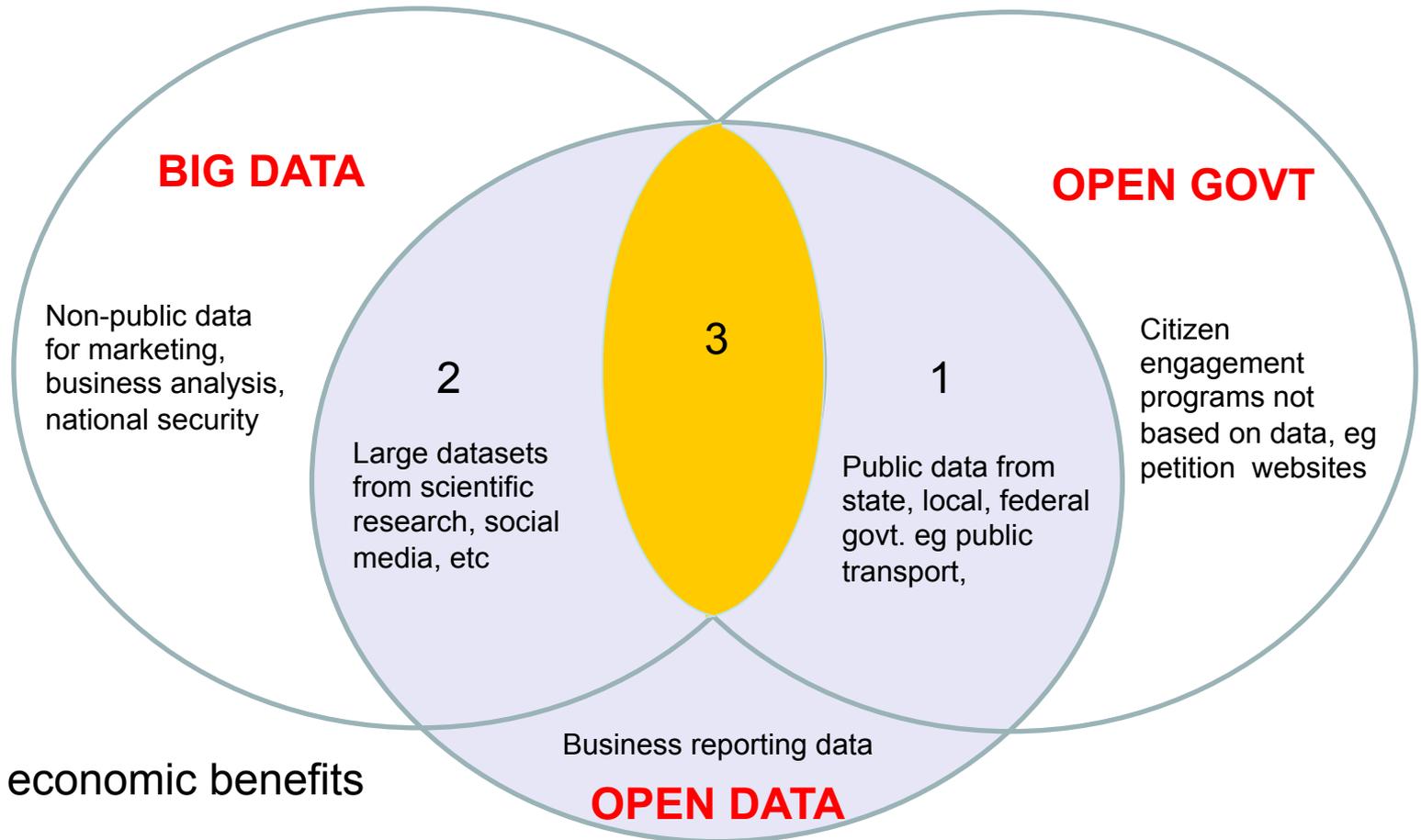


# Big Data and Open Data in Finland

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Workshop on Big Data and Open Data  
Brussels, May 8<sup>th</sup>, 2014

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

# The relationship between big data and open data



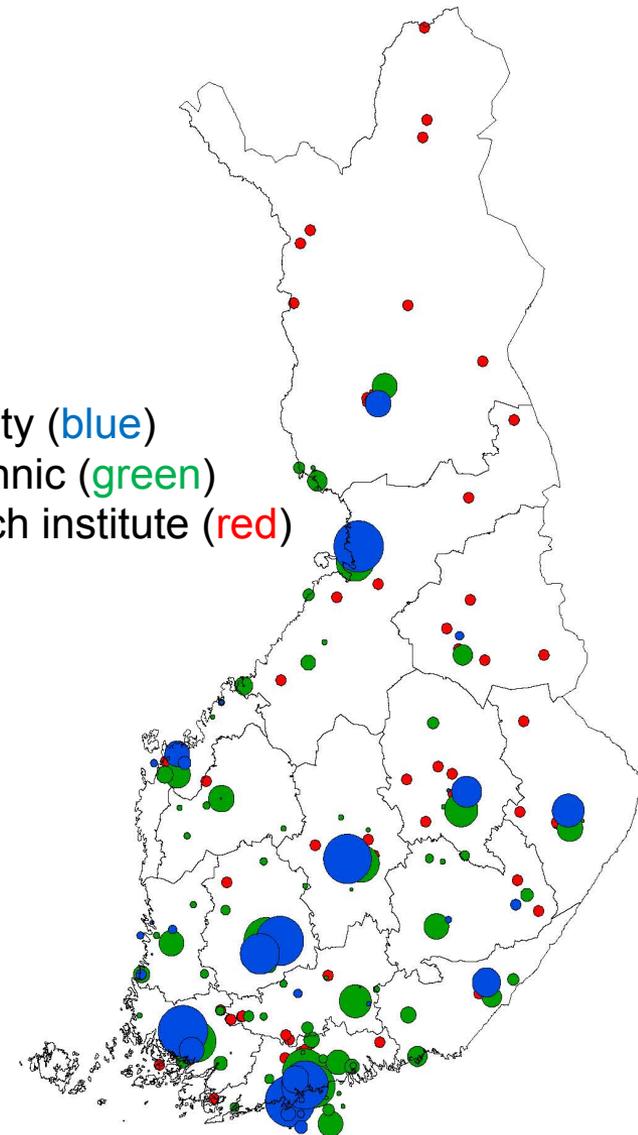
**3** Major economic benefits

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

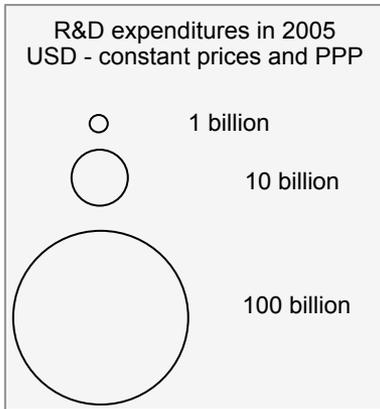
# Selected facts about Finland

- 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

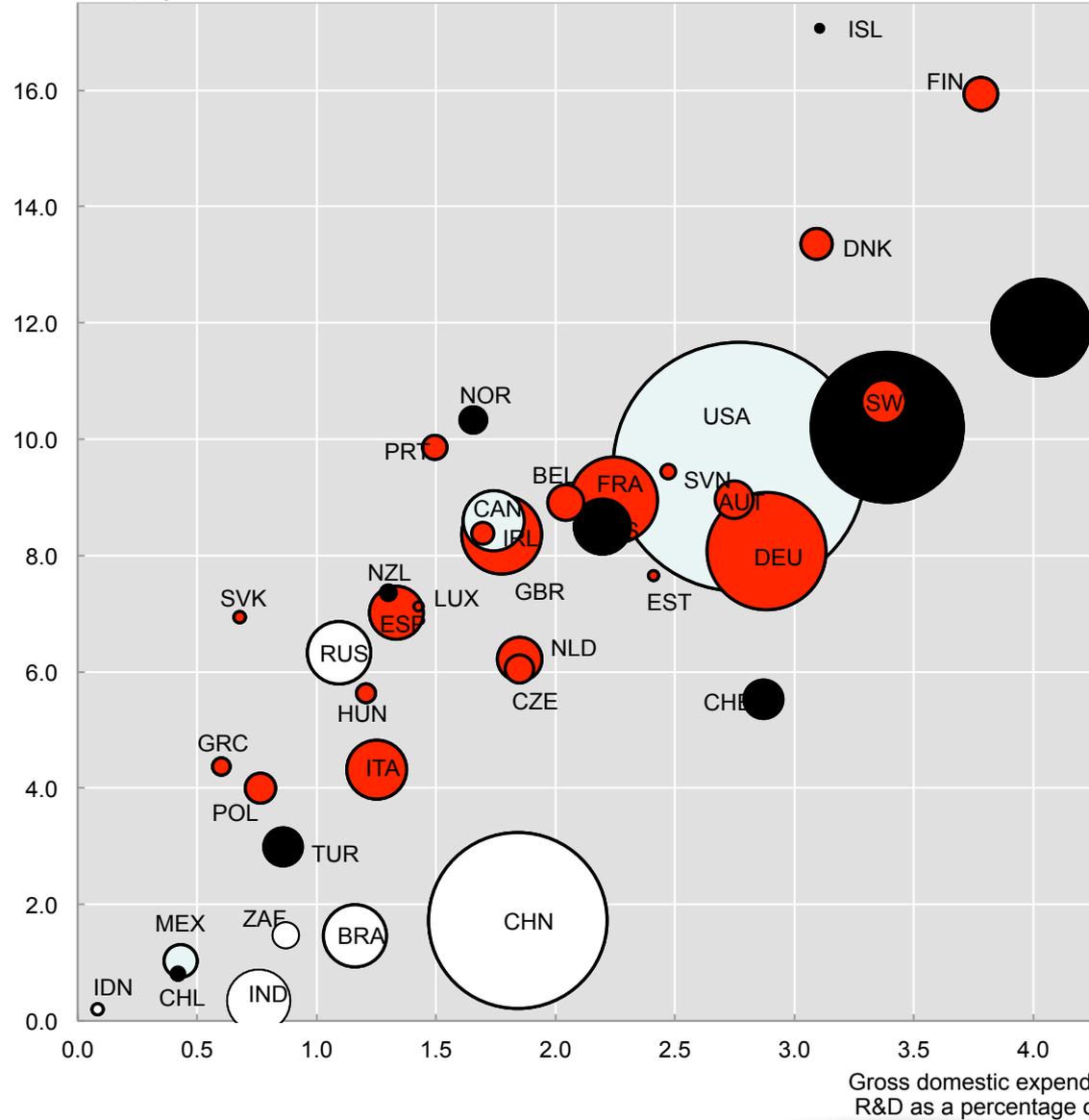
University (blue)  
Polytechnic (green)  
Research institute (red)



# Investment in R&D and talent



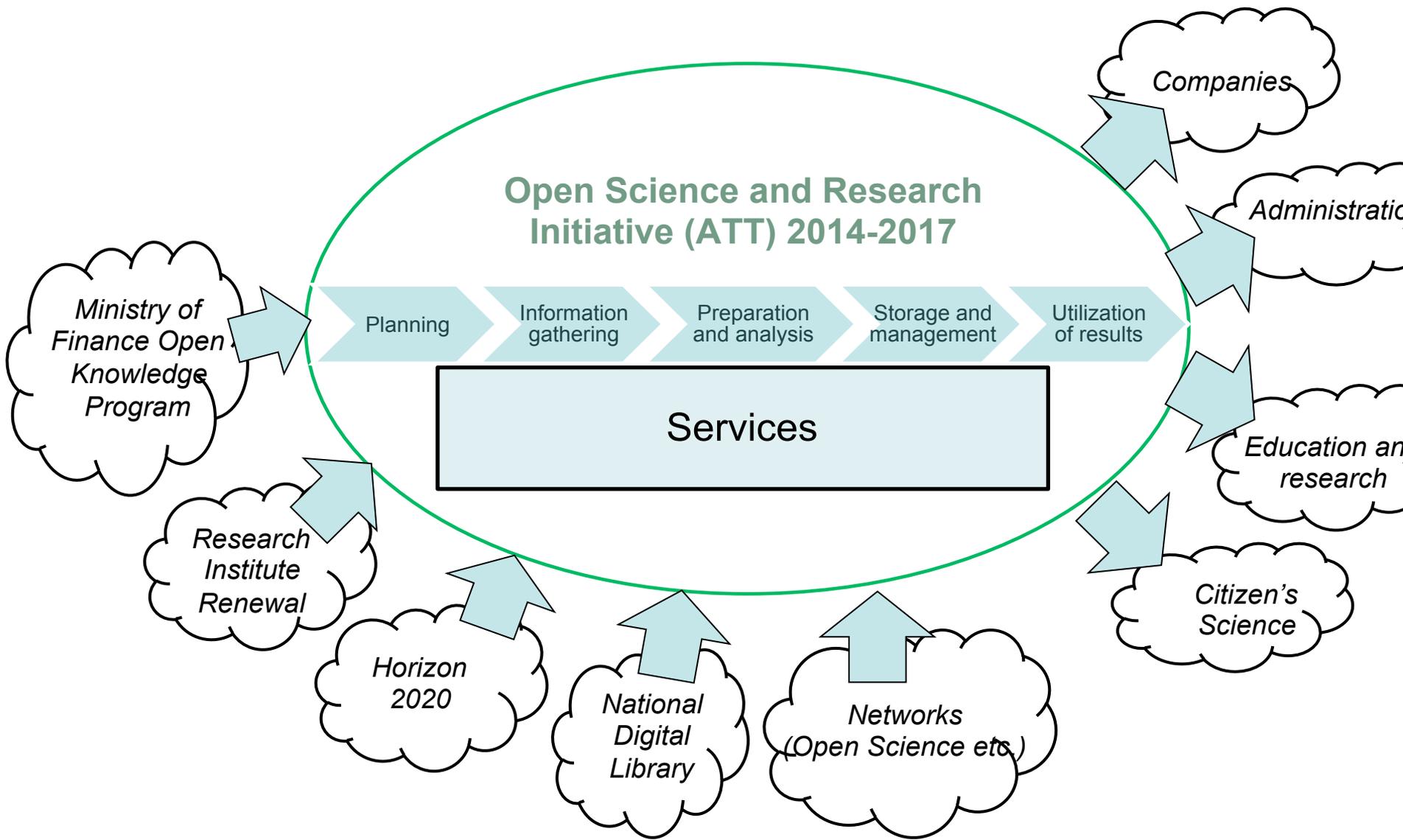
Researchers, per thousand employment



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



# 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