



## THE FINNISH GREEN FLAGSHIP DATA CENTER

CSC – IT Center for Science Ltd is building one of the most eco-efficient data centers in the world. The location is Kajaani, in Northern Finland.

The Kajaani Data Center is a proven solution based on technology, modern, reliable infrastructure and ecological efficiency for data needs in research and development in public and private sector. The Funet Network (Finnish University and Research Network) ensures excellent networking capabilities around the world.

### UNIQUE SYNERGY BENEFITS

The Data Center is being built in an old paper mill by the River Kajaani. The CSC Data Center is 8 000 m<sup>2</sup> in total, of which CSC will first occupy 4 000 m<sup>2</sup> with an option for another 4 000 m<sup>2</sup> for future growth. The Data Center project has started in 2010 and is estimated to be up and running by the early 2012. The infrastructure is already in place.

### COST-EFFICIENT SOLUTION – SUSTAINABLE AND GREEN ENERGY SUPPLY

The Data Center aims for a near zero carbon footprint during its operational lifetime. Due to the Data Center being built in an old paper mill, it has three hydropower stations on site. The combined capacity of the power plants is already 30 MW. There is also an active bio-energy plant of 80 MW in the same industrial area.

The energy supply chain in Kajaani is short due to the proximity of energy plants and there is practically no transfer loss in the energy supply chain. The energy costs are thus minimized.

Massive water stations; pumps, pipelines and filtering systems ensure sufficient cooling capacity. The River Kajaani makes the need for air-based cooling unnecessary.

The Data Center cooling is based on free cooling methods. In Kajaani the raw water from the nearby river is used for cooling the CSC Data Center. The temperature of the water varies between 0 and 21 degrees centigrade. Water cooling is the most efficient cooling system for high performance computing (HPC) data centers. The site has existing water pumps and pipelines that can be used in the cooling.

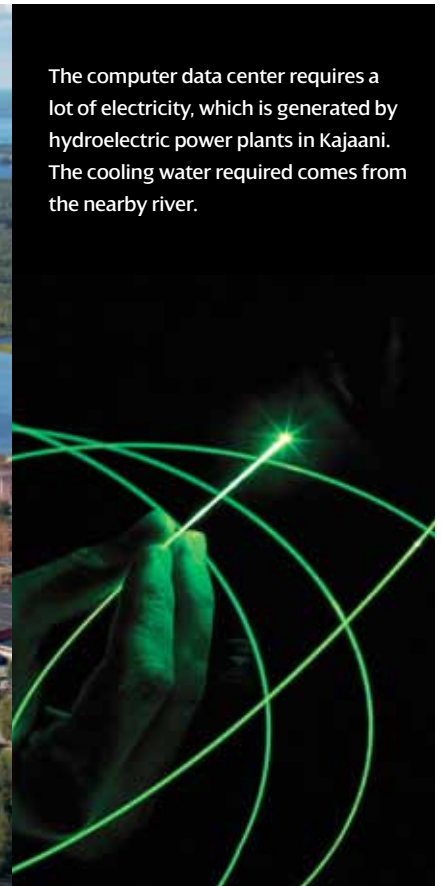
### INFO

#### CSC – A SUSTAINABLE COMPANIONSHIP

- Information and Communication Technology “ONE-STOP SHOP”.
- 200 specialists provide a large spectrum of relevant know-how.
- CSC provides high performance computing and data services for several demanding customers.
- CSC is the ICT-service provider for the Finnish public sector.
- CSC operates Funet network.
- State-owned ICT-service provider.
- An active role in European-wide research infrastructure initiatives.
- Long-term commitment to customers on site.



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The computer data center requires a lot of electricity, which is generated by hydroelectric power plants in Kajaani. The cooling water required comes from the nearby river.

#### STABLE AND SECURE ENVIRONMENT

The proven geological stability makes Finland and Kajaani an ideal location for data centers. Finland is known for its economic stability and determination to ensure investments in research and development. CSC and Finland are determined to develop the competence and the industry by supporting data center technology, sustainable cloud technologies and green IT.



#### FINLAND, KAJAANI & DATA CENTERS

##### – A PERFECT MATCH

- Safe geological location and solid ground, no major natural hazards.
- Stable and one of Europe's lowest energy pricing with continuity in domestic energy production.
- A lot of cooling water available (sea, lakes and rivers) and optimal climate. Free cooling potential up to 365 days per year.
- Extremely stable electricity distribution grid.
- Secure and predictable political culture and transparent legislation.
- Long track record as a homebase for energy intensive industries.
- State of the art optical fiber network provided by Tier 1 carriers and several domestic telecom operators.
- Secure and fast access to the market in redundant networks.

- Annual average temperature around 1–2 degrees centigrade.
- Excellent connections with a nearby Kajaani Airport and the railway station.



INFO

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