



High-end computing in Flanders

April 15, 2025

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fwo
Opening new horizons

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Outline

VSC and governance

Supercomputing as a Services in Flanders

Supercomputing in Europe

Success stories



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VSC in Flanders' research and innovation landscape



VSC is Flanders' most highly integrated **high-performance research computing environment**, providing world-class services to researchers in **academia, industry, and government**. VSC offers **state-of-the-art technology**, including supercomputers, cloud, data storage and visualization, outstanding **training**, and **expert support**.

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VSC in Flanders' research and innovation landscape

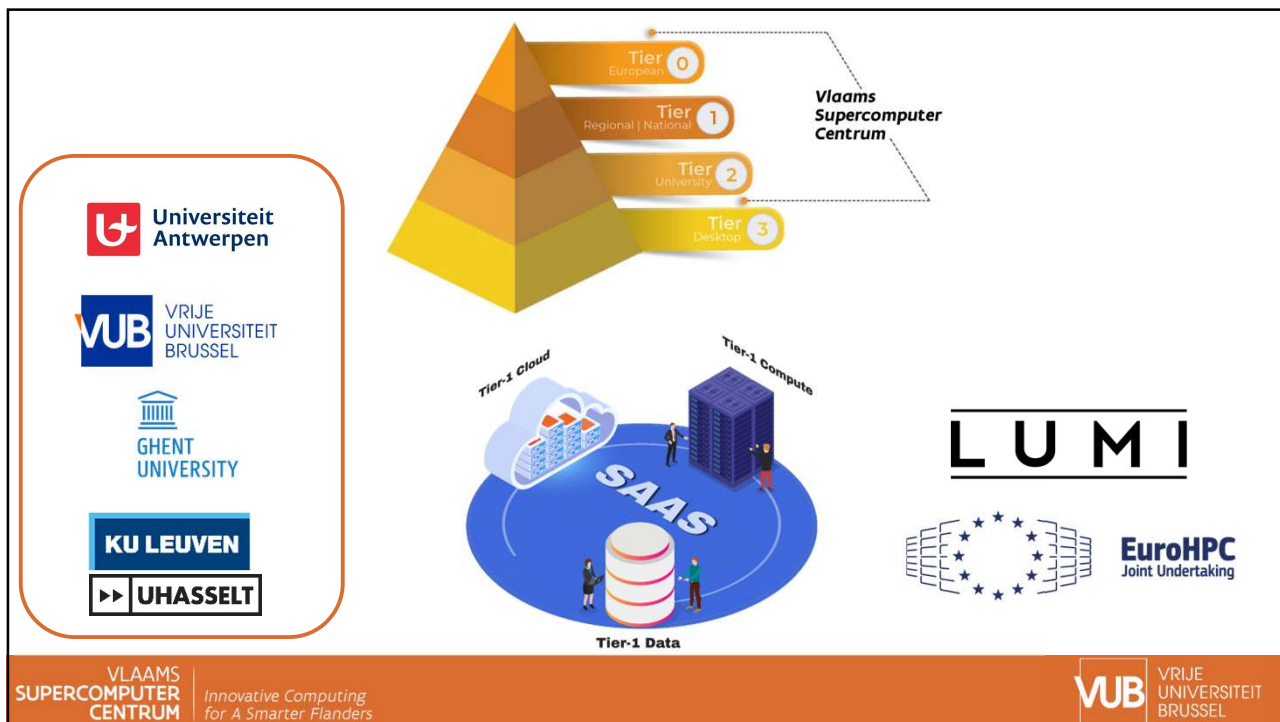


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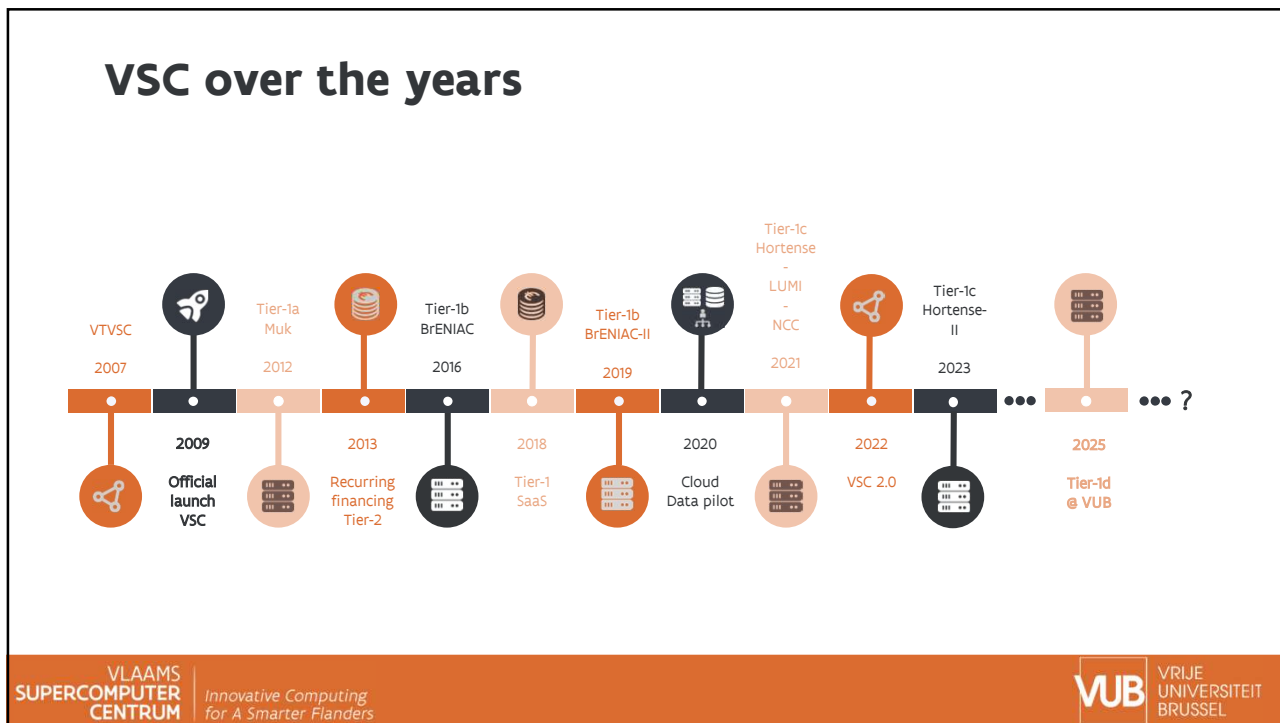
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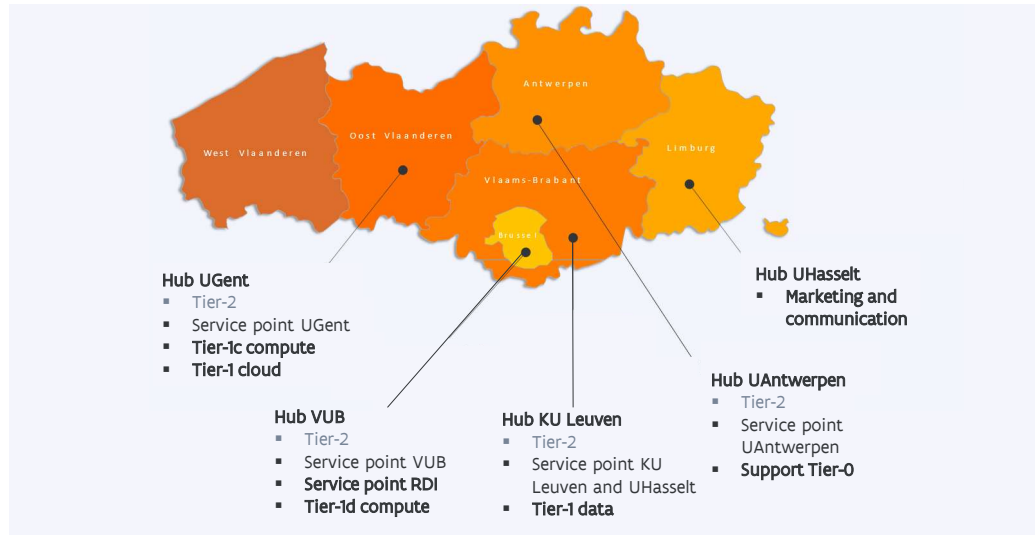


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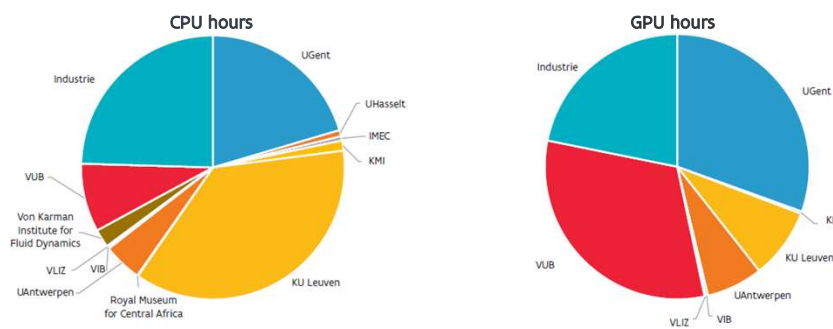
Tier-1 SaaS - next-level collaboration



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Tier-1 compute

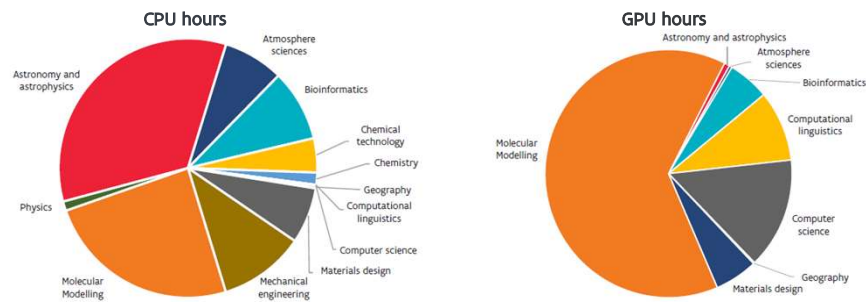
- Hortense, operated by UGent
 - CPU: 98,000 cores
 - GPU: 160 NVIDIA A-100
- Access is proposal-based (TAB): core/gpu hours



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Tier-1 compute

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- Topics
- Sectors
- Exascale

Flanders Invests in a New Supercomputer to Accelerate Research and Innovation

March 5, 2025

March 5, 2025 — The Flemish government has announced an investment of €8.6 million for the acquisition of a new Tier-1 supercomputer, reinforcing Flanders' commitment to cutting-edge research and innovation. The new supercomputer, to be delivered by NEC Deutschland GmbH (NEC), will be housed and managed by [Vrije Universiteit Brussel](#) (VUB) at the [Green Energy Park](#) (GEP) in Zellik, a municipality within the province of Flemish Brabant. The system is expected to become operational fall 2025.

Nexus data center (Penta Infra): most Green datacenter in Belgium; Uptime Tier III, BREEAM Excellent, and EDGE Advanced certified



- **21 nodes** (192 cores and 4 GB memory per core) equipped with 8 GPUs (NVIDIA H200 SXM5)
 - Total computing power: 11,239.20 TFLOPS (FP64)
- **56 'High core' nodes** (384 cores and 2 GB of memory per core)
 - Total computing power: 1,548.29 TFLOPS (FP64)
- **16 'High memory' nodes** (192 cores and 8 GB of memory per core)
 - Total computing power: 255.59 TFLOPS (FP64)
- **4 visualisation nodes and a web portal** to facilitate quick and easy interaction with the system

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Tier-1 cloud

- Operated by UGent
- Access is proposal-based (TAB): instance size, data volume, time
- 4 types of Virtual Machines (including GPU)
- 2022: 1,9 M CPU hours, approx. 70 VMs
- Bioinformatics is largest user base (Galaxy)



VMs



Webapps



Databases



Visualisation



Workflows



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Tier-1 data

- Operated by KU Leuven – 27 PB
- Active research data for compute and cloud
- Access is proposal-based: data volume, time
- Sharing large data sets
 - Climate4data (~ 2,8 PB)



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Tier-0: Supercomputing in Europe

- EuroHPC
 - strategic processor initiative (imec)
 - (pre-)exascale and quantum computing
- LUMI (Finland)
 - #5 of Top 500 (531 PF - 7,1 MW)
 - 50 % via membership / 50 % via EU
 - BE: ~10 % share (15,5 MEUR)
 - Access facilitated by UAntwerpen team
- National Competence Centre (EuroCC)
 - Communication, dissemination, training initiatives
- Quantum computing: joining forces with SURF (NL)



EuroHPC
Joint Undertaking

LUMI



EURO
BELGIUM

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Training @ VSC

- Coordination and content creation by UHasselt team
- Introductory | Intermediate | Advanced | Specialised

Course topics

HPC intro
Linux
MPI / OpenMP

Vlaams Supercomputer Centrum
@vsc_hpc · 353 subscribers · 81 videos
Welcome to the YouTube channel of the Flemish Supercomputing Center. VSC is the Fland...
[vscenrum.be](#) and 2 more links
[Subscribe](#)

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Success stories



PathoSense

<https://www.vscentrum.be/>

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Success stories



<https://www.vscentrum.be/>

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