Page 1: Please provide the information requested below....

Q1 What is your organisation's/project's name?

ANTAREX Project

Q2 Your organisation's/project's website

http://www.antarex-project.eu/

Q3 Are you?

A project

Q4 Your name

Cristina Silvano

Q7 Please summarise who you are and what you do

ANTAREX FP7 Project proposes an autotuning and adaptivity methodology and related tools for energy efficient exascale HPC systems.

The ANTAREX research project, coordinated by prof. Cristina Silvano from Politecnico di Milano, has been granted in the H2020 Future and Emerging Technologies programme on High Performance Computing. The project involves CINECA, the Italian Tier-0 Supercomputing Centre and IT4Innovations, the Czech Tier-1 Supercomputing Center. The Consortium also includes three top-ranked academic partners (ETH Zurich, University of Porto and INRIA), one of the Italian leading biopharmaceutical companies (Dompé) and the top European navigation software company (Sygic). Being one of the nineteen research projects in FET-HPC-2014, ANTAREX brings its partners on the forefront of the European research in HPC. The project started on September 2015 for a 3-year duration.

The main goal of the ANTAREX project is to provide a breakthrough approach to map, runtime manage and autotune applications for green and heterogeneous High Performance Computing systems up to the Exascale level. One key innovation of the proposed approach consists of introducing a separation of concerns (where self-adaptivity and energy efficient strategies are specified aside to application functionalities) promoted by the definition of a Domain Specific Language (DSL) inspired by aspect-oriented programming concepts for heterogeneous systems. The new DSL will be introduced for expressing the adaptivity/energy/performance strategies and to enforce at runtime application autotuning and resource and power management. The goal is to support the parallelism, scalability and adaptability of a dynamic workload by exploiting the full system capabilities (including energy management) for emerging large-scale and extreme-scale systems, while reducing the Total Cost of Ownership (TCO) for companies and public organizations.

Q8 In what way would like to contribute to an EsD project?

As a technology provider

Q9 What would be your contribution to an EsD project?

The ANTAREX project is driven by two use cases chosen to address the self-adaptivity and scalability characteristics of two highly relevant HPC application scenarios:

1) a biopharmaceutical HPC application for accelerating drug discovery deployed on the 1.2 PetaFlops heterogeneous NeXtScale Intel-based IBM system at CINECA;

2) a self-adaptive navigation system to be used in smart cities deployed on the server-side on an heterogeneous Intel-based 1.46 PetaFlops class system provided by IT4Innovations.

The key ANTAREX technology innovations will be designed and engineered to be scaled-up to the Exascale level. Performance metrics extracted from the two use cases will be modeled to extrapolate these results towards Exascale systems. These use cases have been selected due to their significance in emerging application trends and thus by their direct economic exploitability and relevant social impact.

We would like to participate to an EsD project with the technology developed for the two use cases.

Q10 What partners are you looking for?

We would like to get in contact with partners on the following two type of extreme scale demonstrators:

1) Biopharmaceutical HPC application providers for offering them the ANTAREX technology for accelerating drug discovery deployed on Exascale HPC Systems

2) Providers of self-adaptive navigation systems to be used in smart cities for offering them the ANTAREX technology for accelerating navigation application deployed on Exascale HPC Systems

Q11 Please include links to any additional material.

Any additional material related to the ANTAREX Project can be found at:

http://www.antarex-project.eu/

Q12 Other comments/ideas

Respondent skipped this question