

Data Lifecycles & Non-technical Adoption Barriers



A joint study with Project MatCHMaker

Materials Characterization for Industrial R&D: From Fragmented Data
Towards AI-powered Workflows, 25 June 2026

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EMMC is ...?

EMMC is the only association covering all types of models (physics-based, data-based and AI), characterisation of and digital representations for materials (metadata, ontologies) applied to chemicals and materials at all scales and applications.

Be part of our European community and together with the EMMC you can ...





EMMC SERVICES

- Facilitation
- Formation (Orchestration) of Task Groups
- Dissemination
- Refinement of Exploitation outcomes
- Guidance for data documentation
- Support for Training Provision



EMMC and Project MatCHMaker

- We provided a **clustering service** that comprises its sister projects, funded under HORIZON-CL4-2022-RESILIENCE-01-19, Advanced materials modelling and characterisation (RIA)
- A **first workshop** (online) highlighted the common goals these projects have with regards to Advances in Characterisation Methods and Computational Modelling. (workshop report)*^Δ
- A **second workshop** (in Vienna) – Data Life Cycles in the World of Materials Modelling and Characterisation (workshop report)*^Δ
- **Supported a study** on Non-Technical Barriers to Data Management (co-write white paper)*^Δ
- Co-Organiser of **exploitation workshop** in Paris (workshop report)*

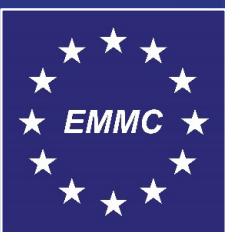


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* All our reports
comprise all
relevant
stakeholders
and have a DOI

^Δ involved
beneficiaries
from





Advances in Characterisation Methods and Computational Modelling

Conclusions and Outlook

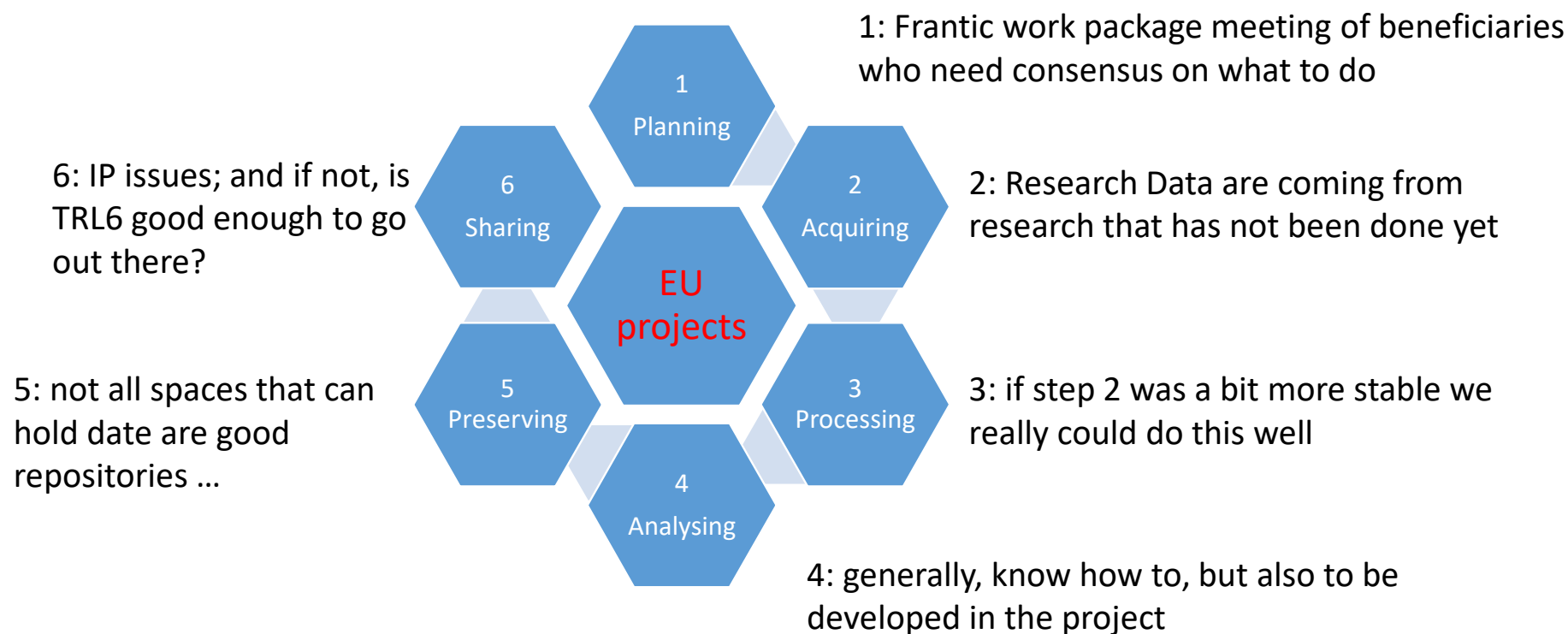
- Workflows comprising both characterisation and modelling **data** are key to develop advanced materials
- ML and AI play a big role in aiding the human-in-the-loop with uncovering knowledge distributed in the available **data**
- Common **data** formats
- Make **data** available to enlarge the learning space for ML/AI

Data seems to be a common thing ...

TO DO : clearly demonstrate value, so industry may be open to adopt new workflows → needs pursuing



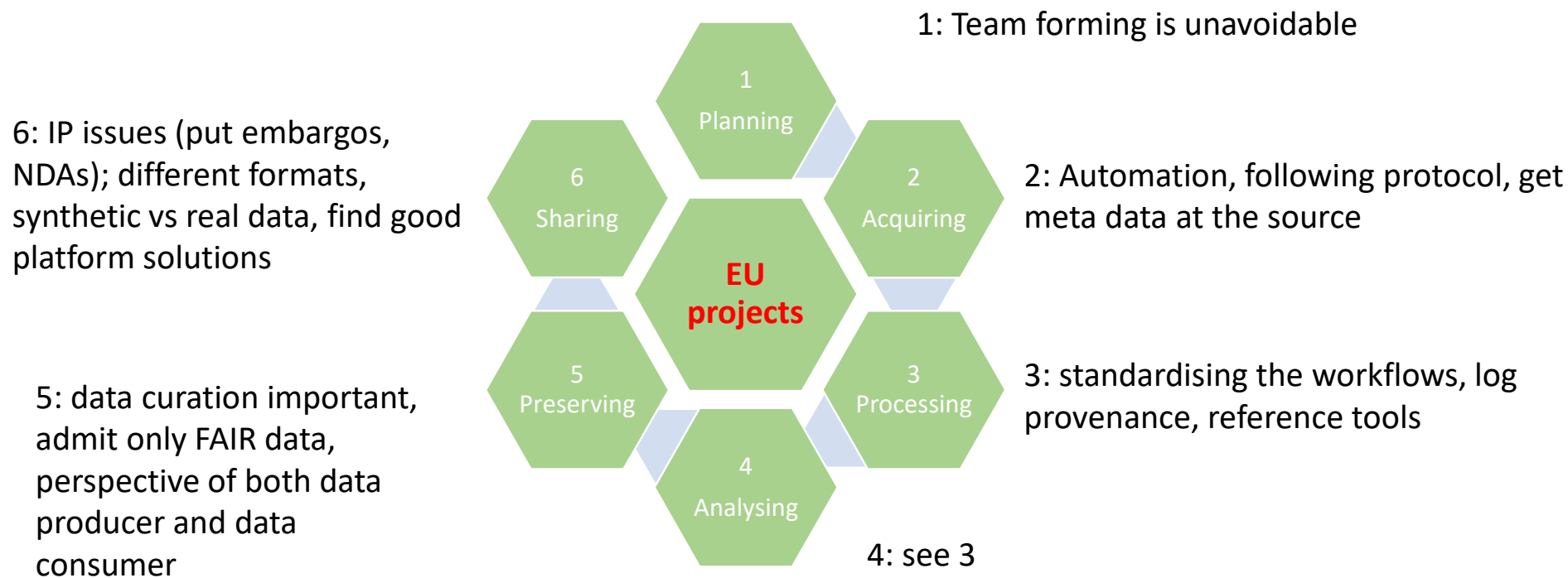
Data Lifecycles in the World of Materials Modelling and Characterisation



Adapted from <https://nfdi-matwerk.de/solutions/data-life-cycle>



Some remedies ... (let's be constructive and ignore pain points for a minute ...)



Adapted from <https://nfdi-matwerk.de/solutions/data-life-cycle>



We can do this, right ...?

- There is training
- There are new jobs such as data stewards, data shepherds, data engineers
- There are SMEs offering services
- Several EU and consultant's reports talk about benefits ...



What makes us indecisive? Why are we not doing it grand-scale? Especially in EU projects that actually should share data/knowledge ?



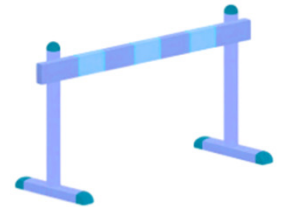
Non-Technical Barriers to Data Management (DM)

- Lead: Alexandre Ouzia, Heidelberg Materials (MatCHMaker)
- 8 interviews with participants from EU projects, who have expertise in DM, and shared their experience (plus 13 online survey results)
- Basically, we have 8 use cases on DM!
- Chatham House rule: we use the information, but do not assign it to an individual



The Barriers

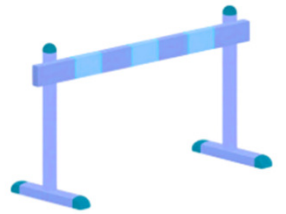
- Time: needs to be allocated
- The DMP is an artifact: if nobody checks on its implementation, ...
- Lack of “double-hatted people”: Domain expert AND keen on DM
- Sub Culture: we’ve got DM, why change?





More Barriers

- The Value: ... comes after the project ... but we moved on ...
- The reporting cascade is too slow: Don't wait for the review meetings ...
- Ontologies and data schema: arrive too late (hopefully a thing of the past now)
- Metadata: are not captured at the source ... so what was this all about?





How to overcome the barriers?

- Data steward budget line in every Horizon Europe Project
- DMP a living document
- Data steward offers training and 1:1 sessions for every researcher who needs them.
- Use pre-existing data schema or deliver early
- Transition domain experts → data steward rather data steward → domain expert





How to overcome the barriers?

- Agile, not waterfall project management
- Data infrastructure funding beyond project
- Support metadata capture tools for each instrument and/or software tool
- Recognise data contribution for researchers
- Consider data outcomes as part of project results (EU side)





How to get involved?

- In your next EU, bi-, multi-lateral project have a go on DM
- Support new “Data-roles”
- Support authorships beyond peer-reviewed papers
- Think “interoperability” (even if your data are I.P.)
- Attend workshops, just like this one!



Look into MaterialsCommons -Federated
Digital Infrastructure for European
Advanced Materials Research and
Development

Grant agreement ID:
101293545

<https://www.materialscommons.eu/>

Thank you!



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