

BMBF *Green HPC* project

Quelloffene Lösungsansätze für Monitoring und Systemeinstellungen
für energieoptimierte Rechenzentren (EE-HPC)

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**Bundesministerium
für Bildung
und Forschung**



About the project

- Project start: 01.09.2022
- Project duration: 3 years
- Funding: 6 positions
- Partners:
 - FAU Erlangen
 - RWTH Aachen University
 - DKRZ Hamburg
 - HLRS Stuttgart
 - HPE Germany
 - Intel (associated partner)



associated partner:



Goals of project

Automated optimization of the energy efficiency of HPC systems

This is achieved by job-specific control and optimization of the hardware configuration and the runtime environments (OpenMP and MPI).

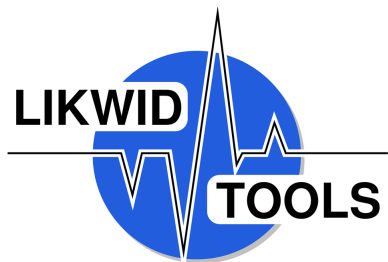
More efficient energy utilization by means of reduced power consumption while simultaneously maximizing throughput.

Production ready open-source integrated framework, benefit evaluated on ICON climate code and 2 production codes per participating computing center.

Existing building blocks

ClusterCockpit

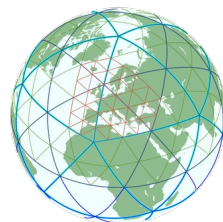
System-wide job-specific framework for performance (and energy) monitoring



Library to collect hardware metrics and implement the hardware configuration.



Global Extensible Open Power Manager (GEOPM) framework for exploring power and energy optimizations.



ICON :: Icosahedral Nonhydrostatic Weather and Climate Model

Next steps

- Study about how effective *knobs* are for different systems and application classes
- Evaluate available node-level/system-level optimization framework
 - Requirements
 - Out of the box functionality
- Extend ClusterCockpit with UI elements visualizing the node states and energy consumptions for the system and job