

BMBF *Green HPC* project

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

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PowerStack Workshop
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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).

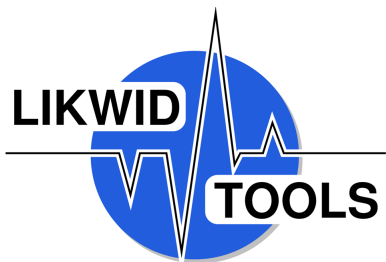
More efficient **energy utilization** by means of **reduced power consumption** while simultaneously **maximizing throughput**.

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

Existing building blocks

ClusterCockpit

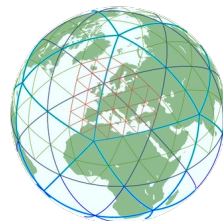
System-wide job-specific framework for performance (and energy) monitoring



Library to collect hardware metrics and implement the hardware configuration.

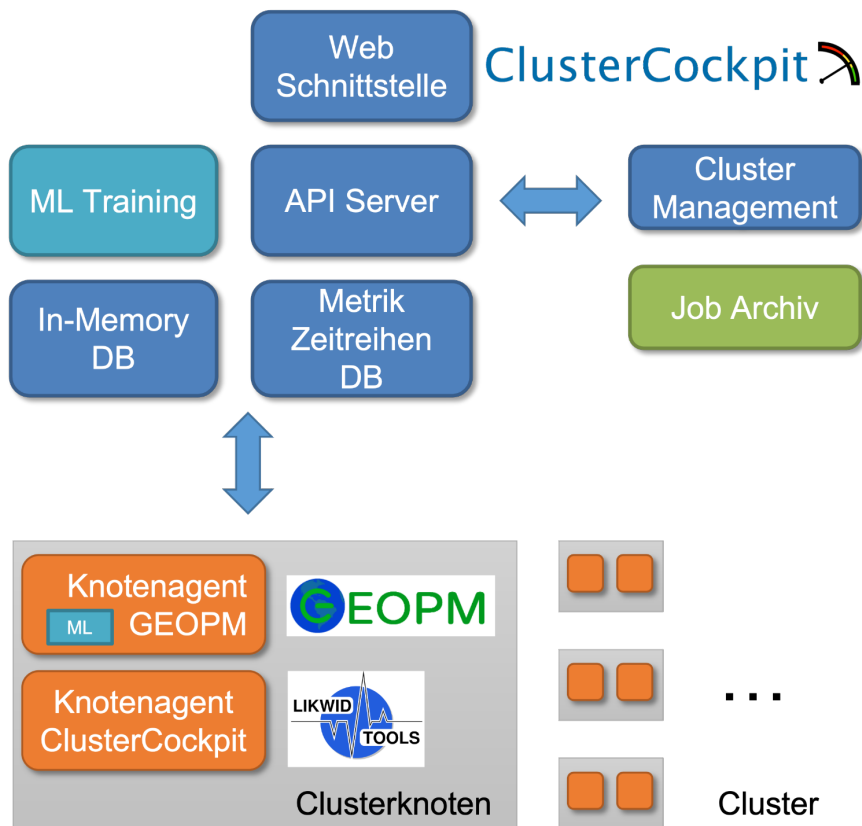
GEOPM

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



ICON :: Icosahedral Nonhydrostatic Weather and Climate Model

Project software stack architecture



Extend GEOPM with Likwid support

Adding support for additional communication method (pub/sub) to GEOPM

Add support for time-interval based optimization trigger to GEOPM

Add API for two-way communication to GEOPM supporting ClusterCockpit

Further information

There is no project website yet!

 <https://github.com/ClusterCockpit/>

 <https://github.com/RRZE-HPC/likwid>

<https://geopm.github.io/>