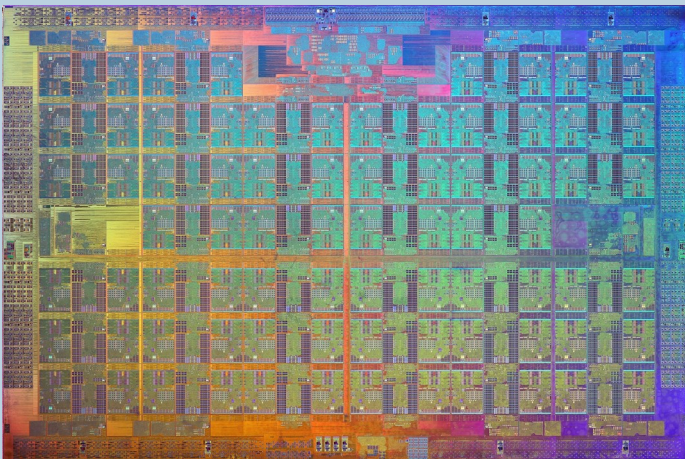


# ExaCluster Laboratory

## Shaping the future of Cluster Computing



- Inspect, optimize and extend software stack and tools used on Petascale Clusters today
- Investigate the capabilities of Intel's Xeon Phi many-core processor
- Explore novel heterogeneous HPC architectures
- Agreement signed during ISC 2010
- 9 technical people (3 from each partner)

### Software stack based resiliency for ExaCluster

**Goal:** Develop methods for failure recovery

**Topics:**

- Re-analysis of monitoring data collected on JUROPA
- Adjust the existent monitoring functionality to JURECA
- Development of an combined hardware and software strategy
- Accomplish fault tolerance in DEEP-ER's offloading mechanism

### Scalable MPI Software Stack

**Goal:** Improve scalability in ParaStation MPI

**Topics:**

- Improve pace and efficiency of application startup
- Port ParaStation MPI to the Xeon Phi platform
- Enable ParaStation MPI to support EXTOLL
- Extend ParaStation MPI towards heterogeneous offloading

### Exa-Cluster Experimentation Platform

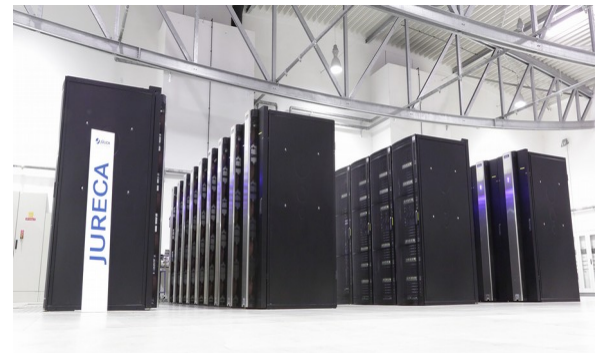
**Goal:** Explore basic technologies of Booster-based HPC architectures

**Topics:**

- Gain experience with Xeon Phi
- Investigate innovative non-volatile memory technologies
- Explore alternative organization of heterogeneity
- From Cluster-Booster towards Modular Supercomputers
- Coordinate the DEEP family of projects

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### JURECA is amongst the most efficient cluster in the TOP500



## ParaStation MPI

