# CSC's services for researchers

Non-profit state organization with special tasks

Turn over in 2018

**44,9**M€

**CSC**

Headquarters in Espoo, datacenter in Kajaani

**Owned by state (70%)**

and all Finnish higher education institutions **(30%)**

Circa

**350**

employees in 2018

# Our customers
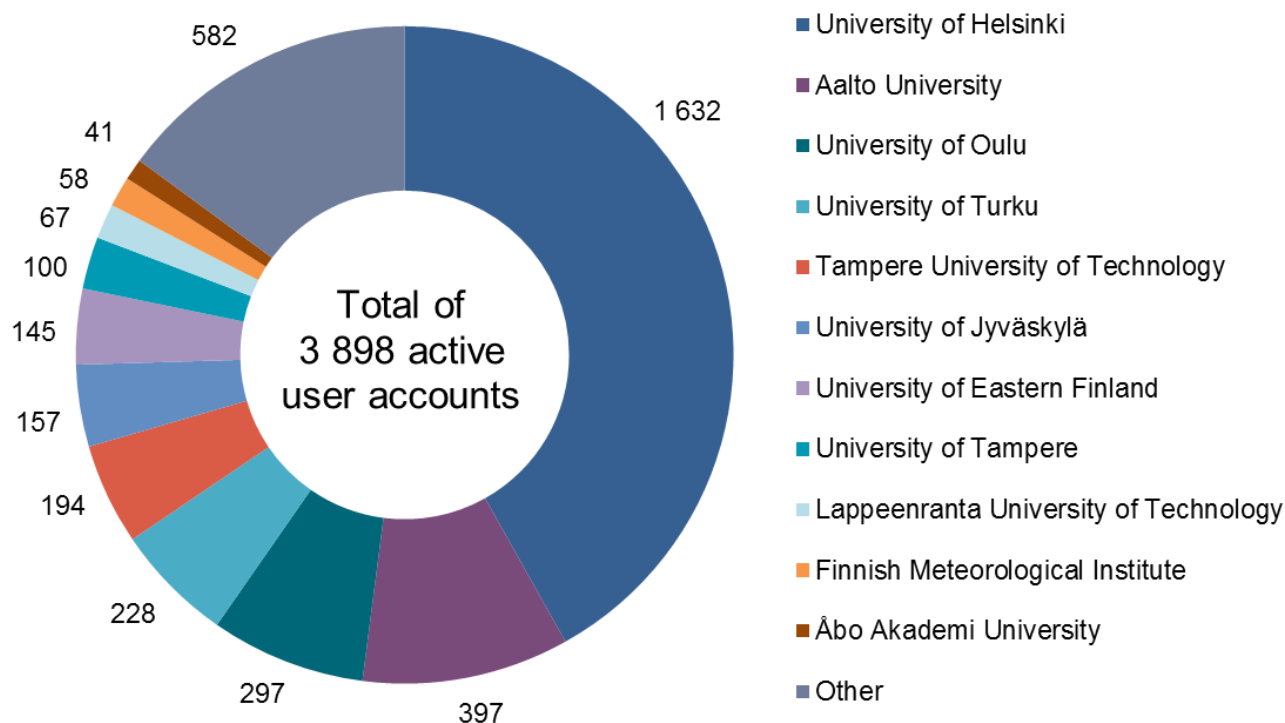
Researchers,
research institutes and
organizations

Organizations providing
education

Memory organizations,
state and public
organizations

# Active user account customers by organization at the end of year 2018

Total of 3 898 active user accounts

- University of Helsinki — 1 632
- Aalto University — 397
- University of Oulu — 297
- University of Turku — 228
- Tampere University of Technology — 194
- University of Jyväskylä — 157
- University of Eastern Finland — 145
- University of Tampere — 100
- Lappeenranta University of Technology — 67
- Finnish Meteorological Institute — 58
- Åbo Akademi University — 41
- Other — 582

Active user account = account's password is valid and it has been changed within 365 + 30 days (counted from 31.12.2018)

# Thanks to our agreement with the Ministry of Education and Culture, our services targeted at researchers are largely free of charge!

# Support in all of the phases of a research process

# CSC's solutions

Computing and software

Data management and analytics for research

Support and training for research

Research administration

Solutions for managing and organizing education

Solutions for learners and teachers

Solutions for educational and teaching cooperation

Hosting services tailored to customers' needs

Identity and authorisation

Management and use of data

## ICT platforms, Funet network and data center functions are the base for our solutions

# CSC's Current Computing Services
## available for research and education



## High Performance
- Sisu
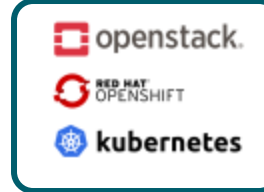- Massive parallelism
- Fast interconnect

## Capacity
- Taito
- General use
- Large memory
- >100 applications

## Accelerated
- Taito extension
- Visualization
- Special codes
- Nvidia GPU

## Cloud
- IaaS: cPouta + ePouta (OpenStack)
- PaaS: Rahti (OpenShift / Kubernetes)

## Hosting
- Kajaani
- Espoo
- Efficient and secure datacenters
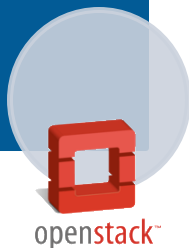- Virtual and physical servers

## Storage Services: Fast parallel storage, Object Storage, Archiving
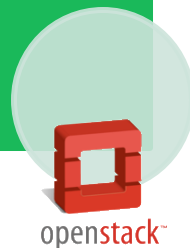
# CSC's Cloud Services

- IaaS Cloud
  - User supplies a virtual machine (VM) image
  - Services accessible over internet
- WebUI, CLI & Rest APIs supported

## cPouta

- IaaS Cloud for Sensitive Data Processing
  - Services accessible only from customer network
- WebUI, CLI & Rest APIs supported

## ePouta

- PaaS Cloud
  - User supplies Docker container
  - Services accessible over internet
- In Closed Beta Phase
- WebUI, CLI & Rest APIs supported

## Rahti

- Different hardware flavours (hpc, GPU, I/O, …) available for all cloud services

# CSC's Upcoming Computing services

- **Supercomputers: Puhti and Mahti**
  - o **Puhti** - Supercomputer with Intel CPUs (2019)
  - o **Puhti-ai** – Supercomputer with GPUs (2019)
  - o **Mahti** - Supercomputer with AMD CPUs (2020)

- **Cloud services**
  - o Pouta and Rahti service development continues

- **Object storage service: Allas**
  - o New service for computing and cloud services, data can be shared to Internet

- **When you need even more**
  - o PRACE research infrastructure
  - o FGCI

# Notebooks – great introduction to CSC computing services

- Notebooks is a web based environment primarily for education and data analysis.

- You can log into the Notebooks service using the user access of your institution (via Haka) and immediately start to use various analytics applications, such as RStudio and Jupyter.

- Notebooks is suitable in particular for minor experiments and teaching, as it is extremely quick and easy to implement.
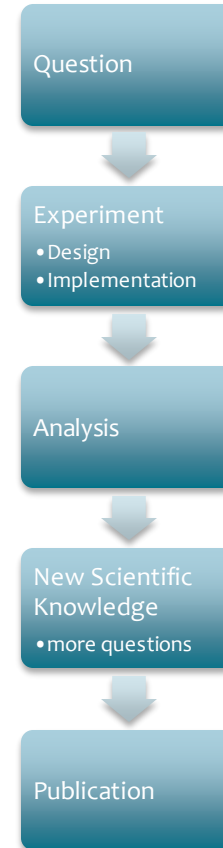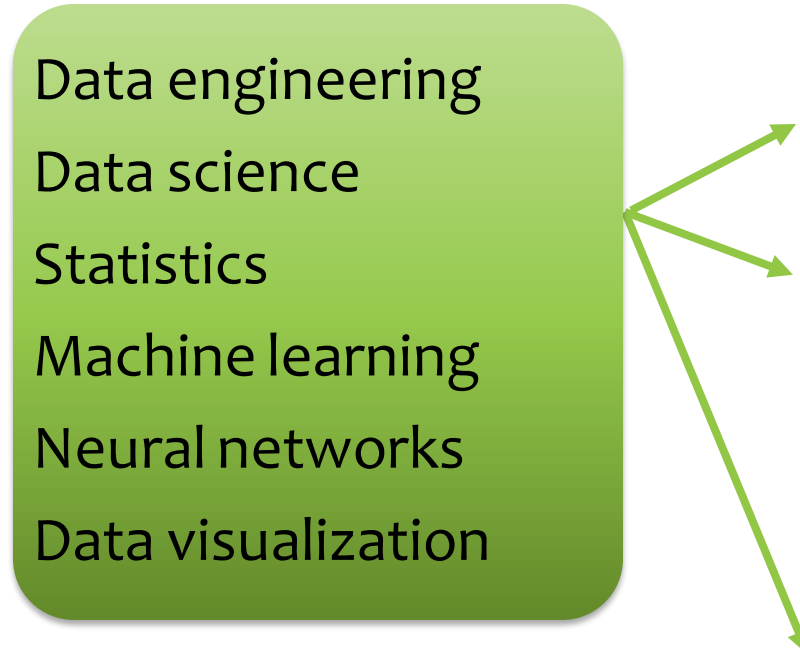
- https://notebooks.csc.fi

# Software and databases

- CSC provides researchers the largest collection of scientific software and databases in Finland.

- The list of pre-installed and supported scientific software packages can be found at: https://research.csc.fi/software

- Information about database services:
  - https://www.csc.fi/tutkimuksen-tietokantapalvelu
  - https://www.csc.fi/tietokantapalvelu-kaivos

# CSC's targets in data analytics

- Help customers reach higher levels of analytics maturity with **expert consultation and training**

- Provide open and tailored **cloud and HPC services** for data-driven solutions

- Support the Finnish society in digitalization and artificial intelligence through **networking and co-creation**

# CSC Expert support

Data engineering

Data science

Statistics

Machine learning

Neural networks

Data visualization

Question

Experiment
•Design
•Implementation

Analysis

New Scientific Knowledge
•more questions

Publication

13.5.2019

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# Fairdata.fi

- National integrated services for storing, describing and sharing and preserving research data

- Provided by MinEdu

- Produced by CSC and National Library of Finland

- **Make your data safe , documented and citable**
  - **IDA** – Research data storage service
  - **ETSIN** – Research data finder
  - **QVAIN** – Research dataset metadata tool
  - **FAIRDATA-PAS** – Digital preservation for research data
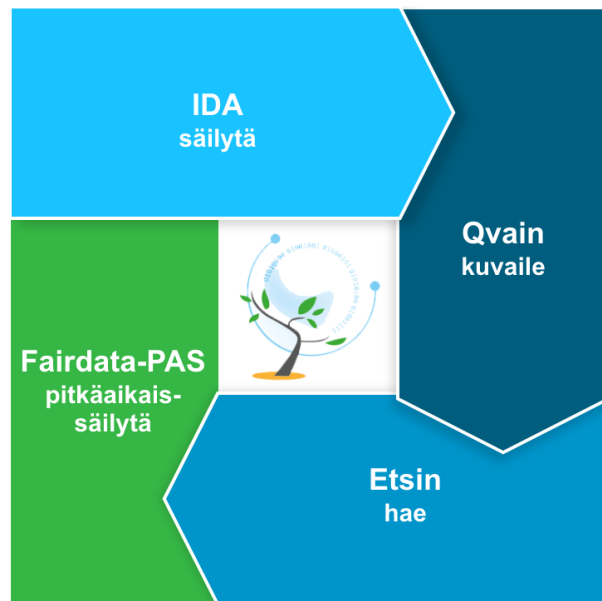
# Services for finding research data

- With ETSIN and B2FIND SERVICE  you can easily find data for your research

- AVAA is a publication platform where you can seek and download open research data.

- THE LANGUAGE BANK OF FINLAND is a service entity for researchers who use text and speech corpora. The basic use is free of charge to researchers and students.

- PAITULI is a download service of Finnish spatial data. The service contains spatial data that is important in research and education. It deviates from many other similar services as it also contains historical year versions.

- ELIXIR offers services for medical and bioinformatics research.

- VIPUNEN is a statistics service provided by the Finnish National Board of Education where you can find information on, for example, education in a number of educational sectors, research conducted in higher education institutions and the educational structure of the population.

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# Storage - active data

- Upcoming **Allas** service provides a cross-platform service for storing and sharing data. Data Objects can be uploaded to this service from CSC environment as well as environments outside CSC. Data can also be shared Internet

- CSC computing environment offers user and project directories for active data as well as an archive. This storage environment is accessible from CSC computing & cloud environment.

- Storage in cloud environments is provided for computing, processing and analyzing data.

- Databases for research are available for computing projects by CSC users. Access to the databases is through the CSC computing & cloud environment. Databases are also provisioned separately, contact Service Desk for more information.

## Storage  - stable data

- Fairdata IDA is used for storing and sharing stable research data. Data can be shared and metadata published via additional services. The service is accessible from the Internet and CSC computer environment.

- EUDAT B2SHARE is a storage and sharing service for openly licensed research data in European collaboration. Access is from the Internet and CSC computer environment.

- Fairdata PAS is a digital preservation service for research data. Digital preservation refers to the reliable preservation of digital information for several decades or even centuries.

# Training services

- Annually about 70 training events for Finnish universities and research institutes: courses, workshops, seminars and webinars

- Lecturers and trainers are leading experts

- Training aimed to familiarize you with the CSC infrastructure and its efficient use

- Courses can be customized according to your needs

- Information and registration for upcoming trainings and learning materials can be found in **CSC's training portal** www.csc.fi/training

- If you have questions related to CSC's training services, contact **courses@csc.fi**

# HPC-Europa3 - travel, compute, learn, network

- Four calls every year until April 2021
  - o Visit a group or invite a (coming) collaborator to your group
  - o Next DL for applications is 14th May 2019

- Requirements:
  - o Non-proprietary research
  - o Affiliated at an EU-country, associated country or other
  - o Project needs/benefits of HPC resources

- Provided:
  - o Support for accommodation, travel costs and likely a small daily allowance for a 3-13 week visit
  - o Resources and support from local HPC-center

- http://www.hpc-europa.org/
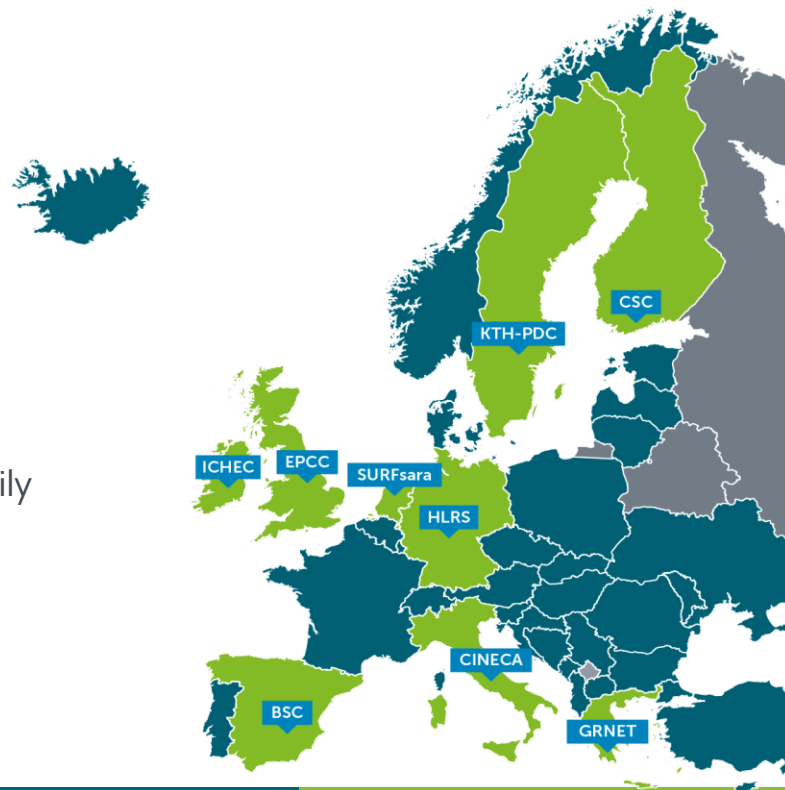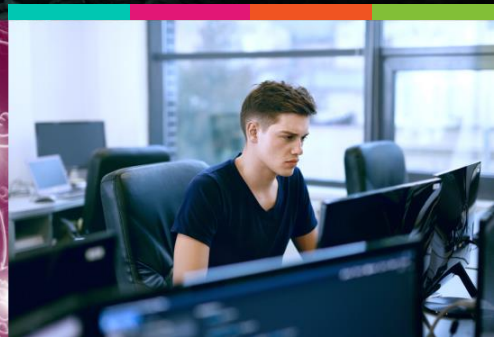
# How to get access?

# How to get access?

- **Your Haka user ID is your access to more than 160 services.**
  - Web based services ready to use
  - Register to get a personal CSC user account
  - If your organization does not have Haka, contact servicedesk@csc.fi

- **Through the contact persons in your own organization**
  - Project supervisor applies for resources and services, and can invite other people to projects
  - IDA has contact persons in customer organizations
    - https://www.fairdata.fi/en/ida/becoming-an-ida-user/

- **Customer service**
  - Instructions https://research.csc.fi/accounts-and-projects
  - Support and guidance **servicedesk@csc.fi**
  - Weekdays  8.30–16.00.

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## Questions?

Information about CSC in general: [www.csc.fi](www.csc.fi)

Information for researchers: [research.csc.fi](research.csc.fi)

Up-to-date information about the new computing and data environment: [research.csc.fi/dl2021-utilization](research.csc.fi/dl2021-utilization)

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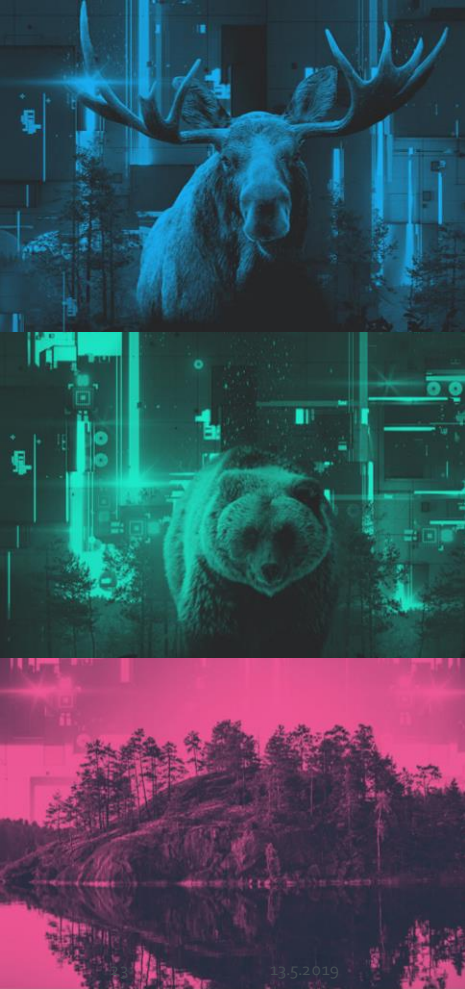
# Getting access: The framework

- **CSC User Account**
  - Is attached to a *Personal Project*
  - Used to log in at CSC
  - Each researcher should have only one
  - Includes access to Taito and little CPU but no additional services

- **Computing Project**
  - Created by your Project Owner (PO)
    - Theses supervisor, professory at your institute, …
  - A research group can have one or many Projects
    - E.g. one per major topic
  - **Resources (CPU time**, disk space) are parts of Projects
    - This CPU time is consumed when you run jobs
  - Academic Project usually has many user accounts
  - Your account can belong to many projects

- **Services**
  - E.g. access to Taito, Sisu or cloud
  - **Services** are properties of **Computing Projects**
  - PO: Accept Terms of Use (link via email)

- **Resources** are managed at **Computing Project** level
  - More CPU time is applied to a Computing Project
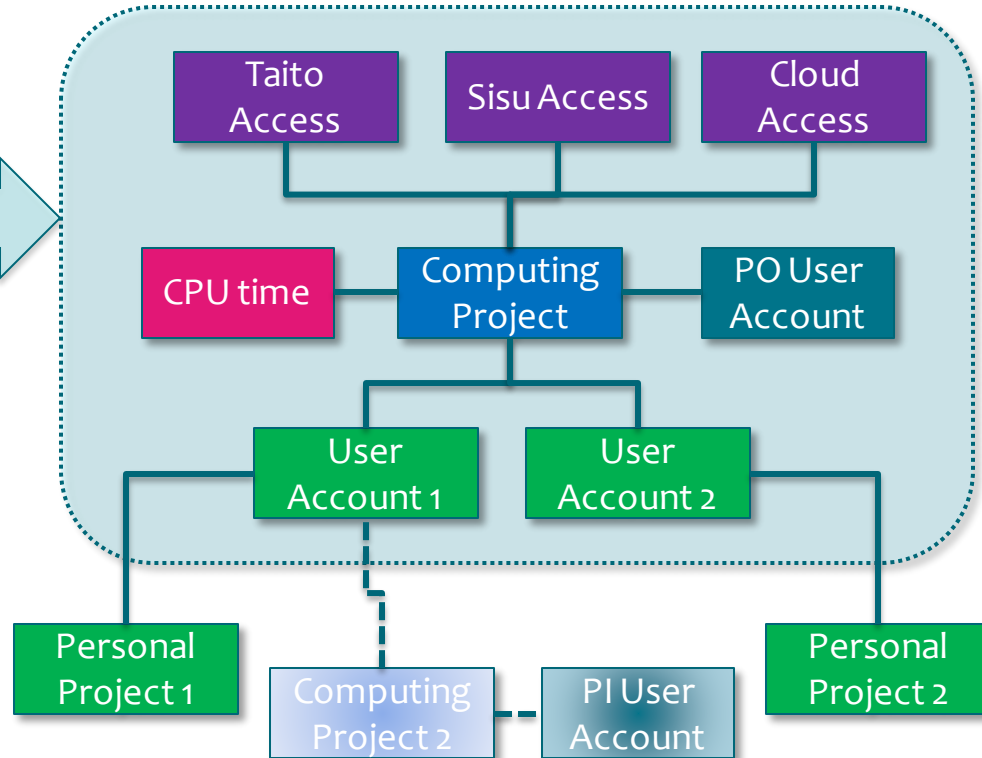
# Concrete examples on using CSC services

- Run simulations
  - Your own code, or preinstalled by us
  - HPC, HTC, GPU, light or interactive

- Data-analysis

- Sharing and storing data

- Provide web services (cPouta, Rahti)

- Work with sensitive data (ePouta)

- Use Notebooks for training

- Participate in training

- Benefit from EU projects