Helsinki-Uusimaa
Regional Council

SAFE AND SUSTAINABLE MOBILITY IN THE HELSINKI-UUSIMAA REGION

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INTRODUCTION

While emissions have decreased in several sectors, the share of transport-related greenhouse gas emissions (GHG) in the EU has actually increased from 15% in 1990 to 25% in 2017.[1] This can be attributed to a growing number of commuters, increased holiday travel and a sluggish development in lower-emission alternatives to the current means of transport.

Road transport, specifically cars, makes up 72.1% of GHG caused by the transport sector in the EU[2] which makes more sustainable mobility one of the most important factors in tackling climate change. The current GHG emissions from the transport sector stand at about +28% compared to 1990 levels while the 2030 target of the EU was to keep emissions of that sector below an 8% increase and reach a 60% reduction compared to 1990 by the year 2050.

1 *Eurostat 2019*

2 *European Environment Agency 2018*

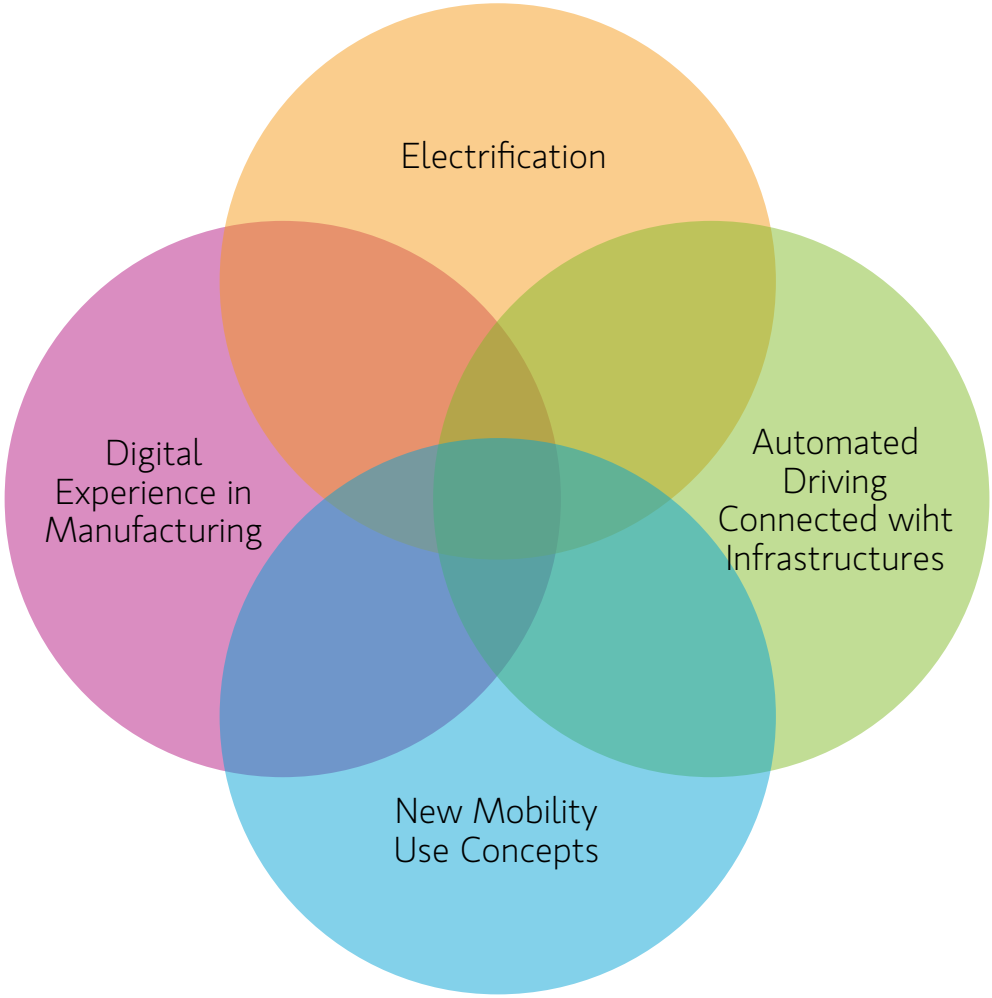

Figure 1: Mobility Megatrends and the Safe and Sustainable Mobility Sub-Themes[3]

Besides the climate impact of GHG, there are also serious implications for citizens' health related to transport emissions. The OECD estimates that at current rates, air pollution could lead to 6-9 million premature deaths and a loss of 1% of global GDP every year by 2060. The financial loss, approximately 2.6 trillion USD annually, is a result of missed workdays, medical expenses and reduced agricultural yields.

To tackle this emergency, the European Commission's Smart Specialisation (S^3) Platform created the thematic area "Safe and Sustainable Mobility" (SSM) which is grouped in 4+1 sub-themes: Smart Vehicle, Smart Infrastructure, Sustainable Mobility, Safe Mobility and Data.

The goals of SSM are the de-carbonization and digitalization of road transport, to strengthen regional innovation beyond the automotive industry and to facilitate investments based on open innovation infrastructure and new technologies. With Aragon (Spain), Bavaria (Germany) and Île-de-France (France) in the lead and five more EU countries involved, the partnership aims to transfer knowledge and create a more sustainable and competitive European industrial landscape. This report will outline the Helsinki-Uusimaa region's role within the platform and give an overview of several relevant stakeholders. Finally, some regional cases that deal with the sub-themes will be highlighted with further projects listed at the end.

3 *European Commission 2019*

2. THE ROLE OF THE HELSINKI-UUSIMAA REGION

Finland's capital Helsinki, as the centre of the Uusimaa region, has been recognized several times for its achievements. For example, the city was ranked 5th amongst the Top 50 Smart City Governments, placing narrowly only behind London, Singapore, Seoul and New York City.[4]

Finland as a whole also places well when it comes to fostering innovation. The most recent Global Innovation Index puts the country in 6th place out of 129 countries, between the UK (5th) and Denmark (7th).[5]

Taking part in the SSM partnership are the Helsinki-Uusimaa capital region as well as the northern Oulu region. The focus areas for the former, as highlighted in green in Figure 2, are mainly Smart Vehicle and Safe Mobility with some projects related also to Sustainable Mobility as well as Data.

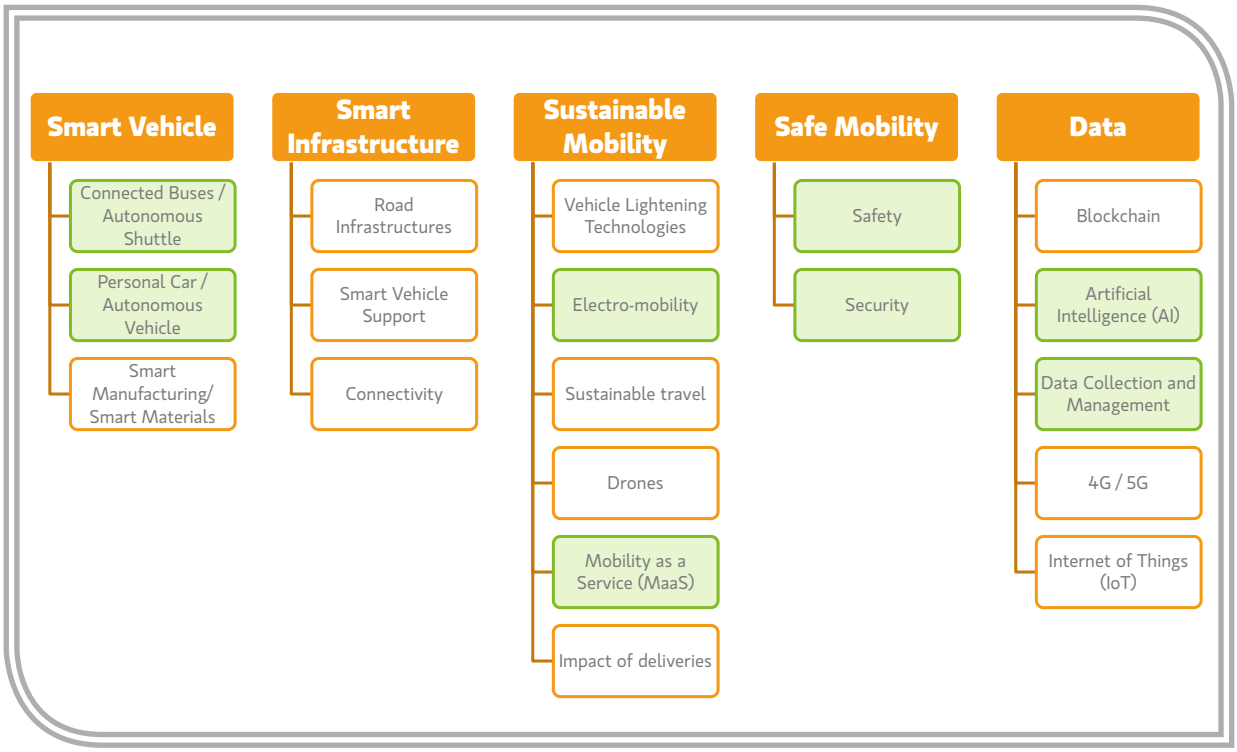

Figure 2: Focus Areas of the Helsinki-Uusimaa Region

4 *Eden Strategy Institute; ONG&ONG Pte Ltd. 2018*

5 *WIPO (World Intellectual Property Organization) 2019*

As the Helsinki-Uusimaa Regional Council (HURC) is a potential lead region for the Safe Mobility sub-theme, it is worthwhile to further elaborate on that aspect. Safety and security are important factors when it comes to mobility and new technologies can enable security systems that are capable of reducing transport emissions as well as accidents and fatalities. At the same time, these safety features have to comply with data security regulations without being intrusive.

Some components of SSM-related safety are safe mobility regarding vehicles, individual safety within the traffic system and human-machine interfaces, e.g. in driverless buses. SSM-related security includes a security infrastructure with Internet of Things (IoT), resilient security systems as well as cyber security.

Some relevant Finnish actors in the field of safe and secure mobility are presented in the table below, including the topics they focus on. What becomes clear is that there are strong capabilities especially in the areas of cyber security and road safety.

Table 1: Relevant Actors in the field of Safe and Secure Mobility

Actor	Topic	Website
Aalto University	Safety & Security of Autonomous Vessels	www.aalto.fi/en/events/issaveswc-2019
	Cyber Security	www.aalto.fi/en/aalto-digi-platform/cyber-security
Finnish Road Safety Council	Road Safety	www.liikenneturva.fi/en
Laurea University	Cyber Security	www.laurea.fi/en/research/coherent-security/
Finnish Transport Infrastructure Agency	Road Safety	vayla.fi/web/en/road-network/safety#.XWThDS17FTY
Finnish Security Committee	Cyber Security	turvallisuuskomitea.fi/wp-content/uploads/2018/09/Cyber-Strategy-for-Finland.pdf
Finnish Information Security Cluster	Cyber Security	www.fisc.fi
Forum Virium	Safety via emissions reduction	forumvirium.fi/en/envyou-project-strives-for-more-comprehensive-knowledge-about-pollution-in-helsinki
City of Espoo	Cyber Security	www.espoo.fi/en-us/city_of_espoo/Safety
Metropolia University	Safety & Security of Autonomous Vessels	www.metropolia.fi/en/innovation-hubs/smart-mobility/
Helsinki-Uusimaa Regional Council	Intermediary for safety-related projects	www.uudenmaanliitto.fi/en
Jätkäsaari	Smart and Safe Mobility	forumvirium.fi/en/jatkasaari-smart-mobility-a-test-area-for-smart-mobility-and-accelerator-for-commercialisation/
Nokia	Safety Infrastructure	www.nokia.com/networks/use-cases/smart-city-services-that-enrich-lives/

3. RELEVANT REGIONAL STAKEHOLDERS

Considering the sub-themes for the SSM platform, there are several interesting stakeholders in the Helsinki-Uusimaa region. The ones involved in many relevant projects are mapped below in Figure 3. The orange circles (Growth Corridor Finland, Smart & Clean Foundation, Demos Helsinki) represent intermediary organisations while the blue circle (Sensible 4) indicates a private company and the purple ones (Business Finland, Forum Virium, Helsinki Region Environmental Services) publicly owned entities. Lastly, the green circles (Aalto University, VTT, Metropolia University) represent research institutes and universities.

The "Interest" (y-axis) is comprised of the number of existing partnerships, open calls and contact persons as well as the approximate share of mobility-related work. The "Relevance" (x-axis) takes into account the number of employees, the founding year as well as the number of projects that are relevant to this report. Finally, the size of the bubbles indicates the stakeholders' number of research publications and lead positions in relevant projects.

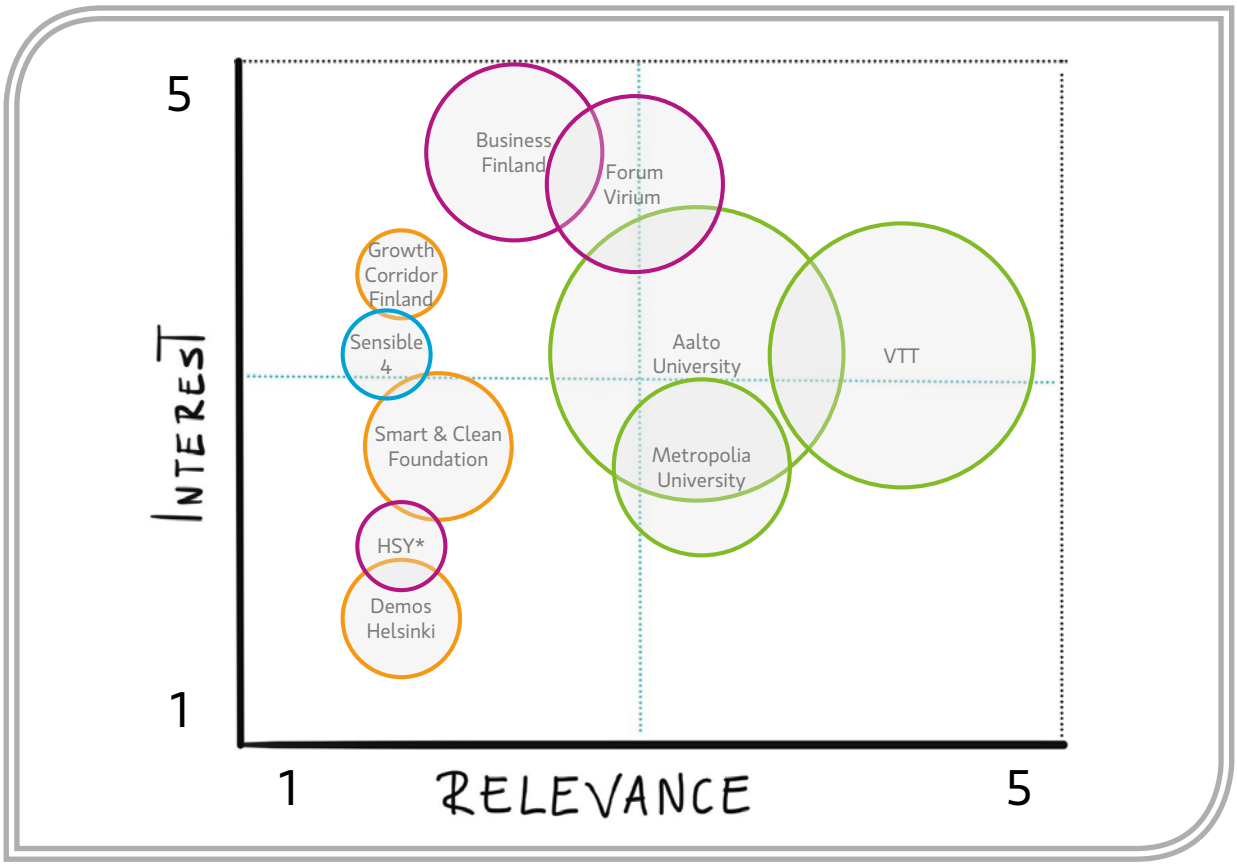

Figure 3: Stakeholder Mapping

**Helsinki Region Environmental Services Authority*

This mapping is less to be taken as a strict ranking but rather as an attempt to classify different actors in the Helsinki-Uusimaa region in order to facilitate access and prioritisation for different needs. Other relevant actors include Cleantech Finland, Aviapolis, Jätkäsaari Mobility Lab, Maria 01 and the Helsinki Regional Transport Authority (HSL).

Another mapping of the stakeholders is the project ecosystem that shows existing connections between relevant actors regarding the SSM-related projects in the Helsinki-Uusimaa region. This is a tool to understand who is involved in what project and what the most active stakeholders are.

With seven projects, Forum Virium is one of the most involved actors. It is also known as the "City of Helsinki innovation company" and can be described as a publicly owned organisation that facilitates collaboration between the public and private sector. Its mission is to "make Helsinki the most functional city in the world" through user-driven open innovation.[6]

Another big player is the research institute VTT, with five projects. Similarly to Forum Virium, it focuses on building bridges between research and its business application.[7]

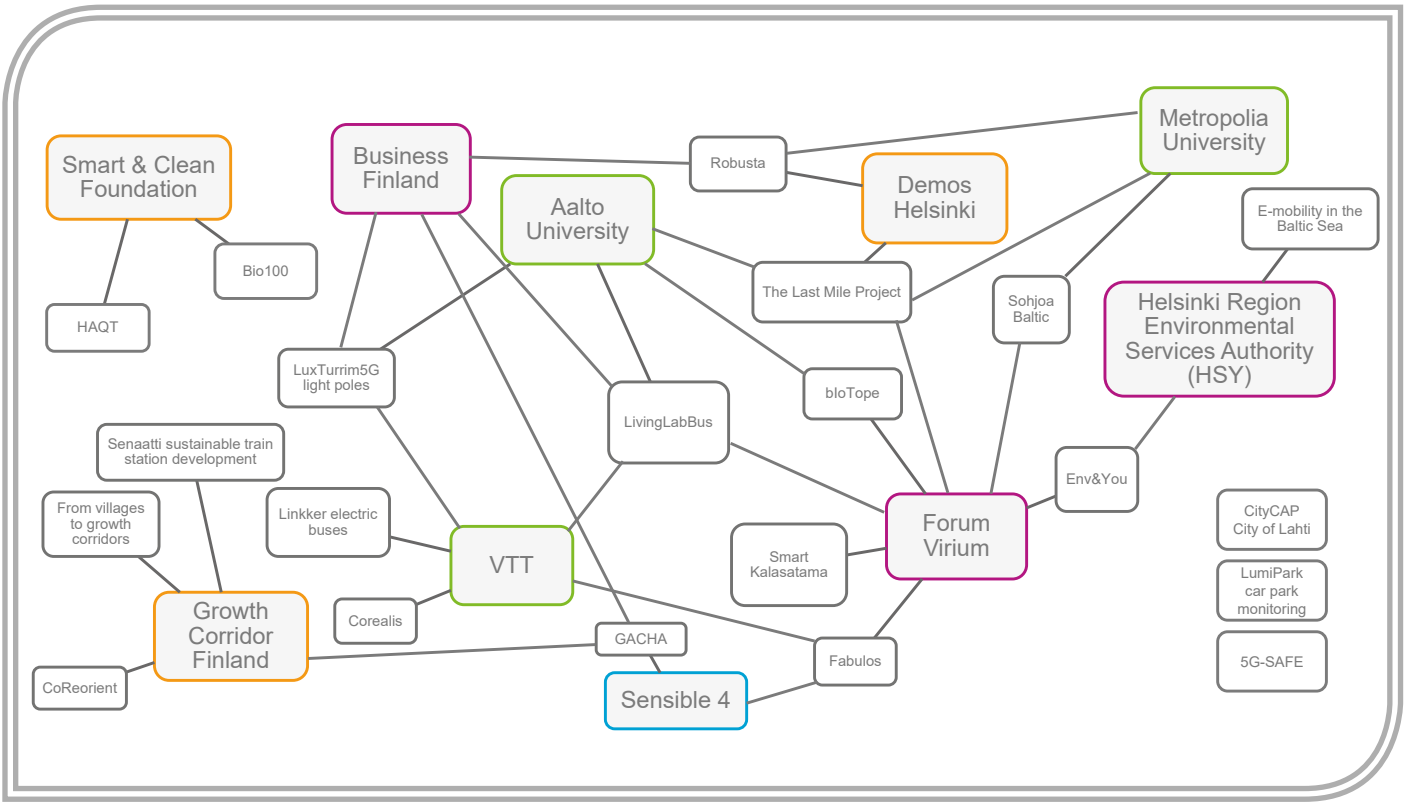

Figure 4: Stakeholder Project Ecosystem

6 *Forum Virium 2019*

7 *VTT 2019*

4. HIGHLIGHTS IN THE HELSINKI-UUSIMAA+ REGION

In the following, five exceptional examples of SSM-related projects from the Helsinki-Uusimaa region will be given in detail. The "+" represents a project from the City of Lahti which lays just outside the Helsinki-Uusimaa region but cannot go without mention in this context. More interesting projects can be found in the last section of this report.

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4.1 MaaS Global

MaaS Global is a private company that is working to make the transition between means of transport as smooth as possible. MaaS stands for Mobility as a Service and is becoming an integral part of future mobility as it can make transport more flexible and by encouraging the sharing economy reduces emissions.

At the beginning of 2019, 3 million trips have already been taken via their app called Whim which lets people easily switch from public transport to taxis, bikes and cars via a single platform. The service is already available in Helsinki (Finland), Antwerp (Belgium) and the West Midlands (England). Partners include the car rental companies Sixt, Toyota Rent a Car and Hertz as well as the British National Express and the Helsinki Regional Transport Authority.[8]

Contact MaaS Global

General inquiries:
info@whimapp.com

Transport Providers:
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Employers:
Benefits@maas.global

City cooperation:
Cities@maas.global

8 *MaaS Global 2019*

SOHJOA BALTIC

Interreg
Central Baltic

EUROPEAN REGIONAL DEVELOPMENT FUND
EUROPEAN UNION

4.2 Sohjoa Baltic

Sohjoa Baltic researches, promotes and pilots automated driverless electric minibuses as part of the public transport chain, especially for the first/last mile connectivity. The project includes several countries across the Baltic Sea, more specifically in Finland, Estonia, Sweden, Latvia, Germany, Poland, Norway and Denmark. Planning and legal expertise from the entire region as well as strong technical knowledge is leveraged to run pilots along demo routes in 6 Baltic Sea Region cities between 2017 and 2020. The project is funded by the Interreg – Baltic Sea Region programme.[9]

Contact Sohjoa Baltic

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Financial Manager:
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9 *Sohjoa Baltic 2019*

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4.3 Smart Kalasatama

The Helsinki district of Kalasatama was an industrial area for the city's old harbour until only a few years ago but is now being developed into a new smart city district. Projects being piloted here include autonomous buses, innovative waste collection systems and communal living spaces. Using an inhabited district to test and develop new solutions for the city of the future, including residents, companies, city officials and researchers.[10]

Contact Smart Kalasatama

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Development Manager:
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kaisa.spilling@forumvirium.fi

10 *Smart Kalasatama 2019*

© www.espoo.fi/en-US/Jobs_and_enterprise/A_dynamic_city/Locate_in_Espoo/Urban_Development/Rail_Zone/Kera and https://studiopuisto.fi/en/2016/06/kera-era-uusi-kaupunkikehitysmalli/

4.4 Kera Smart District

Much like Smart Kalasatama, the Kera Smart District aims to develop smart solutions for urban living in a real-life setting. It is located in Espoo, the city neighbouring Helsinki to the west and just recently started to take shape. Kera focuses specifically on becoming an internationally recognized example for the circular economy while also incorporating new technologies like 5G and the Internet of Things into its infrastructure.

Companies operating in the area so far include Nokia HQ, Algol, Reuse Centre as well as Inex Partners and soon the land use will be expanded to include residential blocks. Furthermore, an urban business campus named Karamalmi will offer additional office space for technology-focused companies.[11]

Contact Kera Smart District

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Pekka Vikkula,
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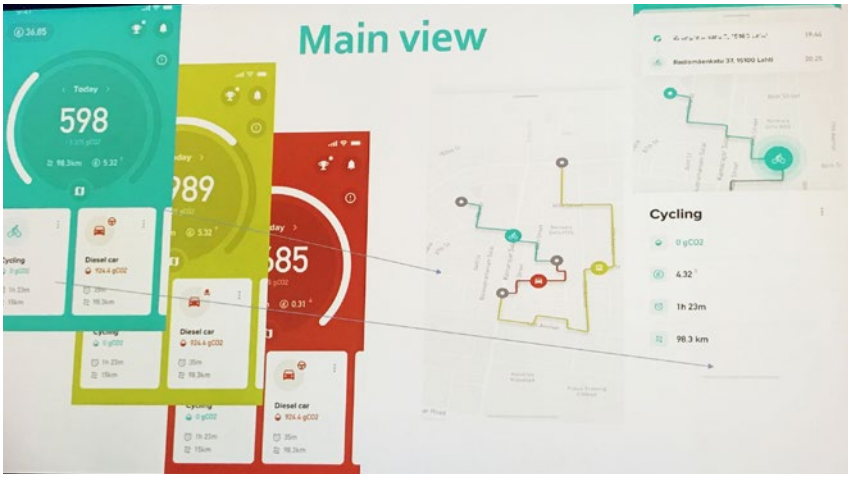
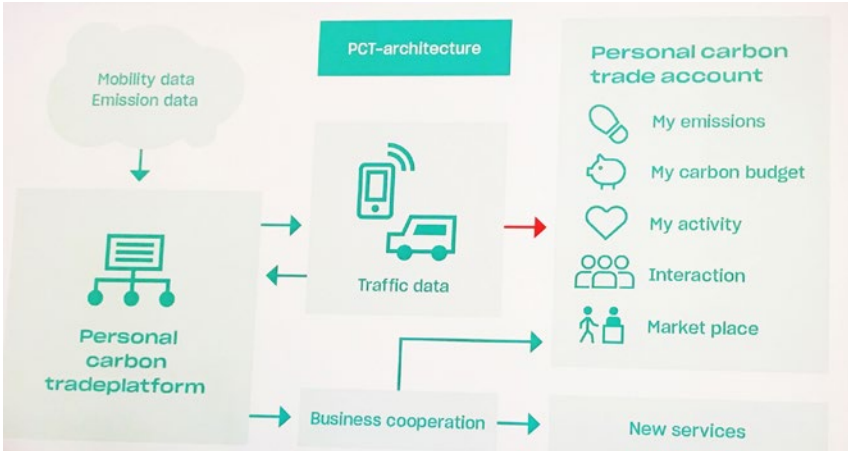
11 *City of Espoo*





© Anna Huttunen, City of Lahti

4.5 CityCAP Personal Carbon Trading

Another project is actually from Lahti which is a small city outside the Helsinki-Uusimaa region. Lahti was awarded the title of European Green Capital for 2021. CitiCAP is the first personal carbon trading scheme. It enables citizens to track their own mobility-related emissions with their smartphones and shows how much they are saving based on a weekly carbon allowance. If the allowance is not fully used up, credits will be given out that can be redeemed for municipal services such as entrance tickets to the local swimming pool. This actively engages citizens and rewards more climate-friendly behaviour which is an important aspect of reducing our overall emissions.[12]

Contact CityCAP

Project Manager:
Anna Huttunen, anna.huttunen@lahti.fi

Public participation planner:
Heidi Snellman, heidi.snellman@lahti.fi

12 *City of Lahti 2019*

5. CONCLUSION

With a large variety of stakeholders and projects, the Helsinki-Uusimaa region is set to be a valuable partner within the Smart Specialisation Platform and beyond. Especially within the focus areas of Smart (autonomous) Vehicles and Safe Mobility there is lots of potential for open innovation, knowledge transfers and collaboration.

While most of the main stakeholders have their areas of expertise, it is worth noting that a lot of projects are not constrained by one of the 4+1 thematic areas outlined in the introduction but rather combine many of these aspects.

MaaS Global, for example, creates a smart and digital infrastructure to provide more sustainable mobility while Sohjoa Baltic combines smart vehicles with electric and therefore more sustainable mobility. Smart Kalasatama and Espoo's smart Kera district both invest heavily in smart infrastructure while leveraging data and paving the way for more safe and sustainable city living. Lastly, CitiCAP also uses data to provide citizens with the ability to improve their own safety by reducing air and noise pollution while encouraging more sustainable mobility.

SOURCES

City of Espoo (2019). *Kera – New ecological local centre.*
Available at: www.espoo.fi/en-US/Jobs_and_enterprise/A_dynamic_city/Locate_in_Espoo/Urban_Development/Rail_Zone/Kera

City of Lahti (2019). *CitiCAP LAHTI – citizens' cap and trade co-created.* Available at: www.smartlahti.fi/citicap

Eden Strategy Institute; ONG&ONG Pte Ltd. (2018). *Top 50 Smart City Governments.*
Available at: https://static1.squarespace.com/static/5b3c517fec4eb767a04e73ff/t/5b513c57aa4a99f62d168e60/1532050650562/Eden-OXD_Top+50+Smart+City+Governments.pdf

European Commission (2019). *Safe and sustainable mobility.*
Available at: https://s3platform.jrc.ec.europa.eu/mobility

European Environment Agency (2018). *Greenhouse gas emissions from transport.*
Available at: https://www.eea.europa.eu/data-and-maps/daviz/transport-emissions-of-ghgs-5#tab-chart_1

Eurostat (2019). *Greenhouse gas emission statistics – emission inventories.*
Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Greenhouse_gas_emission_statistics#Trends_in_greenhouse_gas_emissions

Forum Virium (2019). *City of Helsinki innovation company.* Available at: https://forumvirium.fi/en/introduction/innovation-unit-developing-digital-services/

MaaS Global (2019). *All your journeys.* Available at: https://whimapp.com/

Smart Kalasatama (2019). *Smart Kalasatama is an Urban Living Lab for speeding up smart city development in Helsinki.*
Available at: https://fiksukalasatama.fi/en/

Sohjoa Baltic (2019). *Sohjoa Baltic Project.*
Available at: http://www.sohjoabaltic.eu/en/

VTT (2019). *VTT Website.*
Available at: https://www.vttresearch.com

WIPO, World Intellectual Property Organization (2019). *Global Innovation Index (GII) 2019.*
Available at: https://www.wipo.int/publications/en/details.jsp?id=4434

LIST OF ADDITIONAL PROJECTS

Table 2: List of Additional SSM-related Projects

Name	Topic	Website
Aviapolis Traffic Lab	Smart Vehicle	https://www.trafficlab.fi
CoReorient sharing service	Smart Vehicle	https://coreorient.com https://liiteri.net
Falco autonomous ferry	Smart Vehicle	https://www.finferries.fi/en/news/press-releases/finferries-falco-worlds-first-fully-autonomous-ferry
FinEst Smart Mobility	Smart Vehicle	http://www.finestlink.fi/en/finest-smart-mobility
From villages to growth corridors	Smart Vehicle	https://www.laurea.fi/hankkeet/k/kylilta-kasvukaytavalle---alykkaat-liikkumisen-palvelut-maaseudulla
GACHA Self Driving Shuttle Bus	Smart Vehicle	https://www.sensible4.fi/gacha
Kyyti MaaS platform	Smart Vehicle	https://www.kyyti.com
Last Mile Delivery	Smart Vehicle	https://6aika.fi/en/project/new-solutions-in-city-logistics
L3Pilot Driving Automation	Smart Vehicle	https://l3pilot.eu
mySmartLife robot bus	Smart Vehicle	https://forumvirium.fi/en/robot-buses-taking-over-new-areas-in-helsinki-2/
Robusta remotely operated bus technology	Smart Vehicle	http://www.robusta.fi
SmAll (Smart Mobility as a Service for All)	Smart Vehicle	https://forumvirium.fi/en/small-develops-mobility-as-a-service
The Last Mile Project	Smart Vehicle	https://www.metropolia.fi/en/research-development-and-innovation/all-projects/last-mile
Urban Auto Test	Smart Vehicle	https://www.vtt.fi/sites/urbanautotest
5G-DRIVE	Smart Vehicle	https://5g-ppp.eu/5g-drive
5G-MOBIX	Smart Vehicle	https://5g-ppp.eu/5g-mobix
Delivery pilot	Smart Infrastructure	https://forumvirium.fi/jakeluliikennetta-tehostetaan-uudella-kokeilulla
Jätkäsaari Smart Mobility	Smart Infrastructure	https://forumvirium.fi/jatkasaari-smart-mobility-alykkaan-liikkumisen-testialue-ja-kaupallistamisen-vauhdittaja
Living Lab Bus	Smart Infrastructure	http://livinglabbus.fi
LuxTurrim5G light poles	Smart Infrastructure	https://www.luxturrim5g.com/project-summary
mySmartLife solar benches	Smart Infrastructure	https://www.helen.fi/en/news/2018/Solar-panel-benches-in-Helsinki/
Smart EV Charging	Smart Infrastructure	https://smartotaniemi.fi/pilots/smart-ev-charging
UrbanSense 5G testbeds	Smart Infrastructure	https://forumvirium.fi/en/urbansense-gathers-together-5g-test-platforms-in-helsinki

Batteries from Finland 2020	Sustainable Mobility	https://www.businessfinland.fi/en/for-finnish-customers/services/programs/batteries-from-finland
Bio100 Biofuel in Helsinki	Sustainable Mobility	https://smartclean.fi/en/projects/busses-work-machines-biofuels
City of Espoo sustainable mobility	Sustainable Mobility	https://www.espoo.fi/fi-FI/Asuminen_ja_ymparisto/Kestava_kehitys/Ilmastotavoitteet/Espoon_tyopaikat_tiennayttajina_kestavas
E-bus strategy Helsinki	Sustainable Mobility	https://www.nordicenergy.org/wp-content/uploads/2018/02/11.-Helsinki-region-electric-bus-activities-with-pre-commercial-pilot-_ePELI_-Reijo-Mäkinen.pdf
Linkker electric buses	Sustainable Mobility	http://www.linkkerbus.com
Share IT mobility sharing	Sustainable Mobility	http://shareit.fi
Silent Refuse Truck	Sustainable Mobility	https://smartotaniemi.fi/pilots/silent-refuse-truck
Aurora Arctic Challenge	Safe Mobility + Data	https://tmfg.fi/fi/road/arctic-challenge
Env&You air pollution open source data	Safe Mobility + Data	https://forumvirium.fi/en/envyou-project-strives-for-more-comprehensive-knowledge-about-pollution-in-helsinki
HAQT (Helsinki Air Quality Testbed)	Safe Mobility + Data	http://smartclean.fi/en/projects/the-worlds-densest-air-quality-measurement-system
LumiPark car park monitoring	Safe Mobility + Data	https://forumvirium.fi/en/integrating-parking-and-smart-lighting-in-helsinki
LuxTurrim5G bus stop	Safe Mobility + Data	https://www.teleste.com/news/2018/teleste's-smart-and-safe-bus-stop-built-nokia-campus-espoo-finland-part-luxturrim5g-ecosystem
mySmartLife open data	Safe Mobility + Data	https://www.mysmartlife.eu/news/mysmartlife-news-article/news/cityplanner-helsinki-shares-open-data-with-citizens/?tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baction%5D=detail&cHash=f11cececd50e60602fbf0d18f2354c5e
Senaatti sustainable train station development	Safe Mobility + Data	https://www.senaatti.fi/asema-alueet
5G-SAFE	Safe Mobility + Data	https://www.transdigi.fi/fi/5g-safe http://5gsafe.fmi.fi
bIoTope	EU Partnership on Safe Mobility + Data	https://biotope-project.eu/overview
Corealis, 5 sustainable ports	EU Partnership on Smart Infrastructure	https://www.corealis.eu
E-Mobility in the Baltic Sea	EU Partnership on Sustainable Mobility	https://www.bsr-electric.eu
Fabulos autonomous buses	EU Partnership on Smart Vehicles	https://fabulos.eu

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