ICT Solutions for
Brilliant Minds

CORPORATE SOCIAL RESPONSIBILITY

2017

Contents

Our theme for 2017 was Finland 100.

Managing Director's review

Effectiveness through CSC's services

Year 2017 was in many ways significant in CSC's sector. Finland 100 festivities highlighted a great number of national strengths, one example of which is progressive development of research and education. As a result of these inputs, Finnish society has access to data warehouses and computing capability of international significance. A significant growth was recorded in the use of CSC's services and the company's net sales. CSC's collaboration with other actors increasingly expanded from its traditional field of central government information technology into other areas of public administration. Examples of this include cooperation between the National Institute for Health and Welfare (THL), HUSLAB Clinical Pharmacology unit and CSC aiming to improve the use of genome data in health care, and collaboration on the development of data management and computing solutions between higher education institutions and research institutes across sectoral boundaries.

Excellent results were achieved in 2017. The decision on a development programme for research infrastructures and services in data management and computing for 2017–2021 (DL2021) made in spring will enable Finnish competence and resources to remain on the international leading edge for the next four to five years. Highly successful competitive tendering processes related to the Funet network will guarantee access to modern, top-level network infrastructure meeting the needs of research and education for the years to come. CSC's turnover and project portfolio grew significantly more than in previous years, and profitability also remained at an excellent level. Growing demand also meant increases in personnel numbers.

The success achieved in 2017 lays a solid foundation for our operations in the current year. Investments in research infrastructures for data management and computing and the commissioning of the new Funet network have already been launched. We will continue to develop Nordic and European cooperation and utilise international research infrastructures with a clear focus on the needs of Finnish research. In Finland, we will expand our activities by engaging in closer cooperation with research institutes, offering higher education institutions more comprehensive services, and responding to the growing service needs of digital cultural heritage materials and digitalisation of teaching and learning. Collaboration with the central government is also evolving, for example in the fields of authentication services and artificial intelligence use.

One of the major changes in 2017 was that higher education institutions took over a 30% share of CSC's ownership in total. This also affected the company's management structures: the institutions have two members in the Board and the Ministry of Education and Culture, which represents the government owner, appointed a dedicated advisory body to prepare an ownership strategy for the company. However, the greatest change was that the shareholding increased the higher education institutions' interest in CSC further, and cooperation with them intensified.

The cornerstone of CSC's operation is the company's values: together we can and care – responsibly. Guided by strategy work, our activities are built around our values. Rather than the success of the company alone, our goal is above all ensuring that Finland remains a leading country of research, education, culture and public administration ICT services internationally; in other words, our goal is the success of our customers. The most important role in implementing this vision is played by CSC's competent and continuously learning personnel.

Kimmo Koski

CSC – Finnish expertise in ICT for research, education, culture and public administration

CSC[1] is a Finnish centre of excellence that provides world-class ICT expert services for research, education, culture, public administration and enterprises, thereby enabling them to succeed and generate benefits for society at large.

CSC's primary customers are the Ministry of Education and Culture and organisations within its administrative sector, higher education institutions and research institutes, and public administration. We play a significant role as the Ministry of Education and Culture's instrument for steering and developing scientific policy. Our international operations boost the vitality of the Finnish research community and education system.

CSC's net sales totalled EUR 40,523,583.27 in 2017, and we employed 317 people at year-end. We have offices in Keilaniemi, Espoo and Renforsin Ranta business park in Kajaani.

Ownership and Corporate Governance

CSC is a non-profit limited liability company with a special task owned by the Finnish Government (70%) and Finnish higher education institutions (30%). The company does not pay dividends or other gratuitous compensation. In public procurements, CSC acts as an in-house entity of its shareholders in compliance with Article 12 (1 and 3) of Directive 2014/24/EU of the European Parliament and of the Council. CSC may provide services to other organisations besides its owners, provided that it does not exceed the permitted limit for external sales as specified in procurement legislation.

At the beginning of 2017 the Ministry of Education and Culture, which handles CSC's ownership steering on behalf of the central government, appointed an advisory body for CSC consisting of the owners. The tasks of the advisory body are discussing issues related to the company's steering, preparing the company's ownership strategy, and evaluating the company's societal and financial overall results.

The Annual General Meeting, Board of Directors and Managing Director share responsibility for CSC's management and operations. Annual General Meetings are held on an annual basis before the end of June. In 2017, the Board of Directors had seven members until 1 September 2017, on which date Kaija Pöysti gave up her seat. The Board continued until the end of the year in a composition of six members. **Mirjami Laitinen** was Chair of the Board of Directors and **Kimmo Koski** served as CSC's Managing Director.

The primary norms governing CSC are the Finnish Limited Liability Companies Act (624/2006) and the State Shareholdings and Ownership Steering Act (1368/2007).

CSC's corporate governance is also subject to the Government Resolution on State Ownership Policy (13 May 2016), the Ministerial Committee for Economic Policy's statement on remuneration (13 August 2012), the company's Articles of Association, and the principles and instructions defined by the Board of Directors.

[1] CSC – IT Center for Science Ltd, Business ID: 0920632-0

Key social responsibility themes and material aspects

The focus of CSC's reporting is based on a materiality analysis of social responsibility. The materiality analysis is used to identify the economic, social and environmental responsibility themes that are significant for both CSC's business and our stakeholders.

The materiality analysis for 2017 drew on an extensive stakeholder survey carried out the year before, in which the views of both customers and owners on the company's capability to produce value and its corporate social responsibility were analysed. The results of this survey remain valid for the company. The materiality analysis also drew on an analysis of sectoral trends produced by the Board of Directors and the management. Key themes brought up by the personnel, feedback from partners, and information on different stakeholders' expectations obtained as part of the company's normal activities were also used.

The analysis identified the following material aspects for reporting:

Social responsibility management and operating principles

Our responsible operating methods are guided by our
- jointly defined values and corporate culture
- *Code of Conduct*, and
- leadership and governance principles.

The values directing CSC's activities are expertise, caring and responsibility. Our motto – *Together, Expertise, With Care, Responsibly* – forms the foundation of our corporate culture. Our ethical guidelines (Our Way of Working – CSC Code of Conduct[2]) help us operate in line with our *values*. The Code of Conduct explains what is meant by good business practices and healthy engagement with stakeholders, society and the environment. Our Code of Conduct contains principles governing bribery, corruption and political lobbying. These guidelines apply to all CSC personnel and members of the Board of Directors. All topics addressed in the Code of Conduct are covered during induction. You can read CSC's Code of Conduct on our website. We expect our service and goods suppliers to comply with the same principles.

- CSC complies with the UN Convention against Corruption (UNCAC) and the OECD (Organisation for Economic Co-operation and Development) Anti-Bribery Convention. We will not accept any action that seeks to influence our own or our stakeholders' judgement. Neither do we provide any direct or indirect support for political party candidates, parties, or political groups.

CSC's Board of Directors monitors the management and implementation of social responsibility as part of its rules of procedure. At its annual Financial Statement meeting, the Board of Directors also reviews the social impact of CSC's services and their capacity to generate added value for society as per our special mandate. This assessment guides the Board's decision on the distribution of bonuses to management and personnel.

The Board confirms the annually updated risk management plan and the approved residual risks. The Managing Director and Management Group are jointly responsible for ensuring that risk management has been appropriately arranged. Responsibility management and the coordination of practical procedures are carried out through the company's routine management system.

CSC's Management Group is responsible for internal control, or the steering and operating processes used to ensure that we operate legally and profitably, and that reports on our financial position and activities are reliable. The CFO is responsible for internal auditing in cooperation with the auditor and other members of the company's management. CSC is committed to promoting sustainable development objectives that balance economic activities with ecological, social and cultural values.

Implementing different areas of environmental management is a routine aspect of everyone's daily work at CSC.

Our motto – *Together, Expertise, With Care, Responsibly* – forms the foundation of our corporate culture.

[2] www.csc.fi/meidan-tapamme-toimia

Social responsibility management and operating principles

Stakeholders and stakeholder engagement

We engage in an active and continuous dialogue with our different stakeholders. We work to strengthen our stakeholder relationships and understand the expectations and wishes placed on CSC, striving to provide a better response to them.

The focus of our interaction is on our customers, shareholders, personnel, partners, and research infrastructure financiers. Other key stakeholders include authorities, local communities, and the media. We cooperate and network with all actors in the sector openly, which provides opportunities for sharing views and development. CSC specialists are thus extensively involved in the sector's programmes, projects, networks and networking events.

Our stakeholders' expectations are regularly assessed through surveys (such as customer surveys and interviews, personnel surveys), at face-to-face meetings and quality conferences, and through participation in current debates in the sector.

An overview of key stakeholders in terms of CSC's business and our dialogue with them is provided below.

Understanding our customers' needs and customer-centric operation are two of CSC's strategic targets.

Customers

CSC's customers include the Ministry of Education and Culture, higher education institutions, research institutes and infrastructures, cultural memory organisations, the Ministry of Education and Culture's branch of administration and public administration organisations.

Customer orientation

Understanding our customers' needs and customer-centric operation are two of CSC's strategic targets. CSC strives to act consistently in each customer encounter based on our customer-oriented offering and communications as well as selected operating models.

CSC's customer orientation has been improved in recent years through better internal cooperation. The units and functions in different service areas have supported each other, improving information flows between them. A systematic customer management process has helped us to improve the customer experience and strengthen existing customer relationships, identify changes and new business opportunities, and develop the right services and solutions to meet our customers' needs. Service area directors and customer solutions managers have played a key part in developing customer work. The service area director has CSC-wide responsibility for a specific customer segment. Customer segment teams collated from different service areas have met regularly to plan, implement and monitor the customer relationship management model. The customer segment teams' work is coordinated by the customer solutions manager, who supports the service areas in their customer work.

In 2017, a sales process which enables improved cooperation with customers was specified within CSC. The reinforcement of customer work is continued in 2018 by allocating additional resources to the coordination of CSC's customer work.

Customer cooperation

CSC intensified its customer work further in a number of customer groups, with research institutes and higher education institutions as a priority. CSC seeks to understand its customers' needs and expectations better and to develop its activities accordingly. Regular dialogue with customers, collecting and responding to feedback, and highlighting opportunities for development all continue to play a key role. A further goal was to create means for involving customers in service development.

CSC has developed a supplier cooperation model together with higher education institutions to improve goal-orientation and efficiency. To support this cooperation, a Framework agreement between a higher education institution and CSC has been developed, which enables both parties to act in the role of a customer and a supplier. The higher education institutions' two-way framework agreement, service prices, terms of payment and security agreement are the same for all institutions with no exceptions. This simplifies the procurement of services in both directions.

The Ministry of Education and Culture, along with research and innovation actors, is implementing a development programme for research infrastructures in data management and computing for 2017–2021. This development programme will invest some EUR 35 million in data management and computing infrastructures and services associated with them. At the core of this development programme lies the modernisation of CSC's computing environment and actions that ensure suitable conditions for international research collaboration. The infrastructure to be upgraded and the services associated with it will be offered to the research community more extensively than before. CSC will thus play a more significant role for research institutes.

Diverse perspectives

CSC actively seeks external opinions on its activities from a variety of expert groups.

The Higher Education Information Management and ICT Steering Group appointed by the Ministry of Education and Culture steers and monitors the creation and maintenance of higher education institutions' target infrastructure for ICT services, engages in dialogue, and makes proposals concerning services purchased from CSC for higher education institutions. The group serves as a steering group for higher education institutions' enterprise architecture; monitors, anticipates and influences impacts on higher education institutions' information management together with the Ministry of Education and Culture; and performs other tasks assigned to it by the ministry.

CSC receives information and feedback on its activities through a number of key collaboration networks, such as Universities Finland UNIFI, the Rectors' Conference of Finnish Universities of Applied Sciences ARENE, the HEI coordination group for student and teacher support services (KOOTuki), and the Research Support and Administration Network (TUHA).

The Ministry of Education and Culture has appointed a steering group for the development programme for data management and computing that will see to the extensive usability of the research infrastructure and services as well as the coordination, evaluation and prioritisation of the services. The task of the Computational Science Forum appointed for 2016–2018 is to evaluate future developments in scientific computing with regard to Finnish higher education institutions and the Finnish research field.

CSC receives regular feedback on its research services through the Scientific Customer Panel. In 2017, the Customer Panel was expanded to include ten professors in different fields of research.

Customer-oriented offering

In addition to customer work, CSC strives to improve the clarity of its service range, productisation and transparency of costs.

In order to clarify the service range, we use the model of customer-oriented service offering in our customer communications when talking about CSC's services. In keeping with CSC's special mission, we offer our customers technology and service development in four areas of special expertise: research, education, culture and public administration. We are proactively seeking out innovations and new services produced through national and international cooperation to benefit our customers.

Customer communications

CSC strives for interactive customer communications on multiple channels. Our general principles for communications are openness, timeliness and truthfulness. The objective of customer communications is offering expertise and information as well as rousing interest and deepening understanding.

Contents intended for customers are planned in cooperation with the service areas and marketing experts. The themes and topical contents mainly originate in the service areas. The marketing unit supports the customer orientation of communications and the realisation of customer experience as well as assumes responsibility for implementing communications on different channels.

CSC actively informs its stakeholders of its topical news on its website and on social media channels. In 2017, 78 news items and 32 expert blogs or web articles were published on the website CSC.fi.

A total of 25 customer newsletters were sent out in 2017: five of these were relevant to research, nine to information, education and research administration, ten to customer training and one to central government administration.

We keep in contact with our customers through a variety of different meetings, events, trade fairs, seminars, and training sessions. In 2017, CSC participated in key events of the sector, including Physical Days, UAS Days, ISC High Performance conference, Higher Education IT Days, SC17 conference, EUNIS, Dare to Learn event and NordForum's Free Flow of Information in Education seminar. CSC also arranged numerous visits to higher education institutions across Finland.

CSC is developing a systematic service channel package with the aid of both its website and a variety of customer portals. Our aim is to build a selection of service channels and offering based on customer expectations and a service path that is as user friendly and fast as possible.

CSC also engages in direct dialogue with customers through our customer services and the social media. The customer service supports and assists customers in different phases of the customer relationship.

Customer satisfaction

The customers' views are highly important for CSC, as we wish to improve the quality of our customer encounters further. For continuous collection and monitoring of feedback, we use Customer Pulse, a survey designed to assess the speed and friendliness of customer service and the usefulness of the response received. Customer Pulse features a Net Promoter Score (NPS), which measures the respondents' preparedness to recommend CSC's services to their colleagues.

In 2017, one out of five customers responded to the survey. In general, CSC's customer service is considered to offer high quality, and the services are experienced as useful. Three out of four respondents would recommend CSC's services to a colleague.

CSC collects feedback through customer satisfaction surveys, on social media and during customer encounters. In the future, an effort will increasingly be made to survey the customer experience in connection with digital encounters. In 2018, CSC will develop new metrics to improve its services further.

Customer training

CSC supports its customers with broad-ranging and high-quality training. Our training topics are mainly related to the services we provide in the fields of scientific computing, data analysis, data networks, and information management and distribution. Courses, seminars and webinars give our customers the opportunity to learn how to harness the infrastructure we provide more effectively, and also to get acquainted with future technologies and methods. The latest trend in CSC's customer training has been an increase in courses on data analytics, and researchers in such fields as the humanities are emerging as new customer groups. In the context of new technologies, a course on quantum computing organised in autumn 2017 was the second one of its kind.

In general, CSC's customer service is considered to offer high quality, and the services are experienced as useful.

In 2017, CSC held training sessions on almost every other day of the year, both on our own premises and at universities and universities of applied sciences all around Finland. In total, our training events were attended by about 1,700 people. The participants have been highly satisfied: the general grade given to the courses by those who responded was 8.6 in 2017 (on a scale of 1 to 10), and almost 80% of the participants would be prepared to recommend CSC's training events (NPS index). In 2017, efforts at improving customer experience included introducing e-billing for paying for the training sessions.

Partners, suppliers and research infrastructure financiers

Long-standing relationships with suppliers and service providers play a key role for responsible business and continuous improvement of production. CSC complies with the statutes applicable to public procurement in its purchases and aims for fair treatment, long-term contracts and open cooperation. CSC's goal is to develop partnerships and thus guarantee good business conditions for all parties and the best possible service for customers. All suppliers are expected to comply with CSC's operating principles.

CSC is a reliable partner in projects funded by the EU, the Academy of Finland, Tekes, and NordForsk. CSC submitted grant applications to framework programmes run by the Academy of Finland (FIRI) and the EU (Horizon 2020). Success measured by the number and monetary value of projects as well as responsible cost monitoring and reporting on results in the agreed manner are key indicators of responsible business.

CSC engages in active and direct dialogue with its partners, for example at regular gatherings and quality and development meetings, and participates in the activities and events of key organisations in its field.

Societal influence

CSC actively seeks to participate in societal debate and influence the national and international operating preconditions that are significant for the company or its stakeholders. Boosting the competitiveness of Finnish research is a key objective of CSC's lobbying efforts.

In 2017, CSC raised its profile as a lobbyist. CSC prepared a total of 16 positions on issues relevant to its sector, both at the national and the EU level, and organised different stakeholder events that attracted a lot of interest.

The main achievements of our lobbying in 2017 were:

- Influencing the discussion about the communication on the *European Cloud Initiative*[3] in the European Parliament.
- Exerting influence on the preparation of EU Framework Programme for Research and Innovation Horizon 2020[4] work programmes together with other Finnish actors and financiers.
- Exerting influence on the preparation of the 9th EU framework programme for research and innovation[5].
- Active participation in societal dialogue on such themes as the Act on Public Procurement, the EU's Digital Single Market Mid-term Review, the data economy, the Genome Center and the new EU General Data Protection Regulation.
- Markku Markkula, President of the European Committee of the Regions, visited CSC in February 2017 to discuss Europe's competitiveness within the framework of the Digital Single Market.
- In July 2017, CSC organised a panel discussion on the topic *Which lobby grabs our common funds – are we too soft for the EU?* held in the Suomi Areena public debate forum, with such participants as experienced lobbyists working in Brussels, political decision-makers and representatives of companies that have pioneered as successful RDI funding applicants. Why is Finland left behind the other Nordic countries? Why do we not make a more forceful effort to promote our interests, and do we allow common EU funds to leach into other countries? These questions broadened our horizons concerning lobbying and the exertion of influence by Finland and Finnish stakeholders in the EU[6].
- A seminar titled Nordic Views on Digital Europe was organised at CSC in November 2017. The keynote speakers of the event were Jan Gulliksen, the Digital Champion of Sweden, and Harri Kulmala, CEO of innovation company DIMECC. The seminar discussed the Nordic countries' preparedness to encounter societal changes brought about by digitalisation.

The number of statements issued, which increased many-fold in 2017 compared to the year before, was another demonstration of CSC's exertion of influence. Statements were issued on the following topics related to EU and national regulation, to mention a few:

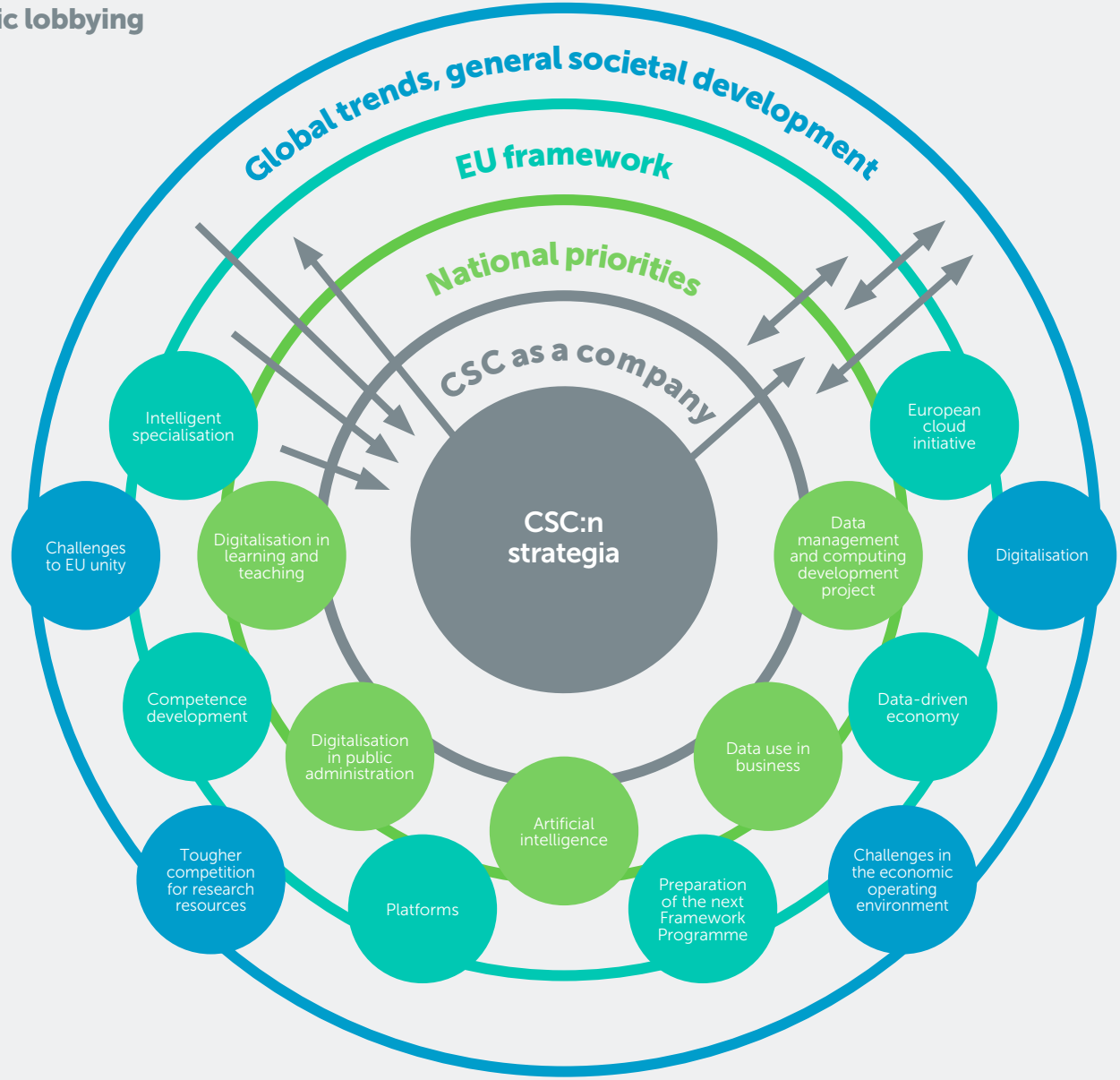
- European Commission Communication 'Towards a thriving data-driven economy'
- Mid-term Review on the implementation of the Digital Single Market Strategy
- Preparation of the 9th EU framework programme for research and innovation
- European Commission declaration on the European Open Science Cloud (EOSC)
- Implementation of the EU General Data Protection Regulation and its impacts on national regulation on scientific research and statistics
- Review of the framework of Key Competences for Lifelong Learning

CSC implemented an open website for publishing CSC's statements and positions[7]. The purpose of more open communications is to promote societal discussion with the aim of improving the competitiveness of Finnish research and to showcase CSC's extensive expertise in topics related to data and digitalisation, among other things.

In the spring of 2016, the Finnish Government decided to establish the Finnish

[3] https://ec.europa.eu/digital-single-market/en/%20european-cloud-initiative
[4] https://ec.europa.eu/programmes/horizon2020/
[5] https://www.csc.fi/-/eu-n-tutkimuksen-ja-innovoinnin-9-puiteohjelman-valmistelu
[6] https://www.csc.fi/web/suomiareena2017/
[7] https://www.csc.fi/lausunnot

Framework for strategic lobbying



Genome Center and launched preparations for it, which continued in 2017. Tommi Nyrönen is a permanent expert member of a working group appointed by the Ministry of Social Affairs and Health to prepare for the establishment of the Genome Center. The Center's tasks will include creating and maintaining a genome database. The future Genome Center will draw on CSC's expertise in the management of sensitive data. Private networks will be established between CSC and Helsinki-Uusimaa Hospital District (HUS) as well as between CSC and the National Institute for Health and Welfare (THL). HUS and THL can use these networks to securely increase the data processing capacity in CSC's datacentre in Finland.

On assignment of the Ministry of Social Affairs and Health, HUSLAB Clinical Pharmacology unit, THL and CSC have completed a cooperative study in support of the establishment of the Genome Center, which assessed the possibility of using pharmacogenetic data in patient work.

The final report of this project found that the sensitive data management platform developed by CSC will also be suitable for the secure processing of genome data. In the international context, a number of services and sections specifically dedicated to the management, processing and storage of genome data are being developed. The solutions of the future Genome Center should be linked to the European Genome-phenome archive EGA, for instance, to facilitate international research cooperation.

The international Resource Entitlement Management System (REMS) developed by CSC lays a good foundation for developing the consent and permit process of the Genome Center.

International collaboration and knowledge sharing

CSC's basic duties include engaging in national and international cooperation in order to identify and harness new innovations and service concepts to bolster Finnish research and expertise. Internationalisation produces added value for the owners through, for example, Nordic or international joint procurements and tendering.

Cooperation opportunities generated by EU projects and other international networks are important for CSC. Participation in these projects builds up CSC's expertise and creates opportunities for new service development, enabling us to offer new services for Finnish researchers. In 2017, CSC participated in 19 EU projects, in three of which the company had a coordinating role. CSC also held leadership responsibility for eleven work packages in different projects.

A record-breaking volume of high-power computing resources in some of the most efficient supercomputers in Europe were granted to Finnish researchers through PRACE (the Partnership for Advanced Computing in Europe) in 2017: PRACE granted Finnish research groups over 240 million computing hours for highly demanding computing projects in different fields of science. The value of these resources alone exceeds EUR 4 million. All in all, Finnish research groups have benefited from over 544 million PRACE computing hours, the monetary value of which exceeds EUR 12 million.

CSC was an active participant in the European Open Science Cloud (EOSC) project that develops open science cloud services in Europe. CSC is a partner in the EOSCpilot project preceding the actual implementation phase, in which the company is responsible for such areas as defining EOSC administration structure. Per Öster, Director of the Research Infrastructures unit at CSC, was selected to lead the EOSCHub, which carries out service development. EOSCHub is a project costing EUR 30 million funded by the European Commission. The idea of EOSC is to create a decentralised interoperable infrastructure that combines existing and new thematic data infrastructures, cloud services for research and horizontal electronic infrastructures.

CSC coordinates the EUDAT2020 project, whose service offering covers the entire life span of research data. The extensive collaboration between EUDAT and EOSCpilot projects will ensure that EUDAT's B2 services will be available for the European Open Science Cloud service also in the future. EUDAT CDI (Collaborative

Data Infrastructure), whose secretariat is hosted by CSC, continues the work began by EUDAT2020. EUDAT CDI brings together more than 20 European research organisations as well as data and computing centres in 14 countries.

The national stakeholder meeting of the global Research Data Alliance (RDA) Europe project, RDA Finland Autumn 2017 meeting, was organised in Keilaniemi, Espoo, in October 2017. The participants heard a presentation about the contents of the 10th RDA General Assembly and considered the objectives of the following RDA 4 project from the perspective of Finnish researchers and other stakeholders present at the event. Additionally, CSC took part in a Nordic RDA stakeholder meeting held in Gothenburg in June 2017. CSC was also involved in writing key RDA statements and positions concerning the Digital Single Market and, in particular, the use of recommendations produced by RDA for developing the European data economy.

ELIXIR, the European Life Science Infrastructure for Biological Information, continued its growth. In particular, Finland participated in promoting the findability and transfers of research data sets on humans subject to data protection. Finland is a leading builder of platforms suitable for processing human data in Europe. The national genome strategy and the health data growth strategy are likely to keep this trend going in years to come. ELIXIR's following five-year plan for 2019–2023 is currently being prepared, and Finland together with the Czech Republic and the European Molecular Biology Laboratory lead the work on a biological information technology platform. CSC aims for policies on national solutions that would ensure the interoperability of information management solutions at the international level.

The second period of the Nordic Tryggve project was launched in late October 2017. The aim Tryggve2 is to develop secure services for research needs with a special focus on life sciences. Tryggve2 is currently NeIC's largest individual project. As an ELIXIR Finland Node and a Tryggve partner, CSC is developing secure research data services, including data saving and storage services, user authentication and authorisation services as well as a secure ePouta cloud computing environment.

EU projects in which CSC participated in 2017

Project	Duration	Responsibility for coordination	Work package leadership responsibility
AARC	2015–2017		
AARC2	2017–2018		
CompLeap	2017–2019	x	x
CORBEL	2015–2019		
E-CAM	2016–2017		
EGI-Engage	2015–2017		
ELIXIR-EXELERATE	2015–2018		x
ENVRI-plus	2015–2019		
EMREX (Erasmus+)	2015–2017	x	x x
EOSCpilot	2017–2018		x
EUDAT2020	2015–2018	x	x
GN4	2015–2021		
HPC-Europa3	2017–2020		x
NoMaD	2015–2018		x
MARINET2	2016–2020		
PRACE-4IP	2015–2017		x
PRACE-5IP	2017–2019		x
RDA Europe3	2015–2018		x
SeaDataCloud	2016–2020		

Employees

CSC's services are based on strong expertise. The personnel's expertise, versatility and ability to engage in solution-oriented activities are the key to the company's success.

CSC had 317 employees at the end of 2017, of whom 92% had a permanent employment contract. Personnel turnover (5.2%) compared favourably with the industry average. **For more key figures related to personnel, see the Report of the Board of Directors.**
In 2016, the social partners signed a Competitiveness Pact under which the agreed working hours contained in collective agreements were extended by 24 hours. CSC carried out this extension of working time as intended. In 2017, the practical method of deducting 24 hours from the staff's flexitime balances was used. A new local agreement was negotiated in autumn 2017, which contains an arrangement for extending working time in 2018.

Ensuring well-being at work

Mental working capacity plays a key role in information workers' motivation and ability to cope at work. CSC pays attention to this in a number of ways, such as involving and listening to the personnel in work-related issues. CSC offers extensive occupational healthcare and health insurance, as well as a diverse range of subsidised opportunities for exercise, hobbies and recreational activities.

One way of measuring success in improving the personnel's well-being at work is the personnel survey conducted every second year. The personnel survey was carried out between 2 and 16 May. The response rate was 87.5.

The contents of the survey were simplified compared to previous times, and the questions focused on selected themes. In this context, a decision was made to carry out a follow-up survey in January 2018 using the same questions to enable comparability.

Key positive observations made in the survey were the following:
- good performances are rewarded fairly
- CSC's outlook appears good
- group supervisors do a good job

The most important areas in need of development were:
- specifying the performance expectations attached to each employee's personal work
- commitment to the employer
- effectiveness of decision-making

Key actions based on these results were:
- improving internal communications, especially leadership communications
- developing the employer image and recruitments
- renewing the work environment and modes of working together with the personnel
- specifying management practices and the levels at which decisions are made.

Competence development and remuneration

Twice a year, all personnel members attend performance and development discussions in which their achievements during the previous period are evaluated and new targets are set for the following period. A personal development plan, which enables horizontal or vertical career paths, is also drawn up during these development discussions.

A performance evaluation carried out during development discussions affects the size of the employee's personal performance-based incentive. The Board of Directors makes an annual decision on the size of the performance-based incentive and the criteria for awarding it, and also authorises the Managing Director to distribute the incentive amongst the personnel. In 2017, performance-based incentives could not exceed 12.5 per cent of annual salary.

CSC encourages lifelong learning and also supports further studies with sabbaticals for competence development.

Work environment development

Efforts to develop an optimally functional and inspiring work environment began in the previous years with two experiments testing work environments of a new type. No further changes to the facilities were made in 2017. The largest project was organising a tendering process for CSC's facilities for the next ten years, as a result of which CSC will continue renting its current premises until 2026. The new lease agreement will bring significant changes in the rental costs of offices and datacentre facilities. A major renovation of the offices is part of the conditions included in the new lease agreement. Working together with the personnel, the aim is to build an adaptable work environment that enables flexible work processes for CSC, completing the renovations in all offices by the end of 2020.

An equal opportunities workplace

CSC's Code of Conduct provides a comprehensive description of the human rights principles that we adhere to in all of our operations. These are supplemented by our statutory equality plan, which is regularly updated and contains practical measures for ensuring equality.

CSC regularly surveys the personnel's experiences of equal treatment with a well-being questionnaire. Every supervisor is responsible for ensuring that equality principles are adhered to in the daily work.

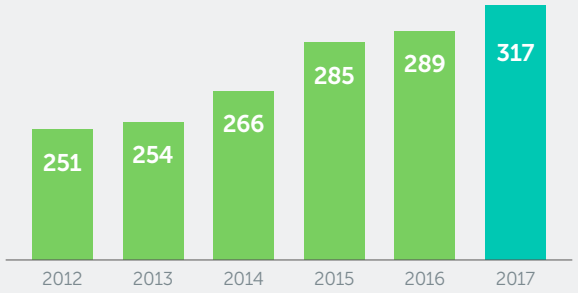
HR management

Commitment, achievements and well-being require good leadership. CSC seeks to be a desirable and responsible employer that inspires its personnel to get the best out of their expertise.

CSC encourages lifelong learning and also supports further studies with sabbaticals for competence development. In 2017, the majority of the personnel participated in different types of training, in addition to which learning at and through the work plays an even greater role in personnel development.

CSC personnel 2017

Employees



Personnel turnover in 2012–2017, %

3,5–6,9

Sickness absences average days/person

6,3

Average age

42

Training days 2012–2017 / person

2–5

Gender

♂ **72 %**

♀ **28 %**

Employment contracts

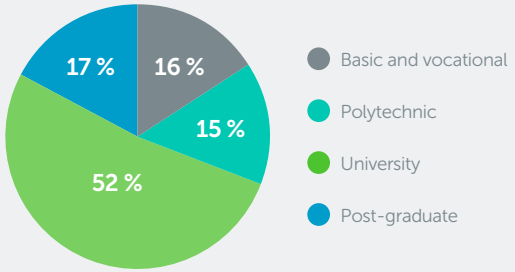
92 %
valid until further notice

8 %
fixed-term

95 %
full time

5 %
part time

Educational background



Average length of employment relationship, years

8,6

Average retirement age

64

In employment relationship for less than five years, %

46

Service provision

At CSC, we harness IT, networks and the expertise of our specialists to further our customers' success. The company offers technology and service development solutions meeting customer needs in four areas of special expertise: research, education, culture and public administration.

A reliable service provider and partner

CSC's operations are based on good and transparent governance, compliance with data protection regulations, and adherence to best practices in service provision and security. CSC has been granted the esteemed international ISO/IEC 27001 certificate for Information Security Management.

By this certificate based on reliable third-party verification, CSC can demonstrate its ability to manage, control and continually improve the information security of its services and operations. This certificate covers our datacentres, ICT platforms, digital preservation (DP), and IaaS cloud services.

CSC's management system covers a broad range of areas including leadership, HR management, communications, stakeholder relations, contractual matters, premises, risks and deviations, resource management, and access control. CSC has several sets of internal guidelines that relate to data protection and transparency in particular: our administrator's guidelines, data protection guidelines, and email policy. You can read more about how we implement data security on CSC's website[8].

We monitor service availability and service-related guidelines, responsibilities and classifications on the basis of our internal production catalogue. CSC's Management Group discusses any significant deviations in information security.

Responsibilities associated with services are agreed upon with the customer or supplier in the service contracts and the information security and data protection agreements associated with them. Service quality is monitored at regular quality conferences.

Regular customer satisfaction surveys are conducted to monitor not only service quality, expectations and customer experiences but also feedback on the security of the services.

CSC prepared for meeting the requirements of the EU's General Data Protection Regulation by appointing a Data Protection Officer, discussing issues related to data protection requirements at CSC's management groups, providing internal training on the subject and identifying CSC services and other activities in which personal data are processed. CSC has also prepared a data protection policy, started including conditions related to personal data processing in its contracts, and commissioned an external evaluation of risks associated with processing personal data. CSC representatives have also participated actively in the network of higher education institutions' data protection officers and given presentations on the implementation of data protection at meetings of international stakeholders.

Services with impact

CSC's services are of national significance and affect the majority of Finns. Our activities in international collaboration networks aim to bolster Finland's competitiveness. International collaboration proactively seeks innovations and new services for our customers.

CSC's service offering is built around openness and system interoperability. We seek to take both the expertise we have acquired and the services we provide for our shareholders and higher education within the framework of our special

[8] www.csc.fi/tietoturva

mandate, and harness them more extensively throughout public administration as a whole. When signing agreements, we seek to retain user rights to the solutions we implement so that they can be reused, thus increasing cost effectiveness and promoting interoperability.

Enabling scientific breakthroughs

A significant proportion of Finnish research teams use CSC's services to support their research. Almost two thirds of CSC's resources are allocated to researchers and scientific projects funded by the Academy of Finland.[9]

Thanks to our annual agreement with the Ministry of Education and Culture, researchers at Finnish higher education institutions can use the national computing and data management environment and the basic services associated with it free of charge. The development programme for data management and computing, which the Ministry of Education and Culture is implementing together with research and innovation actors (DL2021)[10], will extend free services to academic research conducted at research institutes in 2018. Among other things, the development programme will update the computing environment that supports research and improve services for research and education. DL2021 development programme will support the research and education activities of universities, universities of applied sciences and research institutes and national innovation activities, also securing the Finnish research community's competitiveness in data and computing intensive fields of research.

Research services accessible through CSC can be adapted to all scientific fields, and support is offered at all stages of the research process. CSC does not concern itself with what kind of science is being done with the support of its services – all research is treated equally. As we do not engage in our own research, CSC can be a neutral partner even in highly competitive fields.

CSC's resource distribution team allocates the computing and storage resources applied for by our customers. Rather than actually evaluating the scientific quality of an application, CSC carries out a technical evaluation to ensure the effectiveness of the methods employed in the research. We also check that the use of resources leads to scientific publications. The resource distribution team follows national science policy and adheres to the priorities set by Finland's science administration. Computing resources are primarily allocated to national research. Reports on allocated resources are made once a year to CSC's Board of Directors and twice a year to the Ministry of Education and Culture.

Applications for so-called *Grand Challenge* research projects, which require significant computing or storage resources, and applications for international high-performance computing resources are assessed by the Scientific Customer Panel[11], which consists of Finnish research team leaders from a variety of scientific fields.

This year, the threshold of one billion computing units was exceeded for the first time in resource use. These figures were affected by the inclusion of both central storage and cloud storage capacity in use monitoring, in particular, as well as a growth in the usage rate of computing resources and, to some extent, also increased resources. In earlier years, resource use has only been monitored based on the uptake of processor hours.

Finland's national computing and data management environment is being developed through long-term collaboration between the Ministry of Education and Culture and the research community. Acquired resources are scaled to meet the needs of Finnish science. If researchers are using software that will require an extremely high volume of computing resources, we perform scalability tests to ensure the efficient use of resources.

[9] Academy of Finland report on CSC users' proportion in researchers who received Academy funding in 2015–2017. 2.25 MRD billing units, 61% of CSC resources for researchers receiving Academy of Finland funding.
[10] http://minedu.fi/dl2021
[11] research.csc.fi/scientific-customer-panel

In 2017, CSC handled over 700 applications for computing resources

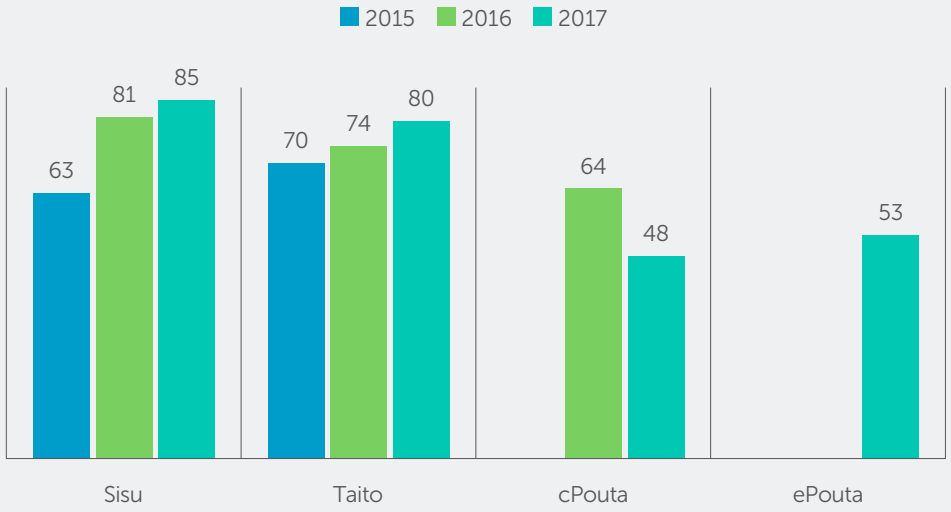
	No. of applications	Resources applied for (million computing units)	Resources granted (million computing units)	Successful applications (%)
Computing resource applications	641	943,859	727,236	77%
Grand Challenge applications	21	196,176	146,100	74%
Total	662	1,140,035	873,336	77%

After problems experienced in 2016, the accessibility of the computing and data management environment returned to an extremely high level.

The usage rate of the computing and data management environment continued its increase in 2017. The usage rate of supercomputer Sisu rose to over 85 per cent (2016: 81%), while this rate for Taito went up to 80% (2016: 74%). We seek to maintain a high resource usage rate, but increased usage also leads to longer waiting times, which reduces the appeal of the computing environment for small and medium users. The reduction in the usage rate of cloud services in 2017 compared to 2016 was the result of a significant capacity increase in 2017. The volume of memory used by virtual computers, which describes the growth in use, increased in * cPouta service by 71% and in ** ePouta service by 45% from January till December.

All indicators point to a continued increase in the use of CSC's research services. Special focus areas in 2017 were services required for artificial intelligence research and the processing of sensitive research data. Interaction with research institutes was also intensified to ensure that the offer of services and expert support can be expanded to new fields of research. The greatest volumes of big data processed in

Usage rate of the computing and data management environment (%)



The volume of memory used by virtual computers, which describes the growth in use, increased in *cPouta service by 71% and in **ePouta service by 45% from January till December.

CSC's computing and data management environments continue to originate in life sciences research. In cooperation with the ELIXIR research infrastructure hosted by CSC, an effort is being made to ensure that CSC's research environment is compatible with the needs of research use of genome data as the National Genome Center is established.

An information specialist and supporter of interoperability

Each student at Finnish higher education institutions uses services implemented by CSC. The joint use of these services is also expanding to vocational education and training and general education. The services implemented and administered by CSC help to steer and develop the Finnish education system as a whole.

CSC maintains and develops national key services for interoperability, including HAKA, MPASSid and Eduuni-ID authentication solutions as well as data description, distribution and collection services that enable interoperability.

VIRTA higher education achievement register contains the student information of students at 38 Finnish higher education institutions, some 1.3 million degrees, and study attainment data of approx. 2.5 million current 2.5 million past students. This information is used in services offered by higher education institutions and companies, student admissions and different activities of the authorities. For example, the study attainment data of over 130,000 students were provided for the monitoring of progress in higher education studies carried out by Kela.

VIRTA publication service collates information about research publications from all Finnish research organisations: the details of approximately 60,000 publications are transferred to the service every year (a total of 292,262 publications). Other data sets in the research data warehouse developed by CSC include data describing research infrastructures, researchers and projects.

In the Finnish National Agency for Education's Arvo Education Management Information Service, 10,796 students who completed a Bachelor's degree at a university as well as 20,726 students having completed a Bachelor's degree and 2,357 having completed a Master's degree at a university of applied sciences responded to graduation phase feedback surveys addressed to higher education students in 2017.

User numbers of Vipunen, a statistics service maintained by CSC for the Finnish National Agency for Education [12], increased by 28% year-on-year (2017: 48,012 users, 2016: 37,451 users, 2015: 24,387 users). This service contains information on Finnish educational and research organisations (of which there are about 3,500). The topics covered include student and degree numbers, student admissions, study progress, graduate placement, personnel, finances, internationality, and publications. The information is used in decision-making on education and science policy, and also to support leadership at educational and research organisations. In late 2017, 1,889 different reports on the statistics and indicators contained in Vipunen were available in three different languages (Finnish, Swedish and English). Some of Vipunen contents can now also be accessed by other services through a machine-readable interface.

CSC is a trusted key expert as a partner in central government development projects, including the Ministry of Finance's key project on Shared Information Management and projects that develop the collection, analysis and utilisation of information from different sectors of public administration. CSC's experience of connecting services to a national service architecture supported the design of service solutions based on an individual's choice and rights to their own data as part of the eSuomi services (MyData).

[12] www.vipunen.fi

An IT system and network specialist

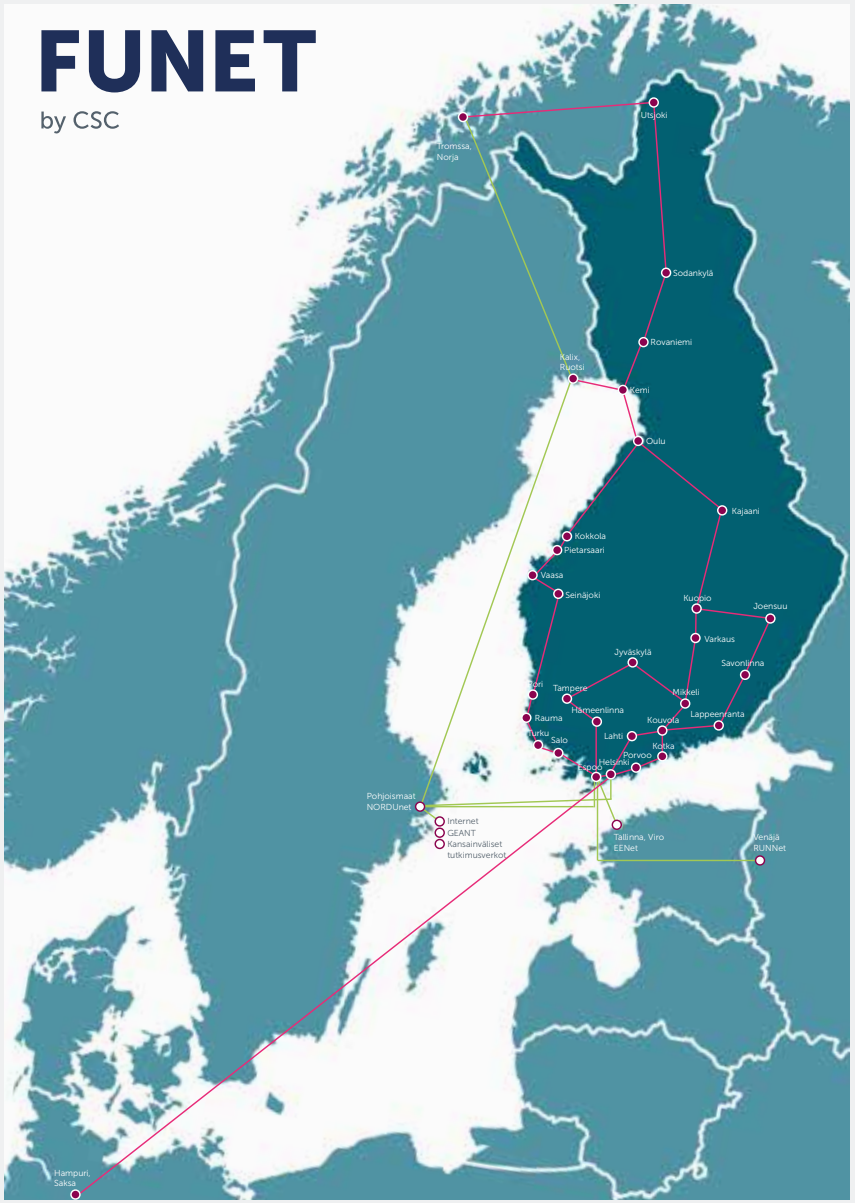
By using the digital preservation service implemented by CSC and funded by the Ministry of Education and Culture, cultural memory organisations can fulfil their statutory obligations to preserve national digital cultural heritage. Agencies having joined the service now include the National Audiovisual Institute, the National Archives, the National Library, the Institute for the Languages of Finland KOTUS, the National Board of Antiquities, the Society of Swedish Literature in Finland and the Finnish Social Science Data Archive.

Rather than only being a means of preserving the bits of which digital data is composed, digital preservation also secures the availability and preservation of the intelligibility of such data – for decades or even centuries. In 2017, the volume of materials stored in the digital preservation service exceeded 110 terabytes.

Funet, a fast and reliable data network for Finnish higher education, research and education, covers all Finnish institutions of higher education irrespective of their administrative sector and serves over 370,000 end users across Finland. A life cycle upgrade project of Funet, known as Funet 2020, was prepared in 2017 and will be launched in 2018. For this upgrade (2018–2021), public tendering processes for the network's optical fibre infrastructure and hardware and other preparative work were successfully carried out.

The work to improve the service range of the network, which started in 2016, continued in cooperation with the organisations using Funet in 2017.

The campus wifi eduroam supports and promotes worldwide mobility for its users. 37 Funet member organisations in Finland have joined eduroam, which can be used in more than 400 places around the country, from Helsinki to Utsjoki. Globally,



eduroam can already be found in almost 22,000 locations. In 2017, Finnish eduroam IDs were used to connect to the web around 1.5 million times a month, both from Finland and abroad, using various terminal devices.

The Funet Tiimi web conference system enables collaboration across organisational boundaries irrespective of time and place. A total of over 500,000 hours of conferences, video broadcasts, and online training took place in the online conference environment during 2017. Approx. 40,000 higher education users registered with the service through the Haka user authentication system, and almost all higher education institutions were involved in the joint service.

Funet Etuubi is a video publication system operating in a hybrid cloud. Finnish higher education institutions posted about 6,000 videos on Etuubi in 2017, which were viewed almost 100,000 times.

Etuubi is mainly used for education but also in marketing, for online broadcasting of events and as a distribution platform for presentation material.

Etuubi can be used not only to publish existing videos but also to produce videos and enrich them with learning materials based on questionnaires. The platform makes students' work easier by offering an alternative for conventional teaching methods and making learning independent of time and place.

CSC piloted a new-generation Zoom video conferencing system in 2017, receiving positive feedback from different test groups. The full introduction of the service will take place in 2018.

The use of mobile terminal devices increased significantly in 2017, and all our video services can now be accessed on mobile platforms. Our identification and user rights management services enable the effortless authentication and allocation of user rights in numerous different systems across organisational boundaries.

With about 326,000 end users, HAKA is the most widely used authentication system among Finnish higher education institutions and research institutes. About 32 million service logins are made through HAKA every year, at best over 4.4 million per month.

Procurement

CSC adheres to both its own procurement guidelines and the Act (1397/2016) and Decree (1397/2016) on Public Procurements. Procurements are also governed by legal practice relating to the Act on Public Procurement.

We also comply with other acts relating to the procurement in question and other legislative requirements applicable to the object of the procurement (such as the Act on the Openness of Government Activities and, on a case-by-case basis, also the General Data Protection Regulation and the Act on the Contractor's Obligations and Liability When Work is Tendered Out).

Even minor procurements that do not fall within the scope of the Act on Public Procurement are put out to tender in accordance with CSC's procurement guidelines. For strategically significant procurements, suppliers' subcontractors must also be approved in advance.

CSC has entered into several framework agreements with goods and service providers subject to competitive tendering organised by Hansel Oy. Unless there is a particular reason not to, CSC always uses these framework agreements, which have been subjected to a tendering process by Hansel Oy. Hansel's framework agreements take environmental perspectives into account.

CSC's procurement guidelines instruct purchasers to consider environmental factors in accordance with the lifecycle model: during the planning phase, during use, and at the end of the cycle. When planning procurements, personnel also have a materials bank for sustainable procurements, competition guidelines, and a carbon footprint calculator at their disposal.

CSC includes all information security requirements in its calls for tenders. Procurement contracts, and in particular those for IT services, software and equipment, contain a separate appendix on security. If necessary, the head of information security or their named representative will be involved in the planning and implementation phases of a procurement.

The environment

CSC is a pioneer in the sustainable development of ICT services and committed to promoting sustainable development objectives in all operations. Environmental management is a routine aspect of the Management Group's work. We seek to minimise the environmental loading caused by our activities.

Business flights and the electricity consumed by datacentres account for the largest share of CSC's environmental loading. Datacentres accounted for approx. 98 per cent of CSC's electrical energy consumption in 2016.

The following environmental principles govern CSC's environmental responsibility:
- CSC seeks energy-efficient solutions in its datacentres
- CSC seeks to save energy and natural resources, and to reduce its carbon footprint
- CSC guides and supports personnel to ensure they have adopted environmentally friendly working methods.

Under the Energy Efficiency Act, major companies are required to perform a corporate energy review at four-year intervals. CSC's last energy review was commissioned in 2015.

The services provided by CSC are mainly digital. In 2017, all electricity used by datacentres and office facilities was produced from renewable sources. The majority of the services we provide have been virtualised, resulting in lower server electricity consumption and resource usage than if the services had been implemented using physical devices.

Energy-efficient datacentres

CSC's datacentre in Kajaani is one of the most energy efficient in the world. The Modular Data Centre (MDC) introduced in 2012 achieved the world-class PUE figure (power usage effectiveness) of 1.04. Levels of up to 1.02 were achieved in Kajaani using a Bull system with warm-water cooling.

On a global scale, the energy efficiency of all our datacentres is excellent (PUE values of 1.04-1.61). Over the years, the efficiency has kept improving, and in 2017, we managed to maintain a good level despite inadequate production capacity. This trend has been enabled by improving cooling systems, modernising and improving the efficiency of server capacity and selecting datacentre technologies that represent top class energy efficiency.

Another important aspect of energy efficiency is ensuring that all of the energy consumed is used to power significant operations. The computing services CSC offers to Finnish research have a high usage rate and we employ, among other things, scaling tests to ensure the efficient use of resources.

All of the electricity used at our datacentres in 2017 came from renewable energy sources.

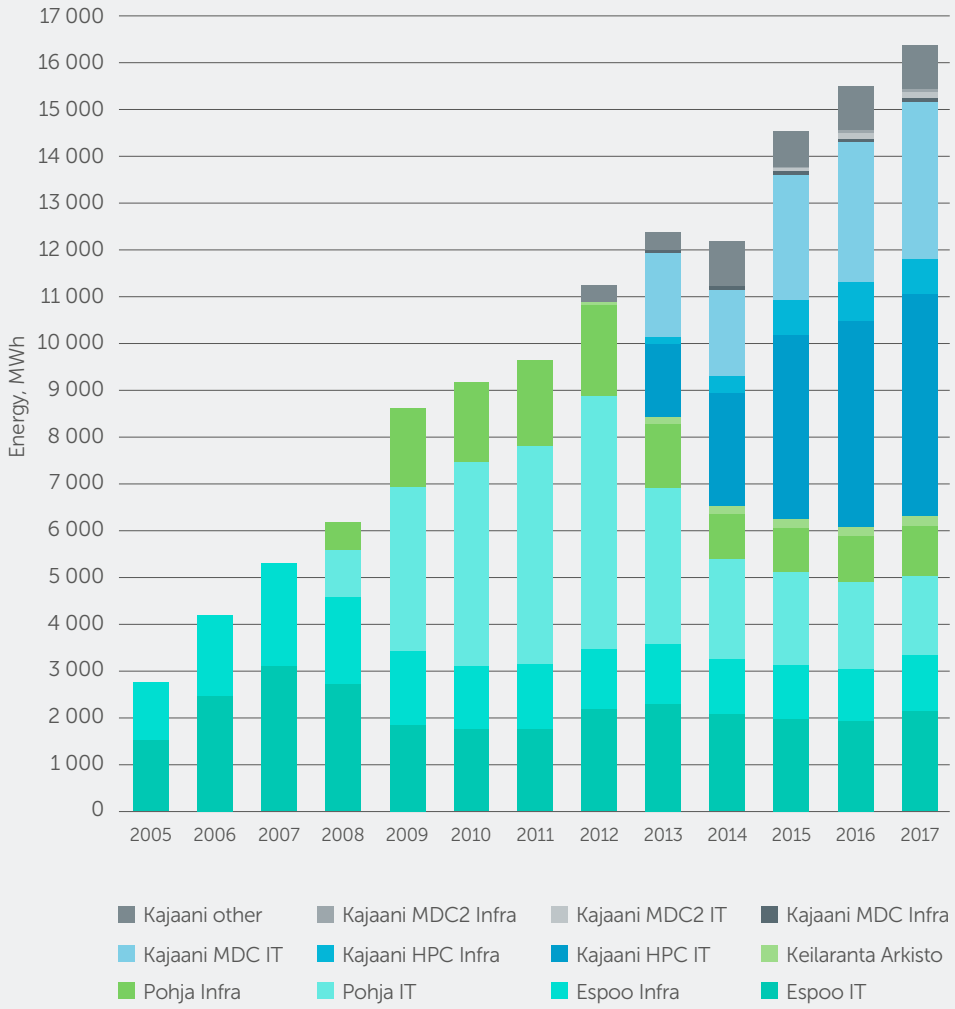
Environmental risks

Potential environmental risks at datacentres are managed in accordance with current regulations. No environmental damage was reported in 2017.

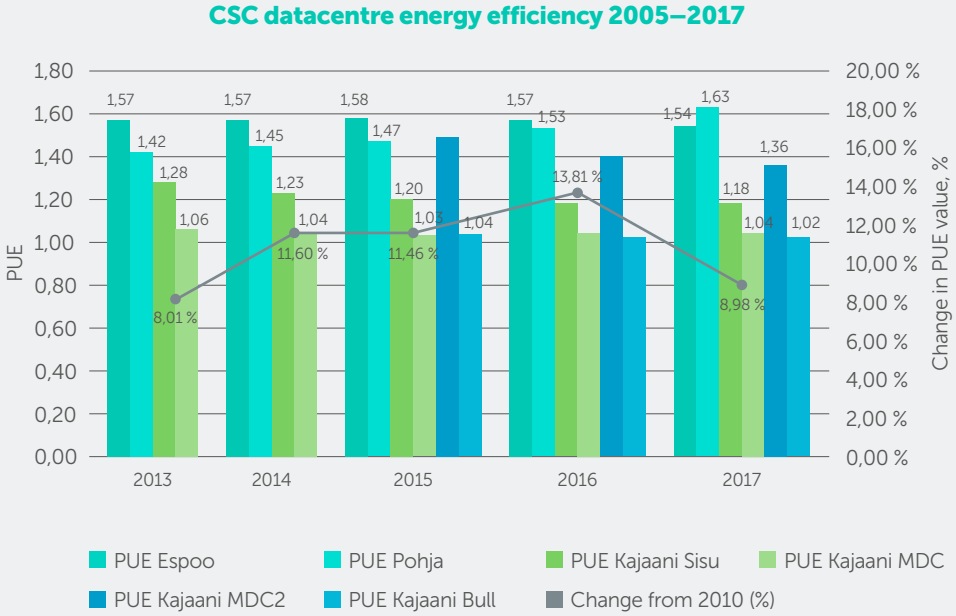
The greatest environmental risks associated with CSC's operations relate to the handling of the gas mixtures, refrigerants and generator fuel oils used in datacentre infrastructure, and the disposal of decommissioned equipment. Datacentre maintenance contracts require suppliers to ensure that hazardous substances and materials are disposed of in the appropriate manner. Whenever possible, refrigerants and gas extinguishants are recycled during maintenance or repairs.

Clauses on the decommissioning of IT equipment are included in procurement contracts. Depending on these agreements, equipment may either be returned to the manufacturer or separately recycled.

CSC datacentre energy consumption 2005–2017



CSC datacentre energy efficiency 2005–2017



Environmental responsibility in other operations

CSC has improved the energy efficiency of its premises through renovations. In 2015 and 2016, a total of 832 m^2 was turned into multifunctional office spaces, in which about 110 people worked in 2017. The space efficiency of CSC's multifunctional office spaces is approx. 8 m^2/person (approx. 10 m^2/person in 2016). Space efficiency has also been improved by adding workstations to single-room offices, where the space efficiency is approx. 19 m^2/person (approx. 20 m^2/person in 2016).

Energy and water

Electricity consumption in CSC's offices totalled 310.6 MWh in 2017, which represents 2 per cent of our total electricity consumption. Electricity consumption per person remained at the same level as in the previous year (1.1 MWh/person).

CSC is not a major consumer of water. A precise figure for CSC's water consumption in Espoo cannot be given, as the property does not have lessor-specific water meters. Our datacentres employ a closed loop water cooling system with minimal water requirements.

Carbon footprint and travel

All of the electricity used at our datacentres and offices in 2017 came from renewable energy sources that did not generate carbon dioxide emissions. Direct greenhouse gas emissions are only produced by the diesel aggregators used as a reserve power supply for datacentres. Air travel is CSC's most significant source of greenhouse gas emissions. While our air mileage showed a slight increase compared to the year before, it actually went down in proportion to the personnel numbers. As in 2015, the district heating used in offices was the second largest source of carbon dioxide emissions.

Rail travel in Finland, kilometres driven by private cars and taxi use declined.

CSC's role in the Finnish and international research infrastructure requires networking and, therefore, travel. We have sought to reduce travel by increasing opportunities for teleconferences and encouraging personnel to use public transport.

We have focused our travel-related procurements on government-tendered airline and accommodation services for which environmental criteria have been specified.

Materials and waste

In its material procurements, CSC relies on Hansel framework agreements that take environmental perspectives into account. CSC's procurement policy also instructs employees to examine environmental factors at all stages, from planning to use and decommissioning.

We reduce printing and paper consumption by employing digital work processes. The most environmentally friendly default settings are used for multifunction devices in our offices (double-sided black-and-white printing, automatic energy-saving mode).

CSC aims for the highest possible waste-sorting rate and we always seek to recycle usable goods.

CSC primarily acquires furniture and ICT equipment through leasing agreements, which saves resources and reduces environmental loading. ICT equipment is returned to the leasing company after 2–5 years of use.

No hazardous substances are used in our offices.

Finances

CSC's purpose is to provide non-profit services to its shareholders. CSC does not engage in market-based business activities. In accordance with our Articles of Association, we provide services to the organisations specified by our shareholders in the business areas specified by our shareholders. At CSC, financial responsibility means transparency, open financial management, and the provision of high-quality yet cost-effective services.

Financial objectives and their attainment

The financial objectives found appropriate in the year before were maintained in 2017, including objectives related to cost management in a changing operating environment and changes arising from our new ownership arrangements. We responded to these changes by boosting the efficiency of our operations and processes among other things.

The economic operating environment took a clear turn for the better during the accounting year, which was successful in financial terms. Significant growth was achieved through new customer relationships and new contracts as well as the expansion of existing customer operations, among other things. The company's turnover grew by 10.0% year-on-year in 2017.

Boosted by the growth in turnover, the accounting year profits were the best ever recorded, with bottom line figures even better than expected. The positive result was supported by sound cost management and the fact that the relative cost level remained similar to earlier years' levels.

Key indicators for CSC's financial performance and financial activities are presented in greater detail in the **Financial Statements and Auditor's Report.**

Key financial indicators

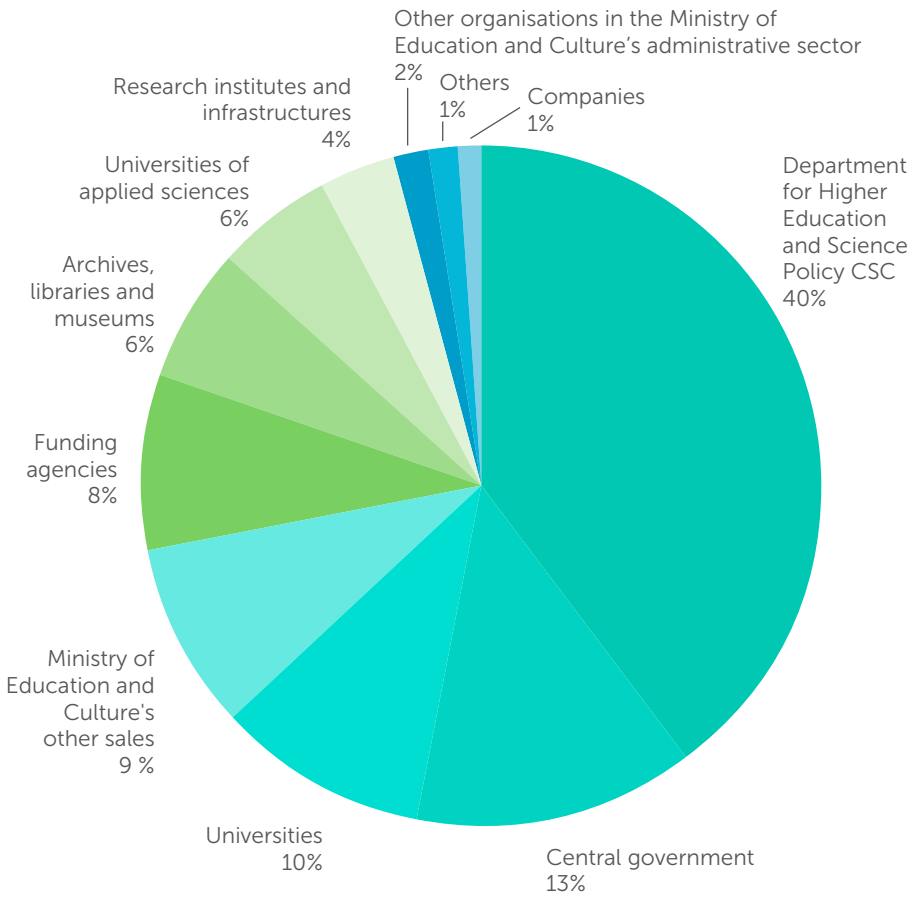
Our net sales for 2017 totalled EUR 40.5 million.

Key indicators	2017
Operating profit	3.90%
Return on equity	39.80%
Return on investment	50.20%
Quick ratio	2.2
Current ratio	1.0
Equity ratio	27.60%
Gearing	26.3%

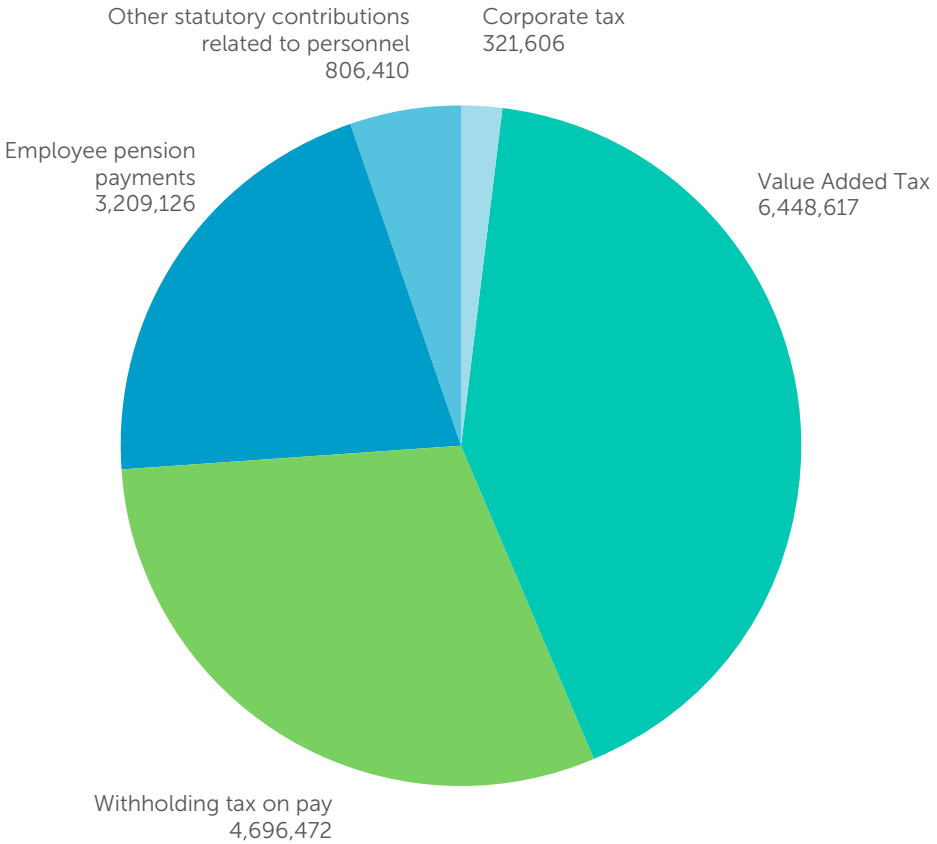
Financial support received from the central government

Support	EUR	Purpose
Discretionary government transfer	2.539 million	The use of the discretionary government transfer is associated with developing computing service infrastructure, service concepts and data warehouse services.
Investment support from the Ministry of Education and Culture	1.246 million	This covers investments in the maintenance, monitoring and security of the state-owned and/or state-funded computing environment administered by CSC.

Revenue 2017



CSC's tax footprint for 2017 was EUR 15.5 million in total.



Cash flows to stakeholders

Stakeholders	EUR	Direct and indirect impact
Customers	Net sales 40.523 million	**Direct financial impact:** Through CSC, the Ministry of Education and Culture fulfils its obligation under the Information Management Act to promote cooperation and IT system interoperability in the fields of education, science, culture and public administration.
	Support from the EU, TEKES, Academy of Finland 3.767 million	CSC's customers are given access to scientific computing services, a world-class data network, and training and expert guidance in the use of supercomputers. **Indirect financial impact:** CSC has an impact on the competitiveness of Finnish research.
Suppliers	-20.294 million	**Direct financial impact:** CSC primarily purchases goods and services from suppliers operating in Finland. **Indirect financial impact:** Cooperation creates business opportunities and jobs for suppliers.
Employees	-21.658 million	**Direct financial impact:** All of CSC's personnel are stationed in Finland. Salaries and bonuses have an impact on private consumption, and the taxes paid by personnel contribute to social well-being. **Indirect financial impact:** We use training and task rotation to enhance our personnel's expertise and performance. CSC personnel have unique expertise in areas such as scientific computing, data management, and storage services.
Public sector	-322,000	Taxes paid by CSC to the central government
Non-profit organisations: support and donations	0	In accordance with its Code of Conduct, CSC does not make donations, support non-profit organisations, or sponsor any type of group.
Shareholders	0	CSC does not pay a dividend. CSC's operating profit of EUR 196,000 was transferred to retained earnings in its entirety.
Funding agencies	-9,000 21,000	Financial expenses Financial income
Result for the financial year	1,269,000	The profit for the financial year was transferred to retained earnings in its entirety.
Investments: depreciation	-761,000	Our own investments focus on the maintenance, monitoring and security of the state-owned and/or state-funded computing environment and data infrastructure administered by CSC.

Reporting principles and formulae

CSC's Corporate Social Responsibility Report is published annually. The report covers all operations under CSC's control. Comparison data for the previous year is presented in accordance with the organisational model and operations of the year in question. Earlier key indicators have not been converted to reflect later changes.

As CSC does not have a direct or indirect holding of 50 per cent or more in any company, no information about companies in which CSC has holdings is included in our Corporate Social Responsibility Report.

CSC is aware of the challenges posed by gathering and collating data, and seeks to develop appropriate monitoring practices.

	Formulae
Financial responsibility	The data used to calculate key indicators has been gathered from the accounting system and the audited Financial Statements. Key indicators have been calculated as follows: • Operating profit, % = operating profit / net sales • Return on equity = net result / equity • Return on investment = (net result + taxes + financial items) / capital employed • Quick ratio = financial assets / (current liabilities - advances received) • Current ratio = (financial assets + inventories) / current liabilities • Equity ratio = equity / balance sheet total*100 • Gearing, % = balance sheet liabilities / net sales (12 months)
Social responsibility	Our data on HR responsibility is taken from a variety of source systems, such as the working hour monitoring system and personnel database. HR management personnel are appointed to collate the information and submit reports on the required key indicators and statistics. Key indicators have been calculated as follows: • Turnover = (number of employees leaving the company 1 Jan–31 Dec) / (number of employees at 31 Dec) x 100% • Accident frequency = (number of accidents 1 Jan–31 Dec) / (1,000,000 work hours) • Sickness absence rate, % = (number of days of sickness absence 1 Jan–31 Dec) / (theoretical standard workings hours 1 Jan–31 Dec) x 100% The Net Promoter Score (NPS) has been calculated as follows: • NPS = (number of promoters - number of detractors)/(number of respondents) * 100 • Customer responses (on a scale of 0–10) were classified as follows: 0–6 = detractors, 7–8 = passive, 9–10 = promoters
Environmental responsibility	At our Espoo and Kajaani datacentres, the energy consumed by infrastructure and IT systems is separately monitored. Energy efficiency is measured as a PUE value (Power Usage Effectiveness) as follows: • PUE = (total energy used by the datacentre) / (energy used by servers) PUE does not provide a complete picture of energy efficiency, as it should take the datacentre's usage rate into account. However, being the most widely used international benchmark, PUE was chosen as a key indicator because of its comparability.

Correspondence with the Government Resolution on State Ownership Policy

The following table compares the scope of CSC's corporate social responsibility reporting to the model defined by the Government Resolution on State Ownership Policy (3 November 2011). The table uses the following abbreviations to indicate where the relevant information may be found:

- FSP = Financial statements
- CSR = Corporate social responsibility report

Code	Reporting in line with the Government Resolution on state ownership policy	Contained in	Document and page	Additional information/Deficiencies/Exceptions
1	Organisation, Corporate Governance, and operating principles			
1.1	Basic information	Yes	CSR 4	
1.2	Social responsibility management and operating principles	Yes	CSR 6	
1.3	1.3 Stakeholders and stakeholder dialogue	Partially	CSR 8-20	
2	Financial responsibility			
2.1	Financial responsibility management			
2.1.1	Financial objectives and their attainment	Yes	CSR 31–32, TP	
2.2	Financial key indicators			
2.1.2	Cash flows to stakeholders	Yes	CSR 33	Financial statements 31 Dec 2017
2.2.2	Support for non-profit organisations and sponsorship	No		CSC neither supports non-profit organisations nor sponsors any groups.
2.2.3	Financial support received from the central government	Yes	CSR 31	
3	Employees			
3.1	HR management			
3.1.1	HR management	Yes	CSR 19	
3.1.2	HR targets	Yes	CSR 18-19	
3.2	Number and breakdown of personnel			
3.2.1	Number of personnel	Yes	CSR 20	
3.2.2	Employment and service contracts	Yes	CSR 20	
3.2.3	Turnover	Yes	CSR 20	

3.2.4	Length of service	Yes	CSR 20	
3.2.5	Age structure	Yes	CSR 20	
3.3	Reorganisations and redundancies / Employer-personnel relations			
3.3.1	Terminations and lay-offs	No		CSC made no redundancies or lay-offs.
3.4	Equality			
3.4.1	Gender breakdown	Yes	CSR 20	
3.4.2	Equality plan	Yes	CSR 19	
3.5	Remuneration			
3.5.1	Remuneration system and performance-based incentives	Yes	CSR 18-19	www.csc.fi/palkitseminen
3.6	Competence development and training			
3.6.1	Development discussions	Yes	CSR 18	
3.6.2	Training and competence development	Yes	CSR 18	
3.7	Well-being at work			
3.7.1	Personnel satisfaction	Yes	CSR 18	
3.7.2	Working capacity and well-being	Yes	CSR 18	
3.8	Occupational health and safety			
3.8.1	Accidents	Yes	CSR 18	
3.8.2	Sickness absences	Yes	CSR 20	
3.8.3	Occupational health	Yes	CSR 18	
4	The environment			
4.1	Environmental management			
4.1.1	Major environmental impacts of operations	Yes	CSR 28-30	
4.1.2	Managing environmental issues	Yes	CSR 28	
4.1.3	Environmental targets and their achievement	Yes	CSR 28-30	
4.2	Environmental key indicators			
4.2.1	Energy	Yes	CSR 30	
4.2.2	Air emissions	Yes	CSR 30	
4.2.3	Water	Partially	CSR 30	CSC is not a major consumer of water. Cannot be itemised. The property does not contain lessor-specific water meters.
4.2.4	Waste	Partially	CSR 30	The property has a common waste area and the proportion generated by CSC cannot be measured.

4.2.5	Compliance and environmental expenses	No	CSR 28-30	No environmental damage.
4.2.6	Products and services	Yes	CSR 28-30	
4.2.7	Transportation	Yes	CSR 30	
4.2.8	Materials	Yes	CSR 30	
5	Social responsibility			
5.1	Local communities			
5.1.1	Impact on local communities	Partially	CSR 8, 14	
5.2	Bribery and corruption			
5.2.1	Measures and practices to combat bribery and corruption	Yes	CSR 6	
5.3	Political influence			
5.3.1	Political influence and support	Yes	CSR 6	CSC does not directly or indirectly influence any political activities.
5.4	Restriction on competition			
5.4.1	Compliance with competition legislation	Yes	CSR 27	
5.5	Compliance			
5.5.1	Compliance with legislation and regulations	Yes	CSR 6, 27	CSC has not been involved in legal proceedings or received any fines or sanctions.
6	Product responsibility			
6.1	Customer satisfaction			
6.1.1	Customer service and customer satisfaction	Yes	CSR 11-12	
6.2	Health and safety of products and services	No		CSC produces intangible services.
6.3	Product and service information and marketing communications	Yes	CSR 11, 21–26	
6.4	Protection of documents and privacy	Yes	CSR 21	
6.5	Sustainable consumption	Yes	CSR 30	
7	Human rights			
7.1	Human rights issues relating to operations	Partially	CSR 6	No clear human rights objectives have been set.
8	Supply chains			
8.1.	Supply chain management			
8.1.1	Procurement principles and policies	Yes	CSR 27	
9	Reporting principles and formulae			
9.1.	Reporting principles	Yes	CSR 34	
9.2.	Formulae	Yes	CSR 34	

External interests of CSC's Board of Directors and Management Group in 2017

CSC's Board of Directors

MIRJAMI LAITINEN (b. 1948)
Master of Administrative Sciences; verotusneuvos; Chair of CSC's Board of Directors since 2015.

In 2016–2017, Laitinen served as the chairperson of a working group preparing the establishment of the National Supervisory Authority. She has previously worked as a senior adviser for the Finnish Innovation Fund (Sitra), and as Director General, a Chief Director and in various managerial and senior inspector roles in the Finnish Tax Administration.

Summary of concurrent confidential posts:
Board Chairperson of ICT service centre for the counties Vimana Oy, Chair of Finnish Customs Advisory Board 2015–2018, member of the monitoring group for the Government Programme's digitalisation objectives and ICT development in the public sector (Digitalisation 2020, DigiNYT)

ANU HARKKI (b. 1951)
Professor Emerita, Senior Advisor; CSC Board Member since 2014

Harkki's previous positions include Director, Business Solutions at the Natural Resources Institute Finland, Research Director at MTT Agrifood Research Finland, Program Director at Sitra, Managing Director of Life-science-man Ltd, and Research Director at Noviant Ltd. She has also worked for Cultor Food Science in New York, in several positions for Cultor Oyj, and as a research specialist for the Technical Research Centre of Finland (VTT).

Summary of concurrent confidential posts:
Climate Reality Leadership Corps, Climate Reality Speaker

MIKA HANNULA (b. 1968)
DSc. (Tech.), university president, professor, CSC Board Member since 2017

Hannula has diverse experience of academic teaching, research and leadership roles. He also has long-standing experience of board work, and he participates in developing a number of different organisations and foundations.

Summary of concurrent confidential posts:
Board member of Academic Engineers and Architects in Finland TEK, Board member of the Tampere University of Technology Support Foundation, Board member of Technology Academy of Finland, Board member of the Baltic Institute of Finland, member of regional committee for Tampere in the Foundation for Economic Education

PENTTI HEIKKINEN (b. 1960)
MSc. (Econ.), Stanford Executive Program; CSC Board Member since 2012

Heikkinen is Board Chairman in Solidabis Oy and CEO of Gateway Technolabs Finland Oy. He has been President & CEO of TietoEnator, and has also worked for TietoEnator and its predecessor Tieto in several managerial positions. Before that, he worked as a director at VTKK Government Systems Ltd and CapGemini Finland.

Summary of concurrent confidential posts: Chair of Auntie Solutions Oy, Chair of Solidabis Oy, Vice Chair of Tecnotree Oyj, Vice Chair of Gateway Technolabs Finland Oy, Vice Chair of CSC – IT Center for Science Ltd, Chair of Value Creation Oy

HEIKKI MANNILA (b. 1960)
PhD. (Computer Science); CSC Board Member since 2015

Mannila is President of the Academy of Finland. He has previously been an Academy professor and Vice Principal of Academic Affairs at Aalto University, and a professor at both the University of Helsinki and Helsinki University of Technology. He has also worked in industrial research in the USA, and been a visiting professor at the Technical University of Vienna and a visiting researcher at the Max Planck Institute for Informatics in Saarbrücken.

Summary of concurrent confidential posts: -

MATTI MANNINEN (b. 1950)
DSc. (Tech.), CSC Board Member 2016–2 May 2017

Manninen served as President and a professor at the University of Jyväskylä until his retirement on 1 August 2017. He has previously been an associate professor at the University of Jyväskylä and docent at Helsinki University of Technology. He has also worked in several positions as an assistant, researcher and associate professor at the Helsinki University of Technology, University of Helsinki, Academy of Finland, and Technical Research Centre of Finland (VTT). His research career has also included work at universities in the USA, Switzerland, and Denmark.

Summary of concurrent confidential posts:
Board Member of Universities Finland UNIFI

JOUKO PAASO (b. 1956)
DSc. (Tech.), eMBA; CSC Board Member since 2016

Paaso is Rector and CEO of Oulu University of Applied Sciences. He has previously served as Rector of Vaasa University of Applied Sciences. At the University of Oulu, he was Director of the Raahe Campus, held a fixed-term professorship in the Faculty of Information Technology and Electrical Engineering, and was Director of the Pehr Brahe Software Laboratory. He has also worked as a visiting researcher at the Fraunhofer Institute in Germany, a senior lecturer in computer science at the Raahe Institute of Computer Engineering, a researcher at the Technical Research Centre of Finland (VTT), and a software developer for LM Ericsson.

Summary of concurrent confidential posts: Board Member of Nuorten Ystävät -palvelut Oy; Member of the Oulu Innovation Alliance's strategic steering group; Member of the Nordea Advisory Board.

KAIJA PÖYSTI (b. 1959)
MSc. (Tech.), CSC Board Member 2015–1 September 2017

Pöysti is a Master of Science in technology and serial entrepreneur with over 35 years of experience as an entrepreneur, board member and consultant on operating in high-growth, internationalising companies.

Summary of concurrent confidential posts:
Board Member of Sets Oy

CSC's Management Group

KIMMO KOSKI (b. 1964)
MSc. (Tech.), CSC Managing Director since 2004

Koski has previously worked in managerial and directorial positions at Nokia, and in managerial and specialist roles at CSC. He has also worked at the European Organisation for Nuclear Research (CERN) in Switzerland.

Key concurrent positions of trust:
Coordinator of European Data Infrastructure (EUDAT), member of the strategy group for the Ministry of Education and Culture's Open science and research project

TIINA KUPILA-RANTALA (b. 1963)
PhD., MBA; Vice Managing Director at CSC since 2011

Kupila-Rantala joined CSC in 1996. In 2001, she was Project Manager for Nokia Networks. Before joining CSC, she worked as a research assistant in the University of Helsinki's Department of Physics and as a systems analyst for Nokia Telecommunications.

Key concurrent positions of trust: -

MINNA LAPPALAINEN (b. 1967)
MSc. (Econ.); Director, Marketing and Communications; in CSC's service since June 2014

Lappalainen has previously worked in managerial and directorial positions at Taaleritehdas, Vattenfall, PlusTV and A-lehdet. She has also held managerial and specialist positions at Sanoma Magazines and TietoEnator.

Key concurrent positions of trust: -

KLAUS LINDBERG (b. 1958)
MSc. (Tech.); Director, Services; in CSC's service since 1989.

Lindberg has previously held a number of different managerial positions with CSC. He has also worked as a research assistant at the Helsinki University of Technology.

Key concurrent positions of trust:
Board member in Otaverkko Oy

TOMASZ MALKIEWICZ (b. 1980)
Ph.D., Senior Application Specialist, personnel representative. Has worked for CSC in project manager and specialist positions since 2011.

Malkiewicz has previously worked as a researcher at LPSC in Grenoble, France and at the University of Jyväskylä.

Key concurrent positions of trust: -

PEKKA UUSITALO (b. 1964)
MSc. (Tech.); Director, Partnerships; in CSC's service since November 2015.

Uusitalo has previously worked in managerial and directorial positions at Juniper Networks, Cisco Systems and Hewlett-Packard.

Key concurrent positions of trust: -

PER ÖSTER (b. 1959)
PhD.; Director, Research Infrastructures; in CSC's service since 2007

Öster has previously worked in managerial and directorial positions at the KTH Royal Institute of Technology in Stockholm, in consultant and specialist positions at Volvo Data AB, and as a researcher at the Chalmers University of Technology and University of Gothenburg.

Key concurrent positions of trust:
Member of the Swedish Research Council's (Vetenskapsrådet) Infrastructure for e-Science Evaluation Panel; Vice-Chair of the FIN-CLARIN consortium; Board Member of ELIXIR (European Life Science Infrastructure for Biological Information); Member of the Knowledge Exchange network's steering group.

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