Testbeds and major transport and mobility projects in Finland

Testbeds: Experimental research and new product development platforms and environments.

Major R&D projects: Collaborative project examples, national/EU funding.

Image: Sohjoa


Image: Dimecc

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Why Finland

Finland is the most stable country in the world.

The Fund for Peace, Fragile States Index 2017

In Finland, business ethics are the second best in the world.

World Economic Forum (WEF), The Global Competitiveness Report 2017–2018: Corporate Ethics

Finland is one of Europe´s top innovation leaders.

EU Commission, European Innovation Scoreboard

Finland has Europe's strongest digital competence capital.

EU Commission, The Digital Economy and Society Index 2017: Suomi

Finland is the top OECD country in education.

OECD, Better Life Index: Education

Finland is the most water-rich country in the world.

University of Keele, Comparison

Hannes Becker/ Visit Finland

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LAND TESTBEDS

Image: Sohjoa

LAND for the future of mobility

In Finland, you will find a full set of testbeds for development of transport and mobility solutions. These open development and testing environments welcome innovative and ambitious partners.

Our testbed focus includes:

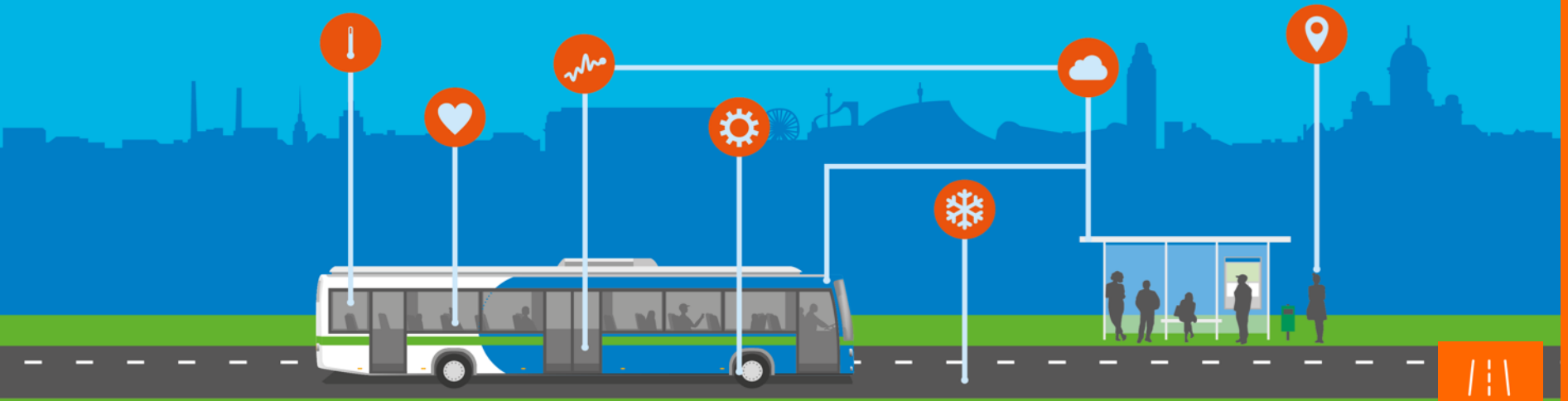
- Autonomous vehicles
- Electric Vehicles
- Mobility-as-a-Service
- Arctic testing
- Intelligent traffic infrastructure
- Connectivity, 5G, Open Data, Cloud Services, IoT

LAND

Electric Vehicles

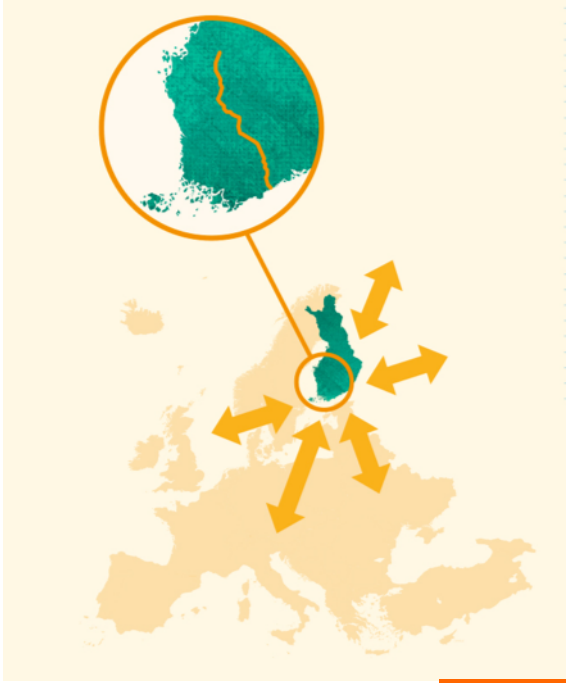
LIVING LAB BUS – OPEN INNOVATION AND TEST PLATFORM

- Innovative electric buses serve as a test platform in real use environment. Service and technology developers and providers are welcome to develop and test their solutions.
- Real context and references – co-development and business ecosystem.
- **Partners**: HSL, Helsinki, Tampere, Ajeco, EEE Innovations, Foreca, Linkker, PayiQ, Aalto, TUT, UTA, VTT
- **Contact**: raine.hautala@vtt.fi, www.livinglabbus.fi



GROWTH CORRIDOR FINLAND – TESTBED FOR MAAS, ITS

- **Growth Corridor Finland** provides an open data platform and testing environment for MaaS operators and ITS developers.
- The testbed covers the Helsinki – Tampere corridor, which connects the two largest cities in Finland.
- The objective of the Growth Corridor Finland is to create a transport service operator that combines all means of transport into a unified, demand driven transport application for 300 000 commuters.
- Organizations worldwide are invited to develop and pilot their services in this unique environment.
- **Partners**: 20 cities together with ministries, companies and regional authorities, ITS Finland
- **Contact** & **info**: Anne.Horila@hameenlinna.fi, suomenkasvukaytava.fi



MaaS, shared mobility and parking

VAMOS! PROJECT – VALUE ADDING MOBILITY SERVICES

- Value adding mobility solutions, shared mobility and parking services. Scenario: travel chain from Turku to Ylläs, combined with event services
- The pilots and ecosystem cover the full value chain: users, trip planning, mobile payments, mobility operators, parking services and events
- **Partners**: VTT (research), PayIQ (mobile ticketing and payment), BloxCar (peer-to-peer car sharing), Tuup (MaaS operator), Witrafi (intelligent parking), ApInf (API management platform), Reittikioski (trip planning), Eveman (event services)
- **Contact** & **info**: tuomo.k.kinnunen@vtt.fi

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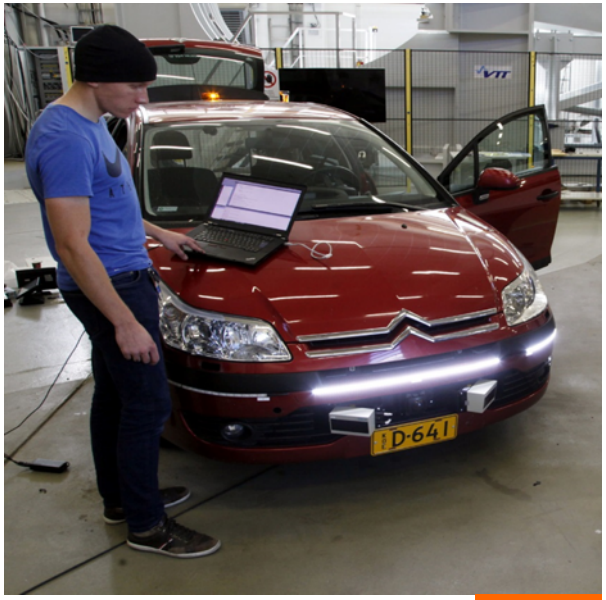
AURORA – TESTBED FOR AUTONOMOUS VEHICLES IN AND INTELLIGENT TRANSPORT ECOSYSTEM IN ARCTIC CONDITIONS

- **Aurora** project aims to create an Arctic intelligent transport test ecosystem. The ecosystem enables autonomous driving and intelligent transport testing in extreme winter conditions. The test environment includes both closed tracks and a highway test stretch among normal traffic.
- Aurora offers a broad selection of services for developers of digital transport infrastructure and connected transportation: intelligent infrastructure, asset management and data collection to enhance traffic management.
- **Partners**: Aurora network includes more than 60 partners from public and private sectors.
- **Contact**: Reija.Viinanen@liikennevirasto.fi, www.liikennevirasto.fi/web/en/e8-aurora

5G test site for autonomous vehicles

OULUZONE+ – 5G ENABLED CONSTRUCTION AND AUTONOMOUS VEHICLES

- **OuluZone+** plans to be the first 5G enabled test site for autonomous vehicles. OuluZone+ is currently building a 5G enabled construction site for autonomous heavy machinery.
- The site features eight different types of tracks, including an environment for testing autonomous vehicle handling in snowstorms and testing heavy truck tires on ice.
- OuluZone+ also offers an area for testing autonomous operation in a construction site, enabling infrastructure BIM development in a practical environment.
- **Partner organisations**: University of Oulu, VTT, Oulu University of Applied Sciences, Nokia Networks
- **Contact**: Rauno Heikkilä, rauno.heikkila@oulu.fi, www.ouluzone.com



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Testing for autonomous vehicles

KYMIRING – AUTONOMOUS VEHICLE TESTING

- Using the facilities of a highly rated race track, **KymiRing** is a closed test track for the automotive sector. The track provides safe and flexible facilities for testing autonomous vehicles.
- The KymiRing test site is currently developing artificial smart city infrastructure that can be utilized for autonomous driving tests in future smart city environments.
- The test track also enables testing components at high speeds.
- **Partners**: Kinno, Kouvola Innovation, KymiRing Oy, VTT
- **Contact**: www.kymiring.fi, Risto Wallin, KymiRing Oy, matti.kutila@vtt.fi

LAND

Arctic testing of autonomous vehicles, UAVs and connectivity

E75 STARGATE – ARCTIC DEVELOPMENT ENVIROMENT

- **E75 Stargate** provides a closed area for Arctic testing of autonomous vehicles, transport and connectivity North from the Arctic Circle.
- The testbed features a 5G test network and a wide set of sensors and tools, including intelligent driving conditions data from the Finnish Meteorological Service.
- The test site also utilizes the long runway of Sodankylä Airport, and also provides services for developers of Unmanned Aerial Vehicles. A closed area offer an unique possibility for joint operations of unmanned and manned aircraft.
- **Partners**: Sodankylä municipality, Tähtikunta Oy, Finnish Meteorological Institute, VTT, Arctic Geoinvest
- **Contact**: heikki.heinonen@sodankyla.fi, matti.kutila@vtt.fi

LAND

Mobility lab – autonomous vehicles, ITS, logistics

JÄTKÄSAARI SMART MOBILITY LAB

- **Jätkäsaari Smart Mobility Lab** is home to more than 10 ongoing mobility projects, including autonomous vehicles (self-driving busses, mail delivery with quadcopters), ITS solutions (FinEst Smart Mobility) and IoT projects (real-time mobility, air quality & noise data).
- It also boasts a mobility Living Lab that can support development projects with behavior insights.
- Located in a high-density, high-traffic residential area next to Europe's second largest passenger port.
- **Partners**: Forum Virium Helsinki
- **Contact**: Pekka.Koponen@forumvirium.fi, Sami.Sahala@forumvirium.fi

Test facilities in urban surroundings

TAMPERE URBAN AUTO TEST PROJECT – AUTOMATED DRIVING IN URBAN ENVIRONMENT

- **Tampere Urban Auto Test** provides an ecosystem for developing applications for connected and automated driving
- Test areas are used to test autonomous transport e.g. in intersections, tunnels and parking areas.
- Real traffic transport automation test facilities in urban surroundings. The improved digital transport infrastructure enables C-ITS based collaboration between vehicles and assessing feasibility of automated vehicle functions.
- **Contact**: Matti Kutila, matti.kutila@vtt.fi
- **Partners**: City of Tampere, Taipale Telematics, Unikie, Link Motion, SITO, InfoTripla, Linkker, Tieto, Tredea

Intelligent transport and traffic

ITS FACTORY – WHERE IT ALL COMES TOGETHER

- **ITS Factory** is a national innovation, experimentation and development environment for intelligent traffic and transport.
- The purpose of ITS Factory is to foster collaboration between private and public intelligent transport operators, and turn the Tampere region into a globally noteworthy intelligent transport testing area.
- Since 2006 ITS Factory has been networking organizations in the field of electric transport. ITS Factory is an innovation, experimentation, and development environment with research focus on transport data, that can be utilized e.g. in automatic driving and indoor positioning.
- **Partners**: more than 40 organizations and companies
- **Contact**: Mika Kulmala, mika.kulmala@tampere.fi, www.hermiagroup.fi/its-factory/

LAND

SOHJOA & NORDIC WAY PROJECTS – AUTOMATED VEHICLES

- **Sohjoa** project tests and pilots self-driving buses in real world use. Operation started in July 2016 in Helsinki and piloting has expanded to the cities of Espoo and Tampere as well.
- In addition to piloting, the project will create an open innovation platform that companies can utilize to develop new product and service ideas.
- Operation of automated vehicles in Finnish environment is tested as part of the NordicWay project. Sohjoa NordicWay project tackles the challenges of new traffic services and road transport automation.
- **Partners**: Metropolia, Aalto University, Forum Virium Helsinki, Finnish Geographical Institute, Tampere University of Technology.
- **Contact:** Oscar Nissin, oscar.nissin@metropolia.fi

ROBUSTA PROJECT – TRANSPORTATION AUTOMATION

- **Robusta** develops novel approaches to transportation automatisation. The project will test and study technologies that remove human drivers from buses and enable drivers to control multiple busses from a central room.
- Key objective of the project is to create a remote drive system that allows the use of semi-autonomous buses, and later other autonomous vehicles, in urban traffic conditions.
- **Consortium**: Metropolia, Demos, Nokia, Fleetonomy, Flou, Infotripla ja Nodeon.
- **Contact**: harri.Santamala@metropolia.fi, ossi.korhonen@demos.fi

DEVELOPMENT PROJECT PORTFOLIO 2017 – 2020

URBANAUTO TEST
- TEKES
- Control functions

Celtic-Plus *SARWS*
- CELTIC-TEKES
- AV functions

5G-SAFE
- TEKES
- 5G applications

Auto Drive
- EU-ECSEL
- Inertia unit

DENSE
- EU-ECSEL
- Radar & FPI

Robust SENSE
- EU-ECSEL
- LiDAR

TRANSFORMING TRANSPORT
- EU-ICT
- Big data

AUTOPILOT
- EU-IoT
- IoT-AV pilot

L3PILOT
- EU-ART02
- L3 function evaluation

TrustVehicle
- EU-ART04
- HMI

Contact: Matti Kutila, Tel. +358 40 820 8334, matti.kutila@vtt.fi

LAND

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AIR TESTBEDS

Image: Dimecc

Business in the AIR

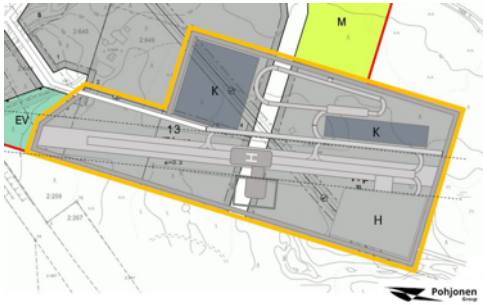
While unmanned aerial vehicles have become common scene in urban settings, there is an increasing need to ensure functionality, security, connectivity and safety of UAVs. Testing facilities across Finland combine technology, people and open approach for developing UAVs. Advanced trainings and consultation help in building new aerial business models.

With AIR Testbeds you may develop your devices and sensors, as well as management of data, to allow flexible use of airspace.

We are always open to new partnerships!

NUMBER 9 – UNMANNED AND MANNED AIRCRAFT TESTING

- **Number 9** provides all the facilities, including two airfields, equipment and know-how for unmanned aircraft research and testing in Karstula, northern Central Finland. Number 9 offers a unique possibility for joint operations of unmanned and manned aircraft.
- Number 9 is an ideal partner for those seeking to start their business with drones with the possibility to conduct test flights between two airfields, situated 30km from one other.
- **Partners**: Kehittämisyhtiö Karstulanseutu Oy, Pohjonen Group
- **Contact**: Teemu Pohjonen, teemu.pohjonen@pohjonengroup.com



AIR

UAS CENTRE FINLAND – TESTING FOR UAVS

- **UAS Centre** focuses on drone and unmanned testing and teaching. The centre provides full facilities for operating and testing unmanned vehicles and provides support and assist the commercial drone operators by organizing training, providing legal advice, arranging insurance etc.
- UAS Centre provides consultation in many areas of unmanned aviation. High experienced staff having wide view about general and commercial aviation is able to offer help in many crucial cases. Several years hands on work in aerial work covering instrument testing, remote sensing, installations design work and operational planning will give knowledge behind the scenes.
- **Contact**: Katja Kapanen, kka@uasfinland.eu

AIR

Image: Dimecc

SEA testbeds for autonomous shipping

Finland is a world leader in autonomous shipping and provides a wealth of opportunities for testing technology and services together with leading companies in the industry.

Our ecosystem activities are open to all companies and researchers who are developing solutions for intelligent fairways and autonomous shipping.

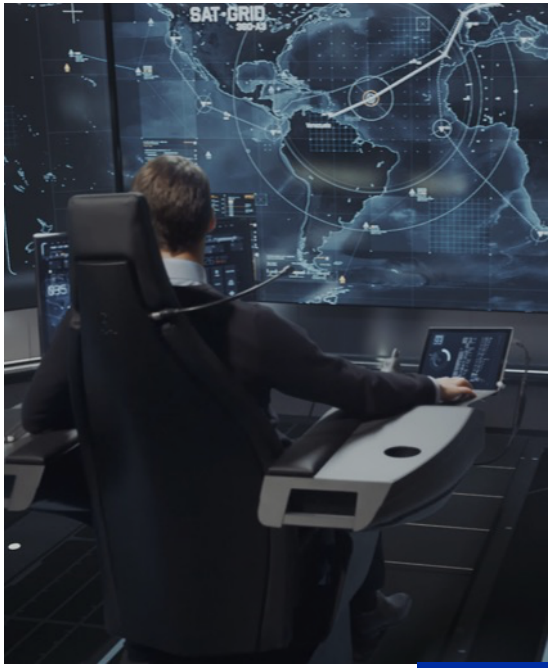
The ecosystem offers opportunities for developing, proofing and piloting digital services as well as testing of remote controlled unmanned vessels.

DIMECC – ONE SEA: AUTONOMOUS MARITIME ECOSYSTEM

- **The One Sea** – Autonomous Maritime Ecosystem is a co-creation ecosystem that combines digitalization, internet, materials and engineering. The objective of The One Sea is to lead digitalization of marine industry and to create the world's first autonomous maritime ecosystem to the Baltic Sea by 2025, including technology for autonomous vessels and digital infrastructure for remote operation.
- DIMECC is already building its first test site at Rauma Finland. Fully remote controlled vessels are expected to operate by 2020.
- DIMECC is now looking early adopters to partner with, who wish to get full benefits of the digital revolution.
- **Partners**: ABB, Cargotec, Ericsson, Meyer Turku, Rolls-Royce, Tieto and Wärtsilä.
- **Contact**: Päivi Haikkola, paivi.haikkola@dimecc.com, www.dimecc.com

INTELLIGENT FAIRWAYS

- **Intelligent fairways** are able to inform mariners about the prevailing conditions and vessel movements in the fairway. For example, up-to-date weather reports, water level data and a model of the seabed will be transmitted directly to the bridge systems of vessels.
- The tests will include testing and piloting of the digital services and real-time situational pictures in both the vessel's own systems and in the systems used by the Vessel Traffic Services.
- **Partners**: Rolls-Royce, ABB, Finnish Transport Agency
- **Contact**: Jouni Patrakka, Finnish Transport Agency, jouni.patrakka@liikennevirasto.fi



SEA

More information

Testing zones in Finland:
www.trafficlab.fi/testing_zones#/0

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