



IMPRESS PCP EXECUTIVE SUMMARY

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The aim of the IMPRESS Project is to develop an interoperable platform consisting of modular hardware and software components based on a cartridge-within-cartridge concept with standardized interfaces. The interoperable platform would bring the possibility to perform complementary and correlative measurements, to develop novel correlative experimental workflows using different TEM instruments with methodological options that are not yet satisfied by commercially available electron microscopes, and to extend it to research communities other than TEM. The solutions will be delivered at Technology Readiness Level (TRL) 8 through a Pre-commercial Procurement (PCP).

1. What is a Pre-Commercial Procurement (PCP)?

Pre-Commercial Procurement (PCP) is a process that enables public entities to purchase R&D services from the market to develop innovative solutions for specific needs, when there are no solutions on the market. The process is typically composed of several phases, beginning with funding multiple companies to design potential solutions. This is followed by the development and testing of prototypes. After rigorous evaluation, the most promising prototypes are selected for further development and potential implementation. This multi-stage approach ensures a competitive and diverse range of innovative solutions.

2. How is the PCP organised?

The PCP is organised in three different phases.

- Phase 1 – Solution design (planned from June 2024 to October 2024): Selected companies will design solutions for the interoperable platform and verify their technical and economic feasibility.
- Phase 2 – Prototype implementation (planned from December 2024 to July 2025): First prototypes will be developed by the companies and tested at FZ Jülich.
- Phase 3 – Validation and demonstration of the solutions (planned from September 2025 to May 2026): Final prototypes will be tested and validated in operational environments at different testing sites.

To select the companies best able to satisfy the goals of the PCP, the number of candidates is reduced at each Phase. The number of companies / consortia of companies involved in the PCP will gradually be reduced from a maximum of five (5) in Phase 1 to a maximum of two (2) in Phase 3.

The PCP is designed in a way that allows companies to start with the simpler tasks before gradually moving to more complex ones. They start with the design of solutions that will be tested first at FZ Jülich and then validated in several operational environments.

3. How to participate in the PCP and get involved in the various phases?

All companies willing to participate in the IMPRESS PCP must submit a bid following the instructions detailed in Tender Document 1 (TD1) Call for Tenders. The deadline to receive bids is 26th April 2024.

Companies can bid individually or form consortia to better fulfill technical and functional requirements.

Companies that have successfully completed a PCP phase will be invited to submit a bid for the next phase.

4. What are the eligibility rules?

Participation in the tendering procedure is open on equal terms to all types of operators, including research technology organisations, from countries that are signatories of the GPA-WTO and willing to perform the majority of R&D in EU Member States and Associated Countries.

Nevertheless, participation in the PCP is not open to organisations based in countries excluded from the Horizon Europe Innovation Actions “in any capacity” even though they are GPA-WTO signatories.

For the sake of clarity, all contractors and subcontractors must be based in one of the following countries.

- EU countries: Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.
- GPA-WTO countries: Armenia, Australia, Canada, Iceland, Israel, Japan, the Republic of Korea, Liechtenstein, Moldova, Montenegro, the Netherlands with respect to Aruba, New Zealand, Norway, Singapore, Switzerland, Taiwan, Ukraine, the United Kingdom and the United States.

As stated above, the majority of R&D activities must be performed in EU countries and/or countries associated to Horizon Europe. For the sake of clarity, these countries are:

- EU countries: See above list.
- Countries associated to Horizon Europe: Albania, Armenia, Bosnia and Herzegovina, Faroe Islands, Georgia, Iceland, Israel, Kosovo, Moldova, Montenegro, New Zealand, North Macedonia, Norway, Serbia, Tunisia, Türkiye, Ukraine and United Kingdom.

5. What is the available budget?

Companies (or consortia of companies) that go through the three phases of the PCP can receive support up to 710,000 € distributed as follows:

- Phase 1: A maximum of 60,000 € per company / consortia of companies
- Phase 2: A maximum of 400,000 € per company / consortia of companies
- Phase 3: A maximum of 250,000 € per company / consortia of companies

6. IPR ownership

Background Intellectual Property (IP) remains the property of the organisation that generated it. Likewise, the IP produced by the companies within the PCP belongs to the organisation that generates it.

Companies are authorized to protect their IP, but they are required to share their results on the IMPRESS FAIRcube platform (in compliance with the open hardware and open software approach of the IMPRESS PCP). Companies that have completed Phase 2 and Phase 3 will be required to share publicly technical information about their prototypes, including API definition and documentation, after the completion of Phase 3. At the very least, this information should be provided in the form of a 3D model of the prototypes. However, companies are invited to commit to sharing more information (e.g. dimensions of the prototypes and materials and fabrication protocols used) in the spirit of co-creation and co-development with other organisations. The requirements for documenting and data sharing are part of the award criteria.

Finally, companies are requested to commercialise their new solutions developed in the PCP within a period of four (4) years after the end of the PCP.

For more details, see the tender documents and in particular Tender Document 1 (TD1) Call for Tenders and Tender Document 10 (TD10) Framework Agreement.

7. The CAT cartridge concept

The CAT (Correlative, Adaptable, Transferable) cartridges that will be developed in the framework of the IMPRESS project will have a standardised interface, so that they can be transferred between TEMs and other analytical tools.

The CAT cartridges must be compatible with sample and aperture planes on each TEM column (independently of the brand of the TEM), so that devices such as novel phase plates can also be tested and used at other positions in the column, including the sample plane where a greater variety of imaging and analysis modes are available.

The CAT cartridges must be designed so that they can be loaded in an automated or semi-automated way into TEM specimen and aperture holders and other instruments for preparation and characterisation, including surface science tools and transport measurements, microfocus X-ray tomography instruments and synchrotrons, while retaining sample cleanliness and the possibility for samples to be cooled, heated, in vacuum or in an inert gas across preparation methods and analytical techniques.

For sample transfer and studies of non-standard geometries that do not fit through conventional goniometers or aperture barrels, the CAT cartridges will be compatible with vacuum transfer suitcases that can be attached to other available ports on TEM columns and with other correlative instruments and techniques.

For more details, see the tender documents and in particular Tender Document 1 (TD1) Call for Tenders and Annex 2 Use cases.

Disclaimer: This document is solely published for the purpose of summarising the key aspects of IMPRESS PCP but has no binding effect. Please note that only the official information contained in the tender documents is legally binding. Technology providers are responsible to ensure that their bids are fully compliant with the provisions of the tender documents.