http://www.interreg-danube.eu/approved-projects/ri2integrate

RI2integrate

(DTP1-1-184-1.1)

4.1.2 PPI Guide, ver. 1.0

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Content

Figures

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Abbreviations explanation

ELI – ELI Beamlines infrastructure

ESIF – European Structural and Investment Funds

EU – European Union

GDP – Gross domestic product

PCP – Pre-commercial procurement

PPI – Public procurement of innovation

PPP – Public Private Partnership

R&D – Research and development

R&D&I – Research, development and innovation

SIC – The Central Bohemia Innovation Centre

TRL – Technology Readiness Level

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1. Public procurement of innovation – introduction to the concept

We need to describe and clarify the main terms used in the document:

PCP – Pre-commercial procurement is the concept when mostly more suppliers develop some innovative service or product which is not available on the market. R&D activities are also part of PCP projects.

PPI – Public procurement of innovation is the procedure when the R&D has been finished already, new innovative service or product is ready on the market but it is not widely used/spread.

PPP – Public private partnership is the type of inter-sectoral cooperation. The public entity (Ministry, regional public authority) cooperates with private company and capital to fulfil some goal, for example build high speed railway; build a highway or wastewater treatment plant. Private company gets some benefit for its corporation – part of revenues from the project.

Public procurements are the significant part of European budget and so they make such a type of specific market.

Totally 13,8 % of European GDP[1] is distributed by the public procurements, so the public procurement is a very big potential market for all actors (private, public, R&D sector).

The public procurement instrument could strongly support the R&D sector, help citizens to get innovative goods or services and spread the innovative solution at the market. So the final outcome of PPI should be the raising competitiveness regarding getting and spreading innovative products and services at the market and to the customers (citizens).

Public services could be improved by these R&D activities so the public procurement of innovation (PPI) is the ideal tool to get these things better. As was written in PPI Guidelines[2]:

[1] https://ec.europa.eu/docsroom/documents/20679/attachments/1/translations/en/renditions/native

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"...PPI aims to 'close the gap' between cutting-edge technology and processes and the public sector customers or users who can benefit from them."

The main motivation for PPI implementation could be highlighted in these points[3]:

- Speed the public sector modernisation using the innovative solution
- Get better value for public money through cooperation – sharing costs for similar needs and solutions.
- Help to bring R&D solution to the market, create growth and jobs in EU, to increase the competitiveness of EU.
- Support the spreading of the innovative solution on the market.

PPI is defined clearly on European Commission level mainly in relation to the Horizon 2020 programme – see the Fig. 1 below.

[2] https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform_Guide_new-final_download.pdf
[3] https://ec.europa.eu/digital-single-market/en/innovation-procurement

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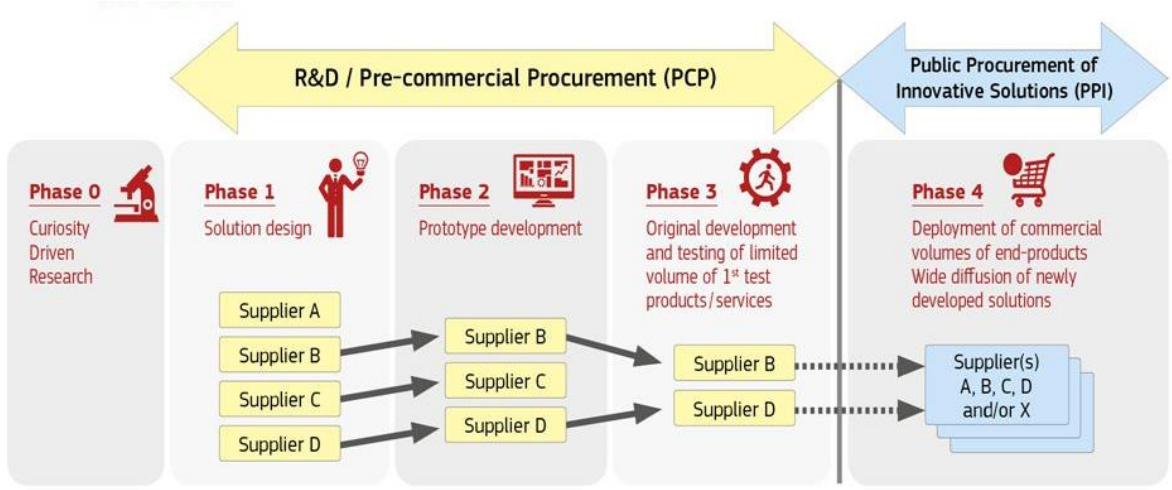

Fig. 1: PPI and PCP complementarity scheme (EC, Source: https://ec.europa.eu/digital-single-market/en/innovation-procurement)

Pre-commercial procurement is the pre-PPI phase and it is well defined in the Framework 2014/C 198/01.

"...means the public procurement of research and development services where the contracting authority or contracting entity does not reserve all the results and benefits of the contract exclusively for itself for use in the conduct of its own affairs, but shares them with the providers under market conditions."

The object of the contract of **PCP has to contain R&D category activities** as defined in the Framework. During this procedure **new solution, which is not available on the market, has been developed until the stage** (TRL 7-8). The final output of PCP procedure has to be share at market conditions = sells at the market. The PCP output could be or should be more than one possible technology/product. Just the variants of optimal solution for specific conditions are the benefit of PCP procedure for end users.

The PPI procedure could take place after PCP but it is not a strict condition. **The PPI is mainly about the wide spreading of new technology/solution into the market by public**

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procurement procedure. There is no preferred procedure of public procurement for implementing PPI (open tender, competitive dialogue,…).

Also, PCP and PPI steps could be involved in one public procurement procedure together (e.g. innovative partnership) – see the more details in Box 2. PCP is not the concept the RI2integrate project is dealing with, so we describe dominantly the PPI concept.

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2. The Legal framework of public procurement in EU, project partners countries

The key directive concerning public procurement is the Directive 2014/24/EU[4] of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC. Here are defined the basic principles and framework of public procurement in the EU. The directive requires member states to achieve a particular result without dictating the means of achieving that result. The Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 is the key directive for sector of postal service and, water, energy and transport.

There are some general exceptions for mandatory using this Directive – the main relevant for this tool is exception for the services including R&D (Article 14 of the Directive) – public procurement directive is not applied for R&D services (except the services fully used and financed by contracting authority – bought for the internal use only and fully self-financed).

The directive also reminds other processes out of this Directive – mainly pre-commercial procurement procedure defined in Framework 2014/C 198/01[5] for state aid as mentioned above.

Hereafter the procedures when the product (delivery, service) are not available on the market are incorporated in Directive 2014/24/EU[6] also. Paragraph 49 (p. 73) says: *"…Where 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, contracting authorities should have access to a specific procurement procedure in respect of contracts falling within the scope of this Directive. This specific procedure should allow contracting authorities to establish a long-term innovation partnership for the development new, innovative product, service or works…."* The main procedure defined for these conditions is the innovative partnership or in some specific case,

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0024&from=CS
[5] http://eur-lex.europa.eu/legal-content/CS/TXT/?uri=celex:52014XC0627(01)
[6] http://eur-lex.europa.eu/legal-content/CS/TXT/?uri=CELEX%3A32014L0024

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the competitive dialogue procedure/competitive procedure with negotiation are possible. More comparison of these procedures is in boxes below.

To sum it up demand of procurements including R&D services could be manage by two main principles:

i) Public procurement procedure (Directive 2014/24/EU + national rules for public procurement).

ii) Using specific grant programme in accordance with (Framework 2014/C 198/01 and national state aid. The main differences and limitations are described in Fig. 2. Public procurement is the main scope of this tool, so further we describe the public procurement procedure only.

Grant programme	Public Procurement
• R&D activities, State Aid rules • Pre-commercial procurement • Grant programme needed. • Not possible to cover 100 % costs - eligible costs definition. • Product is owned by inventor/supplier (research org./private).	• R&D activities (innovation partnership procedure) • Strict procedure and rules about transparency, and non-discrimination. • Product is owned by procurer (not mandatory). • PPI could use any procedure (open, with negotiation, competitive dialogue).

Fig. 2: PPI implementation differences between State Aid and Public procurement implementation.

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The other important legal tool for PPI implementation is **preliminary market consultation** (Article 40 of the Directive). Using these consultations contracting authorities could get supports from external experts to define better their needs and compile tender documentation (consultation could not have the effect on competition). During the consultation, the authority informs the possible suppliers.

The key requirement for these consultations is to define the needs and have enough expert capacity incl. multidisciplinarity on procurer side. **The transparency, non-discriminatory and intellectual property protection – these are main problems related to the consultations.**

PPI procedure is implemented just after the PCP phase in "ideal" case. Both stages, PCP and PPI could be formally implemented in one public procurement procedure, mainly innovative partnership or could be implemented separately.

Due to the specification of each public procurement, it is not possible to define the best procurement procedure in general (for example: open tender, competitive dialogue, innovative partnership) for implementing PPI.

Legal specifications of procurement procedures are described in Boxes 1,2 below at EU level. The key source for comparison different public procurement procedures are the online materials of European Investment Bank[7,8]. The national specifics are summed up in the next section on p. 13.

[7] http://www.eib.org/infocentre/publications/all/epec-ppps-and-procurement.htm
[8] http://www.eib.org/attachments/epec/epec_procurement_ppp_competitive_dialogue_en.pdf

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Specific public procurement procedures

Box 1: Open tender procedure

- Preliminary market consultation (Article 40, Directive 2014/24/EU) – specification of the product, needs and possible solution at the market.
- The procurement subject has to be defined clearly and the bidders have to keep the instructions (main limitation to innovation product, so the subject has to be defined during consultations).
- The Framework Agreements are the specific procedure for long-term contracts (Article 33, Directive 2014/24/EU). Using framework agreement, public procurer could define the optimal conditions for partial tenders inside the Framework Agreement. The final product could be compiled and developed by the consortium of suppliers in the agreement.

Box 2: Innovation partnership

- the need (service, product, goods) is NOT on the market
- setting minimum quality requirement only, negotiation with one or more successful bidders.
- flexibility for Contracting Authority, which could decide how could the project continue and also phase the development of output.
- R&D&I project, uncertainty about final product – PCP + PPI implemented in one procedure – **be careful in setting the estimated value of procurement** (R&D costs incl.).
- There is possibility to share the intellectual property rights with suppliers to motivate the private companies as a supplier and the wider spreading of innovative product/technology.

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Box 3: Competitive procedure with negotiation/Competitive dialogue procedure

These procedures could be used when (Arcticle 26, Directive 2014/24/EU):

- the needs of the contracting authority cannot be met without adaptation of readily available solutions;
- they include the design or innovative solutions;
- the contract cannot be awarded without prior negotiations because of specific circumstances related to nature, the complexity or the legal and financial make- up or because of the risks attaching to them;
- the technical specifications cannot be established with sufficient precision by the contracting authority with reference to a standard, European Technical Assessment, common technical specification or technical reference within the meaning of points 2 to 5 of Annex VII.

The competitive procedure with negotiation is more suitable when the subject requirements are clearer than competitive dialogue which is suitable for the more unclear solution with higher intensity of negotiations.

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National specifics of the public procurement framework and praxis

Please correct/update this national specifics part. Take special attention to the national good practices of PPI. Describe the existing pilot activities in more detail if you find it useful for the tool. The PPI pilot actions are planned in Serbia, Czech Republic and in Croatia. So Czech and Serbian national public procurement laws are added as an Attachment II to this tool.

Austria

PPI implementation and praxis is at the highest level from the project consortium partners. Austria adopts national PPI Guide (2007) and PPI Action Plan (2011/12) and also PPI Monitoring and Evaluation (2014). The main aim of this PPI action plan in Austria was exploiting the large procurement volumes (about 40 billion Euro p. a. in Austria) and promote these two outcomes: to encourage industry to deliver innovative goods and services on the one hand, and to supply public bodies and citizens with advanced and (eco) efficient goods and services on the other hand[9].

As a key factor of successful implementation – the action plan was fully supported and supported by government and 2 ministries. Other important steps of implementation are: i) exchange of information; ii) PPI service points and PPI Centres of competence; iii) Pilot projects; iv) Procurement legislation.

Exchange of information among procurers (public utility providers) and suppliers (companies, research organisations and universities) is important to establish the close inter-sectoral relations and to know about each other needs and possibilities, because it is still very common in Danube region, that R&D sector does very excellent research with promising applications and the public authorities do not know about this research.

[9] https://era.gv.at/object/document/2177

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PPI service points and competence centres made the support network for successful PPI implementation – PPI service points were established to provide the support with formal procedures of PPI mainly. The PPI competence centres were established on thematic/sectoral base – AustriaTech[10], Austria Energy Agency[11] as a part of existing agencies/centres.

The pilot actions are the next factor of successful implementation strongly related to the RI2integrate project. In action plan, there was emphasized the importance of pre-commercial procurement pilot actions for social issues and needs (transport, safety, public health). The strong cooperation with public utility providers is crucial because there exists no adequate market solution.

The last very important factor is procurement legislation. There was cancelled the very common barrier for PPI – the lowest price evaluation criterion. Now the legal practice in Austria follows the other countries in Western Europe. The best price/quality ratio principle is established in public procurement praxis evaluation and legislation. To increase the SMEs participation, the mandatory amount of public procurement has to be assigned. The quality criteria in defining "the most economically advantageous tender (Article 67, Directive 2014/24/EU)" have to be set up to realistic influence the value of the criterion. To sum it up, the lowest price criterion will probably become an exception in Austria in the future.

All abovementioned good practices from Austria are very inspiring for this PPI Guide because Austria has the longest experiences with PPI implementation from the project consortium. Therefore, the most of that was implemented into PPI Guide.

Croatia

Public procurement market makes approx. 12 % of GDP. New Public Procurement Act (effective from the January 2017) allows public procurers to use PPI tool in their public procurement procedures in order to enable effective procurement and efficient spending of

[10] http://www.austriatech.at/en
[11] http://en.energyagency.at

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public procurement funds. The most economically advantageous tender is the selection criterion. The lowest price criterion has to make up to the 90 % of total value of criterion.
The new procurement act is quite new in Croatia, so there are not many good practices here. The public authorities have to get used to using the new procedures in that Act.
There will be compiled 3 thematic guidelines for PPI in the PPI2Innovate project, although there is one example of successful PPI implementation – kindergarten in Koprivnica and energy efficiency materials.

Czech Republic

The public procurement market makes ca 10,3 % of GDP (2015)[12] in the Czech Republic. The main relevant factors about public procurement market are prevailing usage of open tenders and the lower price criterion and also the increase in proportion of small scope tenders.
Inside state aid rules: R&D activities have to be funded using grant programme or similar funding tool. These R&D services have to be delivered using grant agreement. There occur several limitations closely related to eligibility of total costs for the innovative product development and co-financing.
The other way is to use public procurement law. This was the way, how the first pilot (PCP SBIR method) was tested in the Czech Republic (2014 – 2016). Using the formal procedures as framework directive or innovative partnership (using the new procurement law, 2016)[13] we could develop the final innovative product using these procurement procedures. The public procurement procedures become more effective for PPI implementation with the new public procurement act.
New public procurement act (2016) have implemented all procedures from the Directive 2014/24/EU, so the most relevant for PPI are the negotiation procedures described in Boxes 1,2. Also, there are the evaluation criteria as economically advantageous tender – the ratio

[12] http://www.portal-vz.cz/getmedia/596b6316-9683-4f9e-8157-a42211f60404/III_Vyrocni-zprava-o-stavu-verejnych-zakazek-v-Ceske-republice-za-rok-2016_final.pdf
[13] See the Annex II

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between the lowest price/quality. The lowest price is still available and the easiest way in the most of public procurements – the lowest price criterion could not be used in innovation partnership and competitive dialogue procedures.

These are the progressive parts from the national level which will be implemented into the output:

- The multi-sectoral thematic approach of research platform on specific topics – e.g. smart transport solution. Public authorities, research sector and private sectors (manufacturers, suppliers) could network on these events. – define their needs and possibilities, funding sources...
- Market consultation about the scope of procurement delivery before own public procurement procedure. These consultations could help to define the needs and limits of the procurer. Procurer could better get know innovative possibilities of the future procurement. Here are some examples of these market consultations from EU: https://tfl.gov.uk/info-for/business-and-commercial/prolite; http://www.stoplindano.es/en/data-of-interest/pmc/
- Pre-commercial procurement good practices, when external state agency manages the procurement for the all public authorities (ministries). Suppliers apply for these procurements into a specific programme or funding tool (e.g. Beta programme in the Czech Republic).

Hungary

There is approx. 15 % of annual GDP spent using public procurement. Slightly more than half of this funding comes from EU funds. Open public procurement is prevailing (61 % of public procurements in total).

New public procurement act was adopted in 2016 and implementing the EU directives. The public procurement procedures became faster, more flexible and simpler. The innovative partnership procedure was also implemented into the legal scheme. The scheme of the

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innovative partnership is standard – the open call for innovative service/good/product. As an evaluation criterion, the price/quality ratio is used to choose the most economically advantageous tender. There is an emphasis put on environmental, social, innovative and quality-related aspects. The new procurement act allows prior consultations with independent companies, public authorities and experts to prepare procurement procedures.

The most frequent problems related to PPI in Hungary are unjustified change to the direct award of contract/procedures with negotiation; lack of professionalism by central public procurement office and only early stages of digitalization of the public procurement system. Problem is also a lower emphasis on transparency of public procurements in the new act.

These are the progressive parts from the national level which will be implemented into the output:

- environmental, social, innovative and quality-related aspects
- prior consultation or consultation about the final product during the procurement

Romania

The overall amount of public procurement is about 17.2 billion € per year (2014), which is approx. 10.5 % of GDP.

The new public procurement act was adopted in 2016. Following the implementation of EU Directive 2014/24/EU on public procurement, the new Romanian Law 98/2016 on Public Procurement included a section covering innovation partnerships (paragraph 95-103), which presents the conditions under which a contracting authority can organize the production and procurement of new products and/or services which it needs but which are unavailable on the market.

No specific procedure for PPI implementation was set up in the new act, otherwise for the procurement including earlier TRL stages the innovative partnership procedure was implemented also.

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As main evaluation criterions, there could be used: lowest price, lowest cost, best quality / price ratio or best quality / cost ratio. The best quality – price/quality – cost ratio is determined according to evaluation criterions which include environmental or societal aspects related to the object of the public procurement contract or the framework agreement.
The implementation of this new public procurement act is in early stages in Romania so the forthcoming years would show the practice.

These are the progressive parts from the national level which will be implemented into the output:

- include societal or environmental aspect into evaluating criterions.

Serbia

The new public procurement act has been adopted from 2012 to 2013. This new act implemented some principles of PPI concept. Serbian procurement law introduced a new principle of public procurement - the principle of environmental protection and energy efficiency, which stipulates that the contracting authority is obliged to procure goods, services and works that do not pollute or minimize the environmental impact , e.g. that provide an adequate reduction in energy consumption.
But there are still some relevant problems in relation to the public procurement of innovation in Serbia. Although there is a choice to use the most advantageous tender criterion, the lowest price is still prevailing (81 %), because it is much easier to implement for public authorities. The most advantageous tender criterion could include the calculation of life-cycle costs; energy and other uses costs; costs attributed to external environmental factors associated with the product, service or works during their life cycle.
Another problem is the low participation of SMEs in the public procurement because of lowest price criterion and the uneven competition with the big companies. Furthermore, the

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Serbian public procurement law also contains certain provisions that encourage the development of small and medium-sized enterprises.
The conclusion is that the public procurement of innovation is proclaimed as a strategic goal, but there is no specific guideline, strategy or available data about public procurement of innovation. So the formal or informal press on public procurers to implement PPI or the other progressive type of procurement (life cycle costs, green PP,…).

These are the progressive parts from the national level which will be implemented into the output:

- life cycle costs criterion (recycling costs, energy consumption costs, maintenance costs, environmental externalities costs…)
- minimize the pollution or environmental impact of procured goods, products and services

Slovenia

PPI as a concept was partly implemented into legislation (2016) during the harmonization with EU public procurement legislation in the same way as in other consortium countries. PPI could be implemented using any legal procedure like open tender, competitive dialogue or partly the new procedure of innovative partnership.

Key provision for public procurement for innovation:

i) Innovation partnership. One of the more visible legislative changes introduced by the Public Procurement Act is the innovation partnership – a public procurement procedure which may be used in instances where the need for innovative products, services or works cannot be met by solutions already available on the market.

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ii) Transition to electronic system (in this area was Slovenia lagging behind). The Act requires the transition to electronic means to be completed by 2018, however the implementation of the "reinforced" e-procurement has already been effected (on a voluntary / trial basis) by numerous contracting authorities.

Due to the novelty of legislation, there is no public funding for implementation PPI on national level so only the ESIF funds were used in this case (Interreg, H2020). Otherwise, there exist several successful pilot PPI actions – for example, regional waste management centre in Ljubljana[14]

Overview of the national specific, the tool development from national specifics into the final tool

Directive 2014/24/EU, resp. Directive 2014/25/EU were at least partly implemented in the all consortium partner countries. Therefore the best solution for PPI implementation is to use the procurement procedures defined in the directive and the national procurement law also: innovative partnership and competitive dialogue/negotiation procedures.
Besides the legal novelization, the several thematic strategic guidelines were adopted in Slovenia in charge of PPI concept – e.g. Guidelines for Public Procurement of IT Solution or Guidelines for Construction Procurement.
The good practices identified at the national level reports are mainly the thematic approach (Austria, Czech Republic), which could help to network the contracting authorities and R&D providers, better define the society needs and priorities and could serve for public authorities as a feedback of possible innovative solutions for their problems.

[14] http://ec.europa.eu/regional_policy/en/projects/slovenia/upgraded-waste-management-facilities-for-central-slovenia

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3. Logical framework of tool

The tool has 2 main levels: 1) General framework for PPI; 2) Template for PPI including thematic approach examples.

The general framework comprises of i) legal framework compilation; ii) PPI preparatory phases; iii) PPI procedure; iv) PPI evaluation. All these steps make the process of public procurement and lead to the innovative service/good or product.

Template and thematic approach is an extension of the general framework. It is tailor-made the general tool for specific partner needs. Every partner could find out and modify the template regarding its own topic or sector which it is interested in or which is the most demanding for its regional stakeholders. Main additional value of this part is in summarizing good practices of these specific sectors. Mainly we used the databases of existing Interreg projects.

The implementation process of PPI has two main stages: i) inside RI2integrate project pilot; ii) out of the project.

We plan to develop fully and complex toolset inside RI2integrate project framework. The toolset includes the social need selection and ranking, find and set-up relevant stakeholders groups and find out relevant potential innovative technologies. These technologies would be evaluated concerning the benefit to public and estimated costs for their development. More details of deliverables contained in this tool are written in part 4.1.

Out of the project mainly the public procurement itself would be implemented. Also, evaluation processes would be partly done outside the project because they are related to specific procurement products.

Please see the Fig. 3 where is the logical framework of the tool in more detail.

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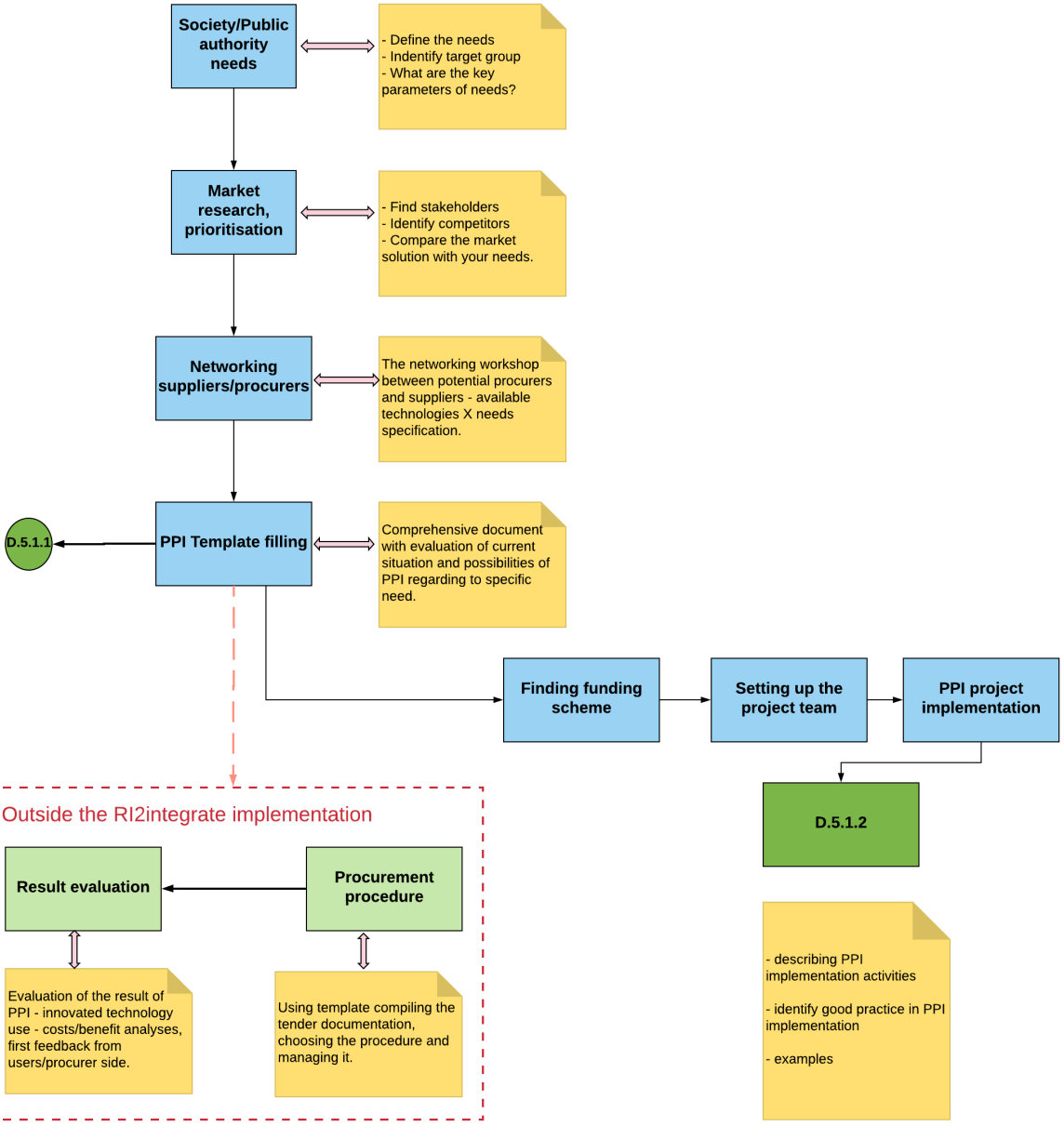

Fig. 3: Logical scheme of PPI Guide tool.

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4. Methodology

Methodology part describes the whole process of implementation of PPI procedure using this tool. It is not detailed instruction how to manage public procurement, so there are many relations to the legal framework and specific steps in the public procurement law.
Methodology part is divided into 2 main blocks: 1) PPI implementation inside the RI2integrate project; 2) PPI implementation out of the project. This division is made because the public procurement procedure takes from several months to a year depending on national specific.
In the RI2integrate project framework, the WP 4 is the preparatory phase for the pilot activity and own PPI implementation (WP 5).

WP 4 follows up the outputs of WP 3, which could be summed up in these statements (using D.3.3.2):

- One of the main roles of the new research infrastructures (including ELI) is the converting the scientific results into economic success.
- It is important to identify and work with all relevant sectoral stakeholders (Quadruple Helix model) to define the regional needs and find the most suitable technologies.
- Best practice approach should be use to compile the quality output at the project level.

There are also many examples of implementing activities planned by the SIC and ELI Beamlines project partners in the Czech Republic. Next, there are also the general examples of good practices. All these examples are written in italics.

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4.1.PPI implantation in RI2integrate project

This part is the main overview of the output 5.1 Implemented and reported PPI procedures. Indirectly this tool could help in synergy to fulfil the Output 5.2 Implemented and reported science park tool because in this tool 120 enterprises totally should be involved in cooperation with research infrastructures.

Key requirements for **Output 5.1** from application form are these:

- **Two PPI procedures will be done step-by-step in CZ and SRB** within this output. It will include the implementation of interactive process management and decision making; calculation; awareness creating package and knowledge compendium. The tool will cover the processes in the design phase of PPI projects as well as reporting the activities done.
- **Sustainable procedures will be implemented** in the public authorities operation that will be further used after project closure.
- **Tested PPI tool will be applicable for any public authorities within the project countries**. With minor corrections related to the national legislations (will be described separately), any public authorities can launch them.
- **Inter-sectoral cross-linkages and quadruple helix model make the theoretical background for all WP4 outputs.**

Deliverables regarding PPI tool implementation:

- **D. 5. 1.1.1 Implemented and finalized PPI procedures:** fully prepared, implemented and evaluated PPI procedures. PPI procedure implementation will contain the steps described in Tab. 1.

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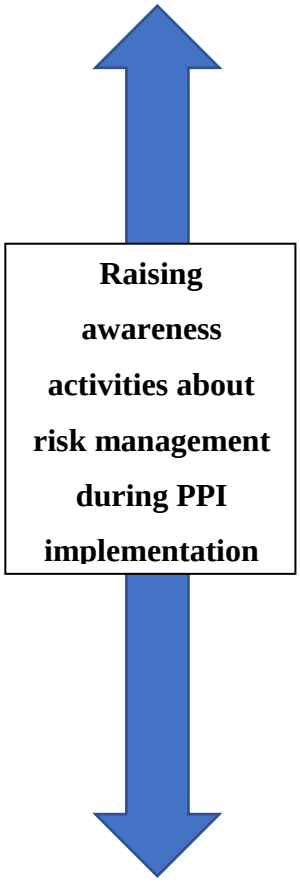
- **D 5.1.2 Join reporting on PPI implementation:** overall reporting of the pilot activities with special attention to the elements that might be transferred to any RI related PPI issues. RIs (2, as R&D providers), public authorities (8, as end users) and SMEs (30, as cooperating organizations) will participate in the pilot activities in 2 countries (CZ and SRB). We will also focus on the quadruple helix cross-linkages during the pilot actions, so we will follow up the inter-sectoral relations (academic, business, public authorities and other sectors).

Tab. 1: Main steps of PPI pilot activities in the RI2integrate project framework

1	Preparatory step – find out actual national legal limits to PPI implementation, setting up the team and the issue/need we would like to solve using PPI.
2	The needs definition – to define the problem, its target group and make basic CBA analysis.
3	The market research step - market consultation including the research organisations/infrastructures
4	The list of innovative technologies with evaluation of their potential.
5	PPI template preparation and filling (**D.5.1.1**)
6	PPI pilot package and knowledge compendium – summarization of pilot activities (**D.5.1.2**)



More detailed information about specific steps of PPI implementation is stated below:

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Step 1 – Preparatory step

During this step, we analyse the actual legal limits for PPI implementation, setting up the team (project management, financial management, legal expert, technical expert, public authority) and also define the basic problem or issue, we would like to address by PPI implementation.

Step 2 - Public sector needs the definition

The public sector could have a variety of specific needs. During this step, we should analyse the existing strategic materials – S3 strategies, strategy plans, development strategies… These documents should lead us to the relevant areas/sector for public authorities.

As a next part, we should define the level of public authority which we would like to deal with – regional, national, sectoral. We recommend using the previous contact with specific public authorities or existing relation in another project. As the last part of this step, we could contact the chosen public authority and together define some specific need for general public. The more we specify the needs, the easier would be next steps and PPI implementation – we have to set up the priorities together with public authority. The basic cost benefit analysis (CBA) should be the part of this definition step. This analysis should define the basic ratio between the costs needed to reach our goals and the benefits to defined target group (end users).

Example from Central Bohemia Region (SIC and ELI Beamlines PPI pilot implementation). Key documents for the definition of public needs are the regional S3 strategy (thematic scope) and Programme for the development of the region[15]. Programme defines the general outcomes of region in R&D&I strategy – the overall goals.

For example, one of proposed indicators is the overall spending for R&D activities. PPI could strongly support fulfilling this indicator and outcome.

[15] https://www.kr-stredocesky.cz/documents/20541/155976/CBR_Development_Programme_internet%281%29.doc/af7723f3-5a56-45ae-ac72-6f720308549f (available the previous version 2007 – 2013 only)

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Further, the Central Bohemia region has a dominant position of the private expenditures for R&D&I activities. The PPI tool implementation could change a little this scheme and support the innovative services concerning the public needs. The example of specific existing need is needed for small municipalities – sustainable energy system for small municipalities including waste management (including waste water management), public lightning, smart system for energy management (incl. high speed internet).

We choose the regional level (NUT3) for PPI implementation, because the Central Bohemia Innovation Centre has very strong relation to the regional authority.

Step 3 - The market consultation including the research organisations/infrastructures

The market research is the analytical part before we could launch the PPI procedure and define the right legal scheme for that procurement. We know the specific need of public authority, so we try to summarize the existing solution on the market and also in R&D&I project database. This part also helps us to get the right contacts for relevant stakeholders – innovative service providers. To manage this step more formally we could establish some thematic platform/workgroup for our specific need/group of similar needs.

As a next step of this market consultation, we could organize the networking workshop for public authorities and potential suppliers. This workshop could be used as an establishing meeting for work group or future project consortium for common project. The networking event could be **organized as a preliminary market consultation** with potential suppliers to specify the future procurement documentation (Article 40, Directive 2014/24/EU).

The output of this part is the list of relevant R&D&I providers for the specific need and their technical possibilities to innovate the product/service/goods.

Example from Central Bohemia Region (SIC and ELI Beamlines PPI pilot implementation).

The SIC research platform was established for specific innovative solutions for small municipalities. Both these platforms consist of research organisations, business support

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organisations (SIC) and private sector (SMEs, big companies). The first platform is focused on wastewater management technologies for small municipalities. The second platform, which was mentioned above already, is focused on energy management.

The 2 project proposals were submitted on the basis of abovementioned work groups – SIC Research. There is a good example of innovative technology for wastewater management for small municipalities in the Central Bohemia region.

The key parameters of the technical solution are: economically profitable for one family house/several houses; independently technical solution – water supply, energy effectivity, compact technology for small-scale use.

We consult the problem with the stakeholders – regional operator of the sewer system and wastewater management and an SME focused on innovative root cleaners. Research sector (Institute of Botany, Institute of Physics) could contribute to technologies for cyanobacteria management and specific diamond diodes for water cleaning. The technical solution would be specified during the future project. The main challenges are to combine the unique diode cleaning system with cyanobacteria cleaning into one compact solution which would be available for citizens.

Step 4 - The evaluation of market and innovative potential of the innovative technologies.

After the definition of need, market research and networking event we should write down several possible different technology solutions regarding our needs. During this step, we evaluate these technologies using the economic feasibility parameters (total costs of innovation, estimation of operational costs for innovative service/good/product). The output of this step should be ranking list of possible technologies using these feasibility parameters. The first technologies from this list should be demanded using public procurement procedure.

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Before every PPI procedure is this key evaluation phase. We summed up the key requirements: What specific problem are we dealing with?; What is our target group, who might care the problem – potential market/customers?; What are the existing competitors at the market, What are our benefits in comparison to them?; What are the estimated costs of innovated technology?

Step 5 – Template for PPI project implementation and preparation of PPI (using tender law)

For PPI project implementation, see the Annex 1
For PPI implementation (using tender law), see the Annex 2

Step 6 - PPI pilot package and knowledge compendium – summarization of pilot activities

The WP leader – The Central Bohemia Innovation Centre will sum up all activities during PPI implementation in the Czech Republic and Serbia. The compendium will include the all activities in previous steps – thematic scope, public needs, the market analysis and potential R&D&I providers and the evaluation of this potential innovative technologies.

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4.2. PPI implementation outside the RI2integrate project framework

RI2 integrate project is planned for 30 months with possible 6 months prolongation. This implementation time is not enough to prepare and compile the PPI pilot methodology and manage the whole public procurement process.

Therefore we compile this tool compare all national specifics and included best practice in PPI implementation. Own public procurement procedure has to be passed after the project itself but uses provided the template to proceed the PPI.

Tab. 2: PPI implementation steps outside the RI2integrateproject framework*

7	Compiling the procurement documentation
8	Public procurement process
9	Contract signed and own delivery of public procurement
10	Evaluation of innovative product, comparison

* continuing the previous steps in the RI2integrate framework

Public procurement procedures

Because every procurement has different specifics and requirements, no optimal procedure could be set up for all cases. The innovative partnership is maybe the most specific procedure, because it should contain R&D phase with more suppliers.

The key aspects of procurement are these:

- tender documentation with economical and technical qualification
- evaluation criteria (not the price only)
- selecting the procurement procedure and describing the scope of tender

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Procedures using public procurement law (Directive 2014/24/EU):

Innovative partnership

Innovative partnership better fits the case, when both stages, PCP and PPI are implemented together in one procedure because it should contain the R&D phase.

"In the procurement documents, the **contracting authority shall identify the need for an innovative product, service or works that cannot be met by purchasing products, services or works already available on the market.** It shall indicate which elements of this description **define the minimum requirements to be met by all tenders**. The information provided shall be sufficiently precise to enable economic operators to identify the nature and scope of the required solution and decide whether to request to participate in the procedure.

The contracting authority may decide to set up the innovation partnership with one partner or with several partners conducting separate research and development activities."

Contracting Authorities can identify a need to be met by a product, service or works not currently available on the market, stating minimum qualitative requirements. One or more successful bidders can then try to develop the product, service or work that best meets the original specification (with cost negotiations continuing through the project's various phases) prior to the Contracting Authority deciding whether or how to continue with the project[10].

The Competitive procedure with negotiation (Article 29, 2014/24/EU)

"In the procurement documents, contracting authorities **shall identify** the subject-matter of the procurement by providing a **description of their needs** and the characteristics required of the supplies, works or services to be procured and **specify the contract award criteria**. They shall also indicate which elements of the description **define the minimum requirements** to be met by all tenders."

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Competitive dialogue (Article 30, 2014/24/EU)

"Contracting authorities shall set out their needs and requirements in the contract notice and they shall define these needs and requirements in that notice and/or in a descriptive document. At the same time and in the same documents, they shall also set out and define the chosen award criteria and set out an indicative timeframe."

The competitive dialogue procedure should remain useful for relatively complex projects where the Contracting Authority is less sure what is available in the market to meet its needs and is seeking to maximise the experience available in the market[16].

[16] https://www.minfin.bg/upload/18668/epec_ppp_and_procurement_en.pdf

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5. Concluding remarks

Public procurement of innovation is a new concept in the Interreg Danube region. European directives for public procurement were implemented but the following methodological documentation is missing – the manual for procurers, raising awareness about the possibilities of PPI and some monitoring indicators for new national procurement laws and PPI implementation.

RI2integrate and other EU projects could help to implement PPI concept more effectively by: i) raising awareness among public procurers about possibilities of procuring the innovative solutions; ii) close the gap between the innovative and public authorities sector to know about each other and their needs and iii) to increase utilizing of innovative solution at the market and so support the hi-tech and the most innovative actors and increase the competitiveness.

This methodology is mainly focused on public authorities and other state agencies which are responsible for distributing public funding and/or the providing public services. Mainly in the public services, the innovative solutions would bring the real added value for end users – citizens. This PPI concept is there in strong synergy with smart city trend, which combine classical public services (waste water management, security, health system) and the most innovative technologies (IT, nanotechnologies, satellite data,…).

The final outcome of these trends should be more effective and available public services using these innovative technologies and more available and expanded innovative technologies itself at the market.

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Annex I – Template for PPI implementation

Introduction - the structure of template is following:

The key questions/parameters for PPI implementation are bold.
These key questions are widely described after each of this point.

The examples from PPI implementation using project TK01030018 Complex solution for integration of local energy sources for small and medium municipalities by the SIC project partner are in italics. This pilot activity will be fully described in WP5.

PPI IMPLEMENTATION TEMPLATE

What is the problem we would like to solve?
Which are our key requirements, for example energy inefficiency; Recent solution has not required functionalities; Costs; Digitalization – get technology smarter; Users more friendly; Social aspects of technology; Gender aspects of technology;…?

The Central Bohemia region is the region with very high proportion of small municipalities (below 3 000 inhabitants). The fossil fuels (coal, wood) are the main energy sources in these municipalities. These local energy sources have very high emission of air pollutants (obsolete heating technologies) and also green house gases. Innovative technology for heating using local energy sources could solve all abovementioned problems.

What are possible innovative technologies which could solve our problem?
Is this technology ready to use at the market, is the prototype existing or we need to invest in some R&D activities. Do we need any further innovation?

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The central energy sources are in operation in several towns in the Czech Republic and there exist many examples abroad. They using local biomass sources to produce energy, recycle the local waste and using the modern combustion technologies, they are more environmental friendly than local sources.

What is our target group?

Who might care about the problem? How big is our potential market/number of customers?

Small municipalities are the main target group (ca 1500 - 2000 inhabitants) because they are not connected to existing energy net (gas, heat).

What is the market competition for our selected innovated technology?

What advantages or disadvantages have these innovated technologies in comparison to the recent solution? What is the market potential of these innovated technologies?

The local energy source using biomass has the advantage in the lower emission of air pollution and also could help in recycling the local waste and bring the savings in waste management.

What public procurement procedure we need to use?

It is strictly related to the level of clear definition of the subject. When we need some more R&D activities or long-term innovation is better to use an innovative partnership. When the demanding technology is already ready at least as the prototype or at the market, we could use some procedure with negotiation or competitive dialogue to clarify the subject in more detail.

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When we need only to compare the existing market solution, give the feedback from the market and then compile the clear tender documentation, we could use the preliminary market consultation procedure and open tender.

The chosen example is the project supported by Technology Agency of the Czech Republic in Théta programme. The project was funded in accordance with programme rules and state aid limitations.

What would be the estimated costs of procurement?

Do we need any preliminary market consultation or I could describe and evaluate the procurement on my own?

Write down the total costs of chosen project. Identify the source of funding of these total costs (public, private). Write down if there are any other limitations in managing this public procurement (eligibility project rules,…).

What technical specification requirement, supplier qualification requirements could we use?

We need to think about the all relevant information for public procurement evaluation.

The key requirements are related to our chosen target group – small municipalities. The innovative technology of energy sources has to be available for them – economically, technically and be suitable for the specific amount and type of waste material and biomass.

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What evaluation criteria could we use (other than cost)?

Could we calculate them properly by the information that will be written in the tender documentation?
How would be public procurement evaluated, by which calculation of criterions?

The main deliverables of the project are stated in the documentation: software for energy management in small municipalities, hardware platform for management and remote sensing of sensor system, analysis of the potential of local energy sources and also expert maps of energy efficiency in region.
The evaluation of quality of the deliverables will be twofold – the critical feedback from municipalities as target group (The Central Bohemia Innovation Centre is application guarantee in the project) and external by Technology Agency during project evaluation.

The final check of documentation

The estimated cost is proved by market research. We use the right public procurement procedure regarding the law and our needs (application deadline, preliminary announcement). The subject of tender is defined clearly together with qualification criteria. Evaluation of tender is clearly defined by evaluation criterion.
We defined the terms and condition to set the outlines of the future contract.
We know from preliminary consultations or matchmaking events that it is realistic to find out the potential supplier for our tender.

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The project documentation has to be checked regarding the programme rules and requirements. Eligibility criteria are the one of the most important part of the documentation.

Annex II –PPI implementation into national legal system

example from the Czech Republic and Serbia

English version of the Czech law available on official website of Ministry of Regional Development of the Czech Republic.[17] and Serbia (provided by Serbian project partner).

[17] http://www.portal-vz.cz/getmedia/ac061a0a-d8c1-4ff1-b8d2-691aa89269b1/Zakon-c-134_2016-Sb-o-zadavani-verejnych-zakazek.pdf

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