YOUR SUPERCOMPUTING PARTNER

LUX PROVIDE

TOGETHER, CREATING COMPETITIVE ADVANTAGES WITH SUPERCOMPUTING

IMPROVE TIME TO MARKET

TACKLE LARGER PROBLEMS

SAVE COSTS

LuxProvide is **Luxembourg's one-stop-shop High Performance Computing Centre**, with missions to provide high performance computing capabilities, high-speed connectivity and advanced applications on a national, European and international scale, serving the public and private sectors.

LuxProvide offers tailor-made **HPC**, **HPDA** and **AI services** with the easiest onboarding and highest quality assistance, in a confidential, trusted and cybersecured environment.

Luxembourg is highly regarded as a **digital trust centre** in Europe and prides itself on its **excellent ICT infrastructure** in the field of connectivity and data centres. LuxProvide further supports the digital transition of the economy by facilitating the competitiveness and innovation of companies, with a particular focus on **SMEs and start-ups**.

Proud members of

EuroHPC
Joint Undertaking

EURO
LUXEMBOURG

Industry 5.0

Ecotech
(circularity
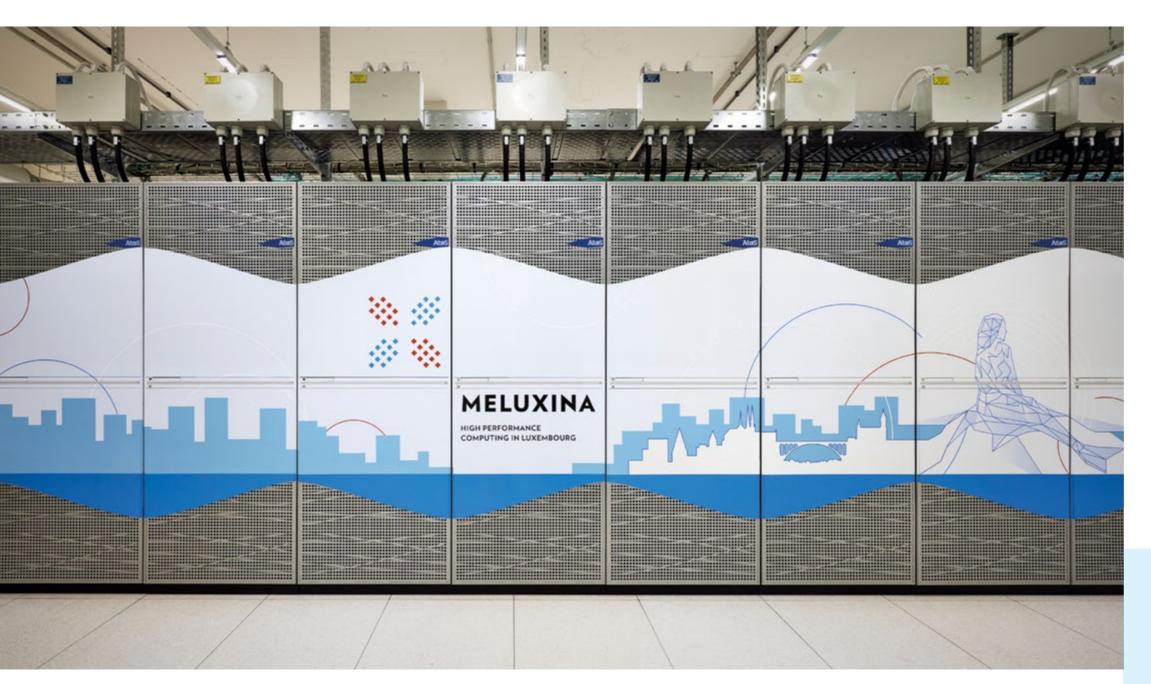smart mobility)

Healthtech

Logistics

Space

Financial
Services

Luxembourg's national supercomputer Meluxina

has been built to serve a large variety of complex, data-driven computational workloads. Its design is forward-looking, responding to the convergence of simulation, modeling, data analytics and artificial intelligence. This enables predictive analytics simulations.

90.000
HPC CPU Cores

5.120
Cloud vCPUs

800
GPU-AI accelerators

Infiniband HDR
200
Gb/s

20
Petabytes high performance storage

300+
Tailored software packages

MELUSINA'S LEGEND

The love story between a mermaid and Count Siegfried of Luxembourg is one of the country's founding legends.

In homage to this legend, LuxProvide's supercomputer was named MeluXina, as it is water cooled and also represents a founding brick in the Luxembourgish digital ecosystem.

Performance

Compute
18 FP64 PetaFlops
500 AI PetaFlops

Data
500+ GB/s Scratch storage
190+ GB/s Project storage

Interconnect
200 Gb/s on Cluster nodes
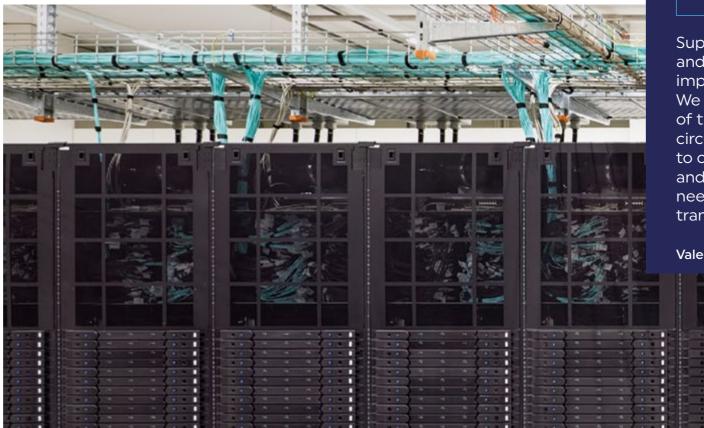# 400 Gb/s on Accelerator and large memory nodes

In June 2021, the **MeluXina** accelerator module has been ranked **36th in the Top500** World ranking of supercomputers, **4th greenest in the world** and **greenest in the EU**.

TOP 500 The List.

The GREEN 500

> Supercomputing is an enabler and accelerator for driving true impact on society and economy. We have the ambition to be a pillar of the data-driven, sustainable circular economy for the decades to come, building the platforms and providing the knowledge needed for digitalisation and transformation.

Valentin Plugaru, CTO LuxProvide

EuroHPC

A **Unique Value Proposition**

delivered by a **team of experts** that advises customers and supports them with a smooth and efficient onboarding based on a **Pay Per Access model**.

Providing high-performance computing capabilities to businesses is at the heart of LuxProvide's mission, that has developed its platform and team with a specific business-oriented focus.

> Our HPC, AI & Data experts are LuxProvide's core differentiators. We allow businesses to gain significant competitive advantage by scaling up their use cases to unprecedented levels. Concretely, it means increased degree of realism and accuracy of simulation and improved AI algorithms assimilating massive amounts of data.

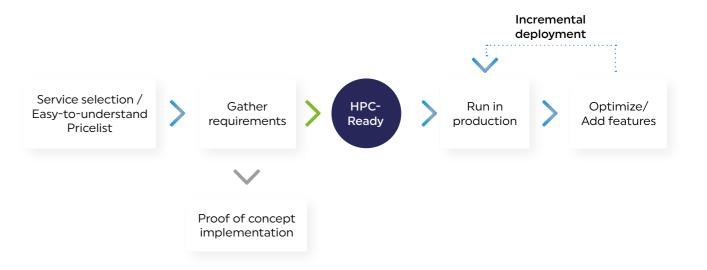**Matthieu Lefebvre,** Head of Supercomputing & Data Solutions

THE **ONBOARDING PROCESS** IS SMOOTH AND FOR HPC-READY COMPANIES, ACCESS TO THE SUPERCOMPUTER IS GRANTED IN A MATTER OF DAYS

Incremental deployment

Service selection / Easy-to-understand Pricelist → Gather requirements → HPC-Ready → Run in production → Optimize/ Add features

Proof of concept implementation

High Performance Computing (HPC)
- Data Analytics (HPDA)
- Artificial Intelligence
- Digital Twins
- Simulations

Solution Engineering

Training

Tailored Services

Fast Onboarding

SUPERCOMPUTING OR CLOUD ?

Supercomputers and Cloud facilities are **complementary platforms** that play together in a digital continuum. Supercomputers deliver superior results for applications that require massive data and processing speed, whereas traditional Cloud is better suited for real-time and interactive applications.

| Supercomputer | | | | Traditional Cloud | |

Enables very efficient parallel applications

Compute intensive workloads

Cost efficiency for HPC and HPDA workloads

Tackle larger problems

Interactive & streaming applications

Deployment of real time applications

Computational speed

Data intensive application

Purely database-driven applications

WE PROVIDE
EXPERT AND TAILOR-MADE SUPPORT
ON ALL ASPECTS

SCALING

software solutions to efficiently handle much larger amounts of data than they were originally developed for

PARALLELIZING

solutions to gain an optimal speed-up on a high number of processors

ACCELERATING

software by leveraging the power of GPUs (graphic processing units), providing potentially hundreds of times acceleration factors

OPTIMIZING

software to maximize the benefit coming from the variety of available resources in the supercomputer

PROFILING, MONITORING & DEBUGGING

software so that it will be designed and remain as efficient as possible. Various aspects of the algorithms are analyzed, including execution time, memory usage, existing bottlenecks, etc.

DESIGNING & PROTOTYPING

software solutions that are fully tailored to customers' needs, increasing their level of digitalization

CONSULTING

on defining the journey to become HPC and/or HPDA ready

They have already trusted us

LUXPROVIDE TEAM

... AND MORE

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