Barriers in Open and responsible research: results from the evaluation of openness of operational culture in Finland 2019

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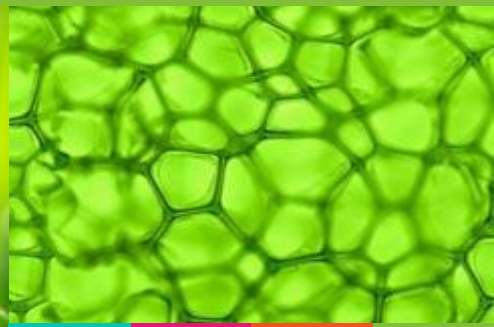
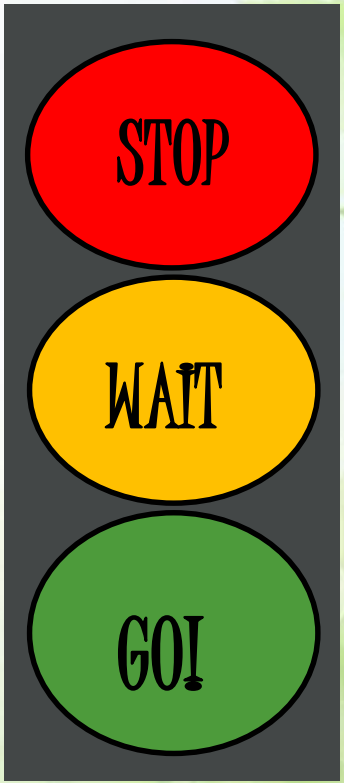


OUTLINE

- Background: evaluations of open science in Finland since 2015
- Evaluation statistics
- Barriers 2016
- Barriers 2019
- Conclusions

KEY QUESTIONS:

- Have we unexpected stops?
- Where hesitation prevails?
- How could we get the green light?



BACKGROUND

- Finlands' Ministry of Education and Culture started 2014 an initiative to advance Open Science and Research (ATT). Targets were set in a roadmap, which defined certain objectives and actions as well as the responsibilities of different stakeholders in policy implementation.

- The maturity of open operational culture has been evaluated:
  - 2015 universities, universities of applied sciences and research institutes
  - 2016 universities, universities of applied sciences and research institutes , university hospitals, research-funding organisations. Included a comparison with selected European research-funding organisations, and a questionnaire on barriers for open science and research.
  - 2017: research institutes and research-funding organisations, evaluation of Opening Academic Publishing.
  - **2019: Atlas of Open Science and Research in Finland** Evaluation of Openness in the Activities of Higher Education Institutions, Research Institutes, Research-funding organisations, Finnish Academic and Cultural Institutes abroad and Learned Societies and Academies in Finland (in publication). Included a questionnaire on barriers and development needs for open science and research. Available at: https://openscience.fi/maturity-evaluation
  - Areas for evaluation:

Strategic steering
Policies and principles
Supporting and promoting openness
Competence development

Maturity levels

LEVEL 5: strategic. An open operational culture is publicly encouraged throughout the organisational level and openness has been defined as a core value in the organisation's strategy and policies. Activities are open and developed in accordance with the principles of openness and in cooperation with other actors. Openness has also been linked to the long-term planning and management of activities. The organisation is always able to ensure that it is moving towards its goals, and is learning and adapting. Key benchmarks are in comprehensive use and are continually reviewed. Personnel are aware of their targets and the organisation's progress towards openness.

LEVEL 4: managed. The organisation is actively working towards an open operational culture, and principles of openness have been publicly set as one of its objectives. Activities are largely open and adhere to the principles of openness. Openness is managed and regularly measured. Measurements are analysed and corrective measures are proactively taken. The organisation is mature in terms of its utilisation of open information, which is also taking on increased significance.

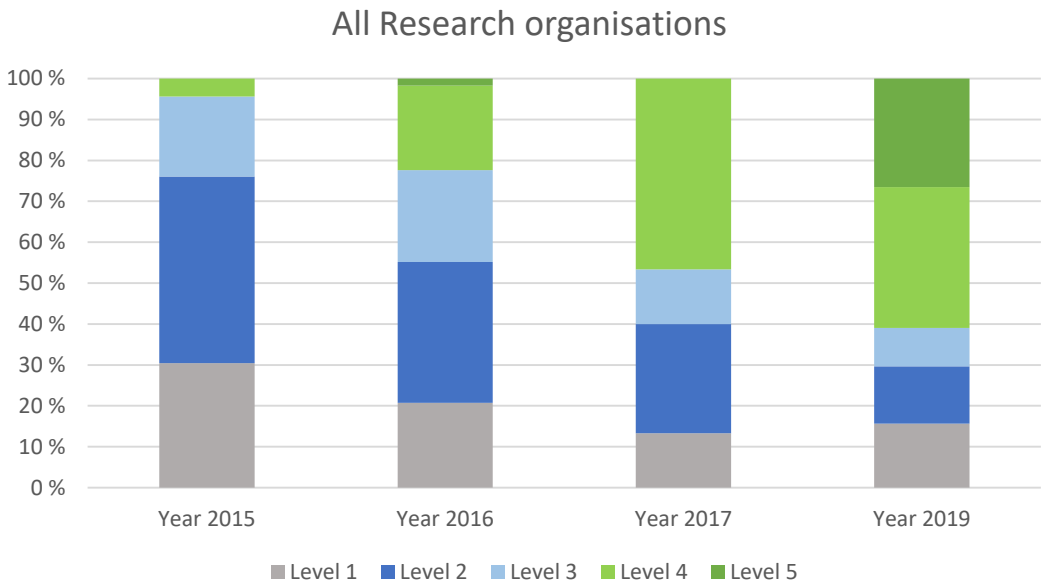
LEVEL 4: defined. At this level, decisions are increasingly made with the aid of data based on openness measurements. Management supports the planning and implementation of an already more effective openness strategy. The organisation has done a great deal of work towards breaking down information silos, in order to establish an extensive organisation-wide technology management and architecture. Although progress has been made towards an open operational culture, this has yet to be completely achieved due to deficiencies in policies and principles. Openness is not to be found as a core steering value in the organisation's strategy. Activities are in many respects open and based on documented descriptions.

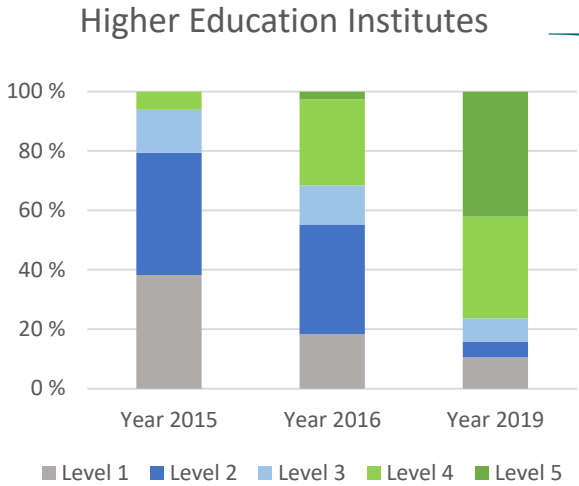
LEVEL 4: partly managed. The organisational culture will begin to change at the next level. Understanding the benefits of openness and its impact on activities is key. However, support for openness is limited and the organisation still has unlinked data warehouses. The first steps have been taken towards an open operational culture, but this is not publicly encouraged. Openness does not appear as a core value in the organisation's strategy. Activities are open to some extent. The organisation has begun efforts to develop competencies and create a systematic approach to openness. Performance measurement is largely the measurement of financial performance.

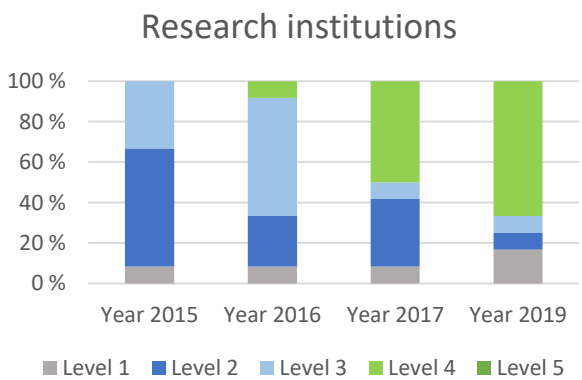
LEVEL 4: unmanaged. No steps have yet been publicly taken towards an open operational culture and the organisation lacks guiding principles and policies. Processes have not been clearly defined. Openness is not included in the organisation's strategy. Openness-related activities are not encouraged at organisational level. Indicates a situation in which openness is not consciously managed. At worst, the organisation may be an information silo. The term 'information silo' denotes informal point solutions. Although systems are in use, data for reports and benchmarks is often manually collated from a variety of information systems and other sources.

Evolution of all research organisations

- Steady but uneven progress







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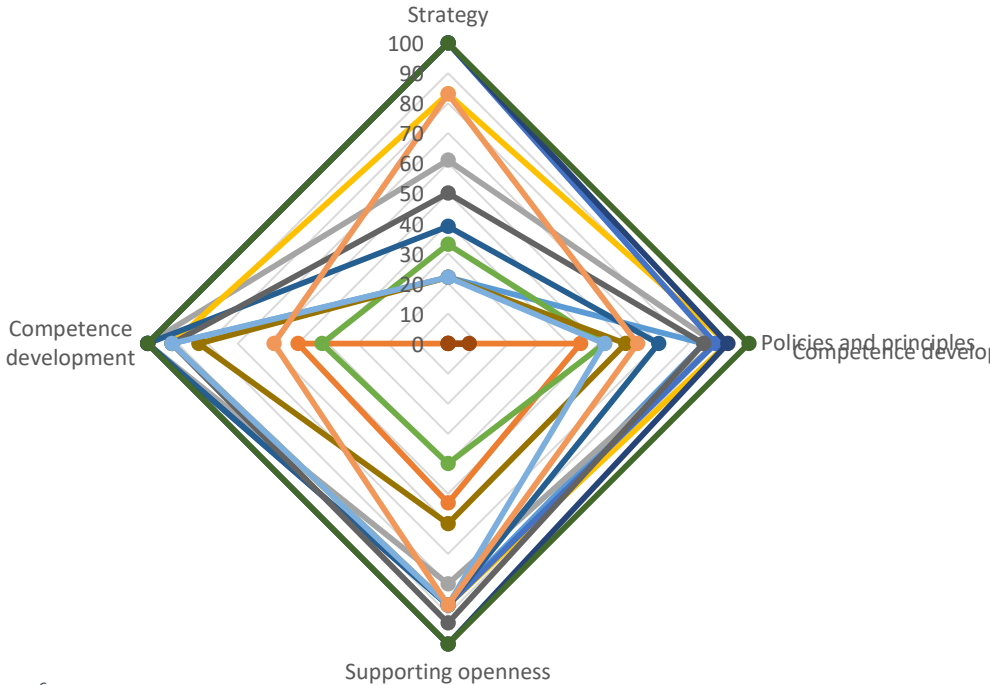
Performance in different areas of openness 2019

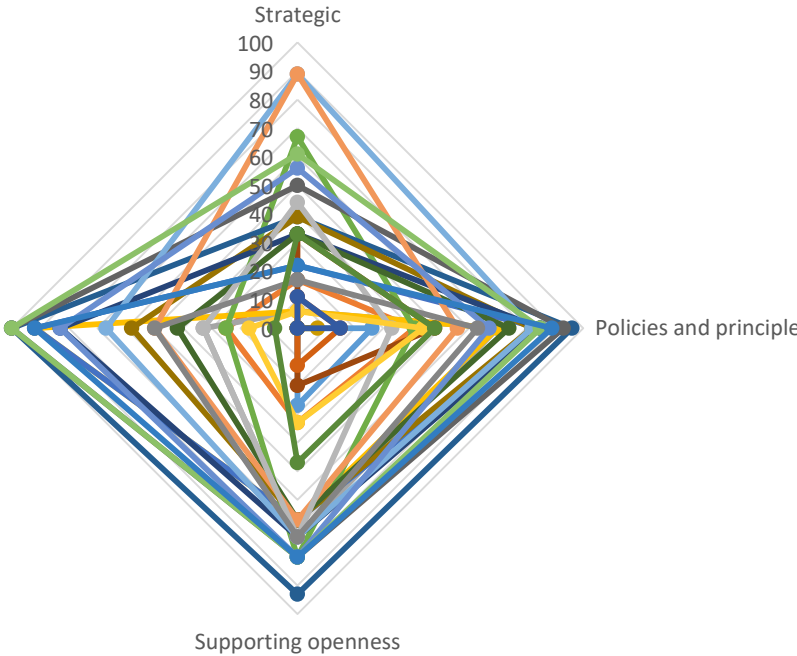
Scores by indicator for universities

Development has been quite balanced, but strategic steering the least mature area.



Indicator sums for universities of applied sciences

Duality: organisations strongest in strategy and supporting
Openness not equally strong policies and principles and competence development, and vice versa.



BARRIERS 2016

39 organisation answers

	Not significant	Some significance	Moderately significant	Significant	Most significant
Quality issues	0	6	9	9	15
Uncertainties in fulfilling legal demands	1	3	12	10	12
Availability (how to find and access data)	2	5	8	10	6
Best practices and guidelines not existing	2	8	8	7	5
Unclear responsibilities	2	3	11	9	4
Costs of being open	2	4	5	9	6
Lacking services or awareness of services	2	5	5	7	3
Insufficient funding and resources	2	3	6	5	13

Quality of processes, data, metadata, methods

Copyright law, ownership issues, non-existing guidelines

Budgetary cuts
Dismissal of personnel

Year 2016

BARRIERS 2019

71 research heads in organisations

Diverse disciplines: jurisprudence, social psychology, medical sciences, political science, veterinary science, future studies, natural sciences…

	Not significant	Some significance	Moderately significant	Significant	Most significant	
Insufficient training and instructions	7	13	19	16	6	
Uncertainties in fulfilling legal demands	2	6	18	31	14	1.
Descipline-specific differences	7	11	19	14	11	
Researchers have to fulfil disproportionate standards	5	6	9	28	17	2.
Conflicting incentives	5	10	13	22	16	4.
Obstacles in open research communication	12	21	11	8	6	
Merit system	9	7	18	17	11	
Insufficient funding and resources	4	6	16	23	17	3.

Year 2019

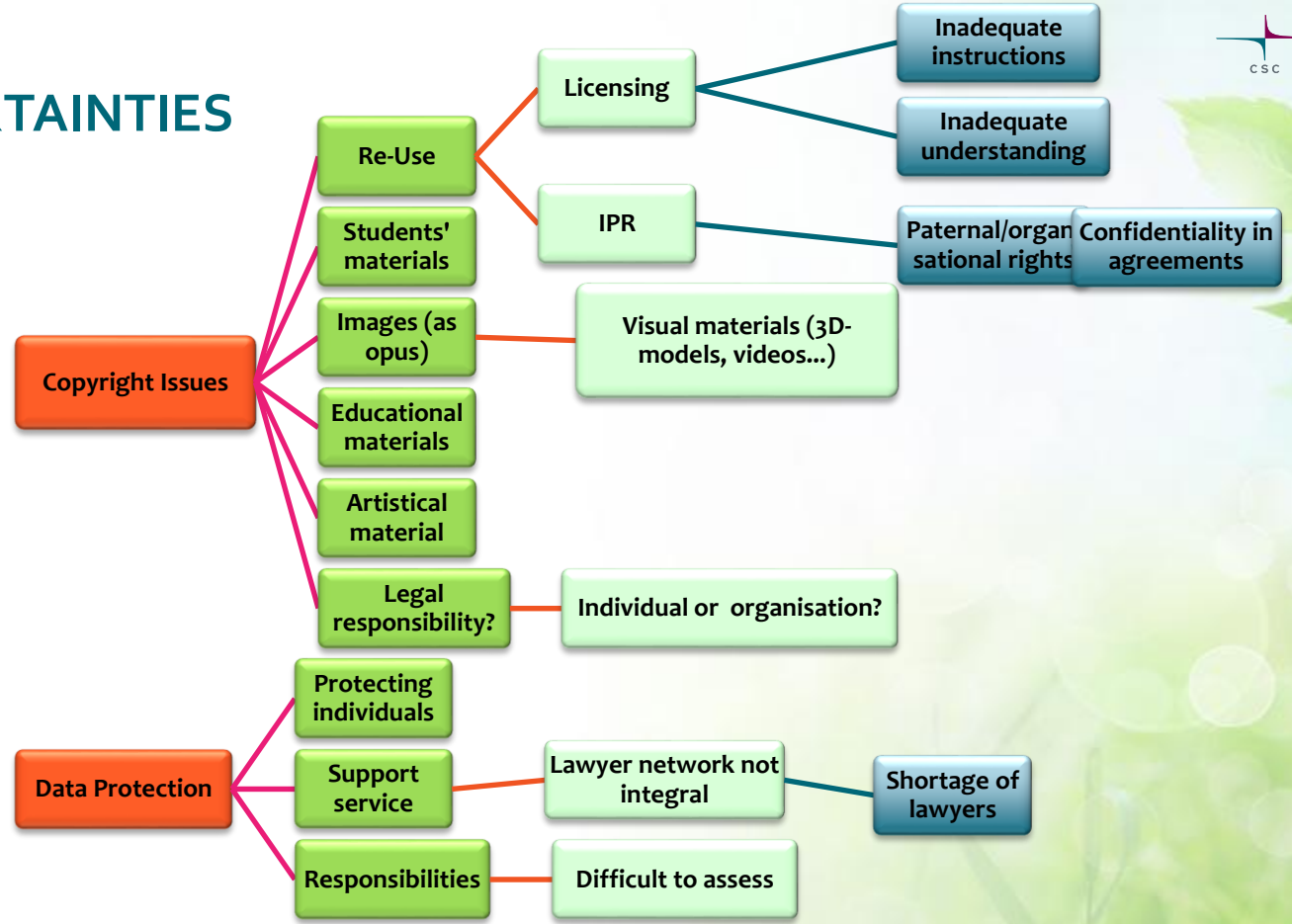
BARRIER N:O 1:
JURIDICAL UNCERTAINTIES

- Actions:

- Task force of researchers to refine the problems

⇒Input to juridical experts group

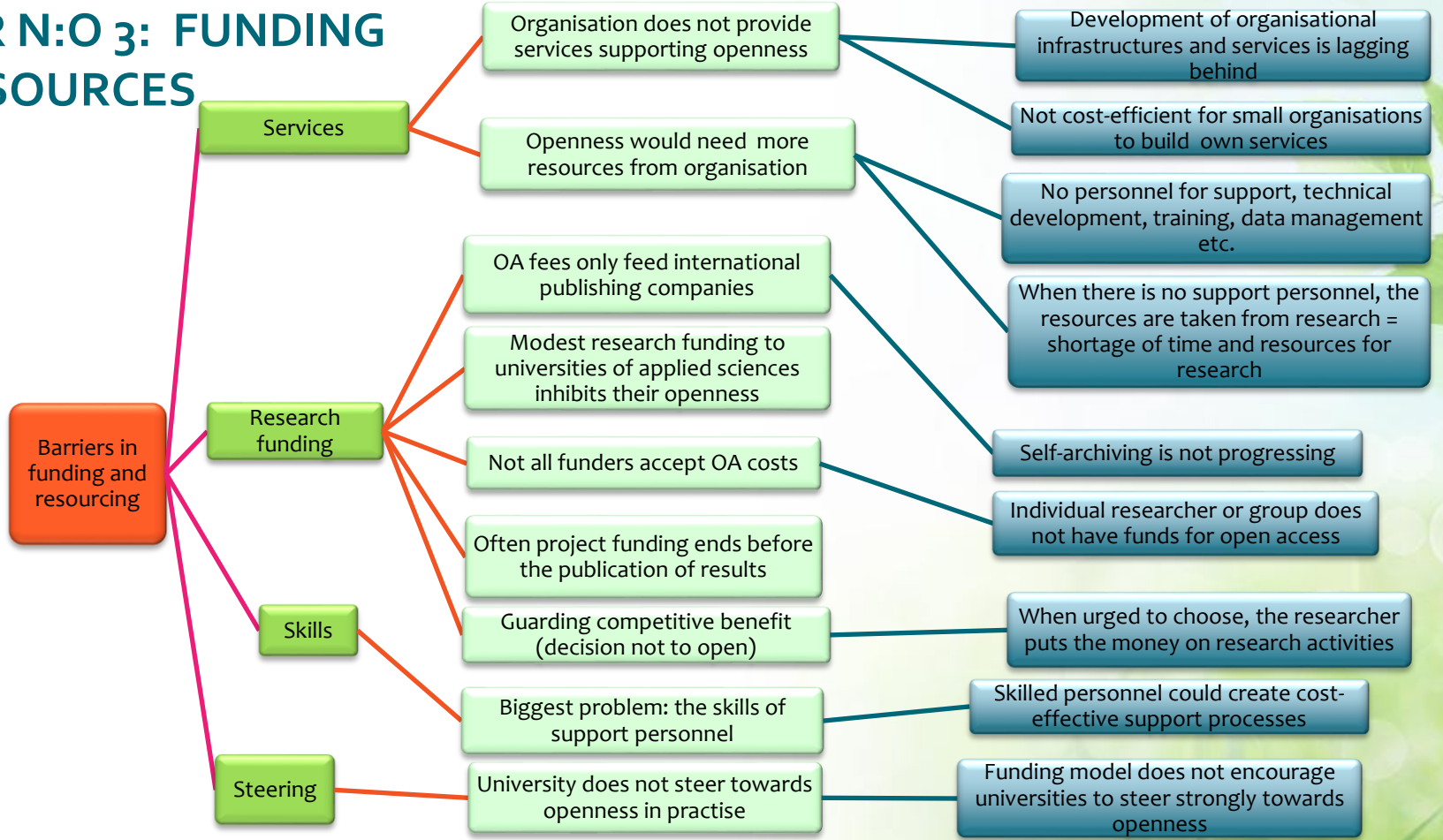
⇒Shared solutions



BARRIER N:O 2:
DISPROPORTIONATE STANDARDS FOR RESEARCHERS TO FULFIL

	Comments
Not enough support	Time is the most valued asset for researchers, it should not be wasted to tackle ever-changing demands => Sufficiently resourced and coherent support processes by skilled personnel for researchers
Merit	• The level of openness to get scientific merit should be clear (where to publish and how) • Researchers do not get extra merit for collecting and creating extensive and significant data sets
Managing demands	• Research funders' demands do not always match research practices • Demands change fast • Different demands of organisations, unclear guidelines • The bureaucracy for researchers should not increase, but decrease
Resources	Small universities have limited resources to support openness

BARRIER N:O 3: FUNDING AND RESOURCES



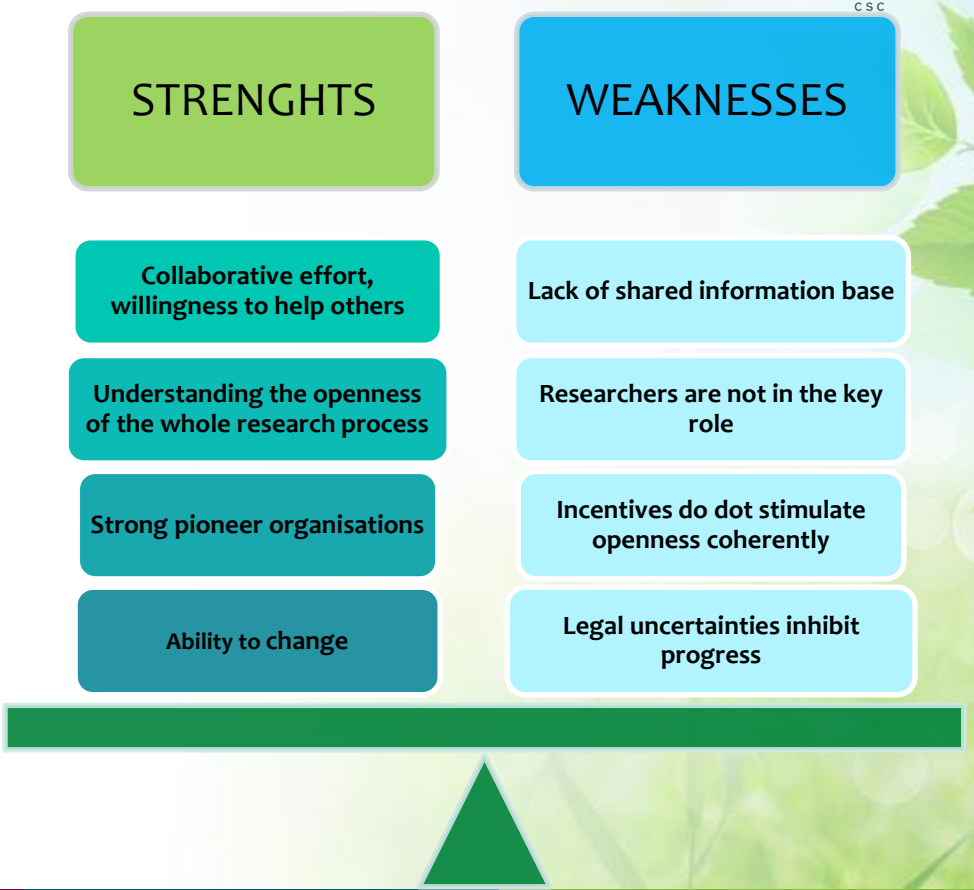
BARRIER N:O 4:
CONFLICTING INCENTIVES

	Comments
Rationale for publishing	• Existing models for funding and merit stimulate publishing behind a paywall. • **Researchers should have proper education on choosing open high impact quality journals and avoiding predator journals.** • University does not have clear incentives for OA publishing for disciplines not having high quality OA journals. • **Artificial quantitative metrics for funding (like JUFO) is a tricky boundary condition, and makes collaboration and OA publishing somewhat unwelcome. Quantity replaces quality.** • **Changes are possible, but they demand strong international collaboration and pressure.** • **Collaboration with publishers needed.** • **We are lacking clear shared intent on how to proceed.**
No alternative metrics for data and publication sharing	• Demands for just opening data sets very quickly do not encourage the collection of big and deep high quality data sets. • Recognizing the amount of publications stimulates the avoidance of open practices, splitting research results and seeking statistically significant result with questionable research methods. • Pushing for recommendations for responsible evaluation of researchers nationally and internationally. • **Defining sensible metrics for research work.**
Discipline-specific differences	• Professional and popular journals are not appreciated. • Some disciplines still lack high quality OA journals

Defining actions

- Understanding the real needs and barriers from global mega- and metatrends
- Finding the best way to build strenghts

Metatrends			
Accelerating speed of changes	Fragmentation	Inequality	Competition



Conclusions

- Actions should take into acount the maturity level
- Organisations with mature open operational culture:
  - **Started early on competence development (personnel, students, researchers)**
  - **Understand what openness means to research process**
  - **Have clear policies and guidelines**
  - **Have support personnel for open science (crucial)**

- Improvement needed:
  - **Hear the voice of researchers**
    - **Administrative burden**
    - **Conflicting incentives**
  - **Strenghten support network for researchers (especially home organisations)**
  - **Strenghten peer networks**

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Some suggestions for national open science coordination

1. **Focus on getting researchers involved. Innovate and offer multiple ways to participate. Organise and facilitate debates about open science and research in universities, in universities of applied sciences and in research institutes. In universities these should be discipline-based.**

2. **Build on networked collaboration** (involving everybody is possible only with strong, distributed collaboration)

3. **Develop metrics and incentives for research impact.** Focus on the impact / societal benefit strategy instead of the outcomes when evaluating research impact. Value all achievements. Applauding all achievements demonstrates that success in societal impact is achievable. Pave the way to realise the use of qualitative indicators. (Recommendations for responsible evaluation of researchers nationally and internationally).

4. **Train academics and evaluators in order to better understand the research impact** – a broader sense of impact than short-term outcomes and financial benefits (such as patents and spin-off companies). Academics may be actively conducting impactful research without even knowing it. Academics and evaluators should understand what research impact and related processes are and also how these relate to openness.

5. **Focus training activities on needs** (help the weakest, learn from the best)

Suggestions for research funders

1. **Set a nationally optimal target level.** Invest in discussing and communicating the perceptions of the content and aims of open science policies.

2. **Reform researcher evaluation, merit system and incentives to promote open culture.** One way to proceed in this immediately and in a responsible way is to focus on the openness in the research strategy instead of the outcomes when evaluating open science practices ex-ante (what is the proposed strategy for openness in the research plan and research funding application, etc.) or ex-post (what strategy for openness in research was followed). Value all achievements at different stages of the research process, not only openly accessible outputs. Applauding all achievements demonstrates that success in openness is manifold and achievable. Train evaluators in the evaluation of open science and research practices.

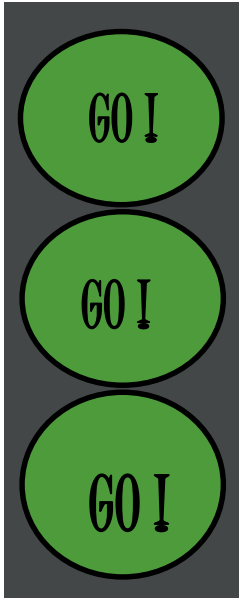
3. **Restructure funding to cover the costs of openness**

4. **Foster global collaboration** (connecting national with global activities (Plan S, EOSC, Nordic EOSC, etc.))

5. **Promote changes for the better** (lighter administrative burden for researchers, strive to keep data protection in research regulation at the same level as in other EU member states. Recast copyright legislation (especially self-archiving).

6. **Review the effect of the funding model, JUFO and artificial quantitative metrics.**

7. **Clarify demands (**no demand without clearly defined benefit).



THANK YOU!
QUESTIONS? COMMENTS?

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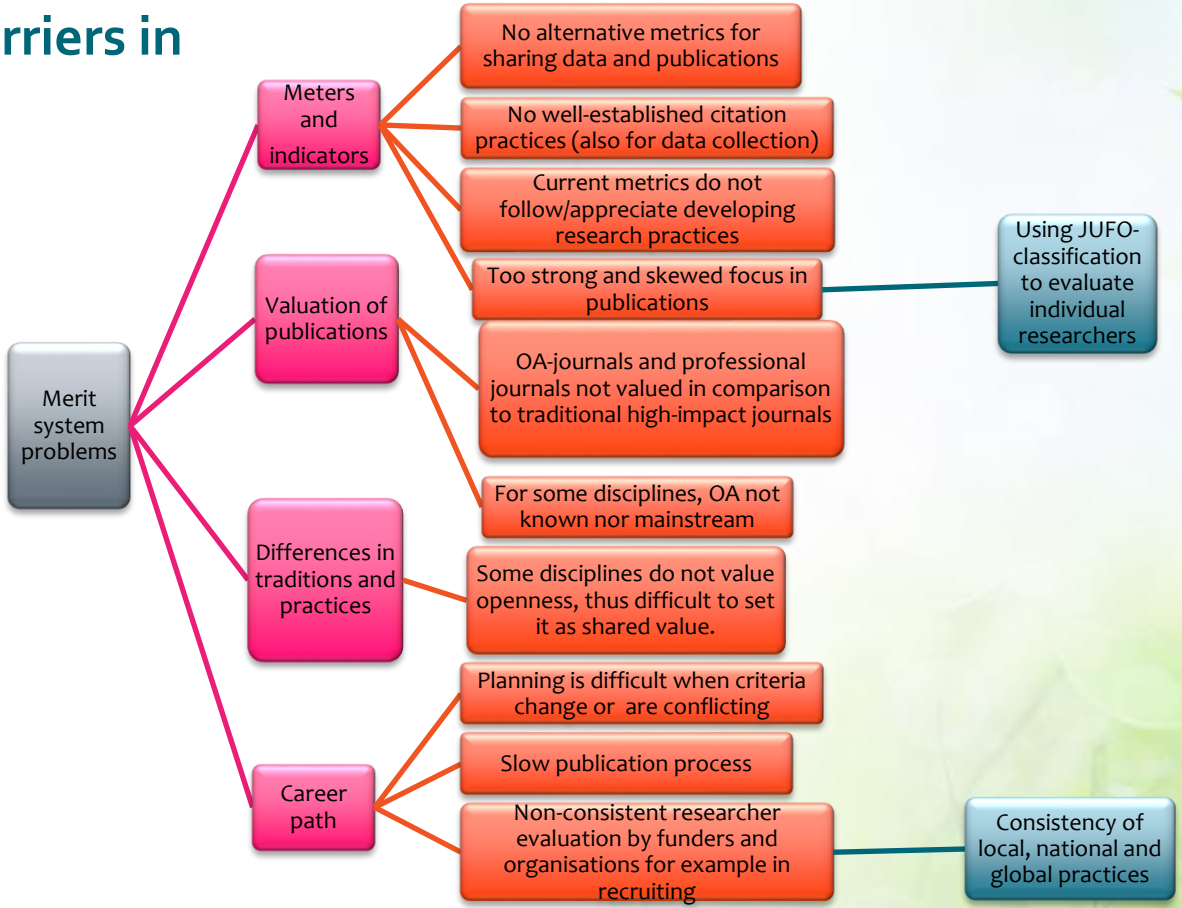
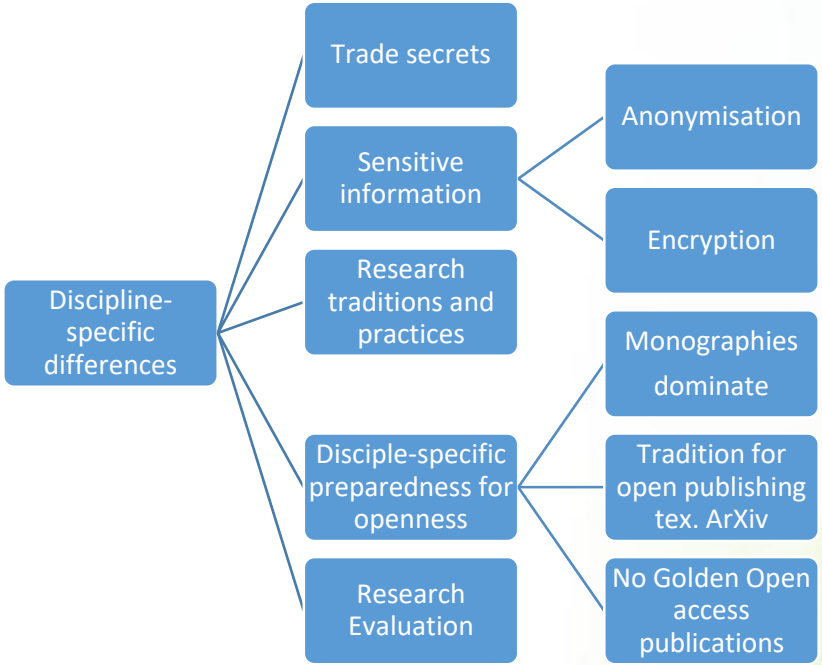
Suggestions for national open science and research coordination

National coordination	**1)**	**Prioritise actions** (more priority to nationally important issues (OA, costs of open science and research, merit system, incentives))
	2)	**Plan stepwise progress** (ensuring resources to reach targets)
	3)	**Focus on getting researchers involved.** Innovate and offer multiple ways to participate. Organise and facilitate debates about open science and research in universities, in universities of applied sciences and in research institutes. In universities these should be discipline-based.
	4)	**Build on networked collaboration** (involving everybody is possible only with strong, distributed collaboration)
	5)	**Develop metrics and incentives for research impact.** Focus on the impact / societal benefit strategy instead of the outcomes when evaluating research impact. Value all achievements. Applauding all achievements demonstrates that success in societal impact is achievable. Pave the way to realise the use of qualitative indicators. (Recommendations for responsible evaluation of researchers nationally and internationally).
	6)	**Train academics and evaluators in order to better understand the research impact** – a broader sense of impact than short-term outcomes and financial benefits (such as patents and spin-off companies). Academics may be actively conducting impactful research without even knowing it. Academics and evaluators should understand what research impact and related processes are and also how these relate to openness.
	7)	**Facilitate updating the academic merit system**
	8)	**Acknowledge diversity in the field**
	9)	**Focus training activities on needs** (help the weakest, learn from the best)
	10)	**Communicate especially to researchers**

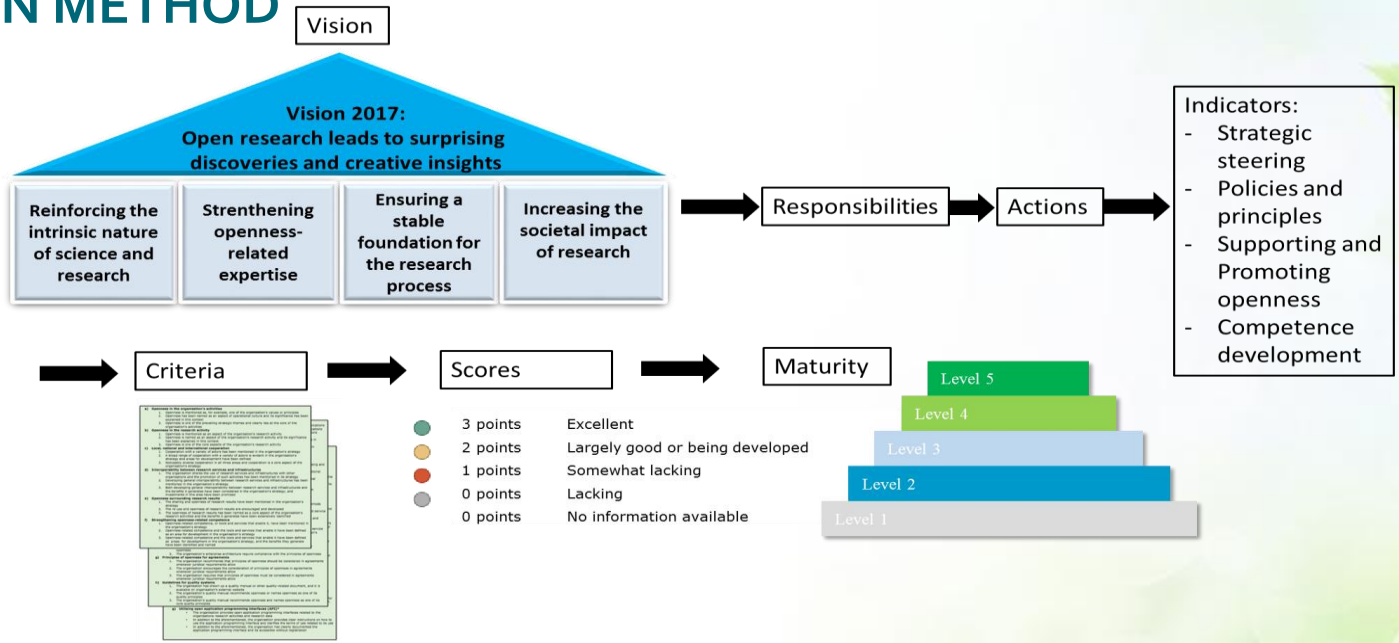
The division of barriers in merit system



Classification of discipline-specific differences:

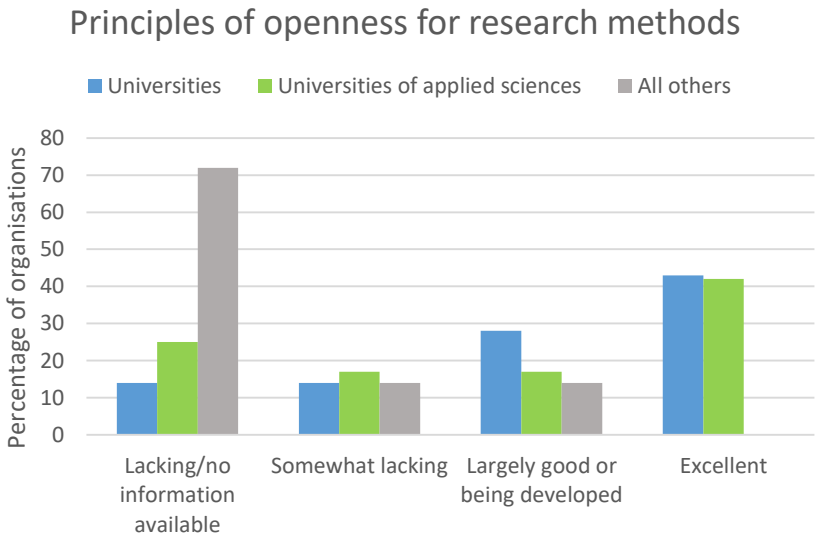


EVALUATION METHOD



Evaluation

- 1st phase: information from organisations websites
- 2nd phase: request for corrections and additional information to organisations + questionnaire of barriers to research heads


Principles of openness for research methods
Universities
Universities of applied sciences
All others
Percentage of organisations
80
70
60
50
40
30
20
10
0
Lacking/no information available
Somewhat lacking
Largely good or being developed
Excellent