



WSTAR

WASA ZERO EMISSION
DATA CENTRE



Vaasan yliopisto
UNIVERSITY OF VAASA



Åbo Akademi University

YRKESHÖGSKOLAN
NOVIA

VAMK
VAASAN AMMATTIKORKEAKOULU
UNIVERSITY OF APPLIED SCIENCES



Funded by
the European Union
NextGenerationEU



SUOMEN AKATEMIA

Why Vaasa?

- Four universities: University of Vaasa, VAMK, Åbo Akademi, Novia
- Vocational education of data centers electricians and energy in VAMIA
- Biggest energy industry concentration in the Nordics: Hitachi Power grids, Danfoss, ABB, Wapice, Vaasan Sähkö, Wartsila, Arcteq, VEO, and 170 others [See Energy Vaasa](#)

Wstar research infrastructure and network

Open research infrastructure and national data center research network

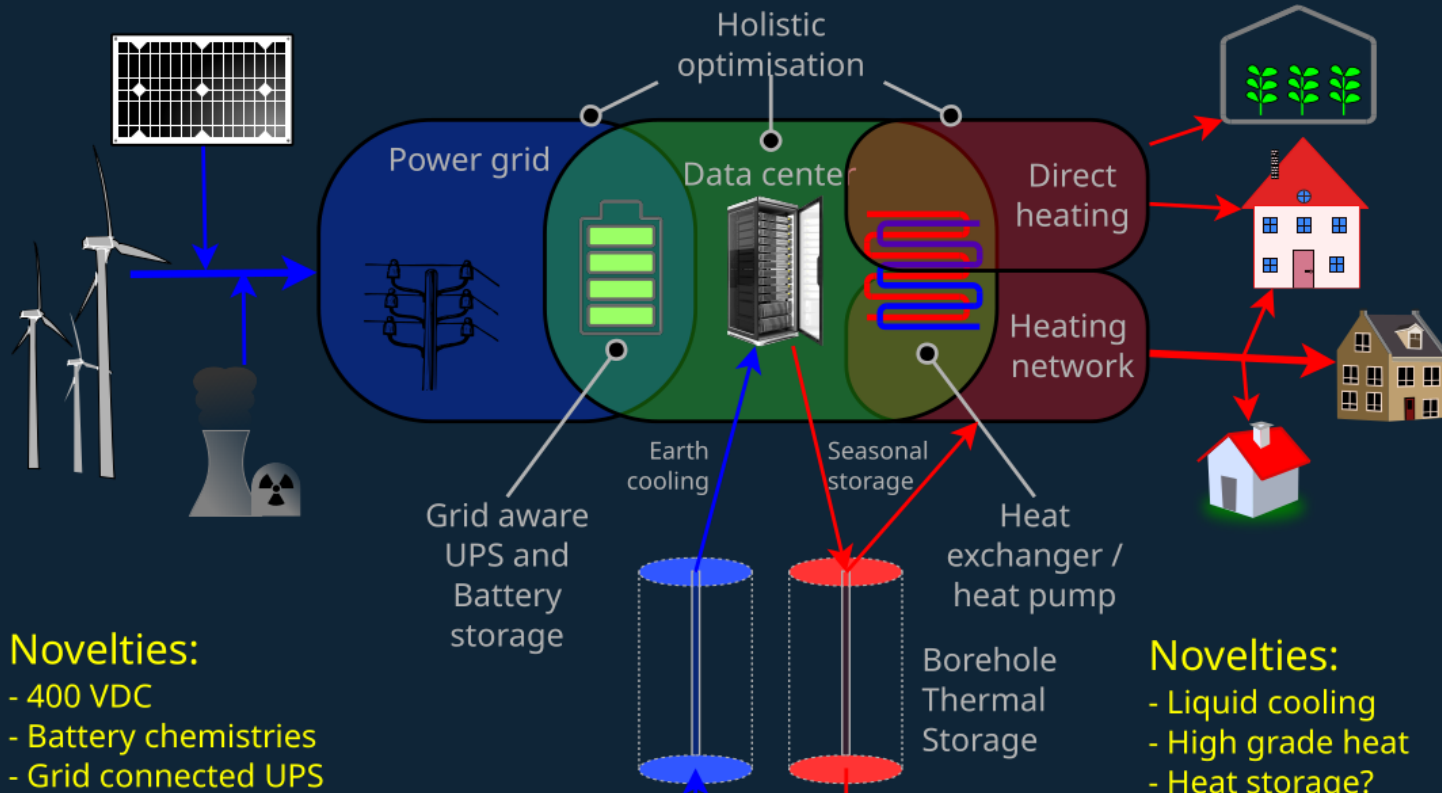
- Started almost four years ago in collaboration with Universities
- Research and develop energy efficient and sustainable computing
- Learn and educate how data centers and cloud infrastructures work
- Digital sovereignty



Tight sector coupling

Novelties:

- Sensoring, D-twin
- Sustainability reports
- ARM / FPGA / Chiplets?



Wstar infrastructure

- Server racks with different cooling solutions and heat reuse
- AC and DC power supply readiness
- Custom automation system
- Sovereign, open source cloud software stack



Wstar network

- Data center seminars in 2022, 2023 and 2024
- Wstar opening and networking event, October 2024 (140 visitors)
- R&D network established, research roadmap work started, several funding applications submitted
- Research network with the four founding Universities and companies
- Collaboration with FDCA, KAMK and CSC
- Next WSTAR networking event 25-26th of November 2026



Future plans

- Expand the research infrastructure
- Expand network and collaboration with companies
 - Connect data centers and Finnish companies
 - Design energy disruption in data centers
- Data center research and education
 - Power supply, batteries, and grid balance
 - Cooling and heat reuse
 - Automation, and energy efficiency
 - Sovereign data center services from Europe

Finnish supercomputers: Mahti and Puhti

A supercomputer is an important research tool in modern science. Supercomputer simulations enable quick and cost-effective research of phenomena that would otherwise be expensive or difficult, or even impossible, to study.

Roihu will replace Mahti and Puhti during 2026

Mahti and Puhti will be phased out during summer 2026 as CSC's next-generation supercomputer Roihu replaces them:

- Puhti's computing services have been decommissioned on 31 July 2026.
- Mahti's computing services will be shut down at the end of August, on 31 August 2026 at 12:00.

Thank you



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