Creating a Unique AI Strategy with Supercomputing

Standing out from the crowd is a key challenge in the Artificial Intelligence (AI) transformation. Competitiveness can be improved by automating existing operations and developing entirely new business areas leveraging AI. Success in the emerging AI solutions world requires the best tools and excellent cooperation networks.

AI systems are based on machine learning that utilizes large data masses and requires efficient computing capacity. The **LUMI supercomputer will be one of the world's most powerful AI development platforms – a leading data management and computing system of its time – when it starts operations later this year. LUMI is hosted by the LUMI consortium and is placed in CSC's data center in Kajaani, Finland.** The system combines computing capacity with AI methods, especially deep learning, traditional large-scale simulations and the utilization of large data masses – all simultaneously to solve a challenge.

Up to one-fifth of the computing resources of the LUMI supercomputer are available for companies on a pay-per-use model. In addition to that, companies are eligible to join academic R&I projects which involve publication of the outcome of the use of the resources. These are significant opportunities for R&D&I development and competitiveness throughout Europe.

EuroHPC Joint Undertaking

The acquisition and operation of the EuroHPC supercomputer is funded jointly by the EuroHPC Joint Undertaking, through the European Union's Connecting Europe Facility and the Horizon 2020 research and innovation programme, as well as the of Participating States FI, BE, CH, CZ, DK, EE, IS, NO, PL, SE.

Leverage from the EU 2014–2020

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REGIONAL COUNCIL OF KAINUU

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Benefits for companies

Superfast product development and new business creation

Supercomputing enables new types of product development and innovations that leverage the power of computing and simulation methods on the one hand and the potential of data analytics and AI on the other. Challenges requiring tightly coupled communication cannot be resolved in regular computing environments or cloud services. In supercomputing-driven data analytics and AI, there is little competition between companies, so investments in this field can give the company a competitive edge. A study involving 763 projects globally showed that each euro invested by a company in high-performance computing generated an increase of EUR 417 in turnover and an increase of EUR 39 in profit[1].

The pan-European LUMI supercomputer makes an unprecedented level of resources available for industry and SMEs. Up to 20% of the capacity of the LUMI supercomputer is reserved for businesses to support their research activities.

Top expert support and competence development are part of the service

At the core of the LUMI consortium is the ability to offer comprehensive support services, such as competence development, expert services, and data management services. One of the services is LUST (LUMI User Support Team), which provides customer support based on an extensive network of LUMI experts.

Practical solutions for cooperation with universities and research institutes

LUMI and EuroHPC create a common platform for utilizing computing resources and expert support between universities, universities of applied sciences, research institutes, and business life, opening new opportunities for research cooperation and economic growth in Europe. Based on genuine international cooperation, the project will also bring new expertise to the participating countries. Collaboration between companies, and universities and higher education institutions is vital for transferring expertise from R&D operations to the business world.

Heavy computing capacity combines with rich data resources

Free data transfer to and from the computing environment makes the processing of data smoother. The consortium members supply the environment with extensive and unique data from various application areas.

Data is managed securely

LUMI will be located in CSC's data center in Kajaani, Finland. CSC is a reliable partner whose data centers have been granted the ISO/IEC 27001 certificate for information security management systems. Safety culture and certification are an integral part of CSC's business. The certificate proves that CSC can manage and continuously improve the information security of its services and operations.

Reliable network connectivity ensures service availability

CSC's solutions are based on reliable ICT platforms, national research and education network Funet, and efficient data center operations. The LUMI research infrastructure is part of NORDUnet, the Nordic backbone network for research, which scales to several terabytes of data. The GÉANT network ensures European-wide access to HPC services.

Towards a sustainable future

LUMI is built on world-class environmental sustainability and cost-efficiency. It helps the European ICT sector become greener and more cost-efficient, which is necessary to reach the EU's ambitious climate targets and pave the way for the green transition.

CSC's data center in Kajaani operates on the principle of sustainable development: ecologically, reducing the global carbon footprint. The location enables the use of cost-effective, environmentally friendly, and renewable energy. Waste heat generated by the hardware is utilized in the district heating network of Kajaani. The energy transferred corresponds to 20% of the annual district heating needs of the city.

[1] https://www.lumi-supercomputer.eu/hpc-roi/