Welcome to the PDC Business Newsflash!
The newsflashes are issued in the PDC newsletters or via the PDC business email list in accordance with the frequency of PDC business events. Here you will find short articles about industrial collaborations with PDC and about business events relevant for high-performance computing (HPC), along with overviews of important developments and trends in relation to HPC for small to medium-sized enterprises (SMEs) and large industries all around the world.

Upcoming Calls and Events

Infrastructure on High Performance Computing

HPC Europa3
Call for Applications

Next cut-off date:
Call #14 - 12 November 2020 at 23:59

Next cut-off dates (tentative):
Call #15 - 18 February 2021 at 23:59
Call #16 - 13 May 2021 at 23:59

Note that KTH has reached its allocation of visitors. If you would like assistance applying to an HPCE3 call to visit another HPC centre, please contact staff@hpc-europa.org. For a list of the HPC centres participating in this programme, please see http://www.hpc-europa.eu/hpc_sites.

Preparatory Access Type-D Calls

Next cut-off dates:
1 December 2020 – 11:00 AM CEST
1 March 2021 – 11:00 AM CEST
1 June 2021 – 11:00 AM CEST
1 September 2021 – 11:00 AM CEST

SHAPE 12th Call is now open
Closing: 1 December 2020 – 10:00 AM CEST

If you are interested in applying to any of the calls above and would like some assistance, please contact the PRACE coordinator for Sweden, Dr. Lilit Axner (lilit@kth.se).

Next PRACE DECI Call
Expected to open: 15 December 2020

If you would like assistance applying to a DECI call, please contact the DECI coordinator at PDC, Dr. Michaela Barth (caela@kth.se).
In line with its mission, the Partnership for Advanced Computing in Europe (PRACE) runs a fast track call for proposals for projects that will use supercomputers to contribute to the fight against COVID-19. A scientific committee established by PRACE leads the review process and evaluates proposals within one week. Selected projects are given access to Europe’s most powerful supercomputers. Those projects can also receive data storage and sharing solutions in line with the open data policy applicable to the call.

For details about the call, see https://prace-ri.eu/prace-support-to-mitigate-impact-of-covid-19-pandemic. If you are interested in applying to the call and would like assistance, please contact Dr. Lilit Axner (lilit@kth.se), the PRACE coordinator for Sweden.

The PDC Center for High Performance Computing at the KTH Royal Institute of Technology is one of the PRACE third parties that provide resources to support the research against COVID-19 via the Swedish National Infrastructure for Computing (SNIC). At the time of writing PDC had already accommodated one PRACE “fast track against COVID-19” project, known as Epi-EWS, from a Spanish company called Mitiga Solutions. The underlying problem that is being addressed by this project is the definition, adaptation and refinement of models that help to detect and contain the spread of epidemics in a timely manner, especially for populations on the move. Specifically, the model will be tuned to the case of COVID-19.

According to S. Rubrichi, an expert in Biomedical Engineering, “human behaviour factors, like mobility and social interactions, are crucial drivers for disease transmissions, as these can substantially alter the probability of encounters, patterns of exposure, and the likelihood of disease propagation”.

The principal investigator (PI) of the project and CEO of Mitiga Solutions, Dr. Alejandro Marti, says that this problem motivated the proposal of the Epi-EWS project, which consists of developing an early warning system (EWS) that will be able to provide early detection of epidemic outbreaks, accurate predictions of the spread of disease, and assessment of the economic impact of the outbreak.

Dr. Marti continued on to say that in order to achieve this general objective, it will be necessary to model the evolution of a large number of individuals related to the development (or absence thereof) of an epidemic outbreak. This model must take into account the habits of the individuals, their relationship with the environment, the spread of the disease, the performance of specific controls and, if necessary, the treatment of the disease.

This implies a highly complex system, which would be extremely difficult to build using, for example, analytical models. For this reason, this proposal will be based on Agent-Based Modelling and Simulation (ABMS) for simulating the behaviour of individuals as this approach is better suited for simulating complex systems, especially since these simulation tools can leverage the computational power of high-performance computing (HPC) platforms.

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Sweco is Europe’s leading architecture and engineering consultancy company, with sales of approximately 20.6 billion SEK (1.9 billion EUR). The company plans and designs the sustainable communities and cities of the future. The results of Sweco’s work are sustainable buildings, efficient infrastructures and access to clean water. With 17,500 employees in northern Europe, Sweco offers its customers the right expertise for every project. They carry out projects in 70 countries annually throughout the world.

As part of its research and development process, Sweco performs Computational Fluid Dynamics (CFD) simulations for large-scale built environment and industrial problems with OpenFOAM utilizing hundreds of processor cores to increase the efficiency and accuracy of the results to serve its customers better. Sweco’s simulations cover indoor air solutions, wind engineering, heat transfer, water engineering, particle-laden flows and various industrial applications.

Thanks to a recommendation by a colleague from the Swedish branch of Sweco, some of these simulations are carried out on supercomputer systems at the PDC Centre for High Performance Computing. From Sweco’s perspective, PDC’s price to performance ratio makes the use of PDC’s facilities attractive, along with the facts that standard shell enabling is straightforward at PDC and that PDC offers Linux-to-Linux usability plus good support for compiling and solving any other problems.

Sweco pointed out that, when it comes to their researchers using high-performance computing systems to run their simulations, the queuing system and its implications are very important because Sweco is a consultancy business. That means Sweco researchers do not have lots of time to wait on queueing. Sweco has found that the queueing system at PDC operates adequately for the purposes of their researchers, although there are – as always – things that could be improved. Some examples of improvements that would be helpful are increasing the maximum allowed run time, getting rid of monthly averaged quotas (so it would be possible to run simulations whenever needed) and enabling peak performance. This would be advantageous because Sweco researchers are not running simulations all the time but every now and then, and when they are, they definitely need capacity.