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Description

EPEEC's main goal is to develop and deploy a production-ready parallel programming environment that turns upcoming overwhelmingly-heterogeneous exascale supercomputers into manageable platforms for domain application developers. The consortium will significantly advance and integrate existing state-of-the-art components based on European technology (programming models, runtime systems, and tools) with key features enabling 3 overarching objectives:

- high coding productivity,
- high performance, and
- energy awareness.

An automatic generator of compiler directives will provide outstanding coding productivity from the very beginning of the application developing/porting process. Developers will be able to leverage either shared memory or distributed-shared memory programming flavours, and code in their preferred language: C, Fortran, or C++. EPEEC will ensure the composability and interoperability of its programming models and runtimes, which will incorporate specific features to handle data-intensive and extreme-data applications. Enhanced leading-edge performance tools will offer integral profiling, performance prediction, and visualisation of traces. Five applications representative of different relevant scientific domains will serve as part of a strong inter-disciplinary co-design approach and as technology demonstrators. EPEEC exploits results from past FET projects that led to the cutting-edge software components it builds upon, and pursues influencing the most relevant parallel programming standardisation bodies.

The consortium is composed of European institutions and individuals with the highest expertise in their field, including not only leading research centres and universities but also SME/start-up companies, all of them recognised as high-tech innovators worldwide. Adhering to the Work Programme's guidelines, EPEEC features the participation of young and high-potential researchers, and includes careful dissemination, exploitation, and public engagement plans.

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Source URL (retrieved on 15 Jul 2024 - 11:51): <https://www.bsc.es/es/research-and-development/projects/epeec-european-joint-effort-toward-highly-productive-programming>