



EPICURE

# EPICURE-EasyBuild European-level HPC Support

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Co-funded by  
the European Union



**EuroHPC**  
Joint Undertaking

This project has received funding from the European High Performance Computing Joint Undertaking under grant agreement No.101139786. Views and opinions expressed are, however, those of the author(s) only and do not necessarily reflect those of the European Union or EuroHPC Joint Undertaking. Neither the European Union nor the granting authority can be held responsible for them.

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1. **Context**
  2. **Support Services**
  3. **Access the Resources**
  4. **EasyBuild & EPICURE**
  5. **Contribution**
  6. **Collaboration**

# Context

**HPC** has enabled technologies with a positive impact on society

- Climate and weather prediction
- Healthcare and research costs
- Renewable energy optimization
- Large-scale AI training

**Installation of supercomputers in multiple countries reflects a commitment to HPC's technological potential**

- **EuroHPC JU** has been instrumental in elevating this ecosystem of European supercomputing

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# Support Services

## Meet our Support Services



### Code enablement and scaling

Support for enabling and increase the scalability of user codes to EuroHPC supercomputers



### Performance Analysis

Performance analysis for HPC codes



### Benchmarking

Our service focuses on developing a benchmarking suite to evaluate the performance of EuroHPC machines.




### Code refactoring

This service involves restructuring or rewriting parts of an application code to improve its maintainability but without changing its function.



### Code optimization

Our service aims at improving the efficiency and performance of the software such that it consumes fewer resources

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# Access the Resources

<https://access.eurohpc-ju.europa.eu/>

1. **Access to EuroHPC JU supercomputers through open calls**

- Development, Regular, Extreme Scale, and AI call
- Accepted projects are matched to adequate supercomputers

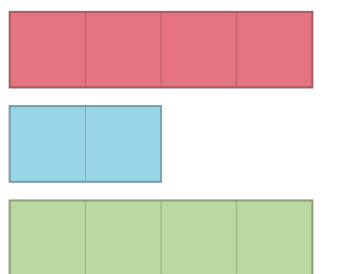
2. **Accepted projects get access to EPICURE support**

<https://pm.epicure-hpc.eu/support/request/>

- Users choose the level of support needed
- A team of experts will work closely with users to achieve set goals

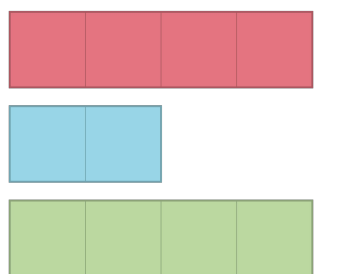
<sup>1</sup> [https://eurohpc-ju.europa.eu/access-our-supercomputers/eurohpc-access-calls\\_en](https://eurohpc-ju.europa.eu/access-our-supercomputers/eurohpc-access-calls_en)

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# EasyBuild & EPICURE

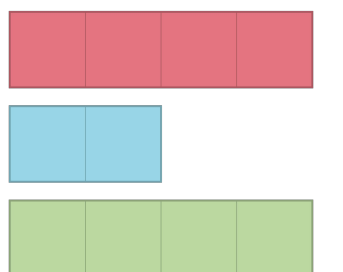
- EasyBuild inside EPICURE
  - Deploying scientific software reproducibly
  - Standardizing software stacks across sites
  - Reducing manual installation effort
  - Supporting benchmark portability
- Some of the EPICURE projects with use of EasyBuild
  - HIDALGO
  - EPICURE Benchmark Suite



# HIDALGO

- Scientific Goal
  - Wildfire and smoke dispersion simulation
- EasyBuild contribution:
  - Created custom easyconfigs for:
    - WRF-SFIRE(WRF-SFIRE-W4.4-S0.1-gompi-2024a-dmpar.eb)
    - WPS(WPS-4.4-gompi-2024a-dmpar.eb)
- Faster deployment and reproducible across HPC sites

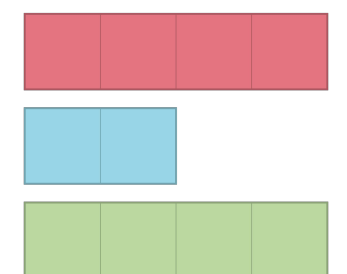
[https://opencode.it4i.eu/epicure/67-hidalgo/-/tree/main?ref\\_type=heads](https://opencode.it4i.eu/epicure/67-hidalgo/-/tree/main?ref_type=heads)



# EPICURE Benchmark Suite

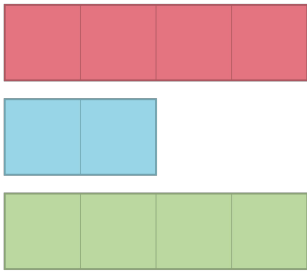
- Workflow:
  - EasyBuild → software installation
  - JUBE → benchmark execution
  - DLB/TALP → performance analysis
- Benchmarks installed via EasyBuild(foss-2023a) used :-
  - CP2K
  - GROMACS
  - iPIC3D
  - NAMD
  - QuantumESPRESSO
  - URANOS
  - WRF

<https://opencode.it4i.eu/epicure/epicure-benchmark>



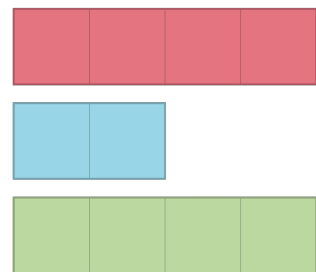
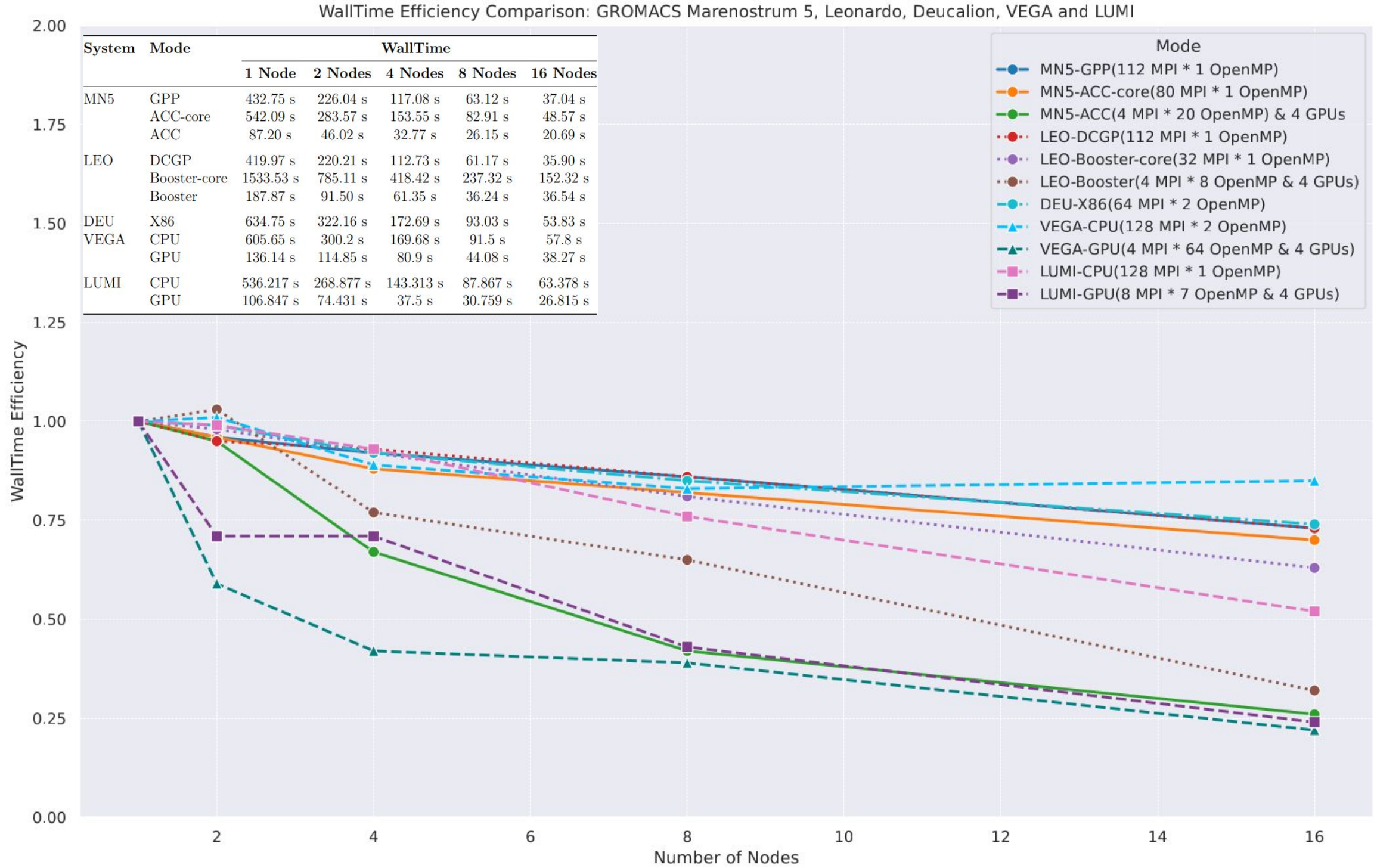
# Benchmark portability across sites

○ Sites	○ Benchmark Suite
Deucalion	✓
Karolina	✓
Leonardo	✓
LUMI	✓
MareNostrum5	✓
Vega	✓

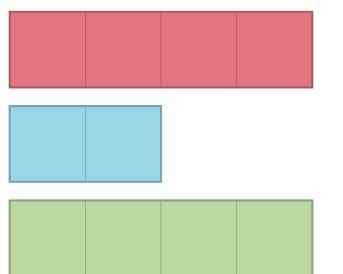


# EPICURE BENCHMARKS

Consistent benchmark execution

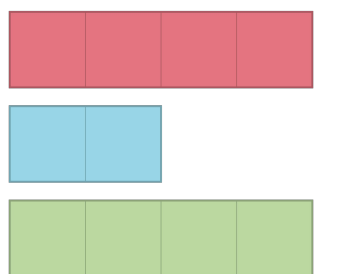


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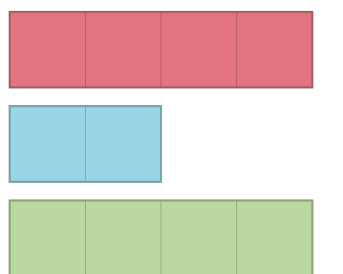


# Contribution

- Contributions to EasyBuild
  - New CPU easyconfig for CP2K
  - New GPU easyconfig and easyblock for CP2K
    - <https://github.com/easybuilders/easybuild-easyblocks/pull/3433>
  - Support for additional benchmarks:
    - URANOS
    - iPIC3D

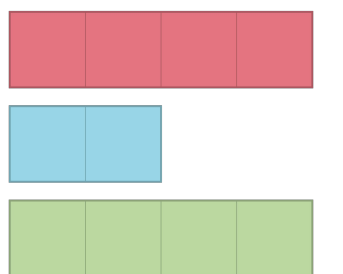


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# Collaboration

- Continue sharing benchmark results
- Maintain EasyBuild modules in EPICURE
- Upgrade toolchain:
  - foss-2023a → 2025b
- Expand benchmark coverage
- Welcome community feedback





# EPICURE

Unlocking European-level HPC Support

**bibek.chapagain@bsc.es**

Follow us



# Thank you!



**pmo-epicure@postit.csc.fi**

<https://epicure-hpc.eu/>



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