COMMUNICATION PLATFORM FOR TENDERS OF NOVEL TRANSPORT NETWORKS



HIGHLIGTS

Newsletter No. 6

The sixth issue of the COMPLETE newsletter features Philippe Segers (GENCI) on his experience and activities within PRACE-3IP and the PCP pilot for procurement of innovation for the public sector.



This issue has been prepared in collaboration with PRACE.

Dear Readers,

In the last issue of the COMPLETE newsletter we interview the coordinator of PRACE PCP activities, Philippe Segers, the Work-Package Leader of PRACE-3IP WP8—Pre-Commercial Procurement (PCP) Pilot on "Whole System Design for Energy Efficient HPC".

PCP is an instrument promoted by the European Commission (EC) to foster innovation through public procurement. It allows to procure research and development services to enable development of new solutions which would otherwise likely not be available. By design a PCP is organized as a multi-phase, competitive process. The goal of the PCP carried out by a Group of Procurers within PRACE-3IP (5 Countries) is to facilitate whole system design for energy efficient HPC that should lead to HPC solutions, which on the one hand are suitable for operation within the PRACE infrastructure of leadership class systems for scientific computing, and on the other hand significantly improves on energy efficiency. The bidders were given the freedom to propose different solutions with respect to how to achieve improvements in terms of energy efficiency. These improvements in energy efficiency must be demonstrated through the use of real production application codes and a subset of benchmark suite in use by PRACE.

Your sincerely,

Bartosz Belter, the project Coordinator

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PCP Success Stories: interview with Philippe Segers (GENCI)



PRACE PCP: "Whole System Design for Energy Efficient High-Performance Computing (HPC)"

Can you provide some examples of good practice during your PCP?

The first good practice is to organize well in advance an Open Dialogue event and to make use of it to redefine the selection criteria, and other requirements, if necessary. The PRACE-3IP PCP was the first PCP that was implemented in the HPC market segment. Therefore, there was a clear need for creating awareness in the market about this new procurement instrument and its implications. A second Open Dialogue event could have been organized just before launching the call for tender, as the process to design the Procurement procedure took more the one full year, it would have been a good opportunity to further explain this complex process to potential bidders.

Another good practice was the use of a set of the so called "benchmark" codes, from the "Unified European Benchmark Suit", that allow us to test the result of the R&D developed by vendors on the usage by our community. As we allow our vendors a lot of freedom to choose the best way to tackle our goal of "Integrated System Design for Energy Efficient HPC", this real life set of benchmark, along with the constraint to demonstrate it on a near production system, worked as a restoring force, keeping this R&D on track to produce effective "pre-production" results.

There was also the ability to move the cursor on our set of criteria, asking for highly innovative low TRL in the first phase of the PCP, to higher TRL closer to the market at the end. Wide scope of innovation allowed in the beginning, delivering useable R&D output.

In our case the identification of the need was clear from the beginning. A good practice in this regard would be to make use of a: SMART (Specific, Measurable, Achievable, Relevant, and Time related) analysis for the need. If you don't have a strong solvent demand, of if you see during the ODE that there is a strong risk that this demand cannot be fulfilled by vendors (in the time frame of our PCP and with your available budget), maybe it is better not to start. There is a window of opportunity for a PCP, to translate reachable R&D into precommercial product. The HPC community has a very good understanding of state-of-the-art technologies due to a good understanding of HPC architectures and the communication with technology and solution providers. This is something mandatory in our field of work. If you don't have these internal R&D skills, which is the more common case, when a procurer only have functional knowledge of its need, you should chose very carefully from the start some external consultancy that could help you to assess what is reachable, within your budget.

Can you name specific points of attention with regard to the implementation of your PCP?

Intellectual Property Rights (IPR)

In the case of PRACE, since it was the first PCP on HPC there were no other projects to take as a reference but a good idea is to check how similar projects handle this aspect, considering also the <u>Background Intellectual Property Rights (IPR) and the 3rd party software</u> to avoid a blockage situation. For companies in the HPC market (and similarly in many other markets) that perform a significant amount of R&D themselves, protection of their IPR is crucial. A strategy that is not putting protection of their IP at risk is therefore crucial as these companies would otherwise consider it too risky to bid within a PCP.

Set-up of the interphases selection process

It was necessary to accommodate the duration of the interphase selection process to the planned schedule for the whole PCP process and also to clarify the distinction between the end of reporting phase and the bid for the next phase. A trade-off must be found, between having a short interphase, that is very interesting, especially for SMEs, avoiding to let a team "waiting" before the decision of being awarded the next phase, and a longer, that allow the Assessment Committee to fully assess the result of a phase and provide guidance for the next one.

Right choice of initial number of participant bidders

When the number of the pre-selected bidders is very limited, especially when the number of total participants is also reduced, the spectrum of different technical approaches offered to choose narrows accordingly and increases the risk of ending up with similar technical proposals. On the other hand, allowing too much bidders on the first phases diluted the budget. Here also a trade-off must be found.

Coordination and communication

Since the procurers are based in different countries it's more difficult to arrange for regular face to face meetings. In this case when resorting to electronic communications it's crucial to have in place, secure electronic means of communication, including standard certificates, to avoid risks of confidentiality breach.

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At the same time, a dedicated secure platform allows the procurers to safely exchange information between them and also to exchange that information with each of the providers individually. Having one partner acting as Procuring Entity, one acting as Project Leader of the PCP work-package (within a larger FP7 project) and a third one acting as PMO of the whole project, while there was rotation among partners regarding the chairing of the Procurer Group, proved to have required a lot of effort for coordination and communication. Finally, within a quite long process (more than five years) it was difficult to keep the same team from start to the end, with departures at key roles of the project that prevent a full capitalization of the lessons learned during the whole process.

Contracting in different jurisdictions

Vendors and procurers need to be ready to perform the contracting in a foreign jurisdiction thus it is important to clarify from the beginning of the procurement the applicable rules to that specific contract to avoid future disputes in this regard, also in relation to the financial aspect. At the same time, European rules need to be taken into account when applicable, in particular taxation rules. Specific local implementation of the EU laws also played a important role, for instance the Italian public procurement procedures used within our PCP have lessen flexibility for this PCP.

How do your initially defined goals and final outcomes compare?

Since the PRACE PCP is still ongoing, this comparison cannot be made at this point in time. Before a complete assessment of the final outcomes we already could distinguish some positive side effect, such as some of the tools designed to monitor the R&D performance, that seems to be promising, and the fact that both the Procurer Group and the vendors have gained a better view on the Total Cost of Ownership (TCO) of our systems. The methods developed to asses this PCP will be reused in other regular procurement.

What was the input received from the PCP suppliers regarding their participation in the PCP?

The feedback from the PCP suppliers was very positive. However, some suppliers did not participate due to the IPR constraints and also due to the process as such, which was perceived as complex.

The strongest positive feedback is with regard to the flexibility allowed by the multiple phases' process. First it allows the vendors to have the phase of design funded by the project, which is highly important especially for SMEs. In a "regular" R&D procurement the full cost of the design of the solution must be handled by the company, before competing without a guarantee of being selected and get a chance to cover this cost. This could be a high risk for a SME, avoided thanks to the PCP process.

Another benefit came directly from the multiple phase process, the possibility to modify the design from one phase to the next one, and even do withdraw without cost (which happen to one of our vendors between phase I and phase II). This limits the risk for the vendor of a binding commitment to provide a certain solution or a certain amount of performance that could become inaccessible along the line for exterior reasons, such as unforeseeable change in the roadmap of provider. Mitigating this contractual risk could allow vendors to take a lot more risk in their design.

What is your feed-back about the procedures that you put in place in your PCP?

In general, most of the procedures worked as expected. We underestimated, however, the time needed for decision making within a Group of Procurers. As a consequence, we did not meet the aggressive timeline foreseen for transition between the different phases, i.e. the time between submission of bids for the next phase and award of the contracts. The multiple governance also render more complex and longer decision- making process.

In the context of HPC, which is by definition the cutting edge of Scientific Computing, it was sometimes challenging to target and to define "beyond state of the art" R&D vs "incremental" R&D. This was even more difficult within such a long process, where the industry was already moving fast. One way to avoid this pitfall would have been to use a two-phase process, combining design and prototyping. Still, what was very positive and worked very well in our procedure is that it allowed vendors and buyers to better know each other, not at the level of co-design, but a lot better than in a regular procurement.

What would you do different in the implementation of the PCP if you could start all over again?

The timing for the different phases and the whole procurement could have been done differently, including an initial Open Dialogue much earlier and also a second Open Dialogue Event after the publication of the Tender call, to better explain the process.

If allowed, moving from a three phases process to a two phases process, combining design and prototyping phase should be considered. Also, moving to a negotiated procedure model instead of an open procedure model, which is a good practice of our community, allowing us to design a more narrowed and focused scope for our R&D target.



Designing a more unified governance framework, with one entity in charge as the Procuring Entity, the project leadership and the chair of the Group of Procurer. Having a clearer chain of command, defining more effectively who is in charge.

What could be improved in the procedure for PCPs as foreseen by the EC?

The changes introduced already regarding the new Directive are very welcome, in particular having templates which were not available at the time when the PRACE PCP was launched.

Clarifying if two phases and negotiated procedures are allowed or not.

What would be the final lessons learned and recommendations that you would like to share with other potential user of the PCP instrument?

- It is important to support the real involvement of SMEs taking into account their financial constraints. PCP could really be a useful instrument to help SMEs achieving innovation.
- The R&D target must be commensurate with the project budget. It could be a leverage of inhouse effort of the vendors, but still need to be kept attractive, especially with regard to the IPR (background and foreground involved).
- The effort to evaluate the R&D outputs should not be underestimated; this is something very different from measuring a standard performance.
- Last but not least, it is challenging to motivate and keep motivated a team on such a halflegal half technical, multi-cultural project. It is also challenging to coordinate legal and technical expertise.

Thank you Philippe for your time. Please accept our congratulations on the project achievements made so far! We wish you a successful project finalization!

About PRACE

PRACE is an international not-for-profit association under Belgian law seated in Brussels. Its founding members have been working together since 2004 in initiatives such as HPCEUR, HET, and the first Scientific Case for HPC in Europe, to create a pan-European HPC Research Infrastructure. With funding from the European Commission's Seventh Framework Programme (FP7) the PRACE Preparatory Phase Project (PRACE-PP) started in 2008, resulting in the creation of PRACE aisbl (Association international sans but lucratif) in 2010. Four Hosting Members (France, Germany, Italy and Spain) secured funding for the initial period from 2010 to 2015, while all PRACE project partners continued to develop the services and brand of PRACE in three FP7-funded Implementation Phase projects (PRACE-1IP, PRACE-2IP, PRACE- 3IP) and two under Horizon 2020 (PRACE-4IP and PRACE-5IP).

PRACE started with 21 members and today boasts 24 members and 2 observers. In October 2016, PRACE welcomed a fifth Hosting Member: Switzerland.



Partnership for Advanced Computing in Europe

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