Introducing FAIR Scores in a Global Agricultural Science Reporting Service: An Analysis of the First Reporting Period

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About me: Sebastian S. Feger

- Computer Scientist
- Human-Computer Interaction (HCI) and User Experience Researcher
- Research Consultant at ICARDA/CGIAR
- Postdoc at LMU Munich
- Completed PhD Research on Designing for Reproducibility @CERN

Overview

- ICARDA/CGIAR and PRMS
- Introduction of FAIR Scores in PRMS
- Usage Analysis during the 1st Reporting Period
- Survey on FAIR Scores
- Next User-Centered Steps

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What is CGIAR?

CGIAR (formerly the Consultative Group for International Agricultural Research) is a **global research partnership for a food-secure future** dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources.

CGIAR’s Centers Across the World

CGIAR's global research portfolio consists of 15 Centers located around the world

Africa Rice Center

Center for International Forestry Research (CIFOR)

International Center for Agricultural Research in the Dry Areas (ICARDA)

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

International Food Policy Research Institute (IFPRI)

International Institute of Tropical Agriculture (IITA)

International Livestock Research Institute (ILRI)

International Maize and Wheat Improvement Center (CIMMYT)

International Potato Center (CIP)

International Rice Research Institute (IRRI)

International Water Management Institute (IWMI)

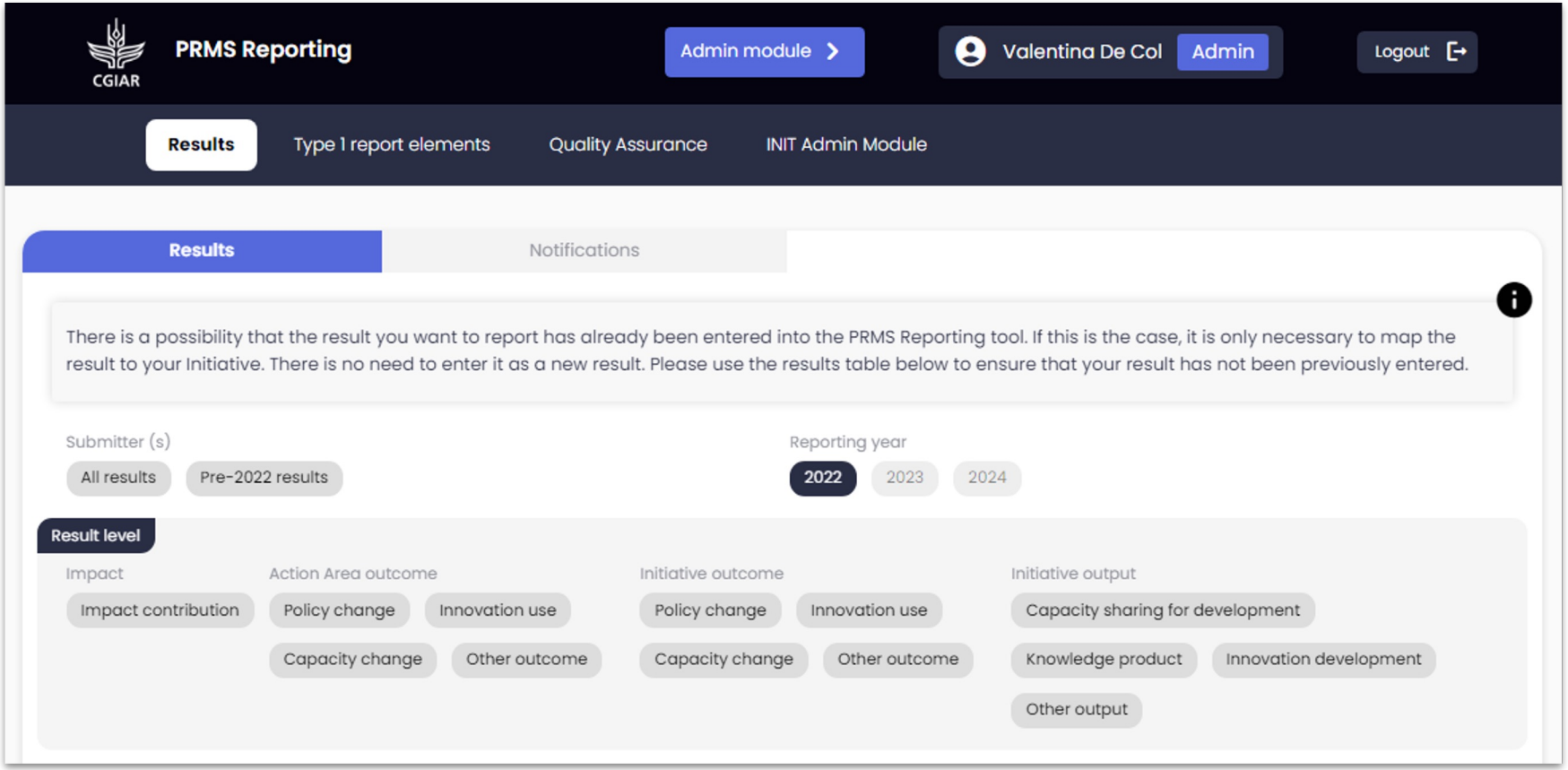
The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

World Agroforestry (ICRAF)

WorldFish

Performance and Results Management System (PRMS)

- Reporting tool introduced in late 2022
- Captures knowledge products such as journal articles, datasets, reports, and briefs



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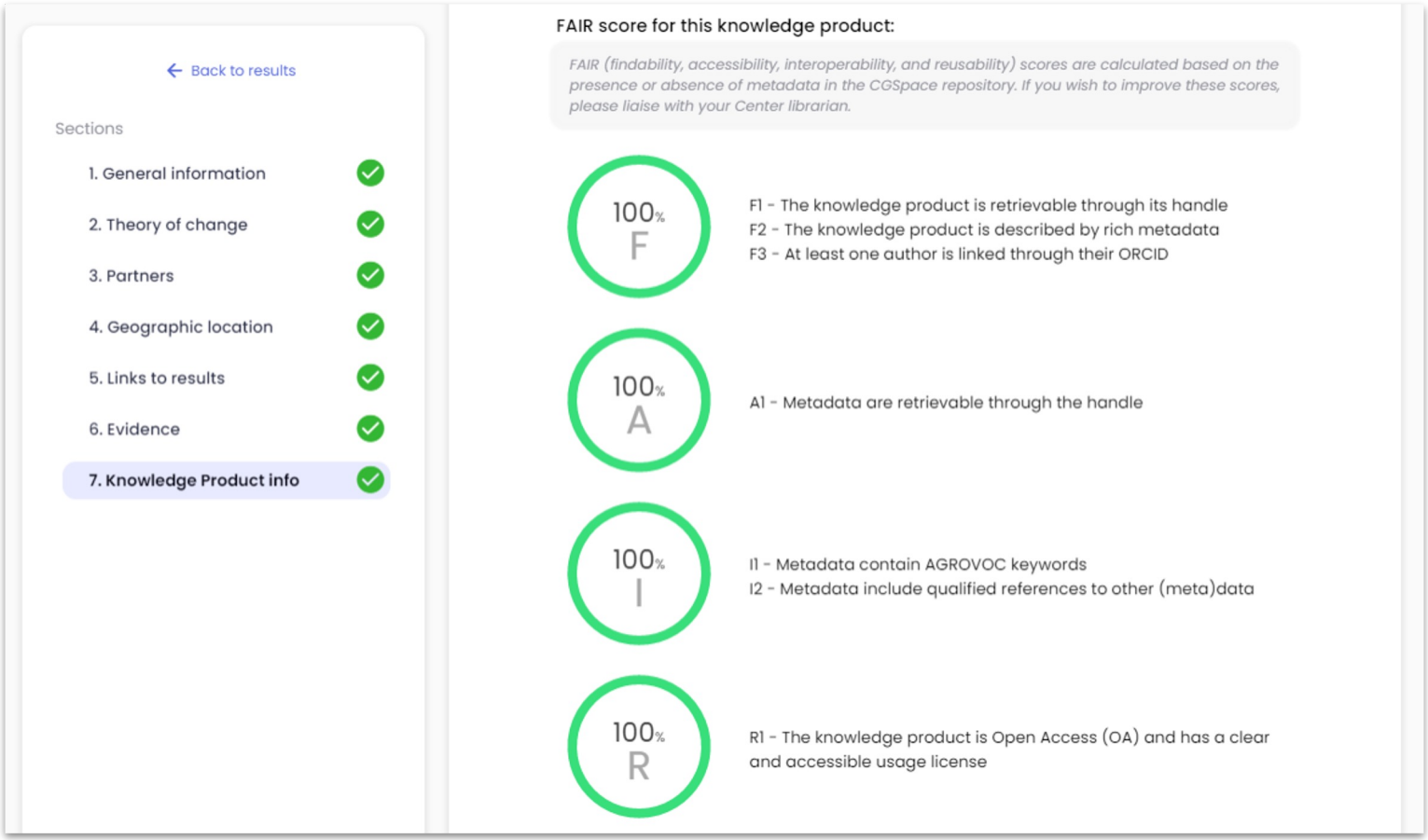
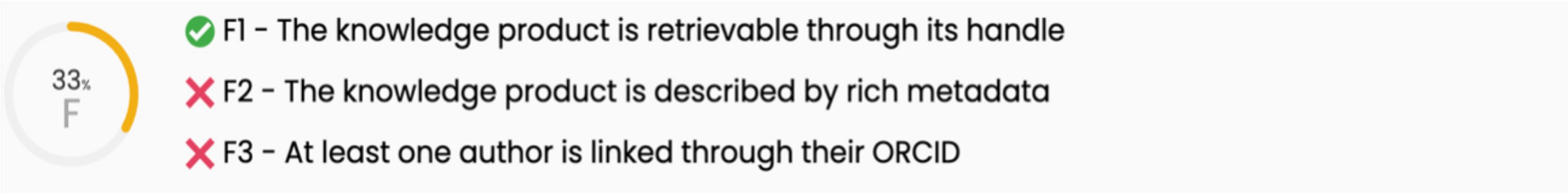
Key challenge: introduce community-wide scoring that researchers **understand and accept**

PRMS and FAIR scores

- First-time introduction of **FAIR scores** (Findable, Accessible, Interoperable, Reusable)
- Based on **seven criteria** considered **easy to understand, follow, and review**



PRMS and FAIR scores



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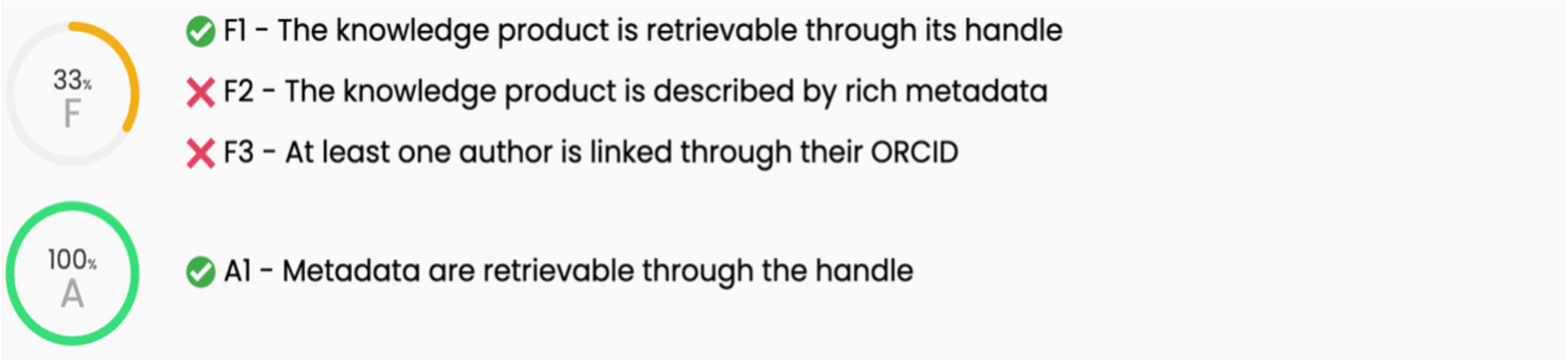
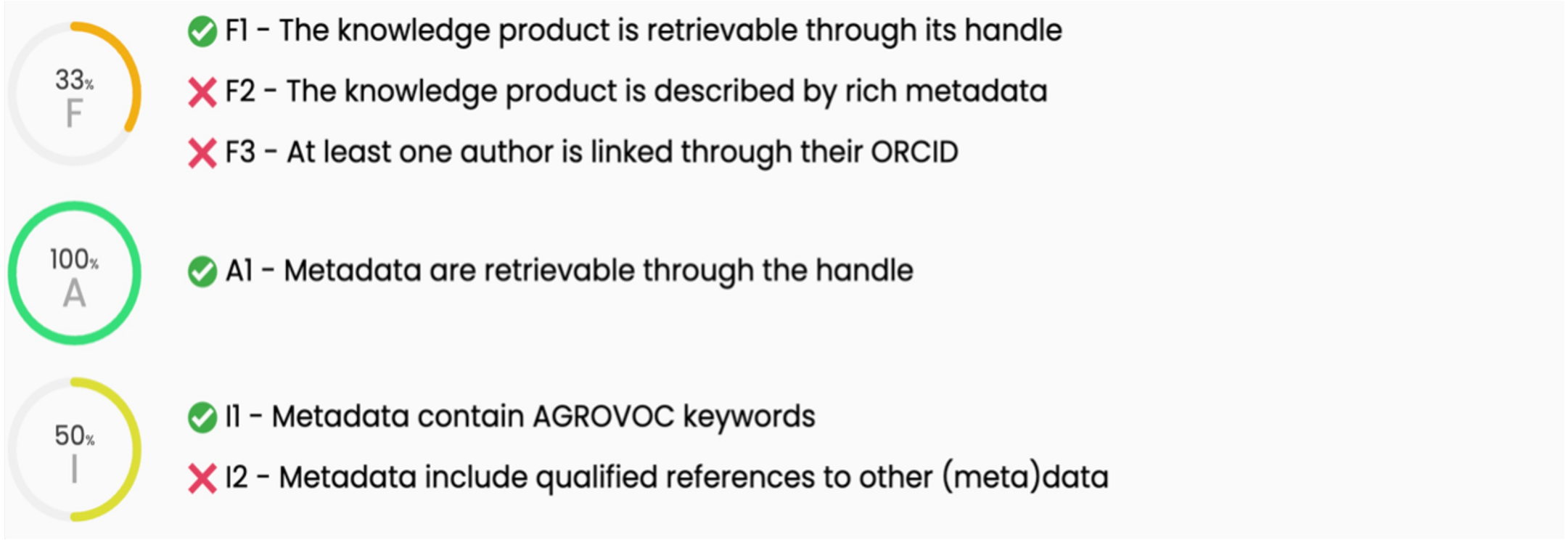
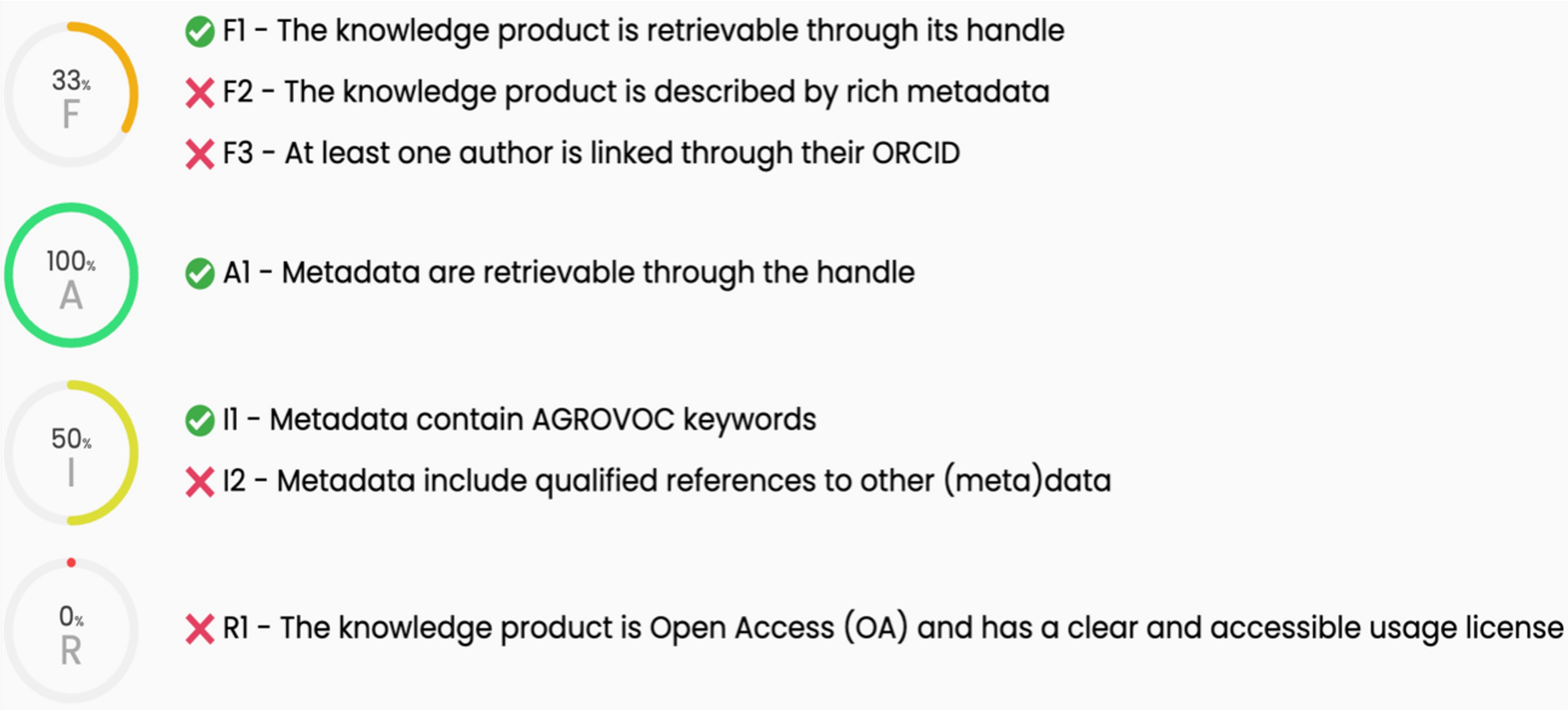


PRMS and FAIR scores



PRMS and FAIR scores



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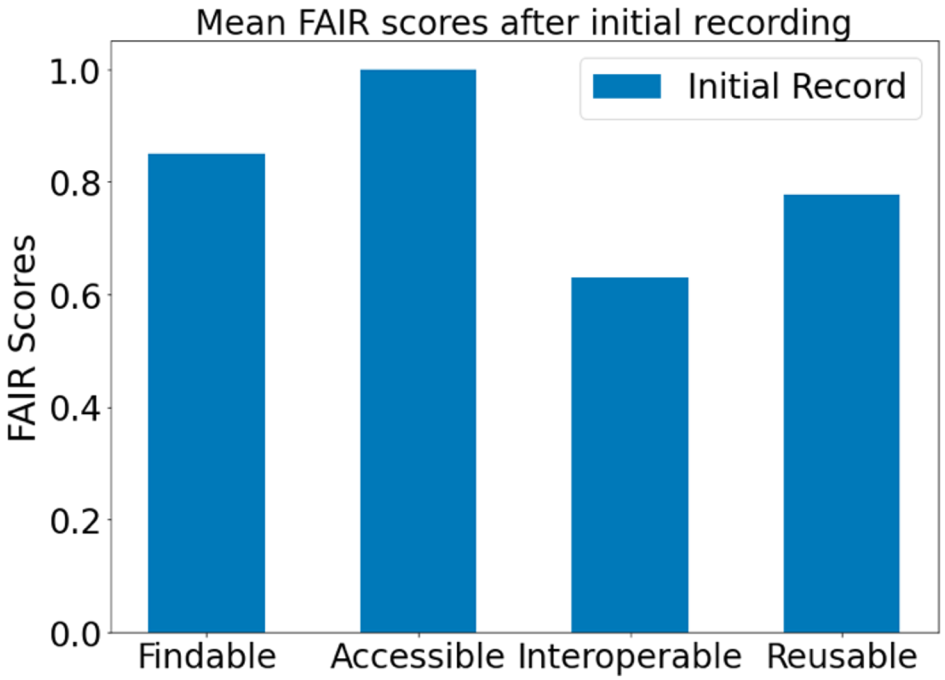
Usage Analysis

- Based on 418 complete datasets
- 163 records (39%) received at least one update
- 12 (3%) received an improved FAIR score



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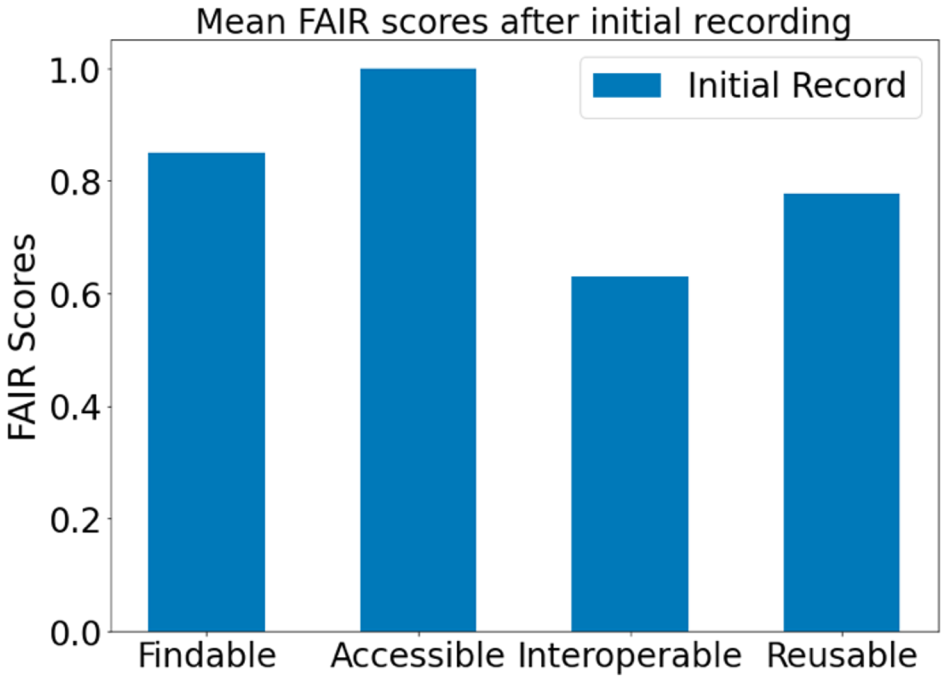

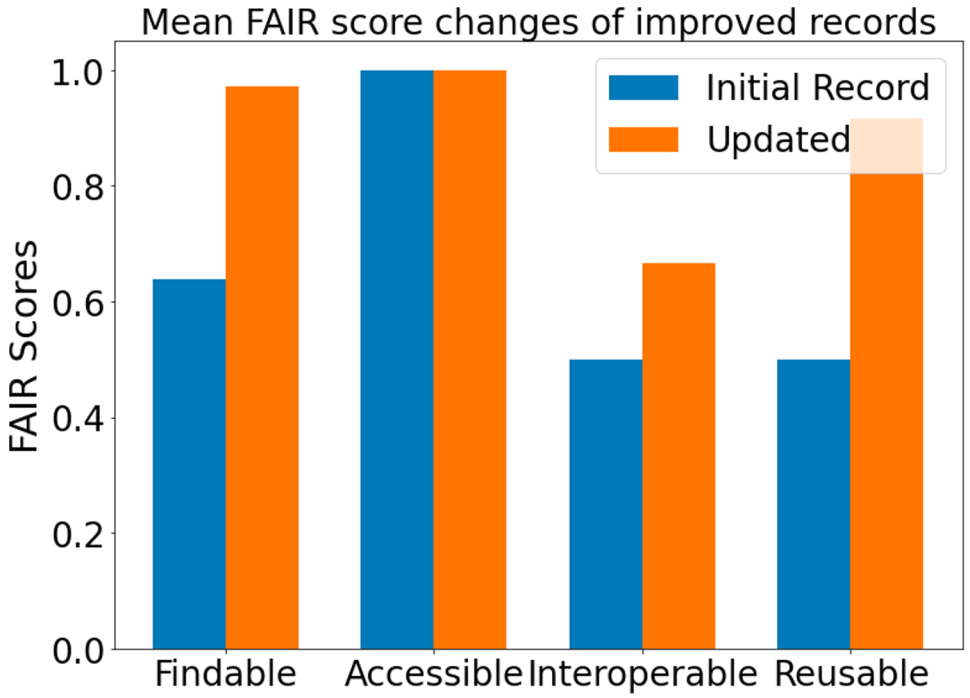

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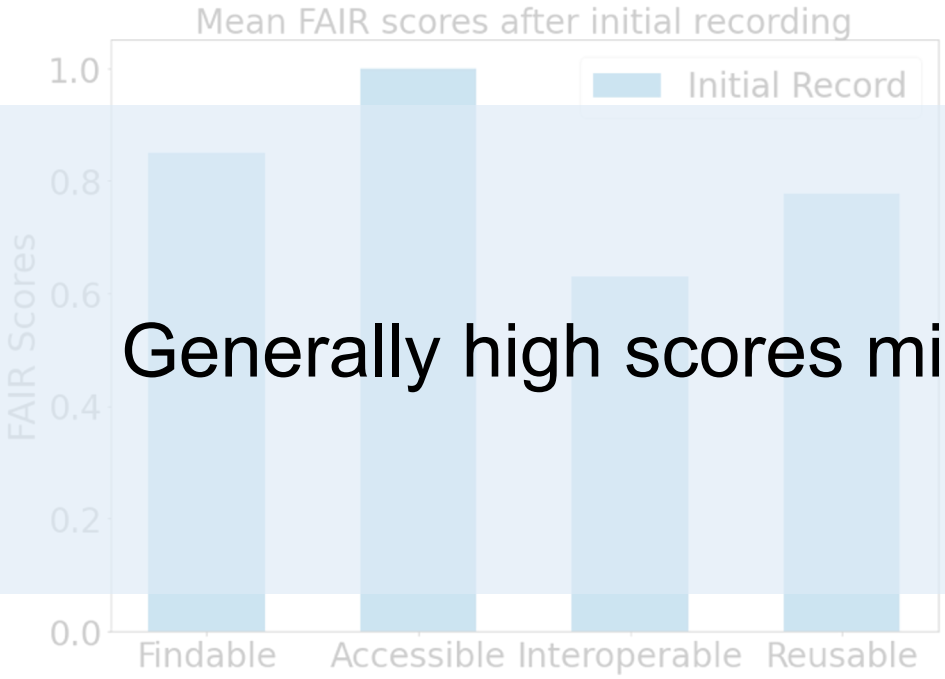
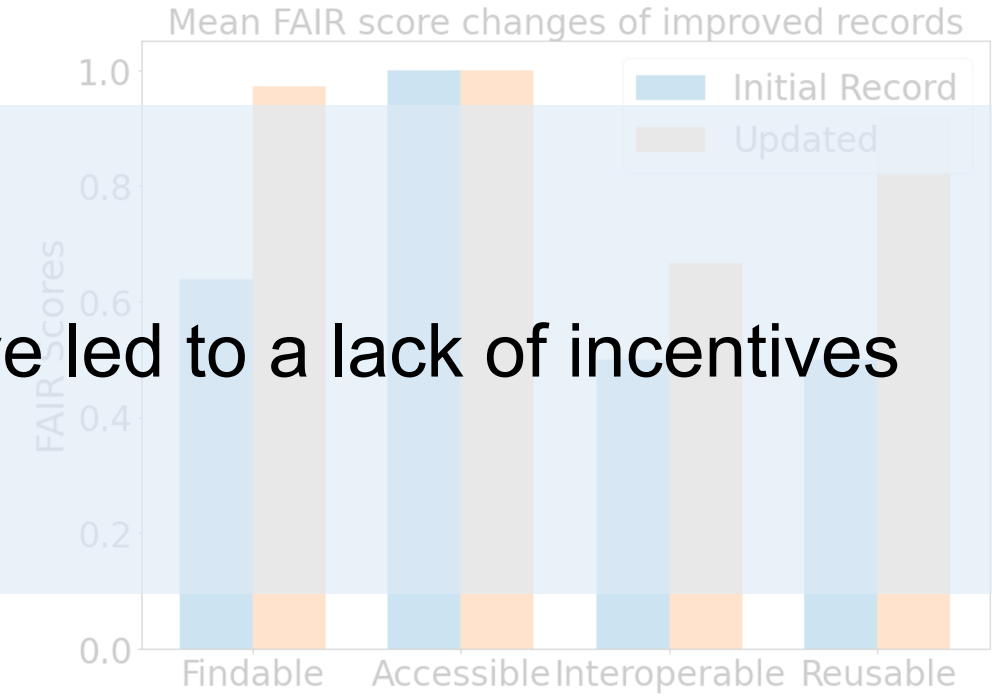
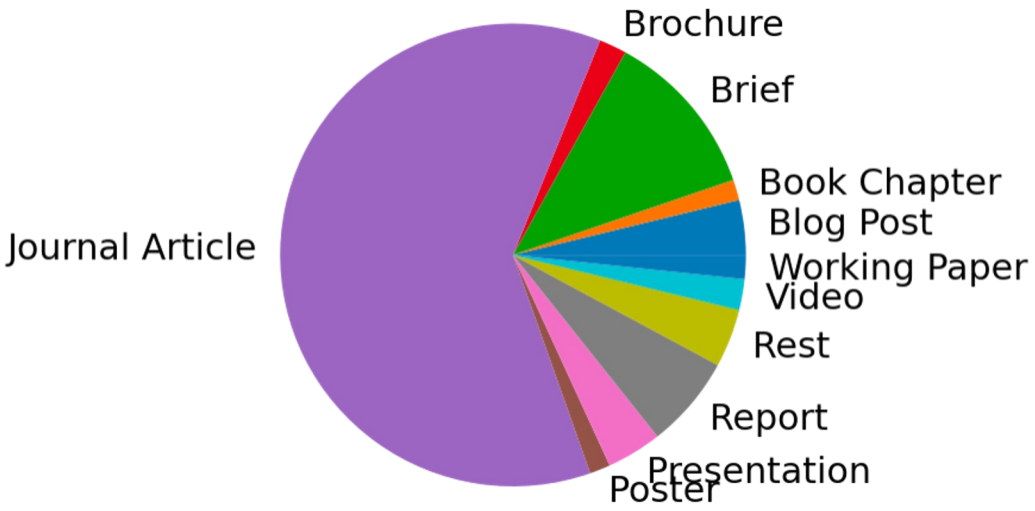


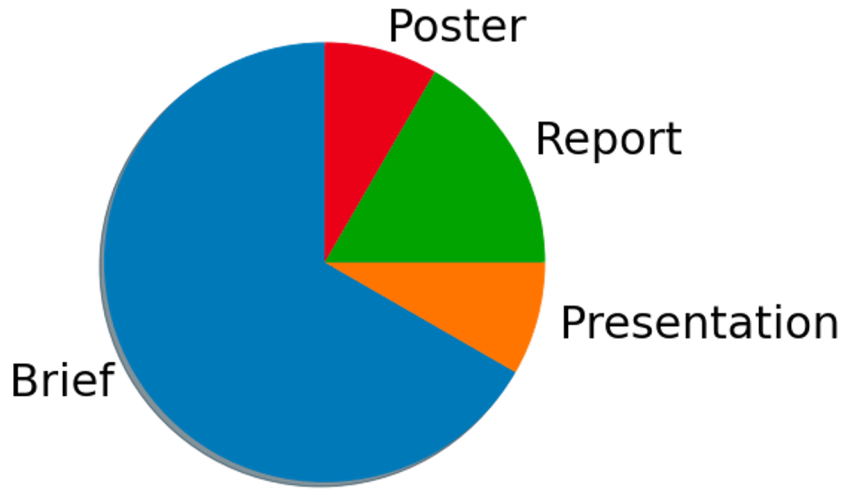


Generally high scores might have led to a lack of incentives

Knowledge product distribution



All records



Improved records

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Survey Design

- Important tool to understand community perception and impact
- Invitation shared with 200 PRMS contributors
- 15 complete responses received (7,5%)

Survey

How many PRMS knowledge products have you reported/co-authored?	Average	Minimum	Maximum
How many knowledge products have you reported yourself on PRMS?	15.93	3.00	30.00

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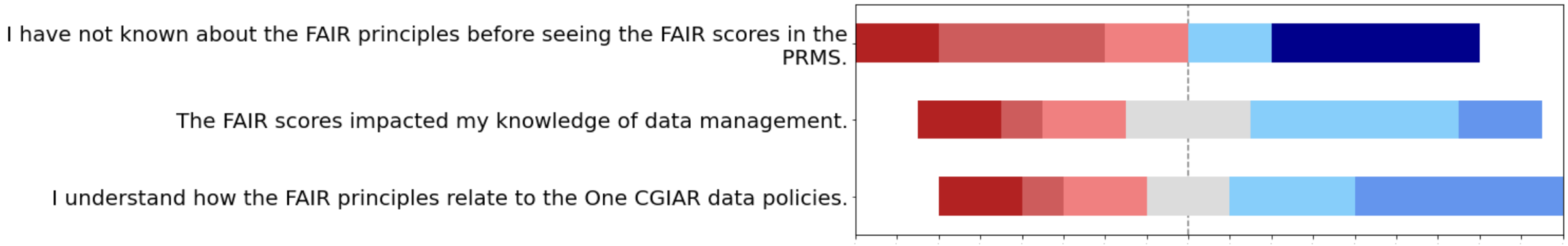
How many knowledge products have you reported yourself on PRMS?	15.93	3.00	30.00
How many knowledge products reported on PRMS have you co-authored	2.14	0.00	19.00

Survey

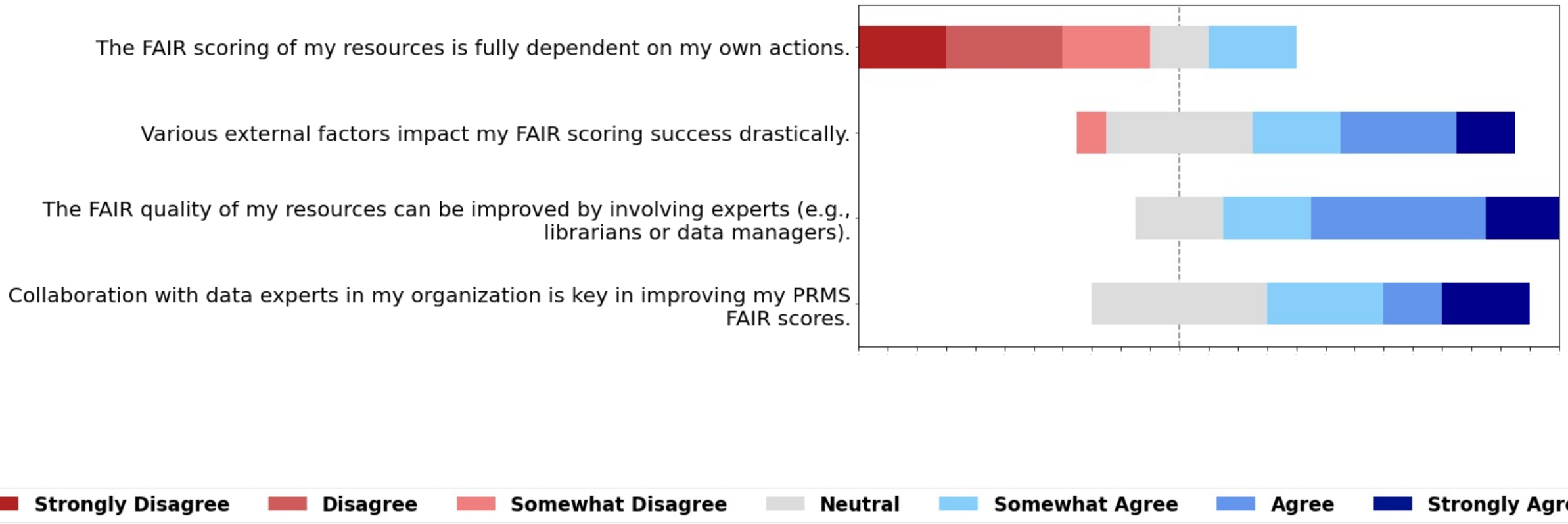
View data: How many knowledge products with FAIR scores have you already viewed in the PRMS?

How many knowledge products with FAIR scores have you already viewed in the...	Average	Minimum	Maximum	Count
Please provide a rough estimate	15.33	0.00	90.00	15

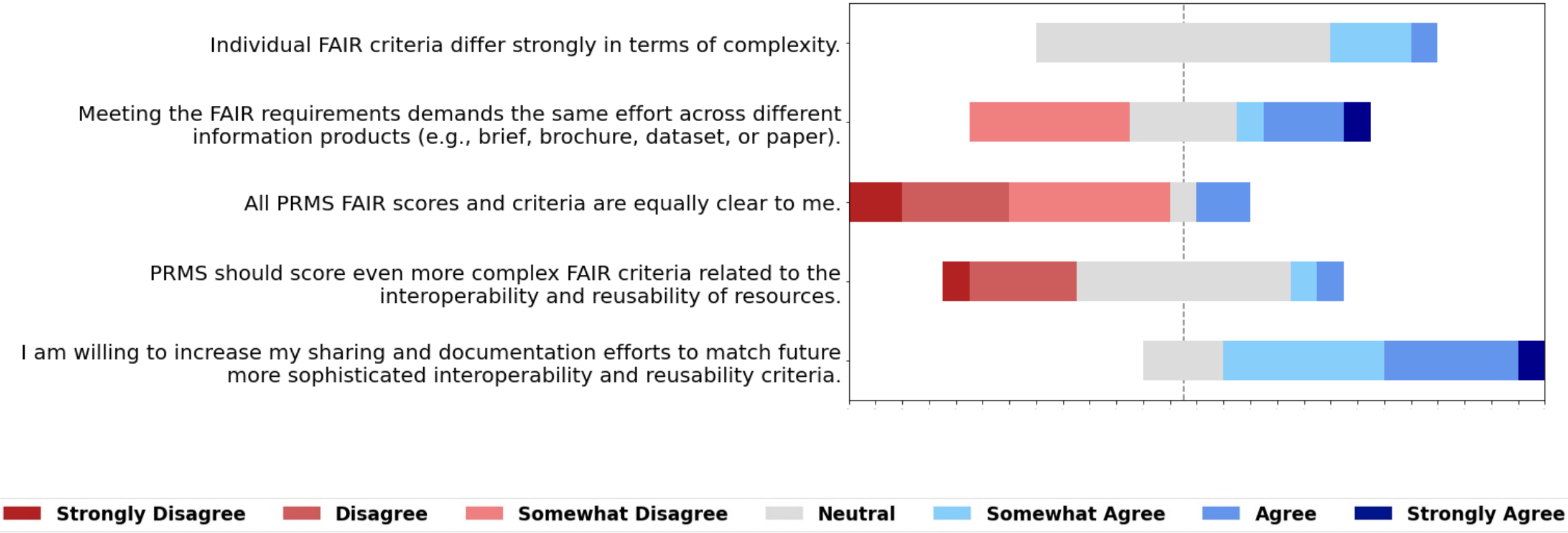
FAIR and Data Management *Knowledge*



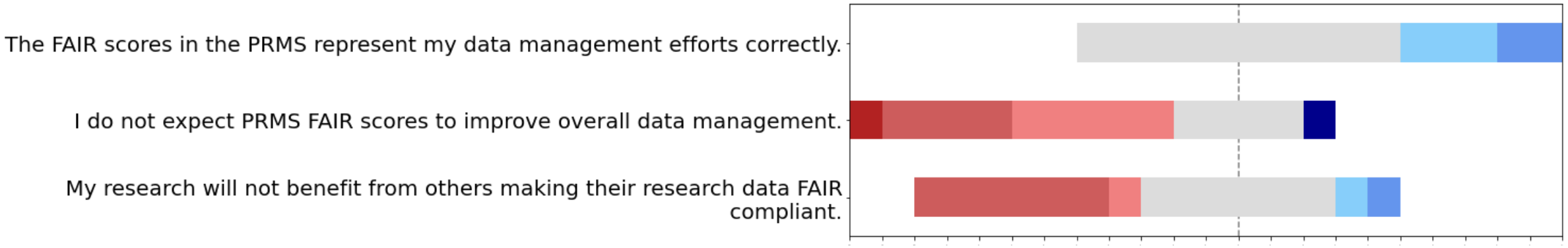
Control over FAIR Scores



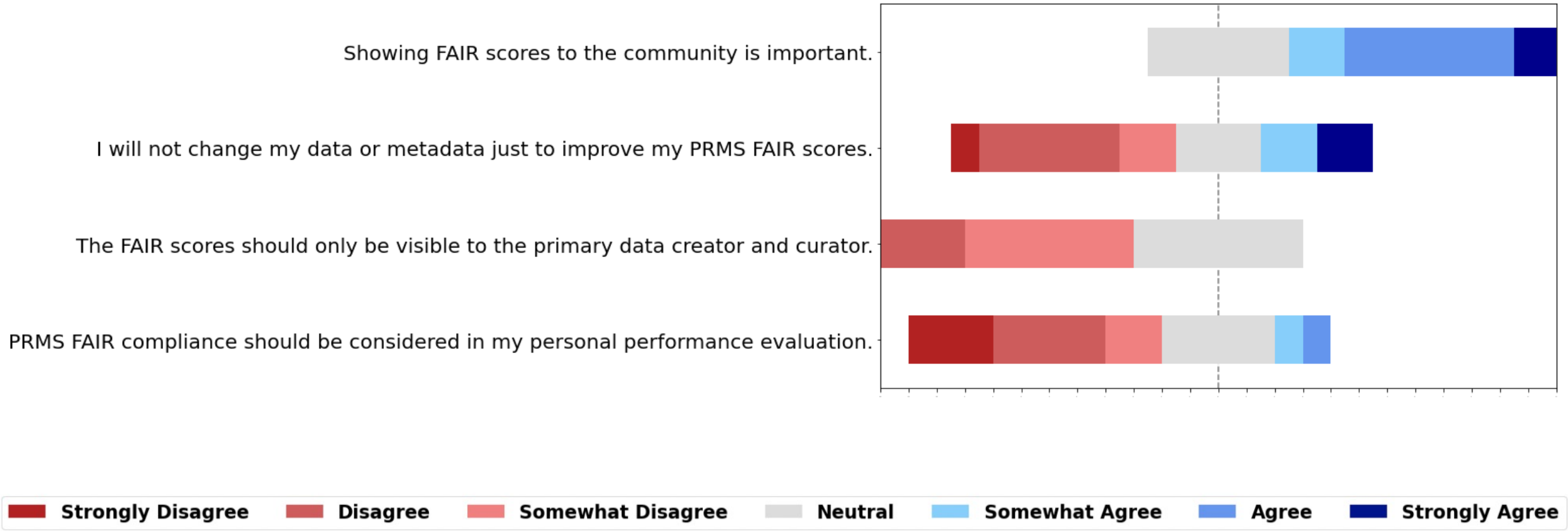
FAIR *Differences* and *Complexity*



Research *Impact*



Transparency



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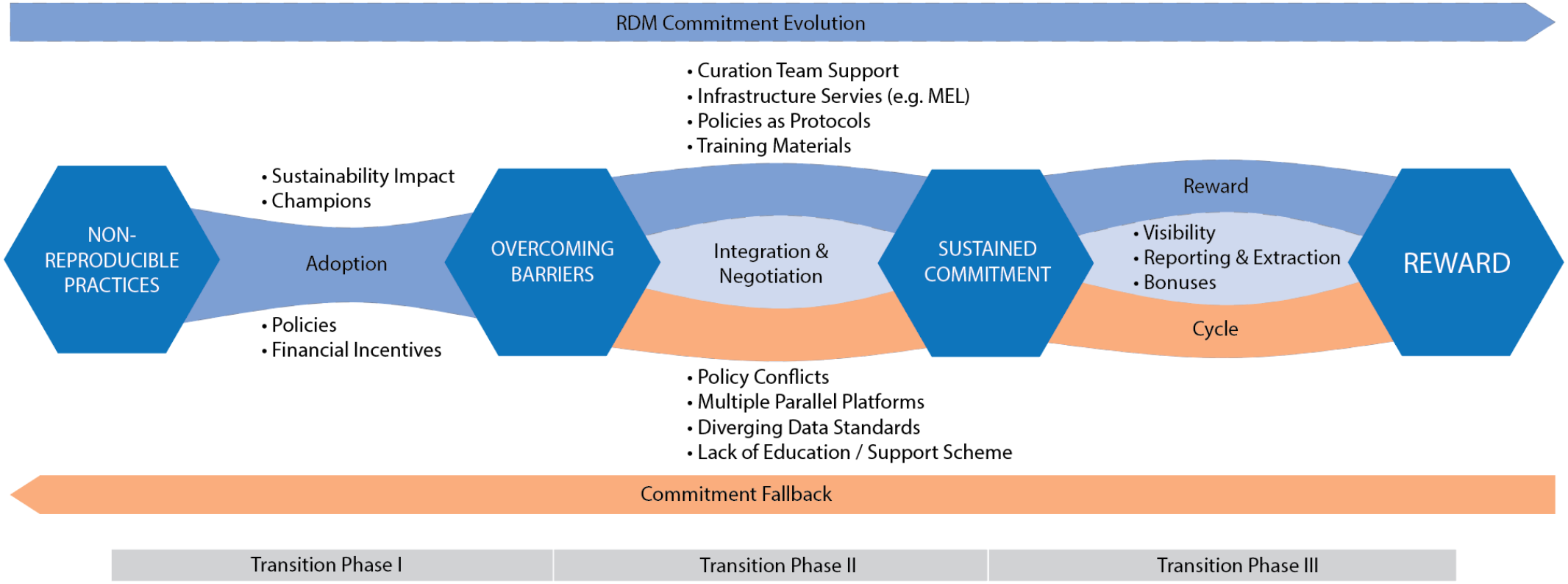
- Further user feedback needed: interviews, focus groups, surveys, …
- Close monitoring of future reporting periods
- Investigate the impact of lower / higher initial FAIR scores
- Explore mechanisms to address more complex FAIR concepts (in particular IR)

Next User-Centered Steps

Reason about findings in the context of related work



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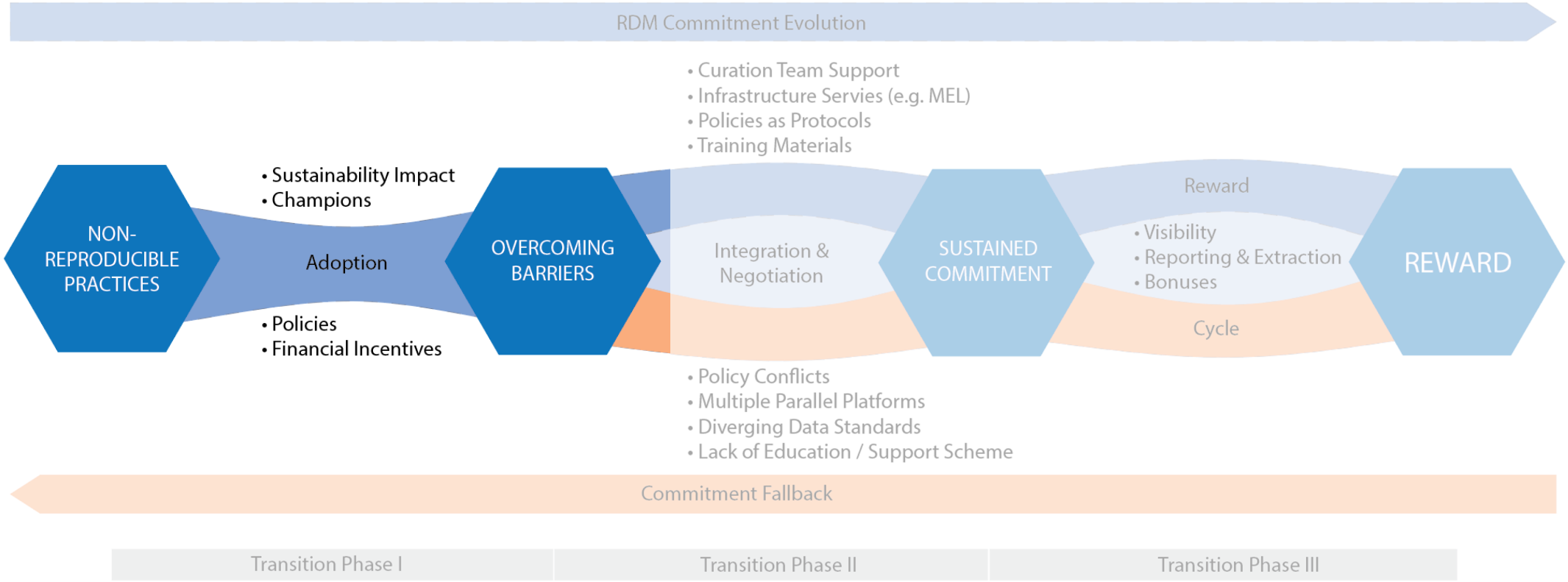

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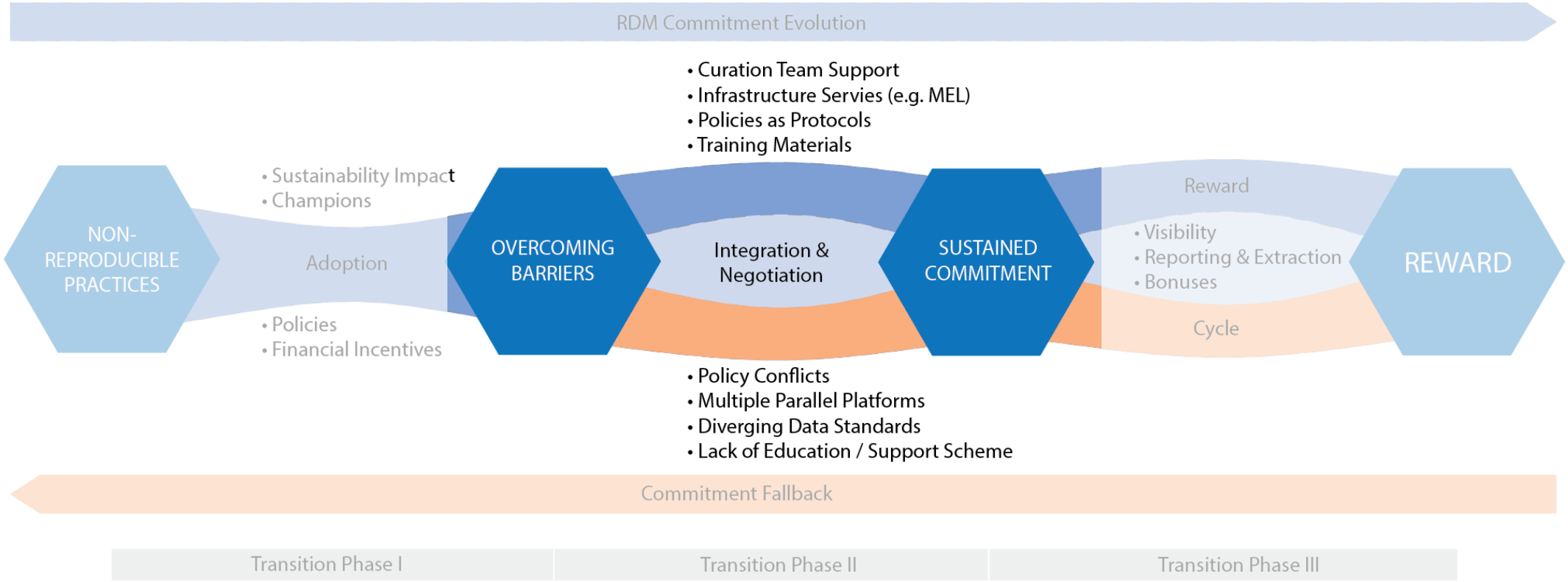

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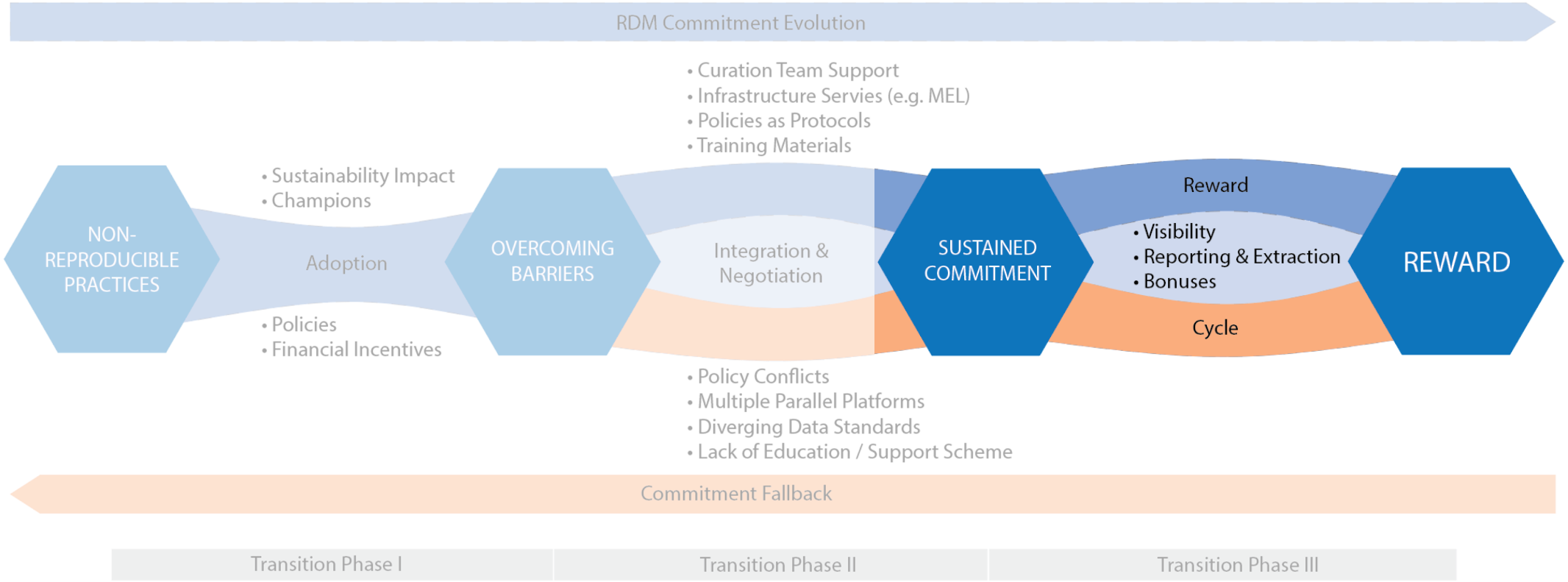

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Reason about findings in the context of related work: **General vs. Tailored Rewards**

Center for Open Science: Open Science Badges

Kidwell, Mallory C., et al. "Badges to acknowledge open practices: A simple, low-cost, effective method for increasing transparency." *PLoS biology* 14.5 (2016): e1002456.

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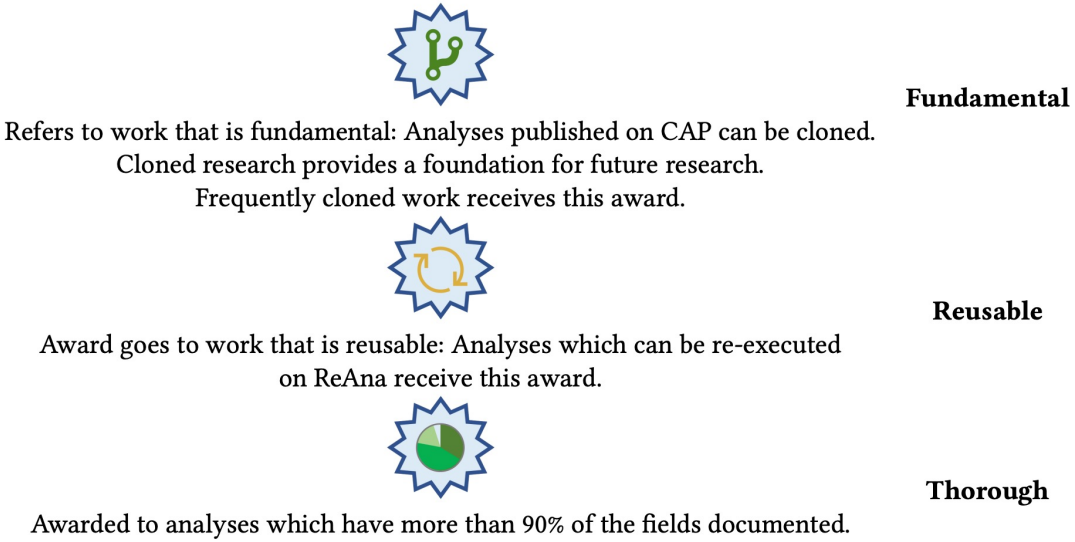

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Tailored Science Badges

Feger, Sebastian Stefan, et al. "Tailored Science Badges: Enabling New Forms of Research Interaction." *Designing Interactive Systems Conference 2021*. 2021.

Conclusion

- We reported on the 1st PRMS reporting period with FAIR scores
- Usage analysis: 39% of records got updated; 3% of records got better FAIR scores
- Survey: the community is willing to improve, but recognizes grand challenges
- Need for further user feedback, improved FAIR scores, and usage monitoring
- Opportunity to connect to related work, e.g. user-centered models and gamification

Thank you