

Wikiprint Book

Title: The MSA story of the DEEP projects family

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The MSA story of the DEEP projects family

1) Motivation

General purpose systems

- + Highly flexible
- High energy consumption
- + Preferred by many applications

Highly scalable systems

- Few (highly parallelizable) codes can fully exploit them
- + Highly energy efficient

2) Can one combine the best of these two worlds into a single system? → Yes! Exploit heterogeneity!

Homogeneous cluster

- General purpose CPUs attached to a high-speed network
 - + Easy to use, very flexible
 - Power hungry

Traditional heterogeneous cluster

- Attach accelerators (e.g. GPUs) to each CPU
 - + Energy efficient, easy management
 - Static assignment of accelerators to CPUs

3) The basis for the MSA: The Cluster-Booster Concept

The MSA developed in DEEP-EST builds on the so-called Cluster-Booster architecture. It was first conceptualized and proven with prototypes in the DEEP project. It is a combination of a standard HPC Cluster and a tightly connected HPC Booster.

Cluster-Booster architecture

- + Energy efficient, high flexibility, dynamic resource assignment