DEEP-EST

Estela Suarez

Jülich Supercomputing Centre, JSC (Germany)
The DEEP Projects

Objectives

• Flexible association of heterogeneous resources
• Increase system performance & energy efficiency
• Address diverse application needs (HPC, HPDA, ML)
• Co-design production-quality HW & SW prototypes
• Build a strong, sustainable European ecosystem

Project data

• 27 partners
• Time frame: 2011 - 2020
• Total EU funding: 30 M€
Co-design applications

- Kreuzer et al. The DEEP-ER project: I/O and resiliency extensions for the Cluster-Booster architecture. HPCC’18 proceedings
- Christou et al., EMAC on DEEP, Geoscientific model devel.(2016) [10.5194/gmd-9-3483-2016]
- Kumbhar et al., Leveraging a Cluster-Booster Architecture for Brain-Scale Simulations, Lecture Notes in Computer Science 9697 (2016) [10.1007/978-3-319-41321-1_19]
- Leger et al., Adapting a Finite-Element Type Solver for Bioelectromagnetics to the DEEP-ER Platform. ParCo 2015, Advances in Parallel Computing, 27 (2016) [10.3233/978-1-61499-621-7-349]
Modular Supercomputing Architecture

- Address **diverse user requirements** in one system
  - Data intensive
  - Highly scalable parallel computing
  - High throughput computing
- Modules shaped via **co-design**
- Achieve leading **scalability & energy efficiency**
  - Extreme Scale Booster ➔ Exascale
- **Unified SW environment** to run applications across all modules
Software Environment

**Goal:** standard HPC environment supporting innovative architecture
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