

PROJECT PERIODIC REPORT

Publishable Summary

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Project acronym: PRACE-3IP

Project title: PRACE – Third Implementation Phase Project

Funding Scheme: Combination of Collaborative projects & Coordination and support actions

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Periodic report: 1st 2nd 3rd 4th

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Project Objectives



Figure 1: PRACE Members and Project Partners

Infrastructure (RI) created in April 2010. It continues, complements, and extends the work of the PRACE-1IP and -2IP projects. PRACE-3IP addresses the computational and simulation needs of European scientific communities and of industry to keep them at the forefront of discovery. The overall goal of PRACE is the formation of an integrated HPC ecosystem of facilities and services enabling researchers to realise the full potential of computational science within the supportive environment of the ERA.



Figure 2: PRACE-3IP All-Hands Meeting, Varna, June 2013

and commerce. The PRACE RI is open for use by SMEs and large European businesses, offering Tier-0 and Tier-1 access, training, and applications support. Applications support and enabling has a bias towards addressing major socio-economic challenges. Best practices are

PRACE, the Partnership for Advanced Computing in Europe, has been established as a pan-European Research Infrastructure providing outstanding computing services to enable world-class research on world-class systems. PRACE secured funding from four European countries that committed to host leading-edge computers at the highest performance level in Europe. Twenty-four PRACE members collaborate in the Third Implementation Phase (PRACE-3IP) project, the last project in the series of implementation phase projects for advancing the Partnership for Advanced Computing Research Infrastructure in the 7th Framework Programme. PRACE-3IP supports the accelerated implementation of the pan-European HPC Research

The PRACE-3IP project undertakes a joint Pre-Commercial Procurement (PCP) pilot to obtain a solution for a ‘Whole System Design for Energy Efficient HPC’. This pilot is the first of its kind on a Europe-wide level and the lessons learned will be invaluable for PRACE in its future procurement strategy and for Europe as a whole in using PCP as a driver for innovation.

PRACE-3IP delivers a broad set of services suitable for use by industry

identified, documented and made available to the European HPC community from academia and industry.

PRACE-3IP has a broad training and outreach activity designed to engage more user communities, including industry, in the use of HPC. The next generation of students and researchers are introduced to the benefits of HPC and the technologies and knowledge required applying it successfully in their discipline. PRACE-3IP considerably strengthens and deepens the co-operation between HPC centres, funding bodies and research communities in a mutually beneficial partnership to enhance European scientific and industrial competitiveness.

Work performed and Main results

Twenty-four months after its start in July 2012 the project has achieved all important milestones building on the successful work of the 1st and 2nd Implementation Phase Projects. Only the PCP pilot is planned for 48 months and thus still ongoing.

Joint Pre-Commercial Procurement

The call for the Pre-Commercial Procurement (PCP) pilot was published on 22nd November 2013 in the Supplement to the Official Journal of the European Union, dedicated to European public procurement via the Tenders Electronic Daily (TED). The Assessment Committee was established after the deadline for reception of offers from vendors on 24th February 2014, according to Italian legislation. CINECA finalised the selection for 1st PCP Phase. Contracts will be awarded to the following companies: BULL SAS, E4 Computer Engineering SpA, EUROTECH SpA, Maxeler Technologies Limited, MEGWARE Computer Vertrieb und Services GmbH (in alphabetical order). These five companies entered the first phase of the Pre-Commercial Procurement process.

Training and Dissemination

Several models for the transformation of the PRACE Advanced Training Centres into a permanent training offer under the PRACE Research Infrastructure were proposed. The PATCs were continued and extended for dedicated training for industrial end users. The PATCs trained more than 2700 persons in 360 training days. The internship programme Summer of HPC 2013 attracted 187 interested students for 24 places. A smaller Summer of HPC programme was prepared and organised in 2014.

Service for Industrial Users

An effective and integrated set of high-level services aimed to the specific needs of industrial users and SMEs, was designed and piloted. The pilot of an Integrated Access Programme (IAP), the SME HPC Adoption Programme in Europe (SHAPE), was implemented and attracted 14 applications out of which 10 were selected. Models and best practices were analysed and legal questions addressed. Recommendations for a sustainable SHAPE programme run by PRACE were proposed. One Shape Pilot has been awarded at the IDC HPC Innovation Excellence award competition on 24 June 2014 during the ISC 2014 Conference in Leipzig, Germany.

Technical Work

The successful operation of six Tier-0 services (JUQUEEN, CURIE, HERMIT, SuperMUC, FERMI and MareNostrum) was continued. In addition to the Tier-0 services also new Tier-1 sites have been included, resulting in a total of 24 Tier-1 operational systems at the end of the second year. The coordination of the activities of the PRACE Security Forum was continued. Several tools and services were evaluated and made available to the PRACE users. With

XSEDE a call for proposals has been issued for technology collaboration between PRACE and XSEDE. Three proposals were selected to enhance the interoperability between the two infrastructures. These projects started in April 2014 and will continue until the end of September.

Enabling support for HPC applications codes is provided for applications selected via the PRACE Preparatory Access, through DECI, or to address socio-economic challenges. These challenges were identified based on the input of the Scientific Case for HPC in Europe (PRACE Scientific Case) with the valuable input of the Scientific Steering Committee. The most promising tools, algorithms and standards for optimisation and parallel scaling that have recently been developed through research and experience in PRACE and other projects have been identified and used for applications enabling. The Unified European Applications Benchmark was updated.

Expected final results

At the end of the project, the PRACE Research Infrastructure (RI) should have achieved major milestones in its implementation and be able to continue the developed services in a sustainable way – using the results of the work funded through this project:

- Successful execution of the PRACE PCP pilot on a “Whole System Design for Energy Efficient HPC”. Lessons learned for the application on PCP in the field of HPC will help to shape PRACE future procurement strategy;
- Stable operation of the distributed Tier-0 and Tier-1 infrastructure with a comprehensive set of common services;
- A rich portfolio of applications especially addressing the socio-economic challenges and users of the Tier-0 infrastructure with close links to Tier-1;
- Six Tier-0 systems in operation, meeting the needs of European users;
- PATC curriculum extended to include training targeted towards the needs of industrial users;
- Pilot of an Integrated Access Programme for industrial users, the SME HPC Adoption Programme in Europe (SHAPE).

Except for the PCP, which is still progressing according to plan, all of these results have been achieved.