

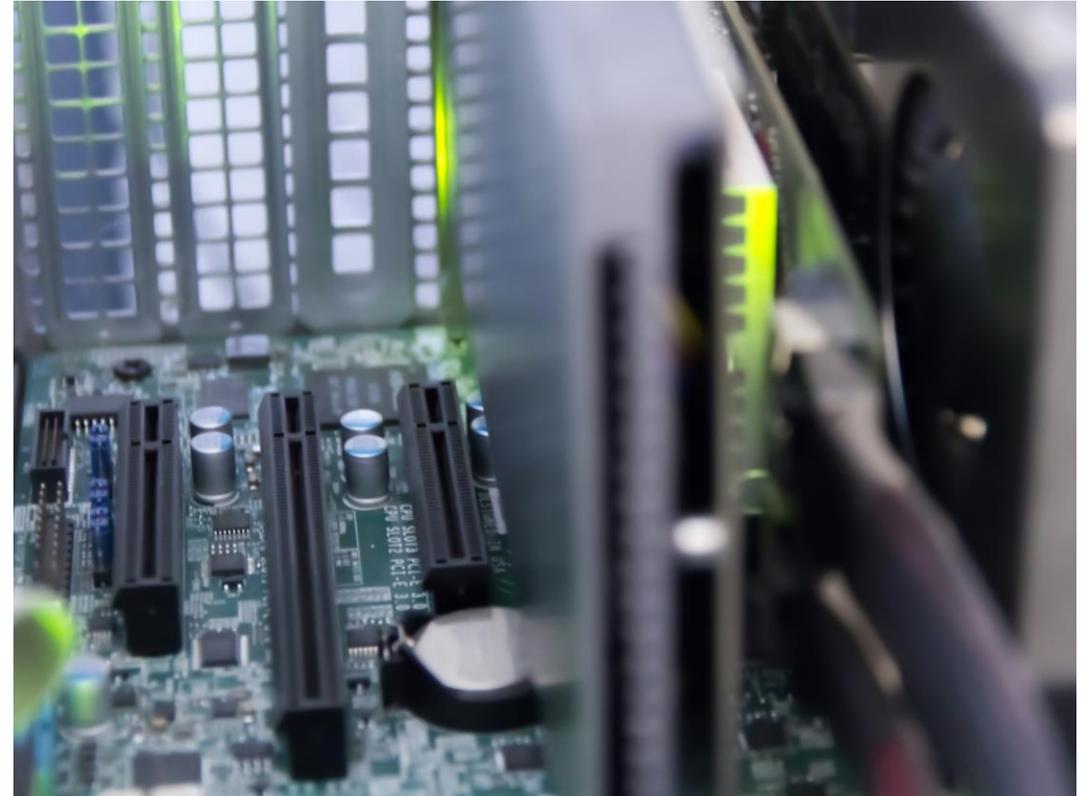
Kemi-Tornio regional skills assessment: data center professionals

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Lampikoski, Sweco Finland. May 2, 2025

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Project objectives



To produce a current state analysis related to the direct and indirect skill needs of data centers, the employment potential and investment situation in Sea Lapland.



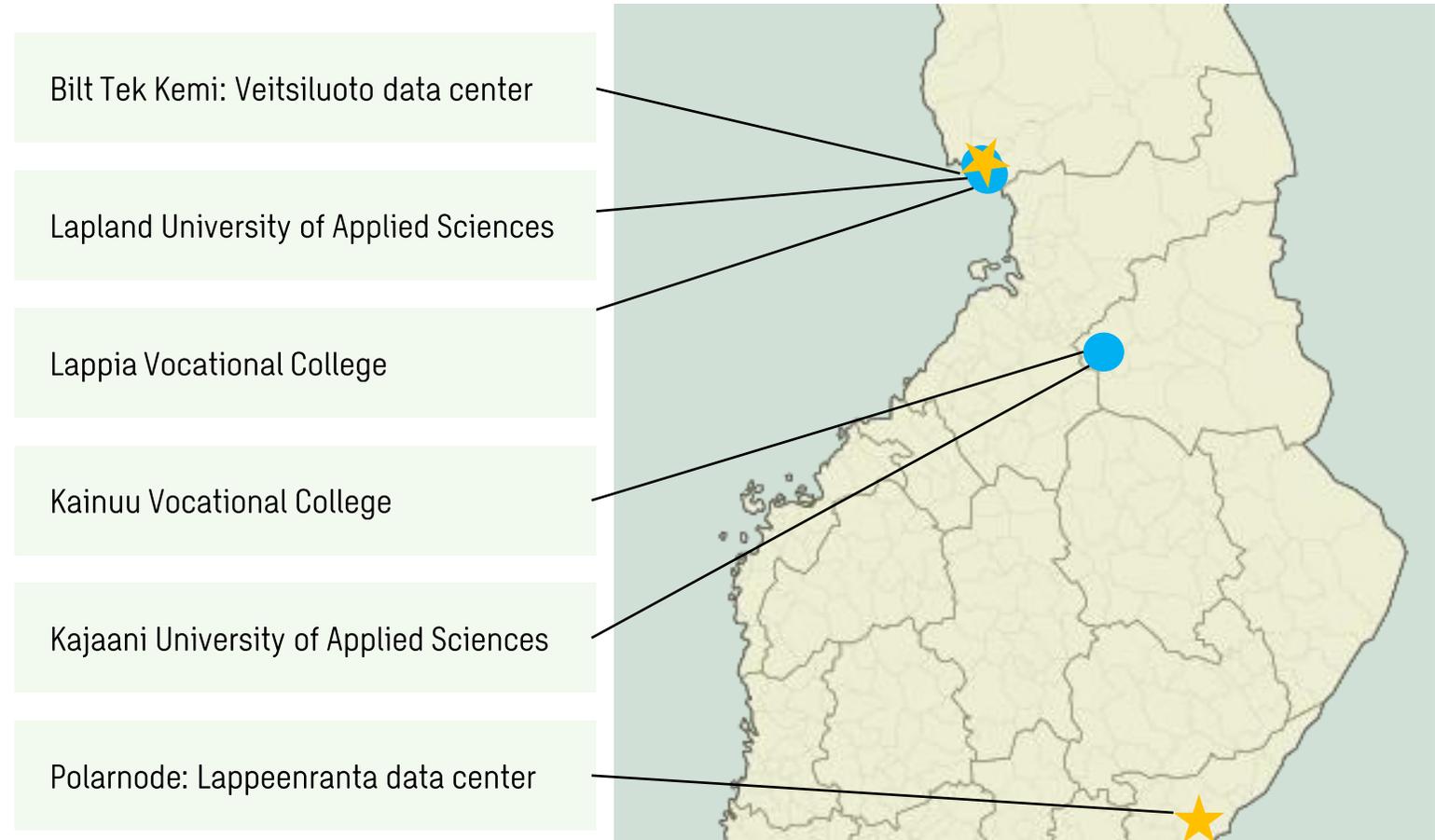
To carry out an analysis of the skills offering related to data centers in Sea Lapland, especially from the perspectives of secondary and higher education and lifelong learning. In addition, the role of RDI activities related to data centers is examined.



To report the findings of the study in an illustrative form so that the end result can be utilized in investor communication.

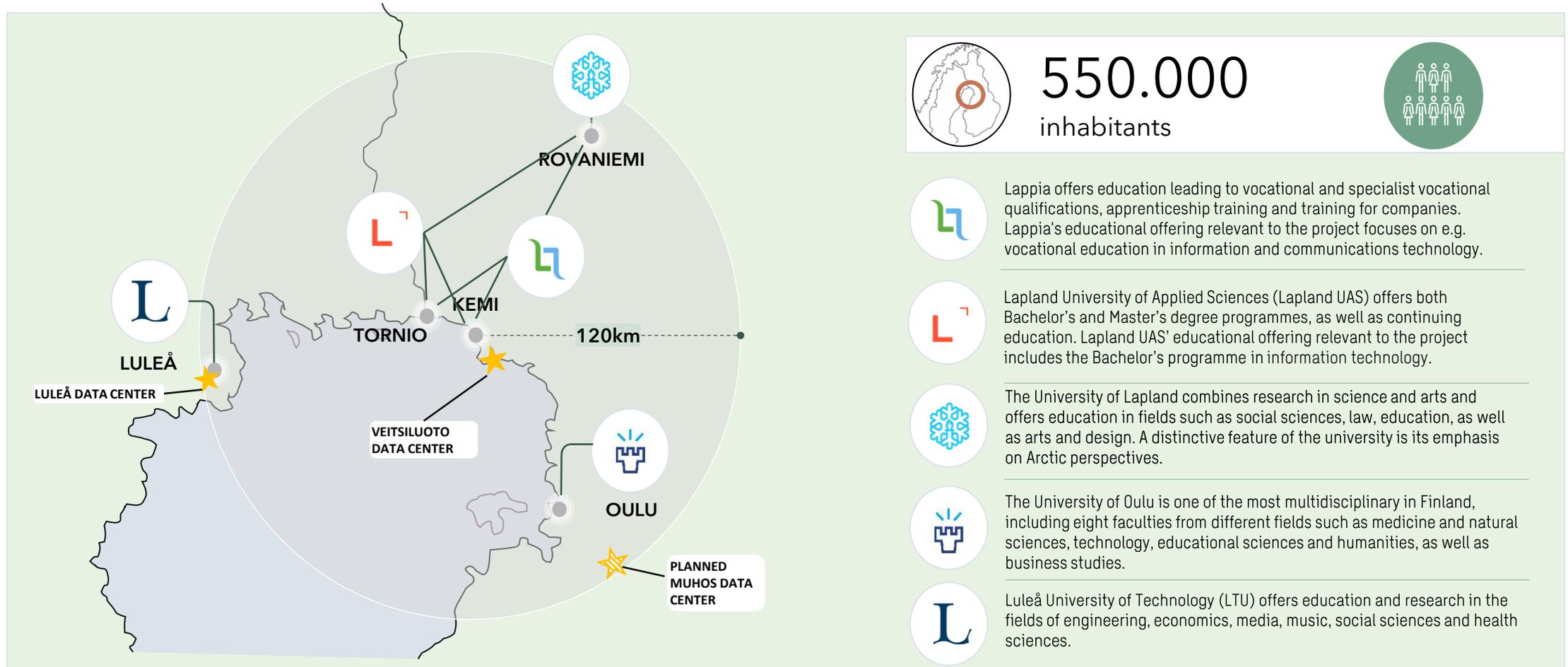
Participants of the project

- As part of the mapping of skill needs, interviews were conducted with key personnel of the Veitsiluoto data center and the planned data center in Lappeenranta.
- As part of the review on the skills offering, interviews were conducted with the competence managers in computer science and information and communication technology at Lapland University of Applied Sciences and Lappia Vocational College.
- In addition, competence managers from sectors representing the supporting functions of data centers, such as construction and cleaning and property services, participated in the Lappia interview.
- Comparative information on skills offerings was sought by conducting a benchmark analysis focusing on Kajaani. The staff of computer science and information and communication technology from Kajaani University of Applied Sciences and Kainuu Vocational College were interviewed for this.



Current state analysis

Educational institutions and data centers in the Sea Lapland area



The current state of investments and development of vitality in Sea Lapland

Development of the operating environment in 2021–2025

- The Kemi-Tornio sub-region has structural unemployment, ageing population and challenges in attracting and retaining the workforce.
- In 2021 Stora Enso closed down the pulp and paper factory in Veitsiluoto. However, the sawmill continues to operate.
- The region has aimed to address the challenge with measures for sudden structural changes, such as offering educational programs, diversifying the region's economic structures, and attracting new businesses.
- The region's strength lies in the large number of process industry professionals. Additionally, graduates from vocational training find employment in the area's basic industries.

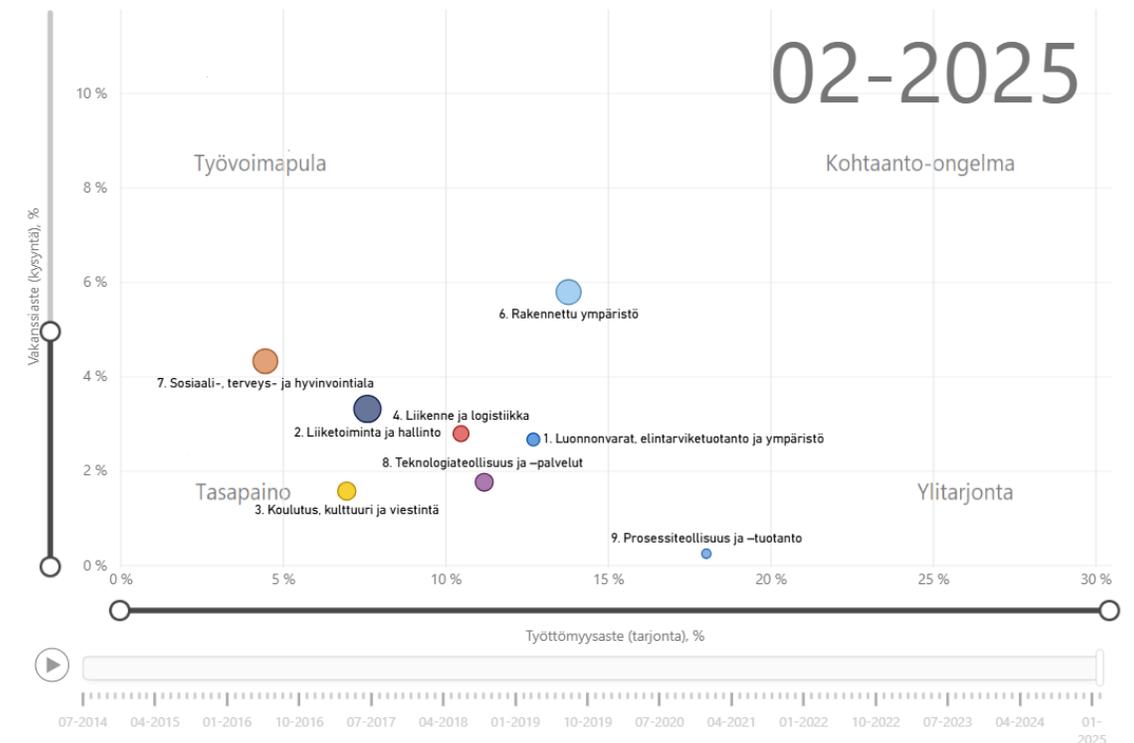
Investment status and plans to attract data centers

- Many data centers of various sizes are interested in making investments in the region.
- Domestic investments in data centers are still limited. The impact of foreign investments on employment is generally significant.
- The advantage of international investments is their large volume and their consequent impact on product research and development as well as on supply chains. Therefore, it is crucial to advance the ability to attract foreign investments and their social acceptance in the region.
- The energy consumption of data centers is expected to rise, which highlights the importance of operational efficiency and the availability of renewable energy. Sea Lapland has plenty of renewable energy and related growth potential.

The current state of employment development in Lapland and Sea Lapland

- In January-February 2025, the unemployment rate in the Kemi-Tornio sub-region was 11.9%. A year earlier, 11% of the workforce was unemployed.
- The key employing sectors in Kemi-Tornio are social and healthcare services, manufacturing industry, wholesale and retail trade, and construction industry.
- As can be seen from the following graph (in Finnish), labor market matching is relatively well balanced in the region of Lapland.
- In February 2025, the most significant challenges related to labor market matching in the region of Lapland were in built environment sector (5.34%), social, health and welfare sector (4.30%), and business and administration (3.06%).
- Changes in labor market skill needs also require collaboration between educational institutions. In general, in the field of information technology, the skills needs of the technology industry may increasingly require higher education. This underlines the importance of cooperation between vocational institutions and higher education institutions to enable smooth educational pathways.

Toimialat



Lapland as the area of assessment: Availability of labor and labor market matching, February 2025

Data center skill needs and employment potential

Factors influencing the location of data centers

Society and economy

Legislation, particularly regulations related to data protection, as well as the smoothness of permit processes, are key factors influencing location decisions. Additionally, **economic incentives and tax breaks** are important benefits for data centers. The **stability of the country's political and economic environment** is also relevant.

Energy and environment

The **cool climate** of the location is an advantage in terms of cooling costs. Additionally, areas with **minimal risks of extreme weather events and natural disasters** are preferred. Important factors also include energy costs and sources of energy production, such as **affordable electricity and availability of renewable energy**. Water supply is essential to ensure efficient cooling.

Infrastructure

The **existing infrastructure and ease of logistics** in the area are favoured. **Large substations and their proximity** as well as a **reliable and fast internet connection** in the area are important. In addition, data centers are preferably located in places where **the waste heat generated from operations can be utilized**.

Workforce and ecosystems

The **availability of skilled workforce** and the **proximity of educational institutions and operators** offering relevant fields of study are key factors. In addition, the social acceptability of projects and **smooth cooperation with stakeholders** are emphasized. **It is relevant to consider what kinds of ecosystems can emerge around the data center and how broader value chains operate in the area**. For example, synergies could be examined between data centers and companies that utilize industrial waste heat and energy parks.

Data center skill needs vary by phase

Development phase of the project

The required skills can be related to areas such as business expertise, procurement and financing knowledge, as well as understanding of construction and permit processes. The personnel involved in the development phase are usually highly educated.

Construction phase

During the construction phase of data centers, civil engineering expertise for contractor cooperation is needed. During the construction phase, contractors need expertise in mechanical engineering, construction, and electrical engineering, as well as expertise in logistics.

Operating phase



Roles requiring higher education: The technical skills needs of data centers may be related to e.g. computer and server maintenance, semiconductor technologies, device repair, management of network equipment, fiber connections, cloud services and network security, or information security. Suitable electrical or mechanical engineering qualifications and education in IT are relevant.

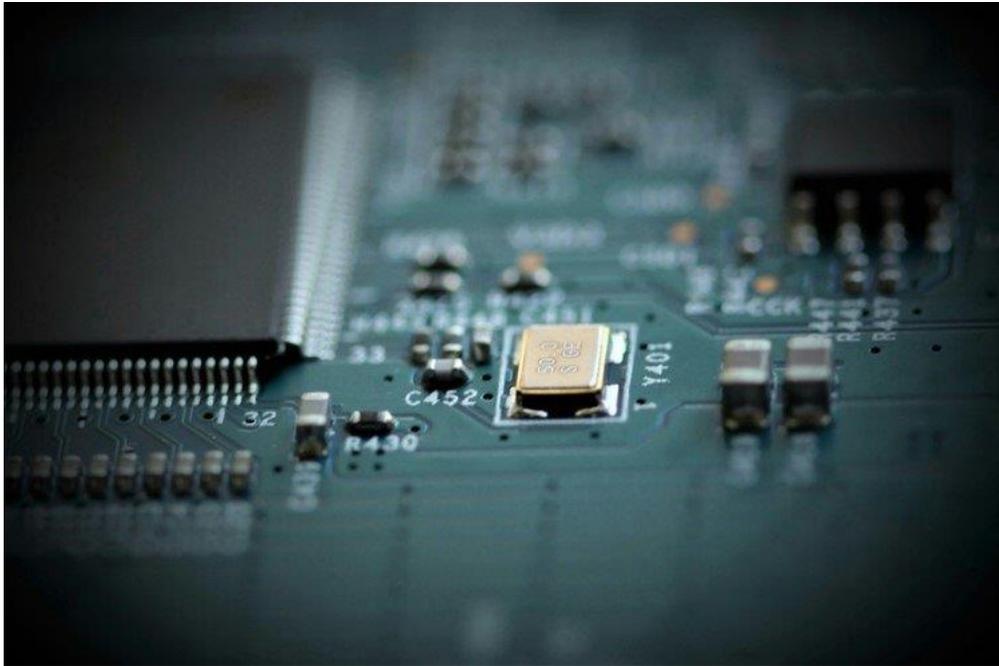


Vocational skills: There is also a need for vocationally trained personnel in data centers. Technicians are mainly required for the maintenance or repair tasks of cooling systems. Mechanical skills may be needed in situations where machinery or their parts are being replaced.



Support functions: Support functions such as facility services expertise, (such as cleaning and catering services) are needed through subcontracting. Additionally, security and surveillance expertise is emphasized in the skill requirements of data centers.

The employment potential of data centers



- Data centers are estimated to employ, on average, 1 person per megawatt (MW) of capacity. During the construction phase, the need for workers can be many times higher. A significant portion of the employment potential of data centers is realized through their supply chains and subcontractors.
- On average, about 30-50 people work in small and medium-sized data centers.
- Large-scale data centers, on the other hand, can employ hundreds of people. For example, Google's data center area in Hamina employs a total of 400 people directly or indirectly. The Microsoft data centers under construction in Espoo, Kirkkonummi and Vihti will employ a total of 300-400 people when completed. In addition to these, the support functions of the centers employ employees in areas such as property maintenance, logistics and security.
- Local employment in data centers is also supported through cooperation between data center operators and educational institutions. For example, Microsoft is training technical experts in cooperation with Omnia and Luksia in the Uusimaa region with the aim that students could start training during 2025.

The strengths of the Sea Lapland area for attracting data centers



Infrastructure and location

The area has existing infrastructure, such as electricity transmission infrastructure, to meet the needs of data centers.

The region's accessibility is good in terms of road and rail networks, as well as sea and air routes.

There are industrial plots available in the region. In Southern Finland and elsewhere in Europe, it is difficult to find plots suitable for the needs of data centers.



Energy

There is plenty of electricity available in the Sea Lapland region and the area has a strong main grid.

There is also plenty of renewable energy available in the area, which makes the region attractive for data centers.



Competence

The expertise generated by the region's educational institutions serves many of the skills needs of data centers (e.g., ICT sector, logistics, construction and property maintenance).

The educational institutions in the area have a strong connection with industrial operators. Educational organizations operate in a network-like manner and are prepared to train experts for identified, long-term labor market needs.



Climate and soil

The cool climate in the area is beneficial for the cooling needs of data centers. In cooler climates, cooling requires less water and energy.

The soil in the area has low seismicity and the risk of natural disasters and extreme weather phenomena is remarkably low.

Case study: Bilt Tek, Veitsiluoto

- Bilt Tek is a British company that provides computing services to its customers. Bilt Tek opened a 70-megawatt data center in Kemi at the beginning of 2025. The center operates in the old premises of Stora Enso's paper mill. In the initial phase, the company employs 22 people.
- Bilt Tek's staffing needs include the following recruitable positions: production managers, shift supervisors, ICT, mechanics and shift managers, as well as administration and personnel coordinators. Bilt Tek's employees in Kemi are locals. Higher-level positions at Bilt Tek are held by highly educated professionals. For daily tasks such as maintenance and supervision, a higher education degree is not necessarily required, as staff can be trained for these roles.
- Bilt Tek does not require previous experience in data centers from their employees. According to Barona, a technical educational background is necessary for production managers, as well as electrical and ICT expertise and industrial production expertise. Barona is responsible for acquiring personnel for Bilt Tek.
- Kemi's strengths in the decision to locate include the climate, the availability of electricity, the competence of the workforce and accessibility. The availability of renewable energy is also seen as an influencing factor.
- Smooth cooperation with the landowner is a significant factor in terms of location. The landowner's good local networks support the launch of operations.
- Bilt Tek can consume electricity from the grid flexibly, regardless of whether there is too much or too little capacity in the grid.



Image: Yle 7.11.2024. Antti Ullakko

Case study: Polarnode, Lappeenranta

- Polarnode is a Finnish data center project development company that is planning a 150-megawatt data center complex on a 33-hectare industrial plot in Pajarila, Lappeenranta. Construction could start already at the beginning of 2026. When realized, the value of the investment is approximately 1 billion euros.
- The location has been influenced by the nearby local airport, the central railway station and the motorway network. In addition, Polarnode's location criteria include the size of the economic area, the availability of educated workforce in the area and the services surrounding the location.
- The company emphasizes locations where data centers generate clear added value, for example through employment and tax revenues. In addition, the proximity of Lappeenranta University of Technology (LUT) creates opportunities for ecosystem development and synergy benefits. Polarnode has existing collaboration with LUT University.
- The location of the plot is ideal because connecting to the power grid and district heating network is affordable and easy. The waste heat from Polarnode is intended to be fed back into the district heating network
- When making an investment, Polarnode emphasizes its commitment to local communities and its dedication to ongoing dialogue with them. The company considers smooth cooperation with the city to be important, especially in matters related to permits, district heating and water.
- Polarnode will be a contracting organization, which means that most of the workforce will be outsourced. According to Polarnode's estimations the data center will employ 100 people during its operational phase. More than half of the job positions will be for highly educated personnel. The employment impact of the data center focuses on the broader value chains. Security and surveillance-related tasks are emphasised.

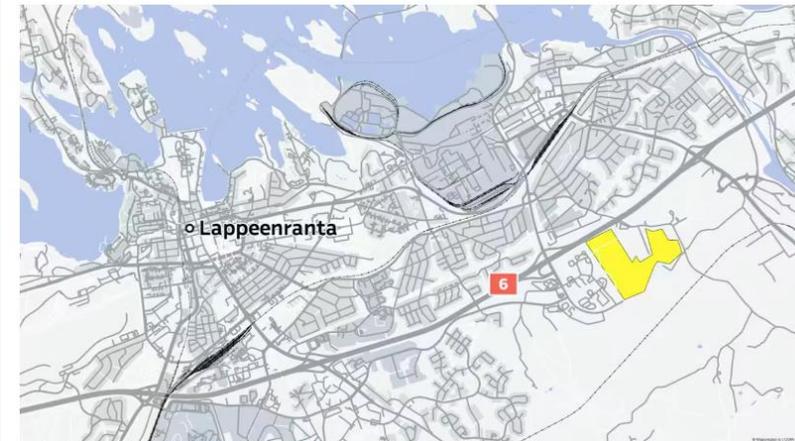


Image: Yle, 25.3. 2025. Kare Lehtonen.

The skills offering of Sea Lapland and its future

The skills offering of Lapland UAS and its future

- Lapland UAS offers a Bachelor of Business Administration degree in information technology and a Bachelor of engineering in information and communication technologies and its English equivalent, *machine learning & data engineering*. These degree programs provide potential talent to meet the diverse technical needs of data centers.
- The University of Applied Sciences also offers a wide range of network studies, which enable the tailoring of study paths according to the students' needs and interests.
- Lapland UAS also educates experts suitable for the support functions of data centers by offering degree programs in electrical and automation engineering, logistics engineering, civil engineering and land surveying.
- Graduates from the information technology and the information and communication technology programs can find employment in software companies, industry, state and municipal IT administration, or as entrepreneurs.
- Identified future factors that affect the field include artificial intelligence and language models, as well as automation.
- Using various applied study formats and learning environments, it is possible to rapidly respond to the new needs rising from the labor market.
- The **Highway to ICT** training offers low-threshold higher education level ICT training through remote learning (45 credits) in collaboration with three universities of applied sciences and guides professionals into ICT roles.
- In the **FrostBit** software laboratory, teams can apply learning in practice and develop, for example, virtual learning environments. Through FrostBit, students also get internships, thesis and project work topics that arise from the needs of working life. In addition, the Electrical Laboratory of the University of Applied Sciences offers staff training for companies.
- The **Xbit Academy** aims to flexibly address the needs of working life by collaboratively training students between the educational institution and companies through project-based learning.
- **RDI activities** are carried out in the fields of gaming and XR, artificial intelligence, as well as in robotics and cyber-physical systems.
- The key to tailoring education is to first understand the needs of the stakeholders. Increasing dialogue with data centers is seen as essential. Through networks, students also gain practical experience directly in companies.

The skills offering of Lappia and its future

- Lappia offers a vocational qualification in information and communication technology, where a student can specialize as a network installer or as an IT support person. Graduates can, among other things, meet the needs stemming from the network infrastructure of data centers.
- Lappia also offers vocational qualifications in logistics, mechanical engineering and production technology, process industry, electrical and automation engineering, as well as a vocational qualification in cleaning and property services. In addition, Lappia offers degrees in the field of safety and security at different levels. Experts in these fields have the potential to be employed in data center support functions.
- Lappia can tailor additional modules of 5-15 credits to existing degrees according to local labor needs. Add-ons can be customized in a multidisciplinary way, across the training offering.

- The offered training and education programs have similarities with the skills needs of data centers.
- Lappia hopes to increase its understanding of the needs of data centers and to engage in dialogue with operators in the field. The use of staffing agencies may slow down the development of dialogue with the operators.
- Lappia primarily trains professionals for a wide range of basic operational tasks. These professionals have the possibility to pursue further education for roles requiring specialized skills, for example, at a university of applied sciences.

Benchmark: Data center-related education offerings in Kajaani



Kajaanin Ammattikorkeakoulu, KAMK

- Kajaani University of Applied Sciences (KAMK) offers a Bachelor of Business Administration with a focus on data centers. The key areas of emphasis are programming, practical data center operations and cyber security. The graduates can work as a system specialist, trainer, IT designer or operations manager. So far, the degree program has provided good employment, although there have been slightly fewer applicants in 2025 than before. The educational institution has plans for the further development of the education.
- At KAMK, it is also possible to study computer science related to the game industry, for example, as an engineer in information and communication technology and mechanical engineering. KAMK also offers Master's level studies in information technology (knowledge management).
- KAMK offers further education studies, such as a 12-credit *cloud and cyber security* micro-degree and 5-credit *data engineering* and *data analysis* path studies, which are also taken by students from other universities of applied sciences.
- KAMK is preparing RDI cooperation related to data centers. The university is also collaborating with IT Center for Science CSC in a research project focusing on artificial intelligence. In addition, a project related to waste heat from data centers is underway.

Kainuu Vocational College, KAO

- KAO offers a vocational qualification in information and communication technology, where the student can specialize as an electronics installer or an IT support person.
- KAO also has fields of study that serve data center support functions, such as vocational qualifications in logistics and mechanical and production engineering, as well as vocational qualifications in machine installation and maintenance, electrical and automation fields, as well as cleaning and property services. In addition, KAO offers degrees in the field of security.
- Certain parts of a degree can be offered to deepen expertise, such as automation skills related to data centers and cooling technology skills.
- KAO's offering mostly meets the needs of basic ICT tasks. Vocational colleges generally meet the needs of basic work in data centers with their range of skills.

Conclusions and development recommendations

Conclusions

- **Sea Lapland has several strengths that make the area an attractive destination for data center investments.**
 - **Data centers need professionals from both vocational education backgrounds and higher education backgrounds.** For both, it is essential to have a strong educational background and the ability to apply it.
 - Vocational background emphasizes technical, practical skills, such as equipment maintenance and repair, while roles requiring higher education often involve engineering qualifications. **The skill requirements for the operation and support functions of data centers differ during the construction and operational phases.**
 - **The skill needs of data centers can be met with existing technical and business education programs.** This study did not identify specific needs for customized training programs.
 - Data center operators do not require their employees to have a background in data centers, and they can train their personnel themselves if necessary.
- The operation of data centers (i.e., what is done with the data) varies between actors and phases of operations, so data centers usually carry out more detailed training of employees themselves.
 - **The educational institutions in the Kemi-Tornio area offer training programs that are able to meet the needs of data centers.** Expertise is also available for support functions. The institutions can tailor individual students' learning paths and develop additional lifelong learning offering based on workforce needs.
 - **Local collaboration is important for data centers.** Emphasis is, among other things, on cooperation with the landowner and possibilities to develop strong ecosystem collaboration.
 - **A potential increase in the electricity tax and other actions that weaken the stability and predictability of the operating environment are seen as a threat by data center operators.** Various stakeholders follow the topic closely.

Development recommendations

- **Educational institutions should further strengthen their understanding of the skill areas required by data centers and systematically market their expertise to industry actors.**
- **Educational institutions are encouraged to increase cooperation and dialogue with data centers, for example through visits.** The local business community are similarly encouraged to build collaborative their relations.
- **By enhancing collaboration and communication between educational institutions and data centers,** data centers can increase understanding of the available skill offerings, while educational institutions can gain a better understanding of the skill needs of data centers. The skill requirements should also be examined broadly across the value chains and support functions.
- **Educational institutions should leverage collaboration between educational institutions from other regions.** Interregional cooperation between institutions can create synergy benefits for the development of data center-related skills offerings and highlight relevant study paths.
- The specific skill needs of data centers vary from one center to another. Educational institutions can address many of the needs of data centers with existing training programs. **The training should also cover the expertise required for the systems surrounding data centers, such as cooling and electrical systems, as these are common and technically similar solutions for all centers.**
- The needs of data centers can largely be met with existing training programs. **Educational institutions can also identify and utilize flexible lifelong learning components to address more specific needs of data centers.** Responding to the needs of individual data centers through further education programs may, however, be challenging and require long-term collaboration and the building of trust.
- **Utilization of synergies with regional companies should be increased, for example by fostering cooperation between data center operators and companies using waste heat.** This would allow data centers to become a more integral part of regional development. However, this topic requires further investigation.
- **Local stakeholder collaboration between data center operators, municipalities, residents, and other key actors should be strengthened to advance the social acceptance of data centers.** Open Interaction over the long term helps to identify the locally relevant themes related to social acceptance. This is also crucial for attracting investments and for managing investment risks.

Appendix: Background material used in the study

- Invest in Veitsiluoto Regional skills assessment review
- Invest in Veitsiluoto Retail and Services Investment Study (FI)
- Invest in Veitsiluoto Datacenter locations in Sea Lapland
- YLE: [Datakeskukset eivät synnytä satoja kovapalkkaisia työpaikkoja – suurelta osin vartiointia ja siivousta, sanoo professori | Etelä-Karjala | Yle](#)
- [HAMK 2024. Jää palkkaamatta se, jolla ei ole ”driveä” – Ammatillisen perustutkinnon suorittaneiden nuorten työttömyys tekniikan aloilla – Ammatillisen perustutkinnon suorittaneiden nuorten työttömyys tekniikan aloilla](#)
- [Katsaus Kemin ja Kemi-Tornion-seudun kehitykseen 2/2025](#)
- [Työvoiman saatavuus ja kohtaanto - Tilastot ja raportit – Työmarkkinatori](#)
- [AMK-koulutukset - Kajaanin ammattikorkeakoulu](#)
- [YAMK-koulutukset - Kajaanin ammattikorkeakoulu](#)
- [Hae lisäkoulutusta / täydennä osaamistasi - Kajaanin ammattikorkeakoulu](#)
- [AMK-tutkinnot - Lapin ammattikorkeakoulu](#)
- [XBit Tornio – Digitaalisen kokemuksen ympäristö](#)
- [Koulutusalat - lappia.fi](#)
- [15 Tips for Hiring Great Data Center Technicians](#)
- [How to Prepare Data Center Sites for An Attraction Strategy](#)
- [The 8Cs: What Goes into Choosing Data Centre Locations? - DataX Connect](#)
- [20 Data Center Site Selection Best Practices](#)
- [Suomalaisyhtiö aikoo rakentaa miljardiluokan datakeskuksen | HS.fi](#)
- [Lappeenrantaan on tulossa miljardin euron datakeskus – seuraavaksi sille etsitään kansainvälistä toimijaa | Kotimaa | Yle](#)
- [Kemin Veitsiluodon tehdasalueelle avataan iso datakeskus, joka työllistää 22 henkilöä | Lappi | Yle](#)
- [Datakeskukset ja vetyhankkeet lupailevat suuria – Kumpi ala tuo todella enemmän työpaikkoja? | Kauppalehti](#)
- [Googlelle miljardin euron jättilaaajennus Haminaan - Uusiteknologia.fi](#)
- [Microsoftin datakeskukset Espoossa, Kirkkonummella ja Vihdissä tuovat yli 300 uutta työpaikkaa | HS.fi](#)
- [Microsoft alkaa kouluttaa Suomessa teknisen alan osaajia suoraan datakeskusten tarpeisiin – 2 oppilaitosta yhteistyössä | Tekniikka&Talous](#)

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