heavy and light rail vehicles: our target is to be able to supply fully automated vehicles in the near future

Our available digital solutions today are drivers' support systems and vehicle management tools

We have test environments and simulators available for complete vehicle systems including drivers' training system to digital twins

## COMPETITIVE ADVANTAGE

Durable rolling stock with smart technical and IOT solutions

Solutions proven in challenging conditions

Lower life-cycle costs due to highly optimized vehicle structure and attention to details

Designed with sustainability in mind, in terms of energy consumption, materials, recyclability and accessibility for a 40-year life cycle

## CUSTOMERS / REFERENCES

- Helsinki Metropolitan Area Transport (FIN)
- Tampere Tramway (FIN)
- VR Group (FIN)
- Schöneiche-Rüdersdorfer Strassenbahn (DE)
- Rhein-Neckar Verkehr (DE)

### Contact details:

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## ABOUT US

### **Solita creates value from data in a connected world.**

Solita has the most extensive expertise in the Nordics on creating customer and data-driven mobility solutions and digital transformation with over 1500 experts in six European countries

We turn the change into a competitive advantage with comprehensive digital expertise that combines technology, data and human insight.

### **OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND**

Solita has +15 years of experience in real-time data-intensive operative solutions. We deliver business value by both crystallizing the needs of different user groups (e.g. traffic management, train operators, asset and maintenance contractors) and implementing solutions utilizing data-assets inter- and intra-organizationally.

#### **1. Manage the transport system in real-time**

Advanced data-driven solutions for various user groups: e.g. traffic and infrastructure monitoring, punctuality tracking, predictive maintenance, and analysis of traffic management operator work

#### **2. Lead the data-centric mobility transformation**

Accelerating data-driven capabilities through data strategies, governance and management, roadmaps, understanding data assets, and defining target state and KPIs.

## COMPETITIVE ADVANTAGE

- +15 years experience in railway industry and its solutions for multiple user groups and functions
- Bringing data-driven excellence through modern tools, data, analytics and insight.
- Extending your reach and timing through connectivity, analytics solutions and data-driven transformation
- We take you from idea to implemented life-cycle solution

## CUSTOMERS AND REFERENCES

- Solita is one of the most central technology and digitalization companies in Finnish mobility ecosystems having long strategic partnerships with many public organizations in transport and mobility, e.g, Fintraffic, Traficom, HSL, Citytraffic, & FTIA
- Selected references:
  - Fintraffic rail: data journey and strategy, multiple mission-critical systems
  - HSL: ticketing renewal, mobile app, communication platform
  - Helsinki Citytraffic: real-time punctuality visualization
  - VR Fleetcare: technology strategy
  - Gothenburg tramways: Cloud platform integration services and strategies

### **CONTACT DETAILS:**

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### **CONTACT PERSON:**

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# STEELWHEEL OY

[www.steelwheel.fi](http://www.steelwheel.fi)

## ABOUT US

Steelwheel Oy is specialized in railroad products. The company was founded in 1945. Our workshop is in Kouvola, a major railroad crossing in Finland. Steelwheel is part of a Saalasti group owned by the Saalasti family.

Steelwheel's special expertise is the maintenance of railway equipment and the manufacture of special equipment for railway professionals.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Teräspyörä-Steelwheel Oy offers

- Shunting locomotives and robots
- Shunting winches
- Railroad maintenance trolleys
- Couplers
- Other railroad equipment, like snow ploughing devices
- Maintenance and modernisation for rolling stock
- ECM services
- Consultation and inspection

## COMPETITIVE ADVANTAGE

- Over 75 years experience
- Combination of maintenance and new production
- Ability to innovate: Numerous unique products
- Experience in 1520 mm gauge and draw hook / central coupler combined operation
- Fast, flexible and flat organisation for quick response
- Strong economy

## CUSTOMERS AND REFERENCES

- Numerous production plants
- Supplier and maintenance partner for track building companies and main line operators
- ECM for over 150 rolling stock units
- References
  - Shunting locomotives: over 80
  - Wagon moving winches: over 30
  - Shunting couplers: over 500
  - Track maintenance vehicles: over 30
  - Two maintenance vehicles delivered to Helsinki Metro, picture on the right

### CONTACT DETAILS:

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### CONTACT PERSON:

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# SV-SHOCKS

[www.sv-shocks.com](http://www.sv-shocks.com)



## ABOUT US

SV-SHOCKS is a traditional shock absorber and damper manufacturer. We have produced and designed shock absorbers over 50 years.

Our production plant is located in Järvenpää, in southern Finland. SV-SHOCKS is a quality orientated company and we have been certified according to ISO 9001, ISO 14001, ISO 3834 and EN 15085.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland SV-SHOCKS offers

- production and design skills enable to produce a large variety of railway dampers in large or short production runs.
- We can manufacture shock absorbers for every purpose, ensuring that the specific requirements of all customers are met quickly and efficiently.
- Primary and secondary suspension (horizontal and vertical)
- Yaw dampers / Roof dampers
- Pantograph dampers / Special applications
- SV-Shocks is committed to the delivery of reliable products to the market.
- SV-Shocks has a broad industry experience and a worldwide reputation for reliable and long service life products, meeting the needs of even highly customized applications.

## COMPETITIVE ADVANTAGE

- SV-Shocks has invested in a completely new state of the art test system and upgraded all existing test systems. With our powerful testing devices, we can perform demanding performance and durability tests in any position and at any waveforms.
- We make tests up to 50kN forces with velocities from 0.001 m/s up to 5 m/s.
- SV railway shock absorbers are well known as high-quality products.
- Every shock absorber is thoroughly tested before it leaves the factory to meet our highest quality requirements.
- Our high-quality products provide a safe and maintenance free operation until the next planned major overhaul of the bogies

## CUSTOMERS AND REFERENCES FOR EX.

- EUROTUNNEL, since 2012
- CAF Spain, since 2017 (Worldwide customers)
- MTR Sweden, since 2017
- STADLER Spain, since 2015
- ŠKODA, since 2019
- TCDD, since 2013

## CONTACT DETAILS:

SV-SHOCKS

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## CONTACT PERSON:

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# SWECO FINLAND OY



<https://www.sweco.fi>

## ABOUT US

Sweco designs sustainable communities and cities of the future. We are Europe's leading architecture and engineering consultancy with 18 500 experts across Europe. Sweco has offices in 14 countries and we carry out projects in 70 countries annually throughout the world.

In Sweco's infrastructure & traffic field our experts are designing infrastructure and transportation that helps tomorrow's cities manage everything from growing populations to new transportation solutions. Sweco is the leading railway design expert in Finland and Northern Europe. Our expertise covers the entire Finnish state rail network, and the design and expert services connected to railway and tramway plans for private tracks.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail and Tramway Solutions from Finland Sweco offers

- Project management of railway projects
- Railway and tramway engineering including electrification
- Railway and tramway safety equipment engineering
- Commissioning of rail safety equipments
- Safety and risk management
- Other rail related disciplines etc. geotechnical, structural, environmental and railway traffic design.
- Rail measurements, rail inspections and ground surveys

## COMPETITIVE ADVANTAGE

- We are the market leader of the railway design sector in Finland with long-term expertise of the railway system.
- Sweco offers every rail related design discipline that projects needs, but also field investigations and expert services.
- We have our own trusted design program, Luoti RTS, to design reliable railway geometry and to automate design of rail electrification and safety equipment.
- We have strong know-how of rail safety automation and commissioning of safety equipment after construction work.
- With our own rail inspection train EMMA we collect rail data from the field to research, analyse and develop of railways.

## CUSTOMERS AND REFERENCES

- Our railway business is relying strongly on one big customer, Finnish Transport Infrastructure Agency.
- Our newest customer in railway design business is Turku One Hour Train and for next steps we are eager to get involved also into projects of Suomirata and Itärata.
- In our tramway projects, we work closely with our city customers like Helsinki, Espoo, Vantaa and Tampere.
- Our biggest rail projects now are construction design of rail yard in Tampere and Turku, railway design between Espoo-Salo and Tramways in Tampere and capital region (Raide-Jokeri, Kruunusillat and Kalasatamasta Pasilaan).

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# TAMPERE UNIVERSITY

<https://www.tuni.fi>

## ABOUT US

Tampere University is one of the truly multidisciplinary universities in Finland, bringing together research and education in technology, health, and society. Collaboration with our partners is built on unique combinations of scientific disciplines and applied expertise.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

Tampere University offers several tools for assessing urban rail systems, such as:

- Land use, transport system, and sustainability assessment framework.
- LiTE (Lighter Testbed) - a unique physical showcase and testing environment at Nokia Arena, in the heart of Tampere to introduce and test future digital services in a physical environment.
- Digital Virtual Reality simulation environments and interactive public displays.
- Digital models of advanced materials and structures for design and simulation

## COMPETITIVE ADVANTAGE

- Support for designing accessible public transportation services for people with different needs.
- A low-level solution to introduce and test future digital services in a physical environment.
- Support for simulating and designing accessible public transportation services in XR.
- Citizen and user experience surveys for assessing the effects of urban rail.

## CUSTOMERS AND REFERENCES

- The multidisciplinary offerings are intended for companies, research organizations, third sector, municipalities, and cities.

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# OY TAMWARE AB

**tamware**  
DOOR SOLUTIONS

<https://tamware.com/>

## ABOUT US

We are a high-quality passenger door solution provider for the rail and bus sector.

We specialize in electric door systems and our base of operations is located in Tampere, Finland.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Tamware offers

- State of the art electrically operated passenger doors and their controlling systems
- Environmentally friendly and long-lasting door systems
- Local service and aftermarket support

## COMPETITIVE ADVANTAGE

- The patented design in our products grants cost-effective and long-lasting door products for the OEM's and operators
- The intelligent door controlling systems ensure high safety for passenger use
- As the door systems have been engineered in Finland, they've been built to sustain harsh weather conditions and cold climates
- Tamware's products will be tailored for each customer requirement

## CUSTOMERS AND REFERENCES

- Stadler
- Skoda
- Pesa
- Modertrans
- Tatra-Yug

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<https://www.teknoware.com>

## ABOUT US

**Teknoware** offers advanced solutions for premium train experiences, and we are pioneers in providing intelligent lighting control. Our rolling stock solutions include interior and exterior lighting and interior structures.

We are also experienced in interior lighting solutions for buses and coaches and emergency lighting systems for buildings and cruise ships. We have over 50 years of experience in lighting.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Smart Rail solutions Teknoware offers

- Intelligent lighting control systems
  - For example, Smart main lighting covering light color temperature adjustment according to circadian rhythm
- Wide range of sustainable interior and exterior LED lighting solutions
  - Direct and indirect systems
- Lightweight interior structures

## COMPETITIVE ADVANTAGE

- Over 30 years of experience in train lighting.
- Business experience in vehicle lighting over 50 years.
- Own manufacturing units in five different countries: Finland, Malaysia, Poland, UK and USA
- Own design and product development departments.
- From design to production and service, all aspects are under our control and represent our best know-how. When the product has the Teknoware-label on it, it is a guarantee that we have made it. From design to production.

## CUSTOMERS AND REFERENCES

### Customers

- States, municipalities and cities
- Train, metro and tram manufacturers
- Railway companies
- Railway depots

### References

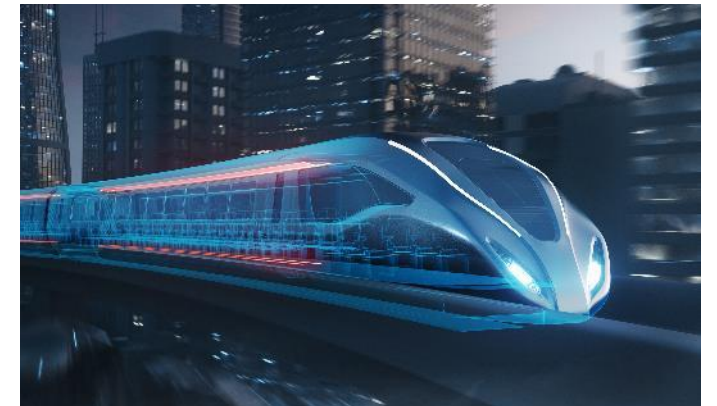
- TGV Duplex Refurbishment (SNCF)
- ICE4 High Speed Train (Siemens)
- Metro Lille, France (Alstom)

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# TELESTE

[www.teleste.com](http://www.teleste.com)

## ABOUT US

We provide professional video and information management applications, systems and services for **public transport operators** and **rolling stock manufacturers**. Our portfolio meets the highest international standards and requirements for demanding operational environments and large-scale, integrated implementations.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

Our solutions help public transport operators and rolling stock manufacturers build and manage increasingly **efficient infrastructures** and provide **safe and easy journey for passengers**:

- Intelligent passenger information software designed for the **delivery of travel information and multimedia content** at stations and onboard, on websites, smartphones and through social media
- **Proven on-board solutions**, including systems for passenger information, public address, intercommunication, infotainment, wireless data transmission and on-board CCTV for trains, trams and the metro
- Clear and sharp **on-board and station displays** for versatile information and advertising applications
- **Situational awareness platform** for improving operational control and safety of people in public places

## COMPETITIVE ADVANTAGE

- The modular structure of our solutions makes it possible to **build on-board and stationary infrastructures based on local, project or customer-specific needs**. The integration of all system components is efficient and reliable, which results in the **lower cost of ownership**.

## CUSTOMERS AND REFERENCES

- On-board solutions to several train platforms and projects for Alstom, Stadler and CAF
- Situational awareness, video security and passenger information system for Helsinki metro
- Passenger information system to Tampere Tramway
- Nationwide video security and passenger information systems for Swedish Transport Administration
- Distributed IP video solution for Chicago Transit Authority
- An IP video system for Toronto Transit Commission
- Passenger information displays in all railway stations across Finland
- Passenger information displays for Cologne Transit Authority

# TELESTE

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# VINKA OY

<https://www.vinka.fi/>

## ABOUT US

Vinka optimises on-demand mobility and last-mile logistics. We are trusted by fleets with thousands of vehicles and millions of trips every year.

We have an experienced team with 100+ years of experience and a trail of market leading products.

We do business in B2B and B2G.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

Vinka offers a SaaS platform that is a complete toolkit for orchestrating fleets and optimising routes.

Vinka's platform can be used for optimising:

- Public on-demand transport
- Special needs transport
  - Para-transit
  - non-emergency medical transport
  - special needs education transport
- Schoolrides
- Taxi dispatch
- Last-mile logistics
- Autonomous fleets

## COMPETITIVE ADVANTAGE

- Vinka's team has 100+ years of experience in offering on-demand mobility and logistics systems. This experience is used to create a unique state of the art platform that can handle all aspects of on-demand mobility. We know what needs to be done and how to achieve the goal.
- The platform is trusted by and has been battle tested on large fleets and with extremely high volumes.
- The platform can handle different services with different rules and business goals at once. Vinka is heading towards "total transport" where any on-demand can be run on its platform.

## CUSTOMERS AND REFERENCES

Vinka's customer base includes:

- Taxi dispatch companies
- Public authorities like cities, counties, health care regions etc.
- Logistics companies
- System providers seeking for adding new capabilities to their products.
- Vinka's platform orchestrates thousands of vehicles and millions of rides every year.

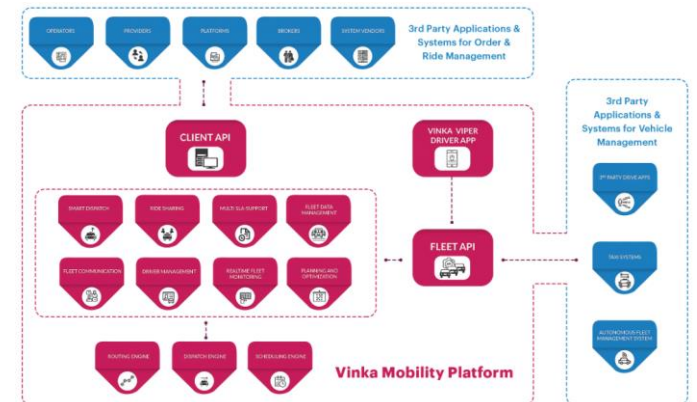
# VINKA

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# VTT Technical Research Centre of Finland

[www.vtt.fi](http://www.vtt.fi)

## ABOUT US

VTT is one of Europe's leading research institutions. We advance the utilisation and commercialisation of research and technology in commerce and society through scientific and technological means.

VTT offers Leading edge scientific and technical expertise in cross-sectoral solutions for rail-related city mobility through ecosystems and living labs.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

- VTT offers tools for societal, business and environmental impact assessments as well as business models, working practices and living lab tools for ecosystemic co-creation.
- Data-driven rail-related secure solutions for sustainable transport and mobility integrating other city transport and services.
- Digital solutions for simulations, energy efficiency, optimization and autonomous rail transport development enable sustainable mobility for cities on rails.
- Monitoring system development and implementation on in-service railway vehicle to fulfill different needs, such as measurements for structural health monitoring, ride comfort, lifetime prediction and tramway track condition monitoring.
- Sustainable ventilation and air filtration concepts for healthy and comfort indoor environment, including safety against airborne biocontamination.
- GoA3 & GoA4 assessment and development.

## COMPETITIVE ADVANTAGE

- Evidence-based decision support for cities to advance sustainable and user-focused mobility.
- Multidisciplinary development of more attractive, healthy and efficient travel experience for end users.
- Leading edge research on sustainable and resource efficient traffic system and safe pathway to autonomous systems.
- Ecosystemic co-creation to boost company RD&I for sustainable growth of business.
- Methods and technologies for real operation condition measurements to advance smart operation management.

## CUSTOMERS / REFERENCES

- Škoda Transtech Ltd: Structural monitoring of a tram for lifetime prediction, predictive maintenance, vibration behavior, tramway track condition monitoring and ride comfort.
- Tampere Tramway Ltd: Tram-based living lab environment.
- Metropolitan Area Transport Ltd: Variotram tram fatigue analysis and lifetime prediction, tram vibration behavior, tramway track condition monitoring. The benefit, cost, risk, and service level assessment of fully automated metro service.
- Länsimetro Ltd: Dynamic behavior of the metro in passengers ride comfort.
- VR Ltd: Several different failure and root cause surveys.
- Helsinki Regional Transport: Ventilation review on public transport vehicles. Survey of GoA3 & GoA4 potential.
- Lumikko Ltd: Filtration efficiency of an air conditioning unit.

The VTT logo consists of the letters 'VTT' in a bold, white, sans-serif font, centered within a solid orange square.

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<https://www.welado.fi/en/>

## ABOUT US

Welado is an independent construction management consultancy for demanding construction projects in all fields of the built environment; infrastructure, real estate, energy and industrial construction. We are a known project leader, developing operations and projects, both for our clients and our own project delivery and success.

We utilize the opportunities of digital and new technologies in our operations and implement best practices and work methodology to always meet with our customer promise and guideline to deliver an easy project.

## OFFERING FOR THE RAIL SOLUTIONS FROM FINLAND

For the Rail Solutions from Finland Welado offers

- Construction management
- Design management
- Supervision
- Project leadership
- Procurement
- Signalling systems and ERTMS
- Electrical expertise
- Safety and risk management
- Sustainability and environmental expertise
- BIM
- Measurement and verification
- Asset management

## COMPETITIVE ADVANTAGE

- Most extensive knowledge and market leader of infra construction management in Finland. 300 experts to support customer projects.
- Team based, agile, low to no hierarchic organization with unique internal LaaS-Services to share expert knowledge freely as well as other personal expert strengths (Leadership as a Service), this way we ensure customers have the expertise of all 300 people in every project
- Employee wellbeing is in the forefront of our strategy to ensure the best experts to all customer delivery projects
- Vision and thrive to shape a new kind of built environment ecosystem that achieves more and creates greater value by putting people first in everything
- Commitment is to change the Finnish construction industry in a softer and more empathetic direction and take this know-how to international markets for next level of opportunity creation

## CUSTOMERS AND REFERENCES

- Väylä
- Fintraffic
- Private railway owners
- Trafikverket (as STHK)
- Trafikförvaltningen (as STHK)
- SL(as STHK)

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