

AI4CITIES



AI4Cities webinar Open Market Consultation

15.6.2020



The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871914.

All information contained herein is for discussion purposes only and shall not be considered a commitment on the part of Forum Virium Helsinki or the AI4Cities Buyers Group.

AI4Cities - AI accelerating Cities' transition to carbon neutrality

This webinar is part of the Open Market Consultation phase. The aim is to refine the scope of the Request for Tenders as well as check with the market on state-of-the-art and innovativeness.

The webinar will be recorded.

Agenda

- 14:00 **Introduction to the AI4Cities project and to PCP (Pre-Commercial Procurement) process,**
Project Manager Kaisa Sibelius
- 14:30 **Open AI for agile cities,** Director, IoT and Data Timo Ruohomäki
- 14:45 **Mobility and Energy tracks and challenges in Helsinki,**
Director, IoT and Data Timo Ruohomäki
- 15:10 **Questions and feedback**
- 15:30 **The Webinar ends**



What is Forum Virium Helsinki and what we do?

- Forum Virium Helsinki is the City of Helsinki innovation company established in 2005.
- Co-creating urban futures with companies, universities, cities and citizens.
- City divisions (5) are presented in the board. Chairman is Digital Director of Helsinki.
- Focus: Smart City, Smart Mobility and Open IoT, Data & AI.
- In 2020 the project portfolio includes over 40 projects and 10 M€ total budget.
- Over 100 Smart City projects executed.
 - Horizon 2020, European Regional Development Fund, Interreg Central Baltic
- Personnel 60

Duration: 36 months
(1.1.2020 – 31.12.2022)

Funding instrument:
Pre-commercial procurement
(PCP)

PCP Budget:

4.670.000€

Total Budget:

6.600.000€



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**FORUM
VIRIUM
HELSINKI**

**Gemeente
Amsterdam**

cap-digital
Paris Region



Tallinn



**City of
Stavanger**

ICLEI
Local
Governments
for Sustainability

Cap Digital (Paris Region)

City of Amsterdam

City of Copenhagen

City of Stavanger

City of Tallinn

**Forum Virium
Helsinki
(City of Helsinki)**

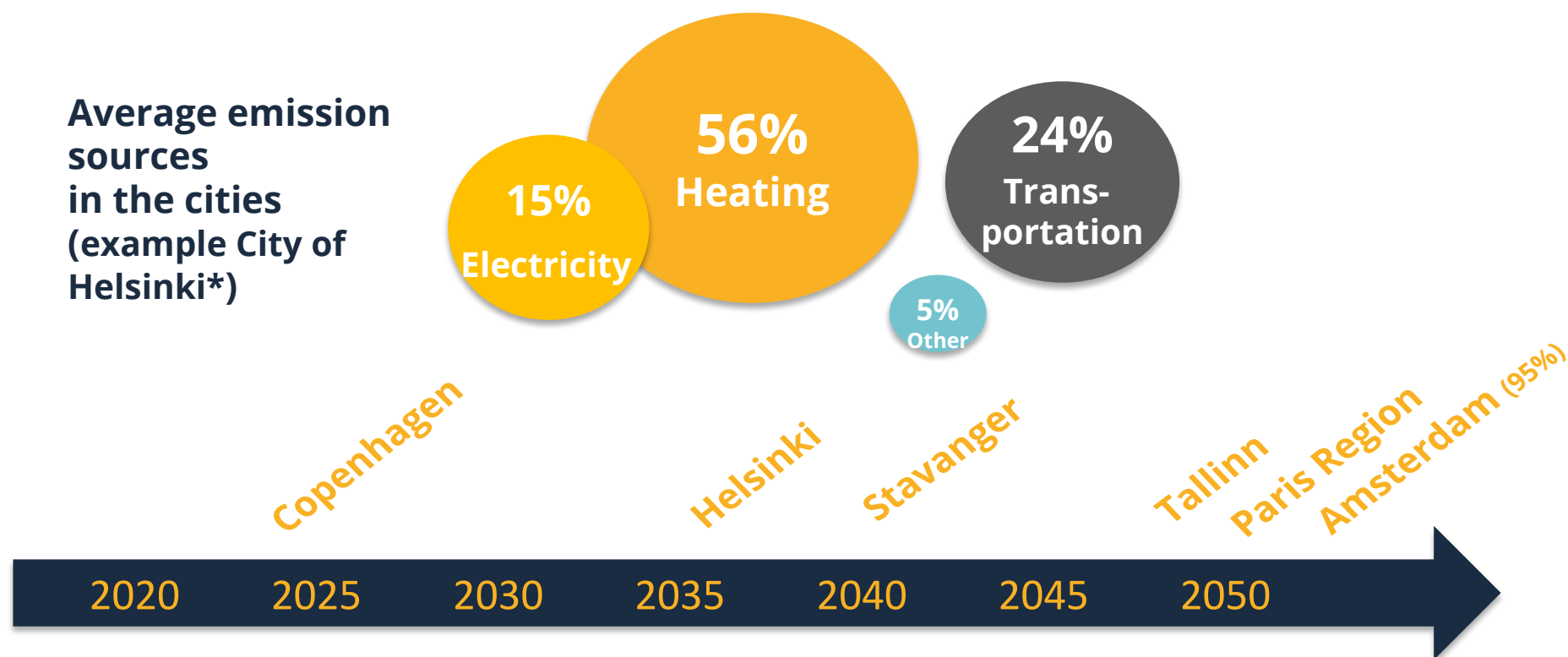
Buyers Group

**Expert
partner**

**Preferred
partners**

ICLEI – Local Governments for Sustainability

The City Partners are all committed to becoming Carbon neutral



*) Source: Helsinki Region Environmental Services Authority HSY, 2019

What do we look for?

Unique and innovative digital solutions utilizing AI to able to **help Cities to reduce their CO2 emissions** in two domains: energy and mobility via a challenge-based PCP competition.

Mobility (Lot 1)



Energy (Lot 2)



AI4Cities challenges build on **highly innovative and not market-ready technologies** to bring **added value** for cities' management and decision making.

Who are we addressing?



Companies, developers and consortiums with innovative ideas for innovative or disruptive new digital-based solutions, based on AI & other Emerging Technologies.



Cities and other public procurement organisations, interested in potential take up of the solutions developed within the PCP process.



Others with an interest in promoting entrepreneurship, climate change, reduction of greenhouse gas emissions, etc.

Accelerating CO2 reduction of the cities

Cities' visions of the carbon neutrality

Amsterdam

Stavanger

Paris region

Tallinn

Copenhagen

Helsinki



Challenge areas

Energy
(Lot 2)**Mobility**
(Lot 1)

Examples of need

Optimization of energy infrastructure and utility (grids and storage)

Sustainable energy and maintenance management and optimization in the buildings

Advanced traffic planning and management

Seamless transportation flows and combining public and private transportation

Motivation and guidance of citizens and facility managers for energy savings

Optimized usage of renewable energy sources

More efficient use of the existing traffic infrastructure

Optimization and coordination of logistics

Key Requirements for the technology

**Energy
(Lot 2)**



**Mobility
(Lot 1)**

AI

- Added value of AI for knowledge-based management
- Improved effectiveness of the city management
- Reasonable and sensible indicators for the resource and action management of the cities
- New knowledge from combined data sources and patterns in large data volumes
- Focus on APIs and algorithms (Less on new platforms or dashboards)

The Pre-Commercial Procurement process

Innovation Procurement in H2020

Through innovation procurement the public sector can drive innovation from the demand side.

- [Pre-Commercial Procurement \(PCP\)](#) addresses the development and testing of innovative solutions
- [Public Procurement of Innovative solutions \(PPI\)](#) focuses on the deployment of innovative solutions

Pre-commercial procurement

Pre-Commercial Procurement (PCP) **challenges industry from the demand side to develop innovative solutions for public sector needs** and it provides a first customer reference that enables companies to create competitive advantage on the market.

PCP enables public procurers **to compare alternative potential solution approaches** and filter out the best possible solutions that the market can deliver to address the public need.

<https://ec.europa.eu/digital-single-market/en/pre-commercial-procurement>

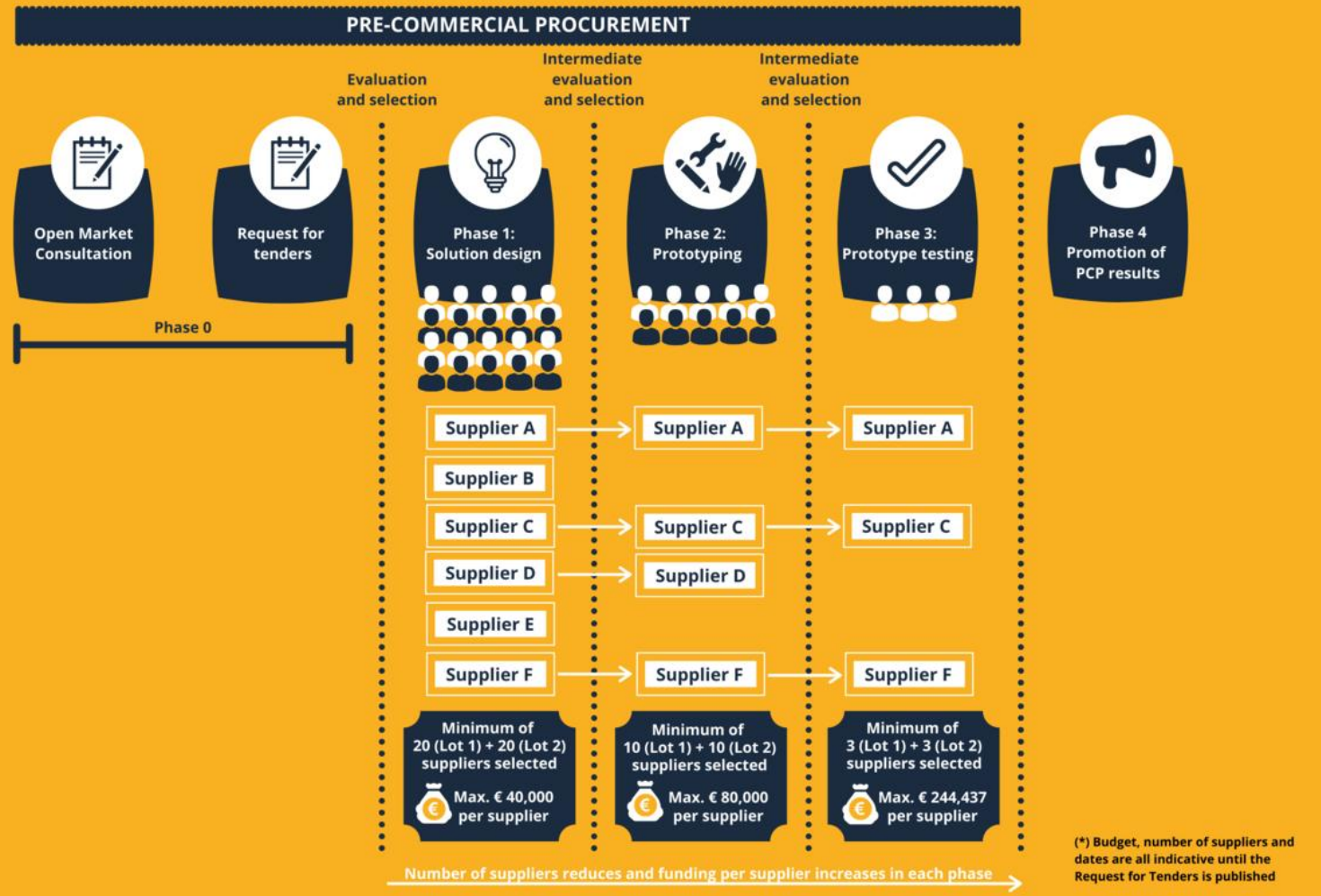
PCP vs. Traditional Public Procurement

PCP	Traditional procurement
Joint procurement tool: a Buyers group launches the RfT	Individual procurement tool - RfT is launched normally by a single department or unit inside the a City
High risk: high degree of innovation and R&D effort required	Low risk: Low degree of innovation focused on solutions on (or close to) the market
Functional specifications for prototypes development - focus on medium-/long-term	Technical specifications for mature product/ service - addresses immediate/ short-term needs
Competitive development with several contracts to several suppliers	Single contract: 1 contract to 1 supplier awarded
IPR – Risk/Benefit-sharing	IPR generated
Exemption for R&D services under EU Directives and WTO rules: special legal framework (H2020)	Tendering procedures and legal framework: national public procurement rules apply
Development in multiple phases	Development in 1 phase

Key requirements and guidelines

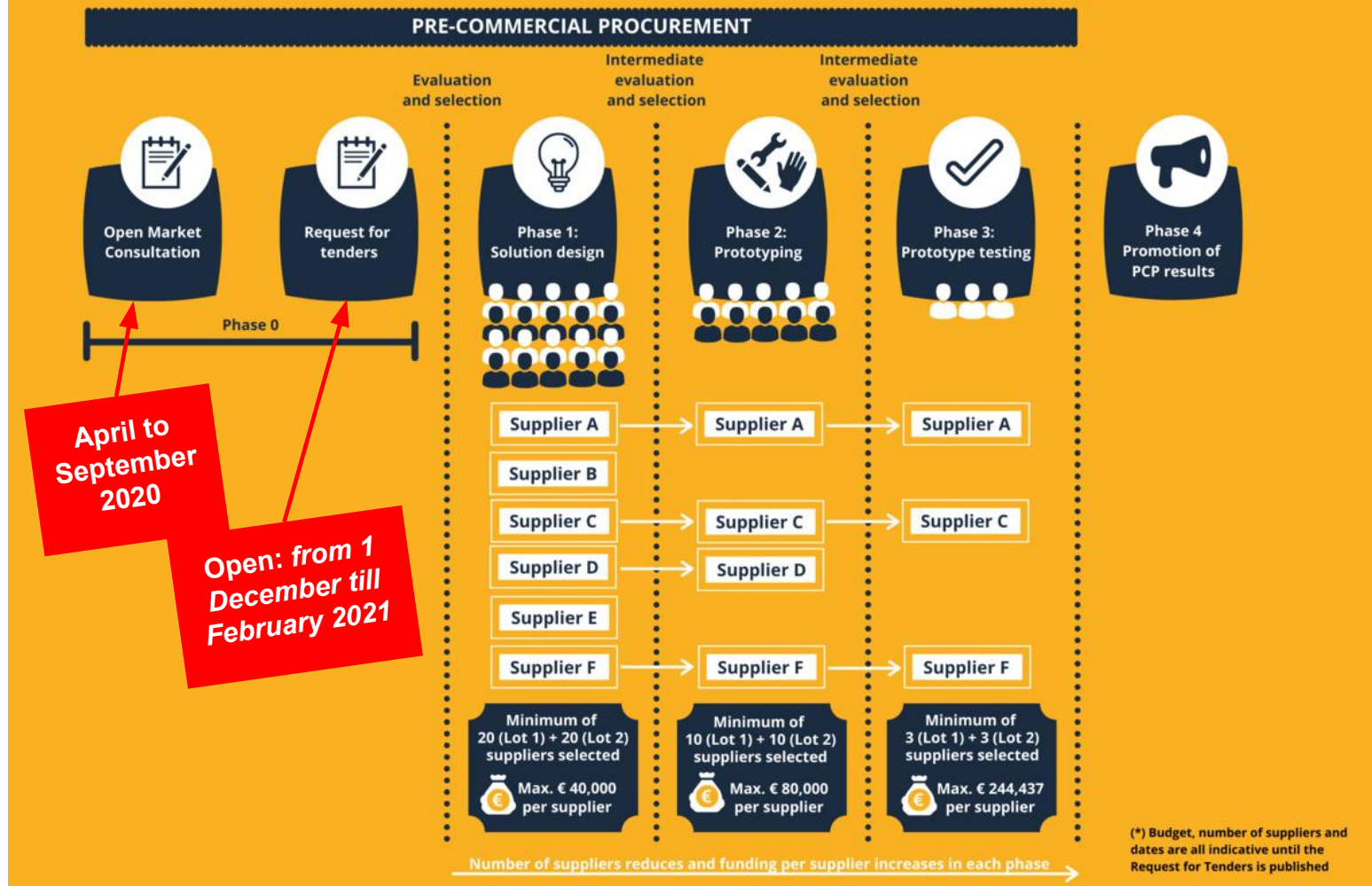
- **Joint Procurement Agreement** between group of Procurers/Buyers
- **Risks and Benefits** of the R&D are **shared between the procurers and the Suppliers**
 - **IPR** retained by suppliers - must be exploited after PCP completion
 - Procurers can **use the solutions royalties free and exploit learnings**
- **Focus on Innovation:** R&D is at least 50% of the total contract value
- **Tool to foster EU competitiveness:** at least 50% in EU Member States and/or Associated Countries to Horizon 2020.
- **Increase Cities capacity** in leading the market to create impact based and innovative solutions

MOBILITY CHALLENGE (Lot 1) & ENERGY CHALLENGE (Lot 2)

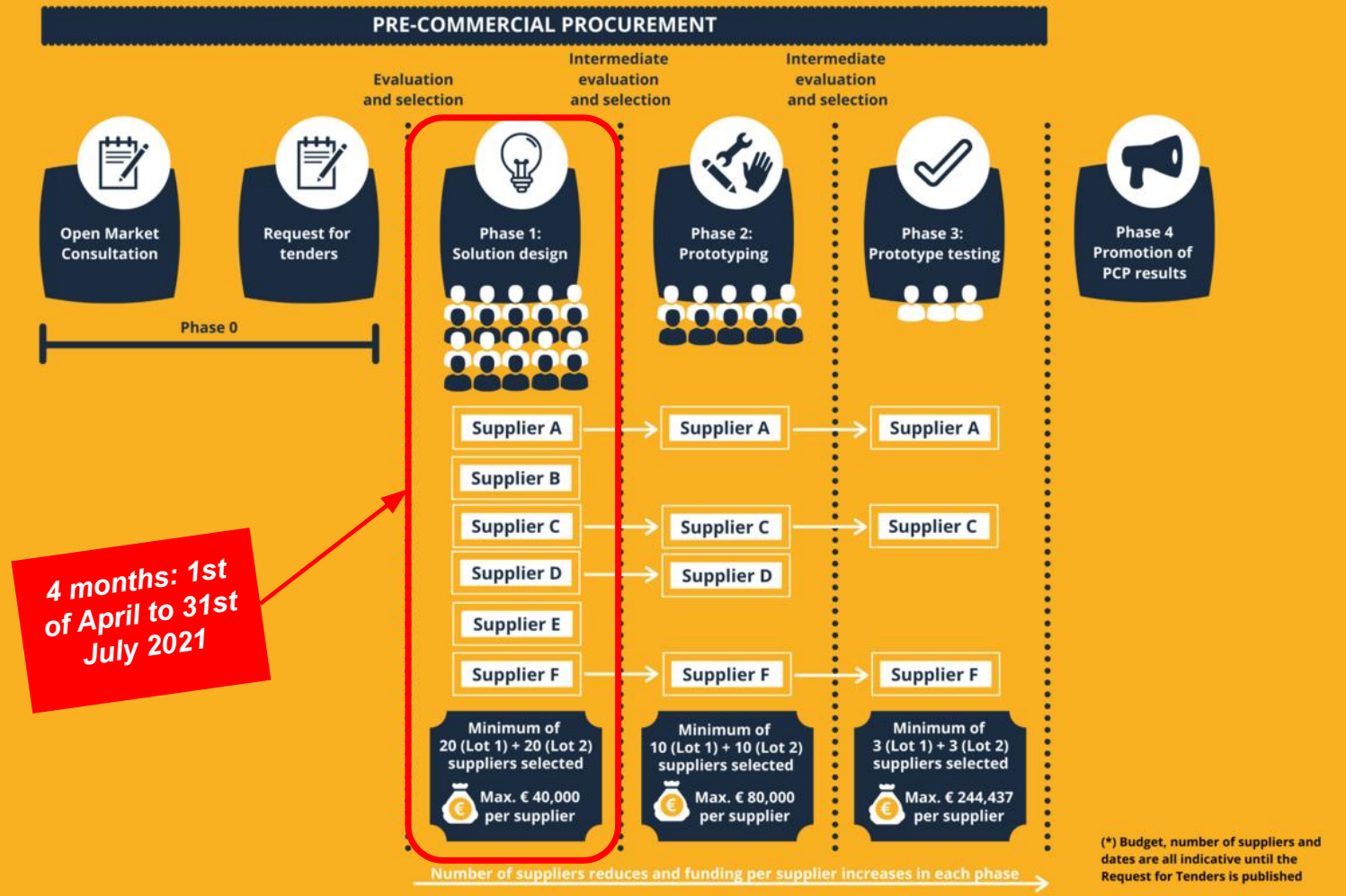


PCP Process and timeline

MOBILITY CHALLENGE (Lot 1) & ENERGY CHALLENGE (Lot 2)

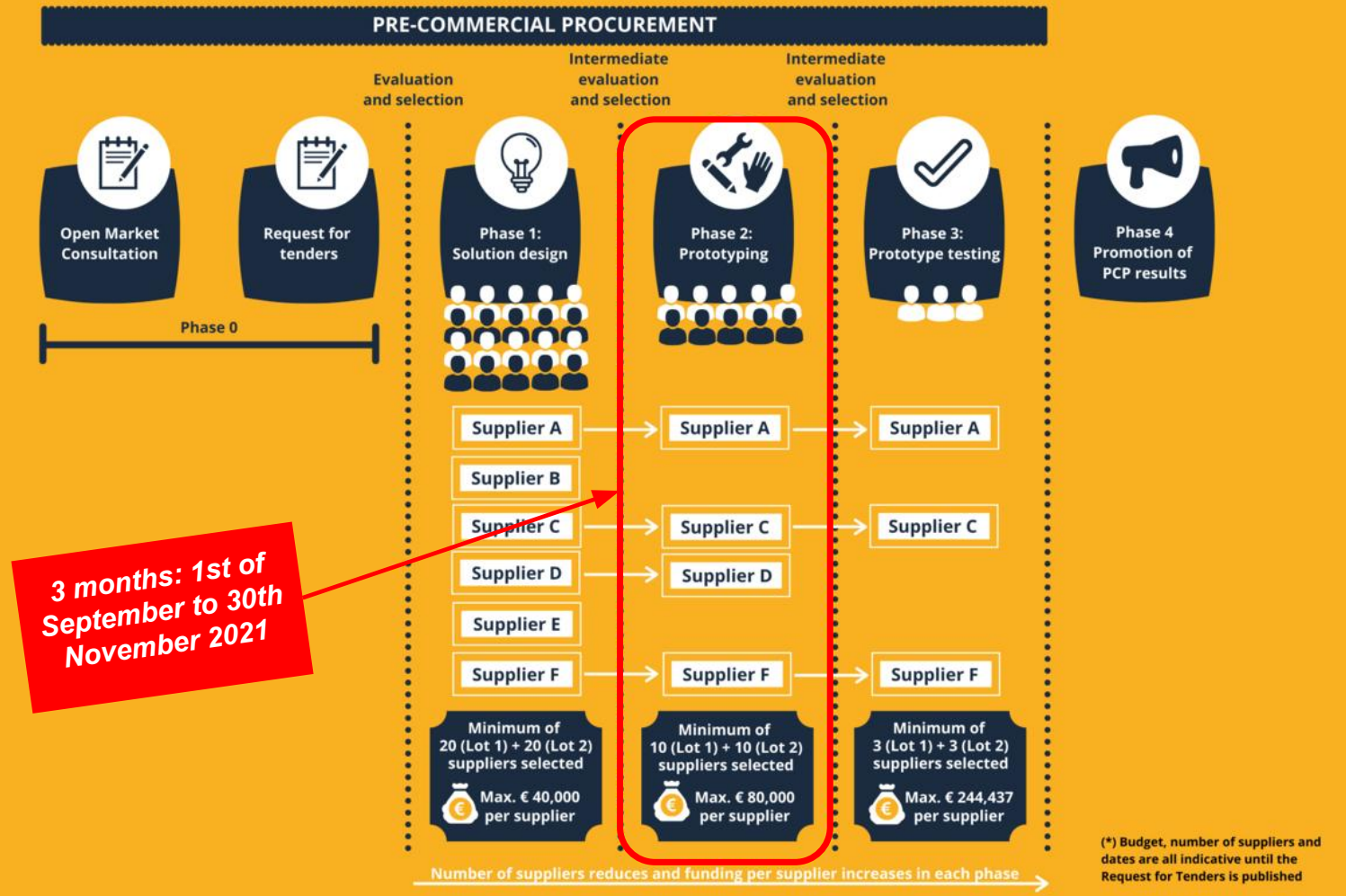


MOBILITY CHALLENGE (Lot 1) & ENERGY CHALLENGE (Lot 2)



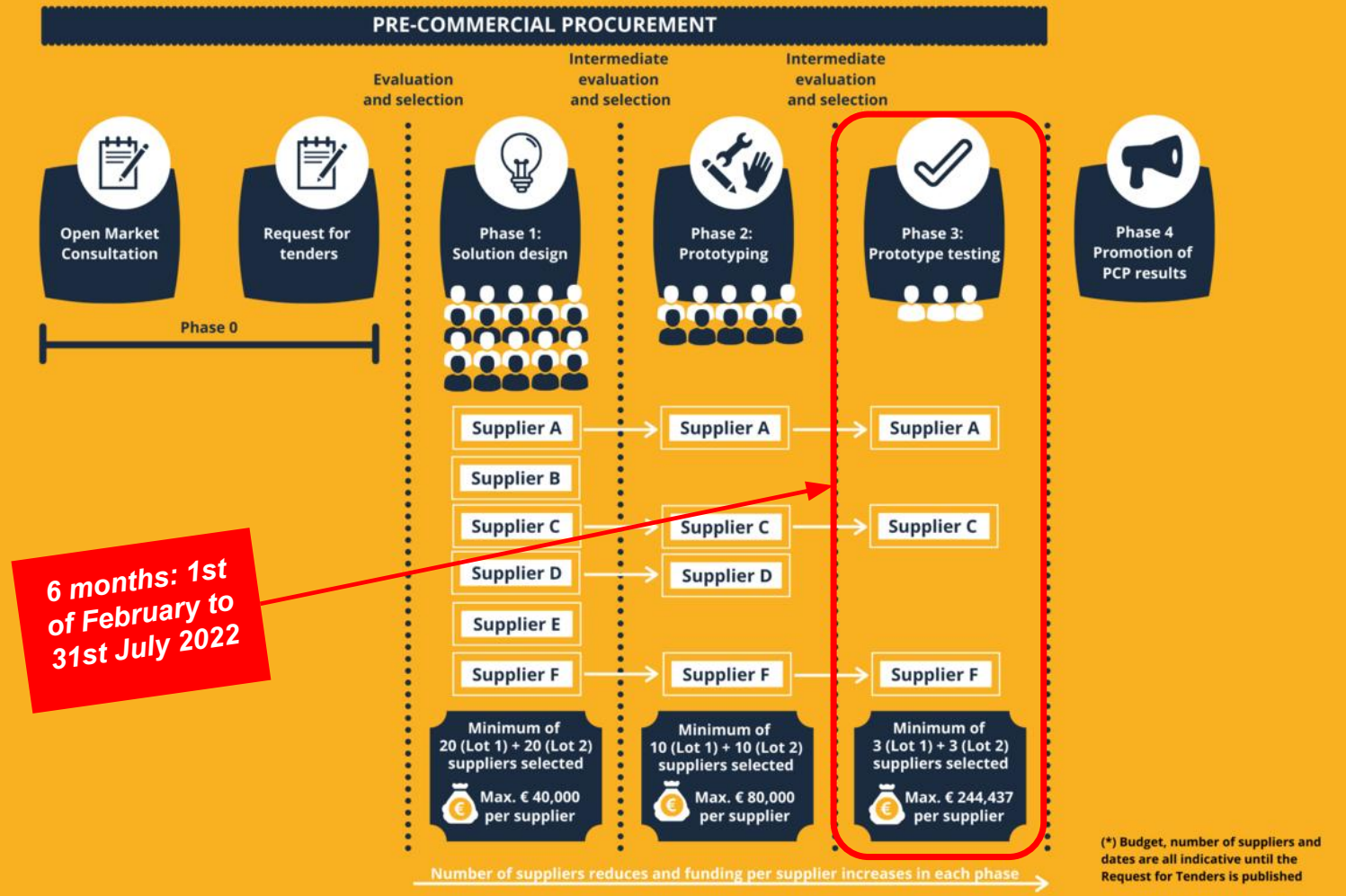
PCP Process and timeline

MOBILITY CHALLENGE (Lot 1) & ENERGY CHALLENGE (Lot 2)

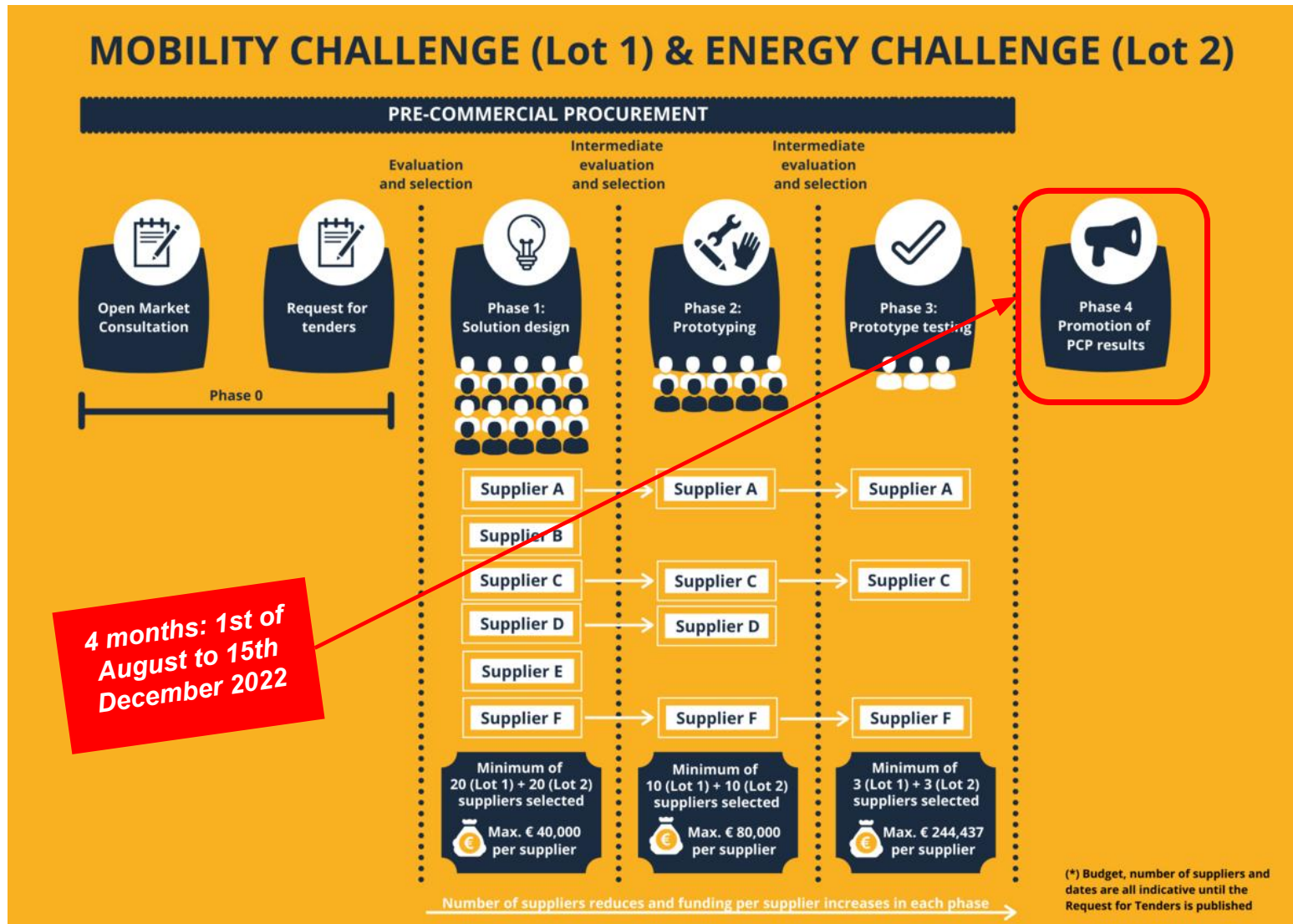


PCP Process and timeline

MOBILITY CHALLENGE (Lot 1) & ENERGY CHALLENGE (Lot 2)



MOBILITY CHALLENGE (Lot 1) & ENERGY CHALLENGE (Lot 2)



PCP Budget*

Expected number of suppliers (Lot 1 & Lot 2)	Max budget per supplier (inc. VAT)	Total available budget per phase (inc. VAT)	Duration of each phase
Phase 1: 40 (20+20)	40.000€	1.600.000€	4 months
Phase 2: 20 (10+10)	80.000€	1.600.000€	3 months
Phase 3: 6 (3+3)	244.437€	1.466.622€	6 months
Totals	364.437€	4.666.622€	

* the budget breakdown and number of suppliers are indicative until the Request for Tenders is published.

Contract procedure

- **One Joint Request for Tenders** published on *1.12.2020 (tentative date)*
 - **N.B. Two (2) Lots** - each lot must be **applied separately!**
- **Lead procurer** (Forum Virium Helsinki) **awarding all contracts** acting **on behalf of all procurers in the Buyers Group**
 - **Single Framework Agreement** per winning tenderer covering all PCP phases, plus a
 - **Specific Phase contract** per PCP phase (depending on subsequent evaluations and offers).
 - **Payments done per phase** upon **satisfactory phase completion**

Reference websites for information on PCP

- [European Commission framework on Innovation Procurement](#)
- [EU policy initiatives on Innovation Procurement](#)
- [EU funded projects implementing PCPs or PPIs](#)
- [Innovation Procurement Platform](#)
- [Procurement forum](#)

See 'What is a PCP' tutorial from our "*older sister*" [SELECT4CITIES.EU](#) project: <https://www.select4cities.eu/what-is-pcp>

NEXT - Timo Ruohomäki

- Open AI for agile cities
- Mobility and Energy tracks and challenges in Helsinki

The AI4Cities PCP timeline



Preparation phase (Phase 0)

February '20	March	April	May	June/July/August	September	October	November	December	January '21
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OMC
starts at
17.4.

Global webinar
28.5.

- Global
webinar
-/online hackathon

OMC
ends

RfT launch
1.12.2020

RfT end
28.2.2021

Dialogue with Suppliers

- Global awareness and information campaign
- **Interactive sessions:** webinars, hackathon
- **Local events:** cities insights!
- OMC Survey open until 15th July

Refining challenges with stakeholders

- Mapping open and other available data sources, APIs
- Local workshops, roundtables, meetings
- Documentation of feedback and comments

Finalizing
Challenges'
Functional
requirements

Preparation of Request for Tenders (RfT)

Give us feedback & get more information

OMC survey for suppliers and procurers

28 May 2020



Feedback and input from suppliers and procuring authorities is crucial for the development and success of AI4Cities. For this reason project coordinator Forum Virium has prepared two Open Market Consultation surveys, one for procurers and one for suppliers.

If you are interested in the procurement and/or development of AI solutions for CO2 emission reduction, we kindly ask you to answer these questions as completely as possible. Your answers will help us shape the Request for Tenders (open from 1 December 2020 to 28 February 2021) and contribute to the variety of selection and award criteria.

Please find the two surveys below:

1. AI4CITIES OMC SURVEY FOR SUPPLIERS

2. AI4CITIES OMC SURVEY FOR PROCURERS

QUESTIONS AND ANSWERS

General



Competition process



Open Market Consultation



Request for Tenders

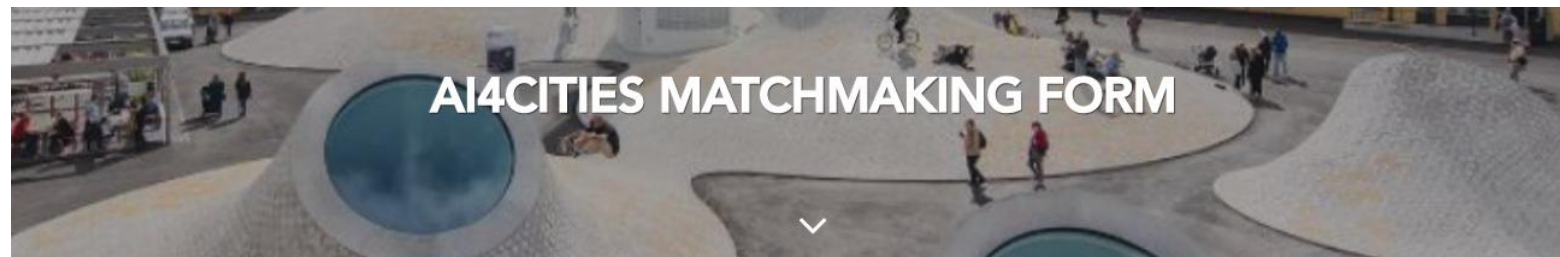


Finance





Reinforce your consortium



AI4Cities is looking for artificial intelligence (AI) solutions in the fields of mobility and energy to accelerate carbon neutrality.

We are giving organisations the chance of finding partners and suppliers by providing their contact information on the Matchmaking section on the AI4Cities website.

If you want your organisation's contact information displayed on the website, please submit details with the form below.



<https://ai4cities.eu/>

More information:



Kaisa Sibelius
Project manager

#AI4Cities
Mobile: +358 40 570 1317
kaisa.sibelius@forumvirium.fi

AI4Cities Matchmaking form

Please send your information with the form below. If you wish your contact information to be removed, send a message to communication@ai4cities.eu

A: Describe what you are looking for or offering. The following information will be published on the AI4Cities website.

1. Company / organisation name *

2. Company / organisation website *

3. Country *

4a: We are looking for *

(you can choose more than one)

- ☐ AI/Technology provider
- ☐ Mobility expertise
- ☐ Energy expertise
- ☐ Other

KEEP IN TOUCH!

Project Coordinator: Kaisa Sibelius, Forum Virium Helsinki

Email info@ai4cities.eu

Website www.ai4cities.eu

Twitter [@AI4Cities_EU](https://twitter.com/AI4Cities_EU)

#AI4Cities

LinkedIn [AI4Cities EU](https://www.linkedin.com/company/AI4Cities-EU)

→ **Subscribe the newsletter** <https://ai4cities.eu/#newsletter>

Become as a Preferred Partner <https://ai4cities.eu/cities/preferred-partners>



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Open AI for Agile Cities

AI4Cities Helsinki Webinar 15.6.2020

Timo Ruohomäki, Forum Virium Helsinki Oy

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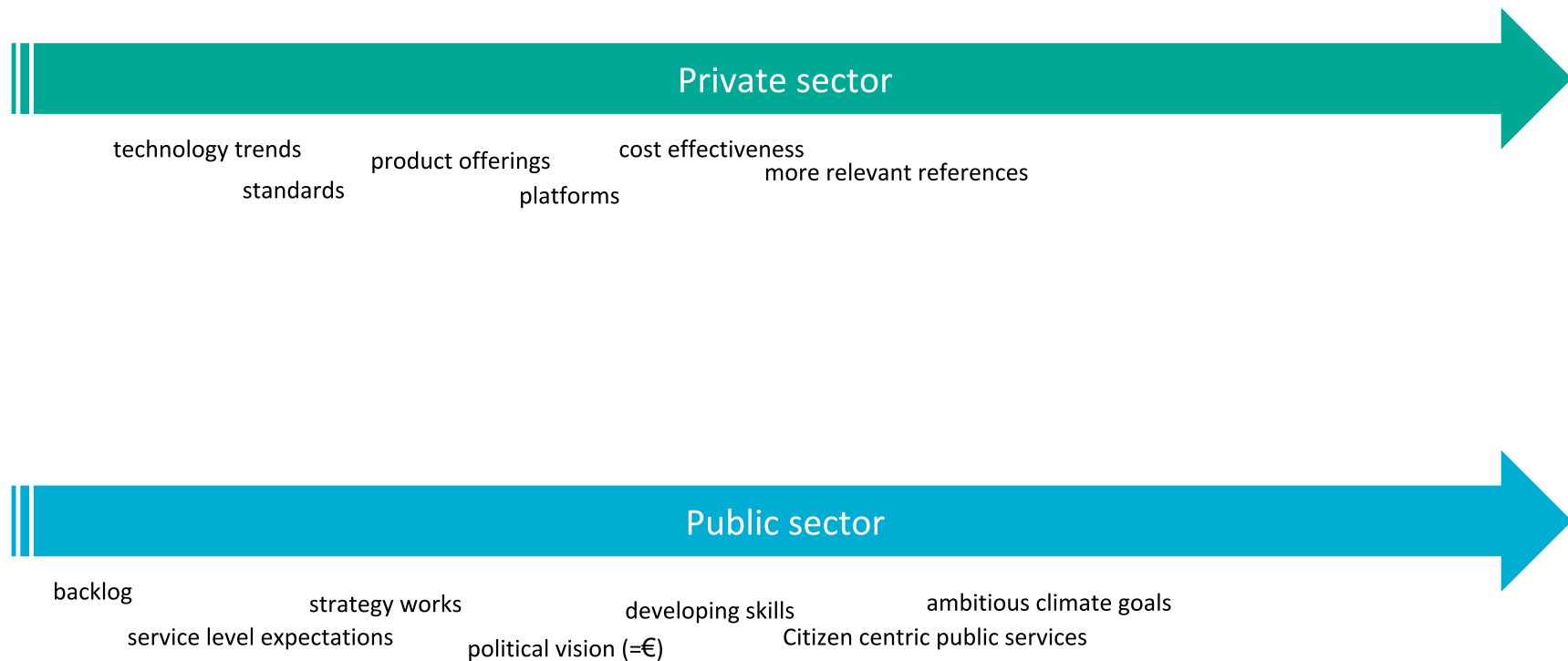
Topics

- How to be agile?
- How can AI be open?
- From raw data to predictive indicators
- AI Governance
- AI4EU
- Challenges

Urban Platform



How to be agile?



How to be agile?



Also note: There is no one voice of the city.

How can AI be open?

ANALYTIKA

DASHBOARDS

GRAPHS

EQUIPMENT

ISSUE TRACKER

REPORTS

HELLO, JIM

HELP

FILTER ISSUES

► Location

Deselect All

► Priority

Deselect All

► Status

Deselect All

► System Type

Deselect All

▼ Equipment Type

Deselect All

☒ Air Handling Unit - Typical Chilled Water

☒ Cooling Coil - Chilled Water

☒ Damper Modulating

☒ Electric Meter

☒ Heating Coil Hot Water / Glycol Mixture

☒ Supply Air Stream

► Issue Owner

Deselect All

▼ Issue Source

Select All

☐ Analytika Pro Report

☒ Analytika Portal

ISSUE FILTER RESULTS - 48 Issues

Search Filtered Issues

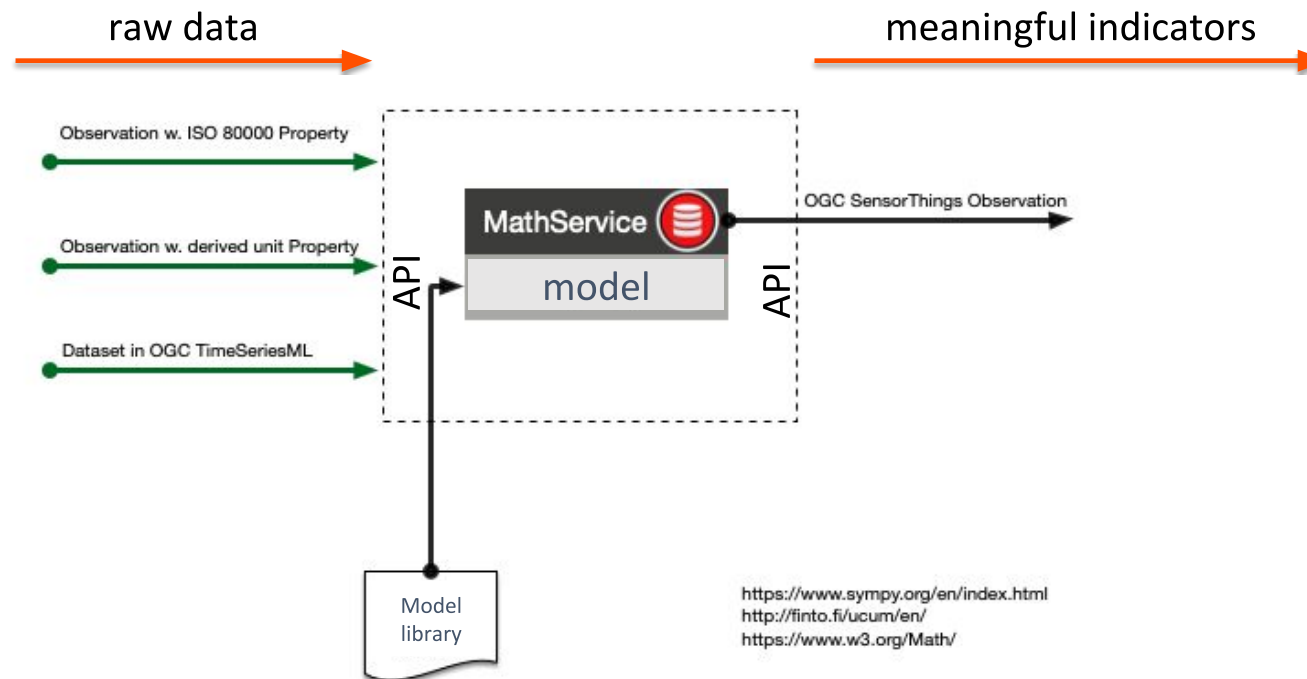
Issue Number	Issue Description	Status	Priority	System Type	Equipment Name	Est. Annual Cost
luer983	Economizer control logic problem	Detected	Medium	Air Distribution System	AHU_CHW-05	\$350,000
wer7843u	Motion appears to be restricted	Detected	Medium	Air Distribution System	OZ/DMPR_M	\$1,100,034
jsf98ls	Dirty Filter	Detected	Medium	Air Distribution System	SA	\$2,250
iushof098w	Economizer control logic problem	Detected	Medium	Air Distribution System	AHU_CHW-06	\$11,903
asdf098w	Sensor calibration high offset	Detected	Medium	Air Distribution System	AHU_CHW-06	\$2,934
asdfpkw	Sensor calibration low offset	Detected	Medium	Air Distribution System	AHU_CHW-06	-
asdf9-08w	Motion appears to be restricted	Detected	Medium	Air Distribution System	OZ/DMPR_M	\$1929
kiuhjsd0	Dirty Filter	Detected	Medium	Air Distribution System	SA	\$789
039klasd	Simultaneous Cooling and Humidification	Detected	Medium	Air Distribution System	SA	\$337,932
kiejfkow9	Economizer control logic problem	Detected	Medium	Air Distribution System	AHU-CHW-07	-

Show: 10 items per page

Page: < Prev 1 Next > of 5

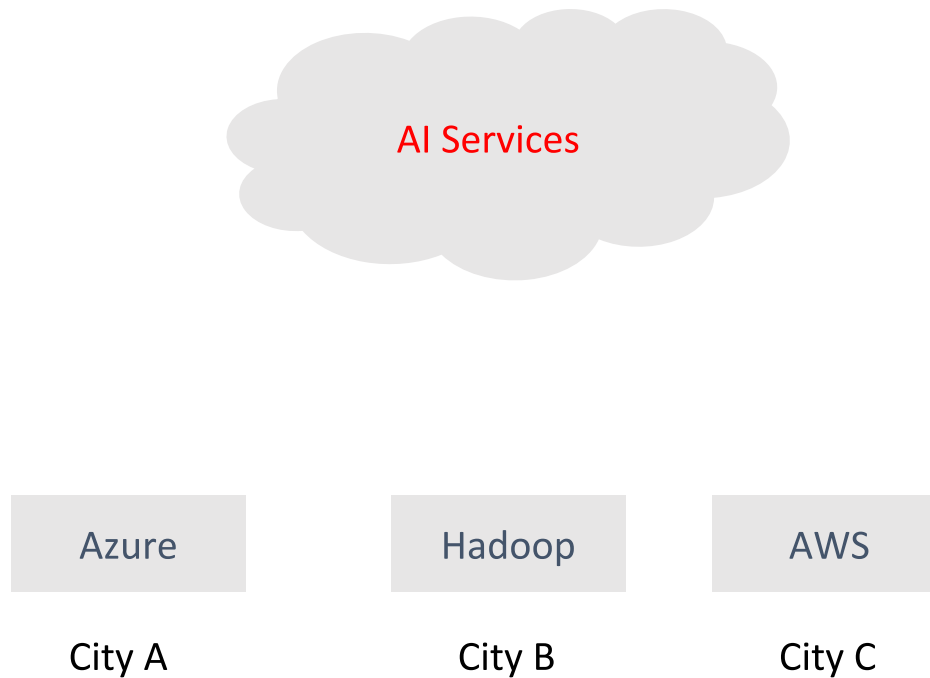
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From raw data to predictive indicators

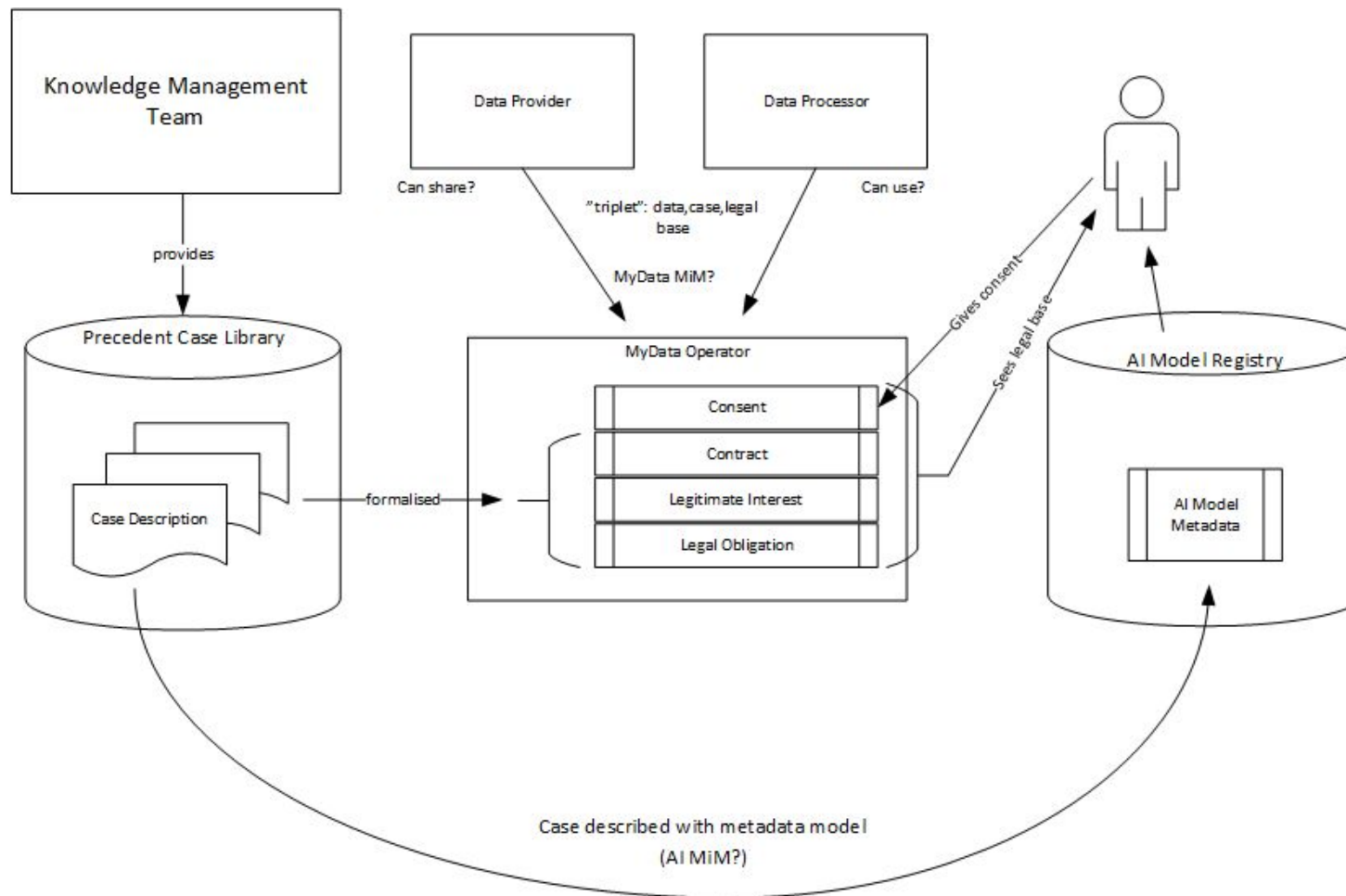


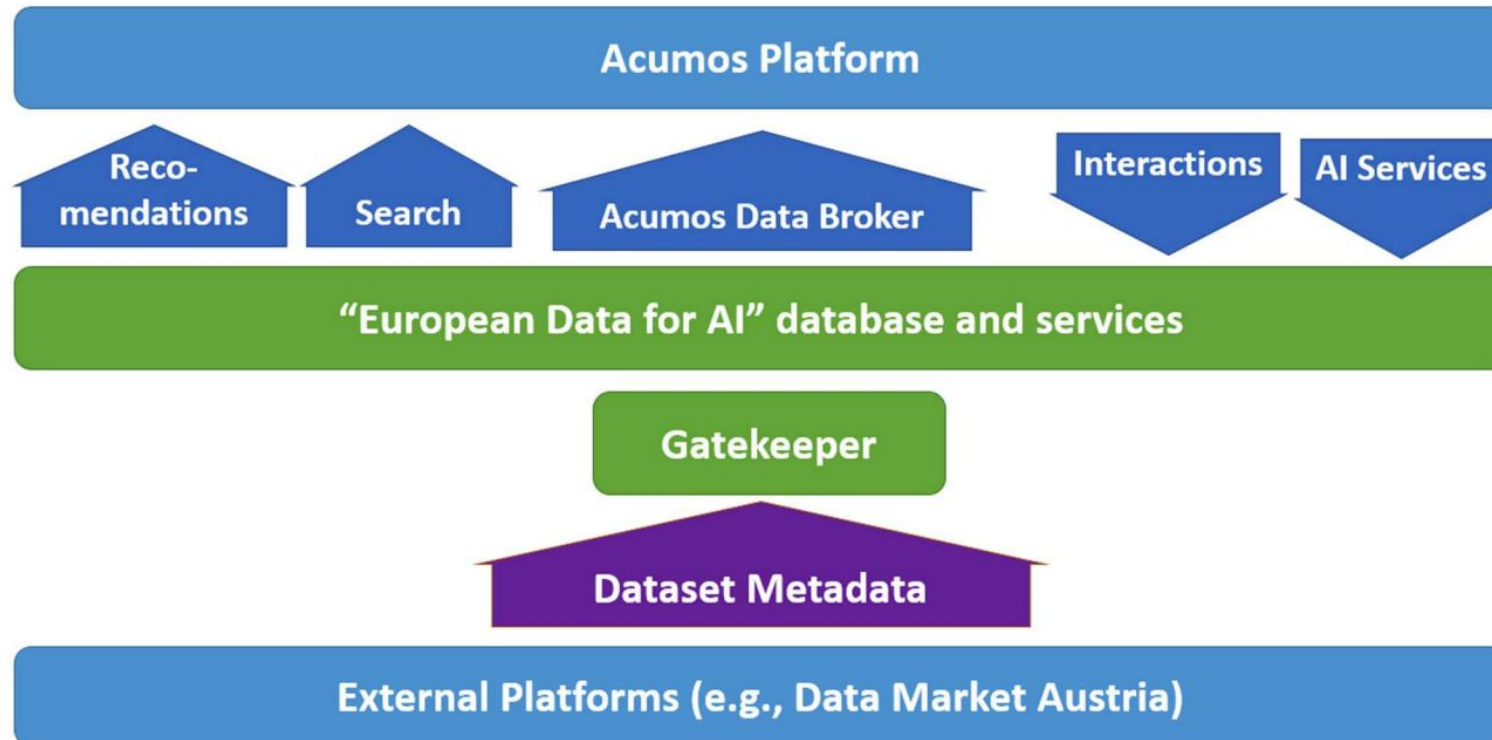
Adopt existing infrastructures

AI4EU (Acumos)

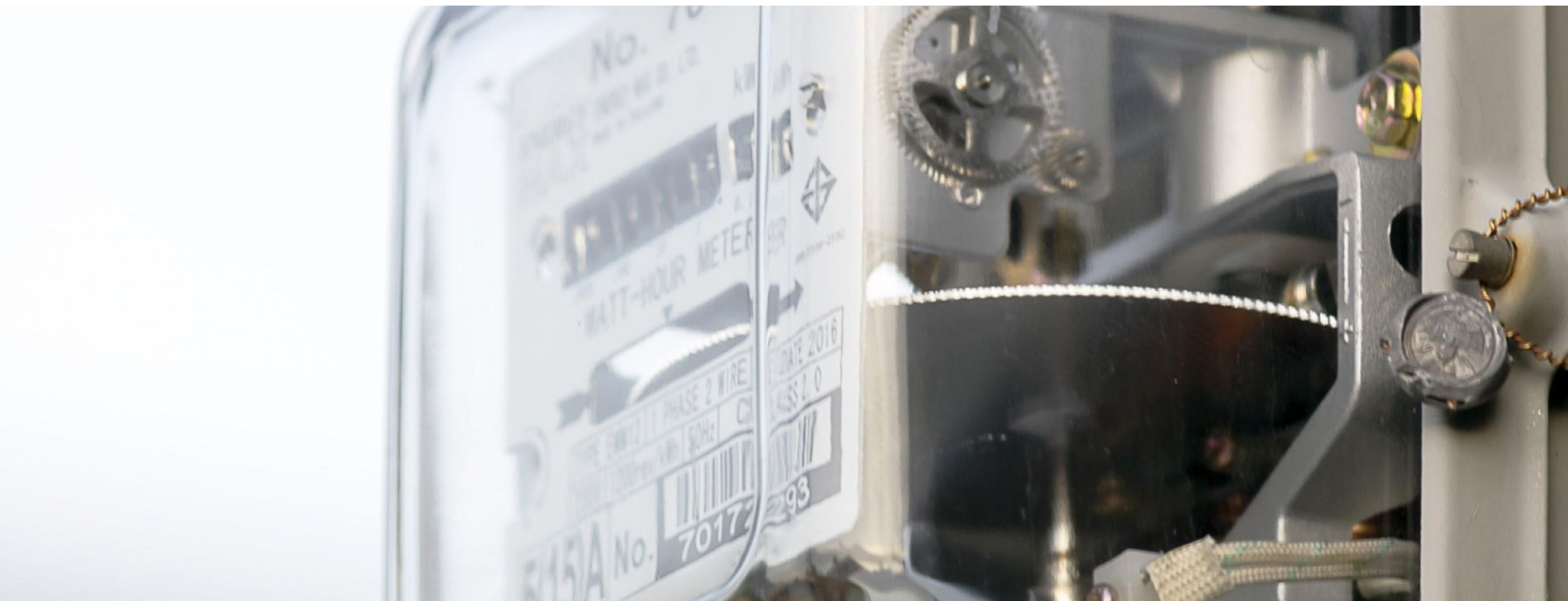


AI Governance with MyData





www.ai4eu.eu



Challenges

Tips

- Study the cities ambition & goals:
 - Carbon Neutral Helsinki 2035 (ilmastovahti.hel.fi)
 - Energy Renaissance 2021-
 - Helsinki Energy Challenge (energychallenge.hel.fi)
 - Helsingin Älyliikenteen Kehittämishjelma 2030
 - Data Strategy
- Study the State of the Art on AI:
 - AI4EU
 - FCAI
 - FAIA
- Understand the role of the city
 - E.g. Helsinki vs. Helen Ltd
- Citizen as an Actor
- Aim high, show your innovation!

Main focus

- Contribution to the CO2 emission reduction
- AI is in an elemental role, supporting knowledge-based management

Energy Challenges

Objective: Reduction of CO2 emissions using innovative AI solutions

Strategic Business Goals:

- Effective use of energy
- Support climate goals of the cities
- Support digitalization and data strategies of the cities

Objectives

Better living and working conditions

Reduced carbon footprint

Reduced costs by optimization

Energy Challenges

Public buildings

- Sustainability of the public buildings
- Energy and maintenance management and optimization in public buildings

Private buildings

- Motivation of citizens and facility managers for energy savings
- Guidance for using and utilizing renewable energy sources and other circular economy solutions
- CityGML Energy ADE model for citywide energy efficiency initiatives (knowledge, funding, best practises)

Infrastructure, utility (grids and storage)

- Energy storage optimizing (electricity, heating, cooling, charging)
- Smart grid optimization (peak shaving, batteries, market signals) on personal and system level
- Optimal production of renewable energy sources (RES)
- Mapping local energy resources (biomass)
- Optimization and integration of public utilities (street lighting, charging stations)

Mobility Challenges

- **Strategic business goals**
 - Safe and fluent traffic flows
 - Demand control
 - Creating ecosystems
- **Objectives**
 - Limit congestion, particularly during peak travel periods
 - Reduce car ownership, car usage and the number of vehicles on roads
 - Use existing infrastructure more effectively and create economies of scale
 - Improve overall environmental impact of transportation

Mobility Challenges

People Flow

- Optimization of people flows
 - Seamless transportation flows combining soft mobility (walking, cycling) and public transportation
 - Optimize placement of city bike terminals
 - Optimize placement of bus stops
 - Supporting of sharing economy in the cities

Logistics

- Optimisation and coordination of last mile logistics
 - Management of dynamic regulations on delivery vehicles
- Management of dynamic low emission zones
- Optimise charging point locations

Mobility Challenges

Traffic flows

- Optimization of traffic flows
- Predictive traffic planning (e. g. taking students to schools, major public events)
- Reducing the usage of energy and improve air quality
- Traffic lights control patterns
- Using hyperlocal air quality measurements to support public space design for healthy urban environments
- Optimizing placement of electrical car sharing
- Advanced traffic management
- Quantitative traffic data analysis, as input for traffic planning (long-term) and traffic (real-time) control
- Identify of new needs of transportation
- Dynamic parking pricing
- Dynamic congestion charging and road pricing
- Adaptive traffic control systems
- Information systems
- Prediction of issues affecting traffic flows
- Changing behaviour by data (alternative routes)

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Thank you!



vimeo



Linked The LinkedIn logo, a white lowercase "in" inside a white square.

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