



A quick guide to...

Procuring Smart City Innovation Through PCP

By, Antwerp | Copenhagen | Helsinki &
the SELECT for Cities Consortium

Based on the experience of

SELECT
for Cities



This booklet has been prepared by the H2020 project SELECT for Cities to provide inspiration for other cities on how to use Pre-Commercial Procurement (PCP) processes to achieve a Smart Cities goal.

It uses the real-life experience of SELECT for Cities to highlight the kinds of activities undertaken during a PCP in order to provide inspiration to other cities looking to use innovative procurement methods for their own research and development.

For more information visit select4cities.eu

Sections



PAGE 2: SELECT
FOR CITIES SMART
CITY CHALLENGE



PAGE 7: WHY WE
ADOPTED PRE COMMERCIAL
PROCUREMENT (PCP)



PAGE 13: HOW WE
APPLIED PCP FOR
SMART CITY
INNOVATION



Our Smart City Challenge

Towards a vision of connected cities...

SELECT for Cities is built around the premise that cities across the world are continuously seeking new methods, technology and tools to foster open innovation to solve challenges, create value for their citizens and business, and to become 'smart cities'.

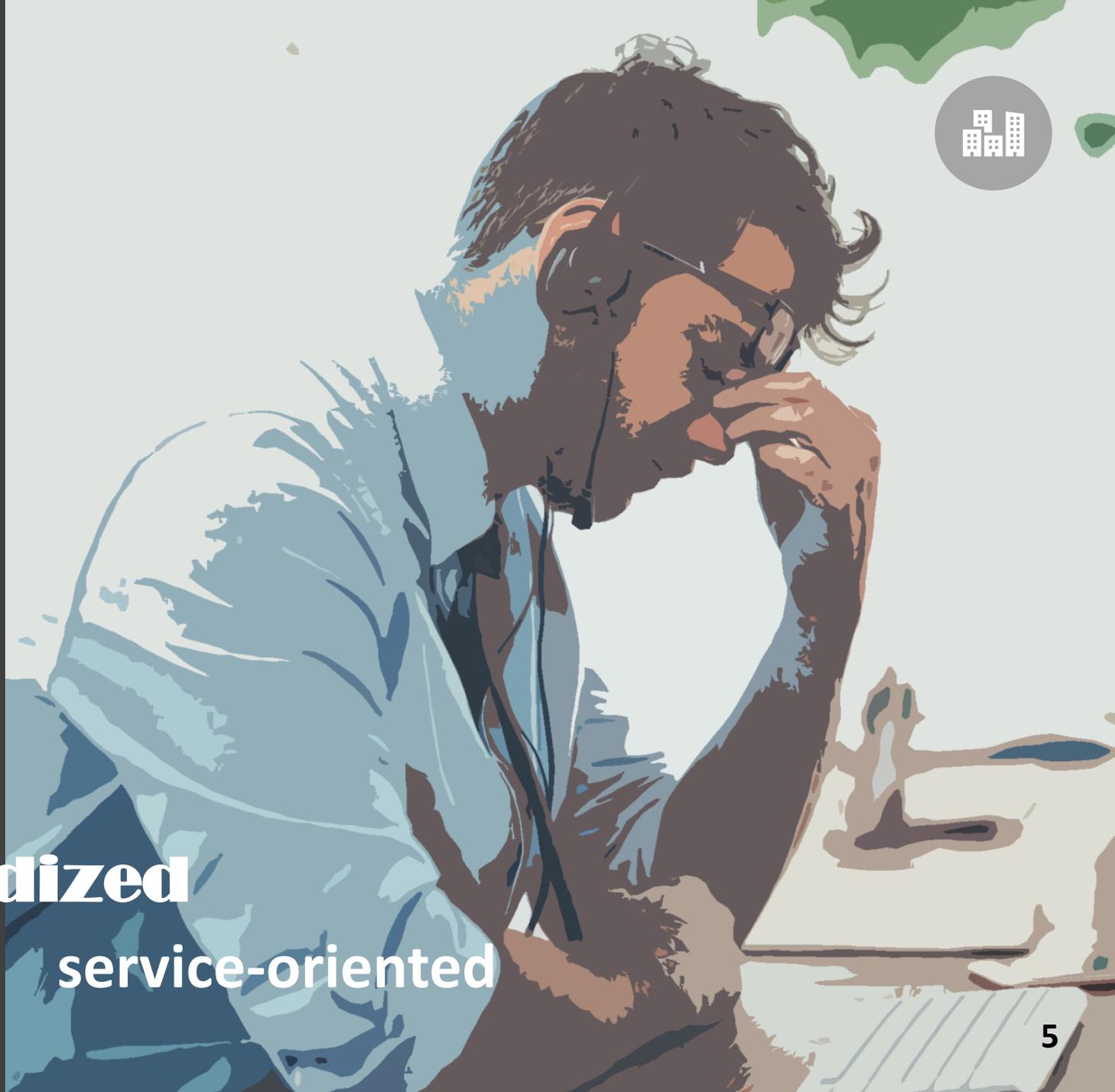
The **Internet of Everything (IoE)** is one of the dominant drivers transforming the way people manage and live in urban environments. This new connected approach involves physical spaces as well as objects and provides a massive opportunity for the creation of new smart services and businesses especially in the areas of logistics, transport, environment, security and wellbeing.



In 2015 we, Antwerp, Copenhagen and Helsinki, joined forces to overcome these barriers and unlock smart city innovation, through an Internet-of-Everything platform.

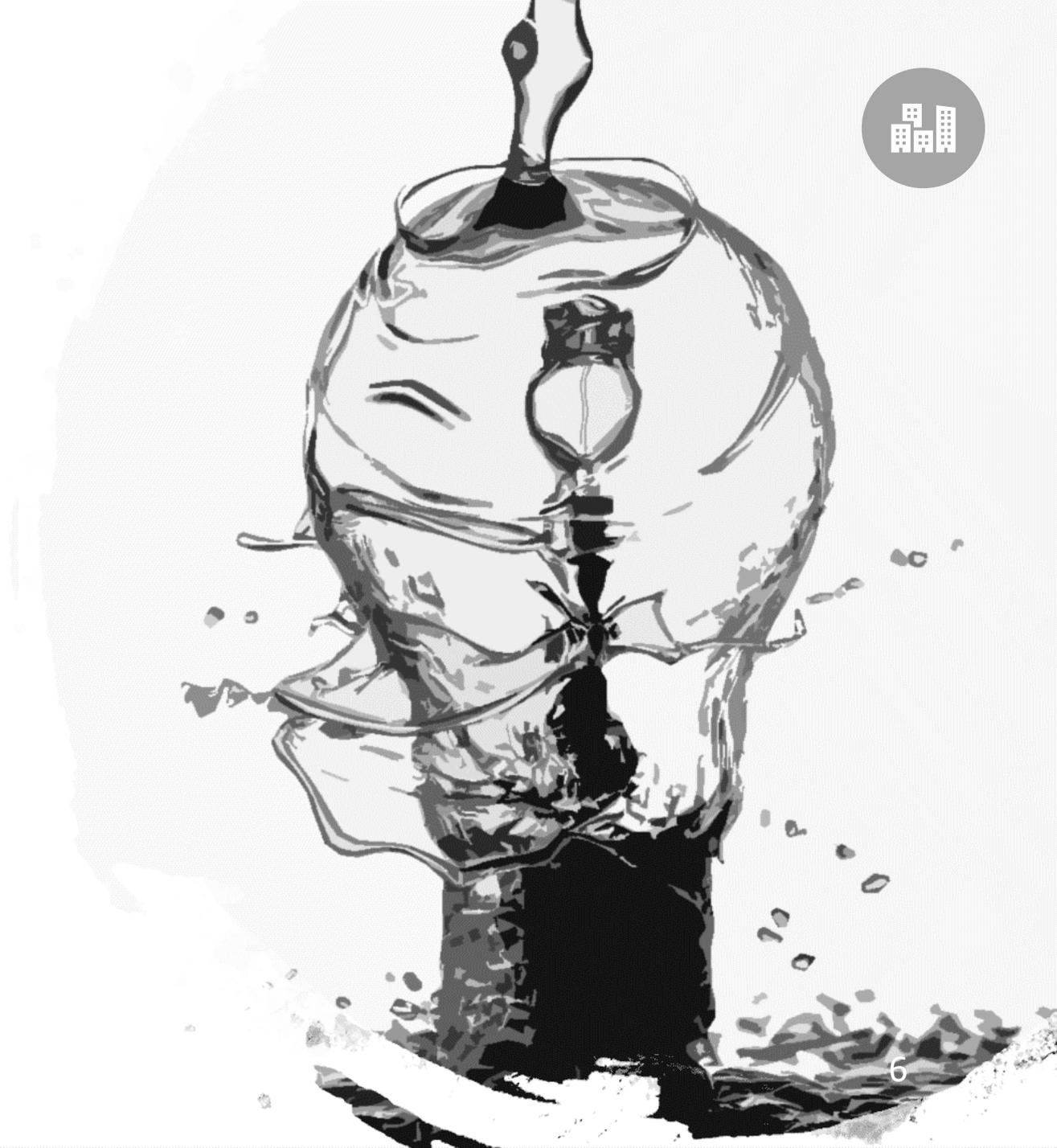
But, despite searching the market no platform existed that met our criteria...

user-centric
open data-driven
standardized
service-oriented





Instead we joined forces to try and develop our own platform that met the needs of our cities and enable large-scale co-creation, testing and validation of urban IoE applications and services.





Why we
adopted PCP



The world is changing at an exponential rate, but Public Sector struggles to keep up

“The process of purchasing goods and services (procurement) has historically been seen as a bit of a challenge for municipalities and other institutions within our cities, especially when it comes to linking it to the achievement of wider local economic, social and environmental benefits.

The process of procurement can and has been seen as bureaucratic, legally complex, isolated from other functions in municipalities, difficult to engage with SMEs, and extremely competitive.”

**From - The Importance of procurement to city economies | URBACT
(urbact.eu/importance-procurement-city-economics)**



“Europe has an enormous and as yet overlooked opportunity to spur innovation using procurement”

director of ICLEI

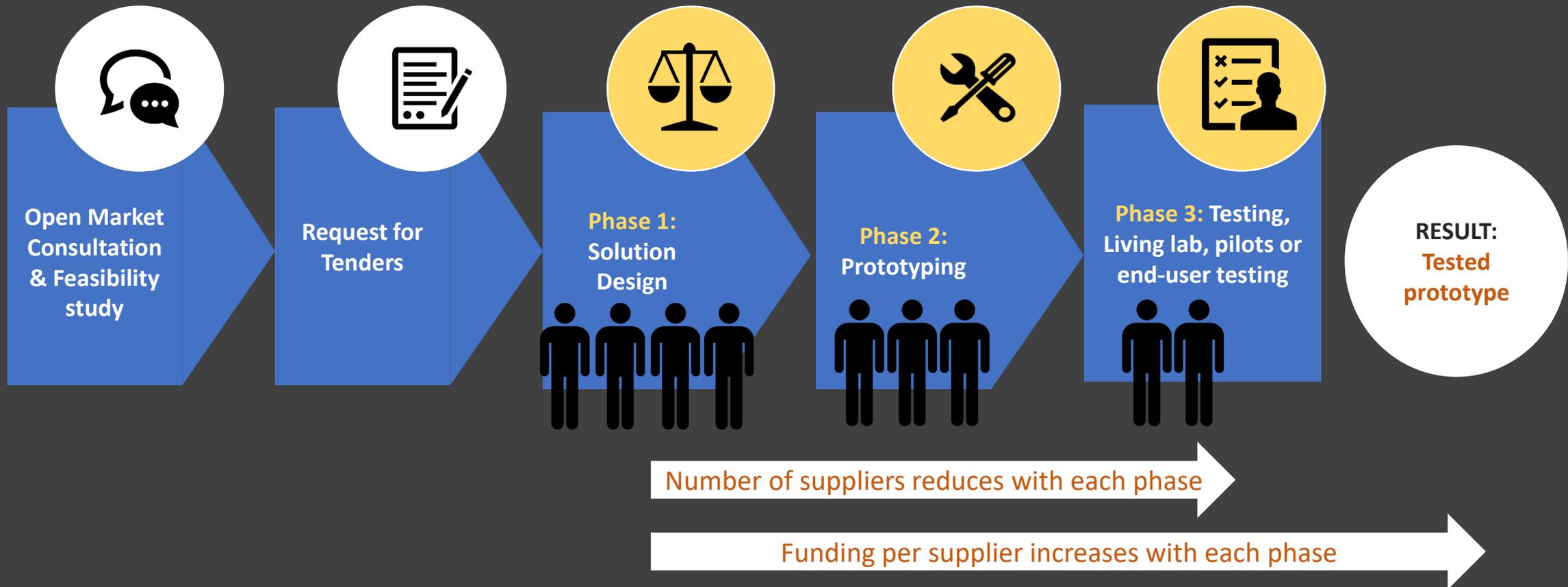
Public procurement now accounts for some 19% of GDP in the European Union, representing an enormous potential market for innovative products and services, offering a powerful leverage for the modernization of public sector and for the competitiveness and growth of European industry.

More and more cities need to procure innovation and are facing changes in procurement.

Pre-Commercial Procurement (PCP) offers a new approach for the public procurement of research and development (R&D) aimed at generating innovation. It works by securing R&D from several competing suppliers across a series of phases – e.g. solution design, prototyping, living lab, piloting or end-user testing - in order to compare different solution approaches and identify which offer the best solution that the city is facing or trying to remediate. During each phase, the number of competing suppliers is reduced, but the funding increases.



Pre-Commercial Procurement (PCP) enables cities to procure competitive research and development of new innovative solutions from multiple suppliers through a competitive, staged approach...





Benefits for Procurer

- Steer development of solutions towards concrete public sector needs
- Enables a focus on the critical R&D phase before actual procurement
- Input from different suppliers who compete using grants for different phases of development
- Risks and benefits are shared between the one who funds (EC) and the procurer who has to pay their part of the funding

Benefits for Supplier

- Better preparation to address the future market through early collaboration with public authorities
- Lower investment to generate new market opportunities thanks to financial support from the public side
- Potential new opportunities ... collaboration with the procurers and not the competitors.
- A focus on the core tasks of R&D with the public sector supporting the creation of a new market



Rather than putting all our funds and effort into developing just one solution via a traditional project or procurement process, SELECT for Cities decided the competitive PCP instrument enabled us to better spread risk, and create more offerings in the public sector market for city-wide platforms.

In 2017 SELECT for Cities launched its competition to all European organisations to **develop an open, standardized, data-driven, service-oriented and user-centric platform** that enables large-scale co-creation, testing and validation of urban IoT applications and services

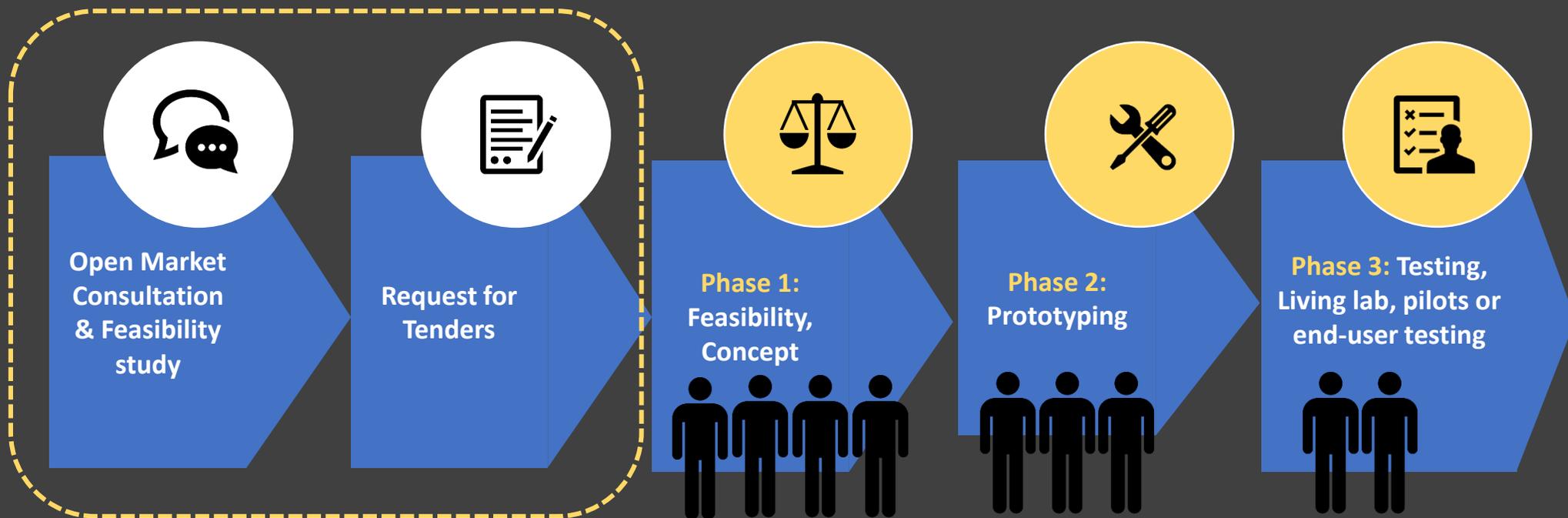




How we applied
PCP to create an
innovative city
IoE platform



First understand the Market: Before creating a tender to select the best suppliers to start the PCP phases it is compulsory to undertake an **open market consultation*** to to define the degree of innovation, the nature and amount of R&D services required, understand what solutions already exist and what suppliers think about the feasibility of the general challenge. SELECT for Cities achieved this through European-wide surveys, webinars and face-to-face meetings. This process also helps disseminate the fact that a tender is about to launch and primes the interest of potential participants.



* see Directive 2014/24/EU



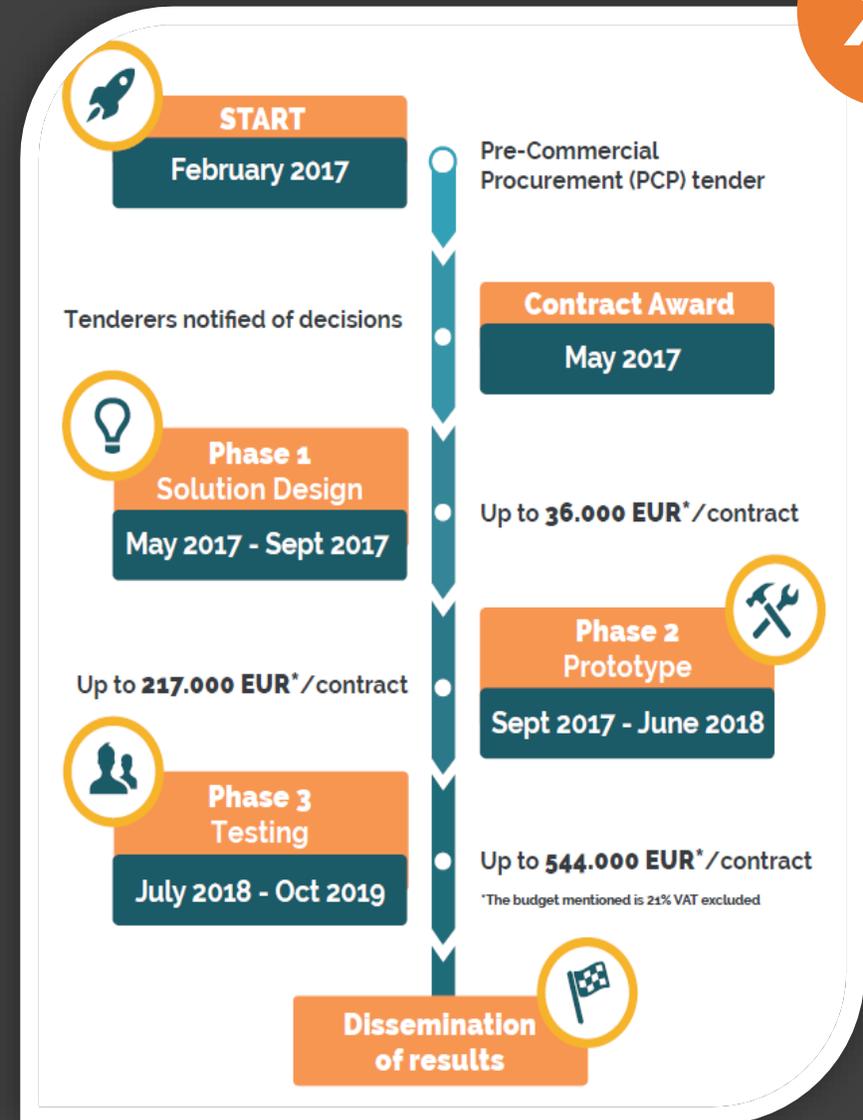
Request for Tenders

Tender preparation: Taking on board the results from the open market consultation, the SELECT for Cities Buyers Group were able to tailor the tender requirements, timeline and budget for the desired IoE platform accordingly. The tender was published on a European Tenders site and advertised across the world.

Webinars provided an opportunity for potential applicants to ask questions about the tender documents and proposal process. A matchmaking tool through the SELECT for Cities website helped participants form consortiums with other interested parties. And an informal handbook helped to guide applicants through the proposal submission steps.

SELECT for Cities received **28 Tenders from 13 different countries.**

From careful review and scoring, 10 contractors were selected to sign a Framework Contract and start Phase 1 of the PCP.





Phase 1:
Feasibility,
Concept



PHASE 1: The objective was to give Procurers a view on how the different Contractors conceptualized the platform through:

- written detailed design report including architecture and technical designs
- how the platform will implement the different functional criteria,
- how the platform will implement innovation, and
- how the architecture of the platform will meet the different quality criteria.

The Contractors were also asked to present:

- a business plan and
- a business model

Evaluation: At the end of Phase 1 an evaluation decided if the Contractor was eligible for payment and/or to enter the next PCP Phase. The evaluation consisted of a:

- desk review and,
- a face-to-face evaluation.

The Evaluation Committee reviewed the concept documents, provided by the Contractors. This was followed by an online evaluation, during which the Contractor presented their solution in a presentation where the concept, its advantages, innovation and business model were highlighted.

Each solution was scored. **All were eligible to submit a proposal for the next phase.**



**Phase 2:
Prototyping**



PHASE 2: 5 Contractors were invited to join the second phase to transform their concept designs into a **working prototype** ready for end-user piloting. This prototype, including all its components, was tested for:

- functionality,
- interoperability and conformation to the qualitative requirements (open source, open standards etc.)
- initial security tests



During the Prototype Phase, a demonstrator had to be available for testing purposes by multiple members of the Procuring teams using real and/or dummy data. Each platform iteration released new features for testing. Contractors were expected to pass on updated user manuals with each iteration and provide a help-desk for tester queries/problems.

Evaluation: The development of the Prototype was monitored closely by the Buyers Group through several monitoring and project progress iterations which involved face-to-face meetings and web briefings as well as through desk-based testing.

Desk-based testing of the prototypes followed detailed user manuals created by the Contractor.

Each solution was then scored by the tender criteria. All passed the phase.



Phase 3:
Testing, Living
lab, pilots or
end-user
testing



PHASE 3: Phase 3 involved real-life piloting, in the form of Living Labs validation, of selected prototypes against 2 use cases. The aim was to improve the digital innovations by actively involving users through real-life interventions. At the same time the Procurers receive detailed insight into the relevance, feasibility and applicability of the solutions in their cities. The phase involved:

- 1) Validation in a real-life setting;
- 2) Simultaneous testing in two cities
- 3) Use by local stakeholders in each city



This approach required Suppliers to:

- ensure their solution can be applied in different cities;
- show their solution is supports divergent use cases;
- demonstrate scalability across Europe;
- prove they can manage real-life operations

Evaluation: Contractors were scored against how well they performed against two uses cases

- (1) Integration with Antwerp's Smart Zone
- (2) Use in solving problems in Jätkäsaari, one of the biggest construction sites in Finland

All contractors passed the third phase and completed the PCP, with special note given to Snap4City and CityEnabler for their performance.

By the end of phase 3 the PCP ensured SELECT for Cities had 3 platform solutions which went beyond the State-of-Art (SOA) for city dashboards...

SoA: Role based dashboards

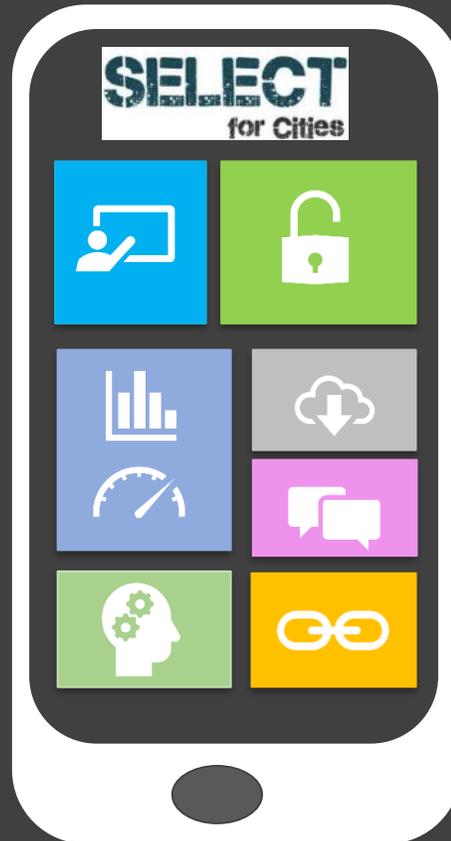
Select Innovation: Personalised individual dashboards that can be created and shared by the user based on their needs

SoA: Data widgets

Select Innovation: Dynamic visualisations (Inc. 3D) enabling users to drill down further into the data to individual sensor level and generate business intelligence

SoA: Real-time information

Select Innovation: Future information. Predictive analytics enables city users to anticipate and mitigate situations before they arise



User-centric design optimised for any device

SoA: Proprietary systems

Select Innovation: Fully open source components using open standards to facilitate open innovation and reduce vendor lock-in

SoA: Monolithic architecture

Select Innovation: Modular architectures for self healing and auto-scaling

SoA: Scripted chat bots

Select Innovation: Smart chatbots using Natural Language Processing capabilities for more personalised assistance

SoA: Centralised transactions

Select Innovation: More secure decentralized transactions through blockchain to trace actions and provide cryptocurrency rewards of value





The contractors felt the Pre-Commercial Procurement process had kept them focused on user needs and helped them create near-market offerings...

Faster product development...

"The competition between participants is a great stimulus to the developers to do better in shorter time"

Ability to build for real needs...

"PCP is a real opportunity to well and deeply gather requirements and needs from the procurers."



"It permits joining forces and sharing the risks associated with the research and experimentation period"



Sharing risk and reward...



and valuable lessons were learned about running a PCP which are being applied to new procurements, including...

The initial tender process involved multiple document submissions. A simple graphic outlining what needs to be done and by when helps ensure the process is easily understood by all contractors.

The PCP framework can be quite rigid meaning it can be difficult to change the underlying criteria between phases. Think innovatively about wording your requirements so you retain some level of flexibility across phases as your knowledge on what you want increases.

Multiple testing iterations in each phase are useful for assessing progress and for providing feedback to the contractors, however this results in heavy admin for the Procuring team and short development cycles for the Contractors. Bear this in mind when scheduling. Strong communication protocols must be established.

Following instruction manuals for the testing process proved to be a dry and long way of evaluating. Setting user scenarios/questions proved to be a better way to explore and experiment with the platform solutions.

During the Living Lab phase, Contractors found it hard to involve end-users from outside each city administration. Ensure Contractors provide sufficient details about their outreach and incentivization plans for user engagement during their application for each phase. This is especially important when Contractors are not based in the procuring city.

Contractors struggled with commercialization activities whilst dealing with development at the same time. It may be worth including either extra help or extra time allocation for business development activities.



Pre-Commercial Procurement processes are changing and improving on a monthly basis. For help and guidance in adopting PCP yourself check out the latest guidelines from the European Commission:

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



Good luck with your own PCP projects.
Don't hesitate to reach out to us for help,
guidance and advice.

select4cities.eu



@SELECT4CITIES



Select4Cities





SELECT
for Cities

**FORUM
VIRIUM
HELSINKI**


digipolis


City of Copenhagen


ANTWERP


umec


21c
consultancy



This PCP received funding under the European Union's Horizon 2020 Research and Innovation Programme, grant agreement No. 688196.