

# Pre-Commercial Procurement for the development of a data-driven, Internet-of-Everything (IoE) platform for large-scale urban app co-creation

## SELECT for Cities

### About this Best Practice Case

This case provides experience and lessons learned from the ongoing SELECT for Cities Pre-Commercial Procurement Project to develop a data-driven, Internet-of-Everything (IoE) platform for large-scale urban app co-creation. Via Pre-Commercial Procurement (PCP) processes, a government can procure research and develop new innovative solutions, thus exploring and testing products and services that are not yet commercially available on the market.

**Title:** Pre-Commercial Procurement of the development of a data-driven, Internet-of-Everything (IoE) platform for large-scale urban app co-creation

**Cluster Topic:** Other/ITS

**Country:** Belgium, Finland and Denmark

**Procuring Authority:** Digipolis (lead procurer), Forum Virium Helsinki, City of Copenhagen

**Procedure:** Competitive Dialogue

**Directive:** 2004/18/EC

**TED:** 2016/S 033-053396

# The ongoing SELECT for Cities Pre-Commercial Procurement Project to develop a data-driven, Internet-of-Everything (IoE) platform for large-scale urban app co-creation

## Key Points

- The SELECT for Cities project searches for new technologies to design, research and develop “cities as linked and large-scale IoE labs”, with the common challenge lying in developing an open, standardized, data-driven, service-oriented and user-centric platform for European cities that enables large-scale co-creation, testing and validation of urban IoE applications and services.
- A Pre-Commercial Procurement (PCP) process enables a government to procure research and develop new innovative solutions, thus exploring and testing products and services that are not yet commercially available on the market.
- The SELECT for Cities project uses the best price-quality ratio as award criteria, including impact on challenge and technical quality as sub-criteria.

## The Procurement Objectives

### Brief description

The common challenge of the SELECT for Cities PCP is the design, research and development of “cities as linked and large-scale IoE labs”. The challenge lies in developing an open, standardized, data-driven, service-oriented and user-centric platform for European cities that enables large-scale co-creation, testing and validation of urban IoE applications and services. This approach fosters the longer-term goal of evidence-based innovation in cities.

To succeed in supporting the urban innovations’ landscape, cities need to introduce more systematic ways to work with external developers and evaluate new solutions. Current development and testing is mostly done in unorganised, random ways, within existing organisational silos. This practice – or the lack of it - has lots of problems:

1. Different city departments pilot solutions in an unorganised manner, mostly based on the interests of individual sub-departments or even individuals;
2. Pilots are done in isolation, without checking if other entities in the city might have already existing solutions or similar needs, or non-compatible services already in use;
3. The outcomes of pilots are not measured and followed up:
  - Successful pilots do not lead to wider implementation, and resources are lost;
  - Failed pilots are not analysed and communicated, which creates the danger of repeating the same mistakes;

- Pilots and tests are not mapped out or evaluated from the technology or practice maturity perspective, which leads, on one hand, to the adaptation of obsolete “sunset technologies”, and, on the other hand, to disappointments when new technologies are introduced too early, before they are mature.

4. The impact of the pilots is not measured; good solutions are not put into practice.

The biggest challenge is the existing legacies (in ICT, service offering and processes). Cities have to be retrofitted to become “smart”. Retrofitting requires both top-down and grassroots-up approaches: on one hand, cities should collaborate to agree on smart city standards and de-facto-standards and, on the other hand, they should support open approaches to data, licenses, interfaces and participation to create robust interoperability. Standardization should not slow down the development of the market.

The overarching goal is simple: one-domain and one-city stand-alone and proprietary platforms and solutions are small-scale, and therefore too expensive to develop and maintain. Cities must support the creation of a properly functioning smart city marketplace through maximum interoperability of service interfaces and portability of services, solutions and apps internally (across city departments, across the boundaries of private and public urban services), regionally, nationally (in national city networks) and internationally (roaming of services across borders to create the critical mass). Portability of solutions is critical to the success of smart cities and smart city service companies.

The development of urban services is exceedingly a collaboration process, in which cities act as enablers of innovation in various ways:

1. Procuring sub-services/solutions from companies, to be integrated in the entity of urban services which the city offers;
2. Opening the data and service interfaces of cities for private developers to build and run their services;
3. Monitoring the field of urban innovations, and supporting the creation and usage of innovative services developed by the urban community, especially developers and SMEs;
4. Reacting in an agile way to new innovations and opportunities by removing quickly the barriers of innovation created by old regulation and practices.

The envisaged platform has several requirements, components & features that are currently not available in a single solution (nor as interoperable separate components) that would allow profound interaction between cities, nor (automated) testing and validation of related services. Bidders should take into account the design and development of an open platform and its (externally developed) ability to support IoE service components that can be tested and validated in (semi-) automated ways.

[ [www.select4cities.eu/vision](http://www.select4cities.eu/vision) ]

## Reasons for this procurement

The SELECT for Cities competition is built around the premise that cities across the world are 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. However, IoE progress to date has been slow due to a number of barriers, such as the lack of common standards, a fragmented marketplace, and the limited number of ways to systematically test and introduce new solutions in the cities.

To combat this challenge, and accelerate innovation, the SELECT project lays forth a competition open to all European companies to develop an open, standardized, data-driven, service-oriented and user-centric platform that enables large-scale co-creation, testing and validation of urban IoE applications and services.

[ [www.select4cities.eu/challenge](http://www.select4cities.eu/challenge) ]

A key requirement is for the platform to work in the three competition cities of Antwerp, Copenhagen and Helsinki.

Goals:

- Deliver a solution for connecting cities' IoT systems helping them become a large-scale de-facto Internet of Everything (IoE) Lab;
- Validate solutions based on the use-cases through real-life living lab scenarios;
- Demonstrate the 'solutions' capacity to allow user-centric management of personal data (MyData model).

Cities' IoE background:

- Antwerp, Copenhagen and Helsinki are all renowned Smart Cities;
- They are pioneers in open data, e-government, participation, smart housing, smart grid, air quality improvement and smart urban mobility;
- The time is right to capitalise and scale up individual achievements by bringing them together within a larger IoE network, allowing for real-time use of aggregated data, and the development of innovative IoE solutions.

[ [www.select4cities.eu/city-use-cases-1](http://www.select4cities.eu/city-use-cases-1) ]

## Innovative Aspects

### **What was procured is innovative:**

The purpose of the PCP was to procure a prototype of an IoT platform. Everything is becoming more data-driven and there is more and more real-time data. [...] Technology is changing very quickly, and it is essential to have the right infrastructure. Also, the IoT platform will allow to connect better IT systems from different departments in big organisations, such as the City of Copenhagen.

### **The procurement process itself was innovative:**

A competition was created where different companies go through different phases to come up with a proposal for a solution. So instead of a traditional procurement where the public authorities know exactly what they are going to procure, this is more dynamic, having an open market consultation in different cities and receiving a lot of feedback from many companies.

## The Procurement Process

To comply with European rules (Directive 2014/24/EU) for this type of competition, SELECT for Cities ran an open consultation across Europe to understand the current state of the market regarding city IoE platforms. The consultation took the form of an online survey plus 3 workshops in each of the competition cities:

- Antwerp (24 May 2016)
- Copenhagen (6 June 2016)
- Helsinki (30 May 2016)

The results of the consultation were used to define and fine-tune the scope of the competition tender and award criteria.

[ [www.select4cities.eu/open-market-consultations](http://www.select4cities.eu/open-market-consultations) ]

## Procurement Procedure

Via Pre-Commercial Procurement (PCP) processes, a government can procure research and develop new innovative solutions, thus exploring and testing products and services that are not yet commercially available on the market.

The SELECT for Cities project searches for new technologies to design, research and develop “cities as linked and large-scale IoE labs”, with the common challenge lying in developing an open, standardized, data-driven, service-oriented and user-centric platform for European cities that enables large-scale co-creation, testing and validation of urban IoE applications and services.

The technologies and solutions are being acquired using a Pre-Commercial Procurement (PCP) process, enabling the procurers to share the risks and benefits. The PCP process was managed through a number of stages that have been defined as follows:

- **CONCEPT PHASE (PHASE 0) - Ran until July 2016:**  
The starting phase took the form of a market consultation open to a large amount of interested parties to help the procuring cities collect insight into the market, including the state of the art and future developments in order to prepare an adequate call for proposals.  
*Outcome:* The challenge was fine-tuned + input was received for the PCP procedure and contract notice.
- **DESIGN PHASE (PHASE 1) - Ran from November 2016 until May 2017:**  
In the design phase, the selected companies received a budget to develop their concept into a competitive solution. Of course, the design had to give a response to the challenge formulated.  
*Outcome:* Concept design & feasibility study (conceptual, technological and financial aspects taken into account).
- **PROTOTYPE PHASE (PHASE 2) - Ran from May 2017 until January 2018:**  
The most promising designs were elaborated into a well-outlined and functioning prototype. Then prototypes were evaluated to select the ones that best meet the requirements of the challenge.  
*Outcome:* Functioning prototype, a test roadmap and a preliminary business plan.
- **PILOT PHASE (PHASE 3) - Runs from February 2018 until February 2019:**  
The functional and technical properties of the solutions are compared and evaluated in an operational environment. A limited number of candidates will elaborate the pilot on a bigger scale.  
*Outcome:* Validated prototypes.

[ [www.select4cities.eu/what-is-pcp](http://www.select4cities.eu/what-is-pcp) ]

## Key Reasons for using Competitive Dialogue in this procurement

The infographic is set against a dark orange background with a black silhouette of a city skyline at the bottom. It is divided into two columns by a vertical white line. The left column is titled 'Benefits for Procuring City' and the right column is titled 'Benefits for Supplier'. Both columns contain a bulleted list of five items each.

Benefits for Procuring City	Benefits for Supplier
<ul style="list-style-type: none"><li>• Steer development of solutions towards concrete public sector needs</li><li>• Enables a focus on the critical R&amp;D phase before actual commercialisation</li><li>• Input from different suppliers who compete using grants for different phases of development</li><li>• Risks and benefits are shared between procurers and suppliers under market conditions</li></ul>	<ul style="list-style-type: none"><li>• Better preparation to address the future market through early collaboration with public authorities</li><li>• Lower investment to generate new market opportunities due to financial support from the public side</li><li>• Potential new opportunities unlocked through collaboration/competition with other suppliers</li><li>• A focus on the core tasks of R&amp;D with the public sector supporting the creation of a new market</li></ul>

1

<sup>1</sup> PCP info deck. URL: [http://docs.wixstatic.com/ugd/a245c2\\_aca3d473ca424267976d711fa60327e6.pdf](http://docs.wixstatic.com/ugd/a245c2_aca3d473ca424267976d711fa60327e6.pdf)

## The contract award criterion

The award will be made based on the Most Economically Advantageous Tender (MEAT), based on the best quality-price ratio. The evaluation will be assessed based on the following sub-criteria:

Sub-criterion	Weighting
Project Management	10 %
Impact on challenge	20 %
Technical quality of the platform	15 %
Commercial feasibility	5 %
Living Labs	20 %
Price	30 %

[ [www.select4cities.eu/tender](http://www.select4cities.eu/tender) ]

## Pros and Cons of the competitive dialogue

A public authority has some ideas, but to a large extent the industry knows better. The market consultation significantly affected the specification of the final tender. A lot of input came both from the live events and during the webinar and the survey. The companies were also allowed to ask some questions and the feedback was incorporated into the tender documents. For companies it was also beneficial because they got a chance to work closely with public authorities. In their product development they can now incorporate a better understanding of what cities actually need.

The challenging part was that it was so new – but it was also the exciting part. The expertise was not present in the organization. No one had done this before, so a lot of time was spent trying to understand the model and establishing a team.

## Key Results

Five organisations/consortia were selected to enter Phase 2 of SELECT for Cities challenge. They will continue with prototyping the Internet-of-Everything solutions for open innovation in Europe. The procurement is financed by three cities – Antwerp, Copenhagen and Helsinki - with support from the European Commission Horizon 2020 programme - Grant Agreement 688196.

1. Bosonit S.L. - Spain
2. Indra sistemas S.A. - Spain
3. Engineering Ingegneria Informatica S.p.A - Italy
4. Martel GmbH - Switzerland
5. University of Florence (DISIT Lab) - Italy

[ [www.select4cities.eu/phase](http://www.select4cities.eu/phase) ]

## Key Lessons Learnt

1. Using **the pre-commercial procurement procedure was very resource demanding** as it was quite new – both to the buyers and to the suppliers.
2. The market consultation and the following feedback allowed SELECT for Cities to explore ideas with the bidders. This was particularly important in **learning about how bidders understood and interpreted the challenges** and proposals for innovation.
3. **Transnational joint procurement was very time demanding** because of differences in backgrounds and objectives between the different countries.

## References and Further Information:

### References

1. [www.select4cities.com](http://www.select4cities.com)
2. [http://docs.wixstatic.com/ugd/a245c2\\_a3d473ca424267976d711fa60327e6.pdf](http://docs.wixstatic.com/ugd/a245c2_a3d473ca424267976d711fa60327e6.pdf)

### Further Information

1. Background information: [www.select4cities.com](http://www.select4cities.com)
2. Information about the tender: [www.ted.europa.eu/udl?uri=TED:NOTICE:53396-2016:TEXT:EN:HTML&tabId=1](http://www.ted.europa.eu/udl?uri=TED:NOTICE:53396-2016:TEXT:EN:HTML&tabId=1)