

# RESEARCHER'S

PATH



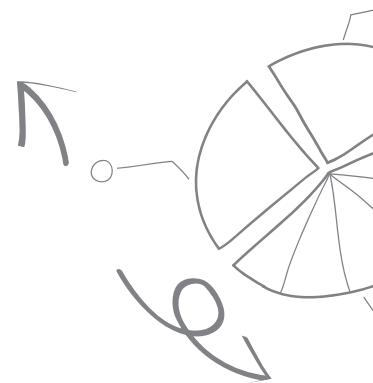
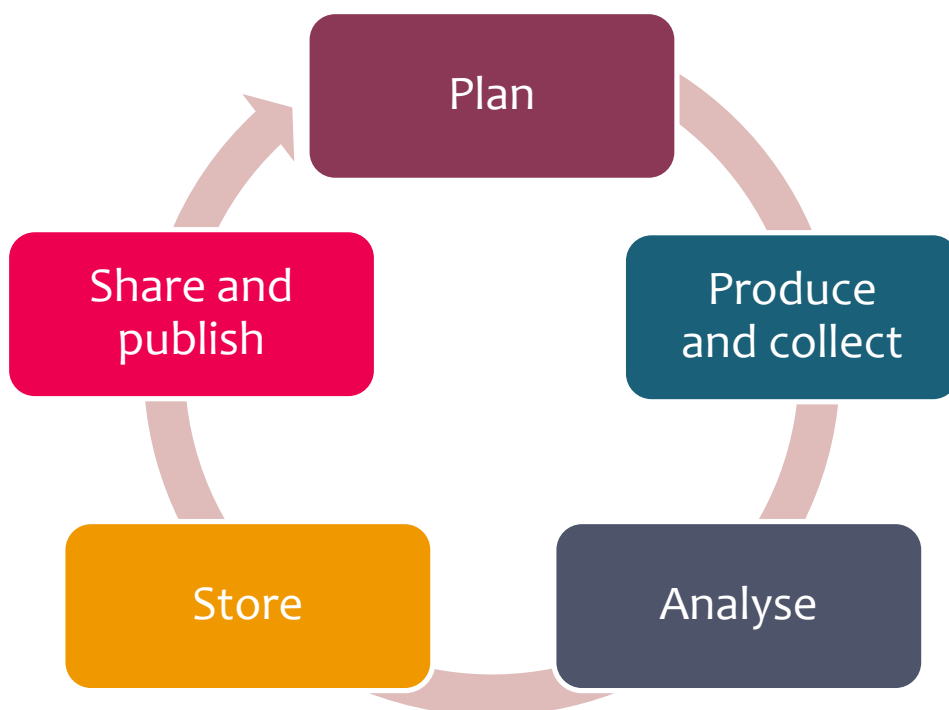
HOW CSC CAN HELP IN THE VARIOUS PHASES OF RESEARCH?

# RESEARCHER'S PATH

Support in all of the phases of a research process.

You surely wish to carry out research with the best possible tools? Take us along on your researcher's path to pave the way towards scientific breakthroughs.

Through CSC, you can access tools for scientific computing and managing research data as well as expert services specific to each discipline in a single place. All the way from research planning to publishing the results – we are there to support you!



# PLAN

Start your researcher's path with CSC's experts.



- What kinds of services are available to support my research?
- How can I start to use the services and do I have to pay for them?
- Can I use the services flexibly with various cooperation partners?
- Where can I find instructions and support for using the services?

Customer portal

Experts

Guides

Servicedesk

Training

Websites



## Access to more than 160 services!

Your Haka user ID is your access to more than 160 services. With the ID, you can, for example, register in CSC's customer portal Scientist's User Interface and take many research services into use. If you do not have a Haka ID, for more information please contact our customer service.

➔ **Customer portal at [sui.csc.fi](https://sui.csc.fi)**  
– log in and start using the services!

## Top quality in the Nordic countries

You may access the most efficient environment in Finland for the needs of computational science, research and product development. We provide you with access to over 100 scientific software entities, and training and support related to services.

## Getting started

Our servicedesk helps thousands of researchers every year. You will receive personal guidance and support in the implementation of services:

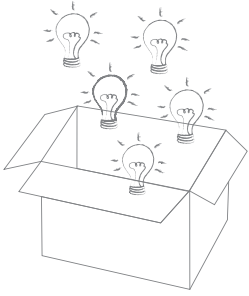
- Weekdays: 8.30–16.00
- +358 (0)9 457 2821
- [servicedesk@csc.fi](mailto:servicedesk@csc.fi)



**CSC.FI/TRAINING**  
Training and courses –  
nearly 100 different  
kinds of events  
a year

 *Thanks to our agreement with the Ministry of Education and Culture, services targeted at researchers at higher education institutions are largely free of charge.*





# PRODUCE & COLLECT

Secure services for research and information management.

- How can I use computer simulations in my research?
- Where can I find open research materials?
- How can I apply for user rights to protected data?
- How can I edit documents on a common platform with others?

Data

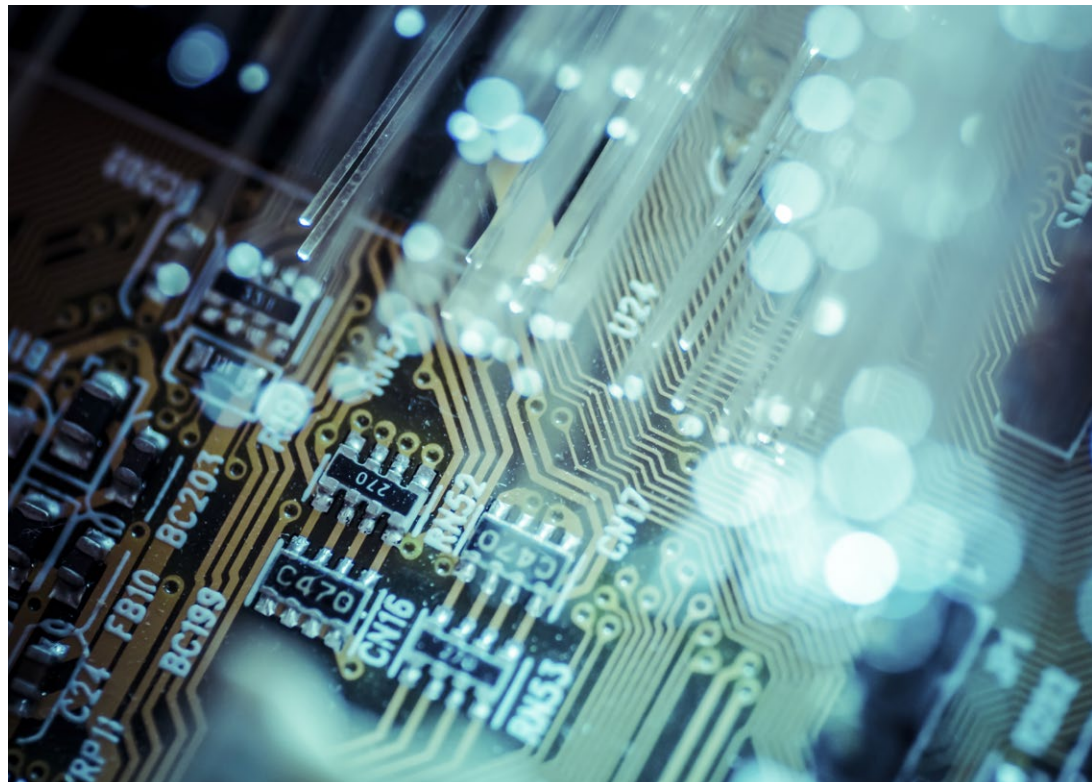
Int. resources

Modelling

Platforms

Software

Supercomputers



RESEARCH.CSC.FI/  
SOFTWARE

More than 100 scientific  
software entities and  
databases and support  
for using them!

## Computing with supercomputers!

It is already a known fact in disciplines that use traditional computing that research requiring high-performance computing cannot be carried out on a regular computer. Along with the digitalisation of society and larger data masses, computing methods have also become a vital competence area in all disciplines, and many new researchers are interested in using the power of supercomputers.

Why wait weeks or even months for results if you could calculate them much faster?

⇒ [csc.fi/scientific-computing-and-software](https://csc.fi/scientific-computing-and-software)

– Find out more about the services

## With Sisu and Taito

A researcher who works in a Finnish higher education institution can easily get started on high-performance computing: Registration and acquiring user access to computing servers only takes a couple of minutes at best through CSC's customer portal.

For more demanding parallel computation requiring several hund-



reds or even thousands computing kernels, you can harness the most powerful supercomputer in Finland, Sisu, or supercluster Taito.

⇒ [sui.csc.fi](https://sui.csc.fi)

– Start your researcher's path here!

## When you need even more

In case this is not enough, you will also be able to access the resources of the largest computing centres and computers in Europe through the PRACE research infrastructure.

You can also access the state-of-the-art distributed Finnish Grid and Cloud computing infrastructure FGCI and flexible and reliable CSC's cloud computing services.

## How can I use computer simulations in my research



**WITH THE HELP** of computer simulations and modelling, you can simulate actual phenomena and either supplement or replace traditional experimental research. For example, when long-term changes are studied or new pharmaceutical products designed, results can be achieved more quickly and efficiently through modelling.

With the help of simulations, it is also possible to access phenomena that would be difficult or impossible to study experimentally. Through CSC, you can access the most efficient

computing resources in Finland as well as receive support from experts on scientific computation, for example, on the parallelisation and optimisation of computing codes.

 [research.csc.fi/  
computing-infrastructures](https://research.csc.fi/computing-infrastructures)  
– Start your researcher's path here!

### TIP!

OPEN SOURCE CODE ELMER SOFTWARE IS SUITABLE IN PARTICULAR FOR MODELLING MULTI-PHYSICAL PHENOMENA. — [CSC.FI/ELMER](https://csc.fi/elmer)

**COMPUTE**  
using the most  
efficient computing  
resources  
in Finland!







Managing research data can be secure and flexible!

**CSC** offers you flexible tools and cloud services also when the rules of an organisation, the requirements of a funder, or the privacy protection of those being studied set restrictions on using equipment.

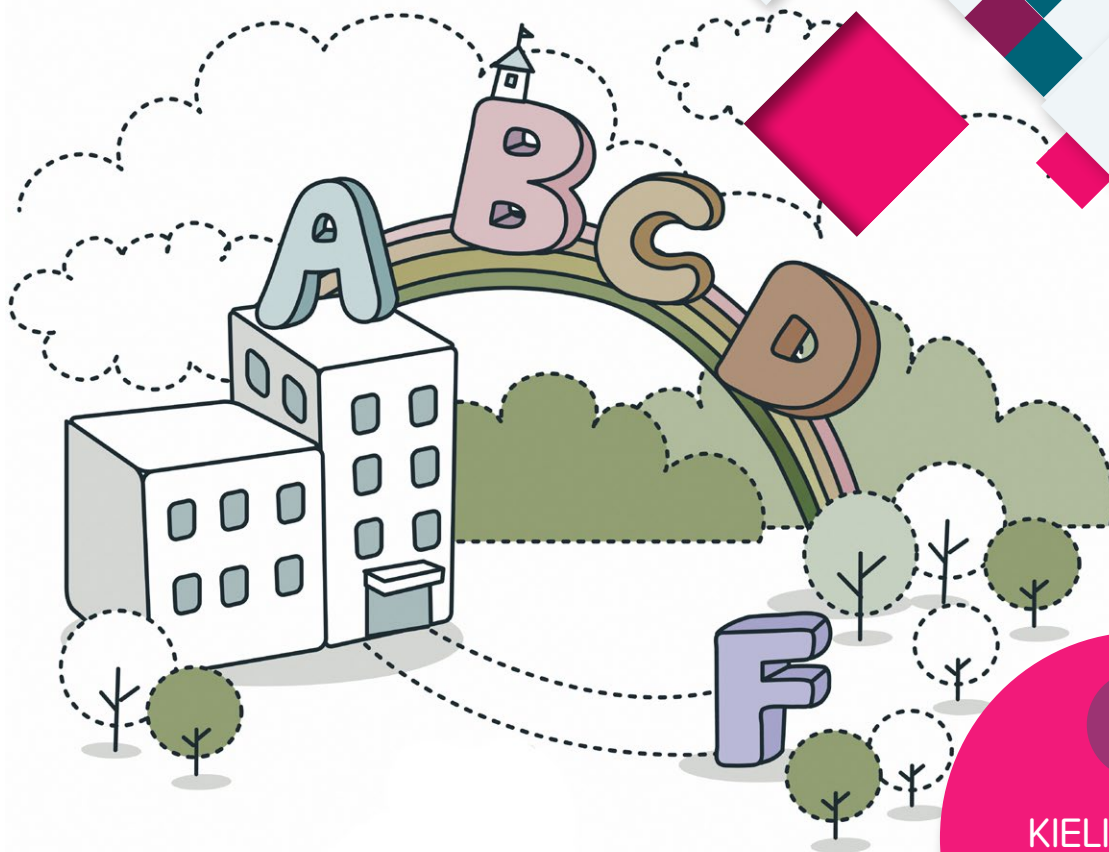
### **Safely, in cooperation**

Eduuni cooperation services enable flexible working across organisation borders. Eduuni workspaces, document libraries, wiki pages and project management tools ensure that your data is secure in CSC's data centre in Finland.

It's not always necessary to do everything from scratch. Someone somewhere may already have collected the data that is of interest to you:

- ➔ **WITH ETSIN** you can easily find data for your research.
- ➔ **AVAA** is a publication platform where you can seek and download open research data.
- ➔ **B2FIND SERVICE** allows you to easily search for domestic and international research data.





**KIELIPANKKI.FI**  
A wide variety of  
speech and text  
corpora!

- ➔ **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.
- ➔ **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.



*Through CSC, you can access tools with which to collect, produce, edit and share research data in a reliable and secure manner.*

# ANALYSE

Research quickly and efficiently.

- How can I analyse my data more quickly?
- Which scientific software could I use for analysis?
- Can I use a familiar software in a cloud service?
- How can I use analytics applications in teaching?



Cloud services

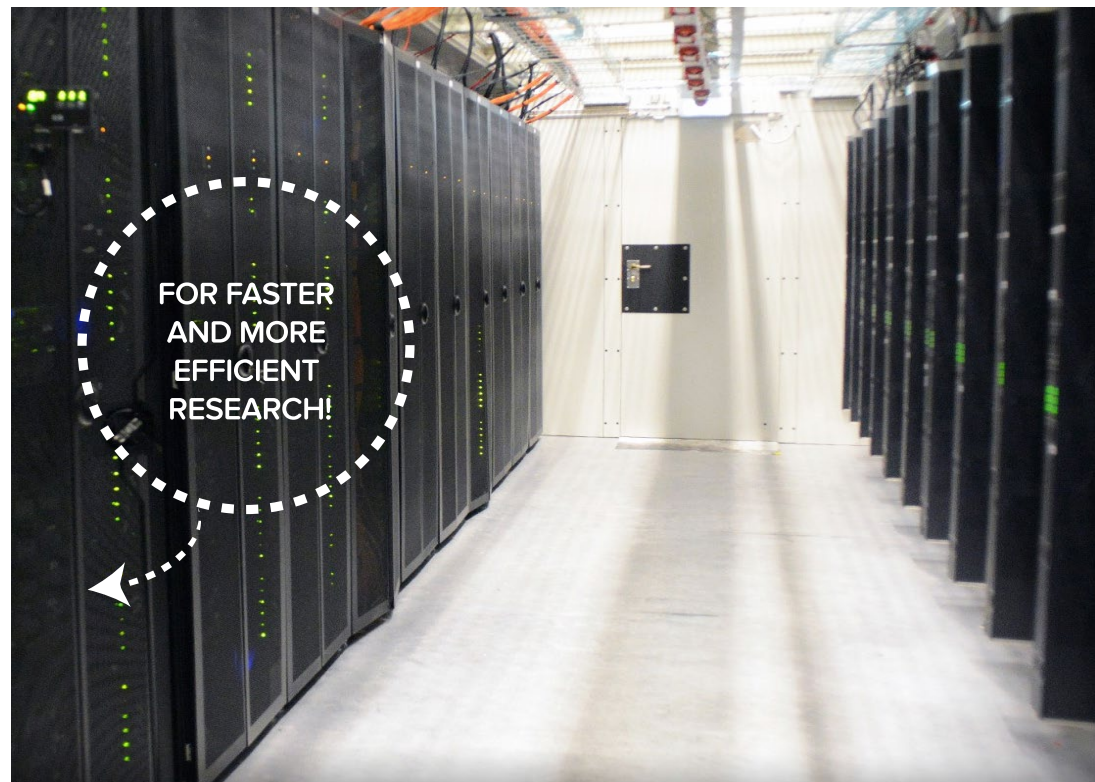
Computing

Data science

Pouta Blueprints

Software

Training



## Help with data analysis

CSC offers services and computing resources for analysing data. Data-driven research is a growing sector, and, therefore, we continue to develop our service selection and help researchers find the correct solutions that meet their needs.

With regard to CSC's computing environments, the Taito cluster and cloud services in particular are suitable for data analysis. Taito contains an extensive range of software, such as R and Python and their additional libraries that are able to carry out most data processing tasks.

Experts provide training in using software and analysis tools. Customised courses are also available.

### TIP!

CHIPSTER OFFERS A COMPREHENSIVE SELECTION OF EASY-TO-USE ANALYSIS TOOLS FOR BIOSCIENCE AND MEDICAL SCIENCE RESEARCHERS. — [CHIPSTER.CSC.FI](http://CHIPSTER.CSC.FI)

## Secure cloud computing

A cloud computing environment enables the use and installation of your own software freely, which is often necessary in quickly developing data analytics sectors. Cloud computing is also the recommended environment to be used by heavy data processing systems, such as Hadoop and Spark.

Our cloud computing service is ideal for processing sensitive data. Data will be stored securely in Finland in a genuinely Finnish cloud service.



[research.csc.fi/data-intensive-computing](http://research.csc.fi/data-intensive-computing)

– Additional information on data analysis services





## Test our new service!

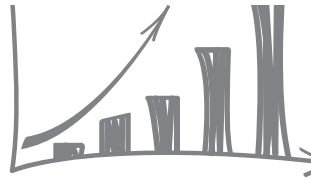
We have launched convenient Pouta Blueprints for test use. You can log into the service directly using the user access of your higher education institution, and you can start to use various analytics applications immediately, such as RStudio and Jupyter Notebooks.

Pouta Blueprints is suitable in particular for minor experiments and teaching, as it is extremely quick and easy to implement.



**PB.CSC.FI**  
In the Pouta Blueprints service you can find several analytics applications!





# STORE

CSC will store your research data securely.

- Where can I store the data from my research or computing project?
- Where can I store my finalised research data?
- How can I ensure the long-term storage of research data?
- Where can I access a database for my personal use?

B2SAFE

B2SHARE

Databases

HPC Archive

IDA

ResearchLTP



## Security for your research data

You can use IDA, the storage service of research data provided by the Ministry of Education and Culture, for securely storing the research data you have collected or produced. The service is intended for finalised research data produced by operators within the Finnish research system.

The owners of data can decide on the openness and use policy of their data. Alternatively you can store project data calculated using CSC's computers on the HPC Archive service. You can access IDA and HPC Archive through CSC's customer portal.

Also, the B2SAFE data storage service has been implemented through European cooperation.

## Research databases

If you need databases for analysing your research data, you can either use the database service Kaivos, which can be connected to a CSC computing project or a common research database service that is intended for storing and processing data in small-scale databases of a couple of dozens of gigabytes.

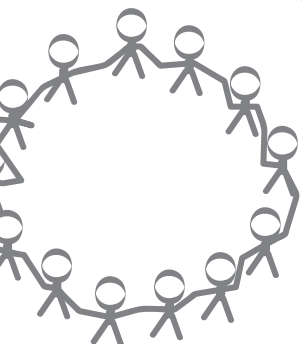


**OPENSOURCE.FI/IDA**  
Store your  
research data  
securely!

## Information for future researchers

Science and research will be on a firm footing when results are widely available and reliably preserved. It is essential for the long-term usability of data that the content can also be read and understood with future tools, and storage methods have been designed so that this has been taken into account. So it can be ensured that research data will also remain available to future researchers. The Ministry of Education and Culture is building a long-term storage service for the needs of research.

 [openseience.fi/digital-preservation](https://openseience.fi/digital-preservation)



# SHARE & PUBLISH

Increase the visibility of your research with the help of services.

- How can I share files with cooperation partners?
- How can I improve the visibility of my own research?
- Where can I find instructions on managing and sharing research data?
- How can I take advantage of the possibilities of open science and research?

AVAA

B2DROP

B2SHARE

Databank

Etsin

Funet FileSender





**WHEN** you need to transfer large files securely, you can use Funet FileSender or B2DROP service. You do not need separate user rights to use FileSender – you can send files using the Haka ID of your organisation, and you only need to know the recipient's email address.

### **Easily accessible data**

National services of open science support good data management. The B2SHARE data sharing service, to all researchers, has been implemented through European cooperation.

- ➔ **ETSIN** enables you to make your data available to others and offer it to be used.
- ➔ **IN AVAA**, you can publish your open research data.
- ➔ **THROUGH B2SHARE SERVICE**, you can share and store your data easily and quickly.
- ➔ **OPENSOURCE.FI** website contains plenty of information on open science and research and related services.



motivation

## Plan

- ▶ **CSC INFORMATION** – [csc.fi](http://csc.fi)
- ▶ **CUSTOMER PORTAL** – [sui.csc.fi](http://sui.csc.fi)
- ▶ **OPEN SCIENCE AND RESEARCH** – [openscience.fi](http://openscience.fi)
- ▶ **SERVICES FOR RESEARCH** – [research.csc.fi](http://research.csc.fi)
- ▶ **TRAINING AND COURSES** – [csc.fi/web/training](http://csc.fi/web/training)

ideas

## Produce&Collect

- ▶ **AVAA** – [avaa.tdata.fi](http://avaa.tdata.fi)
- ▶ **B2FIND** – [eudat.eu/services/b2find](http://eudat.eu/services/b2find)
- ▶ **COMPUTING** – [research.csc.fi](http://research.csc.fi)
- ▶ **EDUUNI ENVIRONMENT** – [info.eduuni.fi](http://info.eduuni.fi)
- ▶ **ELMER SOFTWARE** – [csc.fi/elmer](http://csc.fi/elmer)
- ▶ **ETSIN SERVICE** – [etsin.avointiede.fi](http://etsin.avointiede.fi)
- ▶ **LANGUAGE RESOURCES** – [kielipankki.fi](http://kielipankki.fi)
- ▶ **PAITULI** – [csc.fi/paituli](http://csc.fi/paituli)
- ▶ **PRACE** – [prace-ri.eu](http://prace-ri.eu)
- ▶ **STATISTICS** – [vipunen.fi](http://vipunen.fi)

vision

## Store

- ▶ **IDA** – [openscience.fi/ida](http://openscience.fi/ida)
- ▶ **B2SHARE** – [b2share.eudat.eu](http://b2share.eudat.eu)
- ▶ **DATABASE SERVICES X 2** –
  1. [csc.fi/en/-/tietokantapalvelu](http://csc.fi/en/-/tietokantapalvelu)
  2. [csc.fi/en/-/tutkimuksen-tietokantapalvelu](http://csc.fi/en/-/tutkimuksen-tietokantapalvelu)
- ▶ **FOR RESEARCHERS** – [research.csc.fi](http://research.csc.fi)
- ▶ **SCIENTIST'S USER INTERFACE** – [sui.csc.fi](http://sui.csc.fi)

## Analyse

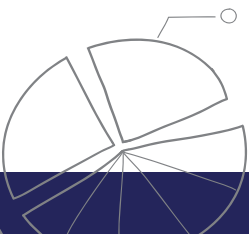
- ▶ **CHIPSTER** – [chipster.csc.fi](http://chipster.csc.fi)
- ▶ **RESOURCES** – [research.fi](http://research.fi)
- ▶ **PORTAL** – [sui.csc.fi](http://sui.csc.fi)
- ▶ **POUTA BLUEPRINTS** – [pb.csc.fi](http://pb.csc.fi)

teamwork

## Share&Publish

- ▶ **AVAA** – [avaa.tdata.fi](http://avaa.tdata.fi)
- ▶ **B2DROP** – [b2drop.eudat.eu](http://b2drop.eudat.eu)
- ▶ **B2SHARE** – [b2share.eudat.eu](http://b2share.eudat.eu)
- ▶ **ETSIN** – [etsin.avointiede.fi](http://etsin.avointiede.fi)
- ▶ **EUDAT** – [eudat.eu](http://eudat.eu)
- ▶ **FOR RESEARCHERS** – [research.csc.fi](http://research.csc.fi)
- ▶ **FUNET FILESENDER** – [filesender.funet.fi](http://filesender.funet.fi)

solution



**1971: CSC ESTABLISHED**  
Univac 1108's support unit

**1988: FINLAND ONLINE**  
CSC takes Finland online

**1993: LTD**  
A limited company

**2012: KAJAANI**  
Data centre opens



EXPERTS  
AT YOUR SERVICE!  
asiakaspalvelu  
@csc.fi

## CSC – IT Centre for Science Ltd

CSC – IT Center for Science Ltd is a pioneer in creating compatibility within education, research, culture and public administration. CSC offers the Finnish scientific community the most powerful computational environment in Finland, super-fast and reliable data connections, and Finland's best ICT experts and services for science. CSC is a non-profit, state-owned company that operates with a special mandate under the Ministry of Education and Culture.

**EUR 35.7 million**  
turnover in year 2015

**About 280**  
employees in Espoo and Kajaani

*FIND OUT MORE ABOUT US AT [WWW.CSC.FI](http://WWW.CSC.FI)*