European Innovation Council

EIC Innovation Procurement Toolkit

European Innovation Council – Strategic use of procurement to open up business opportunities for EIC innovators.

February 2025

Executive Summary

Chapter 2 – Module A: Procurement of Research & Development (R&D) Services

This chapter (Module A) focuses on public procurement of Research and Development (R&D) services, the process by which public procurers buy the development and co-creation of breakthrough innovations to solve public problems for which there are no solutions available in the market.

The **Frascati Manual** defines R&D as follows: "Research and experimental development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge."

In the EU, Pre-Commercial Procurement (PCP), yet falling outside the scope of public procurement Directives but compliant with the principles of the Treaty on the Functioning of the European Union (TFEU), is a tool for public procurement of R&D services aimed at driving innovation by guiding the development of new solutions to meet public sector needs. PCP enables public procurers to competitively compare solutions from various suppliers, fostering industry innovation and giving companies valuable market reference. In PCP, public procurers share the benefits and risks related to the IPRs resulting from the research and development with suppliers at market price. Suppliers retain IPR ownership rights, while procurers keep some usage and licensing rights.

Other procedures falling within the scope of the EU public procurement Directives, are the case of the negotiated procedure for the purpose of contracting R&D services (prototype development and testing), and the Innovation Partnership, which is a negotiated type of procedure that bundles R&D services with the deployment of solutions.

All in all, Module A is designed to inform suppliers on how to prepare and participate in a PCP tender and other forms of procurement of R&D services. It provides insights into the main definitions and general notions linked to this type of procurement, the participation requirements, and the marketing and administrative aspects of the preparatory phase and the tendering process. Module A also gives practical guidance on Intellectual Property Rights (IPRs), contract performance, ESG criteria and ethics in the context of public procurement of R&D services. Finally, it addresses common topics and questions from suppliers and provides a checklist to guide suppliers who wish to participate in R&D services contracts.

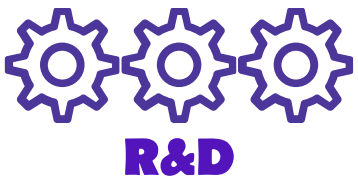


Table of Contents

European Innovation Council

Module A
R&D Procurement

2. Module A – Procurement of R&D Services

2.1. Introduction

Module A focuses on the procurement of R&D services, including Pre-Commercial Procurement (PCP) and other R&D services contracts, according to the European Public Procurement Directives. It also presents examples from other jurisdictions.

The objective of this Module is to inform suppliers on how to prepare and participate in a tender for the procurement of R&D services. With this purpose, Module A provides insights into the main definitions and general notions linked to this type of procurement, participation requirements, and the certain marketing and administrative aspects of the preparatory phase and the tendering process *per se*. Additionally, it gives practical guidance in the fields of IPRs and contract performance.

Module A comprises of **six main sections**, namely: (1) definitions - suppliers' interest, potential contribution in the process and the tendering of R&D services; (2) marketing and business opportunities; (3) R&D procurement processes; (4) participation requirements; (5) IPR, liability, and risks from a supply perspective; (6) contract performance; and is supplemented by one **complementary section:** (7) a checklist.

2.1.1. What is the procurement of R&D? Why is it interesting for your business

What is R&D?

The most relevant notions in this section relate to the understanding of the concept of **Research and Development (R&D),** as defined in the Frascati Manual[1], and how different R&D activities are connected to the **Technology Readiness Levels (TRLs)** that will reveal the maturity of the solutions available in the market. This is relevant because R&D procurement takes place when there are no solutions available in the market to satisfy an unmet need, and, therefore, the development of solutions is required. Suppliers are thus required to perform R&D activities within TRLs 1-8.

[1] OECD (2015), *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development*, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris, https://doi.org/10.1787/9789264239012-en.

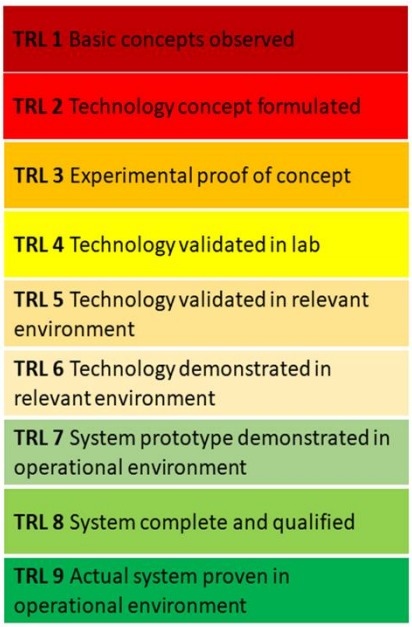


Figure 1: Technology Readiness Levels (TRL) explained

Other essential notions refer to Intellectual Property Rights (background, foreground, and sideground IPRs) to understand how suppliers will own, exploit, share, and/or license their IPRs. Finally, the **criteria** linked to the concept of R&D are equally important to acquire a good overview of what can be classified as such, and what cannot.

In June 1963, the Organisation for Economic Co-operation and Development (OECD) met with national experts on research and experimental development (R&D) statistics at the Villa Falcioneri in Frascati, Italy. The result was the first official version of the Proposed Standard Practice for Surveys of Research and Development, which has come to be better known as the Frascati Manual.

The Frascati Manual defines R&D as follows: "Research and experimental development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge."

The term R&D covers three types of activity: basic research, applied research and experimental development.

Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.

Applied research is original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective.

Experimental development is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

Examples of questions for identifying R&D projects

Question	Comment
a. What are the objectives of the project?	The pursuit of original and challenging objectives through the creation of "new knowledge" (such as seeking previously undiscovered phenomena, structures or relationships) is a key criterion for R&D. Any use of already available knowledge (adaptation, customisation, etc.) which does not entail an attempt to expand the state of the art should be excluded (Novelty).
b. What is new about this project?	In addition to the development of "new knowledge", an R&D project should have a creative approach, such as devising new applications of existing scientific knowledge or new uses of available techniques or technologies (Creativity).
c. What methods are being used to carry out the project?	Methods used in scientific and technological research, as well as in research in the social sciences, humanities and the arts, are accepted provided that they address uncertainty about the project's final outcome. The uncertainty could be about how much time and resources will be needed to achieve the planned goal. The choice of method could be part of the project's creativity and a means of dealing with uncertainty (Creativity and uncertainty).
d. How generally applicable are the findings or results of the project?	To be generally applicable, the findings of an R&D project have to meet the criterion of being transferable/reproducible, in addition to the other four criteria. Transferring the results may for example be demonstrated by publication in the scientific literature and the use of instruments of intellectual property protection.
e. What types of staff are working on the project?	A range of skills is assumed to be required to undertake an R&D project (the R&D personnel issue is discussed in Chapter 5 of this manual). Research personnel in projects are classified as researchers, technicians and other supporting staff, but only researchers, working as researchers, are needed to identify an R&D activity which, implicitly, satisfies all five core criteria.
f. How should the research projects of research institutions be classified?	In selected cases, an "institutional approach" can be used to distinguish between R&D and non-R&D projects. For instance, most projects carried out in research institutes or research universities can be qualified as R&D projects. Projects launched in other domains – like business enterprises or institutions not totally devoted to R&D – should be checked against the five R&D criteria (see institutions in Chapter 3).

Figure 2: Frascati Manual 2015. Questions for identifying R&D projects based on the five core criteria.

A set of common features identifies R&D activities that aim to achieve either specific or general objectives, even if these are carried out by different performers. For an activity to be classified as an R&D activity, **five core criteria** have to be **jointly and cumulatively satisfied**:

- ***Novelty:*** **The creation/production of new knowledge** is an expected objective of an R&D project, but it has to be adapted to different contexts. Novelty could result from a project to reproduce an existing result that finds potential discrepancies. An experimental development project aimed at creating knowledge in support of the development of new concepts and ideas related to the design of new products or processes should be included in R&D. As R&D is the formal creation of knowledge, including knowledge embodied in products and processes, the measurement focus is on the new knowledge, not on the new or significantly improved products or processes resulting from the application of the knowledge.

- ***Creativity:*** An R&D project must have **as an objective new concepts or ideas that improve on existing knowledge**. It should be based on original, not obvious, concepts and hypotheses with human input being at the core, due to its inherent link with creativity in R&D.

- ***Uncertainty:*** R&D involves uncertainty, which has multiple dimensions. At the outset of an R&D project, **the kind of outcome cannot be precisely determined relative to the goals**. For R&D in general, there is uncertainty about the costs, or time, needed to achieve the expected results, as well as about whether its objectives can be achieved to any degree at all.

- ***Systematic:*** **R&D** is **a formal activity that is performed systematically**. In this context "systematic" means that the R&D is conducted in a planned way, with records kept of both the process followed and the outcome. To verify this, the purpose of the R&D project and the sources of funding for the R&D performed should be identified.

- ***Transferable and/or Reproducible***: An R&D project should result in the potential for the transfer of the new knowledge, ensuring its use and **allowing other researchers to reproduce the results** as part of their

own R&D activities. This criterion involves both the positive and the negative perspective of a hypothesis and/or project.

What are the technology readiness levels?

The Technology Readiness Levels (TRLs) are a method for estimating the maturity of technologies enabling consistent and uniform discussions of technical maturity across different types of technology. A TRL is determined during a Technology Readiness Assessment (TRA), which examines a project's concepts, technology requirements, and demonstrated technology capabilities. TRLs are based on a scale from 1 to 9, in which 9 is the most mature technology.

Based on the aforementioned method, it is possible to assess whether procurement **of R&D services can be justified**, for a project that happens **between the levels 1-8 of maturity of the solution in question**. A separate TRA needs to be performed on a case-by-case basis, so as to evaluate the circumstances of the specific case. The critical link between the two, though, is that TRLs are a systematic metric, which provides a clear and structured framework to evaluate and manage the risks, as well as other factors associated with Research & (technology) Development.

Borderline between R&D, innovation and other business activities

Item	Treatment	Remarks
Prototypes	Include in R&D	As long as the primary objective is to make further improvements.
Pilot plant	Include in R&D	As long as the primary purpose is R&D.
Industrial design	Split	Include design required during R&D. Exclude design for production process.
Industrial engineering and tooling up	Split	Include "feedback" R&D and tooling up industrial engineering in innovation processes. Exclude for production processes.
Trial production	Split	Include if production implies full-scale testing and subsequent further design and engineering. Exclude all other associated activities.
Pre-production development	Exclude	
After-sales service and trouble-shooting	Exclude	Except "feedback" R&D (to be included).
Patent and licence work	Exclude	All administrative and legal work needed to apply for patents and licences (delivering documentation as an outcome of R&D projects is R&D). However, patent work connected directly with R&D projects is R&D.
Routine tests	Exclude	Even if undertaken by R&D personnel.
Data collection	Exclude	Except when an integral part of R&D.
Routine compliance with public inspection control, enforcement of standards, regulations	Exclude	

Figure 3: Frascati Manual, 2015. R&D, Innovation and other business activities indicative table

What is considered as innovation?

Innovation is currently defined for measurement purposes in the third edition of the Oslo Manual[2] (OECD/Eurostat, 2005):

"*An innovation is a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process).*"

In summary, it has to do with putting new or significantly improved products on the market or finding better ways (through new or significantly improved processes and methods) of getting products to the market. R&D

[2] OECD/Eurostat (2018), *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition*, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris, https://doi.org/10.1787/9789264304604-en.

may or may not be part of the activity of innovation, but it is one among several innovation activities. These activities also include the acquisition of existing knowledge, of machinery, equipment and of other capital goods, training, marketing, design and software development. Care must be taken to exclude activities which, although part of the innovation process, do not satisfy the criteria required to be classified as R&D.

Why is the procurement of R&D interesting for private companies?

The procurement of R&D seems to have a series of benefits that can make it an appealing process to various economic operators of all sizes.

Additionally, the procurement of R&D services can occur through various ways (e.g. PCP, Innovation Partnership, etc.) and via diverse international instruments that differ drastically from one another. Those instruments include the USA small business innovation research (SBIR) programme, the European Union (EU) PCP framework and the UK small business research initiative (SBRI).

Indicatively, the Small Business Innovation Research (or SBIR) programme is a U.S. government funding programme, coordinated by the Small Business Administration, intended to help certain small businesses conduct research and development (R&D). Funding takes the form of contracts or grants. The recipient projects must have the potential for commercialisation and must meet specific U.S. government R&D needs.

Additionally, the Small Business Research Initiative (or SBRI) brings together government challenges and ideas from business to create innovative solutions and it constitutes an initiative delivered by the Innovate UK aimed at:

- businesses that might want to apply to an SBRI competition to find out how it works and what they can get out of it.

- public sector organisations that might benefit from running an SBRI competition and how to get help to do so.

Thanks to all of the aforementioned one can achieve some of the following goals[3]-[4]:

- **Foster connectivity and cooperation amongst actors** from both the demand and supply side. Many small firms highlighted the role of those instruments in providing **access to markets and potential customers (market expansion)** in the public sector[5]. The opportunity for networking with customers of the scale of public buyers gives a true competitive advantage to the economic operators that properly take advantage of it.
- **Cultivate the right incentives** in the supply side in order to instigate **cooperative R&D,** by opening the door for the formulation of heterogeneous **consortia with a diverse range of participants** from specialist firms and SMEs to universities and research organisations, with the ultimate aim of addressing the tailored needs of the public buyers.
- **Learn and develop skills and capabilities**; is a major asset for any business of the modern era. In more detail, through the participation in procedures for the procurement of R&D, there is a great

[3] Dodgson, M., Hughes, A., Foster, J. and Metcalfe, S. (2011), "Systems thinking, market failure, and the development of innovation policy: the case of Australia", Research Policy, Vol. 40 No. 9, pp. 1145-1156.
[4] Edler, J., Gök, A., Cunningham, P. and Shapira, P. (2016), "Introduction: making sense of innovation policy", in Edler, J., Cunningham, P., Gök, A. and Shapira, P. (Eds), Handbook of Innovation Policy Impact, Edward Elgar, Chetelham, pp. 1-17.
[5] Connell, D. (2017), "Leveraging Public Procurement to Grow the Innovation Economy, An independent review of the Small Business Research Initiative, London."

chance of **building up technical knowledge and capabilities and other types of "soft" skills** (e.g. R&D project management and business plan development).

- **Offer an opportunity to experiment with new ideas, solutions and technologies**, with the safeguard of "fail fast" in cases of unsuccessful projects. One of the best examples in this case is the phased procedures such as PCP, where "small firms can benefit from **early-stage testing of their proposed solutions** and use the **feedback to make informed decisions** regarding the potential of products under development[6]."
- **Shared risk between the private company and the respective public buyer,** since the latter tends to be actively involved in the solution's development and adoption. Therefore, a business faces less market and financial risks while developing, through R&D, new ideas and technologies.
- **"First mover advantage[7]"** refers to the benefit enjoyed by a firm as the consequence of its early entry into a new market, as well as the **advantages of pioneering a new market**. This series of benefits can be then reaped by the businesses that choose to utilise the path of R&D procurement.

Conclusively, for businesses, procurement of R&D presents a strategic opportunity to innovate, share risks, access funding, and develop solutions that address emerging market needs. It allows them to align with policy goals, contribute to environmental sustainability, and secure a competitive edge both locally and globally. By leveraging financial, legal, and reputational benefits, companies can position themselves for long-term growth and market leadership. There are many real-life examples supporting all the above, such as, e.g., UVD Robots.

2.1.2. How can suppliers contribute to the preparation of the procurement? [feedback to the SOTA and OMC]

How can suppliers contribute to the preparation of the procurement of R&D services?

Suppliers can provide feedback to public procurers before a tendering process has started, during the preparation of an R&D procurement, where public procurers conduct some essential steps: (i) the needs assessment, (ii) the state of the art (SOTA) analysis -which consists of a prior art analysis and an IPR and standards search-, (iii) the market consultation, and (iv) the development of a business case.

[6] Ibid., No.1

[7] Lieberman, M. (2016). First-Mover Advantage. In: Augier, M., Teece, D. (eds) The Palgrave Encyclopedia of Strategic Management. Palgrave Macmillan, London. https://doi.org/10.1057/978-1-349-94848-2_602-1.

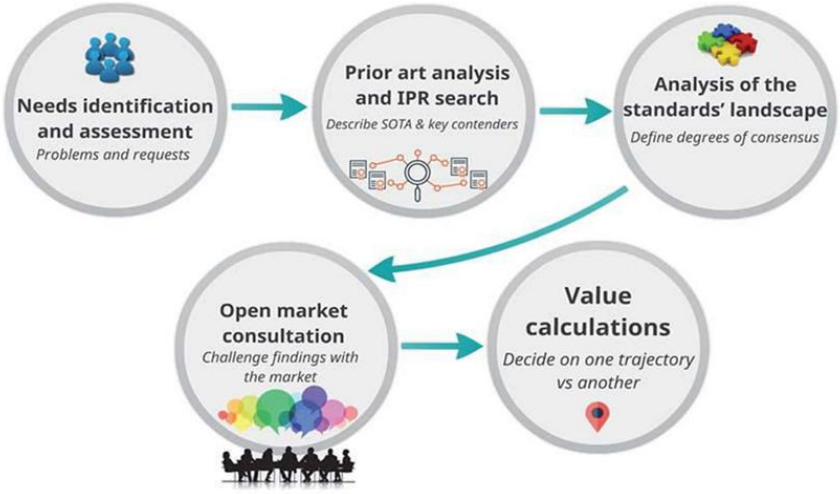


Figure 4: Steps in the preparation of an Innovation procurement project - Business case methodology Corvers Procurement Services B.V.

Once the needs of the public procurers have been identified, **a prior art analysis is usually conducted to confirm whether the identified need(s) are indeed "unmet" needs**[8]. Prior art analysis identifies "all" information available in the public domain (existing products, ongoing product development, and published ideas), whether IPR protected or not.

During this process public procurers search for available solutions in the market and establish the technology readiness of potential technologies. If there is a significant **technological gap** to satisfy the needs of public buyers, they may decide to procure R&D services aimed at bringing solutions at a higher TRL.

In their journey to identify available solutions and their technological readiness, based on the (functional) needs, public procurers may perform a market analysis, participate in industry events/exhibitions, and/or organise pitching events[9]. An IPR search using online tools (like IPlytics) can also provide information about existing patents and standards. All these activities aim to understand what is out there in the market to make an informed procurement decision to satisfy present and future public needs.

Suppliers can participate in these activities through several means, for example, by making available their solutions on their website and presenting them at relevant exhibitions or fairs, and by subscribing to pitching events.

The input from suppliers can provide valuable insights into the TRL of the solutions and the development required for making the solutions compatible with pre-defined performance requirements.

Public procurers also carry out **IPR searches** to find out which of solutions and technologies available in the public domain (existing products, ongoing product development and published ideas) is already protected by IPRs, by searching for registered intellectual property held in a national or international database.

An IPR search is equally important to a prior art analysis. This is because it helps to:

[8] *"A requirement or set of requirements that public procurers have now or (preferably) one that public procurers will have in the future, that current products, services or arrangements cannot meet or can only do so at excessive cost or with unacceptable risk."* - Department for Business Innovation & Skills: "Delivering best value through innovation. Forward Commitment Procurement. Practical Pathways to buy Innovative Solutions", UK Innovate

[9] Matchmaking events in the form of pitching events are organised in the context of SPIN4EIC Initiative, where the aim is to bridge the gap between the demand and the supply side and bring them in touch in the context of procurement. Some examples are: a) The Maritime Climate Action Event in Athens, b) The Dutch Waterschapsbedrijf Limburg (WBL) e-pitching session, c) European Urban Resilience Forum – Pioneering Green solutions by top EIC Innovators and more.

- Verify how innovative the R&D (for PCP) to be purchased is, and whether there is still scope for protecting the innovative, carried outsolutions developed in the procurement, by IPR.
- Determine whether there are already entities on the market who own "key IPRs" that cannot be avoided to address the identified need(s), and whether the licensing policy of those entities is introducing such high risks/costs that there is no good business case to start the innovation procurement.

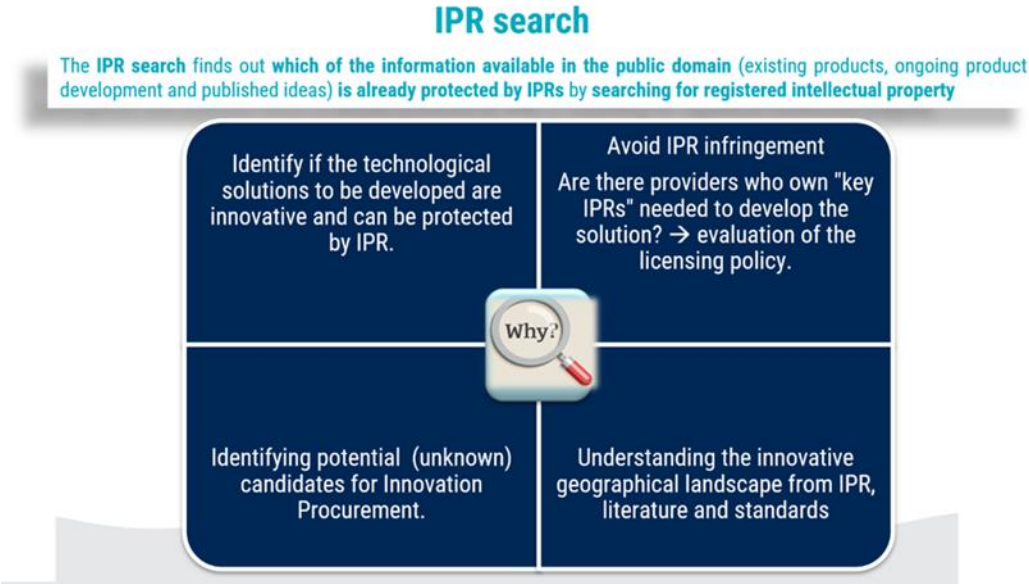


Figure 5. Why is an IPR search important to Innovation procurement?

Corvers Procurement Services B.V

"Registered intellectual property" refers to those intellectual property rights which are issued by a central agency, and which require publication as part of the *quid pro quo* for the IP grant. However, not all IPRs require registration in order to be effective. In Europe, for example, copyright is not a registered IPR, and there is no central database or publication requirement. Patents, trademarks and designs, on the other hand, are registered IPR, and therefore are contained in public databases which can be easily searched.

EAFIP Toolkit

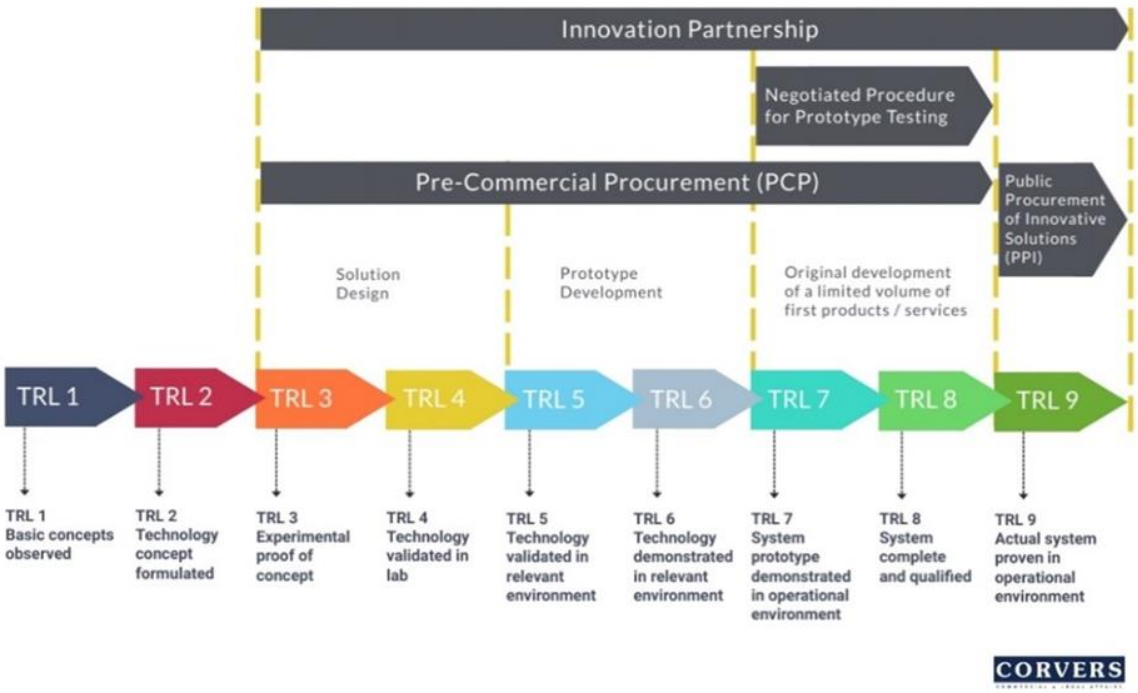
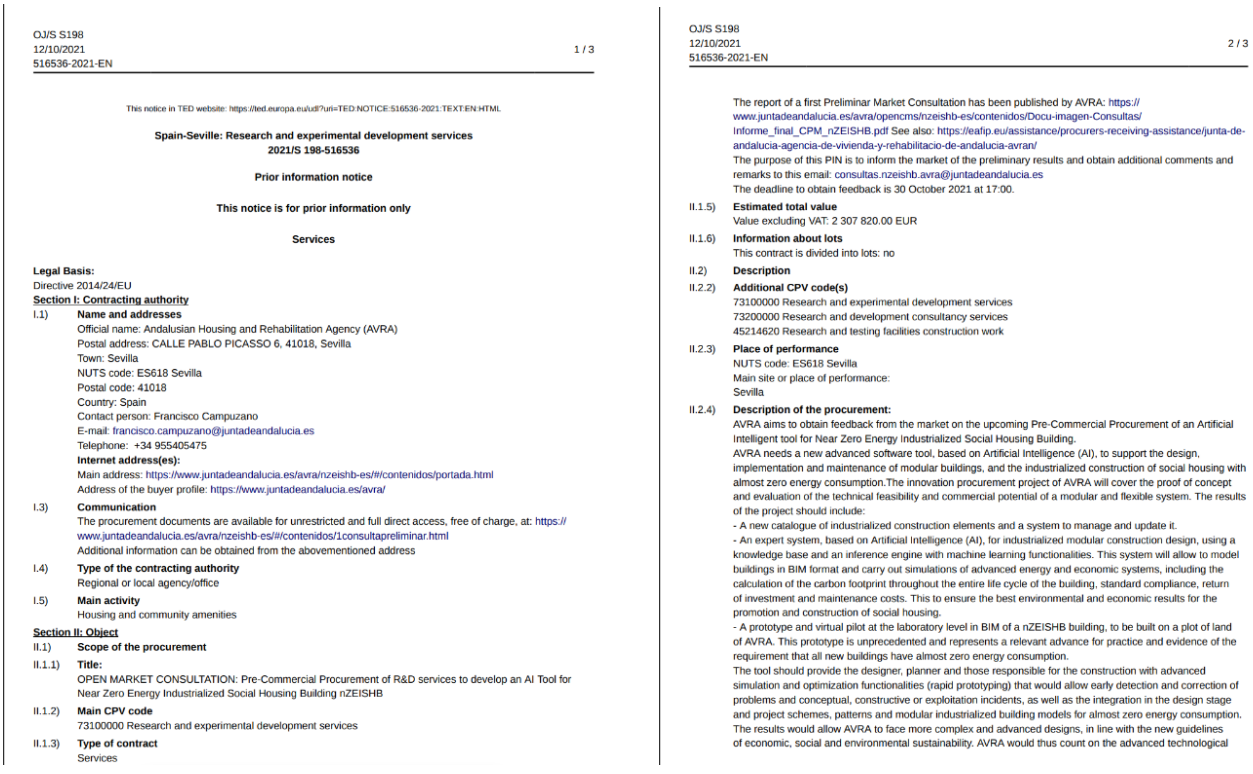


Figure 6. Innovation procurement strategy based on the Technology Readiness Levels (TRL)

Corvers Procurement Services B.V.

Another crucial step in the preparation of an Innovation Procurement is the **Market Consultation,** where public procurers explain their needs and procurement plans, cross-check the findings of the SOTA**,** with the market and increase awareness in the industry to obtain feedback on its capabilities to deliver R&D services.

The invitation to participate in a Market Consultation is usually published on a tender portal (at EU level in TED through a Prior Information Notice) to ensure compliance with the principles of transparency, equal treatment and non-discrimination. It is convenient to disseminate it throughout different (professional) networks and social media. A Prior Information Notice (PIN) is an announcement on a standard format of the e-notices used by public procurers



OJ/S S198
12/10/2021
516536-2021-EN
1 / 3

This notice in TED website: https://ted.europa.eu/udl?uri=TED:NOTICE:516536-2021:TEXT:EN:HTML

Spain-Seville: Research and experimental development services
2021/S 198-516536

Prior information notice

This notice is for prior information only

Services

Legal Basis:
Directive 2014/24/EU
Section I: Contracting authority
I.1) **Name and addresses**
Official name: Andalusian Housing and Rehabilitation Agency (AVRA)
Postal address: CALLE PABLO PICASSO 6, 41018, Sevilla
Town: Sevilla
NUTS code: ES618 Sevilla
Postal code: 41018
Country: Spain
Contact person: Francisco Campuzano
E-mail: francisco.campuzano@juntadeandalucia.es
Telephone: +34 955405475
Internet address(es):
Main address: https://www.juntadeandalucia.es/avra/nzeishb-es/#/contenidos/portada.html
Address of the buyer profile: https://www.juntadeandalucia.es/avra/

I.3) **Communication**
The procurement documents are available for unrestricted and full direct access, free of charge, at: https://www.juntadeandalucia.es/avra/nzeishb-es/#/contenidos/1consultapreliminar.html
Additional information can be obtained from the abovementioned address

I.4) **Type of the contracting authority**
Regional or local agency/office

I.5) **Main activity**
Housing and community amenities

Section II: Object
II.1) **Scope of the procurement**
II.1.1) **Title:**
OPEN MARKET CONSULTATION: Pre-Commercial Procurement of R&D services to develop an AI Tool for Near Zero Energy Industrialized Social Housing Building nZEISHB
II.1.2) **Main CPV code**
73100000 Research and experimental development services
II.1.3) **Type of contract**
Services

OJ/S S198
12/10/2021
516536-2021-EN
2 / 3

The report of a first Preliminar Market Consultation has been published by AVRA: https://www.juntadeandalucia.es/avra/opencms/nzeishb-es/contenidos/Docu-imagen-Consultas/Informe_final_CPM_nZEISHB.pdf See also: https://eafip.eu/assistance/procurers-receiving-assistance/junta-de-andalucia-agencia-de-vivienda-y-rehabilitacio-de-andalucia-avran/
The purpose of this PIN is to inform the market of the preliminary results and obtain additional comments and remarks to this email: consultas.nzeishb.avra@juntadeandalucia.es
The deadline to obtain feedback is 30 October 2021 at 17:00.

II.1.5) **Estimated total value**
Value excluding VAT: 2 307 820.00 EUR

II.1.6) **Information about lots**
This contract is divided into lots: no

II.2) **Description**
II.2.2) **Additional CPV code(s)**
73100000 Research and experimental development services
73200000 Research and development consultancy services
45214620 Research and testing facilities construction work

II.2.3) **Place of performance**
NUTS code: ES618 Sevilla
Main site or place of performance:
Sevilla

II.2.4) **Description of the procurement:**
AVRA aims to obtain feedback from the market on the upcoming Pre-Commercial Procurement of an Artificial Intelligent tool for Near Zero Energy Industrialized Social Housing Building.
AVRA needs a new advanced software tool, based on Artificial Intelligence (AI), to support the design, implementation and maintenance of modular buildings, and the industrialized construction of social housing with almost zero energy consumption.The innovation procurement project of AVRA will cover the proof of concept and evaluation of the technical feasibility and commercial potential of a modular and flexible system. The results of the project should include:
- A new catalogue of industrialized construction elements and a system to manage and update it.
- An expert system, based on Artificial Intelligence (AI), for industrialized modular construction design, using a knowledge base and an inference engine with machine learning functionalities. This system will allow to model buildings in BIM format and carry out simulations of advanced energy and economic systems, including the calculation of the carbon footprint throughout the entire life cycle of the building, standard compliance, return of investment and maintenance costs. This to ensure the best environmental and economic results for the promotion and construction of social housing.
- A prototype and virtual pilot at the laboratory level in BIM of a nZEISHB building, to be built on a plot of land of AVRA. This prototype is unprecedented and represents a relevant advance for practice and evidence of the requirement that all new buildings have almost zero energy consumption.
The tool should provide the designer, planner and those responsible for the construction with advanced simulation and optimization functionalities (rapid prototyping) that would allow early detection and correction of problems and conceptual, constructive or exploitation incidents, as well as the integration in the design stage and project schemes, patterns and modular industrialized building models for almost zero energy consumption. The results would allow AVRA to face more complex and advanced designs, in line with the new guidelines of economic, social and environmental sustainability. AVRA would thus count on the advanced technological

Example 1: Prior Information Notice (PIN)

1 / 4

Prior information notice

This notice is for prior information only

Services

Legal Basis:
Directive 2014/24/EU

Section I: Contracting authority

I.1) **Name and addresses**
Official name: Ministere De L'Interieur
Postal address: Place Beauvau
Town: Paris
NUTS code: FR France
Postal code: 75800
Country: France
E-mail: contact@shield4crowd.eu
Internet address(es):
Main address: https://www.interieur.gouv.fr/

I.1) **Name and addresses**
Official name: Stowarzyszenie Polska Platforma Bezpieczenstwa Wewnetrznego
Postal address: Ul Juliusza Slowackiego 17 Lok 11
Town: Poznan
NUTS code: PL Polska
Postal code: 60 822
Country: Poland
E-mail: contact@shield4crowd.eu
Internet address(es):
Main address: https://ppbw.pl/pl/

I.1) **Name and addresses**
Official name: Ministerstvo Vnutra Slovenskej Republiky
Postal address: Pribinova 2
Town: Bratislava
NUTS code: SK Slovensko
Postal code: 812 72
Country: Slovakia
E-mail: contact@shield4crowd.eu
Internet address(es):
Main address: https://www.minv.sk/?ministry-of-interior

I.1) **Name and addresses**

2 / 4

Official name: Ministerio del Interior
Postal address: Calle Amador de los Ríos 7
Town: Madrid
NUTS code: ES España
Postal code: 28071
Country: Spain
E-mail: contact@shield4crowd.eu
Internet address(es):
Main address: https://www.interior.gob.es/opencms/es/inicio/

I.2) **Information about joint procurement**
The contract involves joint procurement

I.3) **Communication**
Additional information can be obtained from the abovementioned address

I.4) **Type of the contracting authority**
Ministry or any other national or federal authority, including their regional or local subdivisions

I.5) **Main activity**
Public order and safety

Section II: Object

II.1) **Scope of the procurement**

II.1.1) **Title:**
Open Market Consultation of SHIELD4CROWD for the future Pre-Commercial Procurement of R&D services on the security domain

II.1.2) **Main CPV code**
73000000 Research and development services and related consultancy services

II.1.3) **Type of contract**
Services

II.1.4) **Short description:**
This Prior Information Notice announces an Open Market Consultation conducted by the SHIELD4CROWD project and provides information about a potential future Pre-Commercial Procurement (PCP) of R&D services on the security domain. SHIELD4CROWD aims to challenge the market to develop innovative solutions to tackle 3 use cases concerning the protection of public spaces in EU cities against security threats related to crowd management. The OMC documents will be published in due time on the SHIELD4CROWD website (www.shield4crowd.eu).
The project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement n. 101121171. However, the European Union will not participate as a contracting authority in the procurement.

II.1.5) **Estimated total value**

II.1.6) **Information about lots**
This contract is divided into lots: no

II.2) **Description**

II.2.2) **Additional CPV code(s)**
75241000 Public security services

II.2.3) **Place of performance**
NUTS code: ES España

3 / 4

NUTS code: FR France
NUTS code: PL Polska
NUTS code: SK Slovensko
Main site or place of performance:
France, Poland, Slovakia, Spain

II.2.4) **Description of the procurement:**
This Prior Information Notice announces the Open Market Consultation of a potential future Pre-Commercial Procurement (PCP) of R&D services. PCP is an approach that allows public procurers to buy R&D from several competing suppliers in parallel, to compare alternative solution approaches, and to identify the best value-for-money solutions that the market can deliver to address their needs. It is split into three phases: solution design, prototype implementation, and validation and demonstration of the solutions. In PCP, there is a risk-benefit sharing under market conditions between the public procurer and the suppliers, and a clear separation between the PCP and the deployment of commercial volumes of end-products. The PCP procurement is exempted from the WTO Government Procurement Agreement (GPA), the EU public procurement directives and the national laws that implement them.

II.2.14) **Additional information**

II.3) **Estimated date of publication of contract notice:**
02/12/2024

Section IV: Procedure

IV.1) **Description**

IV.1.8) **Information about the Government Procurement Agreement (GPA)**
The procurement is covered by the Government Procurement Agreement: no

Section VI: Complementary information

VI.3) **Additional information:**
This is an announcement of an Open Market Consultation regarding a potential future pre-commercial procurement (PCP) of R&D services on the security domain. The future PCP will be composed of three phases: Phase 1. Solution design: Phase 1 of the PCP will deal with the design of the solutions and verification of their technical and economic feasibility based on functional requirements. It will be implemented according to the

4 / 4

tender documents in compliance with the procurement principles and the PCP methodology. Several technology providers will be selected for this phase.
Phase 2. Prototype implementation: Phase 2 of the PCP concerns the development of the first prototypes of the solutions and testing at the procurers' premises under controlled conditions. Several technology providers will be selected for this phase.
Phase 3. Validation and demonstration of the solutions: Phase 3 of the PCP will deal with testing and validation of the selected solutions in operational environments. It will take place in several Member States. A minimum of 2 operators per challenge will be selected for this phase.
The selected operators will retain ownership of the Intellectual Property Rights (IPRs) that they will generate during the PCP and will be able to use them to exploit the full market potential of the developed solutions.
This PIN invites all interested technology providers from EU Member States and Associated Countries committed to perform R&D in the EU and/or Associated Countries, regardless of their size or governance structure, to take part in the Open Market Consultation. The Open Market Consultation aims to:
(1) Validate the findings of the state-of-the-art analysis and the viability of the set of technical and financial provisions.
(2) Raise awareness to the industry regarding the upcoming pre-commercial procurement (PCP).
(3) Collect insights from the industry which can be used to fine tune the tender specifications.
The market consultation may include one or more events, and a questionnaire to request information from the market.
This Prior Information Notice is not a commitment to procure. The contracting authorities involved are not legally bound in any way by the outcome of the market consultation. No advantage or disadvantage will be given to any supplier /group of suppliers to the detriment of others during the market consultation and the sub-sequent competitive procedure for the award of contracts. The official communication language is English.
All information regarding the open market consultation and other background information will be published in the project's website (www.shield4crowd.eu).

VI.5) **Date of dispatch of this notice:**

Example 2: Prior Information Notice (PIN)

A Market Consultation may comprise different activities, such as informative videos, webinars, on-site events, and a Request For Information (RFI) in a questionnaire.

During a Market Consultation, public procurers engage in a dialogue with suppliers. This dialogue, allows public procurers to **understand the market capabilities, confirm their readiness to participate in a tender, gather insights on the initial set up of a future procurement** and the technology readiness of potential solutions, the expected budget, the time required for the R&D activities, and other questions that public buyers may have.

Suppliers can participate in the Market Consultations by registering to the events and by filling out the questionnaires designed to collect relevant information. The data gathered in the Market Consultation can be strategically employed to finetune the tender for a future R&D procurement.

After the Market Consultation, a **market consultation report** is usually published, to inform all interested parties about the results of the consultation – regardless of whether they participated in the consultation or not - in order to level the playing field by making the information available.

In conclusion, suppliers can provide information about the TRL of existing solutions and inform about their R&D plans to complement the SOTA analysis conducted by public procurers. Suppliers can also give feedback during the Market Consultation process by participating in events and replying to the RFI questionnaire to help public buyers finetune the tendering plans and the tender documents.

2.1.3 The tendering process of R&D services

How is the tendering process of R&D contracts?

A tender to award a contract for R&D services begins with the publication of a formal announcement in the form of a contract notice, usually on an electronic or digital portal. The contract notice includes information about the public procurer, the type of contract, and the tender documentation. That information, naturally, changes on a case-by-case basis.

After the publication of a contract notice, there is a period open to questions about the tender documents and the procurement process; and a defined deadline for the submission of proposals, more commonly referred to as "tenders" or "bids".

Example 3: Contract Notice, PREVENT PCP - 322919-2022 - Competition - TED

Example 4: Contract Notice, WBL AI PCP - Artificial Intelligence models for the sewage water syste...

The submission of bids, nowadays, is mostly done through electronic or digital platforms. For the submission of bids, tenderers must comply with the administrative, technical, and financial requirements set in the tender documents. For example, a tenderer shall demonstrate his capacity to perform R&D - as defined in the Frascati Manual - and in observance of R&D ethics and standards.

Following the reception of bids, the assessment of the administrative, technical, and financial aspects, based on the evaluation scheme, is performed by the procurement bodies established in the tender documents. The bids are assessed against previously defined exclusion, selection, and award criteria, tailored on a case-by-case basis.

In general, for the exclusion and selection criteria, suppliers are requested to sign a declaration of honor and to provide evidence of their capability to perform R&D services in relation to the specific subject matter of the contract.

The award criteria are related to the quality of the proposal and how it complies with the identified functional needs, the methodology, the planning, and the staff assigned. The financial aspects relate to the proposal's price, offered in the bid and the value to be delivered.

The results of the evaluation and the ranking of bids are communicated to the tenderers, following which a provisional contract award is issued.

The final award of the contract will take place after a standstill period (typically 10 – 15 days, it depends on the national provisions), provided there are no challenges to the decision to award the contract. A contract award notice is then published, including the details of the successful contractor.

Figure 8: Tendering process for a R&D services contract from the contract notice to the final award and contract signature

Public contracts for R&D services in the WTO-GPA[10]

The Agreement on Government Procurement (GPA) is a plurilateral agreement under the auspices of the World Trade Organization (WTO), which means that it applies to a number of WTO Members, but not all Members. The GPA's membership is limited to the WTO Members that specifically signed the GPA or that have subsequently acceded to the Agreement. It regulates the procurement of goods and services by the public authorities of the parties to the agreement, based on the principles of openness, transparency, and non-discrimination. The GPA has opened procurement opportunities around the world to international competition.

More specifically, the GPA establishes the possibility that a procuring entity may use limited tendering and may choose not to apply certain GPA provisions in case of procuring prototype development and contracts for research, experiment and study or original development.

WTO - Government Procurement Agreement

Article XIII Limited Tendering

1. Provided that it does not use this provision for the purpose of avoiding competition among suppliers or in a manner that discriminates against suppliers of any other Party or protects domestic suppliers, a procuring entity may use limited tendering and may choose not to apply Articles VII through IX, X (paragraphs 7 through 11), XI, XII, XIV and XV only under any of the following circumstances:

(...) (f) where a procuring entity procures a prototype or a first good or service that is developed at its

[10] The Revised WTO Agreement on Government Procurement (GPA) | WTO iLibrary

request in the course of, and for, a particular contract for research, experiment, study or original development. Original development of a first good or service may GPA 38 include limited production or supply in order to incorporate the results of field testing and to demonstrate that the good or service is suitable for production or supply in quantity to acceptable quality standards, but does not include quantity production or supply to establish commercial viability or to recover research and development costs; (…)

GPA-WTO

Public contracts for R&D services in the EU

In the EU legal framework, public service contracts for research and development services are covered by several main CPV (Common Procurement Vocabulary) codes[11]. A search for R&D tenders can be done by using the CPV codes.

Code	Name
73000000	Research and development services and related consultancy services
73100000	Research and experimental development services
73200000	Research and development consultancy services
73300000	Design and execution of research and development
73400000	Research and development services on security and defence materials

Figure 9: Research and development CPV codes

In the EU context, there are different ways to purchase R&D services. One way of procuring R&D services is using one of the procedures listed in the Public Procurement Directives (e.g. open or restricted procedure), as for any other type of services.

Purchases of R&D services, where the procurer reserves for itself all the benefits of the research and development (including all intellectual and property rights), fall within the scope of the public procurement Directives.

On the contrary, where the procurer does not reserve all the benefits of the R&D services for itself but shares them with the suppliers, the procurement is exempted from the public procurement directives. This means that the procurer can adapt the procurement procedure to their specific needs (e.g. the PCP procedure).

2.2. Marketing and business opportunities

Participation in the procurement of R&D services presents a unique opportunity for companies to drive growth, enhance competitiveness, and solidify their market position by engaging in projects that push the boundaries of technological and process innovation. Companies can get access to new markets, establish enduring relationships, and validate/test their goods in practical settings by taking part in these procurement processes. Beyond the immediate monetary gains, the purpose of these advantages enable them to develop their intellectual property, draw in top talent, and set industry standards. In this regard, organisations who

[11] The Common Procurement Vocabulary (CPV) is a system used in public procurement to classify the goods, services, or works being purchased. Each type of product or service is assigned a unique code made up of numbers. This helps public buyers and suppliers understand what is being procured in a standardised way across the EU. The CPV system makes it easier to search for contracts and ensures consistency in tender descriptions (Main and Supplementary Vocabulary of CPV - ted.europa.eu - TED).

participate in the procurement of R&D services can influence the future of their industries, in addition to satisfying the expectations of today's market. The subsequent points elaborate on how organisations can undergo a transformation through involvement in the procurement of R&D services from various supply-side perspectives.

1. Market Validation and Commercialisation

Market Validation: Companies can validate their goods or services in a real-world situation by taking part in the procurement of R&D services. Obtaining a contract through this process provides a powerful recommendation from a reputable public body; it is a "seal of approval" for forward-thinking businesses, verifying the market viability of recently developed technological innovations and proving that the product satisfies demanding requirements. This validation can be a key factor in attracting additional customers, partners, and investors, as it signals that the product has passed stringent assessments.

Commercialisation *Path:* The procurement process often includes phases of design, prototyping, testing, and refining the solution, which can accelerate its development from a concept to a market-ready product. Contracts with the public sector can serve as a launching pad for more extensive commercialisation by giving businesses a stage on which to present their inventions and demonstrate their economic feasibility.

2. Increased Competitiveness

Market Leadership*:* Participation in a public procurement of R&D services allows companies to position themselves as leaders in their field by being among the first to introduce new technologies or products in the market. Since early movers can take up a sizable portion of the market before rivals can catch up, this can give them a competitive advantage.

Enhanced Capabilities: Companies can enhance and improve their research, development, and project management skills by taking part in procurement projects focused on R&D. With their advanced skills and knowledge, these enhanced capabilities enable them to compete more effectively not only in the public sector but also in other markets.

3. Knowledge Transfer and Learning

Expert Collaboration*:* Companies frequently collaborate closely with researchers, experts, and other stakeholders in the public sector when they participate in the procurement of R&D services. Through this partnership, a company will have access to a wide range of knowledge and experience which will improve its comprehension of the market, the regulatory landscape, and technical challenges.

Continuous Feedback: The nature of Innovation procurement, which often involves multiple phases (such as design, prototyping, and testing), provides companies with continuous feedback from end-users and public authorities. This feedback is invaluable for refining and improving products, leading to better outcomes and a deeper understanding of customer needs.

4. Risk Reduction

Participation in the procurement of R&D services typically involves public sector partners who are willing to share the risks associated with developing new technologies with the companies. This shared risk can make it easier for companies to invest in R&D projects that might otherwise be too risky or uncertain, knowing that they have the backing of a reliable partner. Furthermore, by obtaining a contract, businesses lower the risks involved in entering the market because the support of the public sector can draw in additional customers, act as a catalyst for the launch of a product and allay concerns about the product's acceptance.

5. Enhanced R&D Capabilities

Participation in the procurement of R&D services frequently gives companies the capital they need to engage in extensive R&D projects,. This financial support enables them to explore new ideas, grow their R&D networks and cultivate valuable connections, engage in cooperative R&D, gain knowledge and develop capabilities, and even generate additional innovation projects, technologies, and processes. Additionally, companies can strengthen their internal R&D capabilities by leveraging the experience they gain from participating in R&D services procurement projects.

6. Long-Term Partnerships

Establishing and fulfilling contracts for R&D services can pave the way for enduring collaborations with public sector organisations. Because public authorities frequently choose to work with reliable suppliers who have a track record of success, these partnerships may lead to repeated business. Long-term alliances may also pave the way for additional chances for cooperation, including joint ventures, co-development projects, and participation in bigger consortia tasked with taking on significant public challenges.

7. Intellectual Property (IP) Development and Ownership

***Creation of IP**:* Involvement in the procurement of R&D services and projects frequently results in the creation of new IP, such as patents, trademarks, copyright, and know-how. Fora business businesses, this IP can be a great asset since it gives them a competitive edge, and opens up possibilities for licensing and new revenue streams.

***IP Protection*:** Contracts with the public sector frequently contain clauses that support the preservation of a business' IP, guaranteeing that the innovations created stay under the company's ownership and are free to be licensed or commercialised as the business sees fit.

8. Access to New Markets

Public Sector Markets: Participation in the procurement of R&D services provides companies with a direct access into the public sector market, which is often big, stable, and full of business opportunities. A company's reputation can be improved and it can gain access to relevant innovation ecosystems by succeeding in this market, which will make it simpler to get contracts in other industries.

Global Expansion: Successful participation in the procurement of R&D services and can provide companies with credibility which canand facilitate their international business expansion. Many public sector innovations are scalable and adaptable to different regions, enabling businesses to take advantage of their knowledge and expertise, and offer goods and services in previously untapped markets.

9. Development of Sustainable and Socially Responsible Solutions

Sustainability Focus: Participation in the procurement of R&D services places a growing emphasis on creating environmentally friendly, sustainable solutions. Businesses that take part in these initiatives can establish themselves as industry leaders in sustainability and satisfy the rising demand for environmentally friendly products and procedures.

Social Impact: Companies can support social goals, such as expanding educational opportunities, creating work opportunities for minorities, and improving public health by engaging in the procurement of R&D services. This not only improves a company's reputation as a brand, but also fits in with larger societal objectives. This can draw in more socially conscious investors and clients.

10. Talent Attraction and Retention

Companies known for their innovation capabilities and participation in high-impact projects tend to attract top talent, particularly those interested in cutting-edge technology and meaningful work. Participation in the

procurement of R&D services offers employees the chance to work on exciting, forward-looking initiatives that can make a real difference. Moreover, working on innovative and impactful projects can increase job satisfaction and employee loyalty, reducing turnover rates. Employees who feel they are contributing to important projects are more likely to stay with the company, leading to a more stable and experienced workforce.

11. Regulatory Compliance and Standards Influence

***Proactive Compliance**:* Creating solutions that either meet or surpass regulatory requirements is a common condition for participation in the procurement of R&D services. By working on these projects, businesses make sure that their products comply with all applicable laws and regulations, which reduces the likelihood of legal problems, or the necessity for expensive redesigns.

Standards Setting: Companies that use procurement to innovate frequently contribute to the creation of new industry standards. They can shape regulatory frameworks to ensure that they complement the company's technologies and business models by leading the way in innovation.

Marketing and business opportunities through the procurement of R&D services

Market Validation	Commercialisation	Risk Reduction	Long-Term Partnerships	
Increased Competitiveness	Market Leadership	Enhanced Capabilities	Access to New Markets	Talent Attraction and Retention
Knowledge Transfer and Learning	Expert Collaboration-	Continuous Feedback	Enhanced R&D capabilities	
Intellectual Property (IP) Development and Ownership	Creation of IP	IP Protection		
Development of Sustainable and Socially Responsible Solutions	Sustainability Focus	Social Impact		
Regulatory Compliance and Standards Influence	Proactive Compliance	Standards Setting		

Figure 7. Marketing and business opportunities overview

2.3. R&D procurement processes

Innovation partnerships[12]

The innovation partnership aims at **the development of an innovative product, service or works and the subsequent purchase of the resulting supplies, services or works**, provided that they correspond to the performance levels and maximum costs agreed between the contracting authorities and the participants.

The innovation partnership **is structured in successive phases following the sequence of steps in the research and innovation process**, which may include the manufacturing of the products, the provision of

[12] Innovation partnership - Publications Office of the EU

the services or the completion of the works. The rules for innovation partnership are set out in Article 31 of Directive 2014/24/EU.

In the case of innovation partnerships, the value to be taken into consideration shall be the maximum estimated value net of VAT of the research and development activities to take place during all stages of the envisaged partnership as well as of the supplies, services or works to be developed and procured at the end of the envisaged partnership.

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.

In innovation partnerships, **any economic operator may submit a request to participate in response to a contract notice** by providing the information for qualitative selection that is requested by the contracting authority. For the selection of candidates, the criteria applied concern the candidates' capacity to develop and implement innovative solutions.

Only those economic operators invited by the contracting authority following the assessment of the information provided may 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. The contracts shall be awarded on the sole basis of the award criterion of the **best price-quality ratio**.

The innovation partnership sets **intermediate targets** to be attained by the partners and provides for payment of the remuneration in appropriate instalments. Based on those targets, the contracting authority **may decide after each phase to terminate the innovation partnership** or, in the case of an innovation partnership with several partners, to reduce the number of partners by terminating individual contracts, provided that the contracting authority has indicated in the procurement documents those possibilities and the conditions for their use.

The procurement documents define the arrangements applicable to intellectual property rights. In the case of an innovation partnership with several partners, the contracting authority **shall not reveal to the other partners solutions proposed or other confidential information** communicated by a partner in the framework of the partnership without that partner's agreement.

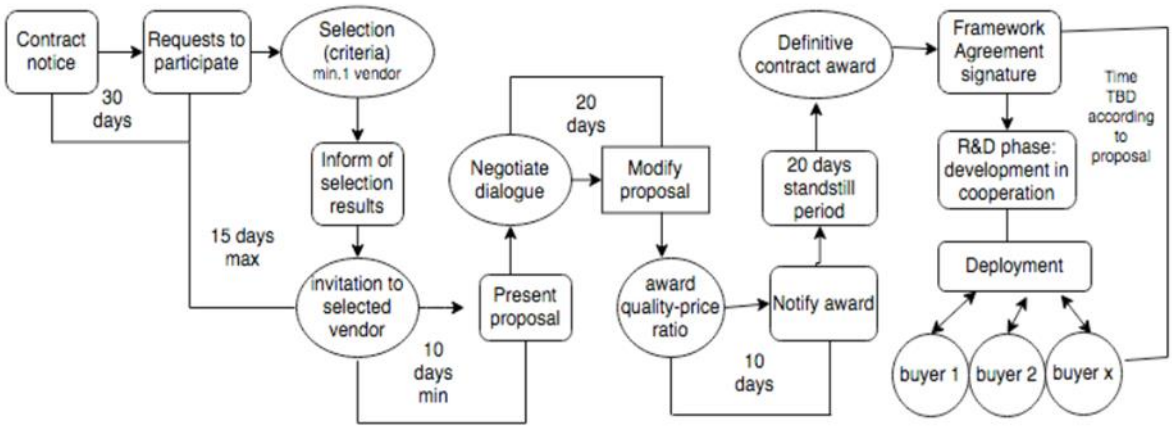


Figure 13: Innovation partnership tendering process

The time periods indicated in this graphic are merely examples (not all are legal requirements). The times above the minimum and below the maximum may be customised on a case-by-case basis.

Example 5: A Norwegian case of Innovation Partnership for the development and procurement of a digital platform for the re-use of building materials (64123-2024 - Competition - TED).
Example 6: A Dutch case of Innovation Partnership for where WDD seeks to contract two innovation partners for pilots in order to scale the most effective innovation for post-treatment of effluent at RWZI Tilburg, focusing on medicine residue and nutrient removal, with partners having expertise in both the technology and development of such innovations (137639-2024 - Competition - TED).

Prototype development and testing

The negotiated procedure without prior publication for prototype development and testing is an exceptional public procurement method allowed under Article 32(3)(b) of Directive 2014/24/EU. This procedure may be used for public supply contracts, **where the products involved are manufactured purely for the purpose of research, experimentation, study or development**. This procedure plays a crucial role in fostering innovation procurement and supporting R&D activities by allowing public buyers to engage directly with suppliers to co-develop novel solutions.

A fundamental condition is that **the contract must not cover mass production or commercial-scale supply**. The objective is to support the development of innovative solutions without turning the contract into a regular supply contract aimed at market exploitation. The rationale is to de-risk the innovation process without distorting market competition.

Additionally, although the procedure bypasses the standard publication and open competition phases, contracting authorities must still respect the principles of equal treatment, non-discrimination, and proportionality. The contracting authority must provide justification for the use of this exceptional procedure, documenting why the negotiated procedure without prior publication is necessary.

This negotiated procedure highlights the unique role that public procurement can play in stimulating innovation by acting as a risk-sharing partner in the development of new technologies. It creates a legal framework that supports collaborative R&D partnerships while ensuring that public funds are not used to provide suppliers with an unfair competitive advantage.

All in all, the negotiated procedure without prior publication for prototype development is closely aligned with **Pre-Commercial Procurement (PCP)** (which we will describe in this section of the Toolkit), an EU policy instrument that encourages public buyers to act as **launching customers** for innovative solutions. Both instruments promote the idea of **public demand driving innovation** by supporting the development of solutions that are not yet available on the market.

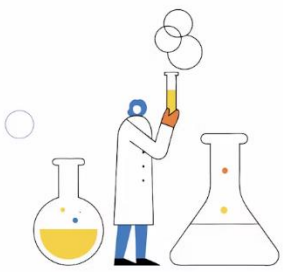


Figure 12: Prototype development

Design Contest

A design contest is a competitive procurement method where contracting authorities invite participants to submit plans, designs, or solutions typically in fields like architecture, landscaping and urban planning, engineering, IT system design and cultural or artistic installations. **The contest serves as a pre-selection mechanism to identify the best ideas before awarding a service contract**. The rules for design contests are set out in Articles 78–82 of Directive 2014/24/EU.

The tendering process for a **design contest** follows a structured sequence to ensure compliance with the overarching principles of transparency, equal treatment and non-discrimination, while ensuring quality outcomes. The contracting authority initiates the process by publishing a **contest notice** in the Official Journal of the EU (**TED – Tenders Electronic Daily**) if the estimated contract value meets the applicable EU thresholds. The notice outlines the **project objectives**, **technical specifications**, **evaluation criteria**, potential **prizes or remuneration**, the **composition of the jury panel**, and whether the contest will result in a **follow-up service contract**. Participants submit their **design proposals anonymously**, safeguarding impartiality during the evaluation phase. A **jury panel** composed of independent experts — at least one-third of whom must hold the same qualifications as the participants — assesses the submissions against the pre-established criteria. The contest may include **monetary prizes or compensation**, particularly in two-stage contests where shortlisted candidates refine their designs. The jury ultimately selects one or more winners, typically based on **design quality**, **functionality**, **innovation, and sustainability**. If the contest is linked to a subsequent service contract, the contracting authority may award the contract directly to the winner or invite multiple winners to negotiate under the **negotiated procedure without prior publication**, in line with the Directive's provisions.

Example 7: French case of a design contest for architectural and related services (135886-2025 - Result - TED).

Pre-Commercial Procurement

Pre-Commercial Procurement (PCP) is a competitive approach where the benefits do not accrue exclusively to the contracting authority for its use in the conduct of its own affairs, and the service provided is not wholly remunerated by the contracting authority. In PCP, the contracting authority and the supplier share the benefits and risks, and the intellectual property rights remain vested in the contractor, while procurers keep some usage and licensing rights. Thus, PCP falls outside the scope of the public procurement Directives[13] and of the WTO-GPA. Nevertheless, PCP must comply with the TFEU[14] and procurement principles[15], the State aid rules for R&D&I, the 2007 PCP Communication, and the national applicable national legal framework.

As stated, "…the literature draws a distinction between public procurement of innovation, which concerns large-scale commercial procurement of already tried and tested products (Edler and Yeow, 2016), and PCP. This distinction is relevant to innovative SMEs, as PCP entails the unbundling of R&D activity from subsequent

[13] For more information, please check EIC Innovation Toolkit, Chapter 1: Introduction (EIC Innovation Procurement Toolkit - European Commission)

[14] The Treaty on the Functioning of the European Union (TFEU) is one of two treaties forming the constitutional basis of the European Union (EU), the other being the Treaty on European Union (TEU). It one of the key foundational agreements that guides how the European Union (EU) operates. It covers a wide range of policies and areas of law, including trade, competition, and public procurement. In simple terms, the TFEU sets out the rules that EU countries must follow to ensure the smooth functioning of the internal market, which includes the free movement of goods, services, and people across borders (Treaty on the Functioning of the European Union | EUR-Lex).

[15] In the context of procurement, the TFEU lays down important principles for public contracts and the overall process of public procurement such as transparency, non-discrimination, proportionality and equal treatment.

commercial procurement and facilitates awarding smaller R&D contracts to multiple firms (Timmermans and Zabala-Iturriagagoitia, 2013; Iossa et al., 2018).

In this sense, **PCP is well-placed to contribute towards achieving the twin goals of innovation and small business development**[16]."

In the PCP approach, the main tender documents include the Request for Tenders, the Framework Agreement and the Phase Contracts (specific contracts for each of the PCP phases).

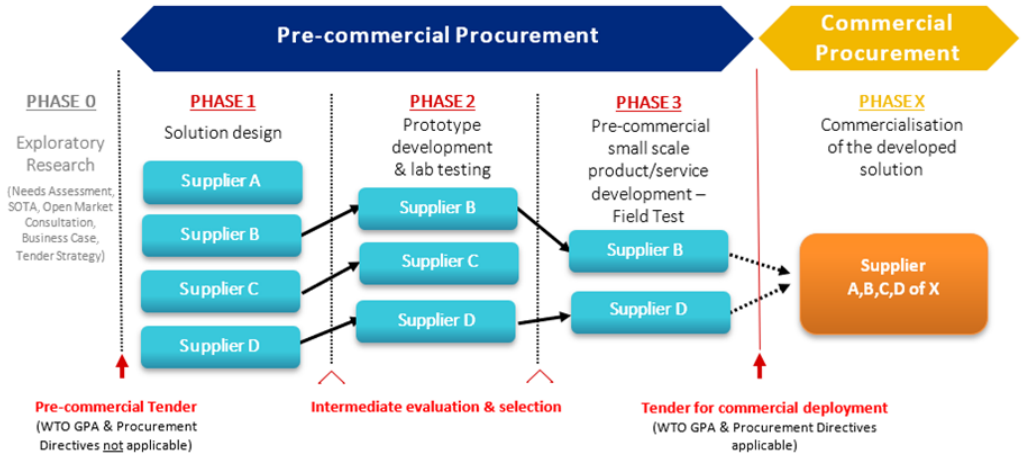


Figure 10: The competitive phases of PCP and the follow up commercial procurement

PCP is composed of different competitive phases for the solution design, prototype development, testing and validation of solutions up to TRL 8.

After each phase, only the successful contractors are invited to submit a proposal for the next phase. The proposals of each phase are evaluated against the same pre-defined criteria (and – possibly - finetuned sub-criteria) set in the tender documents.

Some national legislations (like the Greek and the Italian) also require a standstill period between the PCP phases, before the final award of the new phase contract.

An indicative timeline of the steps in a PCP (which may differ on a case-by-case basis) is outlined in the table below.

[16] Selviaridis Kostas (2021), "Effects of public procurement of R&D on the innovation process: evidence from the UK small business research initiative", *Journal of public procurement*, Vol. 21 Issue 3, pp. 229 – 259.

STEP	TIMELINE
Preparation period	2-8 months (incl. needs validation, prior art analysis, IPR search, regulatory/standardization framework assessment, business case compilation, open market consultation)
Tendering period	Minimum 2 months (to give companies enough time to prepare high quality/innovative offers)
Evaluation of bids and contract award	4-6 weeks
Phase 1 R&D work	3-6 months
Evaluation of phase 2 bids and contract award	3-5 weeks
Phase 2 R&D work	6 – 12 months (or longer for complex projects)
Evaluation of phase 3 bids and contract award	3-5 weeks
Phase 3 R&D work	6 - 12 months (or longer for complex projects e.g. projects with testing in several locations)

Figure 11: Guideline for a PCP process time planning – EAFIP Toolkit

PCP can go up to the development and the purchase of a limited volume of first products or services developed in the PCP ("limited" because in a services contract like PCP the total value of supplies purchased needs to remain below 50% of the total PCP contract value).

As R&D cannot include quantity production (large scale production to produce commercial volumes of end-products), PCP does not cover large scale commercialisation.

PCP is characterised by five features:

1. Competitive development in phases to identify the solutions offering the best value for money

PCP targets situations that require radical innovation or R&D and for which there are typically no solutions in the market or close to the market yet. Different competing providers may have different ideas for solutions to the problem. As R&D is yet to take place, there is no proof as to which of these potential alternative solutions would best meet customers' needs.

PCP therefore involves the award of R&D contracts to a number of competing contractors who will develop the solutions in parallel, in order to compare different approaches to solving the problem. It offers innovators an opportunity to show how well their solution compares with others. It also allows a first customer test reference to be obtained from the countries of the procurers who will test the solutions.

Usually, PCP is composed of 3 phases: Phase 1 - Solution design, Phase 2 - Prototyping and lab testing, and Phase 3 - Original development, installation, wider field testing and validation of a limited set of 'first' products or services.

The evaluations performed at the end of each phase will progressively identify the solutions that offer the best value for money and meet the customers' needs. This phased approach allows successful contractors to improve their offers for the next phase, based on the lessons learnt and feedback from procurers in the previous phase. Using the phased approach with gradually growing contract sizes per phase will also make

it easier for smaller companies to participate in the PCP and enable SMEs to grow their business step-by-step with each phase.

Depending on the outcome of the PCP (whether it will result in innovative solutions that meet the tender requirements and offer good value for money), procurers may or may not decide to follow-up the PCP with a public procurement to deploy the innovative solutions (Public Procurement of Innovative Solutions - PPI).

2. Public procurement of R&D services

PCP is a way for procurers to trigger the market to develop new solutions that address these shortcomings. PCP focuses on specific identified needs and provides customer feedback to businesses from the early stages of R&D. This improves the likelihood of commercial exploitation of the newly developed solutions.

PCP is explained in the *PCP communication COM/2007/799 and the associated staff working document SEC/2007/1668*. The R&D services can cover research and development activities ranging from solution exploration and design, to prototyping, right through to the original development of a limited set of "first" products or services in the form of a test series. Original development of a first product/service may include limited production/supply in order to incorporate the results of field-testing and demonstrate that the product/service is suitable for production/supply in quantity to acceptable quality standards. R&D does not include quantity production or supply to establish the commercial viability or to recover R&D costs. It also excludes commercial development activities such as incremental adaptations or routine/periodic changes to existing products, services, production lines, processes or other operations in progress, even if such changes may constitute improvements.

3. Open, transparent and non-discriminatory approach

Unless there are specific participation and/or control restrictions, PCP procurements are normally open at least to all operators in EU Member States or Horizon Europe associated countries, on equal terms, regardless of their size, geographical location or governance structure.

Access is extended to operators from WTO GPA signatory countries and other third countries if there are not sufficient operators in EU Member States or associated countries that can perform the R&D work.

In all cases, there is, however, a place of performance requirement that a predefined minimum percentage of the contracted R&D services must be performed in EU Member States or Horizon Europe associated countries (or a more restricted list of countries).

All communication (before, during and after the procurement) will normally be carried out in English (and other languages).

Any subsequent PPI, for the supply of commercial volumes of the solutions developed in the PCP, will be carried out under a separate procurement procedure. Participation in the PCP is thus not a prerequisite for the provisioning of a solution on a commercial scale.

4. Sharing of IPR-related risks and benefits under market conditions

PCP procures R&D services at market price, thus providing contractors with a transparent, competitive and reliable source of financing for the early stages of their R&D.

Giving each contractor the ownership of the IPRs attached to the results (foreground) they generate during the PCP means that they can widely exploit the newly developed solutions commercially. In return, the offered price must contain a financial compensation for keeping the IPR ownership - compared to the case where the IPRs would be transferred to the procurers (the tendered price must be the "non-exclusive development

price"). Moreover, the procurers must receive license-free rights to use the R&D results for internal use, and licensing rights subject to certain conditions.

The contractors also retain ownership of their background rights (albeit subject to certain rights of use by the procurers).

5. Exemption from the EU Public Procurement Directives, WTO Government Procurement Agreement (GPA) and EU state aid rules

PCP procurements are exempted from the EU Public Procurement Directives because the procurers do not retain all the benefits of the R&D (the IPR ownership stays with the contractors).

They are also exempted from the WTO Government Procurement Agreement (GPA) because this Agreement does not cover R&D services (provided that the PCP is limited to such services and any subsequent PPI procurements relating to commercial-scale supply of such solutions are not part of the PCP).

PCP procurements do not constitute state aid under the EU state aid rules if they are implemented as defined in the PCP communication, namely by following an open, transparent, competitive procedure with risk- and benefit-sharing at market price. The division of all rights and obligations (including IPRs) and the selection and award criteria for all phases must be published at the outset; the PCP must be limited to R&D services and clearly separated from any potential follow-up PPI procurements; PCP contractors may not be given any preferential treatment in a subsequent procurement for provision of the final products or services on a commercial scale.

Contracts for R&D services under the public procurement directives

Other procedures falling within the scope of the EU public procurement directives, are the case of the negotiated procedure for the purpose of contracting R&D services, and the Innovation Partnership, which is a negotiated type of procedure that bundles R&D services with the deployment of solutions.

Finally, it is significant to mention the analysis of the first 30 Pre-Commercial Procurement projects funded under the FP7 and Horizon 2020, which reveal significant impacts on the European market, particularly in opening routes to the market for new players and fostering cross-border company growth. Notably, 71.5% of the PCP contract value was awarded directly to SMEs, and this figure rises to 86% when including indirect awards, which is more than double the European average in public procurement. Larger companies also benefit, with 16% of contracts won by large companies as single bidders and 19% by consortia of large companies and SMEs working together to bring products to the market. The cross-border impact is striking, with 33.1% of contracts awarded across borders, compared to just 1.7% in typical public procurement.

The longer-term impacts of these PCPs are equally impressive. Companies involved in these projects have seen a substantial increase in their commercialisation success rates, with 86% of Phase 3 contractors, 75% of Phase 2 contractors, and 29% of Phase 1 contractors already bringing their solutions to market. Moreover, about half of the companies are generating revenue from their PCP solutions, with 24% participating in start-ups securing equity investment post-PCP, and 18% forming partnerships with larger corporations. Exit strategies have also been successful, with 3% of start-ups going public through IPOs and 12% undergoing mergers or acquisitions. Overall, these findings suggest that PCPs have had a transformative effect on both small and large companies, significantly enhancing their market presence and commercial success.

RESOURCE FOR FURTHER EXPLORATION & READING

- ASSESSMENT REPORT on the performance of the EC funded Innovation Procurement projects in the security field according to the EC Guidance Notice on Innovation Procurement

- Impacts of EU funded Pre-Commercial Procurements

Innovation procurement strategy

The **Innovation procurement strategy** is a structured approach (part of the EAFIP Methodology[17]) to the strategy which will allow a balance between **legal compliance, technological innovation**, and **intellectual property rights** while fostering collaboration among stakeholders.

The **Innovation procurement strategy** will depend on the TRL of the solutions available on the market. Therefore, the TRL assessment is crucial to choose the most suitable procurement approach. If the solutions are within TRL 1 to 8, a procurement of R&D can be justified. A procurement of R&D services is usually carried out within TRL 3 to TRL 8, but it could also be that solutions which are at higher TRL (e.g. TRL 5-6) are brought up to TRL 8. In the case of an Innovation Partnership, which bundles R&D and deployment, it may be desirable that the R&D takes place from higher TRL (e.g. TRL 6-7) to reach commercialisation.

Below are the main considerations of an innovation procurement strategy:

1. **Define the Subject Matter of the Contract**
   Clearly articulate the functional or performance-based requirements of the solution, leaving room for innovation. This would include identifying the challenge or unmet need without prescribing the exact solution.
2. **Joint Procurement or Cross-Border Joint Procurement Decision**
   Assess whether the procurement could benefit from collaborative approaches, such as pooling resources with other contracting authorities across regions or countries, particularly for highly innovative solutions where market demand aggregation or risk-sharing is beneficial.
3. **Technology Readiness Level (TRL) of the Desired Solution**
   Define the expected TRL of the solution, whether it involves early-stage R&D (lower TRLs, e.g., Pre-Commercial Procurement) or market-ready innovations (higher TRLs, e.g., Public Procurement of Innovative Solutions).
4. **Intellectual Property Rights (IPR) Strategy**
   Develop an IPR strategy that balances the contracting authority's need for access and use of the results with the supplier's need to commercialise the innovation. This could involve granting licenses, retaining ownership, or ensuring shared rights for further exploitation.
5. **Suitable Procurement Procedure**
   Select the appropriate procurement procedure based on the type of innovation, market conditions, and legal framework (e.g., Competitive Dialogue, Innovation Partnership, or PCP for R&D services).
6. **Contractual Terms & Conditions**
   Draft tailored contractual provisions that address IPR arrangements, performance milestones, risk-sharing, confidentiality, and payment structures that incentivise innovation while protecting public interest.

This strategy would reflect your **interdisciplinary approach** by integrating legal, economic, and technological perspectives while supporting sustainable innovation and maximizing value for public authorities.

[17] EAFIP Module 2, https://projects.research-and-innovation.ec.europa.eu/en/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/innovation-procurement/eafip/eafip-toolkit

2.4. Participation requirements

This section is designed to guide suppliers through the essential steps they need to take to participate in R&D procurement processes.

What are the participation requirements?

The following outlines the key participation requirements:

- **Economic and Financial Standing**: Suppliers must demonstrate their economic and financial viability to participate in procurement processes. In open procedures, this assessment occurs post-bid submission, as there is no pre-qualification of participants. Conversely, in restricted and negotiated procedures, as well as under the new competitive dialogue framework, procuring entities have the discretion to evaluate financial standing prior to issuing invitations to participate.[18] This pre-assessment enables the exclusion of providers deemed to be unqualified. Regulations demand that procuring entities articulate the relevant economic and financial standards at this stage, ensuring invitations are limited to those who appear qualified. Verification of financial information can be mandated only for the successful bidder, alleviating the administrative burden for other participants. Additionally, procuring entities may conduct new qualifications assessments based on fresh, or previously unavailable, information at later stages of the procurement process.

- **Technical Capacity and Ability**: Suppliers are required to demonstrate sufficient technical capacity and expertise to execute the contract successfully. This encompasses the necessary skills, experience, and resources to fulfill the project's technical specifications. Evidence of past performance in similar projects, relevant certifications, and qualified personnel must be presented to substantiate the supplier's ability to meet the contract requirements.

- **Exclusion Grounds**: Suppliers may be excluded from participation based on specific regulatory grounds. These exclusions typically relate to serious breaches of contractual obligations, legal penalties, or any conduct that could undermine the integrity of the procurement process. Suppliers must be aware of these regulations and ensure compliance to avoid disqualification.

- **Requirement to Accept Evidence from Official Lists**: Procuring entities are mandated to accept evidence from official lists maintained by other EU Member States and certification bodies that comply with European standards. This provision facilitates cross-border procurement and ensures that suppliers from different jurisdictions can participate without unnecessary barriers. Suppliers should ensure their credentials are recognised by these official sources to streamline their participation.

- **Rules on the Operation of Qualification Lists**: Qualification lists operate under specific rules that govern their formation and use. These lists serve as a reference for procuring entities to identify qualified suppliers. Suppliers must understand the criteria for inclusion, the duration of qualification, and the process for updating or removing entries from these lists. Adherence to these rules is essential for maintaining eligibility to appear on those qualification lists.

- **Legal Structure of Providers**: The legal structure of suppliers plays a crucial role in participation. This includes regulations regarding consortia, the legal form of the supplier (e.g., sole proprietorship,

[18] Arrowsmith, p. 715.

partnership, corporation), and the utilisation of subcontractors. Suppliers must clearly define their legal structure and ensure that all partners or subcontractors comply with other applicable laws or rules related to different areas, such as environmental protection or labor rights as well as the procurement regulations.

- **Compliance with EU Procurement Directives**: Suppliers must comply with the qualification standards defined by the EU Directives on public procurement, which are grounded in the principles of the Treaty on the Functioning of the European Union (TFEU). These Directives ensure equal treatment, non-discrimination, transparency, proportionality, and mutual recognition among suppliers across EU Member States. Adherence to these principles is essential for suppliers to effectively engage in procurement opportunities within the EU.

Requirements	Pre-Commercial Procurement (PCP)	Innovation Partnership	Design Contest	Prototype Development and Testing
Economic and Financial Standing	Must demonstrate their economic and financial viability	Must demonstrate their economic and financial viability (ensure financial stability for long-term partnership)	Can be required for participation (depending on contest scope)	Can be required depending on the scale of the contract
Technical Capacity and Ability	Must demonstrate sufficient technical capacity and (R&D) expertise to execute the contract successfully	Must demonstrate sufficient capacity and ability to fulfill both R&D and deployment phases	Assessed based on contest rules (portfolio, prior work, etc.)	Must demonstrate sufficient technical capacity in prototype development
Exclusion Grounds	Standard exclusion grounds apply	Standard exclusion grounds under EU directives apply	Standard exclusion grounds under EU directives apply	Standard exclusion grounds under EU directives apply
Requirement to Accept Evidence from Official Lists	Must accept evidence from official lists in accordance with EU rules	Must accept evidence from official lists in accordance with EU rules	Must accept evidence from official lists in accordance with EU rules	Must accept evidence from official lists in accordance with EU rules
Rules on the Operation of Qualification Lists	Must apply if qualification lists are maintained	Must apply if qualification lists are maintained	May apply if the design contest is part of a broader procurement process	Must apply if qualification lists are maintained
Legal Structure of Providers	Open to a wide range of economic operators, including SMEs and consortia	Open to a wide range of economic operators	Typically, open to individuals or teams with specific expertise (e.g., architects, engineers, designers, etc.)	Open to a wide range of economic operators, including SMEs and consortia
Compliance with EU Procurement Directives	Not subject to full EU procurement rules (falls outside the scope of procurement directives) – fully subject to the overarching principles of the TFEU	Fully subject to EU procurement directives (Directive 2014/24/EU)	Fully subject to EU procurement directives (Directive 2014/24/EU)	Fully subject to EU procurement directives (Directive 2014/24/EU)

Figure 12: Indicative participation requirements - overview (R&D procurement)

2.5. IPRs, liability, and risks from a supply perspective

This section offers suppliers key information on managing Intellectual Property Rights (IPRs), understanding liability, and addressing risks when participating in R&D procurement. This guidance provides insight into these crucial aspects, helping to protect innovations and support a smooth contractual relationship with the procurer.

What are Intellectual Property Rights (IPRs)?

Technologies are subject to a great number of intangible rights or IPRs that may take various forms. All IPRs provide their owners with some degree of exclusivity and control over the protected innovation and are therefore often highly valuable assets. In addition to IPRs, information assets may also be protected by trade secret law, which is a contract-based protection regime complementary to IPRs.

IPRs are the rights that adhere to creations and that grant the holder(s) thereof a monopoly on the use of that creation for a specified period and subject to certain exceptions. The underlying aim of granting such (temporary) monopoly is to incentivise creators to share their creation with the public, and to achieve the social benefits of increased creative activity.

The table below provides a brief explanation of the various IPR regimes.

IPR Type	Duration (y)	Applicability	Costs (€)
Copyright	Life + 70	Automatic	N/A
Patent (European)	20	On registration	≈25k
Registered Design	25	On registration	≈1.5k
Database right	15	Automatic	N/A
Trademark (EU)	N/A	On registration	≈2.5k
Trade secret (not IPR)	N/A	By contract	N/A

Figure 13: Overview different types of IPR - Source: EAFIP Toolkit[19]

As it is clear from the above table, there are six main IPR regimes. Of the six, trade secrets are not normally classified as "IPR" since their function and operation differ in important ways: they normally require contract law for their enforcement, and they do not provide the kind of exclusive rights entailed by the other rights. In other words, as opposed to the other absolute rights, trade secrets are relative rights.

Moreover, the other traditional IPRs require compliance with certain requirements (whether "originality" in the case of copyright, or "novelty" in the case of patents) in order to be issued. Sometimes IPR protection is automatic - as in the case of copyrighted works, like software and literature, where copyright automatically adheres to all creative works meeting the threshold.

In other cases, issuance requires a formal registration entailing (significant) costs, as in the case of patents. While patents are available for inventions of a technical character, and which possess the requisite levels of "novelty", "inventiveness" and "industrial applicability", copyright only requires that the creative work is "original" and set down in a tangible medium.

In addition, traditional IPRs such as patents, copyright and trademarks are generally fully disclosed to the public domain, meaning that the essential qualities of the protected subject matter are made available for public inspection. Public and third-party use of IPR is however curtailed by the requirement of needing a license to use the IPR productively.

These essential attributes of IPRs will form the basis for an IPR strategy.

Intellectual property rights can be classified based on the timing of their creation during a project:

- **Background IPRs**: Background IPRs are intellectual property rights that are already owned before starting a project. These can include patents, copyrights, trademarks, and trade secrets that were

[19] EAFIP Module 2, p 87, https://projects.research-and-innovation.ec.europa.eu/en/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/innovation-procurement/eafip/eafip-toolkit.

developed independently of the current project. Declaring these at the beginning of the project is crucial to avoid any disputes over ownership later on.

- **Foreground IPRs**: Foreground IPRs refer to any new intellectual property created during the course of the project. This can include new inventions, designs, or processes that are developed as a direct result of the project activities. It is important to negotiate with the procurer regarding the ownership and usage rights of these IPRs to ensure clarity and avoid conflicts.
- **Sideground IPRs**: Sideground IPRs are intellectual property rights that are developed outside the specific project but are related to it. These IPRs are created independently by the project partners during the project's duration but not as a direct result of the project activities. Contracts should clearly define how these IPRs will be handled to protect the broader interests of all parties involved.

IPR Ownership and Exploitation:

- ***Why is it Important?***

The management of IPRs is critical in R&D procurement, as it directly impacts innovation and economic growth. Intellectual property protections, such as patents, copyrights, trademarks, and trade secrets, allow for the exclusive exploitation of innovative solutions, thereby securing financial returns on investment and reducing the risks associated with joint ventures and collaborative efforts.

As the World Intellectual Property Organization notes[20], effective management of these rights helps mitigate risks in collaborations and secures the financial return on innovation investments. In public procurement, especially within R&D contracts, the ability to define, protect, and enforce IPRs ensures that stakeholders understand their rights and obligations, creating a transparent framework for innovation.

IPRs are crucial in establishing ownership, defining usage rights, and determining how intellectual property can be exploited. For suppliers involved in R&D procurement, such as Pre-Commercial Procurement (PCP) or the Public Procurement of Innovative Solutions (PPI), understanding the contractually defined ownership of IPRs and the rules for commercialisation or licensing is pivotal. Depending on the procurement model, IPRs can either remain with the supplier, be shared with the contracting authority, or be transferred entirely. Effective IPR management is therefore essential for suppliers aiming to retain their innovation capacity and market competitiveness after the project.

- ***Key Considerations:***

Ownership Models: In the context of R&D procurement, different ownership models for intellectual property may apply. The contractual arrangements will define who owns the background, foreground, and sideground IPRs. These ownership models have far-reaching implications for suppliers. Three primary ownership models are common:

1- **Full Ownership by the Supplier:** In this model, the supplier retains complete control of the IPRs generated during the project. This can be advantageous for suppliers looking to exploit their innovations in other markets. However, this may come with licensing obligations to the contracting authority for public purposes.

[20] World Intellectual Property Organization. (2015). *World Intellectual Property Report: Breakthrough innovation and economic growth* (WIPO Publication No. 944E). Retrieved from https://www.wipo.int/edocs/pubdocs/en/wipo_report_ip_inn.pdf

2- **Shared Ownership:** In this model, the IPRs are co-owned by the supplier and the contracting authority. Shared ownership can lead to complexities in terms of commercialisation, as both parties will need to agree on the terms of usage, licensing, and exploitation.

3- **Transfer of Ownership to the Procurer:** In certain contracts, the procurer may take full ownership of the IPRs developed during the project. While this allows for immediate public sector application of the innovation, it limits the supplier's ability to commercialise the innovation independently, unless specific licensing rights are negotiated.

Licensing Agreements: If IPRs remain with the supplier, the procurer may require a license to use the intellectual property for public purposes. In these cases, licensing agreements are critical to defining the terms of usage, exclusivity, duration, and territorial scope. Non-exclusive licenses may allow the supplier to exploit the IPRs in other markets or projects, while exclusive licenses may restrict their ability to do so.

Licensing agreements should clearly address:

- **Exclusivity:** Whether the procurer has exclusive rights to use the IPRs or if the supplier can license the IPRs to third parties.
- **Duration:** The length of time the procurer will be able to use the intellectual property.
- **Field of Use:** The scope of activities or sectors where the procurer can apply the intellectual property.
- **Geographic Scope:** Whether the rights are limited to specific countries or regions.

For suppliers, clear licensing terms are crucial to ensuring that the innovation can still be exploited commercially in other contexts, particularly if public procurement frameworks (such as PCP or PPI) are involved.

Protecting and Enforcing IPRs: Effective protection and enforcement of IPRs are critical to ensure that suppliers can maximise the value of their innovations. Infringements on IPRs can undermine a supplier's ability to commercialise their innovations, leading to loss of revenue and competitive advantage. Given the cross-border nature of many public procurement contracts within the EU, suppliers must be particularly vigilant about protecting their intellectual property across multiple jurisdictions.

Suppliers are advised to ensure that any innovations or intellectual property developed during the project are appropriately protected under patent, trademark, or copyright law where applicable. This will safeguard the invention or design from unauthorized use and provide a legal basis for enforcing IPRs if necessary.

In the case of IPR infringement, suppliers can rely on various legal avenues within the EU for enforcement. This may involve pursuing claims in national courts, relying on the Unified Patent Court (for patents), or filing actions with the European Union Intellectual Property Office (EUIPO) for EU-wide protection of trademarks and designs. Cross-border enforcement of intellectual property rights within the EU is facilitated through several international treaties, such as the Hague Agreement and the Madrid Protocol.

Liability and Risk Management: Liability clauses in R&D contracts define the supplier's legal obligations and financial responsibilities in cases of non-performance, breach of contract, or intellectual property disputes. Liability risks can arise in numerous ways, such as delays in project delivery, failure to meet performance criteria, or issues related to the misuse or infringement of IPRs. Suppliers should carefully examine:

Liability Caps: Contracts may include caps on liability, limiting the financial exposure in case of disputes or non-performance. Such caps provide predictability and reduce the risk of excessive financial penalties.

Indemnity Clauses: These clauses may require the supplier to indemnify the contracting authority for losses suffered due to the supplier's actions, including legal costs or damages. Suppliers should carefully assess the scope of indemnity to avoid disproportionate financial burdens.

On the other hand, risk is inherent in any R&D project, particularly those that involve novel and untested technologies. The allocation of risks between the parties defines how potential negative outcomes, such as technology failures or financial losses, are shared or mitigated.

Using innovative solutions can pose a risk of infringing on third-party IPRs. A third party that holds IPR over a key component of the innovation may demand licensing fees or prevent the use of the technology altogether. This risk is particularly pronounced in projects involving cutting-edge technologies or proprietary solutions.[21]

Mitigation Strategies:

- ***IPR Search and Due Diligence:*** Before entering into an R&D contract, public procurers should conduct an IPR search to identify existing third-party rights in the relevant field. This allows for early identification of potential issues and the opportunity to negotiate licenses or design-around solutions.
- ***Indemnification Clauses:*** Public procurers should include indemnification clauses that place the responsibility for third-party IPR infringement on the private partner. This requires the private party to cover any legal fees or damages arising from third-party claims and ensures the public procurer is not financially liable.
- ***Notification Systems:*** Encouraging private parties to participate in third-party IPR notification systems during the R&D process can provide transparency. This allows the procurer to be informed in advance of potential blocking third-party IPRs and develop strategies to manage or mitigate these risks.

Open-Source Software Risks[22]:

Open-source software (OSS) is increasingly used alongside proprietary software in many R&D projects. However, this combination can introduce legal risks, particularly when OSS licensed under a "hereditary" license, such as the GNU General Public License[23] (GPL), is improperly integrated with proprietary software. Such integration may inadvertently force proprietary code to be disclosed under the same open-source license, which could compromise valuable trade secrets or intellectual property.

Mitigation Strategies:

- ***Open-Source Software Policy:*** Establishing a clear policy regarding the use of open-source software in the project is essential. This policy should ensure that any integration of OSS with proprietary software is carefully managed to avoid licensing conflicts. Developers should adhere to best practices to prevent proprietary software from becoming subject to open-source obligations.
- ***Permissive vs. Hereditary Licenses:*** Procurers should be aware of the difference between permissive open-source licenses, which allow for greater flexibility, and hereditary licenses, which can place

[21] EAFIP Module 3, p 28, https://projects.research-and-innovation.ec.europa.eu/en/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/innovation-procurement/eafip/eafip-toolkit.
[22] EAFIP Module 3, p 27, https://projects.research-and-innovation.ec.europa.eu/en/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/innovation-procurement/eafip/eafip-toolkit.
[23] A widely used free software license that guarantees end users the freedom to run, study, share, and modify the software. Please see the website for more information: https://www.gnu.org/licenses/gpl-3.0.en.html

burdensome obligations on proprietary software. Clear contractual guidance should be given to the private party regarding which types of open-source licenses are permissible in the project.

Confidentiality and Non-Disclosure Agreements (NDAs):

Protecting sensitive information, especially in innovative R&D projects, is crucial for maintaining competitive advantage. Confidentiality breaches can lead to the loss of trade secrets or early exposure of innovations, potentially harming both parties.

NDAs should be in place before any discussions that involve sensitive information. These agreements must clearly define what constitutes confidential information and the obligations of both parties to protect it. NDAs should also outline the consequences of breaches, including potential legal and financial liabilities.

2.6. Contract performance

What is required in the performance of an R&D contract?

During the contract implementation suppliers are bound to obligations established in the R&D contract for advancing scientific and technical knowledge. Suppliers should deliver measurable outcomes linked to the activities related to design, development, testing, and evaluation of new products or services to meet specific performance requirements or objectives.

The main obligation in an R&D contract is to comply with the purpose of advancing the state of the art with the aim to exploit scientific discoveries or improvements in technology. At the end, the scientific and technical knowledge should be used to create new products or improve existing ones.

The contractual obligations may include:

- milestones, deliverables and information requirements, according to the scope of work and the planning times linked to payments;
- conditions to ensure the right members of the R&D team;
- conditions with regard to the testing and validation in specific facilities;
- the price for the different R&D activities;
- IPRs management and specific licensing requirements; and,
  compliance with specific legal requirements at European, regional, national and local level.

The applicable legal frameworks may vary on a case-by-case basis. For example, there could be obligations in relation to the protection of personal data (GDPR), the compliance with Artificial Intelligence rules (AI Act), and safety standards relevant to the specific project.

Effective contract management is a key factor in R&D contracts and can significantly impact value creation from supplier relationships. Given the importance of a successful implementation and management of the contract, there are some main mechanisms that can be deployed to monitor the performance of an R&D contract:

- Setting measurable Key Performance Indicators (KPI) and improvement targets in the tender documents.
- Including incentives for achieving targets and liabilities with penalties for falling short.
- Iterative feedback throughout the different R&D phases.

- Sharing lessons learnt from suppliers and contracting authorities with other relevant stakeholders who may implement future innovation procurement projects.

The performance of an R&D contract is measured upon the outcomes established for each phase of the R&D cycle, reflected by the TRL. For example, the results of testing in a lab or the outcomes of testing in an operational environment.

In PCP projects, the tender documents usually establish per each phase the outcomes, objectives, milestones and deliverables upon which payments are made, as explained in the table below.

Expected outcomes (table for 3 phases)			
Phase 1: Solution Design			
Objective:		**Perform research to:** **1. elaborate the solution design and determine the approach to be taken to develop the new solutions and** **2. demonstrate the technical, financial and commercial feasibility of the proposed concepts and approach to meet the procurement need**	
Output and results:		**Solution design (Proof of Concept)**	
Milestones and deliverables	**By when?**	**How?**	**Output and results**
M1.1) Kickoff meeting	**[dd.mm.yyyy] Start of the phase 1**	**[e.g.sent by email to lead procurer, on-site visit] Online meeting with procurer**	**Initial plan and project abstracts (in the format required by the EU for publication).**
M1.2) Follow up meeting	**Mid of phase 1**	**Online meeting with procurer**	**Follow up on work performed**
M1.3) End of phase report	**End of phase 1**	**Online meeting with procurer and report sent via email**	**Solution design**
D1.1) Plan for phase 1	**First week of the start of phase 1**	**Send planning via email to contact person of procurer**	**Phase 1 plan and project abstracts (in the format required by the EU for publication).**
D1.x) End of phase report and abstract	**End of phase 1**	**Send summary in the EU format for publication**	**A summary of the main results achieved by each contractor and conclusions from phase 1 (in the format required by the EU for publication).**

Phase 2: Prototyping			
Objective:		Develop, demonstrate and validate prototypes in lab conditions	
Output and results:		Solutions tested in lab of procurers based on use cases	
Milestones and deliverables	**By when?**	**How?**	**Output and results**
M2.1) Kick off meeting	[dd.mm.yyyy] Start of phase 2	[e.g. sent by email to lead procurer, on-site visit] Online/site meeting with procurer	Phase 2 planning and project abstracts (in the format required by the EU for publication).
M2.2) Progress update	Week 2 of phase 2	Online meeting with procurer	Progress on plan
D2.1) Prototype and testing plan	Week 1 of phase 2	Online/site meeting on testing plan	Testing plan finetuned and project abstracts (in the format required by the EU for publication).
D2.3a) Interim report on testing results	Week 30 of phase 2	Online/site meeting of testing and document sent to contact person	Report on testing results
D2.x) End of phase report	Week 32 of phase 2	End of phase report sent to contact person	End of phase report with recommendation and a section that explains the IPR measures taken by the contractors to protect the results and lists the names and location of personnel that carried out the R&D activities.
D2.x) End of phase report and abstract	Week 32 of phase 2	Send summary in the EU format for publication	A summary of the main results achieved by each contractor and conclusions from phase 2 (in the format required by the EU for publication).
D2.x) Demonstration	End of phase 2	Prototype demonstration to the EU	A demonstration to the EU of the prototypes developed during phase 2.
Points to be addressed in report:		Prototype design and testing plan. Finetuning of the plan based on recommendations. Results of the lab testing based on use cases and KPIs. Abstract and end-of phase report on the required template. A summary of the main results achieved by each contractor and conclusions from phase 2 (in the format required by the EU for publication).	

Phase 3: Development & testing			
Objective:		Original development and field-testing of a limited set of first services in X number of testing sites located in EU Member States.	
Output and results:		Solutions tested in operational environments based on use cases in 5 sites.	
Milestones and deliverables	**By when?**	**How?**	**Output and results**
M3.1) Kickoff meeting	[dd.mm.yyyy] Start of phase 3	[e.g. sent by email to lead procurer, on-site visit] Online/site meeting with procurer	Phase 3 planning testing in operational environment and project abstracts (in the format required by the EU for publication).
M3.2) Testing setup in operational site	Week 14 of phase 3	Online/site meeting with procurer	Finetuned plan for site
M3.x) Testing results on sites	Week 22 of phase 3	Online/site meeting with procurer	Progress and test results of site
M3.x) End of phase report	Week 23 of phase 3	End of phase online/site meeting	End of phase report with recommendations
M3.x) Final report	Week 24 of phase 3	End of phase report sent to contact person	End of PCP report with recommendations
M3.x) Summary of results	End of phase 3	End of phase report sent to contact person	A summary of the main results achieved by each contractor and conclusions from the PCP in the format required by the EU for publication.
D3.1) Plan to test solutions in operational environment	Week 1 of phase 3	Online/site meeting and testing plan sent to contact person	Testing plan finetuned and project abstracts (in the format required by the EU for publication).
D3.1a) Interim report on finetuned plan testing sites	Week 2 of phase 3	Online/site presentation	Testing plan finetuned
D3.x) Summary of results	End of phase 3	End of phase report sent to contact person	A summary of the main results achieved by each contractor and conclusions from the PCP in the format required by the EU for publication.
D3.x) Deadline for lessons learned	End of phase 3	Online meeting and deadline agreement	A deadline by which the contractors must agree on the text for the summary of overall lessons learnt and results achieved from the PCP, for publication.
D3.x) Demonstration of services	End of phase 3	Demonstration to the EU	A final demonstration to the EU of the final products or services developed during the 3 phases.
Points to be addressed in report:		Results of services testing in operational environments in 5 sites. End-user evaluation of solutions based on use cases and KPIs. A summary of the main results achieved by each contractor and conclusions from the PCP in the format required by the EU for publication, recommendations.	

Figure 14: Example of PCP performance requirements by phase (the requirements are tailored to each case)

Post-contractual obligations

A R&D contract may include post-contractual obligations, like the commercialisation of the solutions based on the R&D results within a specific period of time (e.g. 3 - 4 years after the completion of the contract).

Contractors will have the responsibility of managing their IPRs after the completion of the contract. This can entail patenting solutions and licensing, but also informing the contracting authority about IPR transfers and compliance with specific restrictions (e.g. to transfer IPR to third parties established in countries under sanctions).

Patenting solutions: Registering a patent gives exclusive rights over the invention for a limited period, normally 20 years. It means that other people cannot make, use, offer for sale, sell or import a product or a process based on the patented invention. It is possible to give someone else temporary permission to use the invention through a patent license agreement or sell the patent to someone else. However, it is not possible to renew a patent after it expires.

How to register a patent?

- If protection is required in only one European country, it is possible to register a patent at national level. Contact can be established with the local patent office for more information..
- For European-wide protection, it is possible to register a European patent with the European Patent Office (EPO). A European patent also needs to be validated by the national patent office in each country where protection is required. Depending on the country's legislation, it may be necessary to provide translations or pay fees within a specific timeframe.
- In case of protection at international level, contact can be established with the World Intellectual Property Organisation (WIPO).

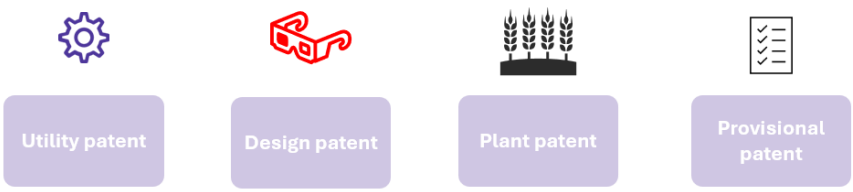


Figure 15: What you need to know before filling a patent

Other post-contractual obligations

There could also be post-contractual obligations for using open-source code repositories like Github or having open hardware licensed blueprints (e.g. using Creative Commons licenses). For more information see: Joinup.

For commercialisation, obtaining the CE mark may be required.

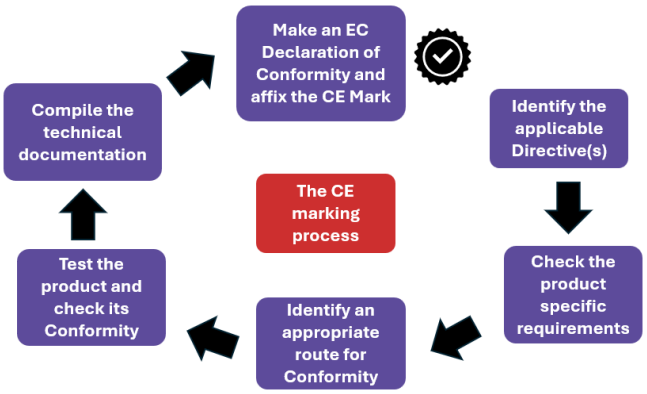


Figure 16: CE-Marking

2.7. Checklist

This checklist is designed to guide suppliers through the various stages of engaging with public sector clients based on the step-by-step methodology developed under the European Assistance for Innovation Procurement (EAFIP). It covers the entire procurement lifecycle for R&D services, from initial engagement during the preparatory phase until the completion of the contract. The checklist also provides insights on managing the unique aspects of Pre-Commercial Procurement (PCP), including the three phases of R&D and the subsequent commercialisation phase.

Pre-Engagement: Preparation and Market Research

1. **Understand the needs and scope**:
    - Review the published procurement notice or request for information to understand the needs and requirements of the procuring entity.
    - Conduct an internal assessment to determine the capabilities, resources, and experience to deliver the required R&D services.
    - Get familiar with the procuring entity's objectives and how a solution could align with its needs.
2. **Analyse the State-of-the-Art (SOTA)**:
    - Assess the current state of the market and available technologies to understand existing solutions.
    - Identify gaps and/or opportunities where your innovative solution could add value.
    - Prepare a document highlighting your competitive advantage and how your solution is in line with the state-of-the-art or beyond.
3. **Participate in the Open Market Consultation (OMC)**:
    - Attend OMC events or consultations organised by the procuring entity to gain insights into its needs and expectations.
    - Engage with stakeholders and potential partners to form consortia if necessary.
    - Prepare a list of questions or clarifications about the scope, requirements, and procurement strategy.

Phase 1: Solution Design

4. **Respond to the Call for Tenders or Requests for Proposals**:
    - Carefully read the tender documents and identify key requirements, evaluation criteria, and submission deadlines.
    - Prepare a proposal that clearly articulates your solution design, innovation potential, and alignment with the procurer's needs.
    - Highlight your team's expertise, past experience in similar projects, and your approach to risk management.
    - Include detailed costing, timelines, and deliverables for the solution design phase.
5. **Plan for collaboration and feedback**:
    - Identify key personnel to work on the project and ensure they are prepared to engage with the procurer.
    - Develop a strategy to incorporate the feedback from the procuring entity into the solution design.
    - Prepare to deliver presentations or demonstrations to showcase the solution.

Phase 2: Prototype Development

6. **Develop a detailed prototype plan**:
    - Outline the development of a functional prototype, including technical specifications, development milestones, testing plans, and quality assurance measures.
    - Collaborate closely with the procuring entity to refine the prototype based on their feedback and evolving requirements.
7. **Monitor budget and resources**:
    - Keep a close watch on resource allocation and budget adherence during prototype development.
    - Prepare contingency plans for any unexpected delays or issues in development.
8. **Conduct testing and validation**:
    - Implement a robust testing and validation process to ensure that the prototype meets all the requirements specified in the tender documents.
    - Document test results and prepare to present findings to the procuring authority.
9. **Maintain clear communication**:
    - Regularly update the procuring entity on progress, challenges, and any changes to the development plan.
    - Ensure that all communications are documented and accessible for future reference.

Phase 3: Original Development and Testing of Limited Volume

10. **Plan for scale-up**:
    - Develop a plan for scaling from prototype to limited volume production, detailing the production process, resource requirements, and timelines.
    - Prepare a risk management plan to address potential challenges during scale-up.
11. **Manage production and quality control**:
    - Implement quality control measures to ensure consistency and adherence to specifications.
    - Coordinate closely with the procuring entity to manage expectations and confirm that all specifications are met.

12. **Prepare for user testing and feedback**:
    - Coordinate with end-users or testers to facilitate real-world testing of the limited volume production.
    - Collect and analyse feedback to identify areas for improvement before proceeding to larger-scale production.

Phase 4: Commercialisation and PPI[24] (Development of Commercial Volumes)

13. **Plan for full-scale production**:
    - Develop a comprehensive plan for transitioning from limited volume to commercial-scale production.
    - Ensure supply chain readiness, identify key suppliers, and finalise agreements for necessary materials and components.
14. **Market readiness assessment**:
    - Conduct a market readiness assessment to ensure the product or service is ready for commercial deployment.
    - Develop a go-to-market strategy, including pricing, distribution channels, and marketing tactics.
15. **Prepare for contractual obligations**:
    - Review the contract terms for full-scale production, including delivery schedules, penalties for non-compliance, and performance metrics.
    - Ensure the organisation is fully prepared to meet contractual obligations.

Post-Contract Management: Continuous Improvement and Evaluation

16. **Manage contractual compliance**:
    - Maintain a system for monitoring contract performance, ensuring all deliverables are submitted on time, and managing any contractual amendments or changes.
    - Address any disputes or issues promptly and in accordance with the contract terms.
17. **Document the lessons learned**:
    - Conduct a thorough evaluation of the R&D process and document the lessons learned.
    - Engage in debrief sessions with the procuring entity to provide and receive feedback.
18. **Participate in evaluations and future opportunities**:
    - Be open to participating in evaluations conducted by the procuring entity to measure the impact and success of the R&D project.
    - Stay informed about future procurement opportunities that may arise from the current project.

[24] For more information, please check EIC Innovation Procurement Toolkit, Chapter 3: Module B, Non-R&D procurement (insert link, when published)

Pre-Engagement: Preparation and Market Research	Phase 1: Solution Design	Phase 2: Prototype Development	Phase 3: Original Development and Testing of Limited Volume	Phase 4: Commercialisation and PPI (Development of Commercial Volumes)	Post-Contract Management: Continuous Improvement and Evaluation
✓ Understand the needs and scope	✓ Respond to the Call for Tenders or Requests for Proposals	✓ Develop a detailed prototype plan	✓ Plan for scale-up	✓ Plan for full-scale production	✓ Manage contractual compliance
✓ Analyse the State-of-the-Art (SOTA)	✓ Plan for collaboration and feedback	✓ Monitor budget and resources	✓ Manage production and quality control	✓ Market readiness assessment	✓ Document the lessons learned
✓ Participate in the Open Market Consultation (OMC)		✓ Conduct testing and validation	✓ Prepare for user testing and feedback	✓ Prepare for contractual obligations	✓ Participate in evaluations and future opportunities
		✓ Maintain clear communication			

Figure 17: Checklist

Disclaimers

The Toolkit is subject to the following exclusions, assumptions and qualifications:

• The Toolkit has been produced as part of the contract signed by the Consortium Deloitte, Corvers and Intellera (the "Contractor") with the European Innovation Council and SMEs Executive Agency ("EIC/EISMEA"), acting under the powers delegated by the European Commission, having as subject matter the "Strategic use of procurement to open up business opportunities to EIC innovators", also called the Strategic Innovation Procurement Programme (SPIN4EIC) with the number EISMEA/2022/OP/0022 (EISMEA/2023/OP/0003). The information and views set out in this Toolkit are those of the author(s) and do not necessarily reflect the official opinion of EIC/EISMEA. The EIC/EISMEA does not guarantee the accuracy of the data included in this study. Neither EIC/EISMEA nor any person acting on the EIC/EISMEA's behalf may be held responsible for the use which may be made of the information contained therein.

• The Toolkit is drafted mainly based on European legislation, EU policy enactments, relevant case law emanating from the European Court of Justice, documents used in other EU projects and other articles and materials addressing the issues pertaining to the implementation of innovation procurement methodologies. Other sources worldwide have been used to provide information with a wider geographical coverage for innovators aiming to participate in tenders in other jurisdictions. In drafting the Toolkit, the author(s) has relied on the accuracy and completeness of the referring documents/information thereunder. All sources of information are duly referenced in the Toolkit.

• The Toolkit provides theoretical background (based on, e.g., legal provisions under relevant pieces of legislation, legal analysis and interpretation thereof), as well as practical guidance based on case examples, which innovators (companies, particularly SMEs and startups) could revert to when participating in innovation procurement tenders or when implementing an innovation procurement project. It also includes examples of formulation of text which could be used for tender preparation. However, the information provided should be deemed as mere recommendation, subject to further amendment and tailoring on a case-by-case basis, taking into account:

a. the specific needs of public procurers and what suppliers can offer;

b. the need to ensure compliance with the legal provisions governing the procurement procedure and the activity of public procurers concerned, in force in the Member State in which the procurement is being prepared, conducted and implemented;

c. the need to ensure compliance with internal policies and/or regulations that bound the public procurer(s) to prepare and conduct the innovation procurement project(s).

The Toolkit also includes examples from templates of procurement documents used by public procurers implementing innovation procurements. The examples from templates included in the Toolkit are drafted based mostly on tender documents used in various EU-funded PCP and/or PPI projects. The examples from templates are mainly based on the provisions of the European legislation governing public procurement. Nevertheless, references from other jurisdictions and particularly related to the Agreement on Government Procurement (GPA) of the World Trade Organization (WTO) have been used.

• The Toolkit and examples from templates may be used by innovators/suppliers as general guidance for the drafting of their own tender proposals, and further tailored to their specific case and applicable legislation. As there are always certain legal concepts which exist in one jurisdiction and not in another, proper legal assistance should be sought to adjust them according to specific case-by-case requirements.

• The content of the reports, policy documents, communications, guidelines, opinions, or memoranda from any other person or entity referred to in the Toolkit, is and remains the exclusive responsibility of that person or entity.