



Gaps and needs on Public Procurement of Innovation for SMEs



LEARNING ON PUBLIC
PROCUREMENT OF INNOVATIVE
SOLUTIONS IN HABITAT AND E-HEALTH

IO1-A2

GAPS AND NEEDS ON PUBLIC PROCUREMENT OF INNOVATION FOR SMES



Erasmus+

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FOREWORD

The Europe 2020 Strategy sets a target of 3% of the EU's GDP to be invested in R&D by 2020. In this way, innovation has been incorporated into the new European Public Procurement Directives approved on 26th February 2014¹ as a new public policy, at the same level as the social and environmental one, which should be promoted through contractual instruments.

The new directives open up a number of opportunities for Public Procurement of Innovation, while maintaining the basic requirements of competition, transparency, equal treatment and compliance with EU state aid rules.

For that reason, **the main objective of the HAePPI project is to develop a new learning curriculum on PPI in line with the needs of habitat and eHealth SMEs.** An innovative and open resource programme of vocational education and training, which will provide an adapted curriculum to equip professionals with the specific, basic and transversal skills currently required for the public procurement of innovation.

To reach the main objective, different activities are going to be carried out:

1. Learning outcomes definition based on a complete analysis of current best practices on PPI and SMEs' needs
2. Joint Curriculum definition
3. Development of the training materials with interactive tools
4. Complete learning evaluation on a developed online e-learning platform

In order to achieve such purposes, a Strategic Partnership has put 6 entities together from different countries and expertise in the different fields of the proposed project: two Universities with high expertise in public procurement policies (UNIZAR and ULO); two clusters from different sectors, habitat and eHealth (AMUEBLA and iVITA); a Technology Park and a business organisation expert in innovation management (STP); and coordinated by the Nordjylland Region of Denmark, through the innovation unit in the health area (Idélinikken).

Although a HAePPI training course will be launched for the habitat and eHealth sectors, the final beneficiaries of the results will be a great number of SMEs and public institutions around Europe, which will lead to a high impact on European economy.

¹ Directives 2014/23/EU; 2014/24/EU, and 2014/25/EU

1. INTRODUCTION

This report provides an overview on how European SMEs are currently participating in public procurement of innovation tenders. By focusing on-going or finished practices, the main objective of this report is to identify the necessary knowledge and skills needed for professionals, managers and workers, of SMEs to be involve and bid such kind of tenders, as innovation facilitators within their organizations.

This report was developed in the framework of HAePPI (www.haeppi-project.eu), an Erasmus+ EU founded project aiming to develop a new learning curriculum on PPI in line with the needs of habitat and eHealth SMEs. The training course is expected to be ready on May 2022.

This report is the result of the first activity of HAePPI project and will be the base to define the learning outcomes of the future HAePPI Joint Curriculum.

2. PUBLIC PROCUREMENT OF INNOVATION IN A NUTSHELL

2.1 European framework

Every year, over 250 000 public authorities in the EU spend around 14% of GDP (around €2 trillion per year) on the purchase of services, works and supplies².

Even though it could create a huge market for innovative products and services, the potential of public procurement remains vastly untapped. The European Commission (EC) aims to improve public procurement practices, promote the demand of innovative goods and services in Europe, and foster the uptake of innovation in the EU. This point was initially set in 2007 through the communication on pre-commercial procurement³, and boosted in the 2017 communication “Making public procurement work in and for Europe”, that established six strategic policy priorities on public procurement.

According to the EC, Public Procurement of Innovative solutions (PPI) is stipulated as “procurement where contracting authorities act as a launch customer for innovative goods or services which are not yet available on a largescale commercial basis, and may include conformance testing. Public procurement of innovative solutions does not include the procurement of R&D services, which is known as ‘pre-commercial procurement’ (PCP)”⁴.

The same document defined PCP as “procurement of research and development services involving risk-benefit sharing under market conditions, and competitive development in phases, where there is a separation of the research and development phase from the deployment of commercial volumes of end-products”.

Thus, officially PCP is excluded from the procurement directives, but PCP and PPI are complementary ways to acquire innovation, as it is showed in figure 1, and explained the EC’s FAQs document related on PCP and PPI⁵:

- PCP refers to the procurement of R&D services as defined in the PCP Communication. It offers a way for contracting authorities to share risks and benefits of procuring R&D to address challenges of public interest for which no technological solution is available on the market yet.
- PPI is when contracting authorities act as lead customer by procuring innovative solutions (not the R&D to develop them) that are newly arriving on the market but that are not yet available on large scale commercial basis due to a lack of market commitment to deploy.

² DG GROW - https://ec.europa.eu/growth/single-market/public-procurement_en

³ EC. COM(2007) 799 final. Pre-commercial procurement: driving innovation to ensure sustainable high quality public services in Europe.

⁴ EC. Public Procurement as a driver of innovation in SMEs and public services. Guidebook series.

⁵ EC, DG Connect. Policy related FAQs on Pre-Commercial Procurement (PCP) and the link with Public Procurement of Innovative Solutions (PPI). https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=5207

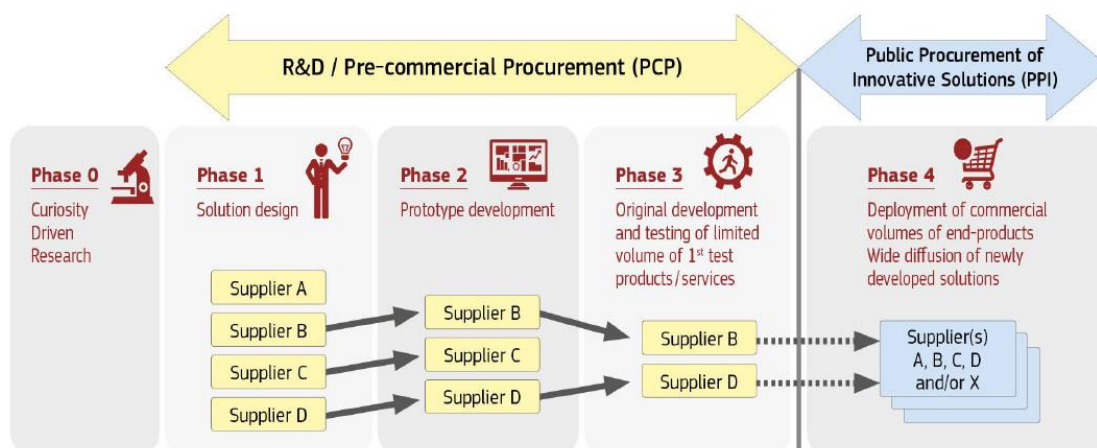


Figure 1. Complementary of PCP and PPI. (Source: Horizon 2020 support to innovation procurement)

Public procurement is subject at European level to different directives and communications set by the EC. In this way, PPI and PCP are regulated by the following documents:

- PPI is currently subject to the Public Procurement Directives – 2014/23/EU (on the awards of concession contracts), 2014/24/EU (on public procurement) and 2014/25/EU (on procurement by entities operating in the water, energy, transport and postal services sectors). These directives encourage companies to develop their capacity for innovation, while maintaining the basic requirements of competition, transparency and equal treatment, and boost the public procurement of innovative solutions.
- PCP is outlined in the PCP communication, COM (2007) 799 final (pre-commercial procurement: driving innovation to ensure sustainable high-quality public series in Europe), and associated staff working document, SEC (2007) 1668.

Finally, Directive 2014/24/EU on public procurement should be taken into account. It established a procurement procedure, which combines both development and purchase elements and is called “innovation partnership”. The Public Procurement Directive states that the procedure is designed to be used: “where there is a need for the development of an innovative product or service or innovative works and the subsequent purchase of the resulting supplies, services or works cannot be met by solutions already available on the market”.

The innovation partnership process takes place in three phases:

1. The competitive phase takes place at the very beginning of the procedure, when the most suitable partner(s) is selected based on their skills and abilities. The contracts establishing the innovation partnership are awarded using mainly the criteria of the best price-quality ratio proposed.
2. In the next phase, each partner(s) develops the new solution in collaboration with the contracting authority. This research and development phase can be divided into several stages during which the number of partners may be gradually reduced, depending on whether they meet predetermined criteria.

3. In the commercial phase, one partner provides the final best result to the contracting authority. If two or more tenderers have reached the final stage and have solutions that meet the needs of the contracting authorities, the best solution can be chosen on the basis of price.

2.2 Public procurement of innovation approach in HAePPI project

According to EC data, up to 73.5% of PCP contracts are won by SMEs, representing 61.5% of total values of PCP contracts, being an opportunity to open a market for small players (SMEs) to gradually growing on contract sizes⁶.

Therefore, for the approach of HAePPI project and taking into account the final objective, to boost and support innovation on SMEs through public procurement, *innovation procurement* or *public procurement of innovation*, HAePPI project considers both PPI and PCP instruments.

This approach is also included in the aforementioned guidebook, which sets “where reference is made to both instruments, PPI and PCP, the wording *innovation procurement* is used”.

This way, HAePPI consortium aims to ease the participation of SMEs in all public contracts that includes some level of innovation - either by signing R&D services contracts to design the best ideas or by developing and providing innovative solutions.

⁶ DG Connect. Update on results from completed and ongoing FP7 and Horizon 2020 funded PCPs. <https://ec.europa.eu/digital-single-market/en/news/impacts-eu-funded-pre-commercial-procurements>

3. PARTICIPATION OF SMEs IN PPI TENDERS: BENEFITS AND BARRIERS

3.1 Characteristics of a small and medium-sized enterprise

To correctly identified the gaps and needs of SMEs related with PPI it is important to clarify an initial understanding of the SME ecosystem. The European Commission defines small and medium-sized enterprises (SMEs), according to the recommendation 2003/361, as “enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million”.

Company category	Staff headcount	Turnover	or	Balance sheet total
Medium-sized	< 250	≤ € 50 m		≤ € 43 m
Small	< 50	≤ € 10 m		≤ € 10 m
Micro	< 10	≤ € 2 m		≤ € 2 m

Table 1. Definition of an SME in the EU (Source: European Commission, *What is an SME*)

According to Eurostat there are approximately 25.1 million SMEs in Europe, that represent 99% of all businesses, employ 2 out of every 3 employees and produce 56 cents of every euro of value added.⁷

Focusing on sectors tackled in HAePPI project, the European habitat sector, dominated by SMEs, provides 1 million direct jobs in 130 thousand companies generating an annual turnover of around EUR 96 billion, and their purchases represent 16% of the GDP⁸. Meanwhile, the European medical technology industry is also comprised primarily of SMEs, which make up 80% of the industry, besides of a major provider of jobs, especially highly skilled jobs in research and manufacturing, that employs nearly 534,000 people across Europe. A survey of 12 National Industry Associations (including all the major medical technology exporters) across Europe has identified almost 7,000 SMEs that design and manufacture medical devices and diagnostic products⁹. In this way, the healthcare industry, which includes the pharmaceutical industry, in 2012 was worth EUR 220 billion and employed about 800,000 people – around 1.8% of the EU’s total manufacturing workforce¹⁰.

3.2 Benefits of public procurement for SMEs

Public bodies spend large sums of money through public procurement to meet their mandates, carry out functions, and deliver quality public services to citizens accounts for about 19% of the GDP in the European Union¹¹, and accounts for almost one-third of government expenditure in OECD countries¹². Due that, depending on how a public institution carries out its purchases, its decisions

⁷ European Commission. Annual Report on European SMEs 2018/2019

⁸ Internal Market, Industry, Entrepreneurship and SMEs data: furniture industry

⁹ TecnoPolis. Technological SMEs for the health industry

¹⁰ Internal Market, Industry, Entrepreneurship and SMEs: healthcare industries

¹¹ Guidance for public authorities on Public Procurement of Innovation. DG Enterprise & Industry

¹² OECD (2018), *SMEs in Public Procurement: Practices and Strategies for Shared Benefits*, OECD Public

can significantly affect economic and social development. Public procurement can indeed be used as a strategic tool to advance various public policy goals, from budget accountability and efficient public spending, to pursuing environmental protection; supporting economic and social development; fostering innovation; encouraging socially responsible suppliers into the global value chain; and promoting social and gender inclusiveness.

Engaging SMEs in public procurement support public institutions to better meet the procurement needs of the public sector. Boosting their participation in public procurement tenders ensures a more competitive bidding process and get access to a wider choice of available and innovative solutions¹³.

Benefits of increasing SMEs participation in public procurement process has been summarized¹⁴ as:

- Better value for money
- Better quality of service
- More innovation

Public procurement markets also provide SMEs with attractive business opportunities due to several factors that market public institutions attractive customers:

- Stability of the public sector's needs
- Fair business practices, as it is subject to laws, regulations and policies
- Achieve a trusted status and recognition as such in other markets

• **Benefits of the Public Procurement of Innovation for SMEs**

Public procurement of innovation may foster the growth of European SMEs and start-ups by providing a leading edge to serve potentially larger markets. Therefore, PPI is often used strategically by public procurers to provide a robust home market for domestic firms facing strong international competition in a way to boost them before going to external markets.

In this manner, PPI can significantly contribute to speeding the adoption and diffusion of innovations, contributing with the commercialization of products that are new to the whole market.

Consequently, as it has been pointed by different authors, PPI is a potential opportunity for SMEs to demonstrate their capabilities, to establish their credibility in international markets, to prove the viability of new products, and to gain authoritative and essential reference contacts from the public sector¹⁵.

Governance Reviews, OECD Publishing, Paris, <https://doi.org/10.1787/9789264307476-en>

¹³ Flynn, A. and P. Davis (2017), "Explaining SME participation and success in public procurement using a capability-based model of tendering", *Journal of Public Procurement*, Vol. 17/3, pp. 337-72, <http://dx.doi.org/10.1108/JOPP-17-03-2017-B003>.

¹⁴ HM Treasury (2008), "Accelerating the SME economic engine: through transparent, simple and strategic procurement", http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/d/pbr08_economicengine_2390.pdf

¹⁵ Department of Enterprise, Trade and Employment of Ireland (2019), Using public procurement to stimulate innovation and SME access to public contracts.

3.3 Barriers of public procurement for SMEs

Although the potential benefits for SMEs of taking part in public procurements tenders, SMEs are underrepresented in the process compared with their overall weight. This underperformance is a clear evidence that there are many barriers that avoid the participation of SMEs on public procurement tenders. Addressing these barriers is on the aim of several public policies related with public procurement.

A consultation to stakeholder’s experts developed by the European Commission for the preparation of the Code of Best Practices¹⁶ encounter the following barriers for the participation of SMEs:

- difficulties in obtaining information (as they are unable to allocate sufficient resources to information collection);
- lack of knowledge about tender procedures;
- excessive administrative burden;
- large size of the contracts;
- too little time to prepare the tenders;
- the cost of preparing the tenders (since many costs are fixed, SMEs face disproportionately high costs in comparison with larger enterprises);
- disproportionate qualification levels and certification requirements;
- excessive requirements for financial guarantees;
- discrimination against foreign tenderers /favouring of local or national enterprises;
- finding cooperation partners abroad;
- late payments by contracting authorities.

In detail, when an SME decides to participate in a public tender, it has been analyzed the different barriers that SMEs need to face in each of the stage of the process. The result of this study¹⁷ it is shown in the following table:

Stages of procurement	Challenges
Access to information	<ul style="list-style-type: none"> – Finding opportunities on tendering platforms on line. – Suppliers do not know whom to contact when seeking contracts or clarification. Buyers are inaccessible. Information is disorganised. – Lack of information or feedback for understanding the procurement process. Lack of related training (e.g. bid writing, submission process). – Preconceptions that governments prefer to contract with large suppliers.

¹⁶ EC. SEC(2008) 2193, European Code of Best Practices facilitating access by SMEs to public procurement contracts

¹⁷ Liao, D., B. Orser and A. Riding (2017), “Canadian Federal Procurement as a Policy Lever to Support Innovation and SME Growth”, http://www.telfer.uottawa.ca/assets/documents/2017/Federal-Procurement-and-SMEs-report-Telfer_web.pdf

Pre-qualification	<ul style="list-style-type: none"> – Clarity of solicitation documents. Limited resources to engage in prequalification processes (e.g. vetting bids). – Governments ask inappropriate questions (e.g. proprietary information). – Time invested does not guarantee invitation to tender. Excessive paperwork. – Lack of feedback following prequalification stage of applications. – Unspecified use of proprietary information (e.g. informal, on websites). – Difficulty getting on bid lists for local contracts. – Restrictive bonding or securing requirements.
Tendering	<ul style="list-style-type: none"> – Contracts awarded based on lowest price rather than overall best value. – Suspicion that selection processes favour insiders and established firms. – Cost of bidding. Contract bundling that limits SME opportunities. – Federal jargon and complex legislation (national and international standards) create unrealistic expectations with respect to technical and financial capacity and compliance standards. – Just-in-time procurement (inventory) reduces the number of long-term relationship and limits number of suppliers. – Sub-contracting is as difficult as contracting directly with governments.
Contract administration	<ul style="list-style-type: none"> – Lack of capacity and resources to meet compliance requirements. – Complexity of federal accounting and payment systems/schedules. – Inflexible terms of payment even when caused by government delays.
On-going relationship management	<ul style="list-style-type: none"> – Expectation creep, unplanned and unrealistic demands. – Informal add-ons without due compensation. – Turnover of federal employees and loss of relationships. – Lack of communication with respect to expectations.

Table 2. SME's public procurement challenges by stage of procurement. (Source: Liao, Orser and Riding, 2017)

• **Barriers for SMEs on the participation Public Procurement of Innovation**

Besides of the barriers already defined for the participation of SMEs in public procurement tenders, being involved in tenders of public procurement of innovation brings new barriers due to the increasing difficulty of the process, as it is unknown to the general public and also to some public procurers.

Moreover, there are specific challenges that SMEs need to overcome related to the development of innovative products in their manufacturing processes. The mostly highlighted by all studies¹⁸ is the

¹⁸ Tiwari, R. and Buse, S. (2007): "Barriers to Innovation in SMEs: Can the Internationalization of R&D

financial bottlenecks to boost new projects. This barrier could be face by the participation on PPI processes, as the external financial resources will be ensure by public institutions. Nevertheless, there are still additional challenges to be faced by SMEs such as:

- Qualified staff, as most of best qualified workers prefer to move to big companies, which makes it difficult to find experienced workers for SME.
- Limited internal knowledge on project and innovation management.
- Missing market know-how to meet customer's needs.
- Bureaucratic process and restrictive regulations, that force SMEs to invest lot of time and resources to face with them, and, in some cases, even avoid new tenders.
- Lack of intellectual property rights.
- Difficulties to find relevant cooperative partners.
- Marketing of new products.

Mitigate Their Effects?”, in: Proceedings of the First European Conference on Knowledge for Growth: Role and Dynamics of Corporate R&D, Seville, Spain, October 8-9, 2007.

4. NECESSARY KNOWLEDGE ON SMES TO PARTICIPATE IN PPI TENDERS

4.1 Methodology

With the objective to define the gaps and needs to be covered on SMEs to participate in PPI tenders, HAePPI consortium carried out a study where 24 companies and public organizations, experienced in this kind of tenders have been interviewed.

Firstly, all partners have identified potential organizations that have participate in tenders of public procurement of innovation, performed analysis on different characteristics, tried to cover as much as possible kind of tenders, and, where possible, tenders related with the habitat and health sectors.

Secondly, two different surveys were developed: the first one to address SMEs (Annex I), and the second one to address public institutions (Annex II). All selected stakeholders to be surveyed were reached by consortium partners, mainly through call, as direct interviews give more information than online surveys.

Consortium interviewed 24 different organizations (18 public authorities and 6 SMEs) with previous experience on public tenders that boost the innovation. It has been difficult for consortium partners to look for SMEs that have participate in such kind of tenders, as selected stakeholders should be close contacts. Therefore, it is obvious that most of the interviewed are public organizations that write and/or launch public tenders which participated SMEs.

All results have been gathered and analysed in the next section.

4.2 Results from public authorities

- **Open market consultation**

Almost all interviewed public authorities, 95%, carried out an open market consultation (OMC) prior to drafting the specifications. As it was appointed by one of the surveyed organizations the development of OMC “*depends a lot on the sector. In IT-related projects, companies are more used to participating in OMC processes. In other more industrial sectors: laundry/lingerie had never done this type of process before*”.

Nevertheless, around 1 out 3 companies that participated in this preliminary process did not participated afterwards in the tendered process (figure 1).

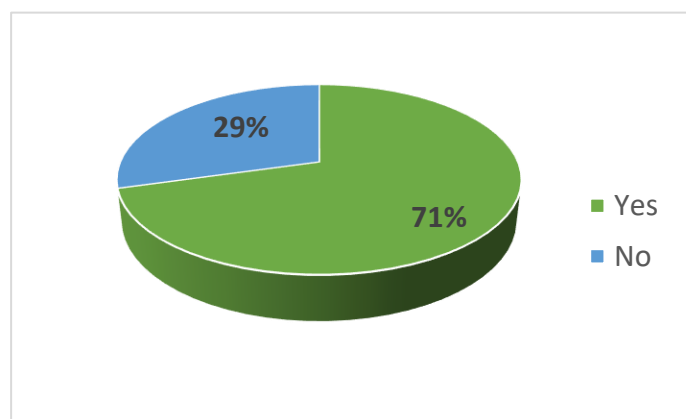


Figure 2. Companies that tendered and has participated in the open market consultation

• *SMEs participation*

All public authorities interviewed have been asked about one or different specific tenders in order to know how many companies applied, and which of them were SMEs. Although the particularities of each tender (items, lots, process, etc.) could be very different, it is possible to conclude that a “standard tender” received 9 proposals: 5 of them SMEs, 1 consortium with SMEs participation and 2 large companies (table 2). So, in general around 50% of the bid proposals are SMEs.

This result could be surprising, but it is necessary to remind that companies with less than 250 employees are considered SMEs.

Cases	Total companies	SMEs	Large	Consortium with SMEs participation
1	17	5	6	6
2	4	2	0	2
3	3	3	0	0
4	7	6	1	0
5	4	1	0	3
6	2	1	1	0
7	4	2	2	0
8	3	2	1	0
9	2	2	0	0
10	5	1	4	0
11	12	2	10	0
12	5	2	3	0
13	7	5	2	0
14	57	38	0	0
15	3	3	0	0
16	5	1	4	0
Average	9	5	2	1

Table 2. Distribution of companies that applied on public tenders

• *Tender’s documents that support SMEs participation*

Stakeholders were firstly openly asked about those aspects of tender documents that could boost SME’s participation in the process. In a second step it was suggested some aspects to be highlighted or chosen.

Table 3 shows the different open comments made by public authorities, responsible for tender processes (grouped by different aspects).

Aspect	Comments
Criteria	<ul style="list-style-type: none"> - Feasible selection criteria to allow SMEs compete with large companies. - Include a complete business as award criteria. - Use a language that companies can understand for the requirements. (<i>We have the experience that healthcare professionals speak in “clinical language” but not in</i>

	<p><i>“technology language”</i>).</p> <ul style="list-style-type: none"> - The initial preconditions thus are setting up selection criteria that match SMEs, e.g. not requiring an annual turnover similar to very large companies, or requiring too many references. - The object of the tender must be of a certain defined size, and the selection criteria must not require too high demands of previous net turnover and too many similar references. - Economic solvency less exigent and technical solvency adapted to the technical requirements.
Consortium or subcontractors	<ul style="list-style-type: none"> - Possibility for the participation of consortium or subcontractors. - The possibility of subcontracting is very useful.
Information	<ul style="list-style-type: none"> - Provide more information about how to look for public tenders on websites platforms. - Do a wide dissemination of the call, and specially targeting companies working in the fields of expertise required by the tender. - Disseminate use cases to exemplify the functional requirements that are required. - Clear purpose of the whole tender project, involving detailed information, from the technical demands and appropriate calculations and especially realistic execution timeline.
Remuneration	<ul style="list-style-type: none"> - Avoid bureaucratic language and explain clearly what is in it for them (benefits of taking part). - Explain the remuneration they can receive if they go through the different phases. Advance payments are very much appreciated by companies. - The financing part should be managed by stages and the timing for money transferring should be shorter. - A fair cashflow with certain pre-payments (refund guarantee will be required thus). - Partial payments for the achievement of milestones - Renumeration in advance is also mentioned by many companies as an important factor for increasement of their participation in public procurement procedure
Procedure	<ul style="list-style-type: none"> - There should be a system to fill in information as we have right now for traditional public procurement. (PPI documents are provided by mail or by e-mail to calling organization). Also, there should be easier application procedures. - The choice of tender procedure with dialogue (negotiated procedure, competitive dialogue or innovation partnership) may also support the participation of SMEs, although requiring much more resources for the bidders. - Division into lots – it means more work for contracting authority but can increase competition and offer best value for money.
Responsibilities/risks	<ul style="list-style-type: none"> - The right diversion of responsibilities and liabilities is important, thus giving the part that has the best preconditions for handling a given problem/uncertainty the responsibility hereof. - A fair balance of risks of penalties for delay and lack of compliance with service goals.

Table 3. Aspects of the tender documents that can help to increase the participation of SMEs in the contract.

It is clear that surveyed stakeholders pointed that use of clear criteria and language, a broad dissemination of the tender, advanced payments or partial payments, the possibility of subcontract some activities or participate as consortium, a fair balance of risks are key points that foster the participation of SMEs on public procurement of innovation.

When survey participant answered open question, the list of aspects, which could boost SME’s participation, was proposed (figure 3).

Results are aligned to the previous table, as remuneration, feasible criteria and the possibility of subcontracting, were the three aspects more selected.

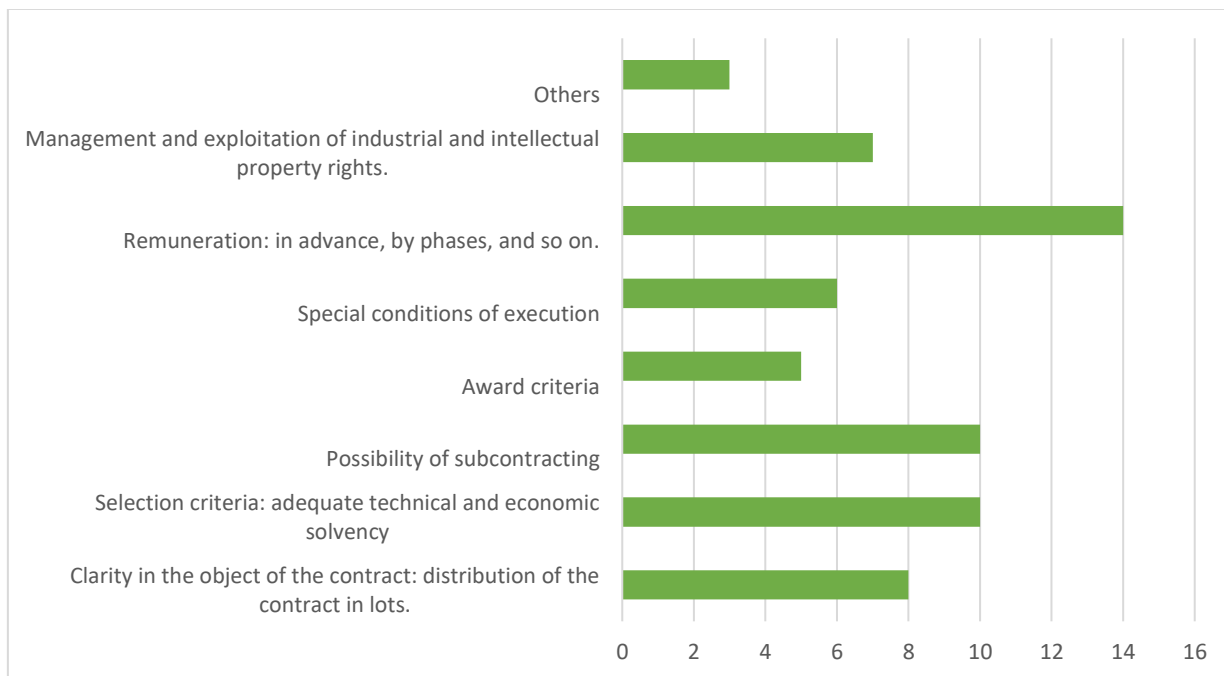


Figure 3. Aspects of the tender documents that can help to increase the participation of SMEs in the contract

Other aspects pointed in the questionnaires were “the possibility to have semi-evaluations with semi-payments”; “clarity in technical and functional tender documents, and adapted to the actual situation of market operators (technological level)”; and “the deadlines for submission of tenders and execution”.

- **Specification’s aspects that are a barrier for SMEs participation**

As previously, stakeholders were consulted to express their opinion about these aspects of the specifications that are a barrier for SMEs participation in public tenders. Table 4 compiles the different open comments grouped by different aspects.

Aspects	Comments
Market consultation and deadlines	<ul style="list-style-type: none"> - Marketing campaign to reach target industry. It could be difficult to reach SMEs without a strong dissemination campaign (Open Market Consultation). - Short deadlines for submission of tenders - Tight execution timeline - Long lead times from the start of the process
Criteria	<ul style="list-style-type: none"> - Restricted selection criteria that impede the application of SMEs to the call for tender. - Inability to cover all the requirements of the tender. Explain that participation in Consortium is allowed and enable partner search by creating a matchmaking tool. - There is a problem with specification: right now, it is very undetailed to make sure that companies could suggest its own creative solution. But in some cases, calling organization submits very strict specifications and then companies do not participate as their solution don’t match it.

	<ul style="list-style-type: none"> - As this project was to become a high profiled project with a long-term support and maintenance contract, and with a very demanding service level (SLA), this was furthermore an element that did not made this tender suitable for SME's. -If the specification specifies the purchase of a special model (technical), but which proves to be very difficult to procure (whether it is far away or it is necessary to order it in several pieces) then this can be an obstacle for small and medium-sized enterprises more so than for big companies. -Technical conditions for the selection and for delivering the service can be an obstacle. In the case of the Smart Card, long-term technical conditions were set. Long-term maintenance of the whole digital system and equipment was a major condition. - Previous references - Requirement of a high technological level, R&D with low TRL; and demand of solutions with a little market share and low added value.
<p>Financial issues</p>	<ul style="list-style-type: none"> - Solvency of companies - If payments are made late in the project, it is not possible or very difficult to obtain an advanced payment, etc. This might difficult the participation of SMEs with limited resources. - Small companies can't afford to participate as they will have to cover all expenses by their own first. There are a lot of great participants, who gave as very interesting ideas, but did not applied fully because of financial reasons. - The payment conditions are a barrier. In many cases it can prevent certain SMEs from applying. They often lack resources. In the case of the Smart Card, conditions did not include the possibility of pre-payment. - Financial conditions - The economic/technical solvency criteria
<p>Bureaucracy and IPR</p>	<ul style="list-style-type: none"> - Fear of paperwork and bureaucracy - Lots of documents and bureaucratic procedures. We know it is a complex process but try to make bureaucracy as simple as possible. - Too much bureaucracy – a lot of documentation and pre-project work. SME also do not have enough experience in overall public procurement, don't have enough human resources to prepare material and, I believe, these are the reasons for weak participation. In my point of view, participation would increase if overall requirements for participation would be made easier. - There is lack of knowledge in legal and IP fields, so they don't want to risk. - Concerns on IPR. Make sure you explain well this so that you don't have surprises. -Demanding and extensive administrative documents/reporting - They are not used to public procurement: contracting portal; role; electronic signature platforms of the bidders - SMEs point out complicated legal system, problems with remuneration, award criteria

Table 4. Aspects of the specifications that are a barrier for the participation of SMEs.

According to the comments, there are 4 aspects to take into account that have been expressed by most of surveyed: the tight execution and deadlines for the tender and execution; problem to fulfil all technical criteria by SMEs; the financial issues related with not advanced payments; and the high bureaucracy and IPR issues, as most of SMEs don't have the necessary resources and knowledge to face them.

After the open questions, surveyed were then asked to choose from a short list of those aspects that they considered as barriers for SMEs in public tenders. Figure 4 shows that by far the remuneration, management, IPR issues, and special conditions of execution, are the three aspects considered that have a high negative effect for the SMEs participation. All selected aspects are aligned to the open responses gathered before.

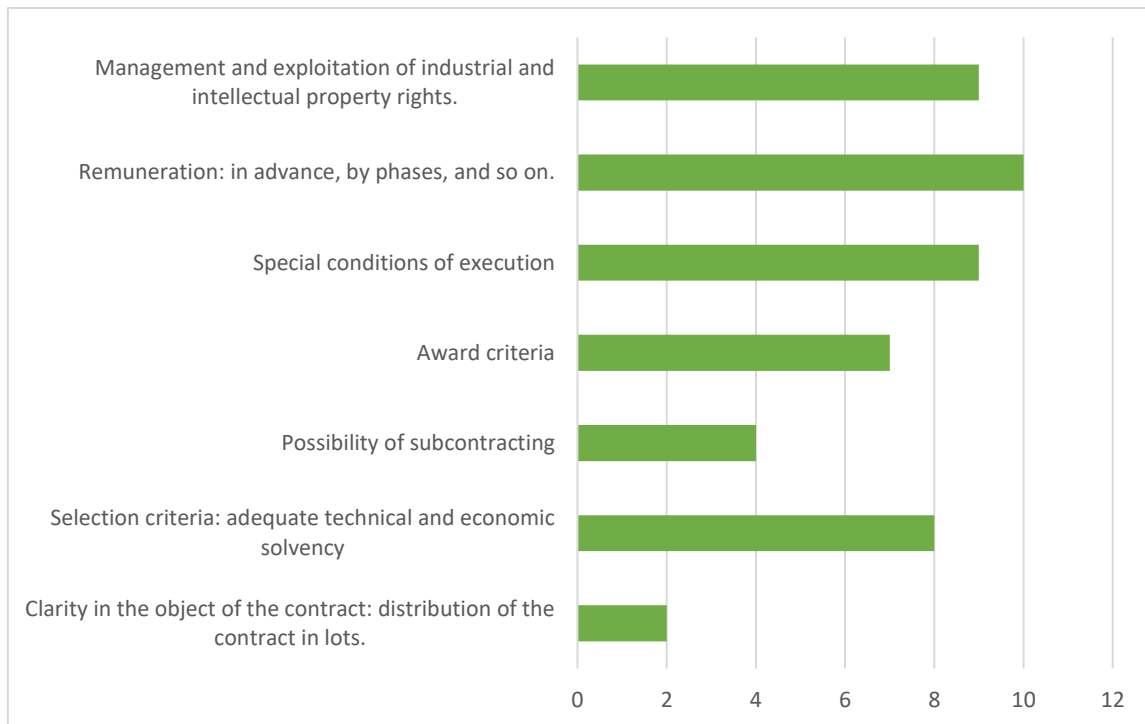


Figure 4. Aspects of the specifications that are a barrier for the participation of SMEs

- **Support on PPI by public procurers**

Several questions were included in the survey to know if public procurers give special support in those tenders with innovation aspects to interested companies and if their knowledge about helpful documents or related trainings for SMEs.

Results shows that near 80% of consulted stakeholders received more consultations in tenders with innovation aspects that in normal procurement processes (figure 5). Thus, it is clear the necessity of give more information and training to those companies that want to participate in this kind of tenders.

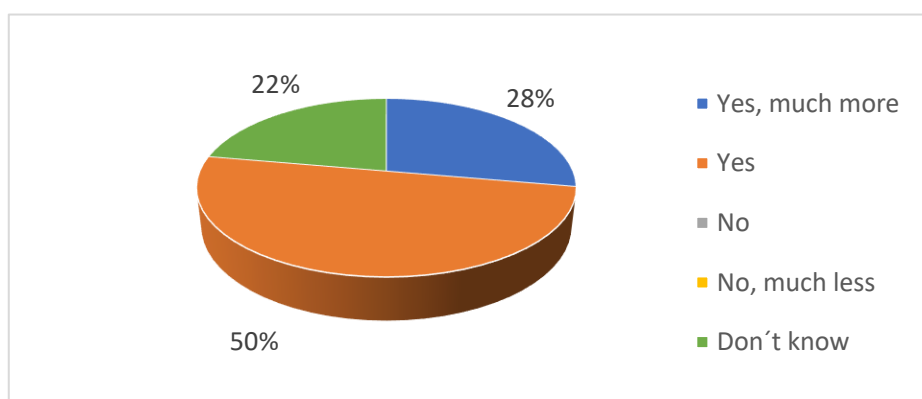


Figure 5. Responses to the question "do you receive more consultations in a PPI process that in a normal procurement process?"

A vast majority of stakeholders, more than 80%, declared that they provided helpful documents to participants in public tenders of innovation (figure 6).

Those with affirmative answer normally organized a workshop about how to apply to the tender, with an explanation of the requirements; and/or provide guidelines to support them in the process.

In some cases, they have an open platform to receive questions, and all answers are public to ensure that all companies have the same information.

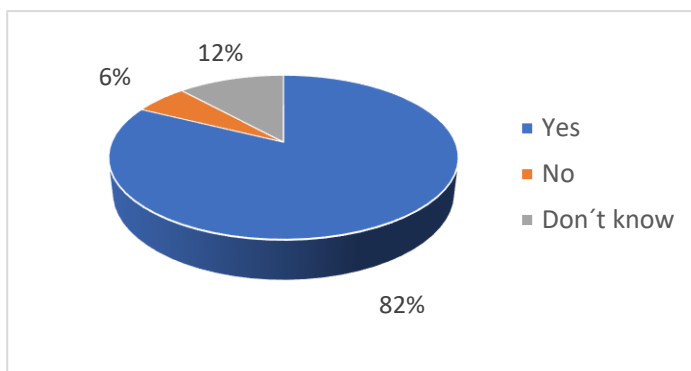


Figure 6. Responses to the question "do you provide helpful docs to participants?"

It is also extended to include the necessary annexes to support bidders with technical reports, calculations, samples of the documentation, etc. Also, link to official guides or websites drafted by Ministry's or the European Commission are usually provided, such as the portal on PPI by the Health Sciences Institute of Aragon¹⁹.

Finally, only 6 out of 17 stakeholders answered that they are aware of training programmes for procurement professionals that suits with the necessities of a bidder company. These programmes are usually organized by Regional public authorities in a kind of workshop, such as once organized by the *Diputaci3n de Alicante* (Spain); at national level, as one training organize by the Lithuanian National Science, Innovation and Technology Agency, MITA; or as sectoral level, organized by different federations, as the regional metal entrepreneurs at Murcia (Spain). Other initiatives are the PPI2Innovative project²⁰, a capacity building to boost PPI Interreg central Europe project; or the European Network of Competence Centres for Innovation Procurement²¹.

• **Aspects for a training course on PPI for SMEs**

Finally, all stakeholders were asked about the aspects that they consider necessary to include in a course on PPI for SMEs with the final aim to boost their participation and give a support during the process by the acquisition of the necessary knowledge.

All given answers have been grouped by topics in table 5:

Topics	Comments
Public procurement	<ul style="list-style-type: none"> - What is public procurement and processes (avoid initial fear). - Graphical views of the full procurement process. - The definition of the subject matter of the contract. - The difference between doing business with a private customer and a public customer; e.g. a "negotiated procedure" does not mean that you actually get to negotiated the conditions with the public customer. - Training on the different types of public procurement and their processes and phases.

¹⁹ <http://www.iacs.es/compra-publica-innovacion-portal-guiasalud/>

²⁰ <https://www.interreg-central.eu/Content.Node/PPI2Innovate.html>

²¹ <https://procure2innovate.eu/home/>

Public procurement of innovation (PPI)	<ul style="list-style-type: none"> - The course should focus on clearly understanding PPI, as well as public tendering on a more general level. Preparation to the tender should also be one of the main topics. - Clearer distinction between PPI and classic PP and further explanation about process / steps within PPI. - What is the PPI and what distinguishes it from ordinary shopping? - Types of PPI. - How is confidentiality guaranteed in PPI processes? - Confidentiality on the part of the Administration in the process. - Explain benefits of PPI for SMEs, as PPI is not a business. The business is the commercialization of the solution resulting from PPI. - Presentation of the public procurement procedure, description of the subject of the contract (innovative aspects - need for precise definitions), selection criteria, execution of the contract.
Public pre-commercial procurement (PCP)	<ul style="list-style-type: none"> - Introduction to the PCP: gains and benefits for companies. - Training on the step-by-step of the PCP instrument and its phases - Training on the characteristics of the specific PCP to be launched: expectations, obligations, implications. - What is expected in the PCP
Market consultation	<ul style="list-style-type: none"> - Estimated time from preliminary market consultation to collection - What are preliminary market consultations and what are they for? - Training on the way to face a Preliminary Market Consultation of PPI
Look for public tenders – registers	<ul style="list-style-type: none"> - How to check information in the platform of public tenders - Registration in the “registration of companies that bid for public tenders” (Spanish <i>registro empresas adjudicatarias</i>).
Supporters	<ul style="list-style-type: none"> - SMEs should be supported by consultancies, associations, tech centres, etc to this kind of processes - Additional juridical counseling
Application process	<ul style="list-style-type: none"> - How to write a winning proposal - Technical and financial reporting: how to prepare requested documentation - How to prepare documentations for successful participation in PCP and PPI - The importance of being very careful when drafting the prequalification application, focusing on a full description of references and how the references will be evaluated according to the selection criteria - The importance of knowing how to read the tender documentation, including the award criteria. Do not assume that you can win the tender if you do not follow the conditions. This often requires a great deal of resources, especially in PPIs - Technical specifications and evaluation criteria (ratio of price to other criteria) - Detailed description what are the stages of the procedure, qualification criteria, award criteria.
Co-creation	<ul style="list-style-type: none"> - Framework for co-creation: how will the participating companies be able/be expected to interact with stakeholders and relevant users? - Co-creation. What it means and what to expect
Innovation management	<ul style="list-style-type: none"> - Innovation management in companies (many SMEs do not develop own R&D and innovation). - Business Plan for innovations - How to draft proposals of R&D projects
IPR management	<ul style="list-style-type: none"> - IPR management

	<ul style="list-style-type: none"> - Exploitation of results - Negotiation of IPRs - Industrial or intellectual property rights
Consortium options	<ul style="list-style-type: none"> - The possibilities of using sub-suppliers or bidding as a consortium – gathering the necessary products and services, knowledge, experience and economic power. - Overview of existing networks and web platforms for grouping and independent providers - How an SME can participate: bidder; subcontracting; joint venture
Technical skills	<ul style="list-style-type: none"> - Strengthening internal capacity for PPI preparation - Technical and professional ability

Table 5. Aspects for a training course on PPI for SMEs to take into account in accordance to surveyed stakeholders

All comments have been grouped in 11 different topics that that could be highlighted as a initial bullet point of the necessary gaps and needs to be covered in a future training on public procurement of innovation.

4.3 Results from SMEs

Although it was possible to collect feedback from 6 SMEs of the health IT sector, conclusions will not be extrapolated. These answers should be taken into account as examples and opinions of professionals of SMEs that participated in different kind of public tenders of innovation, being PCP or PPI.

- **Why participate in public procurement and how managed it internally**

All surveyed knew about opportunities of public tenders through a continuous tracking of different platforms on public tenders. One of the companies hired a bid manager as responsible of the tender processes, others created a working group for tender preparation lead by the CEO, head of sales or a project manager. In this case, the majority is the CEO took the main responsibility of this task.

The main goal for SMEs to be involved in these public tenders is to look for new market opportunities, but also to launch ongoing and new R&D projects (figure 7).

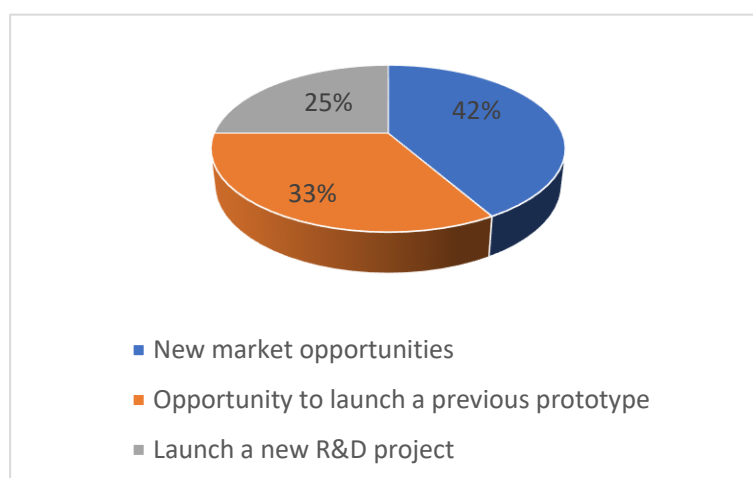


Figure 7. Aim that drove SMEs to be interested on public tenders

- **Barriers for the participation of SMEs**

Surveyed SMEs were asked about the main barriers that they faced during the whole process. Table 6 shows the answers and comments received to this specific question.

Main barriers could be summarized as lack of information about the procurement process and its evaluation (one of the SMEs never received feedback about it), consortium collaboration, not getting appropriate references and technical specifications. Due to the difficulties and bureaucracy, two of the consulted SMEs had a need of support of an external consultant or assistance expert on such processes, one required more information to the public authority that launched the tender.

SME	Comments
1	Getting information about PCP process and terms of evaluation
2	References, as it's hard to build a catalogue of enough relevant projects to provide when participating in tenders. Requirements for financial turnover. Main challenge has been that they have not been able to participate properly in tenders, as they have been too complex and containing too many different parts, so that they would have to collaborate with two or three other companies, in order to be able to deliver what's described in the tender. The people in charge of creating the tenders has to have the knowledge within the field of the tender, in order to create one that's actually possible to fulfil by a single company, and doesn't require many partners.
3	In general, I think that big tenders are not the best way to do IT procurement. It would be better to define the "killer feature" /business requirements and start small and ensure to have enough buffer in the budget/project to enhance in a way that will deliver best value for the money. A true agile method is very effective also when it comes to big nationwide solutions.
4	Information and training
5	Award criteria – 100% price
6	Technical specification, endorsements

Table 6. Answers to the question "In your opinion, what were the main barriers that you faced during this particular Public Procurement process?"

- **Necessary knowledge and skills to participate in public procurement tenders**

SMEs also were consulted about the knowledge that they consider necessary to bid for public procurement tenders with innovative aspects. Their answers, compiled in table 7, shows that basic knowledge on public procurement processes, innovation, project management, and team working are essential skills that have to be supported by a good financial situation of the company.

SME	Comments
1	You need science, technology and innovation knowledge and project manager, good writing skills.
2	Technical insight in the tender process and a good financial situation within the company + financial backing. Being able to collaborate with other companies. References/earlier projects to prove that you have the knowledge to provide what's needed.
3	You need to have knowledge about the bid discipline. You need to know about the playing field in public procurement and you need knowledge about classic waterfall.

4	Company should read all documents carefully and fulfil all requires attachments.
5	High technical skills, precise fulfilment of the tender’s documents
6	Own high qualified human resources, purchase of technical equipment

Table 7. Answers to the question " In your opinion, what are the necessary knowledge and skills to be able to participate on this kind of Public Procurement tenders?"

Consulted SMEs were also asked the same question from a list of aspect of a procurement process: previous steps, tender, innovation, and payment. From the results of 6 consulted SMEs it could be highlighted that intermediate payments, followed by project coordination and where to find information on public tenders are essential skills to successfully manage tenders. Other useful skills are how to manage the final payment, what is and steps to follow in a preliminary market consultation, basic vocabulary of a tender, design thinking, and understanding the content of a tender. Intellectual property rights management has been also selected as important aspect for 2 of the surveyed companies.

Aspect		Very important (1)	Fairly important (2)	Important (3)	Slightly important (4)	Not important (5)
Previous steps:	Where to find information on public tenders?	3	1			
	Participation in preliminary market consultation	1	2	2		
Tender	Vocabulary	1	2	1		
	Tender content	2	1			
	Intellectual property rights		1	2		
Innovation process	Innovation management	1	1			1
	Coordinate project teams	1	3			
	Design thinking		2			1
Payment	In advance	2	1		1	
	Intermediate/in different phases	4				
	Final	2		1	1	

Table 8. Selected aspects by SMEs as necessary knowledge and skills to be able to participate in public procurement tenders

- **Differences between public procurement of innovation and “normal” public procurement**

Consulted SMEs considered that the possibility of sharing costs with other partners, and the higher risks due to the technical and innovative requirements, and the process itself of a PPI are the key points that differentiate this kind of public procurement to the “normal” one, or those tenders that follow the simple process of a common public tender. (table 9).

SME	Comments
1	Duration, process, technical requirements, risk, intellectual property, evaluation criteria, finance.
2	PPI has mainly been development in collaboration with public partners such as labs or hospitals, where costs have been partly covered by external funding.
3	I do not have much of experience to compare.
4	PPI was more difficult
5	Innovative aspects
6	Not consider different

Table 9. Answers to the question "What do you consider different between a "normal" public procurement tender and a tender of public procurement of innovation?"

- **Helpful and training for SMEs**

The consulted SMEs did not receive any guide or document to support them during the process, neither know about a training programme that suits with the necessities of their companies. Nevertheless, they are quite interested to participate in a future HAePPI project online training on public procurement of innovation for SMEs.

5. CONCLUSIONS: GAPS AND NEEDS ON PPI FOR SMEs

Taking into account all answers and the previous desk research it could be concluded that it is highly necessary to offer a training course on public procurement of innovation for SMEs, with a wide approach of the concept, including PCP, PPI and also innovation partnerships, so future HAePPI training course should be focused on all public contracts that have some kind of innovation.

Analysis of the different barriers for SMEs to participate in public procurement was conducted, and the necessary knowledge and skills that professionals of SMEs were selected. Nevertheless, other discovered aspects should be established by public authorities to boost the participation of SMEs, such as possibility to include advanced payments or use clear, understandable language.

From the analysis of the questions, 6 different topics were identified as gaps and needs on PPI for SMEs. Each of the defined gaps and need topics and sub-topics are shown as conclusion of this report:

<p>Public procurement</p> <ul style="list-style-type: none"> •What is public procurement •Proces to participate on public procurement •Types of tenders •Confidentiality of the administration •Payment: financial issues to take into account by SMEs 	<p>PPI and PCP</p> <ul style="list-style-type: none"> •What is PPI and PCP? •Differencies •Phases of PPI and PCP •Benefits for SMEs •Preliminary market consultation: what is and how to to face it 	<p>Application process</p> <ul style="list-style-type: none"> •How to face a tender: vocabulary and main sections •Key aspects to write a winning proposal •How to prepare requested documentation •Understand specifications and award criteria
<p>Project management</p> <ul style="list-style-type: none"> •How a SME can participate: bidder, subcontracting, and joint venture •Consortium and team management •IPR management •Exploitation of results 	<p>Innovation management</p> <ul style="list-style-type: none"> •Co-creation: what is and how to interact with stakeholders? •Innovation management in companies •Design thinking for innovation •Business Plan for innovators 	<p>Tender tracking and support</p> <ul style="list-style-type: none"> •How to look for tenders: european/national registers? •Where to find guides and documents to support SMEs on public procurement •Possibilites of external support: who and what to expect

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ANNEX I. QUESTIONNAIRE FOR PUBLIC AUTHORITIES

1. General Information

- Name of the organization:
- Location:
- Type (local, regional or national):
- Approximately N° of PPI tenders launched:
- Approximately N° of public procurement tenders launched (excluding minor contracts):

- Name of Informant:
- Position
- Date of Interview:

2. General Questions

(1) Did you carry out a preliminary market consultation prior to drafting the specifications?

Yes	
No	

(2) How many companies applied? (*Differentiate between SMEs and Large enterprises.*)

(3) The companies that tendered had participated in the preliminary market consultation?

Yes	
No	

Any comment

(4) What aspects of the tender documents do you think can help to increase the participation of SMEs in the contract? (*First do and open question, later remind and mark the following points*)

Clarity in the object of the contract: distribution of the contract in lots.	
Selection criteria: adequate technical and economic solvency	
Possibility of subcontracting	
Award criteria	
Special conditions of execution	
Remuneration: in advance, by phases, and so on.	
Management and exploitation of industrial and intellectual property rights.	
Others:	

(5) What aspects of the specification do you consider to be a barrier to greater participation

by SMEs? *(First do an open question, later remind and mark the following points)*

--

Clarity in the object of the contract: distribution of the contract in lots.	
Selection criteria: adequate technical and economic solvency	
Possibility of subcontracting	
Award criteria	
Special conditions of execution	
Remuneration: in advance, by phases, and so on.	
Management and exploitation of industrial and intellectual property rights.	
Others:	

(6) Do you receive more consultations in an PPI process than in a normal procurement process?

Yes, much more	
Yes	
No	
No, much less	
Don't know	

(7) Do you provide helpful docs to participants? *(if yes, which one?)*

Yes	
No	
Don't know	

--

(8) Are you aware of any training programme for procurement professionals that suits with the necessities of a bidder company?

Yes	
No	
Don't know	

(9) If yes, could you give some information?

--

(10) If a course on PPI is designed for SMEs, which aspects do you consider necessary to include?

--

ANNEX II. QUESTIONNAIRE FOR SMES

3. General Information

- Name of Company:
- Sector:
- Location:
- Size (big company or SME)
- Date of creation:
- N° tenders you have participated:
- N° PPI you have participated:

- Name of respondent:
- Position in the Company:

4. General questions

(1) How did you know about this Public Procurement tender (PCP, PPI...)

(2) How would you define your satisfaction with your participation in this tender process?
(Choose one)

Very satisfied	
Satisfied	
Neutral	
Dissatisfied	
Very dissatisfied	

(3) What was the final result of the process and how it benefits to your company?
(Highlight if they achieved the contract, and if they have a new product in their catalogue due to their participation)

(4) Who was the person in charge of the tender process within the company? (Ask about his/her role in the company, knowledge on public procurement)

(5) What was the aim that drove your company to be interested on this Public Procurement tender? *(Select the appropriate/s)*

New market opportunities	
Opportunity to launch a previous prototype we were working on it	
To launch a new R&D project	
Other:	

(6.1) In your opinion, what are the necessary knowledge and skills to be able to participate on this kind of Public Procurement tenders? *(Do an open question, and later ask next questions with some points to mark)*

(6.2) And what about....?

		Very important (1)	Fairly important (2)	Important (3)	Slightly important (4)	Not important (5)
1. Previous steps:						
	Where to find information on public tenders?					
	Participation in preliminary market consultation					
2. Tender						
	Vocabulary					
	Tender content					
3. Innovation process:	Intellectual property rights					
	Innovation management					
	Coordinate project teams					
4. Payment:	Design thinking					
	In advance					
	Intermediate/in different phases					
	Final					

Add any comment

(7) In your opinion, what were the main barriers that you faced during this particular Public Procurement process?

(8) Did you need any help? *(In affirmative case, who and how supports you?)*

(9) Do you know any helpful doc/guidelines/office in your country/region that support your company on how to participate in this public procurement tender *(In affirmative case, ask if they have used it)*

(10) What do you consider different between a “normal” public procurement tender and a tender of public procurement of innovation?

(11.1) Are you aware of any training programme for procurement professionals that suits with the necessities of your company?

Yes	
No	
Don't know	

(11.2) If yes, could you give some information?

(12) Will you/or someone from your organization be interested to participate in a future online training on public procurement of innovation for SMEs?

Yes	
No	
Don't know	

(13) Any other comment: