

Basic research for education and society

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Colloquium: 60 years of CERN – 60 years of Science for Peace
September 17, 2014, CERN

Ministry of Education and Culture
Ministère de l'Éducation et de la culture



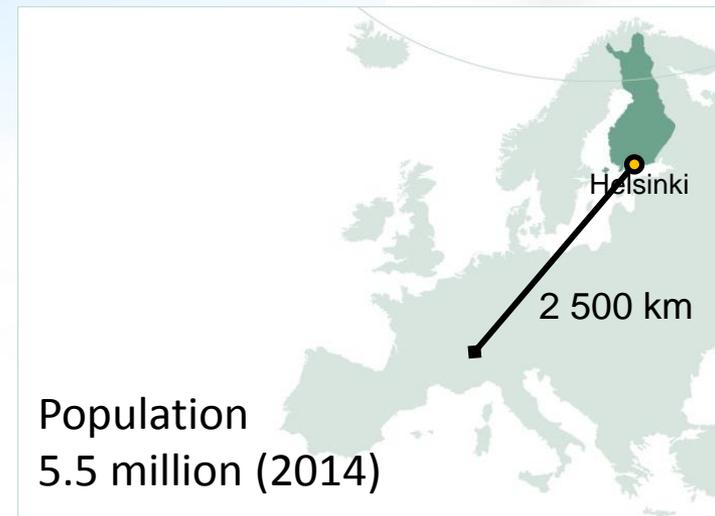
Creation of knowledge societies is premised on the conviction that universal access to information is key to building peace, sustainable economic development, and intercultural dialogue (UNESCO)

Four key pillars of knowledge societies:

- Freedom of expression
- Quality education for all
- Universal access to information and knowledge
- Respect for cultural and linguistic diversity

Historical Development of Finnish Society

- Distant location between Russia and Sweden
- Independence 1917
- Civil war 1918
- Heavy losses in war 1939-1945



Rehabilitating the society after 1945 to build up the knowledge society

- Rebuilding infrastructures
- Resettlement of the Karelian Evacuees
- War indemnities 1945-1952



Round tower of Vyborg in World War II.
Photo Museovirasto (www.Finna.fi)

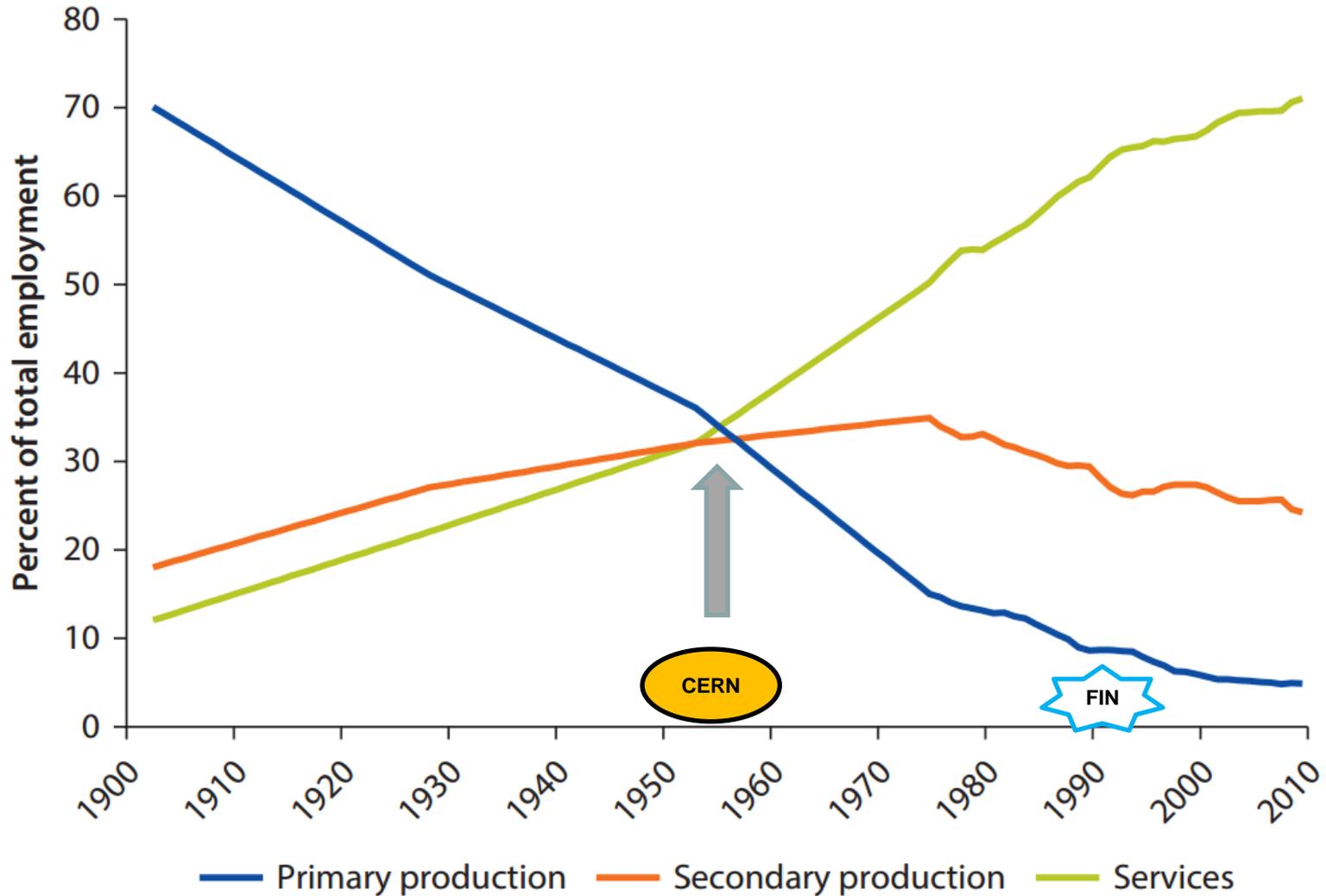


A Karelian evaucee saying goodbye.
Photo Tauno Norjavirta (www.Finna.fi)



Funeral during World War II.
Photo Väinö Kannisto (www.Finna.fi)

Employment in Primary and Secondary Production and Services as a Percentage of Total Employment in Finland, 1900-2010*



Source: Finland as a Knowledge Economy 2.0. World Bank, 2014.

The future is in the hands of our children



School meal in 1950. Photo Hugo Sundström
City museum of Helsinki (www.Finna.fi)

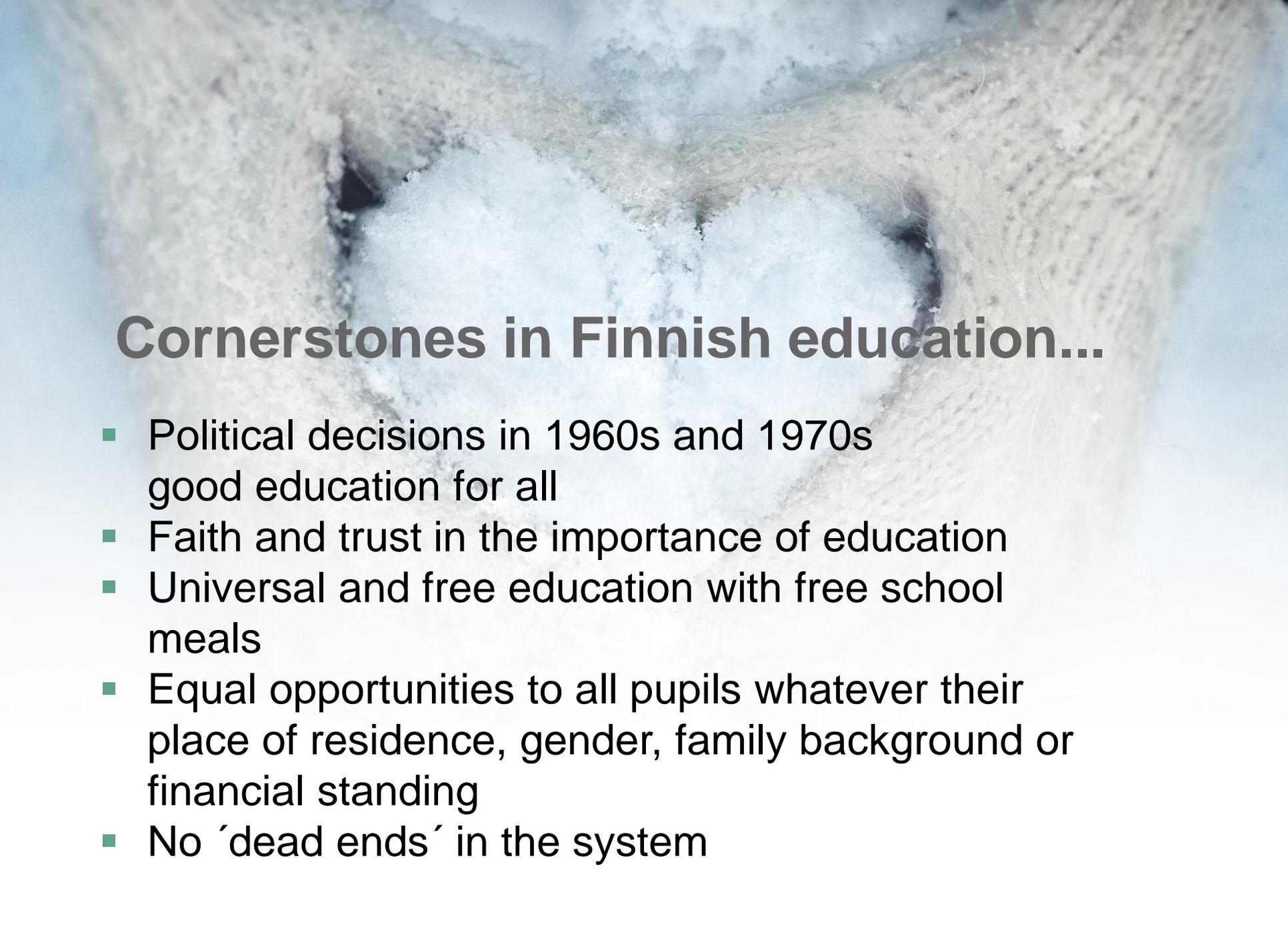


First school day in 1948. Photo Jukka Raunio.
Museums of Tampere (www.Finna.fi)



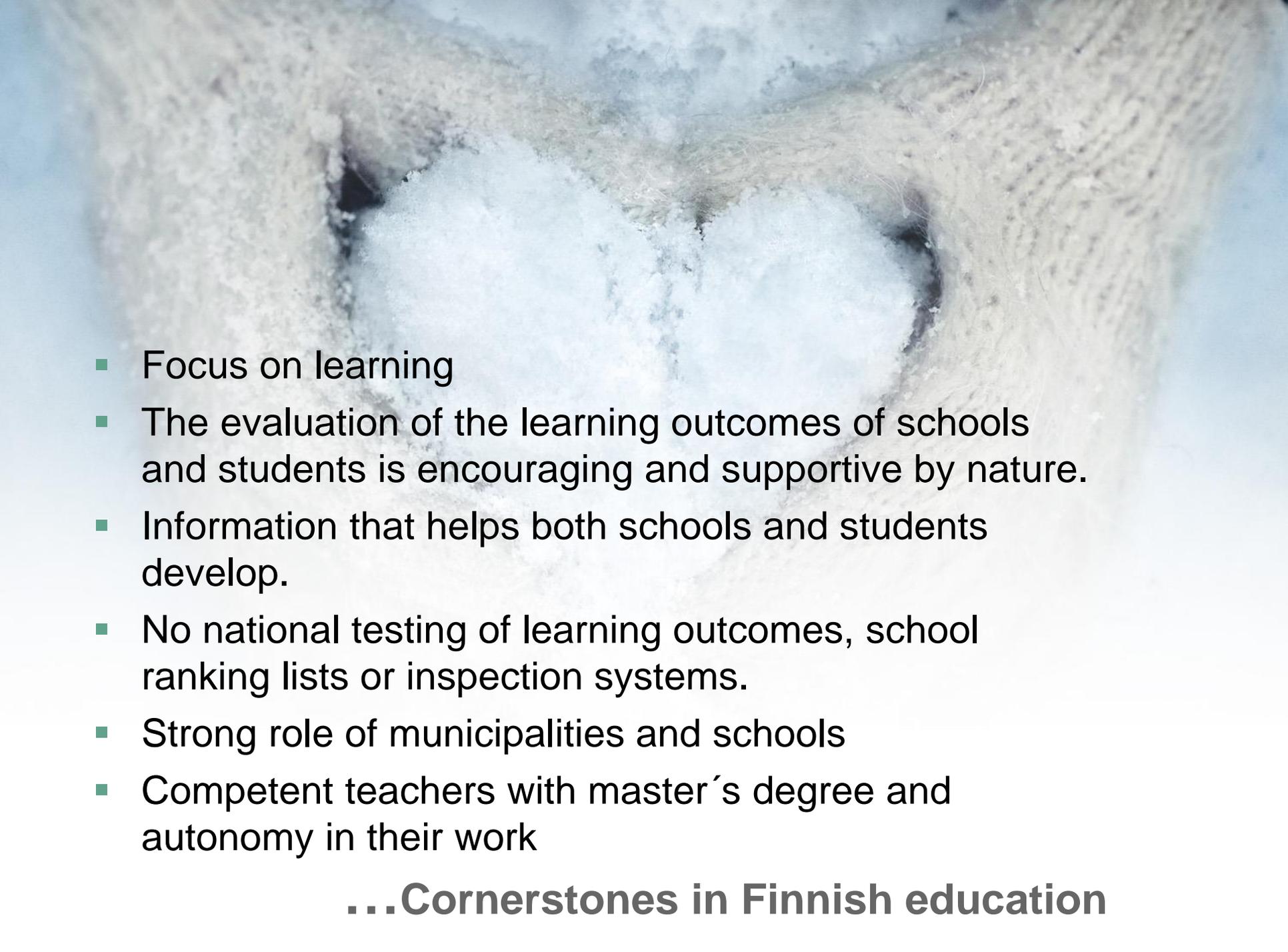
Summer holiday starts in 1953. Photo Ensio Kauppila.
Museums of Tampere (www.Finna.fi)

Finna: Treasures of Finnish archives, libraries and museums with a single search
(Already 9 million entries included)

A close-up photograph of a horse's eye, showing the iris and surrounding skin. There is a prominent white, irregular patch on the skin around the eye, possibly a scar or a condition. The background is a soft, out-of-focus light blue.

Cornerstones in Finnish education...

- Political decisions in 1960s and 1970s
good education for all
- Faith and trust in the importance of education
- Universal and free education with free school meals
- Equal opportunities to all pupils whatever their place of residence, gender, family background or financial standing
- No 'dead ends' in the system

- 
- Focus on learning
 - The evaluation of the learning outcomes of schools and students is encouraging and supportive by nature.
 - Information that helps both schools and students develop.
 - No national testing of learning outcomes, school ranking lists or inspection systems.
 - Strong role of municipalities and schools
 - Competent teachers with master's degree and autonomy in their work

...Cornerstones in Finnish education

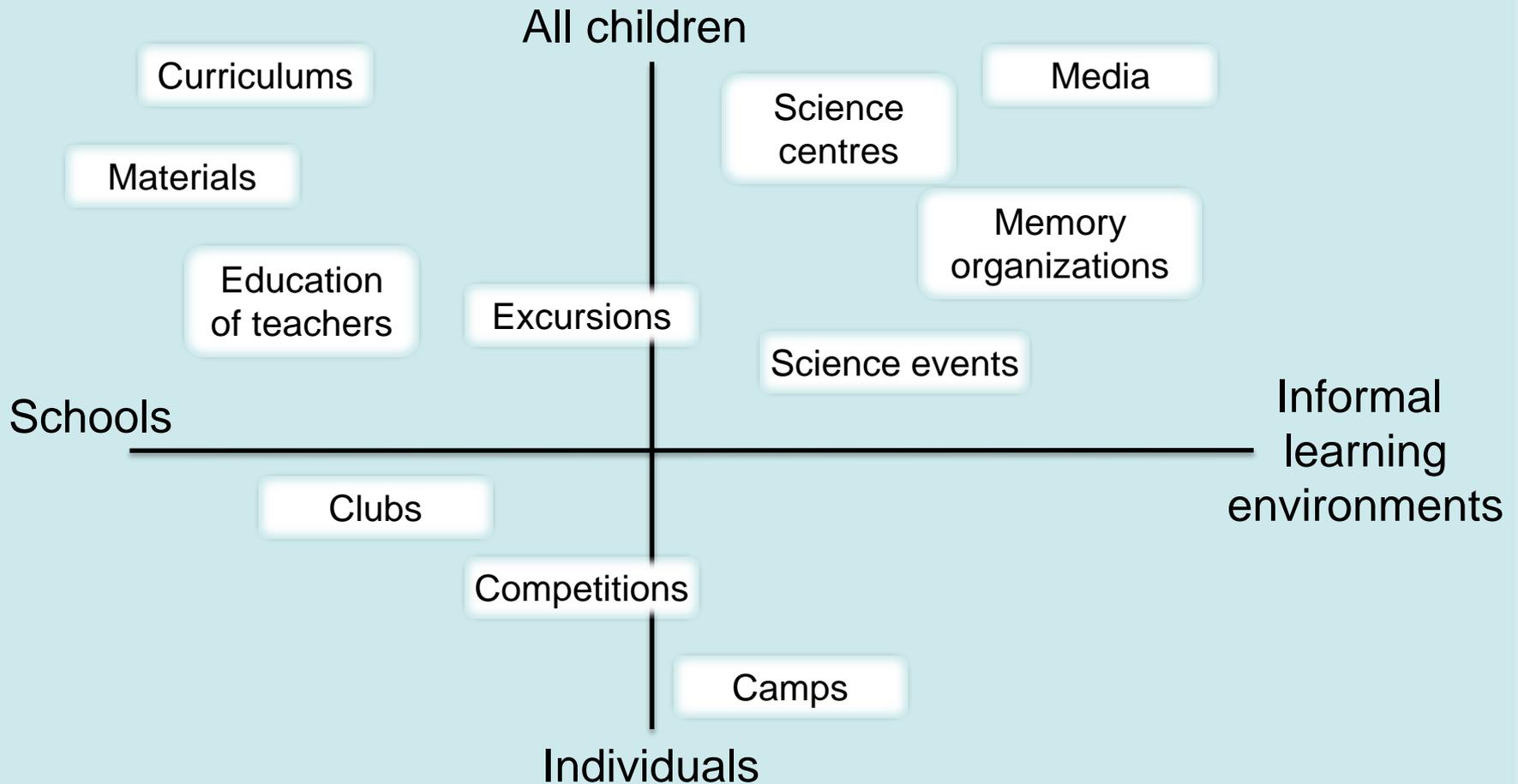
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Top scores are achieved where everyone has
equal opportunities.

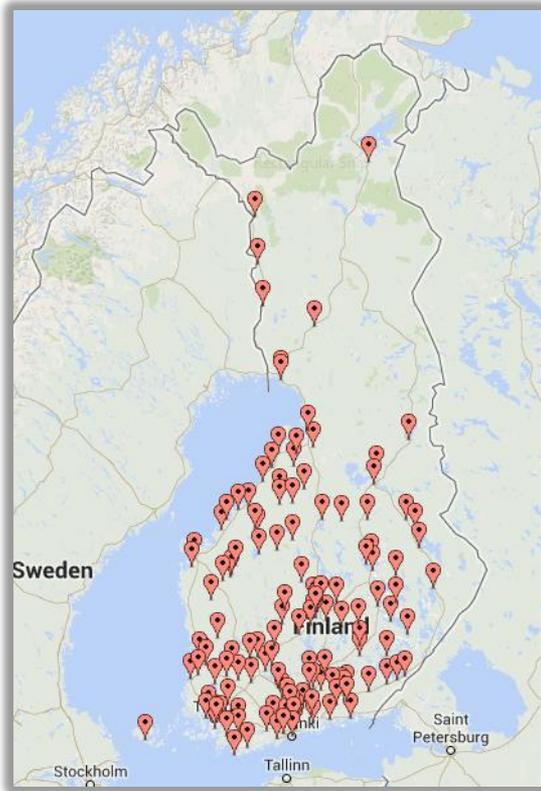


Equal opportunities in science education for all children in Finland*





Finnish Teacher and High School student programs at CERN organized by Helsinki Institute of Physics*



- 75% of Finnish high schools involved in the network
- Since year 2000, 4 300 students and 700 teachers involved
- Over 500 articles and interviews in newspapers, TV or radio
- Inspired teachers to engage with other international science initiatives
- Equal opportunities for all



Basic skills of Finnish adults one of the best in the OECD countries

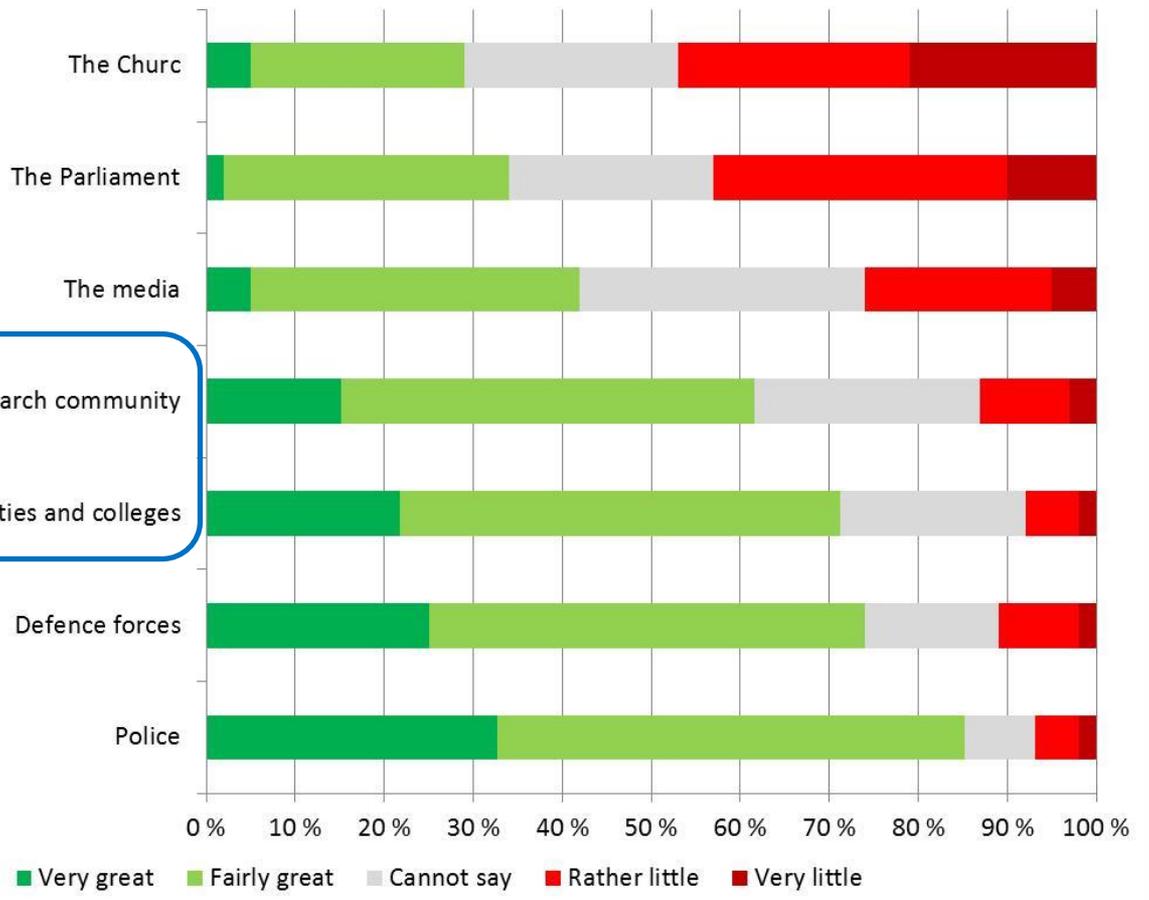
The excellent scores of Finland in literacy, numeracy and problem solving in technology-rich environments are largely thanks to the good skills of 20 to 39-year-olds.

The Survey of Adult Skills
(PIAAC 2012)
OECD

Science, research and technology-related issues are followed with great interest by 2/3 of adults*

Trust expressed by Finns in certain institutions*

Science & research/research community

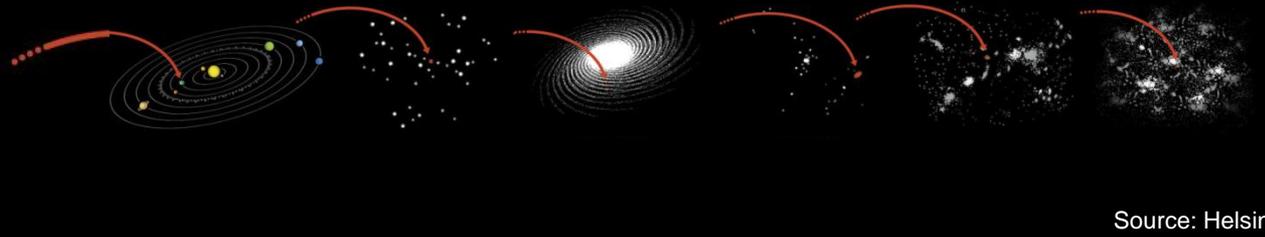


Basic science & relevance for public

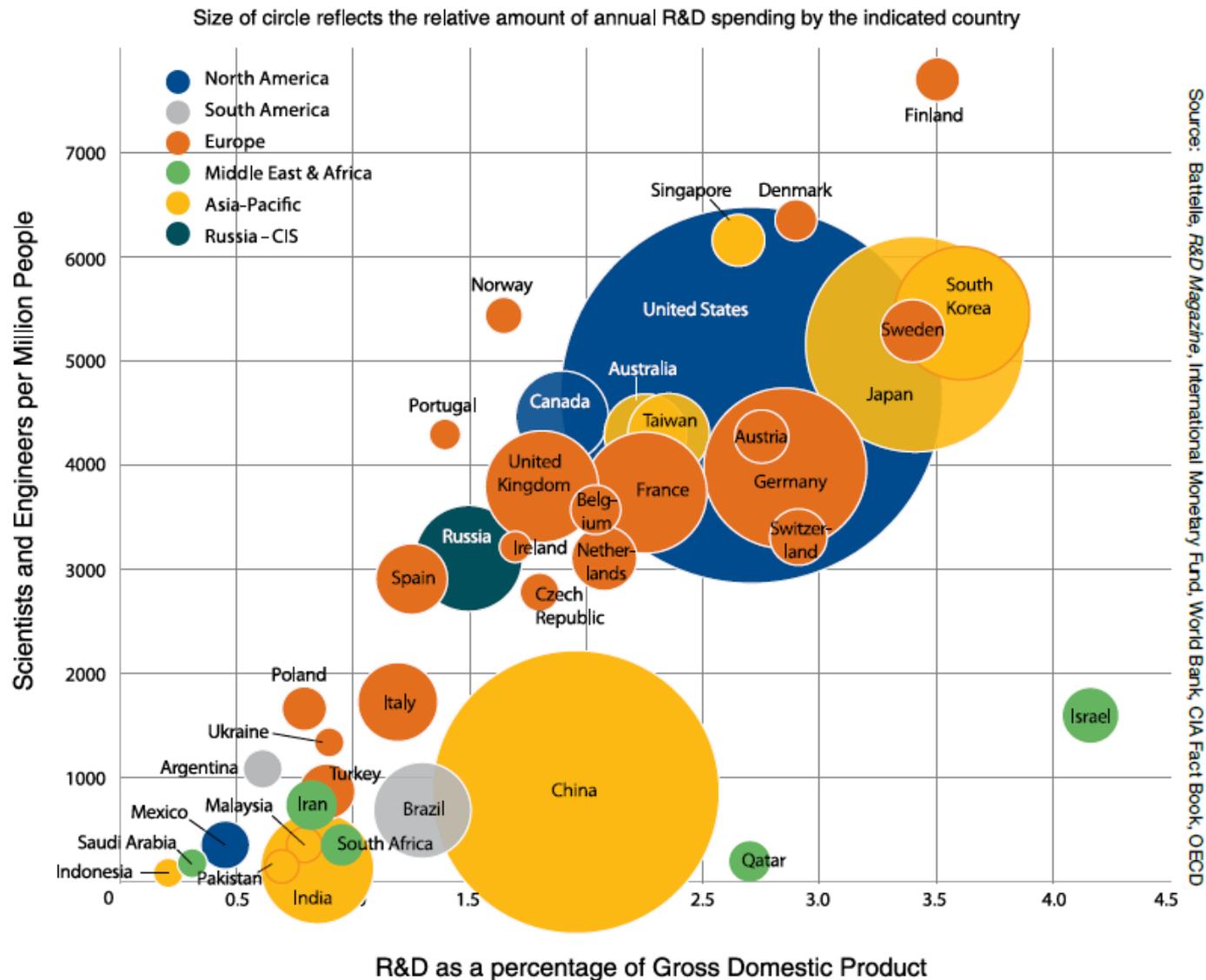
”Breakthroughs in cosmology
do not usually offer
practical solutions for people
but provide something
more important.
They tell us about
our place in this cosmos.”*



*Syksy Räsänen in Newspaper Helsingin Sanomat, August 2014.
Leader of the theory project "Cosmology of the early and late universe"
at the Helsinki Institute of Physics.



Investment in R&D and Talent 2013





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- Quality education for all
- **Universal access to information and knowledge**
- Respect for cultural and linguistic diversity

Open science



Increasing the quality of science

Developing new ways for collaboration

Increasing impact of science

Supporting life-long learning

Increasing the innovation capacity

Ensuring trust in science and research

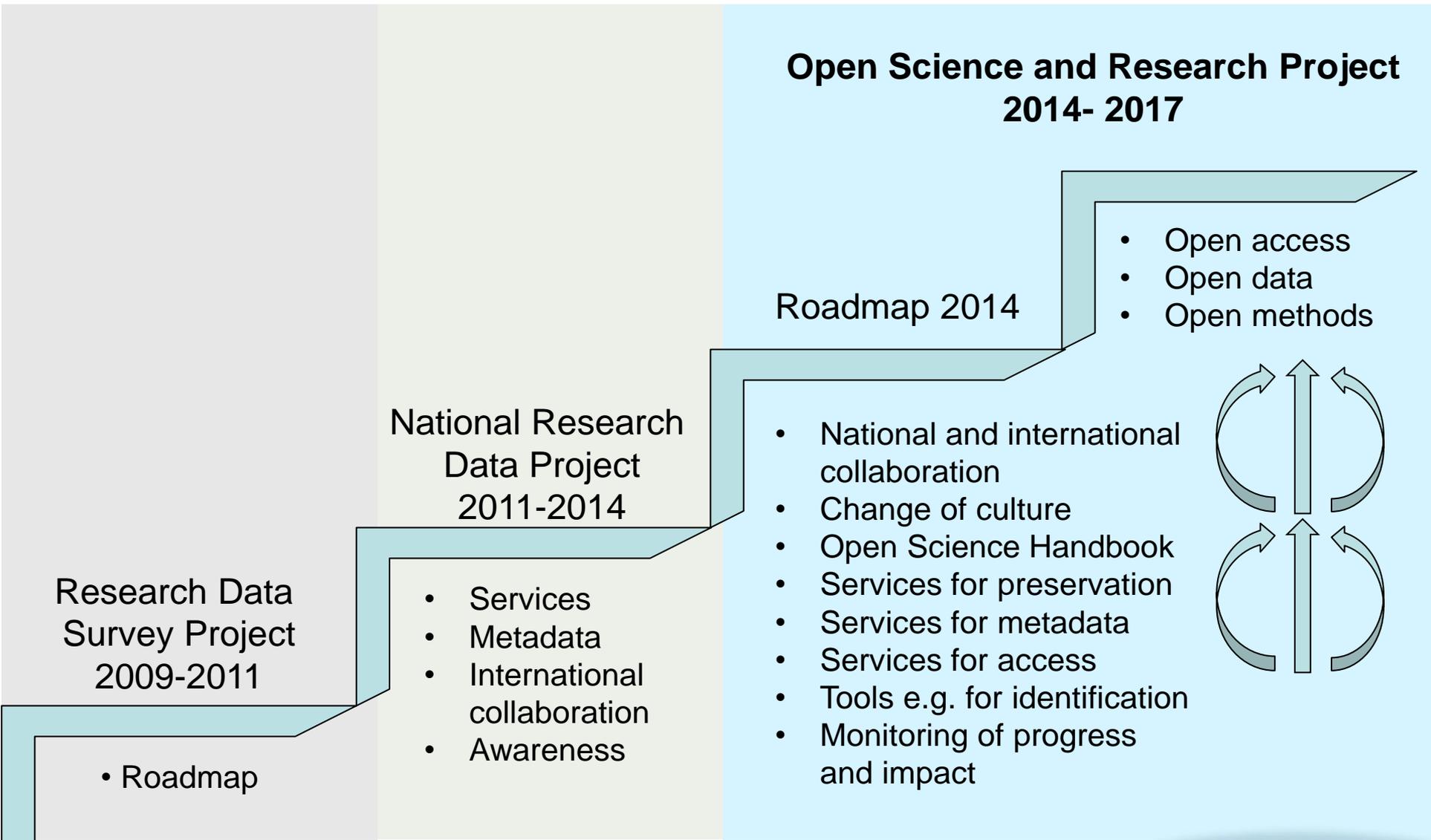
Developing citizen science

Open Access to scientific publications

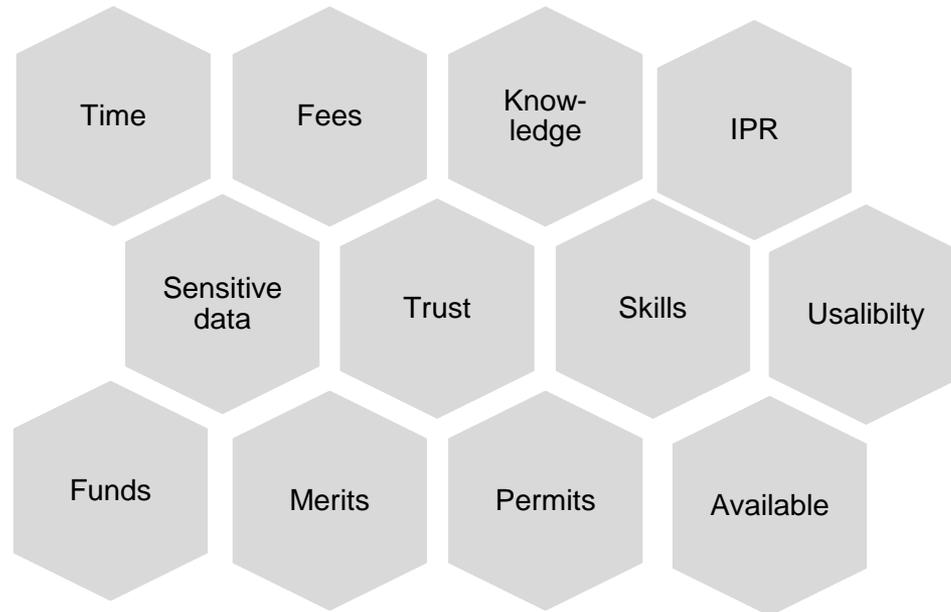
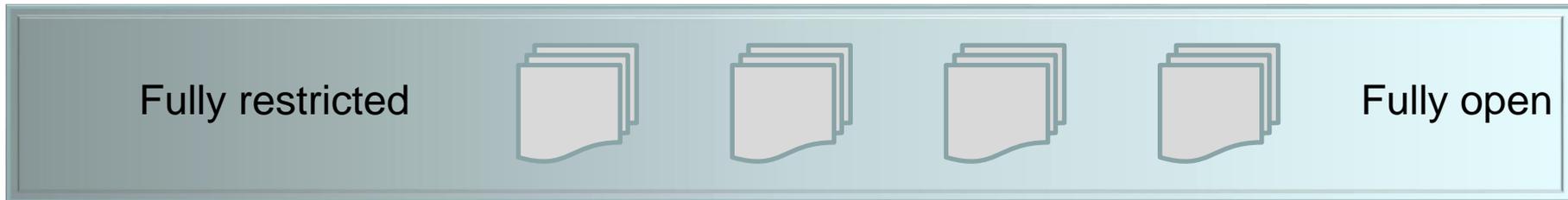
- Results disseminated more broadly and faster, to the benefit of researchers, innovative industry and citizens
- 2002 the Budapest Open Access Initiative & 2003 Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities
- EU Horizon 2020 mandates Open Access to all peer-reviewed output relating to the grant (open access publishing or self-archiving)
- 2014 Sponsoring consortium for Open Access Publishing in Particle Physics (SCOAP3)



Open Science and Research 2009-2017



Diversity of openness requires different approaches





**Home page:
opensecience.fi**

Challenge in Open Science

Pragmatic and gradual approaches

Ownership

Engaging key actors at different organizational levels

Infrastructures and services

Infrastructure roadmap, funding for infras and services

Metadata, licenses

Best practices in applying standards

Culture

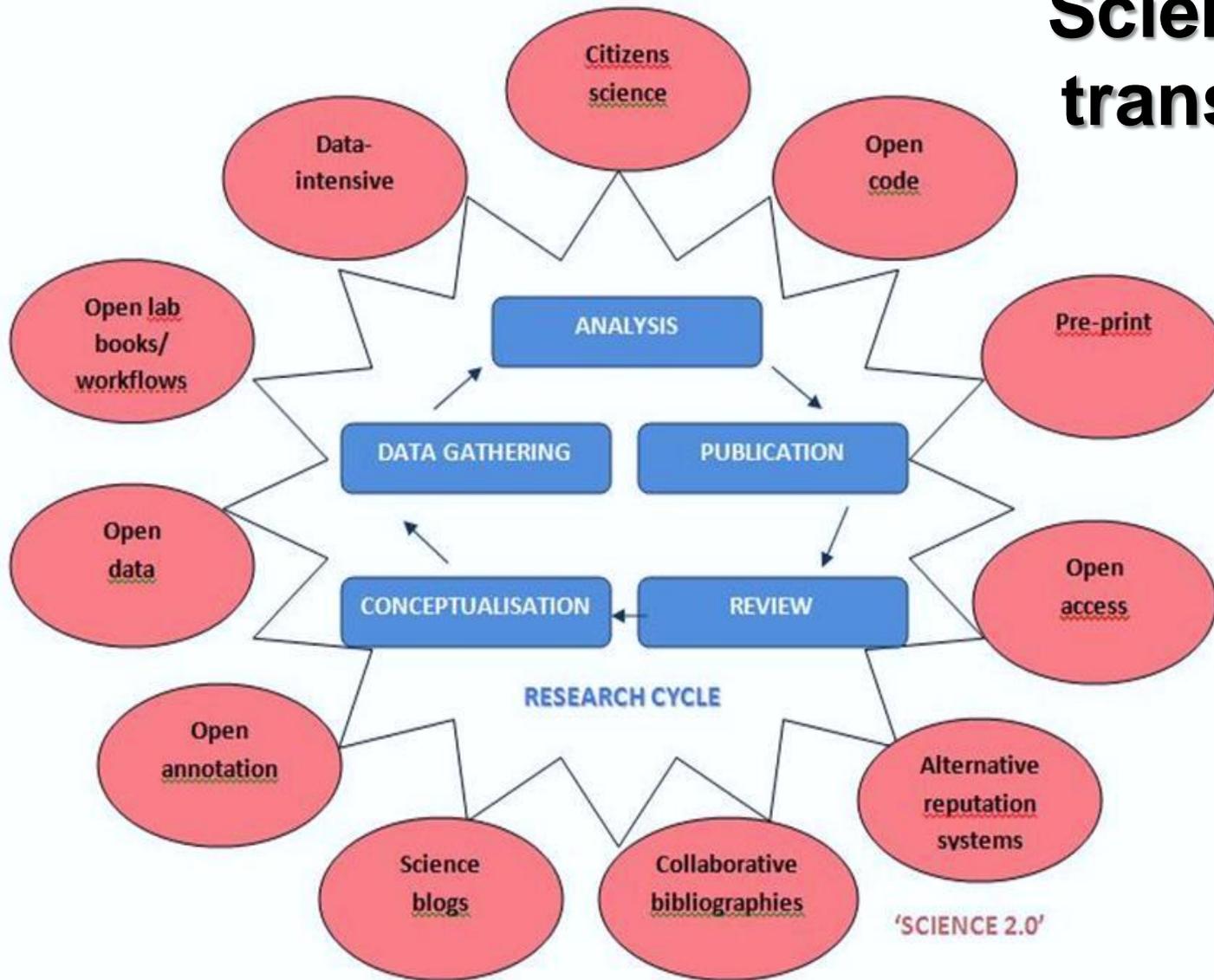
Seminars, training, guidance

International collaboration

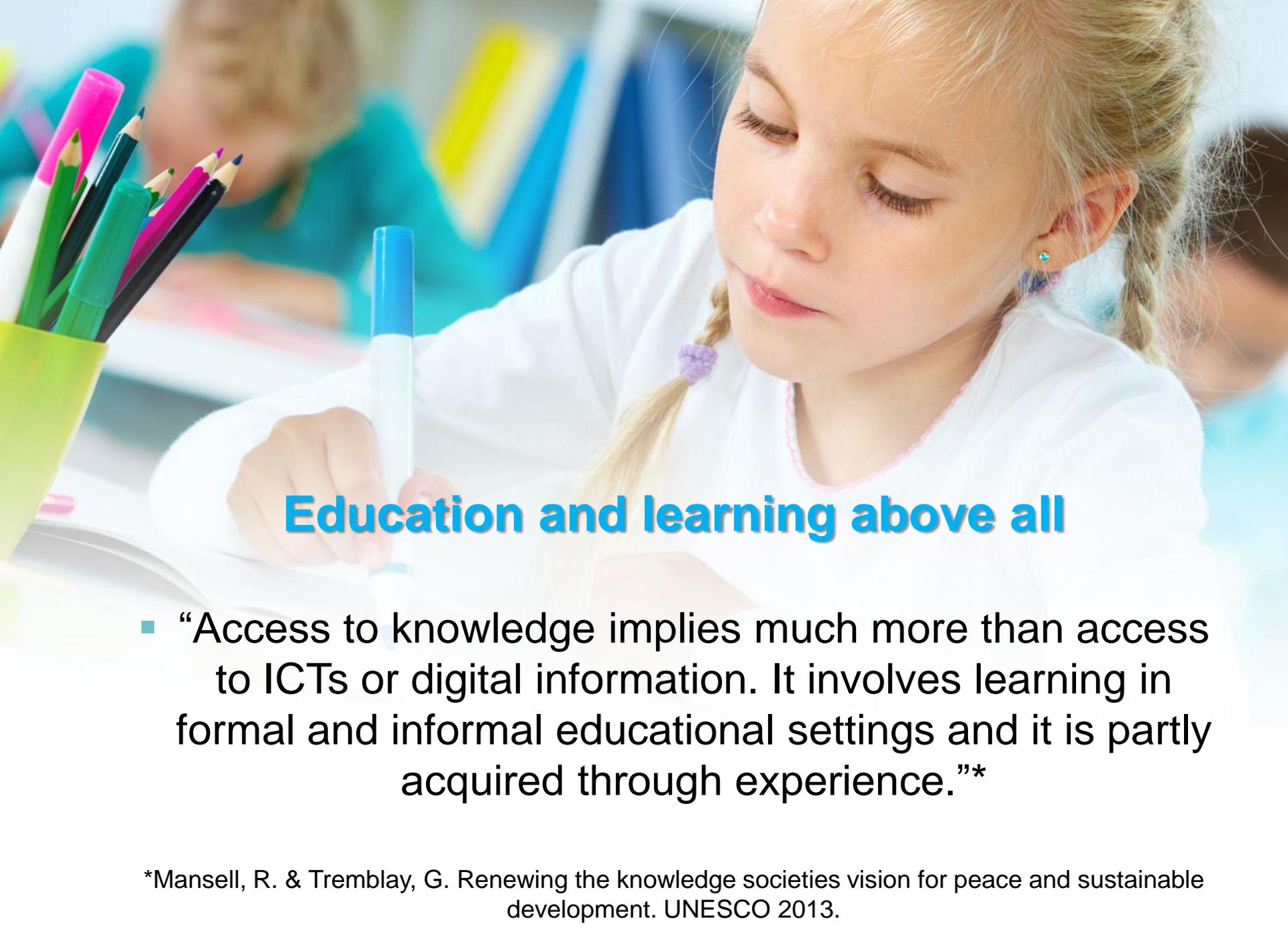
Skillful use of standardization, networking, active role in key initiatives

Science in transition

Science 2.0
consultation by
EC*



* http://europa.eu/rapid/press-release_IP-14-761_en.htm



Education and learning above all

- “Access to knowledge implies much more than access to ICTs or digital information. It involves learning in formal and informal educational settings and it is partly acquired through experience.”*

*Mansell, R. & Tremblay, G. Renewing the knowledge societies vision for peace and sustainable development. UNESCO 2013.



Finland's history shows that progress on education, science and research enables to create a knowledge society for peace and sustainable development



A world map with a light blue background and white continents. A small yellow dot is located in Europe, specifically in the region of France/Switzerland, representing the location of CERN.

Congratulations for CERN !