Transnational Access Programme for a Pan-European Network of HPC Research Infrastructures and Laboratories for scientific computing

Reporting

Project Information

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Periodic Reporting for period 2 - HPC-EUROPA3
(Transnational Access Programme for a Pan-European Network of HPC Research Infrastructures and Laboratories for scientific computing)

Reporting period: 2018-11-01 to 2020-04-30

Summary of the context and overall objectives of the project

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In the last years, numerical simulation methods have come to prominence and are at the base of new gains in knowledge and progress in all scientific domains. At the same time, the panorama of High Performance Computing (HPC) in Europe has reached a remarkable level of consistency, and it could reach a still further level of completeness thanks to the Transnational Access (TA) model that is offered by the HPC-Europa initiative. In this scenario, complementing the long-established techniques with the use of numerical simulation has become an increasingly important scientific method of advancing the careers of European researchers.

Thanks to HPC-Europa3, researchers are being supported in the use of HPC throughout their scientific careers until they become self-sufficient users of the large-scale facilities included in the pan-European initiative for supercomputing, leading to maximum exploitation of the experience gained and of the scientific network created through the HPC-Europa programme. The objective of HPC-Europa3 is to implement a programme of TA visits, giving European-based researchers the opportunity to spend a period of time (on average 7 weeks) at one of the HPC centres partners of the project, collaborating with one of the associated research teams (host labs), and to benefit from using some of the most relevant HPC research infrastructures in Europe complemented by strong technical on-site support from staff with varied expertise.

To summarize, targets of HPC-Europa3 are:

¬ 1.098 visits expected in the project lifespan in more than 200 host research groups in the associated countries;
¬ Wide participation of the EU computational science community: applications to be invited from all eligible countries and a wide range of disciplines;
¬ New Regional Access Programme for Baltic and Western Balkans regions with 80 visits and strong targeted support;
¬ Expected visitor successes: joint publications with hosts, repeat or reciprocal visits, new joint research grants, and visitors gaining research posts in their former host departments;
¬ TA users’ meetings to allow users of all levels an early opportunity to present their work;
¬ Increase awareness of HPC among SMEs via the organisation of dedicated workshops;
¬ Increase synergy and relationship with PRACE and other HPC initiatives with the signature of Memorandums of Understanding;
¬ Identify a sustainability roadmap to facilitate the access to HPC resources for EU researchers in the future.

Work performed from the beginning of the project to the end of the period covered by the report and main results achieved so far

After the first six months spent to set-up of all necessary procedures and tools to manage the visits, the consortium actively started the execution of the Transnational access programme.

In the first 36 months of the project, the TA team has co-ordinated 11 calls for applications (including dissemination, support in the application preparation phase, review of the applications, organisation of the SUSP meeting to rank the applications, and then organisation of the approved visits to each centre). Up to call 11, 782 applications were received, of which 614 were accepted (78%). Applications were received from researchers in 32 European and associated countries and also from outside Europe, with a broad range of scientific disciplines represented. Among applicants there was a broadly even split between postgraduate students, postdoctoral researchers, and senior
researchers, and the number of female applicants stood at 23% - higher than in previous HPC-Europa programmes.

The period has seen the first Transnational Access Meeting for users taking place in Edinburgh on the 23rd of October, with a high number of visitors attending enthusiastically to present their achievements. Unfortunately, the second Transnational Access Meeting for users should be re-scheduled due to the COVID-19 pandemic, but the event is now being organised in the Autumn as an online one.

The networking activities in HPC-Europa3 are devoted to strengthening the collaboration between HPC centres and research communities in a mutually beneficial partnership, leading to a considerable enhancement of scientific progress in Europe. Various Memorandums of Understanding (MoU) for collaboration have been signed with different EU Centres of Excellence, other EU projects and PRACE. Three workshops for SMEs have also been organised in Stuttgart (Germany), Milan (Italy) and Edinburgh (UK).

In parallel, the activities related to the JRA have been also successfully completed with a number of public deliverables being produced to help researchers for portability of their applications to different HPC centres.

**Progress beyond the state of the art and expected potential impact (including the socio-economic impact and the wider societal implications of the project so far)**

HPC-Europa3 ensures that European researchers can gain easy and supported access to state-of-the-art HPC infrastructures, thereby boosting the competitiveness and innovativeness of the European scientific community through cutting-edge research. HPC-Europa3 also introduces a regional dimension to the previous TA model by providing targeted action in geographical regions to enable the largest HPC centres in the locality to support researchers by improving their HPC competences and disciplinary know-how, to equip them to apply for access to larger HPC facilities and to compete for HPC resources on a more equal basis with researchers working in larger countries. This will increase the competitiveness for the access to the top level of the HPC infrastructure pyramid represented by PRACE.

The closer interactions between a larger number of researchers active in and a number of infrastructures provided by HPC-Europa3 facilitates cross-disciplinary fertilization and a wider sharing of information, knowledge and technologies across fields and between academia and industry.

- Building on an existing extensive network of scientific hosts, an outreach programme aims to identify new host research groups, leading to increased chances of finding a good match of research interests for each applicant.
- Productive links between research communities in different countries is established, resulting in joint publications, subsequent reciprocal visits, and visitors securing research vice versa positions in their former host groups, with the potential to stimulate the structuring of pan-European collaborations.
- Innovation is fostered through a reinforced partnership of research organizations with industry.
- Strong existing links will be promoted between HPC-Europa centres and their industrial partners, i.e. technology providers and partners from projects such as ETP4HPC.
- Specific activities will be carried out to engage with the SMEs in order to increase awareness on the advantages of the use of HPC in the development of new product or services and to increase
innovation.
A significant impact is expected as the consortium builds on a strong existing partnership of some of
the leading HPC centres in Europe, who have long experience of opening up their HPC infrastructures
to the full European user community, and have been successful in attracting an extremely wide variety
of users, both in geographic terms and in terms of application area.

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