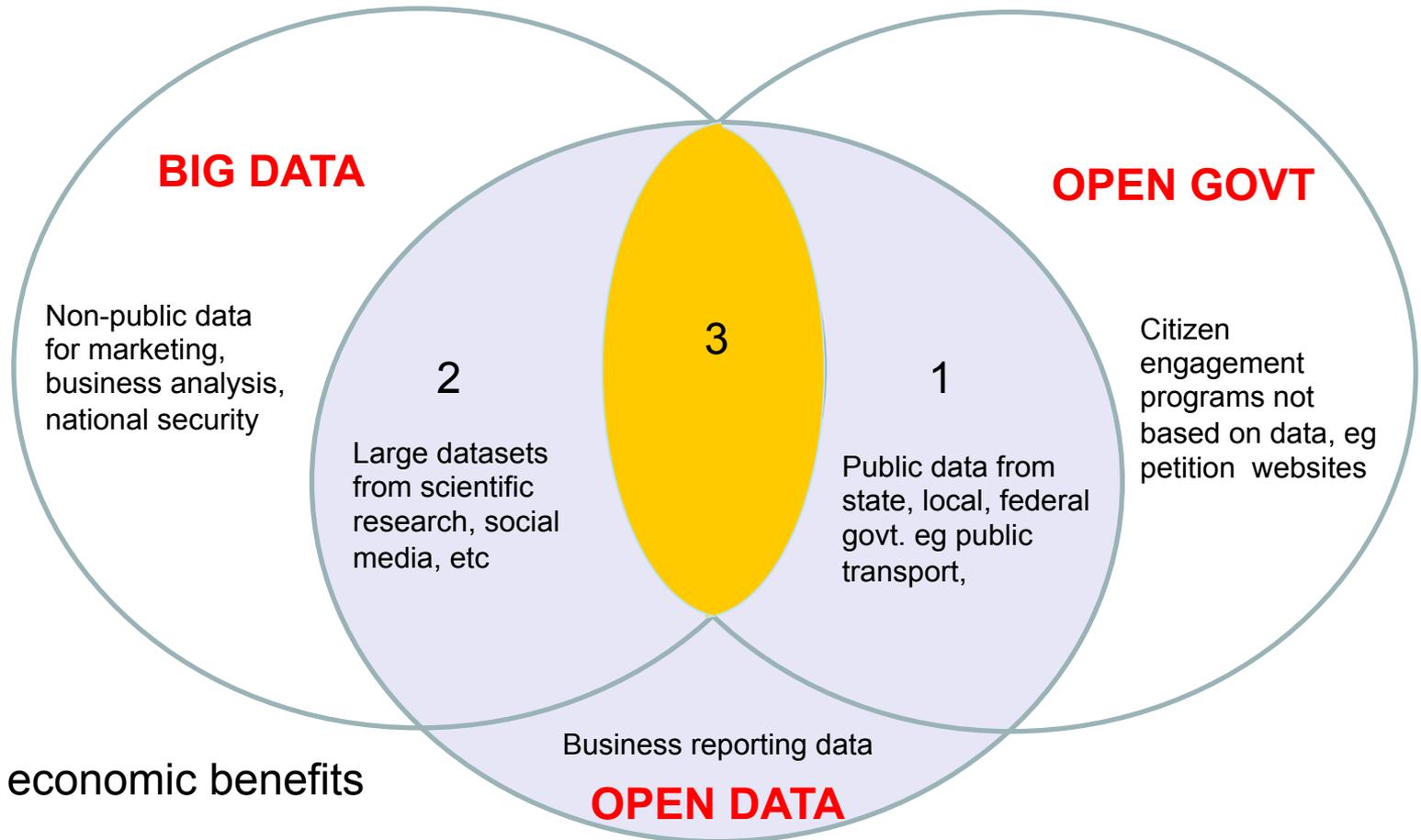


Big Data and Open Data in Finland

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Workshop on Big Data and Open Data
Brussels, May 8th, 2014

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

The relationship between big data and open data



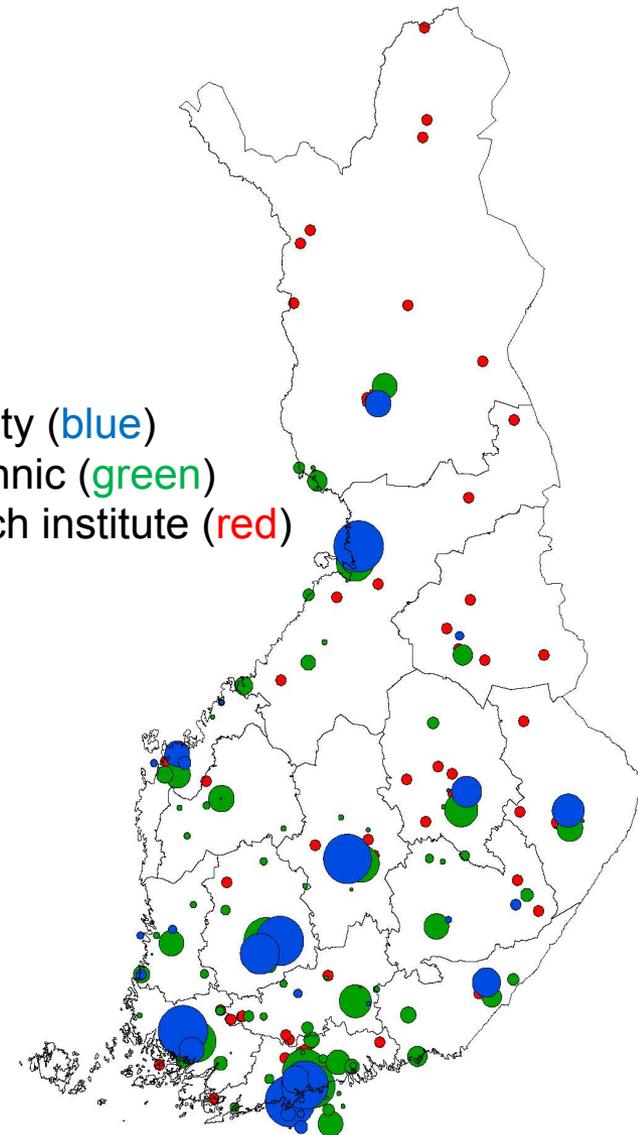
3 Major economic benefits

<http://www.theguardian.com/public-leaders-network/2014/apr/15/big-data-open-data-transform-government>

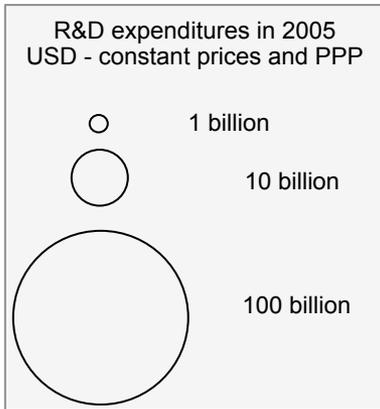
Selected facts about Finland

- Population of 5,4 million
- Higher education institution network covers the populated parts of the country
 - 14 universities (four in the great Helsinki area)
 - 24 polytechnics
- 18 research institutes and 5 university hospitals
- Student enrollment 316 000 of which 18 000 doctoral students

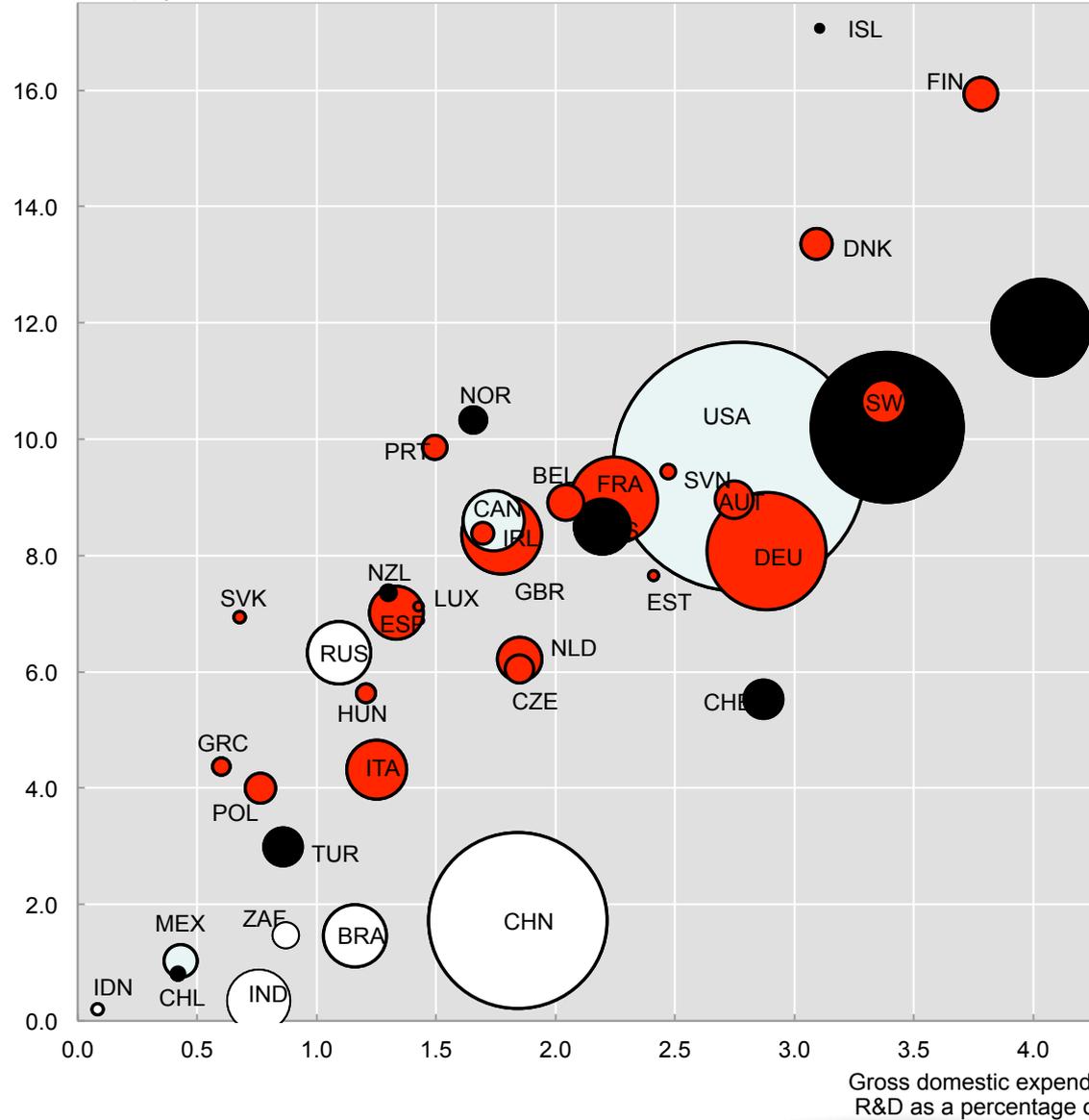
University (blue)
Polytechnic (green)
Research institute (red)



Investment in R&D and talent



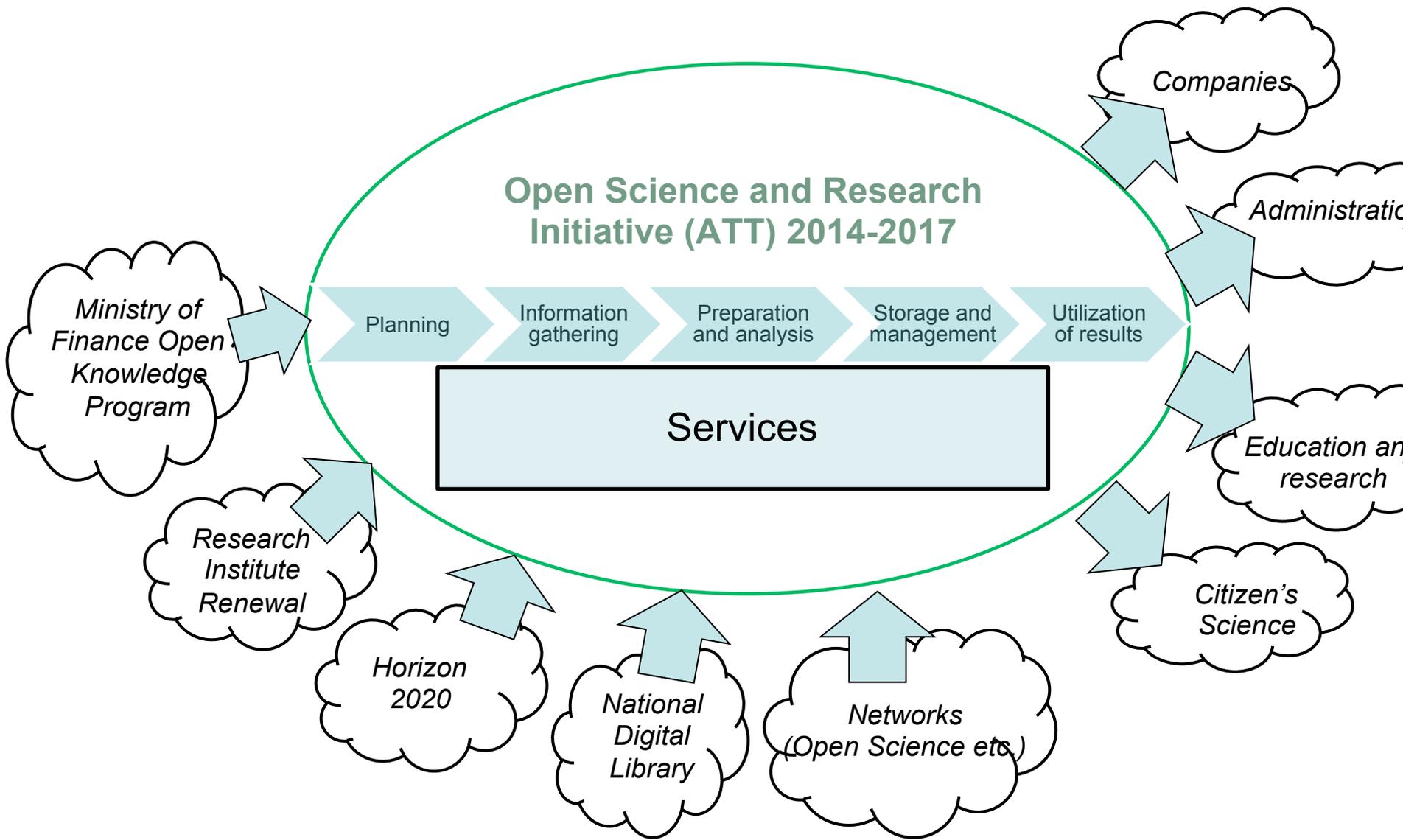
Researchers, per thousand employment



OECD (2013), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing. doi: 10.1787/sti_scoreboard-2013-en

Opening up Science in Finland

- **The Ministry of Education and Culture has launched the Open Science and Research Initiative, for the promotion of information availability and open science for years 2014–2017.**
- The Initiative will implement the national political agenda in a way that increases the competitiveness and quality of the Finnish research system.
- The Initiative will promote the reliability, openness and societal impact of science and research.
- The aim is to provide researchers with practical knowledge in how they as individuals can implement open science.
- Promoting open science promotes also innovations.
- The goal is that by 2017, Finland will become a leading country in the openness of science and research.



Open Science and Research Initiative: National background – government level

- Competitive and Creative Finland – Future Overview, Ministry of Culture and Education (2010)
- Government white paper on improving the availability of public sector digital data and promoting reuse (2011)
- The enterprise architecture of public administration
- 21 Paths to a Friction-Free Finland. Report of the ICT 2015 working group. Ministry of Employment and the Economy
- Services and data in use. Public administration's shared ICT utilisation strategy 2012–2020
- Government white paper on the reform of state research institutes and research funding 2013

Open Science and Research Initiative: EU foundation

- The EU Digital Agenda (August 2010)
- The EU open data strategy (December 2011)
- Europe 2020 strategy. Finland's national programme (April 2012)
- Commission recommendation on the availability and storage of scientific information (July 2012)
- The EU framework programme Horizon 2020
 - Digital science in Horizon 2020. March 2013.
 - Guidelines on Data Management in Horizon 2020. Version 1.0. 11 December 2013.
 - Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020. Version 1.0. 11 December 2013.

Actors for Open Science and Research in Finland

- Ministry of Education and Culture
 - Open Science and Research Initiative (ATT)
- Research councils and funding agencies
 - Academy of Finland and TEKES
- Higher education institutions
 - As an example, University of Helsinki is a leading player in OA in Finland
- Finnish Social Science Data Archive (FSD)
 - A national resource center of social science research and education. Archives, promotes and disseminates digital research data. Funded by the Ministry of Education and Culture.
- Other actors
 - CSC – IT Center for Science Ltd. develops and provides IT services for research, education, culture, and administrative purposes
 - The National Library of Finland provides centralized repository platform services
 - Federation of Finnish Learned Societies supports publishing activities by providing distribution and storage services and consultation
 - FinnOA is a group of professionals from academia, libraries and data management, promoting open access to scientific information

Big data in Finland

- The Ministry of Education has invested through CSC – IT Center for Science Ltd. in state-of-the-art solutions like fast networks, tiered computing, scientific applications, information management, data services as well as expert support
- The Ministry of Transport and Communications is working on a national Big Data Strategy due out in June 2014
- Data intensive computing is recognized as one of the “21 Paths to a Friction-Free Finland” that will lead to innovation and services and eventually economic growth
- Polytechnics and universities are responding to the recognized lack of experts in big data by starting new programs and cooperation with companies

Funet, the Finnish University and Research Network

- Close to 80 member organizations and 350 000 users.
- Funet is one of the most advanced research networks in the world.
- At best the network enables up to 40 optical channels, each with the capacity of up to 40 Gbp/s. A single lightpath reaches 100 Gbp/s.



Problems to be solved in big data

A survey conducted in 2013 by the Finnish Ministry of Transport and Communications listed the following problems encountered in data intensive computing

- Lack of experts (25%)
- Poor quality of data (17%)
- Unclear meaning (14%)
- Unripe / scattered technology (10%)
- Privacy / legislation (10%)
- Lack of innovations / market (10%)
- High costs (9%)
- No problems (4%)
- Lack of references (1%)

<http://urn.fi/URN:ISBN:978-952-243-358-9>

Conclusion

- Finland has a high number of researchers
- By 2017, Finland is aiming to become a leading country in the openness of science and research
- Big data is recognized as a very important new technology and a national strategy is in the making
- The Funet network and the computing services of CSC – IT Center for Science Ltd. enable big data in research and science
- Main problems facing big data are lack of experts, complexity of data and legislative issues

Thank you



Photo: Sara Djupsund