

# Challenge and solution catalogue

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# Background and purpose of the catalogue

The Jätkäsaari Mobility Lab challenge and solution catalogue helps steer tests, pilots and supporting actions according to the city's development needs and priorities. The challenges are related to the city stakeholders' own development projects and activities. The objective is to tie the learnings and results of pilots to address identified and important knowledge gaps and to create new solutions that can more easily be adopted and scaled. The catalogue is not intended as a complete list of needs but as examples of real challenges in the city. One of the purposes is to use the identified challenges in defining the open calls for agile pilots.

Forum Virium Helsinki has compiled the catalogue. The challenges have been defined by city departments, Port of Helsinki, Helsinki Region Transport (HSL) and the Helsinki City Transport (HKL). A first workshop to gather the specific challenges was held on 22 October 2019. It has been – and will be – supplemented and revised through further meetings and emails along the way.

The catalogue has been divided into three thematic areas according to the objectives of the Jätkäsaari Mobility Lab: 1) smooth traffic and sustainable modes, 2) traffic safety, and 3) air quality and emissions.

## Smooth traffic and sustainable modes

The Jätkäsaari Mobility Lab plan has defined the following guiding objectives related to smooth traffic and sustainable modes.

“Virtual extra lane to the West Harbour”, aiming towards:

- a) 20% smoother traffic to/from West Harbour during rush hours (in terms of stops or travel time), and
- b) 20% modal shift away from private car use for arriving to West Harbour (shift to e.g. public transport, cycling, walking, shared modes).

## Challenges

### *Lacking traffic situation awareness*

The lack of accurate information on the traffic situation prevents a more efficient use of existing street space and traffic management as well as planning. New and innovative solutions are needed to produce better situational awareness.

*Challenge posed by: Jätkäsaari district development project, streets and traffic planning*

### *Existing situational picture data is poorly usable*

The existing sensor data is not well enough available/usable for planners (e.g. data from the Crusell bridge has not been applied for traffic monitoring). A functional data platform for sharing data and information is missing. New ways are needed to bring data to be utilizable.

*Challenged posed by: Jätkäsaari district development project, streets and traffic planning*

### *Trucks' arrival time to the harbour is not optimal*

Trucks arrive too early to wait for the ferries. Queueing and trucks parked on the streets generate traffic disruptions and dangerous situations.

*Challenged posed by: Port of Helsinki*

### *Traffic management does not disperse the vehicles from ships efficiently enough*

The trucks and private cars arriving from ships create congestion on the streets and exit routes from Jätkäsaari, especially in the "Länsilinkki" intersection (Mechelinkatu/Jätkäsaarenlaituri) as well as in Ruoholahti.

*Challenge posed by: Jätkäsaari district development project, streets and traffic planning*

### *Solutions to reduce private car use in Jätkäsaari are needed*

There is a need for a modal shift from private car use towards more sustainable (low-emission) mobility services that improve traffic flow. A lacking mobility service offering does not encourage people to give up a private car.

*Challenge posed by: Urban environment (environment services)*

### *New ways are needed to increase the use of walking, cycling and public transport*

There is a need to shift modal choices from private cars towards low-emission mobility. New and innovative ways to affect the citizen's choices are needed in addition to the traditional ones.

*Haasteen esittäjä: Urban environment, Helsinki Region Transport*

## *Night time delivery activities need to be less disturbing*

Moving delivery traffic and activity to night time would improve traffic flow and thereby e.g. reduce traffic emissions. Noise level regulations, however, often prevent deliveries from being performed during night time in living areas. Therefore, new low-noise solutions are needed for carrying out night time deliveries.

*Challenge posed by: Urban environment, environment services*

## Solutions

Possible solutions to pilot could include, for example:

- New data sources (radars, cameras, sensors), opening, integrating and presenting existing data sources (e.g. Google, Traffic, Smart Junction, Smart Pedestrian Crosswalk, Crusell bridge sensor data), traffic situational picture for the city, logistics companies and citizens, travel time estimates for different user groups,
- Ways of managing the traffic coming from ships in and outside the harbour area, new ways of guiding truck drivers to arrive at the right time, (digital) real-time signage, efficient traffic management for cars and public transport,
- Solutions that improve the accessibility of sustainable modes (public transport, cycling, walking, sustainable services) for the citizens and other people in the area, gamification and new incentives,
- New mobility services that improve traffic efficiency such as ride services and platforms (for school kids, hobbies and other purposes), shared cargobikes (incl. storage and charging solutions), other shared mobility devices, on-demand services, waterway services, special groups services (e.g. for the elderly),
- Other new and innovative solutions that improve traffic flow

The following solutions have already been tested in Jätkäsaari:

- Water boat trial for tourists (NorsöLine, Perille asti -project 2018)
- "Uber of boats" -service (BOUT, Perille asti -project 2018)
- Smart park for shared cars (DriveNow Finland and EasyPark, Perille asti -project 2018)
- Traffic data collecting smart crosswalk (Bercman Technologies, Perille asti -project 2019)
- Shared cargobikes (Colossus Finland, Perille asti -project 2019)
- MUV-game, incentivizing the use of walking, cycling and public transport (MUV 2018-2020)
- Traffic situational picture service (Infotripla, FinEst Smart Mobility 2018 ->)
- Truck queueing system, ride sharing, info on incoming ships (FinEst Smart Mobility 2018-19)

# Traffic safety

The Jätkäsaari Mobility Lab plan has defined the following guiding objectives related to traffic safety.

*"Urban traffic safety", aiming towards:*

- a) Zero speeding, parking violations and traffic accidents, and
- b) The amount of particulates not being above hazardous levels in any walking areas.

## Challenges

### *Construction sites and large vehicles generate dangerous situations*

Traffic safety needs to be improved in the area that has, due to constructions, incompleteness, changes and large vehicle traffic (especially on the street of Atlantinkatu).

*Challenge posed by: Jätkäsaari district development project*

### *Traffic creating dangerous situations for kids on the way to e.g. school*

The school in Jätkäsaari opened in the fall of 2019. There is a need to find new ways to improve the school route safety especially in areas where there is a lot of large vehicle traffic due to constructions and the harbour.

*Challenge posed by: Jätkäsaari district development project*

### *Tackling the emissions caused by studded tyres*

The wear and tear on the road caused by studded tyres is a significant source of dust, which relates to negative effects on health and comfort as well as road maintenance. Studded tyres also generate significant amounts of noise pollution. More information is needed on the share of studs used in Helsinki.

*Challenge posed by: Urban environment, environment services*

# Solutions

Possible solutions to pilot could include, for example:

- Real-time information about the changes and temporary traffic arrangements caused by constructions, disruptions dangerous situations,
- Solutions pertaining to monitoring and preventing parking and speeding violations,
- Safe and attractive routes for walking and cycling (e.g. lighting, art, digital solutions)
- Solutions that reduce the feeling of danger
- Means of detecting studded and friction tyres, ways to affect the use of studded tyres
- Other new and innovative solutions to improve traffic safety

The following solutions have already been tested in Jätkäsaari:

- Smart Pedestrian Crosswalk which has warning functions for pedestrians and drivers, including V2X readiness (Bercman Technologies, Perille asti -project 2019)

# Air quality and emissions

The Jätkäsaari Mobility Lab plan has defined the following guiding objectives related to air quality and emissions.

*"Pilot area for emissions goals", aiming towards:*

- a) 99% of vehicle emissions and street dust is known as continuously measured and shared data, and*
- b) a 20% reduction in greenhouse gas emissions from traffic.*

# Challenges

## *Lacking information about air quality*

More accurate information is needed on the dust, particulate and other emissions from traffic and construction sites.

*Challenge posed by: Urban environment, environment services*

## *Lacking information on noise pollution*

Noise pollution is the second most harmful environmental exposure agent after particulates. Road traffic is the most significant source of noise pollution. Noise sensor trials, visualisations, data collection and data availability improvement are needed.

Ympäristömelu on pienhiukkasten jälkeen toiseksi haitallisimman ympäristöaltisteen. Tieliikenne on merkittävin melulähde. Tarvitaan meluanturiikan kokeiluja, visualisointeja, datan keräämistä ja saatavuuden parantamista.

*Challenge posed by: Urban environment, environment services*

### *The electric vehicle infrastructure is insufficient*

Realization of electric vehicle charging infrastructure and preparing for it is scarce in both residential and business real estates. Apart from street dust and tyre noise, electric vehicles do not create local emissions and their greenhouse gas emissions are lesser than those of internal combustion engine cars. Means for more efficient use and better accessibility of charging infrastructure are needed.

*Challenge posed by: Urban environment, environment services*

### *Lacking information about vehicles and their emissions*

More information is needed on e.g. the amounts, types, emissions and use of vehicles to support planning and monitoring. The information is needed at least on vehicle types (cars, vans, trucks etc.), emission categories (Euro emission standards), greenhouse gas specific emissions (g-CO<sub>2</sub> / km), power types (gas, diesel, electric etc.)

*Challenge posed by: Urban environment, environment services*

## Solutions

Possible solutions to pilot could include, for example:

- Emission and noise sensor tests, new ways of collecting and sharing emission and noise data, and visualisations (for citizens, authorities, researchers)
- Other new and innovative ways and solutions that enable measuring and reducing emissions

The following solutions have already been tested in Jätkäsaari:

- Several projects related to measuring air quality (e.g. UIA HOPE, Select for Cities, SynchroniCity, Quasimodo, ...)