



**ICT Solutions for  
Brilliant Minds**



# Lifelong learning in the context of e-infrastructures

e-IRG workshop 5.12.2019, Helsinki

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Non-profit state  
organization with  
special tasks



Turn over  
in 2018  
**44,9** M€



Headquarters in  
Espoo,  
datacenter in  
Kajaani



Owned by state (70%)  
and all Finnish higher education  
institutions (30%)



Circa  
**350**  
employees  
in 2018



## Targets

1

Enables world-class data management and computing

2

Maximizes the value of data

3

Leverages artificial intelligence

4

Paves the way for lifelong learning

### CSC catalyses success of customers by:

- Co-creating value with customers
- Being transparent, agile and experimenting
- Generating interoperability and co-operation
- Showing leadership and accountability
- Impacting locally and globally

### Mission

CSC as part of the national research system develops, integrates and offers high-quality ICT services for research, education, culture, public administration and companies

### Vision 2020

CSC is valued by customers and provides internationally high-quality digital services in its field of business

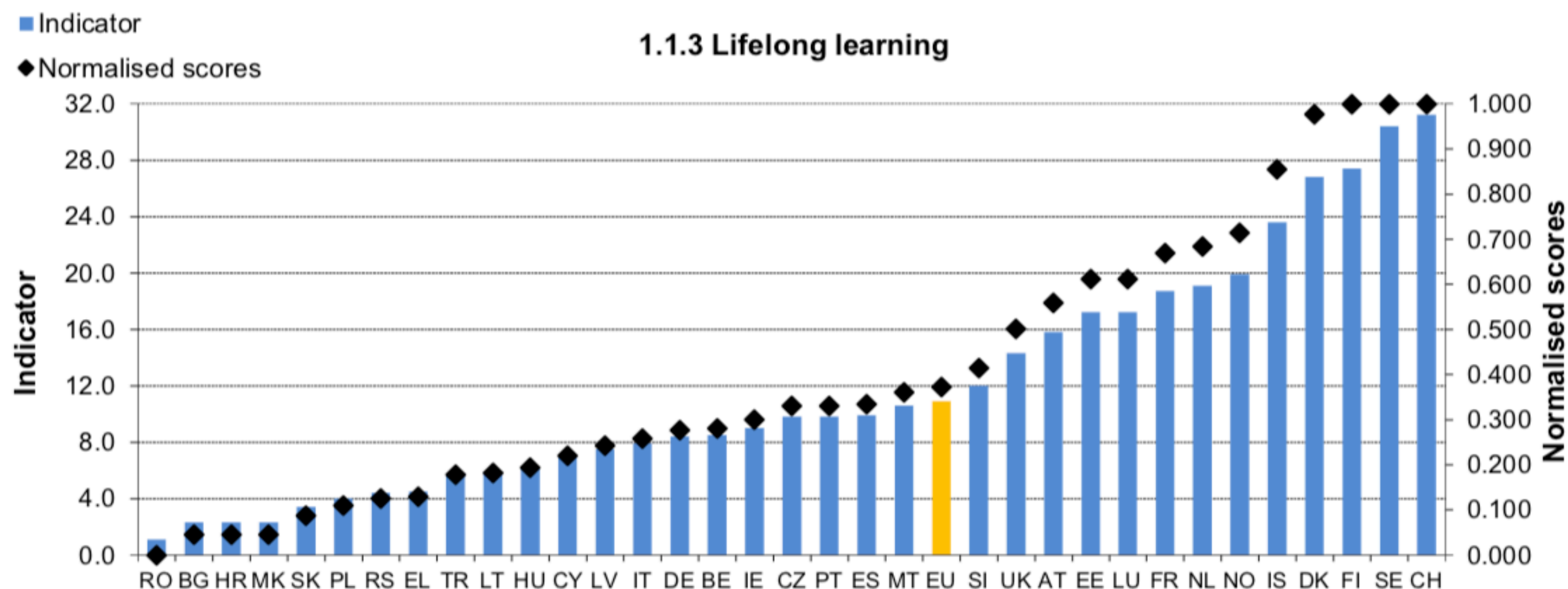
### Values

Community	Expertise
Assurance	Integrity

### Brand

We harness our expertise, networks and information technology to enhance our customers' success and ultimately benefit the whole society

# Lifelong learning in EU countries



European Innovation Scoreboard 2019: Percentage population aged 25-64 participating in lifelong learning

# Readiness for digital lifelong learning

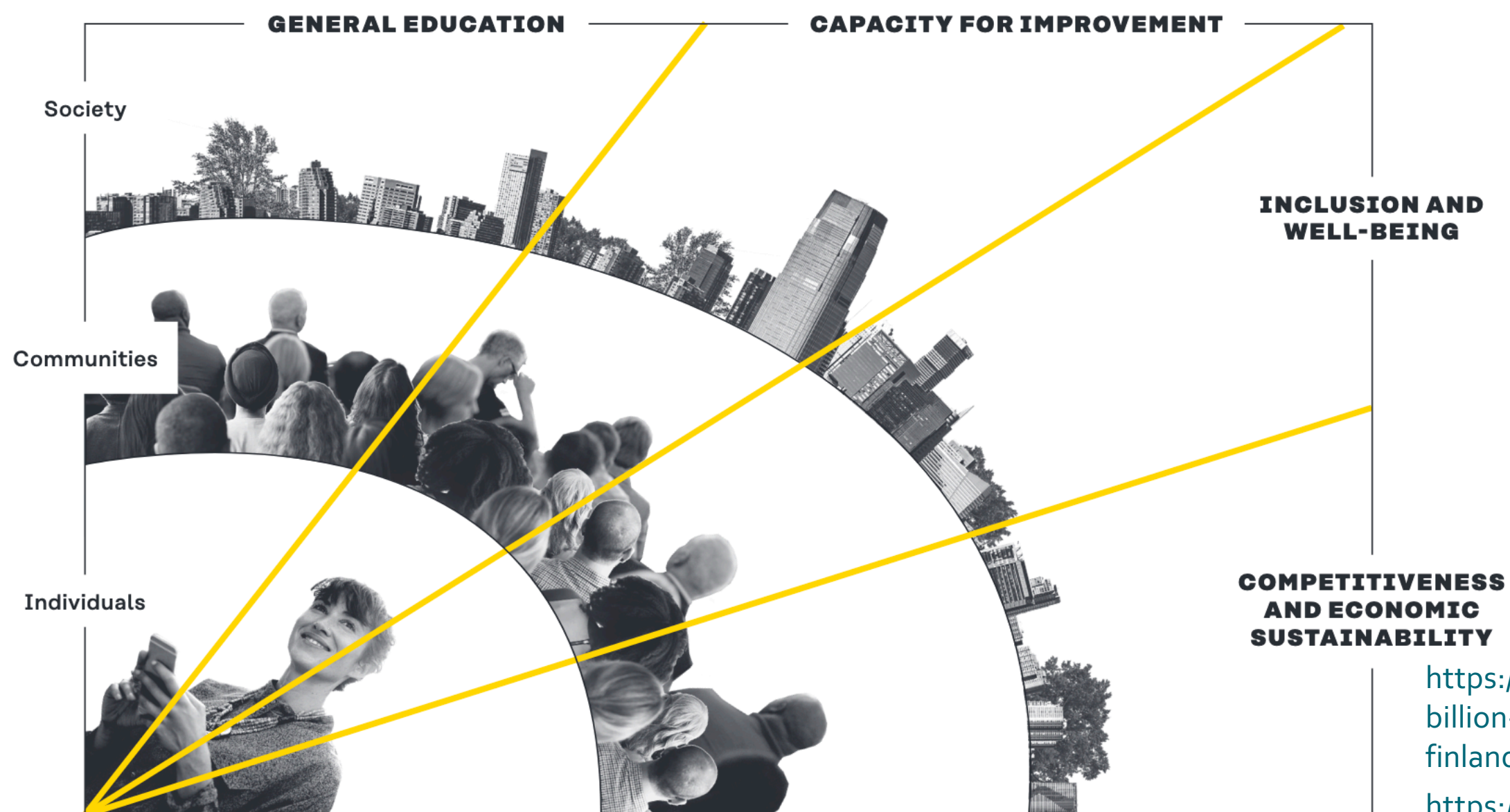
- According to CEPS – Centre for European Policy Studies in partnership with Grow with Google the construction of the Index of readiness for digital lifelong learning (IRDLL) stems from the premise that three broad categories are most relevant to understand digital learning readiness:
  - learning outcomes and participation
  - institutions and policies
  - and the availability of digital learning.



Source: Authors' elaboration based on index calculations.

<https://www.ceps.eu/wp-content/uploads/2019/11/Index-of-Readiness-for-Digital-Lifelong-Learning.pdf>

# Nearly 19 billion euros spent yearly on lifelong learning in Finland



<https://www.sitra.fi/en/news/nearly-19-billion-euros-spent-yearly-lifelong-learning-finland/>

<https://media.sitra.fi/2019/09/16162911/towards-lifelong-learning.pdf>

# Finnish vision for Digitalization of Higher Education Institutions

## 2030: Flexible digital operating environment and model



*Digitalization changes the nature of higher education by making even more study opportunities available for anyone, creating flexible study paths and allowing educational actors to cooperate on a new basis.*

ARENE and UNIFI, the rectors of Finnish higher education institutions, are formulating a vision for digitalization of the higher education institutions for 2030: Flexible digital operating environment and model

### Drivers and targets for change

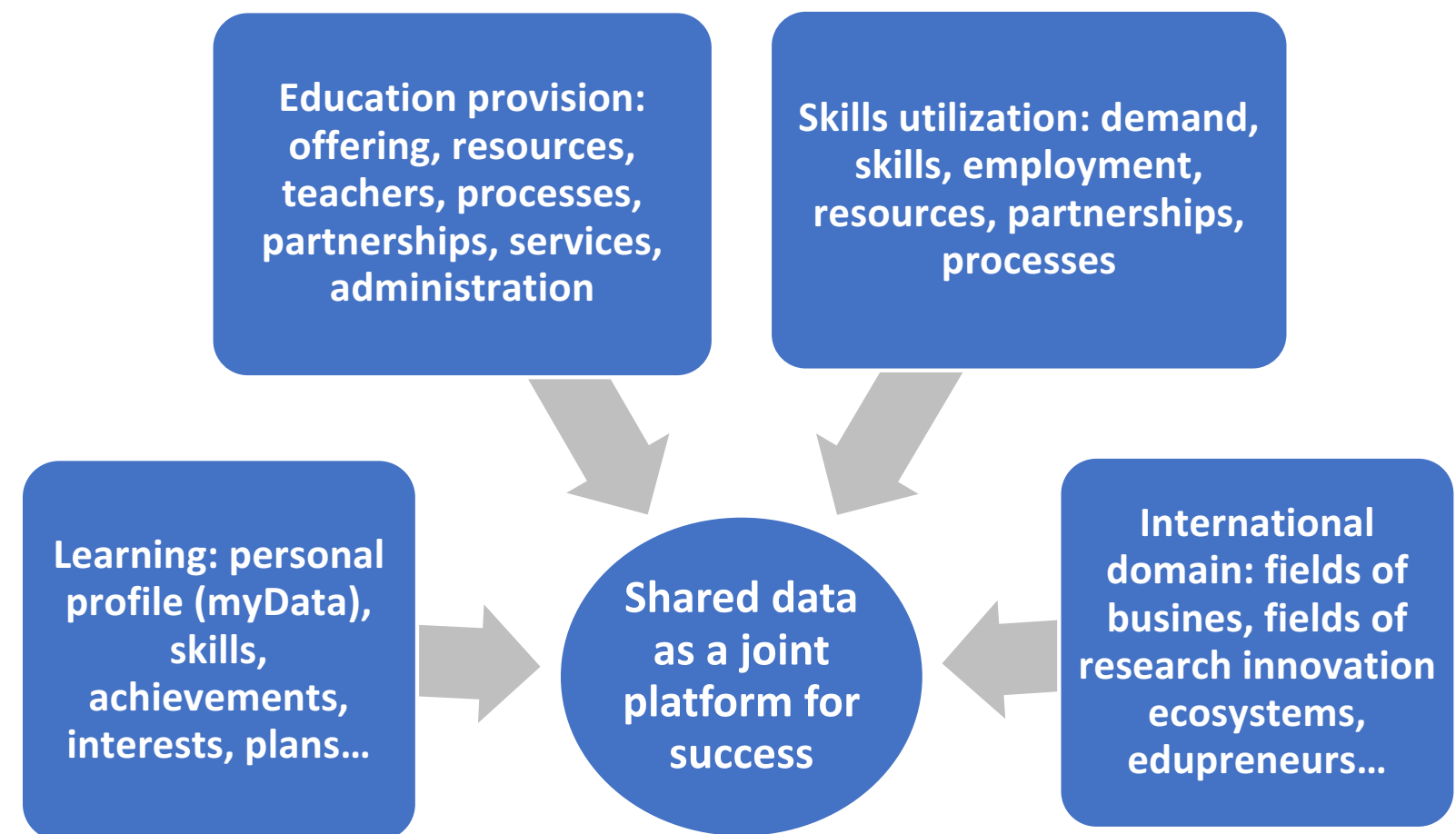
- Support lifelong learning
- Ensure national and international competitiveness
- Promote data-driven leadership & decision making
- Ensure customer-centric design & engagement
- Form an ecosystem of education and educators that supports also research and innovation activities

<https://wiki.eduuni.fi/x/NKELBw> (in Finnish)

# Finnish vision for Digitalization of Higher Education Institutions 2030 Part 1: Digital learning ecosystem and education data pools



- Shared data as a joint platform for success
  - Creation of data pools to support learning, teaching, research and innovation
  - Opening education data to the use of individuals, organizations and the society beyond the education system
  - Supporting open science and research as well as innovation activities
  - Enabling the emergence of new actors and the evolving cooperation between educational, research, business and other institutions and across governmental sectors



Arene ja Unifi Digi vision 2030: National education data pools for the benefit of the individual and society

<https://wiki.eduuni.fi/x/NKELBw> (in Finnish)

# Finnish vision for Digitalization of Higher Education Institutions 2030



## How do Finnish higher education institutions reach their vision?

- Learners own their own data (MyData), learner portfolio is available throughout learners' lifetime
- Learners have one national identity that is used in all education and beyond
- Shared data pools and common data models make education data available for individuals and society.
- Higher education institutes are data driven communities

## How can e-Infrastructures support learners and higher education institutions?

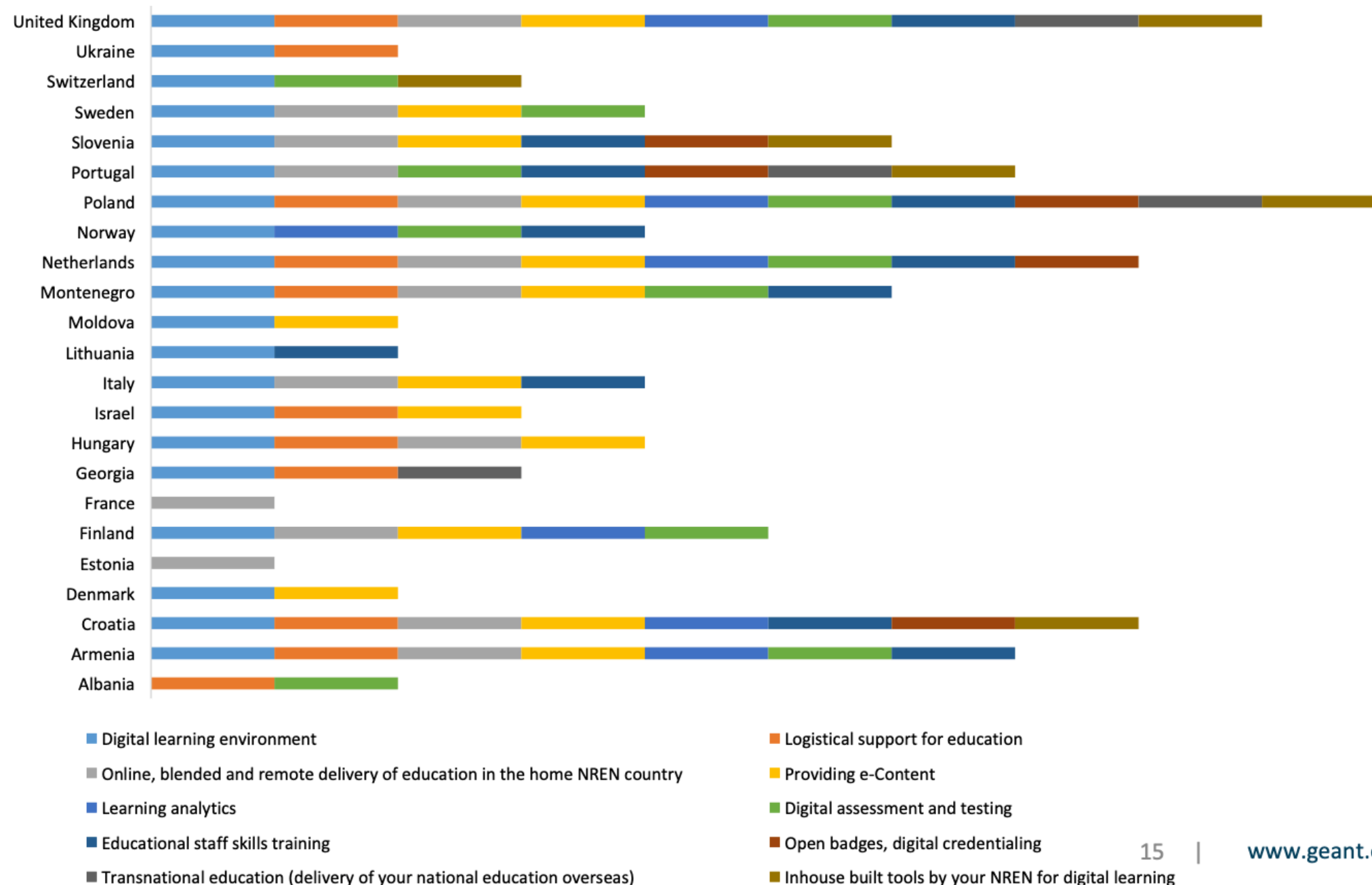
- Solutions that enable cooperation across organizational borders and support the mobility and interaction of learners, teachers and personnel (AAI, MyData)
- Services that enhance the findability, accessibility, interoperability and reusability of education data (FAIR data)
- Support and expertise for defining Common education data policies and models (Open science and open data)
- Interoperable data management solutions and data pools, learning and education statistics and analytics (Analytics)

# What kind services National Research and Education networks (NREN) provide?



Results of GÉANT's European NREN educational activities and services survey 2019

<https://connect.geant.org/2019/07/11/forging-digital-education-is-a-european-task>



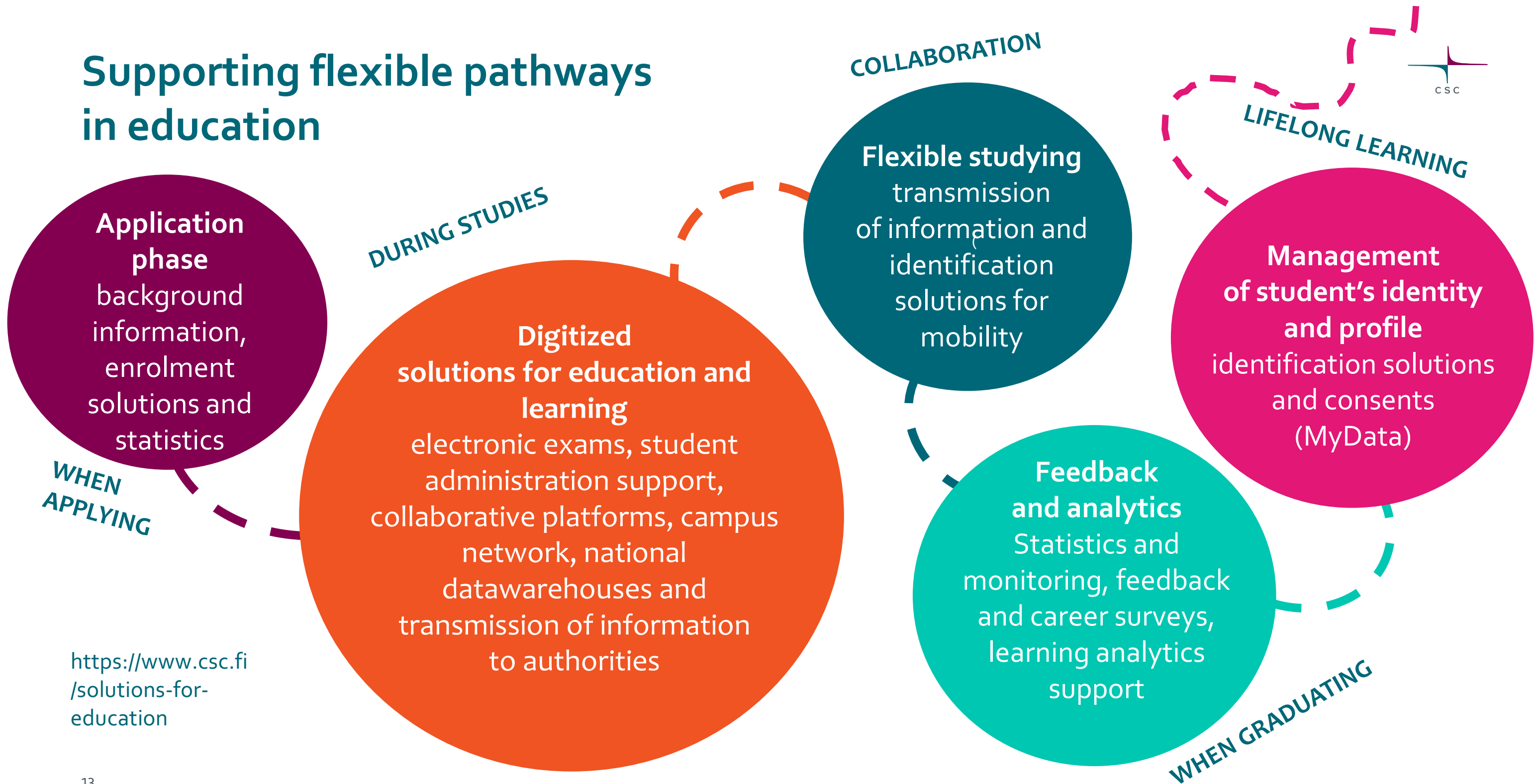
# EuroHPC – leading the way in the European supercomputing

- The EU and national governments are **jointly investing in high-performance computing** (HPC) to help advancing research, innovation and industrial growth and keeping Europe globally competitive.
- **EuroHPC Joint Undertaking** has 29 European member countries. The budget includes public investments from the EU and participating states as well as investments from private sector.
- The EU call for proposals process resulted in a decision to place three exascale supercomputers in **Finland, Italy** and **Spain**.

## Data management and computing development

- 33 M€ funding 2018-2021 to develop data management and computing environment and 4 M€ funding for increased AI capacity
  - **Puhti** - Supercomputer with Intel CPUs
  - **Puhti-ai** – Supercomputer with GPUs
  - **Mahti** - Supercomputer with AMD CPUs
  - **Allas** – Large storage system
- Additional efforts (2 M€) for competence development and support for novel use cases and emerging user groups
- CSC resources can also be used for teaching and education use, not only for scientific research

# Supporting flexible pathways in education



<https://www.csc.fi/solutions-for-education>

# Shared challenges and opportunities in lifelong learning

- Data-driven skills development and education provision
  - How to make data on education FAIR?
- Harnessing digitalization for skilling, reskilling and upskilling
  - How could we further the use of ICT in education and learning?
- Building a learner-centered service ecosystem nationally and internationally
  - What could be the role of e-Infrastructures in supporting lifelong learning?

## Discussion topics for the break-out session

- **Group 1** How to make data on education FAIR?
  - How do we manage the growing amount of education data?
  - What kind of shared education services and data pools would benefit education, research and society at large?
  - What could be the next steps for data-informed decision making in higher education?
- **Group 2** How could we further the use of ICT in education and learning?
  - What kind of opportunities digitalisation brings that could benefit education and learning?
  - How to advance the openness of learning resources and materials?
  - What could be the next steps for technological advancements e.g. AI in education?
- **Group 3** What could be the role of e-Infrastructures in supporting lifelong learning?
  - How do service portfolios need to change to account for supporting learning and learners?
  - How to support cooperation between research and education to promote life long learning?
  - What would it mean to do learner-centred service development?



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