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FAIR to Care

Repository landscaping and support for FAIR in Europe

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Presentation outline

1. Project descriptions: SSHOC and EOSC-Nordic
2. Desk research on repositories: setting and results
3. FAIR support and evaluation
4. Data on minorities
5. Conclusions

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Project Descriptions: SSHOC and EOSC-Nordic

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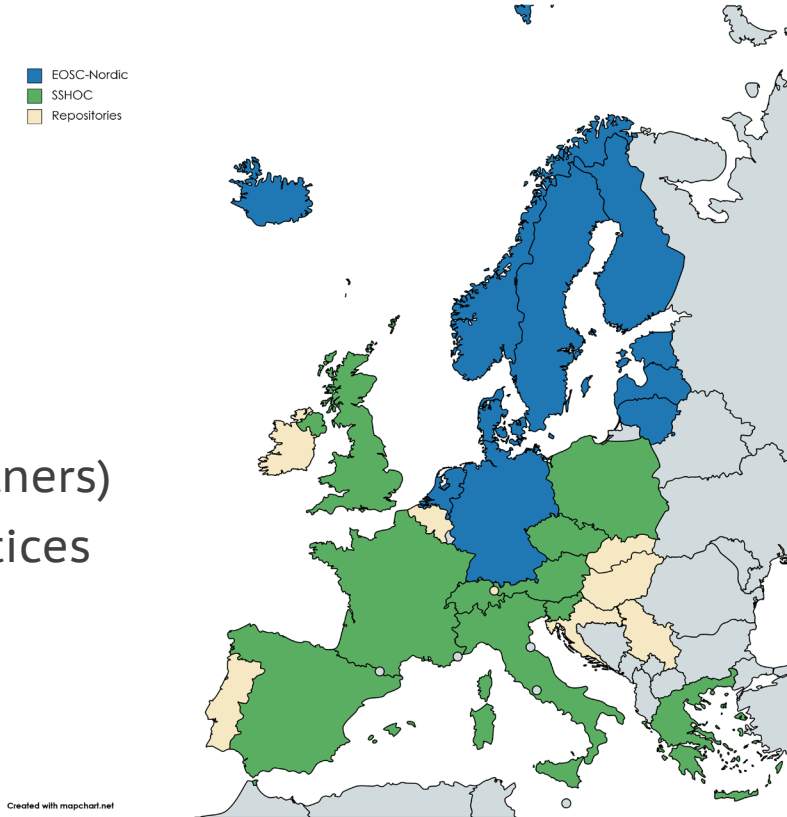
SSHOC and EOSC-Nordic

- EU funded* infrastructure projects with research / research infrastructure support functions and European Open Science Cloud connection
- A subtask in both to support repository certification and examine the landscape
- SSHOC
  - Discipline specific, Social Sciences and Humanities data
  - Targeted the whole EU/ERA (20 partners and 27 associates)
    - Research infrastructures and individual organisations as participants
  - Cloud based solutions for researchers and curators, training
- EOSC-Nordic
  - Regional, all disciplines (participants from 10 countries, 25 partners)
  - Focus on openness of research data, synergies in policies, practices
  - Strong focus on FAIR uptake and measuring FAIR maturity



*Horizon 2020: the EU Framework Programme for Research and Innovation

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Desk Research on Repositories: Setting and Results

The study and the objectives set

- Gain insight of the basic characteristics of data repositories in Europe and the Nordic and Baltic countries
- Gain insight into the differences and commonalities to better support repositories in FAIRification and certification
- Conducted by accessing the publicly available information on the repository websites in 2021-2022 = *"curious and persistent user"* approach
- EOSC-Nordic sample: 86 repositories studied
  - Further 12 excluded due to website being under construction, access to metadata and other information behind a login or the entity not being a data repository
- SSHOC sample: 93 repositories studied
  - Further 41 excluded as not "organisations that preserve, manage, and provide access to digital research data in a variety of formats"
- Included repositories from 27 countries, some overlap in samples

Why? No FAIR in a vacuum

- Data users need to know what the data are about, who the providers are, and how the data can be accessed and used
- To make and keep data FAIR (=repository function), certain basic details must be available to data users / stakeholders
- Same basic needs present in repository certification
- ¾ of repositories in the combined sample were hosted by a larger organisation
  - Usually a university: 43 % in SSHOC, 52 % EOSC-Nordic
  - Dependency on the host is common, and can cause confusion for the user looking for information
- First step: categorise the repositories…

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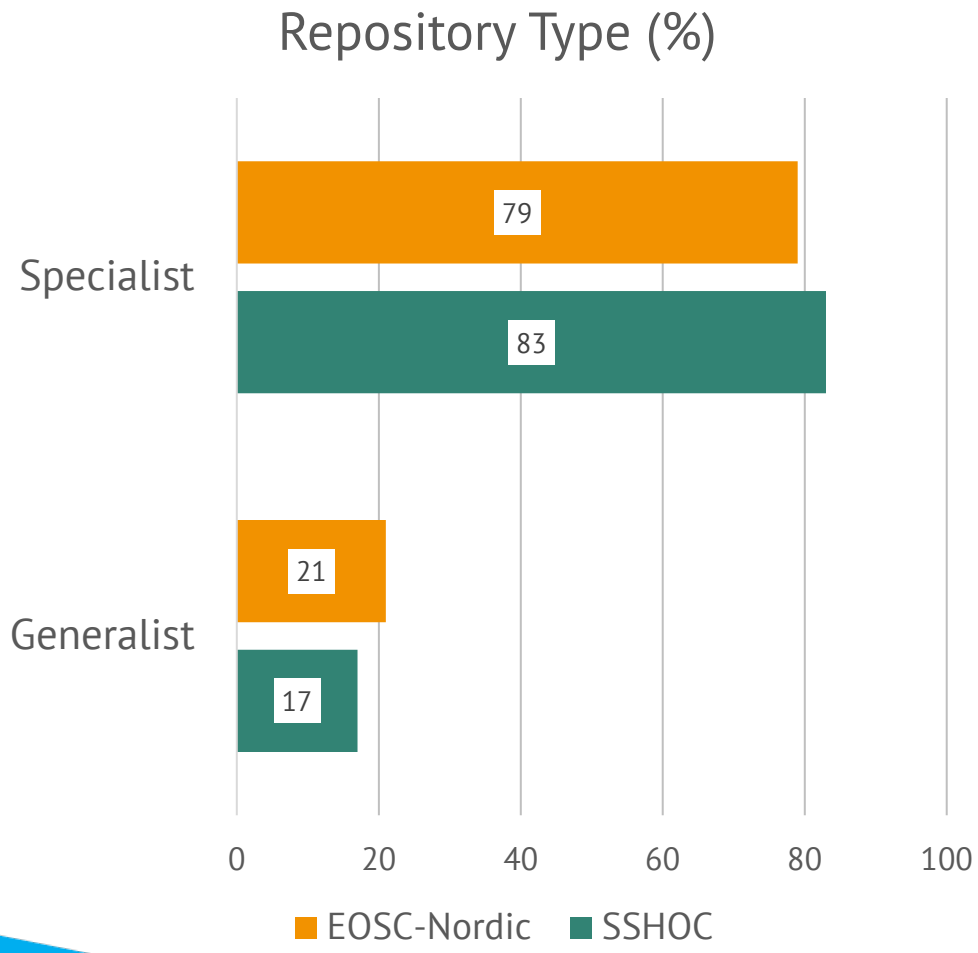
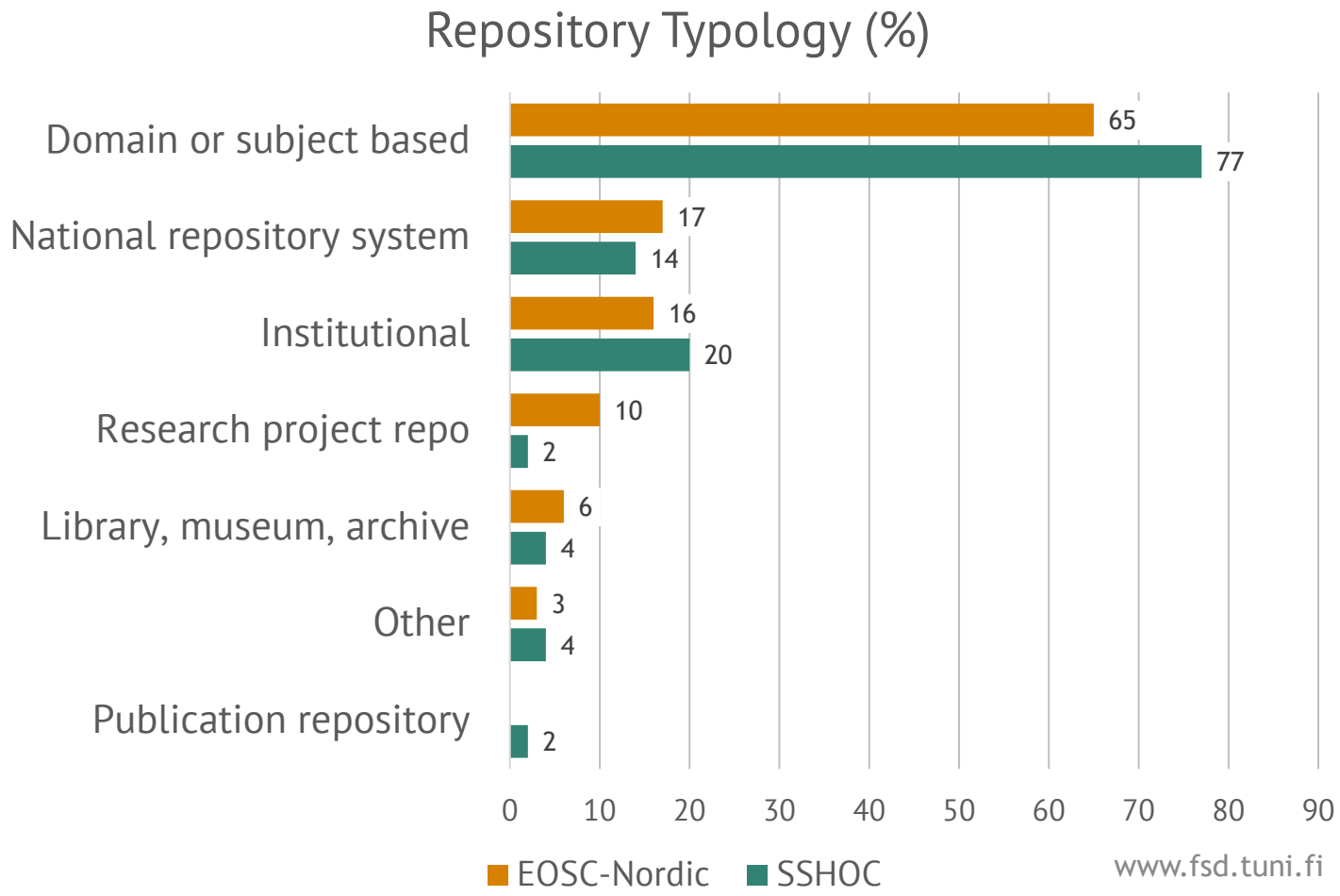
Repository types and typologies





Basic information looked for

- **Mission statement** – does the repository have a mission in data curation?
- **Long-term preservation promise** – data will remain (re)usable in the future too
- **Terms and conditions** for data use – how to access and use
- **Model citation** – how to cite – for men and machines
- **Persistent identifiers** - data will remain findable / accessible
- **Certification** – audited against a defined criteria = quality assurance
- **Organisational identifier** – findability and organisational persistence
- **Designated user community**
  - Almost always findable, but often only in mission statements or organizational descriptions. In EOSC-Nordic sample only about 45% had a clear definition.

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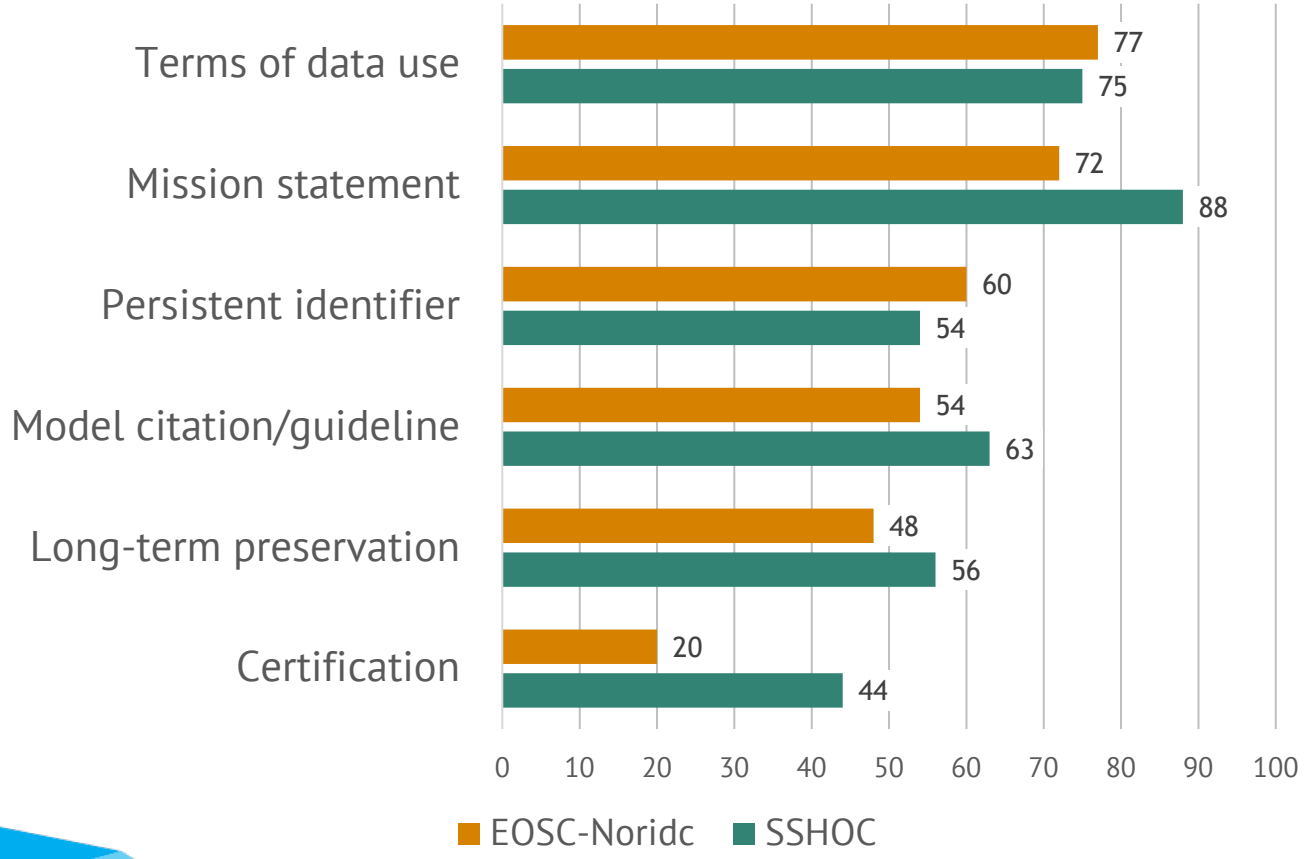
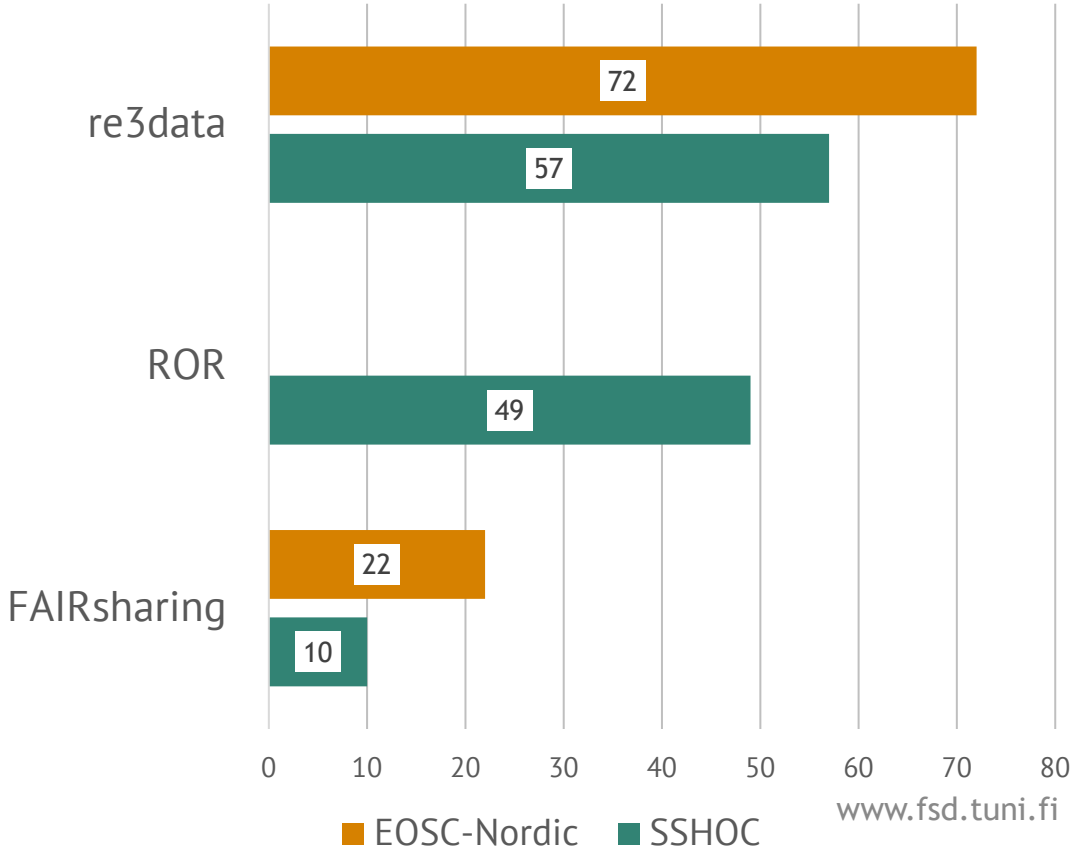
Basic information provided by repositories

Information provided by the repositories (%)



Record in a repository registry (%)



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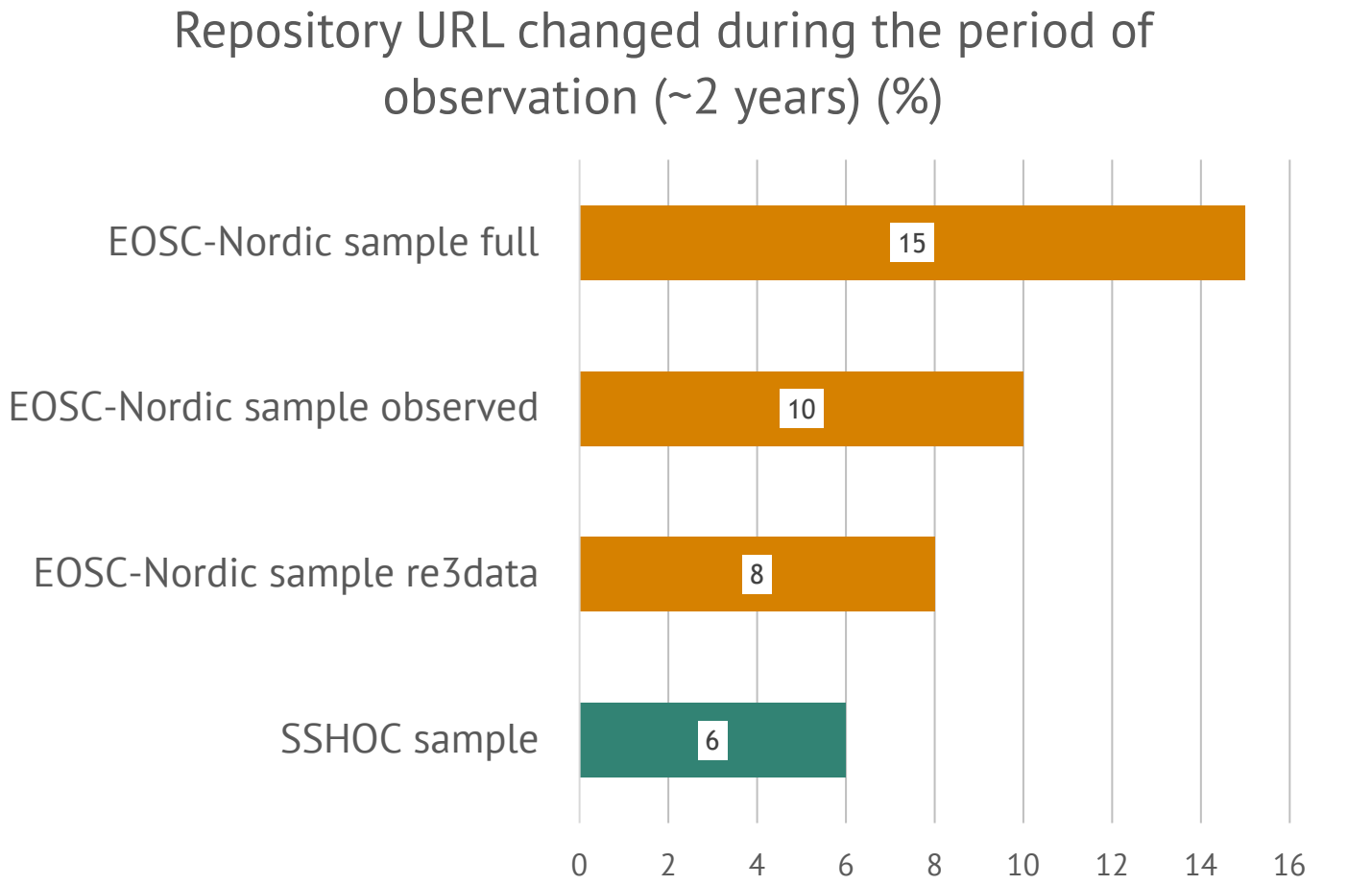
Repository persistence

- Tested slightly differently in SSHOC and EOSC-Nordic
  - SSHOC looked at in URL persistence, and name changes
  - EOSC-Nordic used an automated test of URLs
- Not all changes were reflected in research registries



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FAIR Support and Evaluation

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Automated measurement of FAIR (EOSC-Nordic)

- Measuring FAIR defined:
  - an ability to process machine-actionable metadata from data catalogues
  - and pass tests created for a FAIR evaluator
- Extremely practical and direct approach
- Instead of running hundreds of the tests manually, an automated test approach developed
- FAIR score is defined as an average of test results for Findability, Accessibility, Interoperability and Reusability

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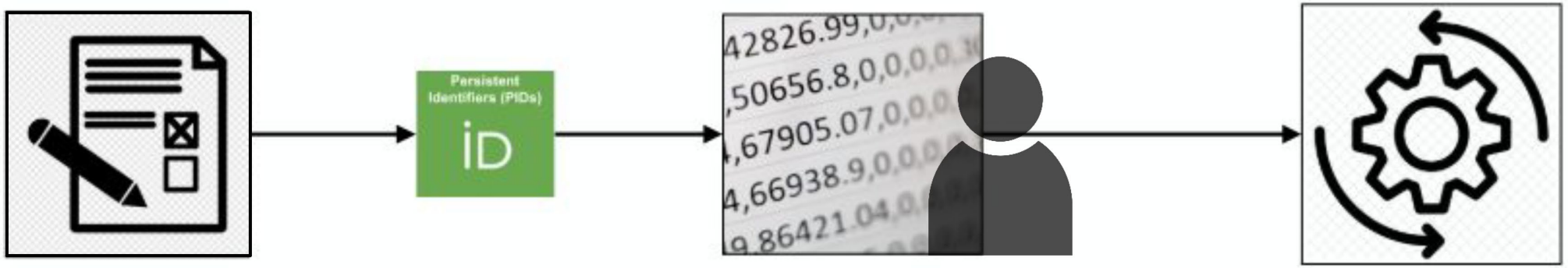
Automated FAIR maturity assessment



Sample of 98 repositories in the Nordic countries and the Baltics

Almost 25% cannot be evaluated because they lack a GUID

Expert selection of 10 different datasets (metadata records) from each repository

Iterative evaluations during the project period using a standalone F-UJI tool instance

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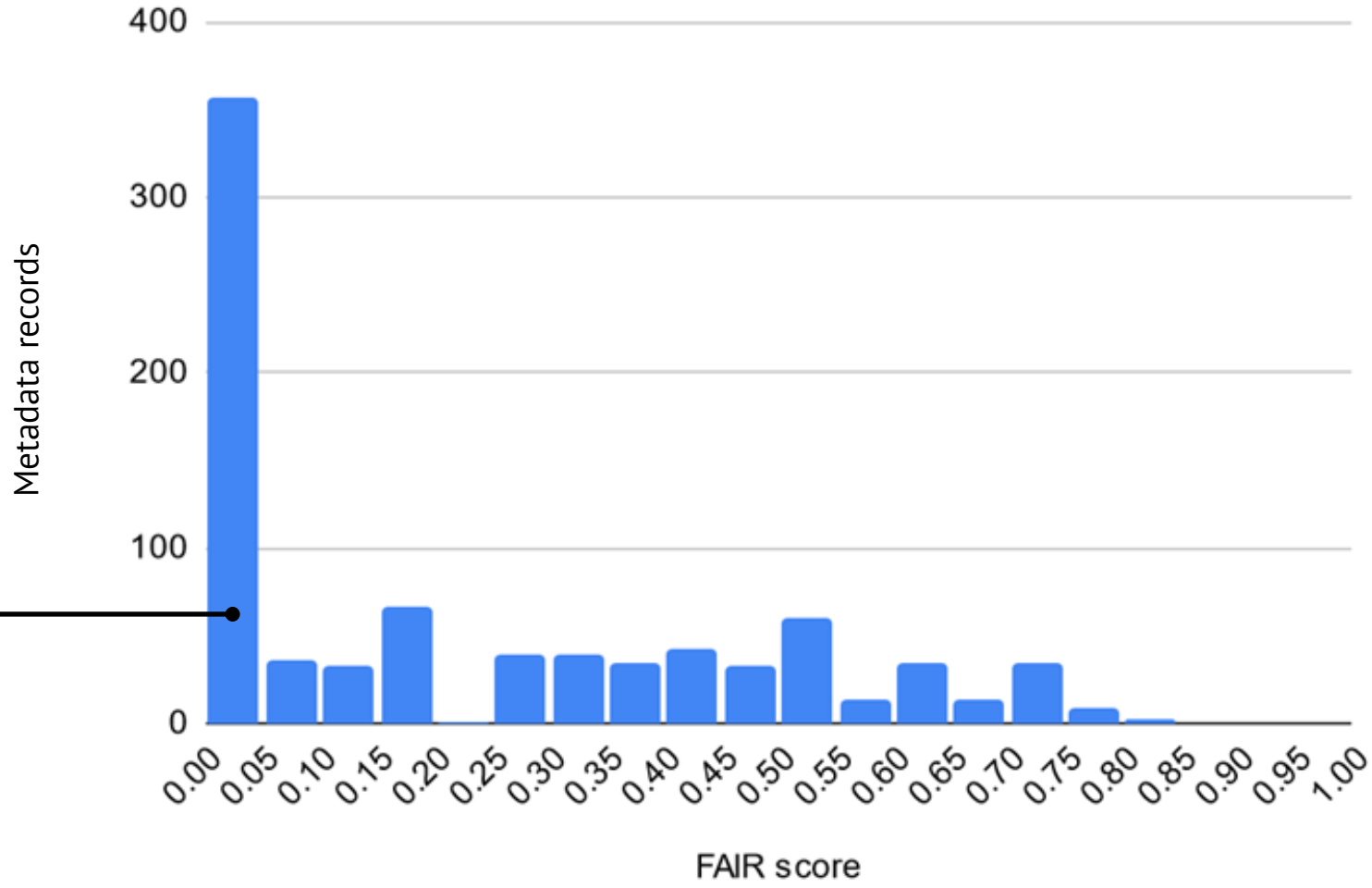
FAIR Scores

- Overall, FAIR maturity level still relatively low
- Lots of room for improvement, especially in readiness to be evaluated at all
- 0,00 result only possible if evaluation fails



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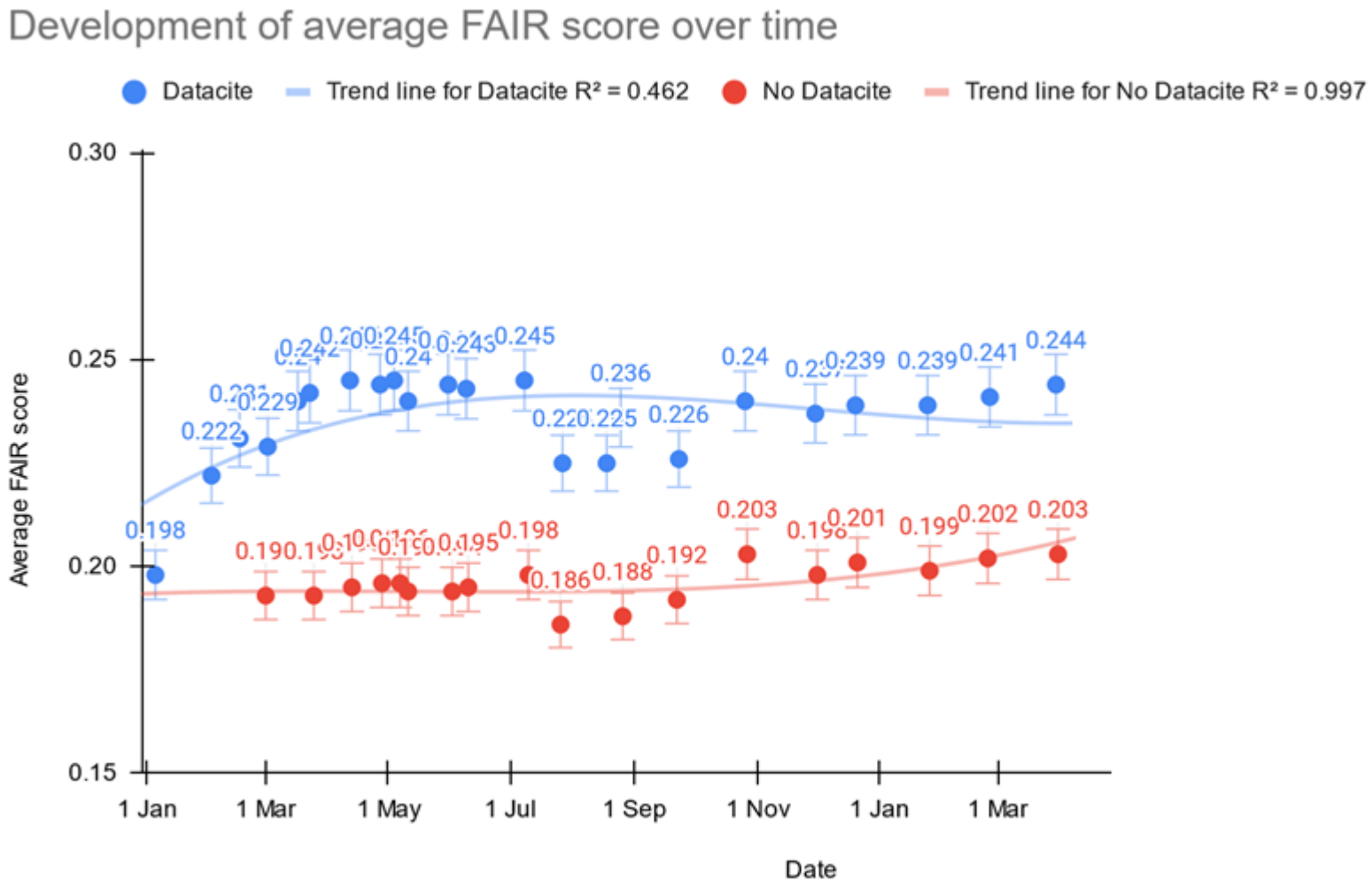
FAIR Scores over time

- Slight increase in averages over time
- Within the sample remarkable single improvements (e.g. ~.2 → .7)
- Test failures excluded from the averages
- DataCite metadata through DOIs has a positive effect on the score



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Study results explaining the FAIR scores?

FAIR score*	PIDs not in use	PIDs in use
No score	20,0	3,5
Low	8,2	9,4
Medium	9,4	32,9
High	1,2	15,3

FAIR score*	Not certified %	Certified %
No score	20,9	2,3
Low	14,0	3,5
Medium	31,4	11,6
High	9,3	7,0

FAIR score*	No long-term preservation	Long-term preservation mission
No score	15,1	8,1
Low	10,5	7,0
Medium	18,6	24,4
High	8,1	8,1

*Using 2022/3 FAIR scores, low is below .2 and high above .5

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Data on Minorities

Minority data and study results

- Information whether data on minorities were provided by a repository does not really show up in aggregate results
- It is largely spread throughout the (SSH) repositories or in a very few specific repositories
  - Latter are often small and struggle with similar issues as any other small repository
  - Some data are restricted (explored only onsite), some are very open because they are seen as cultural heritage data
  - Any repository quality stamps applied to minority data too – but is there expertise specific to those data?
- Not satisfied with this result, should be looked in more detail

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Conclusions

Conclusions 1/2

- Repositories are not alike. (And what is a repository..?)
  - Results should not be generalised too heavily (purposive sampling)
- Information is relatively well available for all stakeholders, but there could/should be even more
- Use of PIDs is common but not as high as it should be for FAIR
- FAIR measurement can be automated, but the results should be interpreted with caution
- Ticking many boxes in the study did not necessarily lead to better results in the FAIR evaluations

Conclusions 2/2

- Machine-actionable metadata or globally unique identifiers should be used more widely
  - Persistent identifiers, rich generic and discipline-specific metadata, machine-actionable licenses, and controlled vocabularies expressed in some form of linked open data will quickly increase the FAIR score
- Level of certification relatively low…
  - But how high it should be? Depends on the expectations.
- Funding and coordination of national, regional and international initiatives is essential
  - Repository persistence fluctuates and broader shoulders or sharing the burden might help

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Read more

- Alaterä, Tuomas J., Kleemola, Mari, Ala-Lahti, Henri, & Jerlehag, Birger. (2022). D4.5 Report on completed FAIR data standard adoption and certifications of data repositories in the region. https://doi.org/10.5281/zenodo.7303538
- Ala-Lahti, Henri, Mathers, Benjamin Jacob, L'Hours, Hervé, Kleemola, Mari, & Alaterä, Tuomas J. (2022). Data Repositories and Certification in a Diverse Trust Landscape: Results of SSHOC T8.2 Desk Research (v1.0). https://doi.org/10.5281/zenodo.6334025
- Ala-Lahti, Henri, Mathers, Benjamin Jacob, L'Hours, Hervé, Kleemola, Mari, & Alaterä, Tuomas J. (2022). Repositories and Beyond: Analysis of Survey for SSHOC Organisations (v1.0). https://doi.org/10.5281/zenodo.6325149
- Nordling, Josefine, Mihai, Hannah, Meerman, Bert, Alaterä, Tuomas J., Kleemola, Mari, & Livenson, Ilja. (2022). D4.3 Report on Nordic and Baltic repositories and their uptake of FAIR. https://doi.org/10.5281/zenodo.6880904

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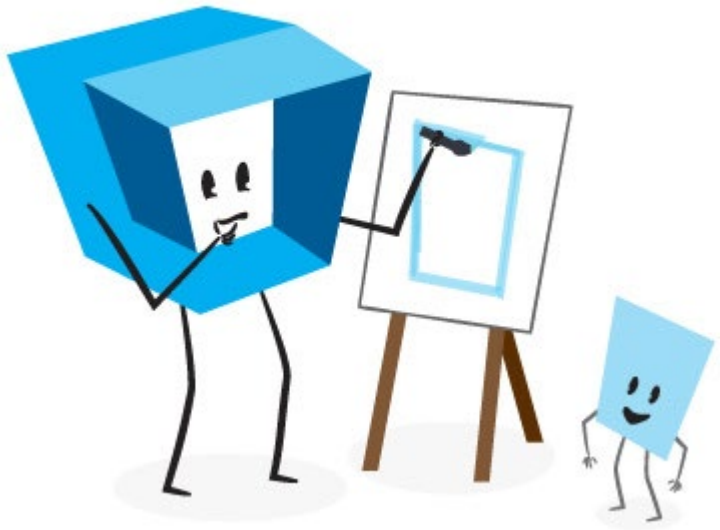
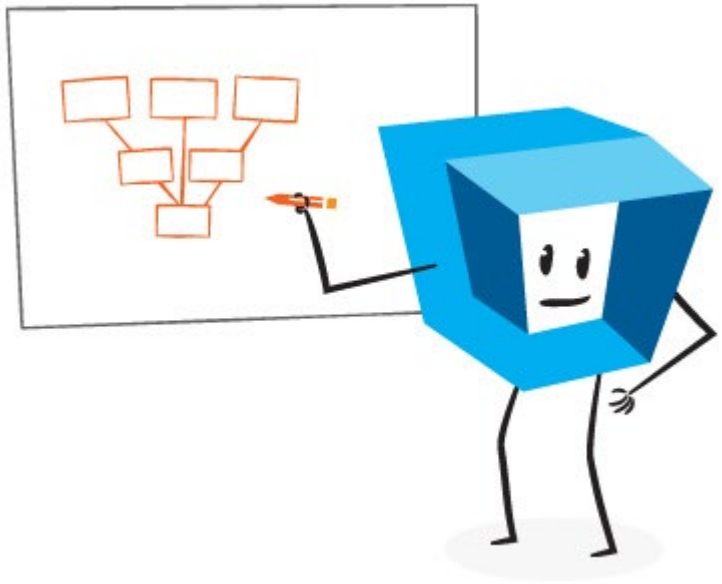
And with that I'm finished

https://www.fsd.tuni.fi/en/





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