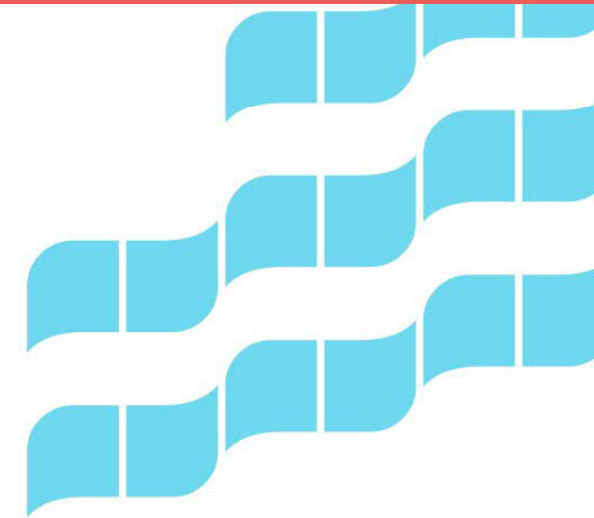# Moving Smartly Towards Sustainable Mobility in the Cities - Tampere

ITS Estonia & ITS Finland

30.3.2023

Mika Kulmala, Project Manager

City of Tampere
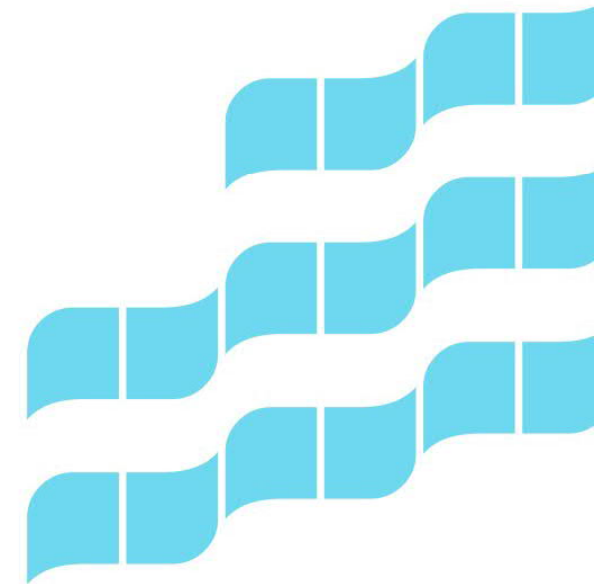
Background – Strategy level

City development projects

Automated vehicles

C-ITS

Traffic data

Traffic lights

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FINLAND

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Tampere Mayor´s Programme

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Mayor´s Programme: The goal is a sustainable, intelligent and comprehensive transport system.

- "A transport system to city centre area will cover all modes of transport and which will utilize digitalization and smart mobility solutions."

- "Smart Mobility possibilities take into account, for example demand-responsive transport and autonomous buses."

- "Our goal is to create an internationally attractive Smart City platform in the City of Tampere."

- "Smart city development in City of Tampere should be done and contribute to the building of the region's knowledge centers and business ecosystems. The urban environment can also be used more as an experiment platform, where new digital solutions are tested and developed in a cost-effective way with different operators."
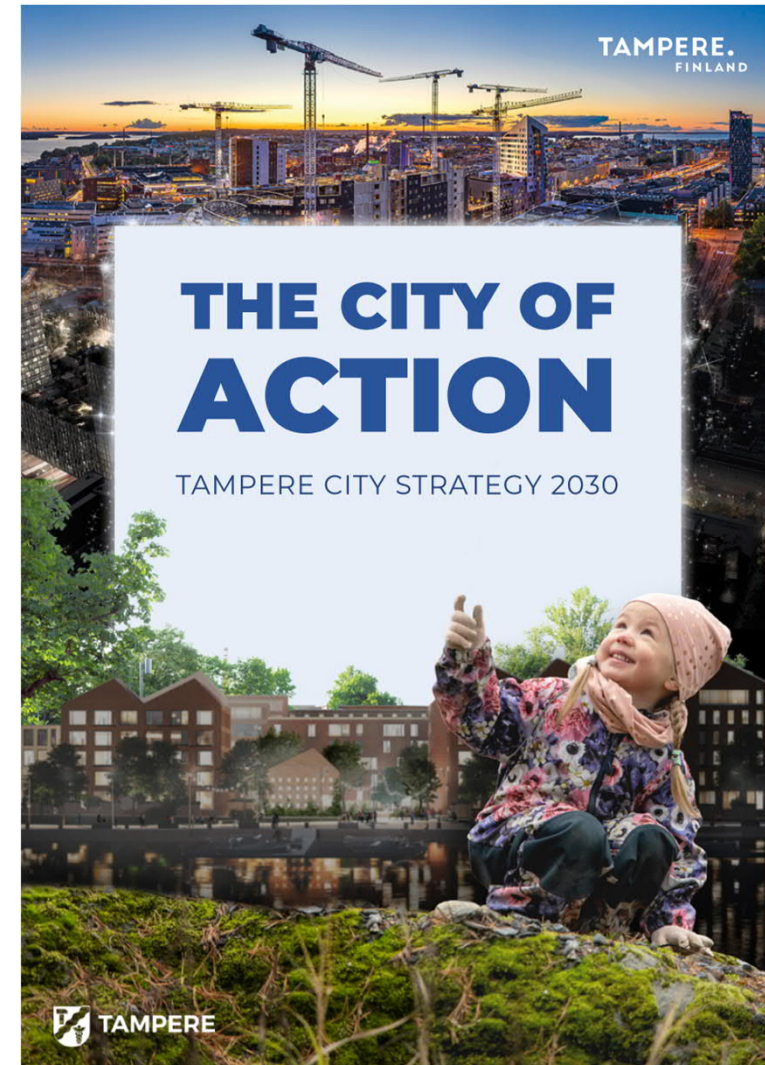

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IHMISTEN TAMPERE -
MAHDOLLISUUKSIEN
KAUPUNKI

Anna-Kaisa Ikosen pormestariohjelma vuosille 2021-2025

TAMPERE
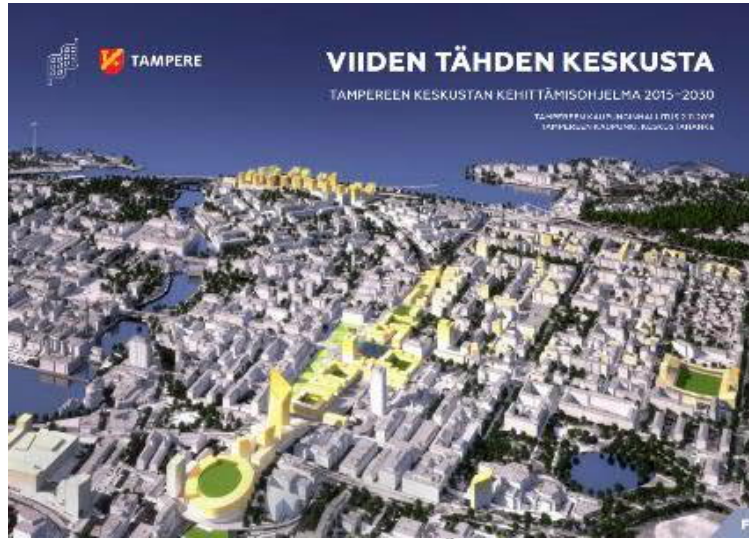
Tampere City Strategy 2030

Tampere City Strategy 2030:

- "We are moving towards a sustainable, smart and diverse transport system. We enable sustainable and smooth mobility."

- "We strengthen the smoothness of everyday life by providing high-quality and accessible services. Our actions aim to reduce the need for unnecessary transport for our residents."

THE CITY OF ACTION
TAMPERE CITY STRATEGY 2030

HIEDANRANTA
ÄLYKÄS JA KESTÄVÄ
TULEVAISUUDEN KAUPUNGINOSA

TAMPERE
VIIDEN TÄHDEN KESKUSTA
TAMPEREEN KESKUSTAN KEHITTÄMISOHJELMA 2015–2030

SARKANNIEMI

Hakametsä Sport Campus

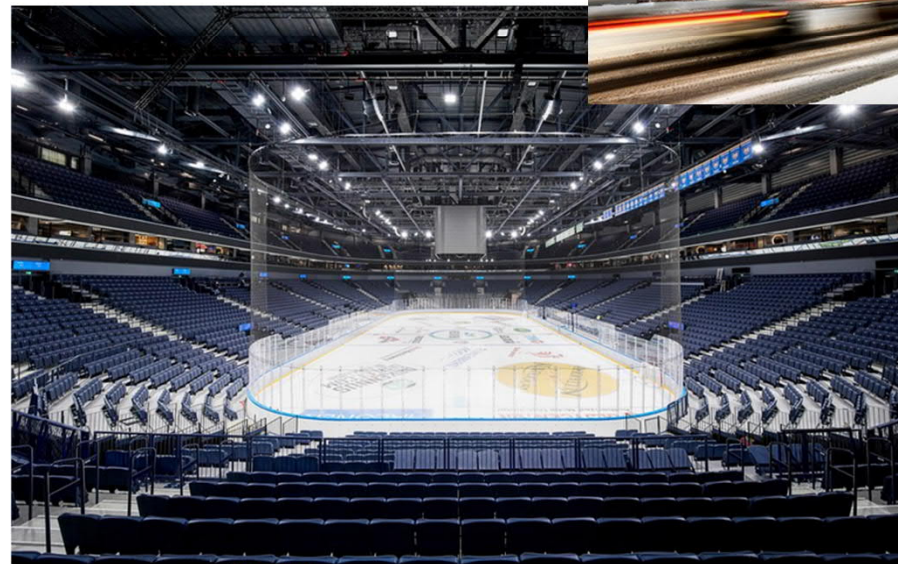# City Development – Five-Star City Centre

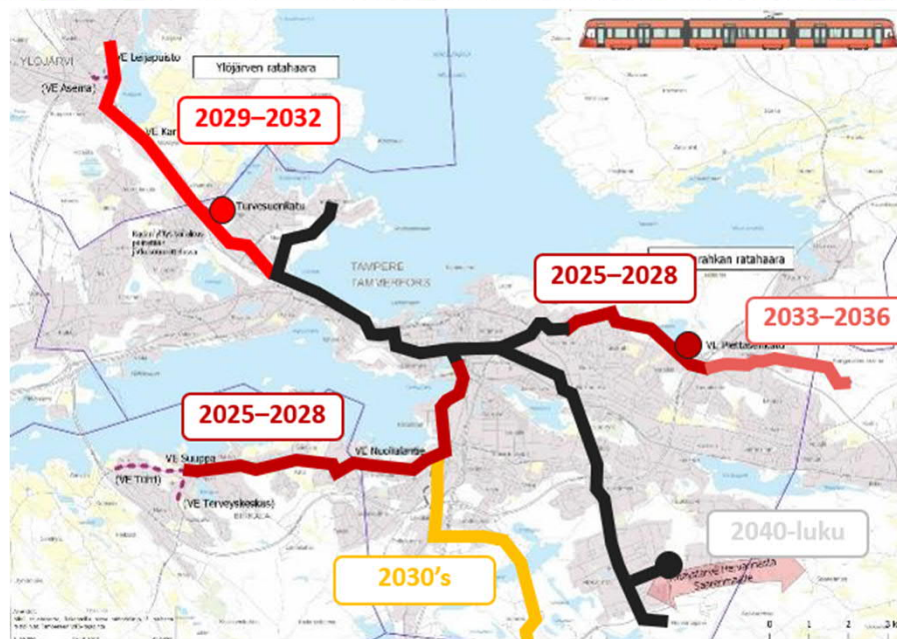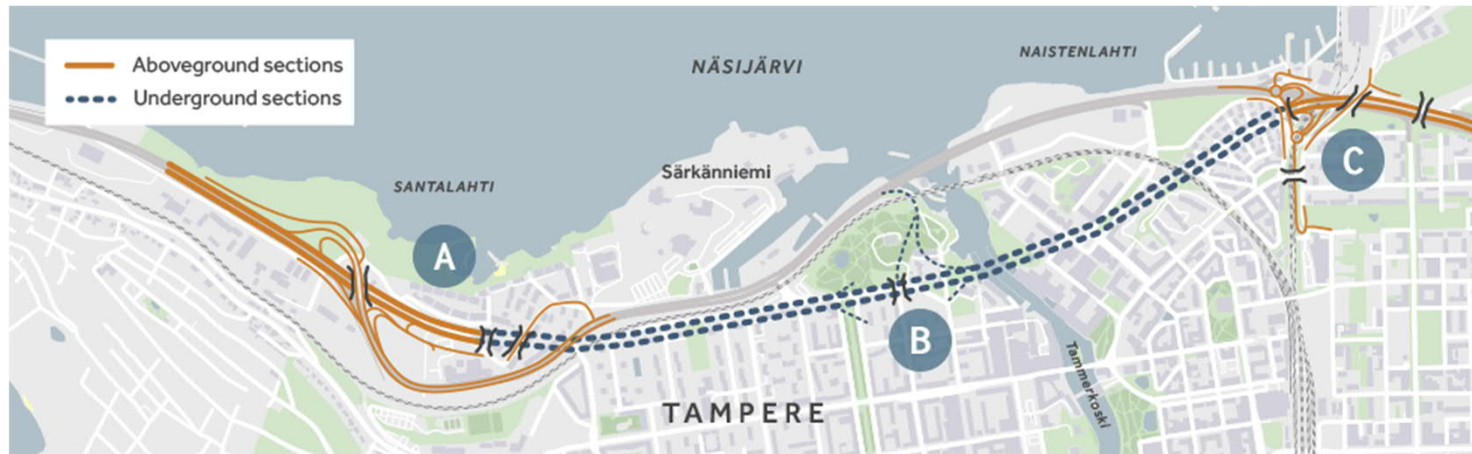# City Development – Nokia Arena
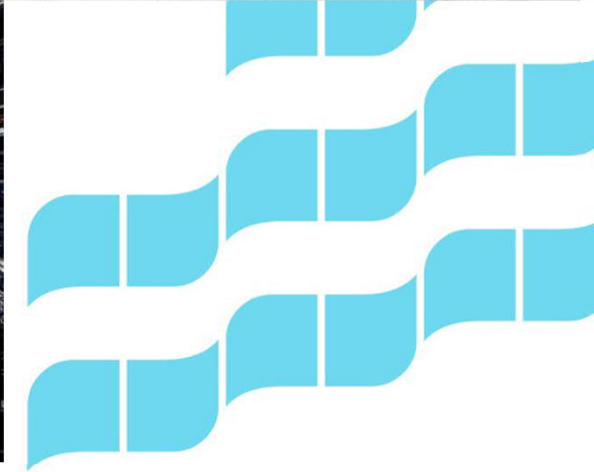
City Development – Traffic Infra, City Tunnel & Tram
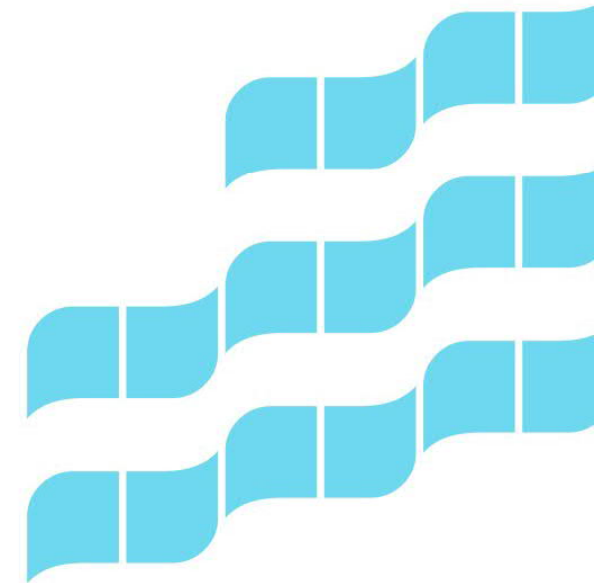
City Development - Tram

Tampere Urban Rail Mobility Services Smart Tram - TURMS & LYYLI

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- TURMS is an open development environment involving different interest groups

- Unique piloting platform for tram technology and digitalized services related to the tram environment

- LYYLI Living Lab is based on a real operative Tram operating environment

Tampere Urban Mobility 2.0 Innovation Cluster
Players and roles

LIVING LAB TAMPERE
Welcome to Developer Portal

Living Lab Operation
Living Lab Methodology
Living Lab Co-creation tools
Living Lab ICT
Real-life environment

Extra Tech Inside

LYYLI LIVING LAB

YES
09:15:00
156920
TAYS
0902

34 °C   35 °C   22.6 °C
3.01 v

GPS Speed
35.4 km/h

Mobility Plans for City of Tampere

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- **Carbon Neutral Tampere 2030 roadmap**
  - 101 Sustainable mobility actions
  - (https://www.tampere.fi/sites/default/files/2022-06/Carbon_Neutral_Tampere_2030_Roadmap.pdf)

- **Data Driven City for Citizens –development programme**

- **SUMP – Sustainable Urban Mobility Plan**
  - (https://www.tampere.fi/sites/default/files/2022-05/SUMP_taitto2021_englanti.p%C3%A4ivitetty.pdf)

Tampere (Finland) – winner of the 10th Award for Sustainable Urban Mobility Planning (SUMP)

Tampere's Sustainable Urban Mobility Plan stood out to the jury due to its multidisciplinary approach that empowers people to make healthier mobility choices that are active, safe and environmentally responsible. The ambitious plan includes impact assessments on the effect of mobility campaigns on the local population, as well as a focus on low-carbon mobility, road safety, vulnerable groups, smart mobility solutions, physical and mental well-being, accessibility and low pollution levels. Together with its educational unit, the mobility unit of the City of Tampere is already testing various pilot actions like active school trips by bicycle, on foot or by scooter, zebra crossing campaigns, and also highlighting the fundamental role of mobility in the creation of quality urban spaces.

The other finalists are Madrid (Spain) and Mitrovica South (Kosovo*).

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CARBON NEUTRAL TAMPERE 2030 ROADMAP
Tampere City Board 31 August 2020.

2. Sustainable mobility Benefit target 2030: The modal share of sustainable modes of transport will be 69%.	
2.1. Tram transport	2.6. Road transport
2.2. Local train transport	2.7. Transport equipment and work machines
2.3. Bus transport	2.8. New mobility services
2.4. Level of service in public transport	2.9. Mobility management
2.5. Pedestrian and bicycle traffic	

SUSTAINABLE URBAN MOBILITY PLAN SUMP
City of Tampere
Approved by the City Board on 3 May 2021

Equal

Equal mobility
Successful urban planning strengthens equity and narrows well-being differences between residents and districts. An equal transport system is reasonably priced, safe and reliable.

Tampere wants to offer mobility opportunities for all regardless of age, residential area, gender, situation in life, income level or mobility limitations. Making this a reality requires more diverse impact assessments and the knowhow to identify solutions that decrease engagement. Everyone's right to move without fear and discrimination is part of a safe and equal traffic environment.

Sustainable modes of transport increase equality
In an urban environment, walking is the most equal mode of transport that is suitable for people of all ages despite their income level. Affordable and easy-to-use public transport enables daily journeys without a car and driver's licence. You don't have to be over eighteen to drive a bicycle, but you have to have a bike, skills and functional ability.

Equality of mobility

| SUPPLY: A suitable mode of transport option is available. | ACCESSIBILITY: Important services and destinations can be reached with different modes of transport. | AFFORDABILITY: Mobility is reasonably priced. | TIME: The journey can be covered in a reasonable amount of time. | SUITABILITY: The mobility environment is safe, accessible and pleasant. |

Tampere ITS Strategy

- Tampere ITS strategy 2018-2022
  - Actions:
    - Tramway - traffic, information, traffic services
    - Digitilization - MaaS - law on transport services
      - the new payment and information system for public transport
      - opening up and sharing publicly subsidized transport
    - Automated transport
      - automated public transport, feeder traffic
      - implementation of level 4 automated traffic area
    - National growth program for the transport sector 2018 – 2022
      - cities as a platform for pioneer markets, implementation of actions
    - Application process for the ITS Europe congress in Tampere for 2022 or 2023
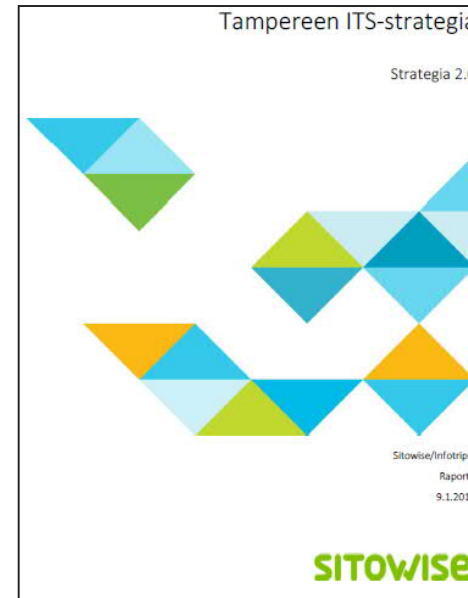
- ITS Factory's strategy was made at the same time

- A new Tampere ITS strategy and ITS Factory strategy is currently being developed
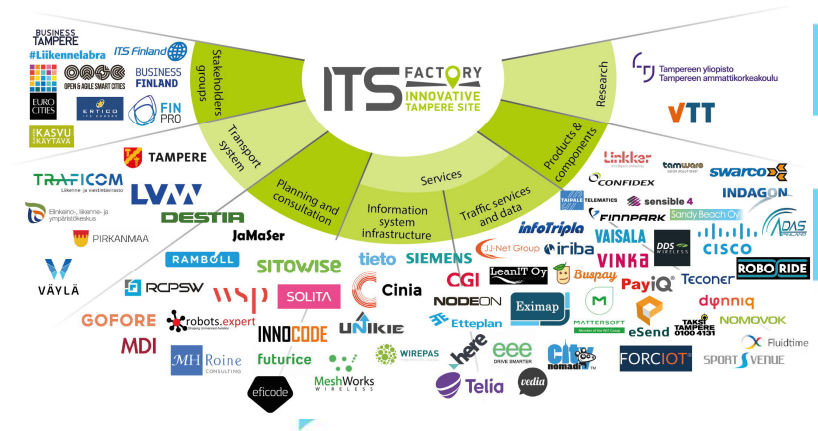
Tampere Towards Automated Traffic

- In 2014, a local council initiative to include Tampere as an experimental area for robot cars

- Three-phase Tampere automated traffic pilot and deployment plan 2016-2017

- How to test and how to introduce commercial use - "automated traffic, potential and impacts in Tampere"
  - Tampere automated traffic pilot plan
  - Report on how Tampere is going to progress towards automated traffic commercial use

Tampere Towards Automated Traffic

- Tampere automatic transport implementation plan
  - o Transportation to Särkänniemi
  - o Automated buses between the City Center and Tampere Exhipition and Sport Centre
  - o TAYS internal service traffic
  - o Automated feeder traffic to tram system in Hervanta
  - o Automated machines
- Discussions with Ministry to enable level 4 automated traffic in an urban environment

TAMPEREEN KAUPUNKI   RAMBOLL   VTT

Tampereen automaattiliikenteen käyttöönottosuunnitelma

1.4.2017
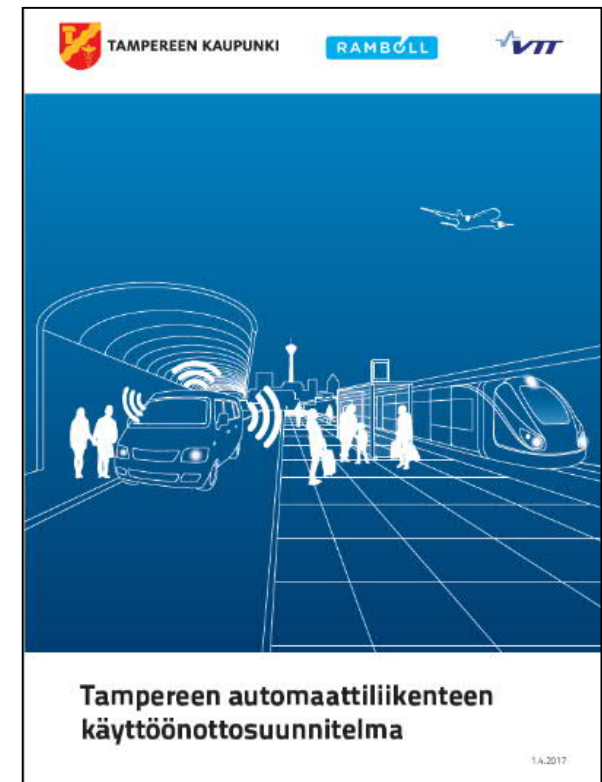
TAMPERE

Tampere Towards Automated Traffic

- SOHJOA-project
  - Hernesaari (Helsinki) – Otaniemi (Espoo) – Hervanta (Tampere) 2016 – 2018

- Hiedanranta
  - Pilot in Hiedanranta area 2020
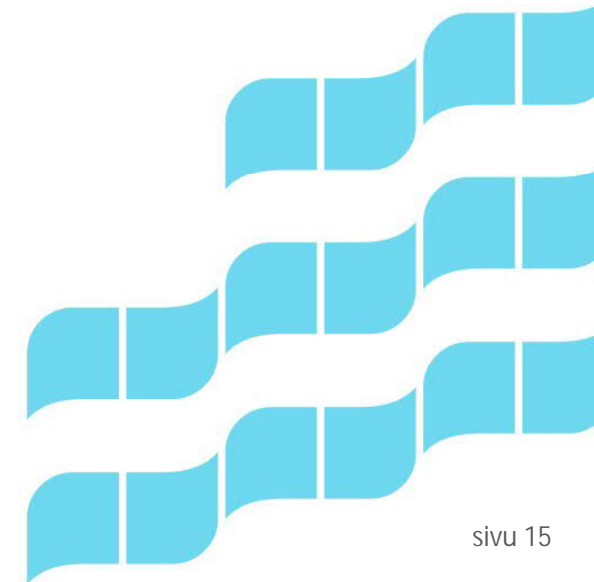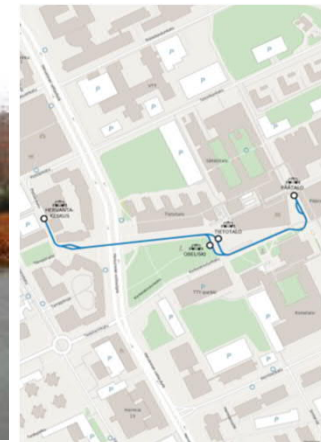
Tampere Towards Automated Traffic

- EU-funded SHOW project (Shared automation operation models for worldwide adoption) 2020-2023

- The goal is to move towards the commercial use of automated transport

- 69 parties, from 13 countries. Budget €36 million with EU funding of €30 million

- In the Tampere consortium, Sitowise, VTT, Sensible4, Remoted and the City of Tampere.

- Tampere's goal is the phased introduction of automatic traffic. In the project, Tampere will provide feeder traffic to a tram stop in the Hervanta area.

- In the same project with many automated transport developers in Europe, both cities, manufacturers and operators of automatic vehicles

Demo Sites

70 Automated Vehicles
Robotaxis, buses, and shuttles for persons & goods

Tampere Towards Automated Traffic

- The first Tampere pilot of the SHOW project was run 1-3/2022 with two Toyota Proace vehicles

- Circular route of 3,5 km on public streets with 9 stops, at 10 minutes intervals between 8:30 – 15:30 on weekdays

- The vehicles drove autonomously, the safety drivers took control only if needed

- The Tampere pilot's special challenge was winter conditions, snow, ice and frost. Route was partly on the tram route.

- No 5G connection was used in the pilot, the vehicles still had 4G/LTE modems

Tampere Towards Automated Traffic

Tampere Towards Automated Traffic

- Current phase
  - 3 AuveTech ISEAUTO shuttles and 1 Easymile EZ10 gen3 shuttle providing feeder services to tram in Hervanta and Lintuhytti
  - Two routes 1,5 km and 3,5 km
  - Fixed routes and stops
  - The service is included in the Tampere PT Journey Planner
  - This phase piloting started in January 2023 and is on-going
  - Autonomous mode average in Hervanta route (w 11-12) 98 %
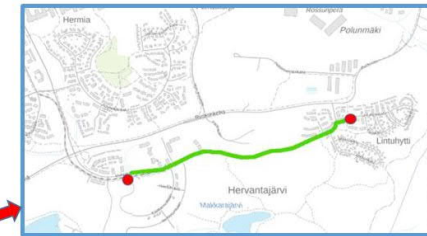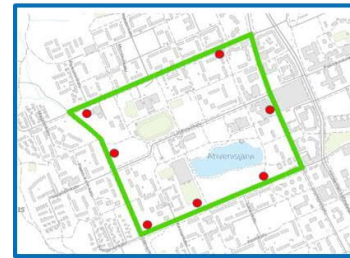
Tampere Towards Automated Traffic TAMPERE. FINLAND

- Remote control of automated traffic

- 1.10.2021-31.5.2023

- Goal: An important part of public transport will be autonomic traffic and autonomous vehicles, which will act as a feeder traffic service. That service will need a control center for remote monitoring and control which will be implemented in this project.

- Three vehicles, remote control center and testing the operation of vehicles with remote control
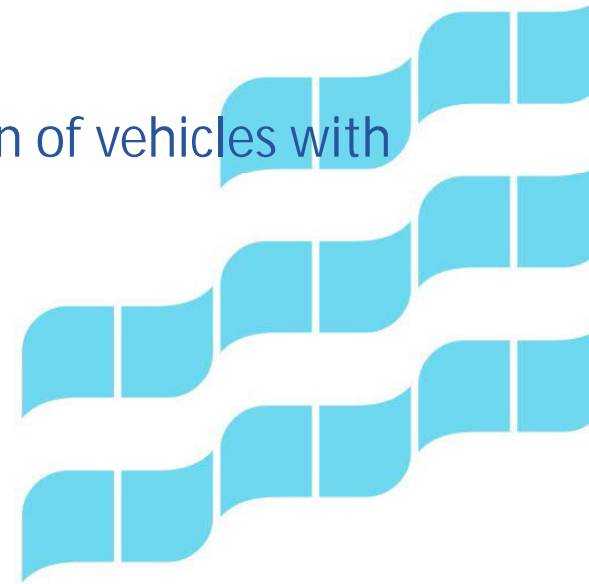
TAMPERE

Tampere Towards Automated Traffic 9/9

- Projects supporting the development of automatic transport
  - Level 4 automated vehicles - a plan to define the test environment
    - 47 development activities, divided into eight categories
    - Hervanta 5G network area
  - Level 4 automatic traffic development
    - development of the test area
    - digital twin
  - National background study: Effects of automated traffic on the roles, functions and costs of road authorities
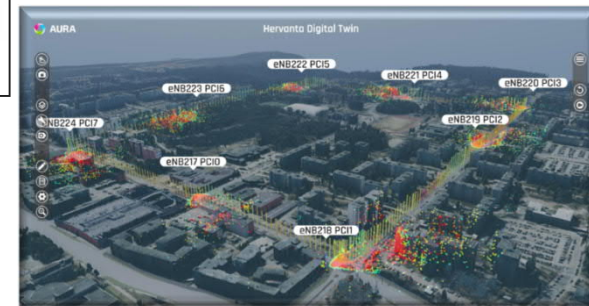
C-ITS

- C-ITS plans and pilots
- The development of C-ITS services is seen as necessary
  - o new services to increase traffic safety and information
  - o in order to enable the autonomous transport system (CCAM - Cooperative, Connected and Automated Mobility) in the future
- Nordicway 3 –project
- Collecting traffic light data
  - o Standard C-ROADS (ETSI and ISO) modes and interfaces, SPATem & MAPem
  - o T-LEX cloud service
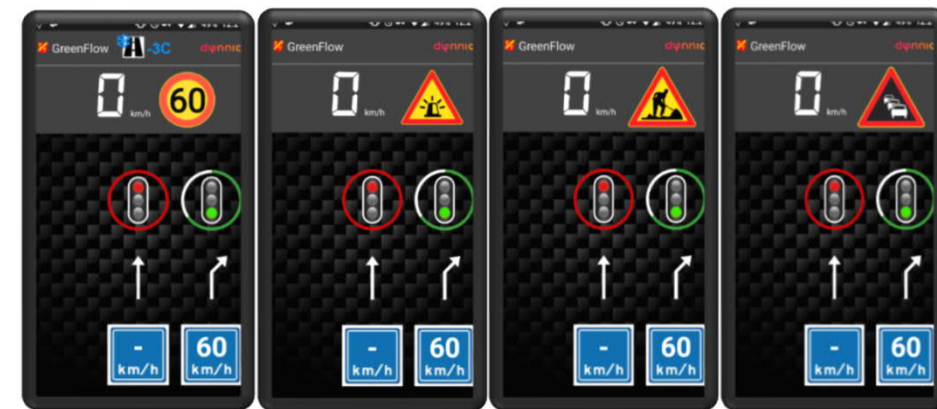
Traffic light data: 3 alternatives

TAMPERE
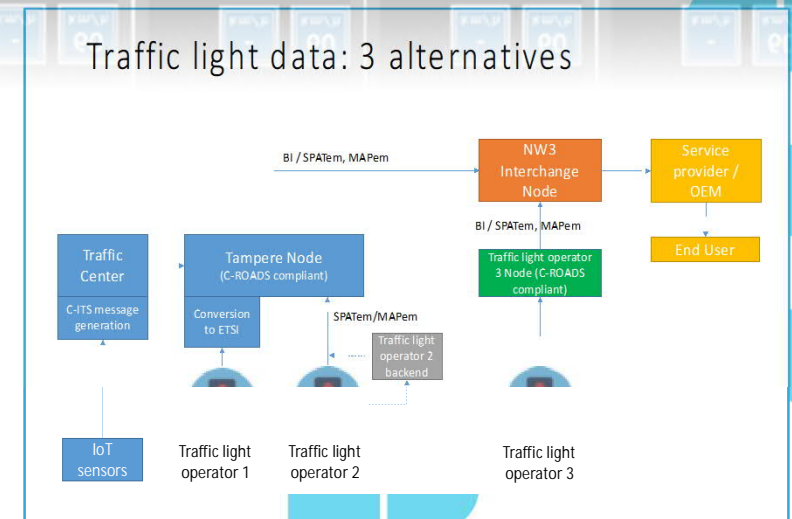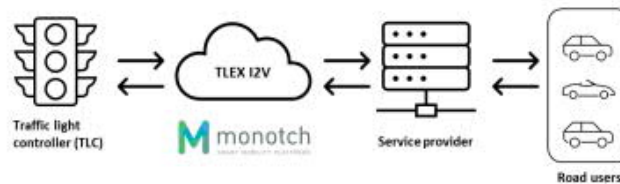
Trafficdata

- The city's own systems have been opened, mainly in standard format, data catalogs (https://data.tampere.fi/fi/)

- Real-time data widely used, e.g. public transport data, traffic light data

- Data library ITS Factory wiki (http://wiki.itsfactory.fi)

- The IoT platform supports city decision makers and improves the resident experience

Trafficdata _{2/3}

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FINLAND

- Data sources of the real-time situation
  - real-time data from traffic lights
    - detectors, signal groups...
  - real-time public transport data
    - real-time location and forecast
    - priorities at traffic lights
  - Measurement points, camera feed analysis
    - pedestrians, cyclists, escooters
    - traffic jams
  - FCD
  - road works
  - parking information
  - tunnel data
  - weather, air quality
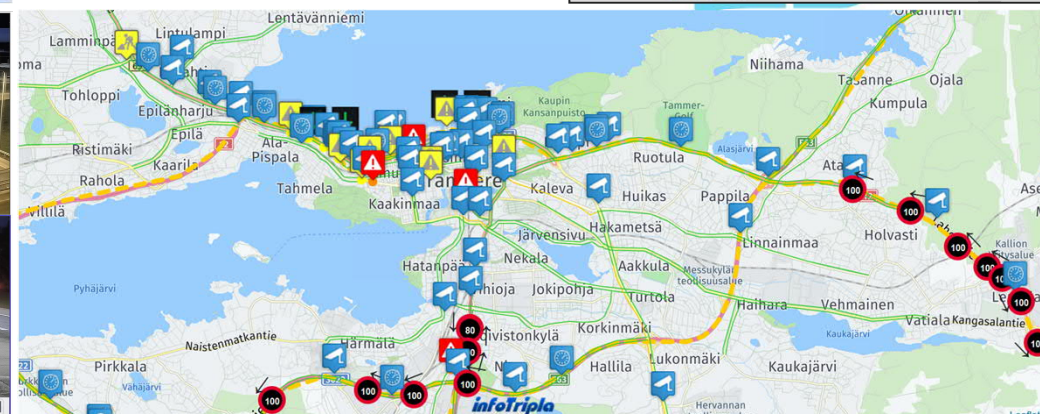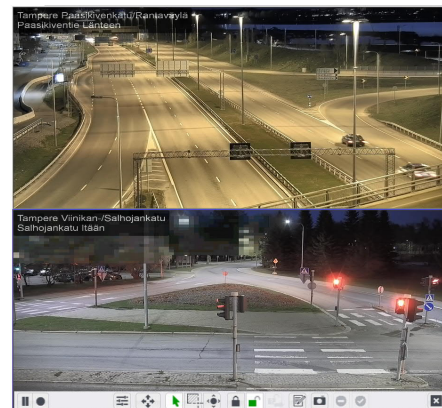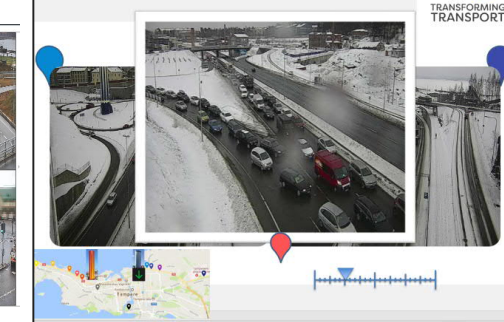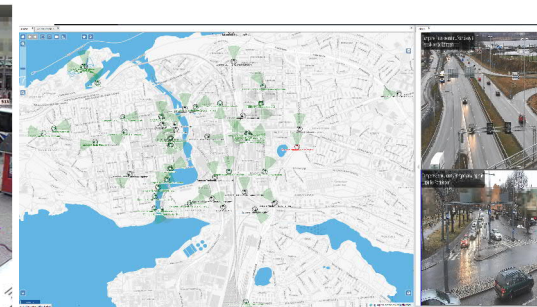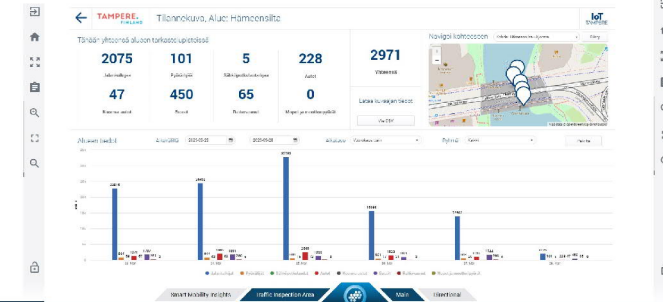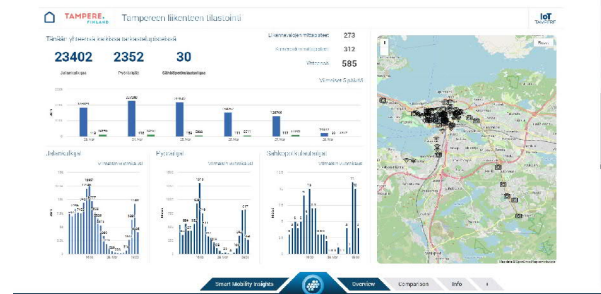
- Tampereenliikenne.fi

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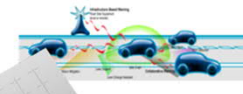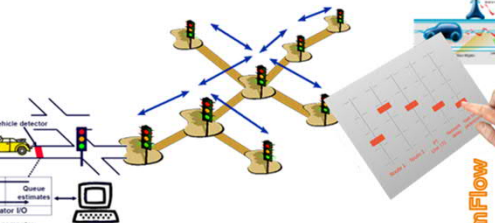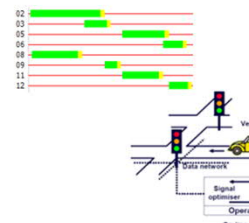# Trafficdata

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- Operating based on real-time data
  - o traffic lights, operating, service level, priorities
  - o real-time parking guidance system
  - o variable guidance system
  - o traffic information system
  - o statistical systems, real time and historical data
  - o disturbance notification tool
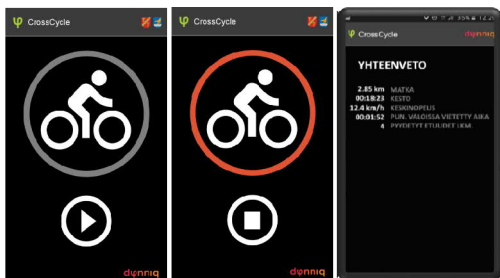 - o automated social media messages

TAMPERE
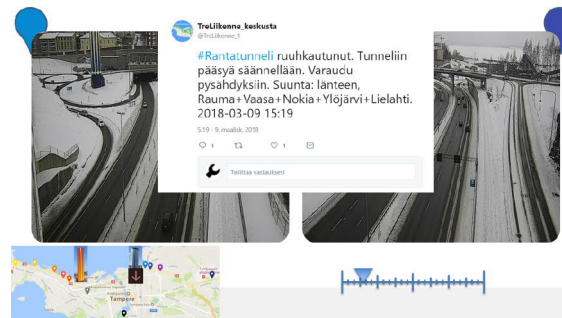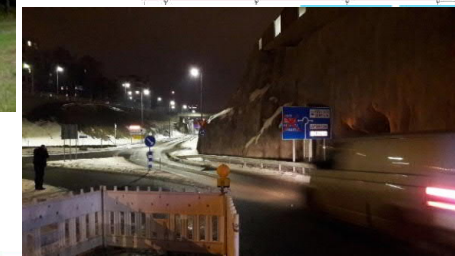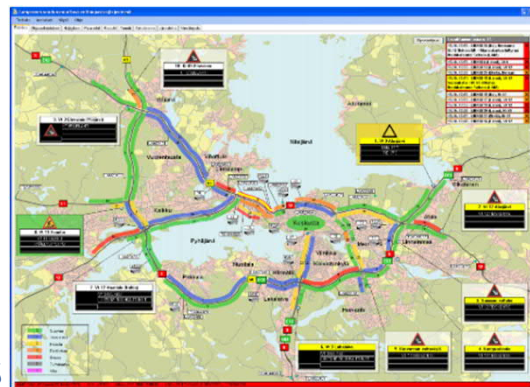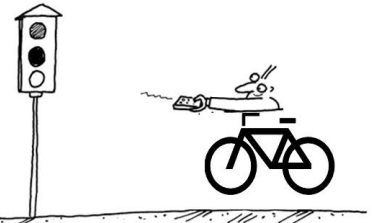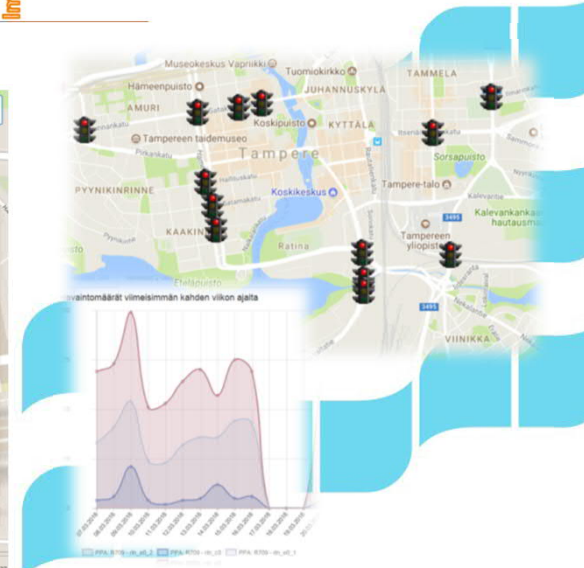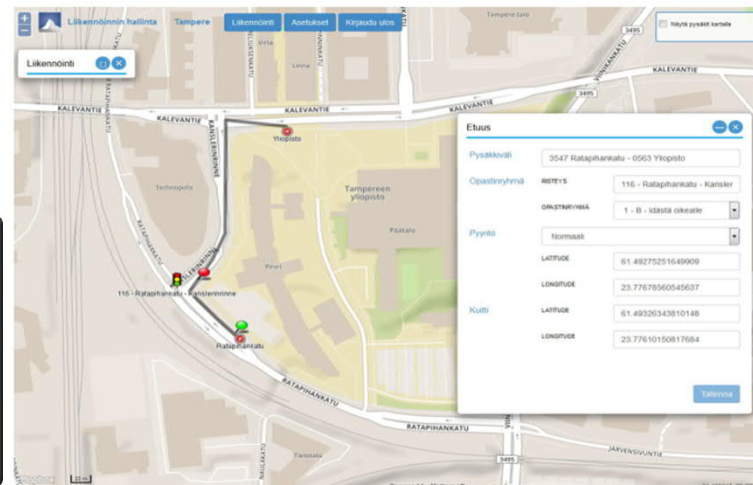
Traffic Lights

- Priorities in traffic lights
    1. Emergency vehicles
        - HALI-system
    2. Tram
        - Adaptive control system
    3. Buses
        - Real time information system
    4. Cyclist
        - Crosscycle
    - Nokia Arena
    - Collecting data
        o volumes, disturbance, driving against red lights

Thank You!

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Kuva: Visit Tampere / Laura Vanzo

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