



The innovation, testing and
development environment for
intelligent transport



A test environment the size of a city

Tampere is one of the leading cities in Europe in terms of the development of intelligent transport services.

With regard to the number of inhabitants, the city is of a suitable size for the testing of transport products and services whilst being sufficiently compact for agile and flexible decision-making and functional cooperation between the public and private sectors.

ITS Factory, an active innovation, testing and development envi-

ronment for intelligent transport, operates in Tampere. At ITS Factory, the actors in the field cooperate to find solutions for intelligent transport and develop new business. Their goal is to produce business-oriented solutions to enable fluent, sustainable and safe transport.

The network has been active since 2006, but the community started under name ITS Factory in 2012. Together with the city council, the members of ITS Factory – companies that offer intelligent traffic products and services as well as colleges and research institutes – invest in the creation of new transport services.

”The strong local community has networked at a national and international level.

NETWORK

- about 40 members
- companies, research institutes, other organisations

DIGITIZED TRANSPORT SYSTEM

- public transport
- tramline, tunnel
- R&D projects

TEST AREA

- transport network
- indoor positioning
- automatic driving

TRANSPORT DATA

- open and commercial data

ROADMAP



A real-time snapshot is created using open data

When does the bus arrive at the bus stop? Is the cycle path clear of snow? Where is the closest charging point for an electric vehicle? Is the access route crowded? How do I avoid the scene of an accident?

The real-time transport snapshot is increasingly created using follow-up data from both public and private sources. Creating a comprehensive real-time snapshot requires cooperation that exceeds the operating limits. Several projects and pilots related to status and condition information on the transport network are underway in Tampere.

The city council distributes a variety of transport information to developers and authorities and operates actively in opening public data materials. The city council is developing a distribution por-

tal of open data, continuously providing new data for use by the product and service developers.

For example, status information on car parks and real-time data on buses has been published lately. Status information from traffic lights and queue data from sensors in traffic lights at crossroads are the latest additions. Several cycle and pedestrian traffic counting points are also positioned in Tampere.

Vitality from innovative procurements

The City of Tampere also supports the development of intelligent transport through innovative procurements. The purpose is to develop interaction between the companies in this field and the service users and the city council in the planning and development of procurements. This creates new services and solutions which the companies can use as references. The vitality of the area grows and new business opportunities in the field of intelligent transport are created.



”The goal is to create a visual, illustrative and comprehensive picture on the prevailing transport situation.



Boosting electric transportations

The number of electric vehicles is growing. The first electric buses will be introduced in Tampere for gathering user experiences for future procurements.

Finland is among the leading countries in the world in terms of the number of electric buses on its streets, likewise for expertise related to the payment and identification systems of vehicle

” Did you know that with their eTruck project, Tampere is also at the cutting edge of research on the usability of electric goods transport?”

The action plan for electric transport in Tampere:

- Development of charging points
- Introduction of electric buses
- Electric cars to be used by the city council staff
- Promoting the use of electric bicycles
- Free fixed-time parking and charging of low-emission vehicles
- Charging of electric vehicles is taken into account in the building practice code of new development areas

charging devices. The first public electric vehicle charging points in the street network are under construction in Tampere. The aim of developing the charging points is to reduce the threshold for the use of electric vehicles. The goal is to create a sustainable and comfortable city environment.

The electrification of transport will be permanently linked to the future trip chains in this region. Trams could be used to travel to the transport hubs and, from there, trips could proceed in an electric vehicle, such as a bicycle, a car or a robot bus. The electrically operated robot buses could improve serviceability, profitability and friendliness to the environment on some quieter routes and during quieter periods. Electric cars intended for joint use are becoming more and more common.



photo: Finnpark



Gathering know-how on automatic driving



The development of the technology and transport service concepts as well as the evaluation and testing of their effects are involved in automatic driving. After a change in legislation, automatic driving can now be piloted in transport in the most advanced way in the world in Finland, and our researchers are among Europe's best in terms of observation of the environment and artificial intelligence of the vehicle. The difficult weather conditions bring their own challenges to the development work. Tampere is a suitable test area for the development of automatic driving, as bus data can be displayed on a map. Moreover, we have an intelligent traffic light system, intelligent streetlights and lots of sensor expertise, among other things.

Robot minibuses have entered the cityscape in Helsinki, Espoo and Tampere to help in the search for new solutions to the challenges of city transport. The goal of the SOHJOA project is to find the best targets of application for automatic buses in the near future regarding the fluency, safety and user experience of passengers in city traffic. Tampere studies the adaptation of robot buses to the transport system and the possibilities that they offer to feeder traffic.

The automation of passenger cars in city traffic is also under investigation in the Tampere region. In addition to the functionalities and situational awareness of the automatic vehicles, the tools and methods that make testing easier, such as wireless communication between vehicles and observation of the environment, are being developed in the region.

Autonomous movement creates a real opportunity for companies to develop new product and service ideas. The requirements are related to the optimisation of parking areas for robot vehicles and for services related to updates to and quality of map data, for example.

Knowledge of the test area

A test area for automatic driving has been established in Tampere, where the robot vehicles can drive in real traffic. The purpose is to find out how an automatic passenger car operates at intersections with traffic lights, and in car parks and tunnels, for example. The route includes both city and highway sections.

At first, the communication between the vehicles and the infrastructure, as well as map services, are developed in the test area of three autonomous vehicles. The goal is to create real services and autonomous vehicle functions for end users. Several different projects are underway, all related to the test area, such as UrbanAutoTest which is coordinated by VTT Technical Research Centre of Finland Ltd and where the members of ITS Factory are involved.

”Finnish legislation provides a true international competitive advantage for the developers of the transport automation.



Indoor positioning in the urban city environment

In Tampere, the intelligent test area includes more than just streets and roads – we also develop indoor positioning.

Using indoor positioning, one can move from one place to another within a city, such as from a parking garage or inside a railway station to one's seat in a concert hall, paying a visit to the services offered along the way. The indoor positioning can help to find various services and, in the future, may enable the automatic parking of vehicles, for example.

Digital indoor maps can be easily used to navigate within the urban environment in places with large streams of people, such as parking garages, shopping centres or railway stations.

ITS Factory is involved in a project that examines and develops business opportunities and technological solutions to indoor positioning. Tampere is seeking new business and innovative consumer products by seamlessly combining outdoor and indoor positioning.

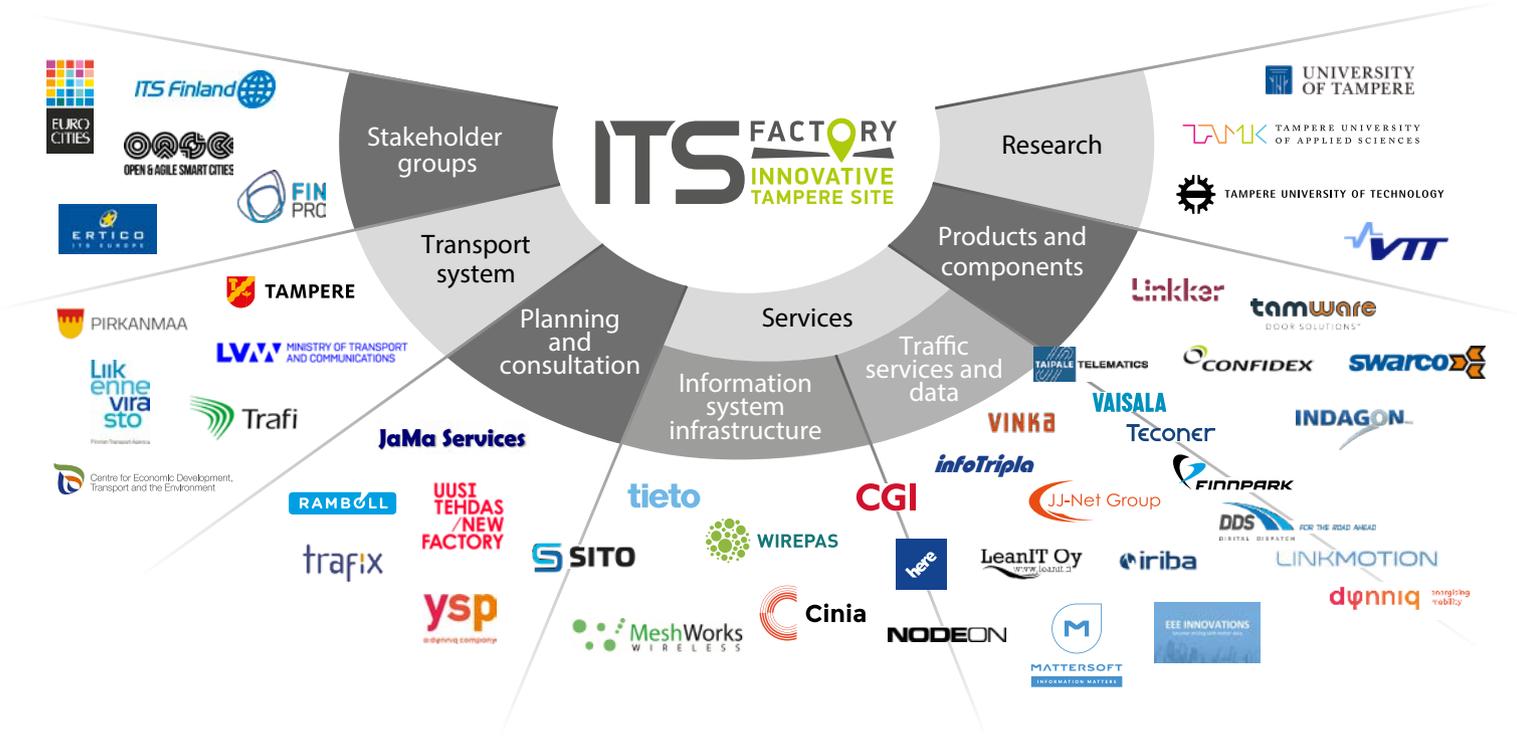
”P-Hämppi is a modern parking garage below the main street of Tampere, which provides a testbed for indoor positioning.



photo: Finnpark



ITS Factory's network





automatic driving

electric
transport

indoor positioning

community of
developers

snapshot

innovative
procurements

test area

open data

photo: Juha Suhonen



ITS **FACTORY**
INNOVATIVE
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