Observing and Negating Matthew Effects in Responsible Research and Innovation Transition

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Key values of Open Science (OS) & Responsible Research and Innovation (RRI)

Uptake of Open Science practices depends on:

- Infrastructure
- Resources
- Training
- Support
- Political will

Access to these advantages isn't equally distributed….

Matthew effects in science

- Robert Merton (*Science*, 1968)
- Successful scientists tend to receive disproportionately high recognition & rewards
- The rich getting richer

- Possible factors: geographical location, institutions, institutional standing, gender, early OS adopters…

Could Open Science & RRI reinforce existing hierarchies and privileges or create new ones?

Open Science: Who is left behind?

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Introducing ON-MERRIT

- H2020 project: October 2019 - March 2022
- Methods: Sociological, bibliometric and computational approaches

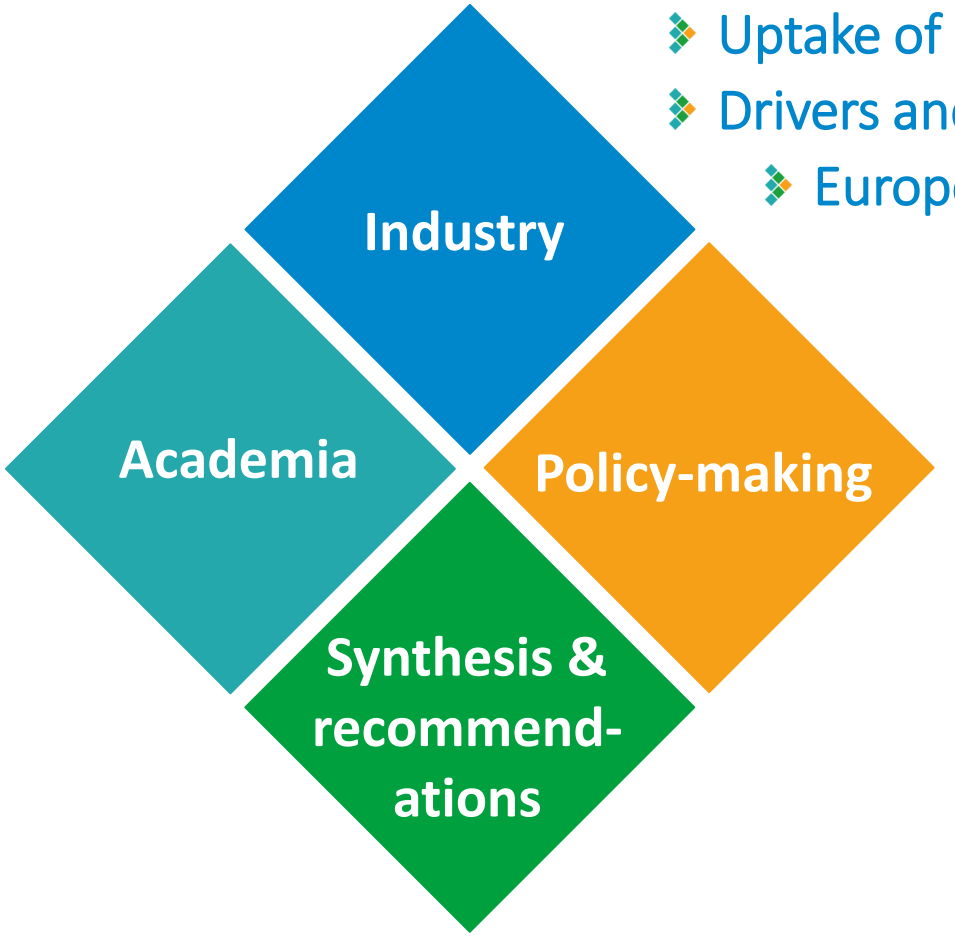
Objectives

- Ensure that Open Science & RRI interventions contribute to a more equitable scientific system
- Distribution of rewards based on merit rather than privilege

Key research questions

Effects of…

- barriers to accessing literature
- OS & RRI practices on career progression
- OS & RRI indicators in promotion policies
- OS & RRI training



- Uptake of OS resources
- Drivers and barriers
  - European patent literature

- Uptake of OS resources
- Drivers and barriers
- With RRI experts & citizen scientists: Reflect on barriers to participate in evidence-gathering

- Effects of traditional vs. potentially new OS & RRI indicators on research practices

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Promotion, Review and Tenure policies

- Sample of seven countries (Austria, Brazil, Germany, India, Portugal, UK, USA)
- Range of indicators, coded manually
  - Gender, citizen science, engagement with public and industry (**impact**), open access, open data, scientific software, journal metrics, citations, **number of publications**, peer review, **pastoral work**, patents
- No mention of open access publications or data, mentions of contribution to software in Brazil, however not scientific software
- https://zenodo.org/record/3874587

Literature review on Open Science in industry

- **Question**: *Is open research data actually being taken up by industry?*
- Key term: absorptive capacity
- Two main barriers
  - Perceived lack of relevance of scientific outputs for innovation in many sectors
  - Lack of information seeking skills amongst employees
- Major benefits of open access to research findings
  - Efficiency gains
  - Enablement
- https://zenodo.org/record/3875018

Open Science in policy making

- **Question**: *How are Open Science outputs used in policy making?*
- Researchers and policy-makers living in different and incompatible worlds
- Policymakers seek information that is timely, relevant, credible, and readily available
  - But lack resources, knowledge, and skills to utilize research
- Policymakers prefer personal networks → access to scientific literature not main concern
- Accessibility versus Acceptability
  - Frequently in tension, because accessibility by removing access barriers ≠ Cognitive Accessibility
- https://zenodo.org/record/3997398

Road ahead

- Academia
  - Survey to assess the impact of Open Science Training
  - Conduct analyses on Microsoft Academic Graph regarding connection between academic performance and the application of Open Science principles
- Industry & Policymaking
  - Interviews and surveys to engage practitioners and gather their opinion

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Thank you!

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