Creating a unique AI strategy with supercomputing

Standing out from the crowd is a key challenge in the AI transformation. Competitiveness can be improved by automating existing operations and developing entirely new business areas that leverage 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. **Finland will become the home of one of the world's most powerful AI development platforms when the LUMI supercomputer[1] – a leading data management and computing system of its time[2] – becomes operational in CSC's Kajaani datacenter in early 2021.** LUMI 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.

One fifth of the computing time of the LUMI supercomputer is earmarked reserved for companies. This capacity represents a significant opportunity for the Finnish economy and society as a whole.

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 one hand, and the potential of data analytics and AI on the other. Challenges like these cannot be resolved in regular computing environments or cloud services. In the field of 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 143 projects in Europe showed that each euro invested by a company in high-performance computing generated an increase of EUR 870 in turnover and an increase of EUR 69 in profit.[3] The pan-European LUMI supercomputer makes an unprecedented level of resources available in Finland. Per capita, no other country can offer equal supercomputing capacity. Up to 20% of the capacity of the LUMI supercomputer is reserved for businesses to support their research activities. The primary objective is to promote cooperation with higher education institutions and research institutes. If the research results are published, the use of computing capacity is free of charge. Various funding models for research projects are available, the most important of which are programs funded by Business Finland and the EU.
Top expert support and competence development are part of the service	At the core of the LUMI consortium coordinated by Finland 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 up new opportunities for research cooperation and economic growth in Finland. Based on genuine international cooperation, the project will also bring new expertise to Finland. Cooperation between companies and universities and higher education institutions is vital for transferring expertise from R&D operations to the business world. One example of this is the partnership between CSC and the Finnish Centre for Artificial Intelligence (FCAI). Thanks to this cooperation, CSC's computing services are available to research groups at Aalto University, University of Helsinki and VTT Technical Research Centre of Finland, making use of the latest technology offerings on the market (such as GPU computing resources) and expertise.
Heavy computing capacity combines with rich data resources	Free data transfer to and from the computing environment makes the processing of data smoother. CSC, a significant player in research data management and public administration, supplies the environment with extensive and unique data from various application areas.
Data is managed securely in 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 has the ability to 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, the national research and education network Funet and efficient datacenter 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 Europe-wide access to HPC services. Through the Arctic Connect project, a strong investment is underway in the data communication connections between Europe and Asia with the aim of creating a new digital bridge between continents. The connection seeks to create new data driven business and employment in Finland and increasing opportunities for cooperation with Russia, China and Japan.
Towards a sustainable future	CSC's datacenter 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 Kajaani.

For more information on how companies can apply for computing resources, please contact:
Dan Still, Partnerships Manager, Dan.Still@csc.fi, +358-50-381 9037

Also check out the story of Disior – a company listed by Finland's Artificial Intelligence Accelerator as one of the champions among Finnish AI companies: **Optimized solutions for treating bone fractures will soon be reality**

[1] www.lumi-supercomputer.eu
[2] https://www.csc.fi/en/eurohpc-suurteholaskennan-seuraava-askel
[3] https://ec.europa.eu/digital-single-market/en/news/pooling-resources-build-world-classeuropean-supercomputers