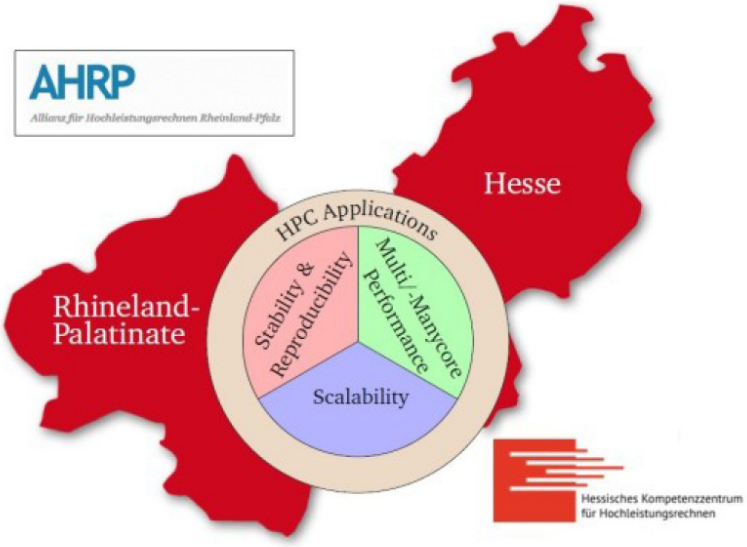
Hessisches Kompetenzzentrum
für Hochleistungsrechnen

Enabling Performance Engineering in Hesse and Rhineland-Palatinate (EPE)



Introduction

Objective: Expand and deepen HPC support in areas where existing scientific expertise coincides with critical user needs.

Approach: Bundle the distributed expertise for HPC support and performance engineering within the HKHLR and the AHRP under a new umbrella to support scientists to efficiently use the HPC resources in Hesse and Rhineland-Palatinate.

DFG-Gepris Website

Methods

Performance Engineering Services:

Within our project, we design and provide the following portfolio of consulting services:

Scalability

• Objective: Help developers identify and resolve scalability limitations in their codes

• Approach: Define services with increasing degrees of applications engagement around Extra-P, an automatic

Project Term
2017 - 2019

Project Areas
Computer Science

Project website
http://www.sc.informatik.tu-darmstadt.de/res/pro/epe/epe_overview/index.en.jsp

Project Partners
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JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN
TECHNISCHE UNIVERSITÄT DARMSTADT
UNIKASSEL VERSITÄT
Philipps Universität Marburg

performance-modeling tool developed at TU Darmstadt

Stability, Performance, and Reproducibility

• Objective: Help developers understand the impact of changes to specific parts of algorithms,especially the exchange of libraries and architectures.

• Approach: Measure condition numbers of algorithms with the help of algorithmic differentiation, by leveraging the tools Code Differentiation Package (CoDiPack) and Message Differentiation Package (MeDiPack) of TU Kaiserslautern. Package run-time environments either in containers or virtual machines.

Multi-/Manycore Performance

• Objective: Help developers to use multi-/manycore architectures more effectively

• Approach: Identify applications that make intensive use of multi-/manycore architectures and suggest optimizations while maintaining portability

Support Structures

• Provide local support staff as point of contact for the above services

• Organize workshops, tutorials, and coding weeks for interested HPC users in Hesse and Rhineland-Palatinate

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