



Smart Kalasatama – an Innovation Smart City District

Vaasa Energy Week, Future City Seminar 20 March 2019
Kerkko Vanhanen, Programme Director, Smart Kalasatama

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Forum Virium Helsinki

- A non-profit innovation company, fully owned by the City of Helsinki. Employs ~50 top experts.
- Focus areas: Smart Mobility, Robotics, Digitalization, Artificial intelligence, Open data, Internet of Things, Sustainable energy solutions, Wellbeing, Sharing Economy
- Collaboration with companies, the scientific community and residents.
- The operations are funded by the City of Helsinki and different EU funding instruments worth of about EUR 6+ million a year.



A wide, sunlit pedestrian path in a park, likely the Esplanade in Helsinki. The path is paved and flanked by green hedges and trees. Many people are walking, some holding hands, and others are sitting on benches. The scene is bright and lively, with long shadows cast on the path. The text "HELSINKI BUILDING THE MOST FUNCTIONAL OPEN CITY" is overlaid in large white letters.

HELSINKI BUILDING THE MOST FUNCTIONAL OPEN CITY

Photo: Lauri Rotko / City of Helsinki MediaBank

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HELSINKI CITY STRATEGY

The Most Functional City in the World

Helsinki City Strategy 2017–2021



“Helsinki aims to cut emissions by 60% from 1990 to 2030 and resets the city’s target year for carbon neutrality to 2035 from the previous target year of 2050.”

Helsinki

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CARBON NEUTRAL HELSINKI 2035 ACTION PLAN



- The action plan presents Helsinki's current climate action and emission forecasts for 2030 and 2035. A scheduled plan with 147 specific actions to achieve emission goals are defined by category. The current status, goals and main emission reduction measures are defined for each category.
- Transport
- Construction and the use of buildings
- Consumption, procurement, and the sharing and circular economies
- Smart & Clean growth
- Helen's development programme
- Carbon sinks and carbon offsets
- Communication and public participation
- Coordination, monitoring and evaluation of climate action

Hanasaari Power plant



- The Hanasaari power plant (coal), next to Kalasatama district, started energy production in 1974.
- As a result of several improvements done in the past few years (burning pellets, flue gas cleaning systems, combustion technology), the annual sulphur dioxide, nitrogen oxide and particulate emissions will fall to less than half of the current levels.
- Helen is preparing to close the Hanasaari power plant by the end of 2024.
- The power plant will be replaced with renewable energy solutions.

SMART KALASATAMA



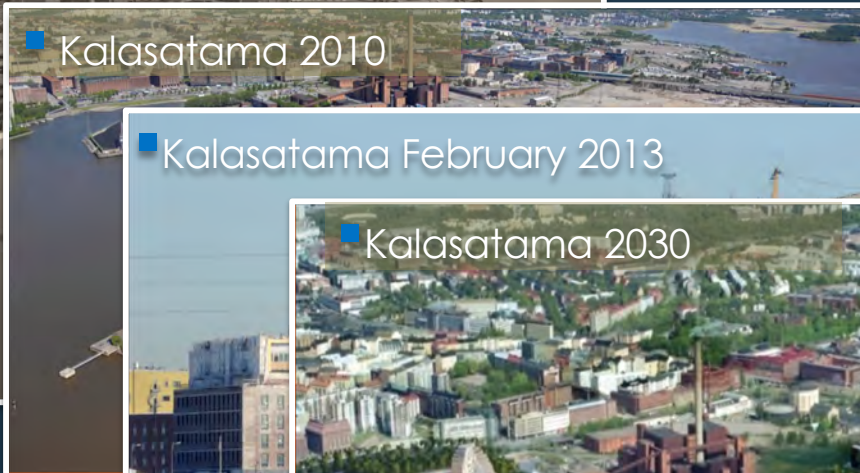
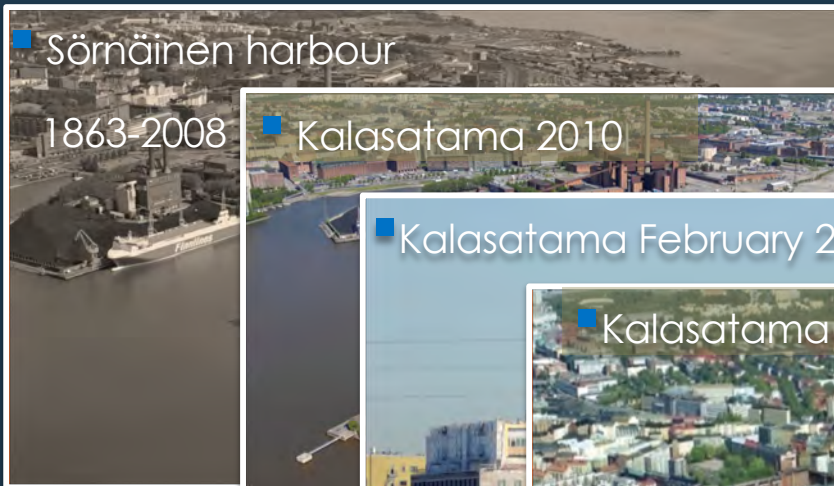
Photo: Riku Pihlanto

Innovations and Co-Creation





SMART KALASATAMA FROM A HARBOUR TO RESIDENTIAL DISTRICT



SMART KALASATAMA



Picture: Vesa Laitinen

2018–2020

Smart and sustainable neighborhood

2015

Agile piloting programme starts

2015–2018

Smart Kalasatama: building an innovation platform

2014

Smart Kalasatama: vision

2013

Decision: Kalasatama to be smart city district

2020

2020

City environment house ready

2019

Kesko campus open

2018

Health and wellbeing center open
REDI shopping centre open

2016

School open
Bridge to recreation area Mustikkamaa

2015

2012

First residents

2009

Construction begins

2009–2011

Temporary uses for empty areas

2007

Metro station

2010

AREA CONSTRUCTION



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Vision: One more hour a day

Picture: Jussi Hellsten / Visit Helsinki

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SMART KALASATAMA

Helsinki Smart City Innovation District



Brownfield district

Construction
2011-2035

Target: 25 000 people,
10 000 jobs

Now ~3500 people

Smart Kalasatama Project portfolio

Project portfolio

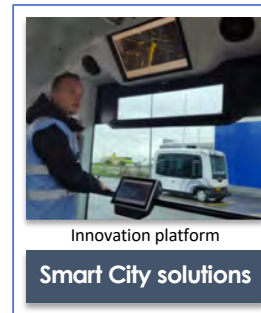
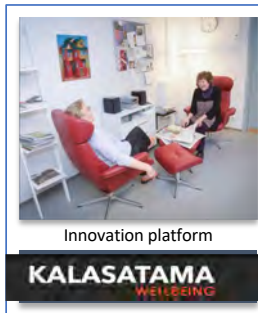
Project portfolio management + establishing new projects

Brand, Communication

Community management, incl.. the Developers' Club

Technical platforms

Innovation platforms



Projects

Pilot and test project programme

Projects

Pilot and test project programme

Projects








Pilot and test project programme

Projects

Flexible spaces

3D models

SMART KALASATAMA – STAKEHOLDERS AND NEEDS

 <p>STARTUPS & SMEs 100+</p> <p>Partners incl. JOUSTOTOIMISTOT OLOTECH, EKORENT, WITRAFI, TUUP, PARKKISÄHKÖ, and more</p>	<p>Partners incl. ABB, Helen, SRV, ATT, KESKO, FIRA, HOAS, SETLEMENTTI and more</p> <p>COMPANIES 25+</p> 	 <p>RESIDENTS 1100+</p> <p>Housing companies, residents, organisation, active citizens, seniors</p>	<p>Laurea, Aalto, Helsinki University, international researchers Metropolia</p> <p>ACADEMIA</p> 	 <p>PUBLIC SECTOR</p> <p>City 6Pack Cities Ministries Tekes Sitra R&D&I</p>	<p>OKF Helsinki Loves Developers Citizen movements</p> <p>NGOs</p> 	 <p>INNOVATION TOURISTS 500+ / YEAR</p> <p>International delegations cities, press delegations</p>
NEEDS						
<p>Bypassing bureaucracy</p> <p>First real business opportunity</p> <p>Connecting with companies, users and the city</p>	<p>Insights</p> <p>Connecting with users & startups</p> <p>Collaboration with the city</p>	<p>Participation</p> <p>Social aspects</p> <p>Learning & curiosity</p>	<p>Connecting with key actors in the ecosystem</p> <p>Engaging with companies and startups</p>	<p>Collaboration with companies and other stakeholders</p> <p>Understanding and developing the future market</p>	<p>Network, Data, Opportunities Thematic activities</p>	<p>Learning and opportunities</p>

**1/3 of the residents
involved
130+ companies,
startups & SMEs
21 projects**

KALASATAMA URBAN LAB



Co-creation space

- Showroom for smart & sustainable solutions
- Climate positive events
- Experimentation testbed for self-service use

For...

- Kalasatama innovation community
- Innovation tourists
- Citizens

Opening in November -18

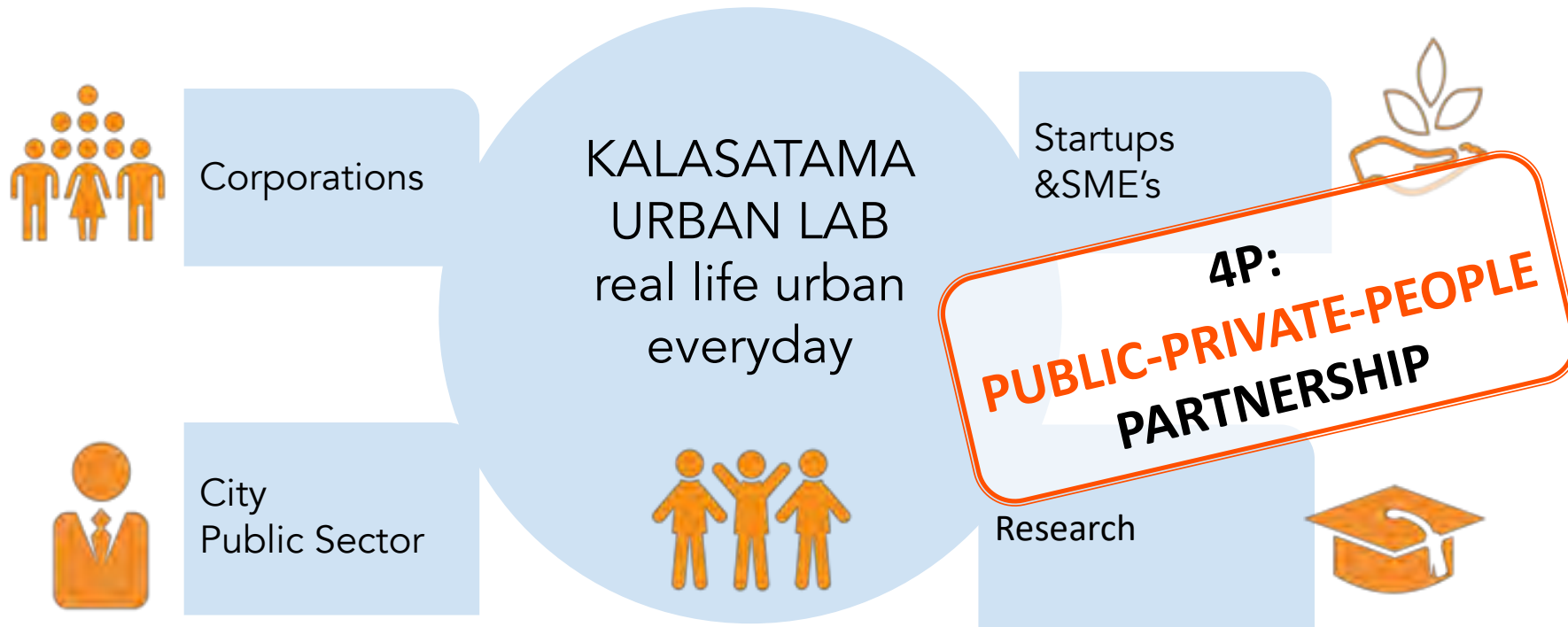
- ~240 m²
- for ~60 people

DISTRICT AS AN URBAN LAB



Photo: Riku Pihlanto

INNOVATION ECOSYSTEMS CO-CREATING VALUE



WHY AGILE PILOTING?

CO-CREATING
VALUE FOR ALL
STAKEHOLDERS

MARKET
REFERENCES

ENGAGING
CITIZENS

FUTURE
USE CASES





SOME **EXAMPLES**
OF PROJECTS AND
INVESTMENTS

Photo: Jussi Hellsten

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AUTOMATED WASTE COLLECTION SYSTEM IN KALASATAMA



AUTOMATED WASTE COLLECTION SYSTEM IN KALASATAMA

- 1 The waste collection points are located in connection to the exits in each block.
- 2 The residents sort out the waste – mixed waste, biowaste, paper, cardboard and plastic packaging.
- 3 Using an underground pipe network, waste travels from the inlet points in vacuum
- 4 to the waste collection station in the basement of the Redi Mall and in the designated waste containers.
- 5 Garbage trucks pick up full containers from the station and transport the waste onwards → The collected waste is utilized as recycled material, incinerated for energy or converted to biogas



mySMARTLife – Transition of EU cities towards a new concept of Smart Life and Economy

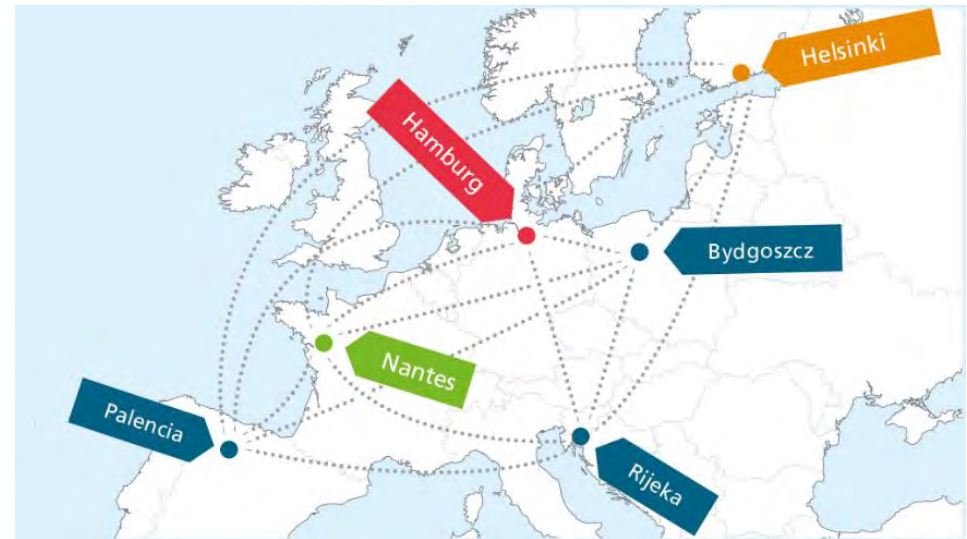
3 Lighthouse Cities • 3 Follower Cities • Network of Cities • 27 Partners • 6 Countries • 150 Actions

Project duration: 12/2016 - 11/2021

Main objective: Making sustainable cities with smart people & a smart economy a reality

Lighthouse Cities: Nantes (FR), Hamburg (DE), Helsinki (FI)

Follower Cities: Bydgoszcz (PL), Rijeka (HR), Palencia (ES)



Partners in Helsinki:



Helsinki Demosite Overview

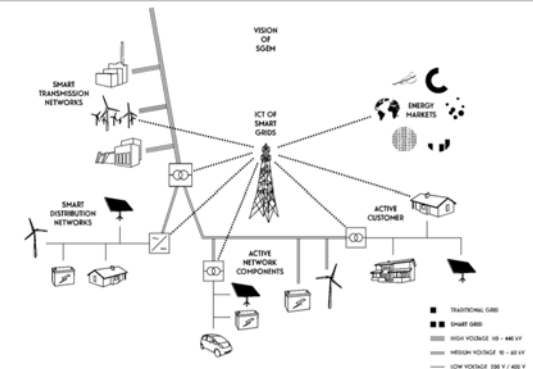


- Zone 1 retrofitting Merihaka
- Zone 2 High performance new construction district Kalasatama
- Zone 3 Energy efficiency optimization for office building at Viikki
- City infrastructures in energy supply, smart charging, public lighting, autonomous bus and public e-transport in city scale
- Urban platform and supporting ICT and IoT

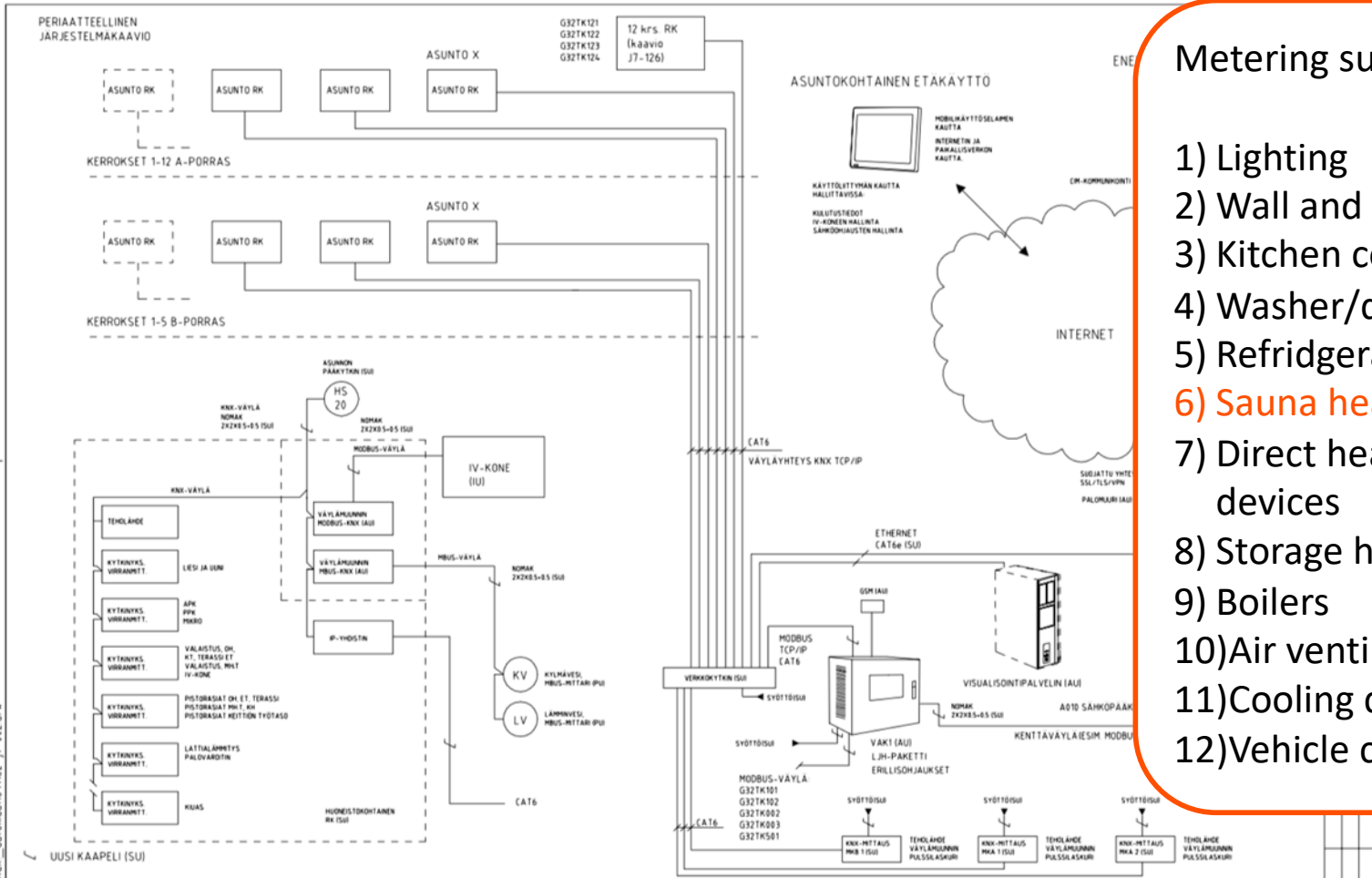
SMART ENERGY IN KALASATAMA



Smart Grid, Open Data



SMART ENERGY IN KALASATAMA



Metering subtypes:

- 1) Lighting
- 2) Wall and floor outlets
- 3) Kitchen countertop
- 4) Washer/dryer
- 5) Refrigeration
- 6) Sauna heater
- 7) Direct heating devices
- 8) Storage heating
- 9) Boilers
- 10) Air ventilation
- 11) Cooling devices
- 12) Vehicle chargers



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VAHANEN
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SIUNN	JL	PÄIV
PYH	30 6 2017	
ALLEKIRJOTUS		

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JÄRJESTELMÄKAAVIO

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LVI 1162-J7-002	
LEHTI 2	LEHDISTÄ 4
TEKÄJÄN NÖ	

MUUT
LUKUM
TUNN



AI-BASED DEMAND RESPONSE OF HEAT USE AT HOME & OFFICES

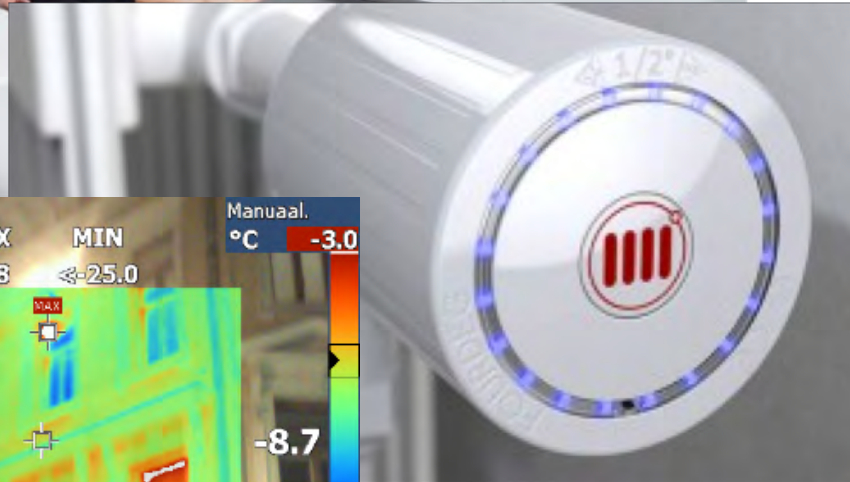
Genetic Algorithm optimizes smart thermostat:

- Home/Office temperature

Combine data from:

- Grid demand response
- Weather forecast
- Personal preferences
- Energy use forecast

- **15% less energy use**
- **Avoid grid peak loads**



FLEXI SPACES – OPEN ALL SPACES IN THE DISTRICT



Pieces of the ECOSYSTEM:

- Mobile reservation
- Authentication
- Mobile Payment
- Smart Locking
- All in one system
- Real time - Open APIs



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Smart **HELSINKI** on top of the world

#1 Leading City for MaaS Implementation

Juniper Research, 2018

#1 European Capital of Smart Tourism 2018

European Commission, 2018

#1 Best Urban Region for Foreign Investments
(category: population 1,5-4 million)

Financial Times, 2018



M Smart Cities

ARTICLE SÉLECTIONNÉ DANS LA MATINALE DU 07/07/2018 > Découvrir l'application

A Helsinki, la smart city à hauteur de citoyen

monde.fr/recherche/



A Helsinki district is being used as one huge innovation platform – with the goal of saving inhabitants one hour per day

Vilhelm Carlström 07 Dec 2016 5:31 PM 7561

Helsinki is already one of the most modern cities in the world. In 2015, Frost & Sullivan ranked it the number one 'Real-Time City' in Europe for its data-based services, open source utilization and collaboration. The CITIE report of 2015 ranked it the number three city globally, when it comes to city initiatives for technology, innovation and entrepreneurship – only surpassed by New York City and London.

At the forefront of urban development is the Smart Kalasatama district.



Helsinki: A Very Smart City

06/13/2016 07:57 am ET | Updated Jun 13, 2016 110

Magda Abu-Fadi Director of Kalesa Unlimited in Lebanon It's not every day one sees a fully-functional smart city, given crumbling urban infrastructure in many countries, so a visit to a metropolitan area that runs well and serves its residents efficiently is a delightful sight for sore eyes.

The Finnish capital of Helsinki is such a model, notably its Smart Kalasatama district – an experimental innovation platform to co-create smart infrastructure and services.



Ongoing construction at Smart Kalasatama district (Abu-Fadi)



Agile piloting for startups

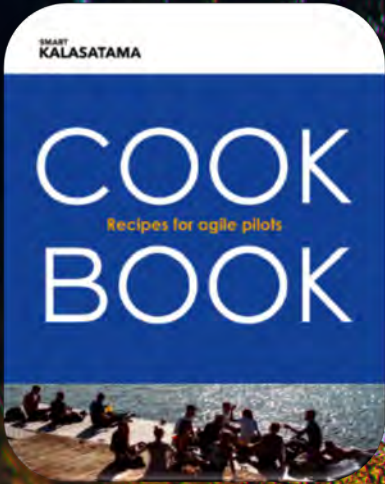
Starting small can lead to something bigger. The Programme for Agile Piloting procures small startups that provide new innovative services for people living in the Kalasatama area.

New services are tested with residents and local companies for a period of six months. One example of such projects is Foller, a startup that use IoT to address the issue of food waste. Individual products in local supermarkets and cafes are fitted with RFID sensor tags. The sensor detects the gas build-up inside packaged foods such as fruit, fish, and meat. When products are nearing the end of their shelf life the price is automatically reduced and ads/notifications sent to customers. The corresponding store smart shelf also knows when products need to be refilled. The sensors can also be used in the home with a RFID reader.

One of the contributions to Helsinki's smart city successes is the collaboration across stakeholders. They include more than 30 city departments, residents, citizen organizations, industry, small and medium enterprises, startups and academia. A Smart Kalasatama Innovators Club meets four times a year helping participants to regularly share news and build their community.

Picture: Sakke Somerma

SMART KALASATAMA PUBLICATIONS



Picture: Jussi Hellsten

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THANK YOU!

Helsinki

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KIRJASTO

HELSINKIN KAUPUNKI
HELSINGFORS
HELSINKI CITY

Picture: Jussi Hellsten

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