The Open Science and Research Initiative in Finland

Sami Niinimäki
Senior Advisor
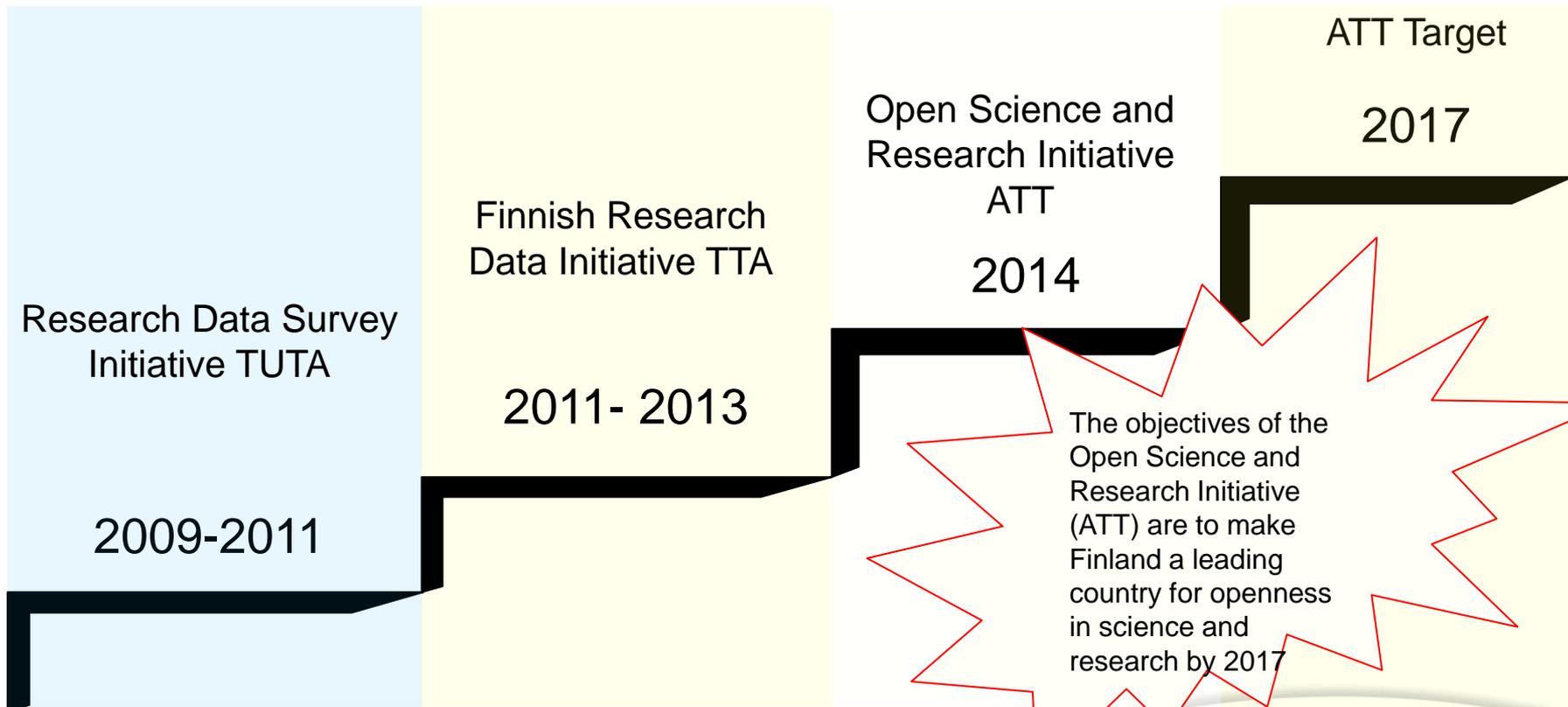Annual JPI Conference in Brussels
Friday 15th of January 2016

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

Open Science and Research 2009-2017

Research Data Survey Initiative TUTA

2009-2011

Finnish Research Data Initiative TTA

2011- 2013

Open Science and Research Initiative ATT

2014

ATT Target

2017

The objectives of the Open Science and Research Initiative (ATT) are to make Finland a leading country for openness in science and research by 2017

Open science and research leads to surprising discoveries and creative insights

Open science and research roadmap 2014–2017

Reports of the Ministry of Education and Culture, Finland 2014:21

Opetus- ja kulttuuriministeriö
Ministry of Education and Culture

Research

Open Science and Research Roadmap 2014 – 2017.
http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2014/liitteet/okm21.pdf?lang=fi

Opening up Science in Finland

Targets of Open Science and Research 2014-2017 initiative (ATT)

- To incorporate open science and research to the whole research process **to improve the visibility and impact of science and research** in the innovation system and society at large

- To foster the research system in Finland towards better competitiveness and higher quality, **transparent, collaborative and inspirational research process** should be promoted.

- The measures **promote open publications, open research data, open research methods and tools**, as well as increasing skills and knowledge and support services in open science domain.

- Contributions from all research system actors are welcome to **change the research culture** towards openness.

- Finland will engage in **international collaboration** to promote open science and research.

Vision 2017: Open research leads to surprising discoveries and creative insights
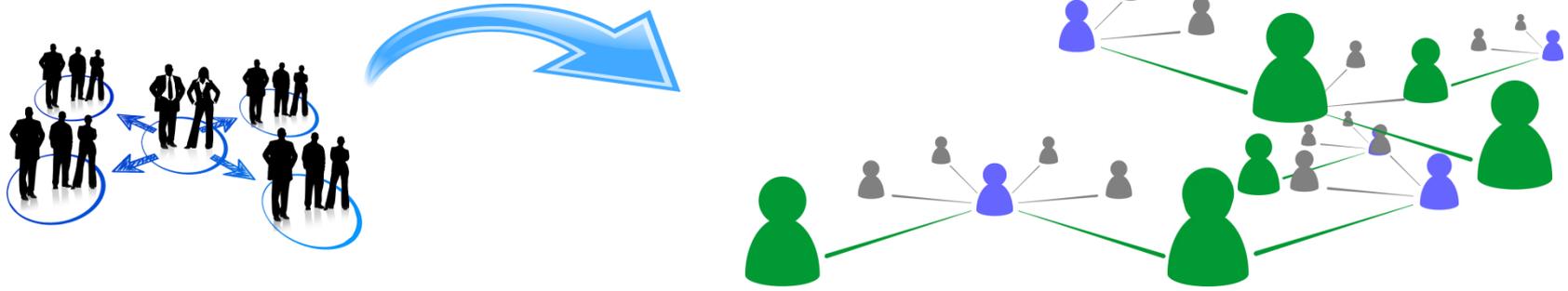
✓ Knowing how to harness the opportunities
✓ Good basic structures and services
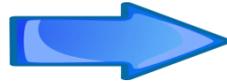
➢ Openness and repeatability of science and research
➢ New opportunities for all stakeholders

Objectives of the Roadmap 2014-2017

Reinforcing the intrinsic nature of science and research	• Openness and repeatability increase the reliability and quality of science and research
Strengthening openness-related expertise	• Those working within the Finnish research system know how to harness the opportunities afforded by openness to boost Finland's competitive edge
Ensuring a stable foundation for the research process	• Good and clear basic structures and services enable new opportunities of openness to be harnessed in a timely manner and ensure a stable basis for research
Increasing the social impact of research	• Open science and research creates new opportunities for researchers, decision-makers, business, public bodies and citizens

Objective 1: Reinforcing the intrinsic nature of science and research

2017

Reviewing progress
Monitoring maturity level of culture

2016

Rewiewing progress
Developing an evaluation model for citizen science

2015

Preparing policies and baselines to support RO activities
Suggestions for incentivising openess in peer-reviews and merits
Assessing the present state of openess in research environments

Objective 2: Strengthening openness-related expertise

2017

Introducing certificate of Open Science
Providing openess training and guidance

2016

Piloting certificate for Open Science
Providing openess training and guidance
Establishing professorships focused on openess

2015

Starting to develop certificate for Open Science
Updating the Open Science and Research Manual
Analysing of current competency level - training packages and training

Objective 3: Ensuring a stable foundation for the research process

Structures and services enable new opportunities of openness to be harnessed in a timely manner and ensure a stable basis for research

2017

Putting into practice digital preservation of research outputs

2016

Developing digital preservation
Opening up new major national research data
Creating permanent operating model for open publication

2015

Developing services for utilization of open research data
Piloting of open publication of Finnish scientific publications
Publication of target architecture and developing shared practices for storage, distribution and publication of outputs & promoting service design and usability

Objective 4: Increasing the social impact of research

Open science and research creates new opportunities for researchers, decision-makers, business, public bodies and citizens

2017

Reviewing progress

2016

Introducing openess criterion for research funding
Promoting peer reviews of openess (national / international)

2015

Promoting clearer division of responsabilities in service production
Motivating companies and research organizations to develop businesses
Suggesting indicators to measure openess and use incentives to promote

Risk assessment

Consequences Probability	Minor 1	Detrimental 2	Serious 3
Unlikely 1	**Negligible risk** The system is too difficult to manage as a whole. The agents for open science cannot be introduced.	**Low risk** Openness will collapse when the initiative ends. The silofication of Finnish science.	Moderate risk
Possible 2	**Low risk**	**Moderate risk** An open working culture will not form within organisations. Not taking differences into account. Not encouraging openness. Cooperation cannot be implemented on a practical level. Research organisations' opinions will not be considered. An error in data protection.	**Significant risk** Data users' opinions will not be considered. Newly available resources will not be fully harnessed. No eye to the long term in development work.
Probable 3	**Moderate risk** Insufficient investment in know-how.	**Significant risk** The quality of materials will be insufficient for long-term preservation.	Intolerable risk

Figure 2. An evaluation of the probability and consequences of the aforementioned threats.

Research funding organisations' responsibilities 1/5

Research funding decisions should require:

- the rapid and widest possible publication of research results
- good availability and comprehensibility of results
- clear contracts on copyrights and proprietary rights for research results
- the open licensing of results (ATT recommends CC4.0 BY license)
- the planning of data management and prediction of further use (including the documentation and description of materials, the standards used in production and distribution, data collection design, services used, and links to other materials)
- a working method that safeguards the digital preservation of research results, as well as the use of any associated services
- an open use policy for funded research infrastructures.

Research funding organisations' responsibilities 2/5

Research funding organisations should support:

- open publication (publications, materials, methods); that is, the costs of open publication should be accepted as project expenses and thus supported financially
- the preparation of materials for publication (including anonymisation and documentation)
- researchers' efforts towards openness, through, for example, awards for researchers
- open cooperation and making research results generally comprehensible
- the building of a common service infrastructure.

Research funding organisations' responsibilities 3/5

Research funding organisations should state:

- their recommendations concerning open access publication alternatives
- how openness will be rewarded in career development
- how the funder would like copyrights and proprietary rights to be managed
- what quality criteria they stipulate for research
- the methods and indicators to be used in evaluations.

Research funding organisations' responsibilities 4/5

Research funding organisations should reward:

- clear contracts, open licensing, policies that support openness and their associated plans.

Research funding organisations' responsibilities 5/5

Research funding organisations should promote:

- the establishment of an open accreditation model
- expertise in openness and good data management
- peer reviews of data and methods alongside peer reviews of publications, in both national and international frameworks
- the assessment of openness and the most transparent measurement possible
- the creation and maintenance of the expertise required to harness the opportunities afforded by openness
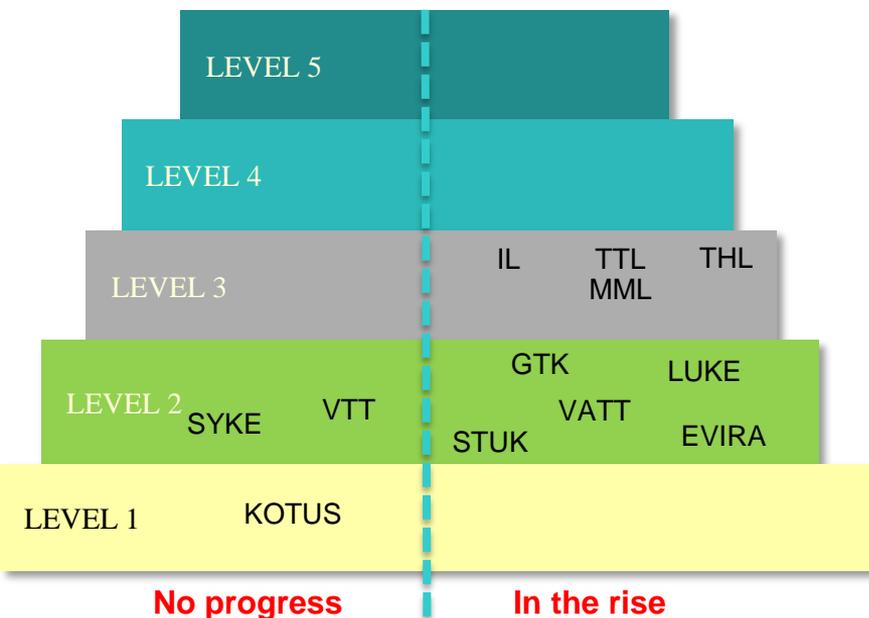- the clarification of financing instruments that support openness.

ATT-roadmap 2014-2017 will be successfull only if we work together
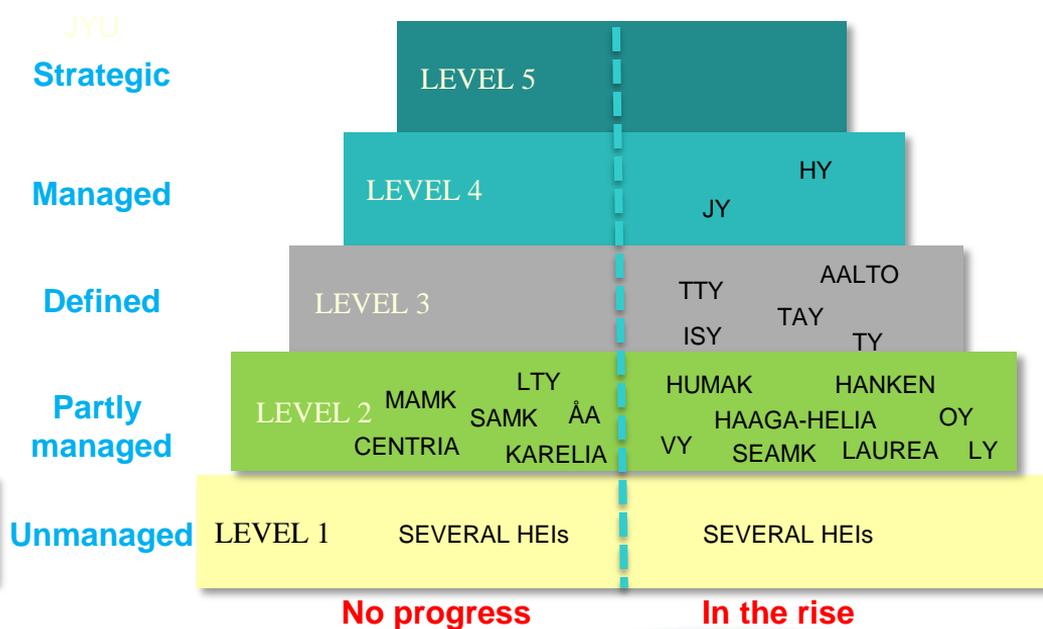
Nationally and internationally by:

- Identifying at each level which actions are needed to promote open science and research
- Building together environments, infrastructures, services and policies
- Sharing experiences and knolwedge and learning from mistakes
- Committing to pragmatic and progressive development
- Identifiying problems where national and/or international solutions are needed
- Gathering infromation on progress and evidence of the benefits

The overall maturity level of the open science operating culture in 2015

Research Institutes

Higher Education Institutes

LEVEL 5	**Strategic**	LEVEL 5
LEVEL 4	**Managed**	LEVEL 4 — HY, JY
LEVEL 3 — IL, TTL, THL, MML	**Defined**	LEVEL 3 — TTY, AALTO, ISY, TAY, TY
LEVEL 2 — SYKE, VTT, GTK, VATT, LUKE, STUK, EVIRA	**Partly managed**	LEVEL 2 — MAMK, LTY, SAMK, ÅA, CENTRIA, KARELIA, HUMAK, HANKEN, HAAGA-HELIA, OY, VY, SEAMK, LAUREA, LY
LEVEL 1 — KOTUS	**Unmanaged**	LEVEL 1 — SEVERAL HEIs, SEVERAL HEIs

JYU

No progress   **In the rise**

No progress   **In the rise**

Key performance indicators 1/2

The ATT strategy group set indicators for monitoring the progress.

The number of organisations at the highest level in the analysis of openness of the operational cultures (openness has become a strategic strength)

- 10 % of HEIs in 2017
- 25% of HEIs in 2018
- 50% of HEIs in 2020

Doctoral programs with open science training

- 90% of programs in 2018
- 100% of programs in 2020

Key performance indicators 2/2

The ATT strategy group set indicators for monitoring the progress.

Open access of publications in the EU assessment
- 65% in 2017
- 75% in 2018
- 90% in 2020

Of new datasets
- 25% are licenced in 2017 and 30% in 2018
- In 2020 50% of new datasets are licenced and their metadata are found in national metadata catalogues

Improving the Open Science and Research framework

- The Enterprise Architecture (EA) method is used for designing and planning complex IT infrastructure, services and related capabilities
- It creates a coherent understanding of the existing situation with the shortcomings and problems
- The lack of analytical planning leads to unneeded and costly overlaps and non-interoperable infrastructure and services
- EA creates a uniformal vocabulary and helps in identifying the roles and responsibilities of stakeholders and also common targets
- EA is a tool for governance, it aims at a global optimum solution instead of a partial one
- Despite the business connotation of the EA name, in Finland the method is also used in the public sector
- EA can be studied at many information levels: physical (with what), logical (how), conceptual (what) and principal (why)
- Produces assessment tools
- If done systematically EA helps in comparison of different frameworks

Open Science: Gradual and practical approach in Finland

Challenges	Solutions
Creating ownership	Engaging key actors at different organizational levels
Availability of infrastructures	Infrastructure roadmap including Open Science, funding for infrastructures and services
Harmonization of metadata	Best practises in applying standards
Open access, license policy	Detailed planning in progress, implementation to follow
Cultural change towards openness	Seminars, training, guidance (education of researchers)
International collaboration	Skillful use of existing standardization, making use of researchers' networks, active role in key initiatives

Ongoing Work

- Tool for data management planning
  - Will be available to all research organizations
  - Based on DMPTool with lots of localization
  - Helps in grant application phase

- Research Infrastructure Catalogue
  - Research infrastructure services and funding information in one place
  - Promotes sharing and efficient use of resources

- Digital preservation of research materials (Tutkimus-PAS)
  - Recognize the most important research outputs
  - Ensure linkage between publications, data and methods
  - Describe to organizations the digital preservation process and it's interfaces to other processes and services
  - Make the service easy to use, efficient and adaptable
  - Carry out the services so that organizations can easily adopt them in their own operations
  - Specify the long-term preservation service description with among others the required common services
  - Define the eligible metadata and file formats as well as the operating model to taking care of them

Fig 7. Operating profits (million USD) and profit margin of Reed-Elsevier as a whole (A) and of its Scientific, Technical & Medical division (B), 1991–2013.
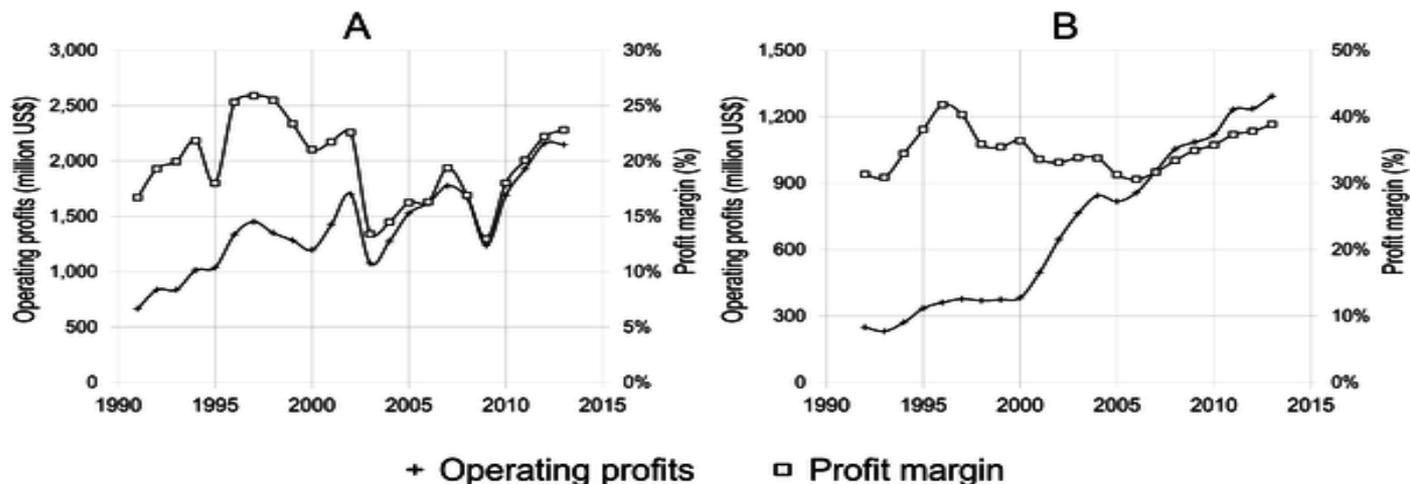
Top five most prolific publishers account for more than 50% of all papers published in 2013.
The consolidation of the publishing industry led to an increase of the profits of publishers.

Larivière V, Haustein S, Mongeon P (2015) The Oligopoly of Academic Publishers in the Digital Era. PLoS ONE 10(6): e0127502.
doi:10.1371/journal.pone.0127502
http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0127502

PLOS | ONE

How to improve the academic publication market?

1. Improve transparency of costs.
2. Enable greater competition in the publishing market. Research institutions will have to make greater efforts to establish non-commercial publication models of high quality.
3. Increase cross-border cooperation between funders, including common funding models.
4. Make Open Access part of the official government policy.

Falk Reckling 2015. Open Access Publishing at Springer.
http://scilog.fwf.ac.at/en/article/2835/open-access-publishing-at-springer

Barriers and bottlenecks in Finland

- The experience so far shows that training of the stakeholders on open science requires plenty of time and effort, we have resources only for training the trainers.

- Scientific publishing is expensive and the transition to fair Open Access potentially requires additional resources.

- Inclusion of open science to the whole research evaluation system

- A challenge yet to be solved is revamping of the national copyright legislation to better serve the needs of digitalized research, for example giving researchers the explicit right for self-archiving in OA repositories.

Want to know more?

Web:
Openscience.fi/

Email:
avointiede@postit.csc.fi

Twitter:
@AvoinTiede

Facebook:
facebook.com/avointiede