

# AutoPeroSol - Project

Towards automatic data management and a common ontology  
for perovskite solar cell device data (24 M)



Eva Unger, Thomas Unold

Helmholtz Zentrum Berlin für Materialien und Energie

Ulrich W. Paetzold - Karlsruhe Institute of Technology

Jens Hauch – Helmholtz-Institut Erlangen-Nürnberg



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In the Helmholtz Association, 3 centers (HZB, KIT and FZJ) and 1 Institute (HI-ERN) are involved in Photovoltaics research



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Together, we formulated ambitious R&D goals for PV technology development

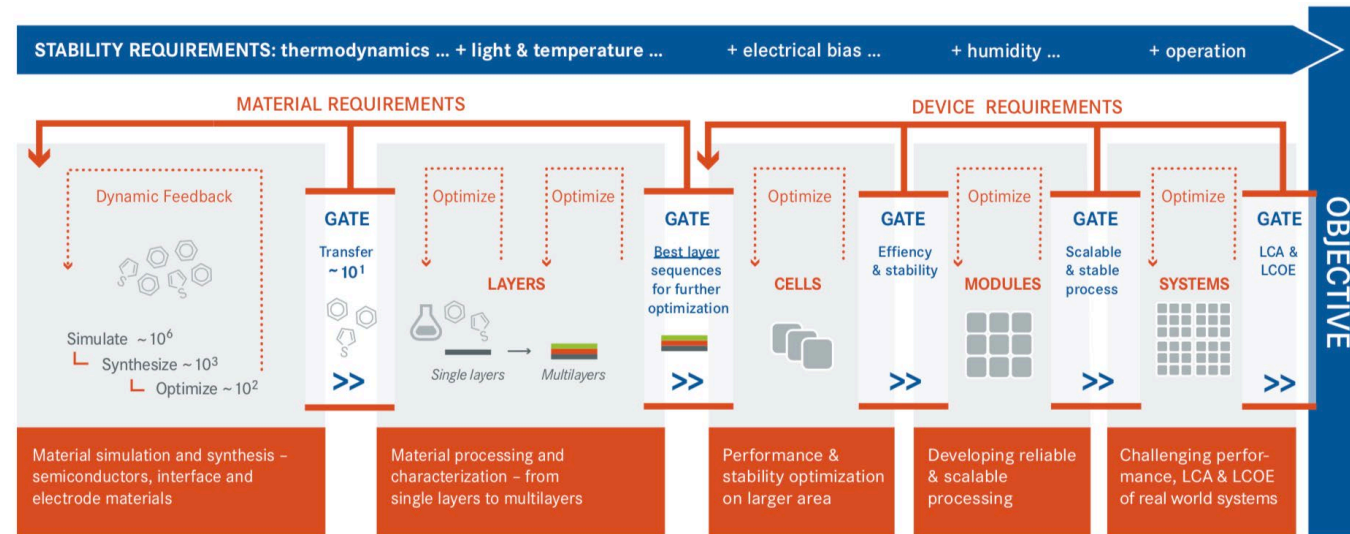


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Aim to develop next generation multi-junction solar cell devices  
from TRL\* 0 – 6, from new materials discovery to larger area prototype validation



We follow a stage-gate process using key performance indicators to determine which materials and devices to take to the next \*technology readiness level...



(Image from POFIV strategy of MTET Topic 1 program)



## BACKGROUND: PEROVSKITE LITERATURE DATABASE PROJECT

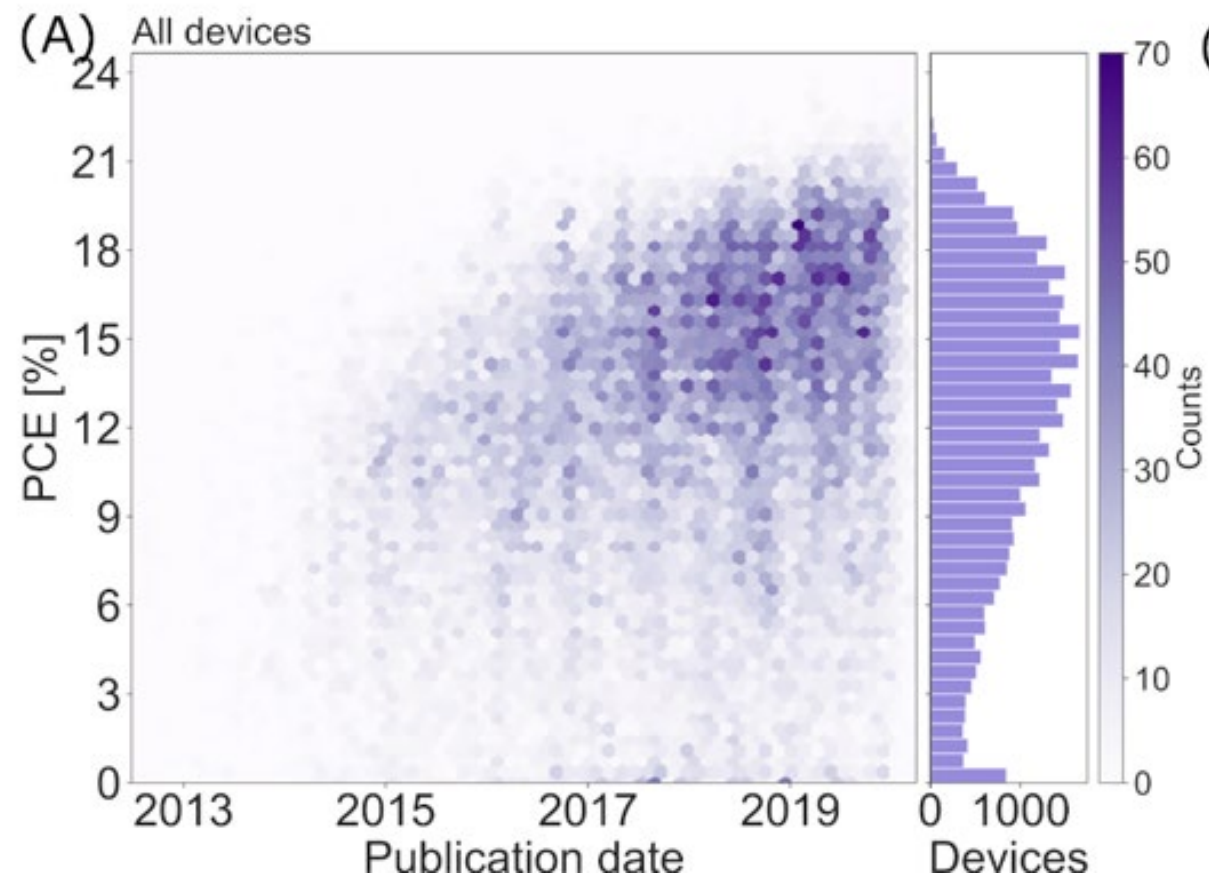
We have created a "literature database" capturing data from ca 40000 solar cell devices published in perovskite solar cell research

Large collaboration of > 100 scientists

Encourage community to upload data

Database will be online in the next months

Experience in (the challenges) in collecting data according to defined identifiers from a myriad of different publications.



The Perovskite Database Project: Releasing the Power of the Crowd with FAIR Data Management, **T. Jesper Jacobson** at al., submitted

# AutoPeroSol - PROJECT OVERVIEW

This HMC project will create an **automated data flow** to facilitate data and sample sharing among partners and collaborations

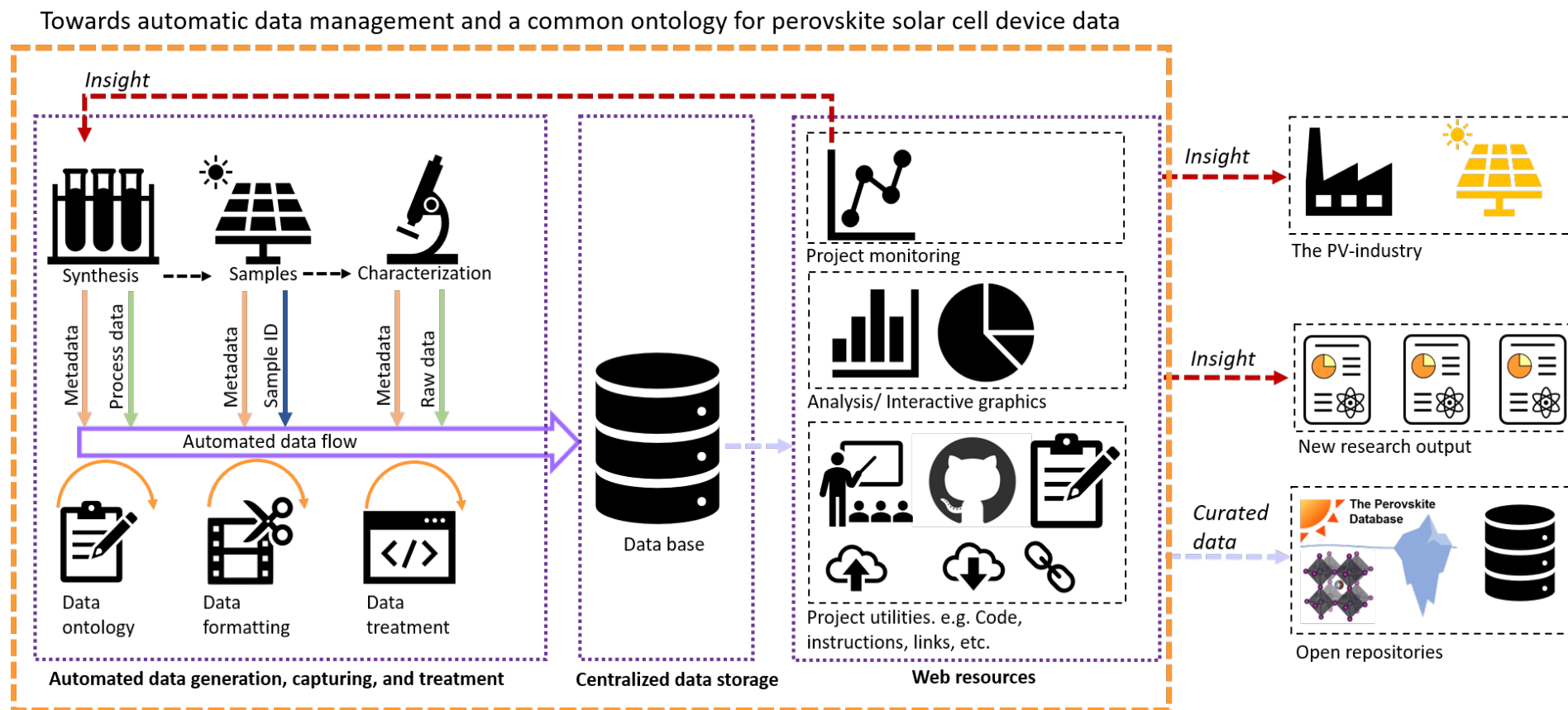
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WP2: Procedures and software enabling simple capture and storage of metadata

WP3: Automated procedures for data treatment

WP4: Centralized data storage solution

WP5: Analysis tools



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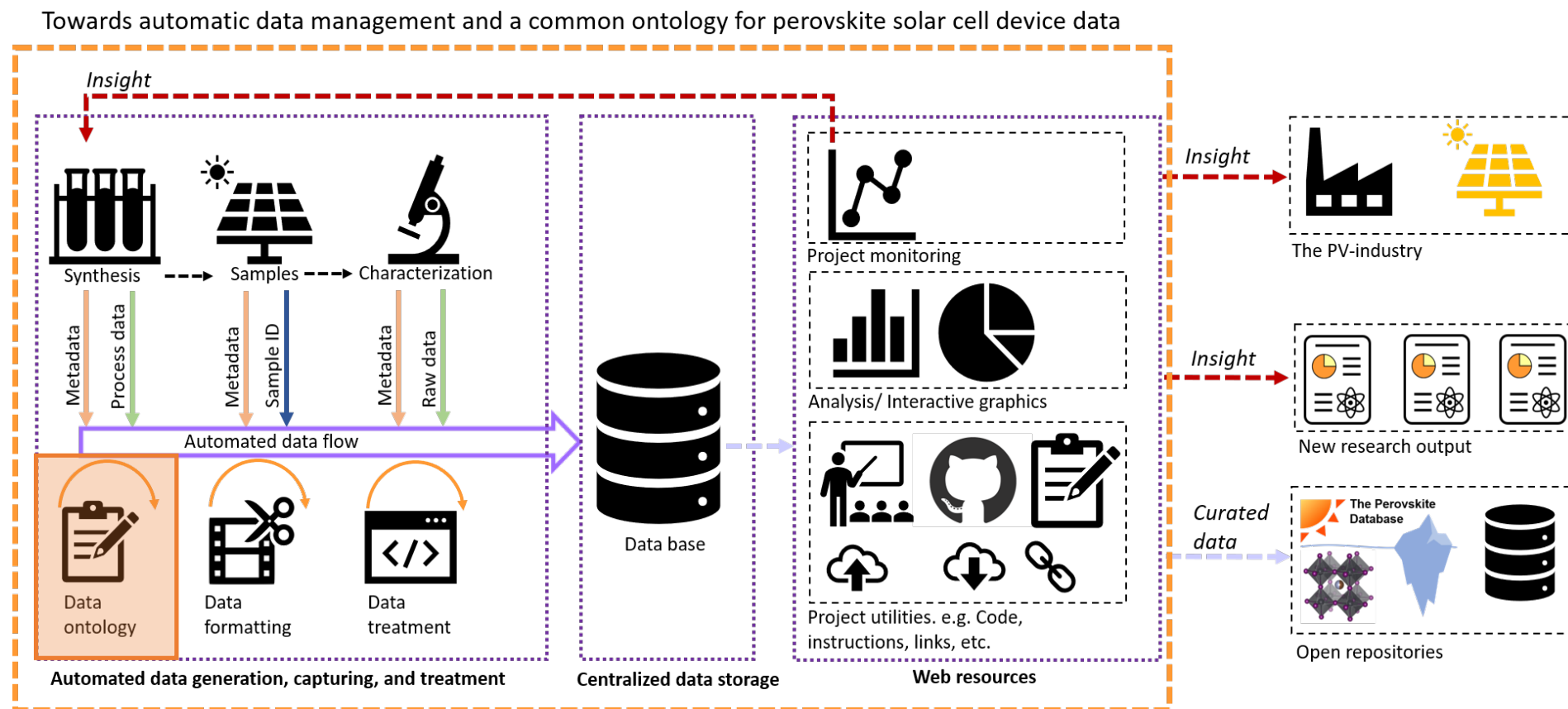
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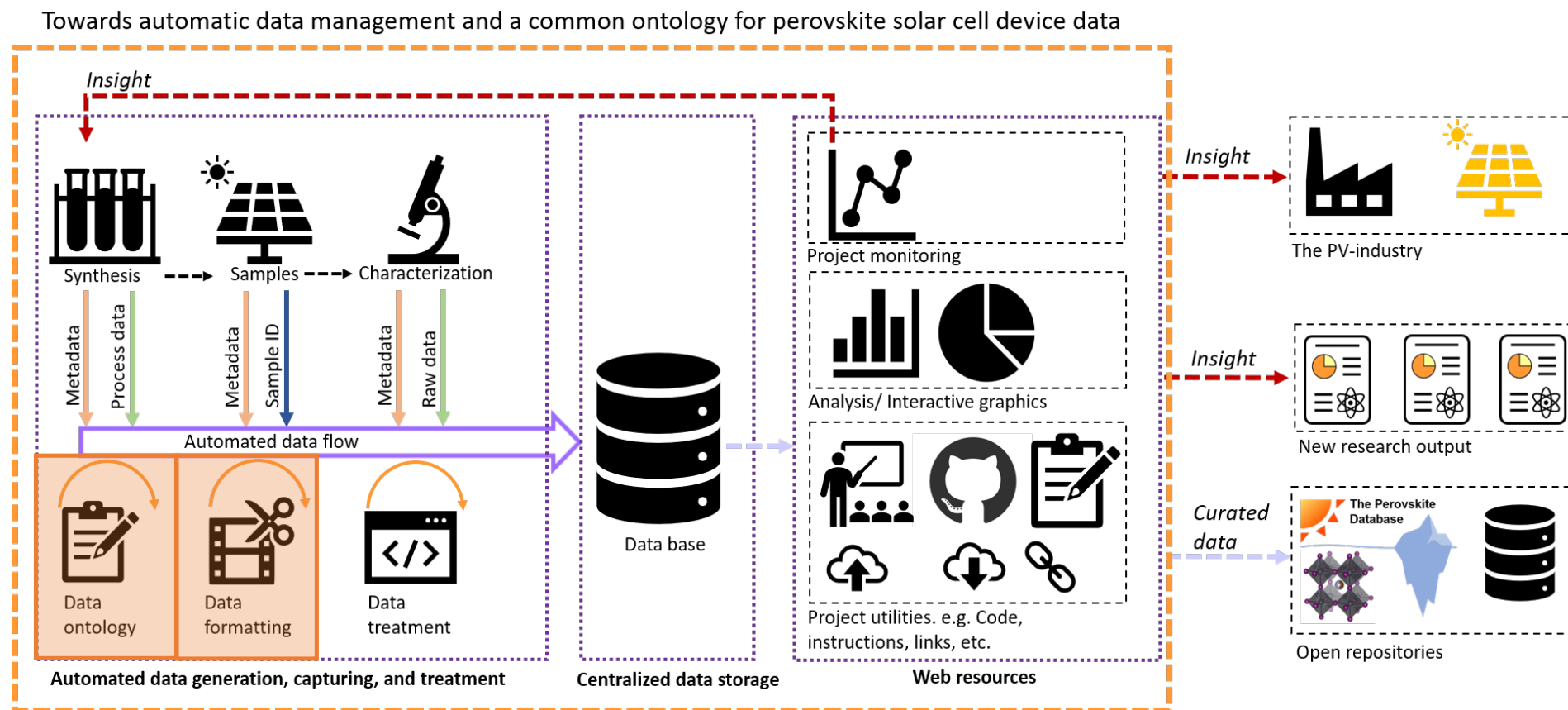
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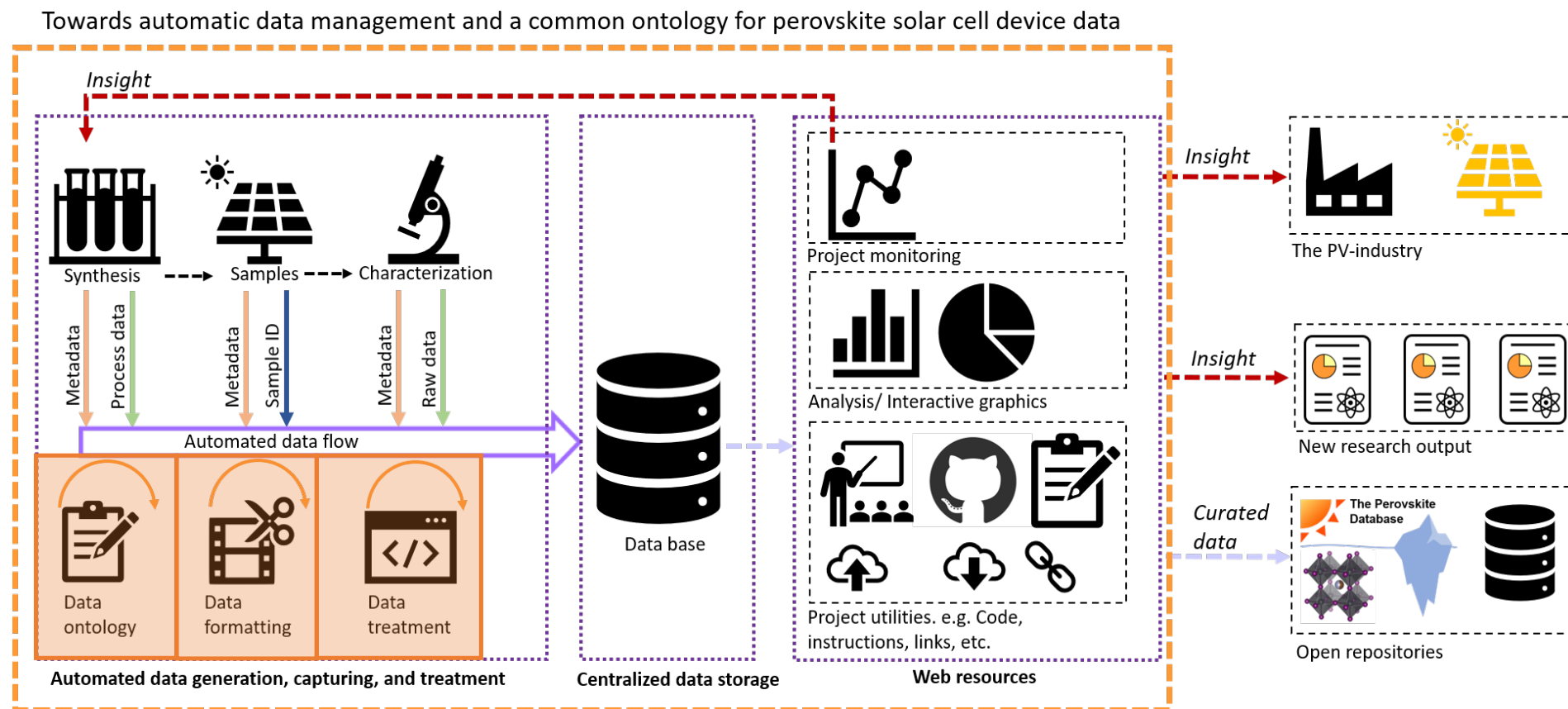
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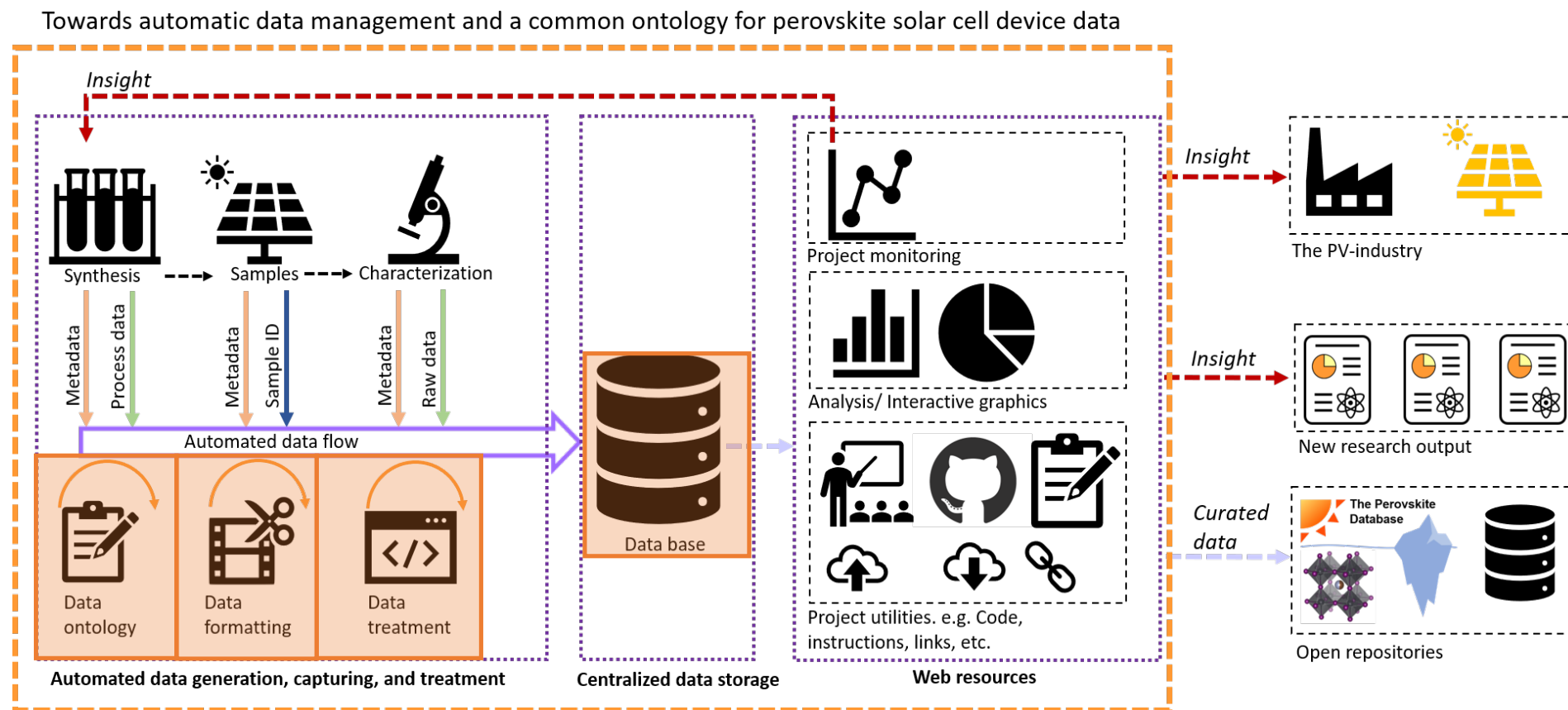
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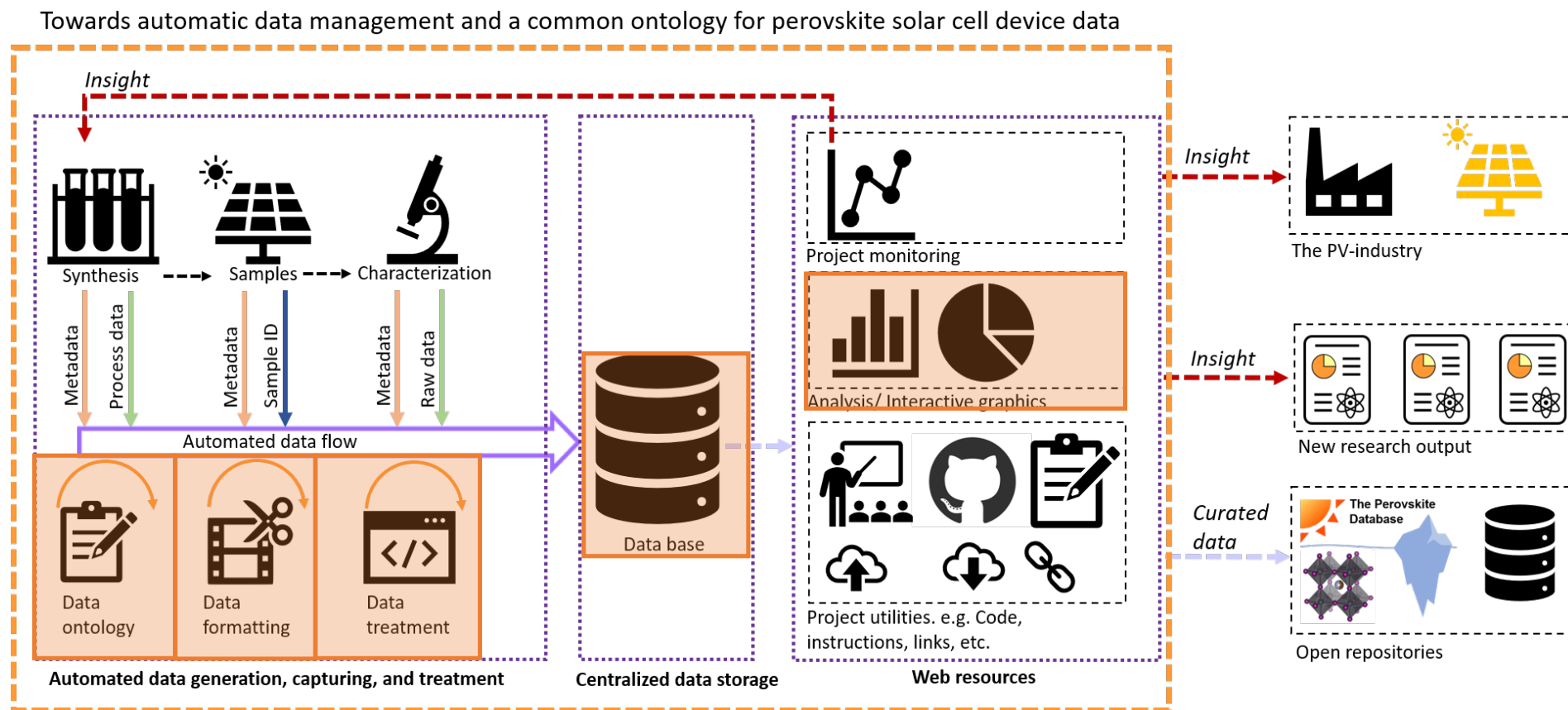
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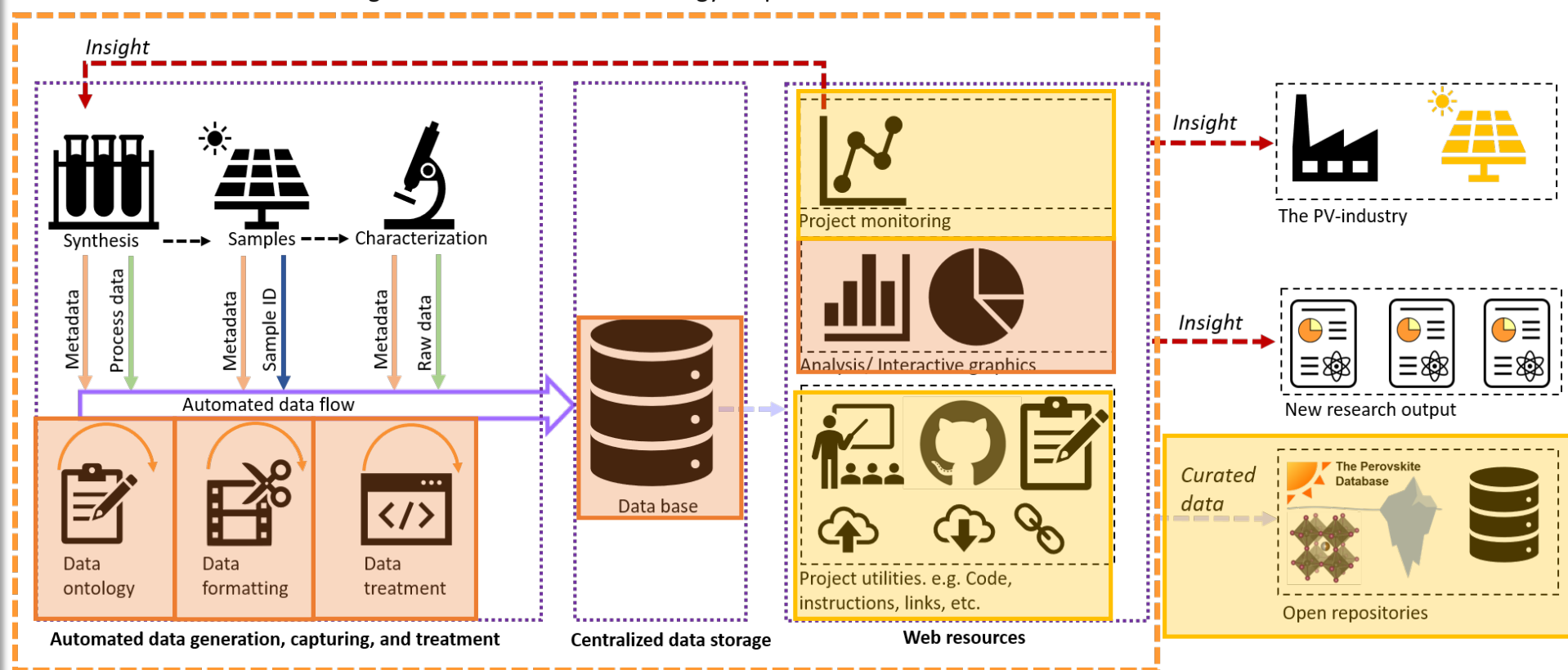
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# AutoPeroSol - PROJECT DELIVERABLES

- Ontology for metadata for single junction cells
- Ontology for metadata for tandem cells
- Procedures for automated metadata generation and capturing
- Software for linking metadata and measurement data
- Code for automatic data treatment
- Linking to the perovskite database project
- Centralised data storage
- Web page and interactive graphics
- Github repository

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# AutoPeroSol – HMC support and linkage

How can HMC support your project (infrastructure, tools, ...) to be successful?

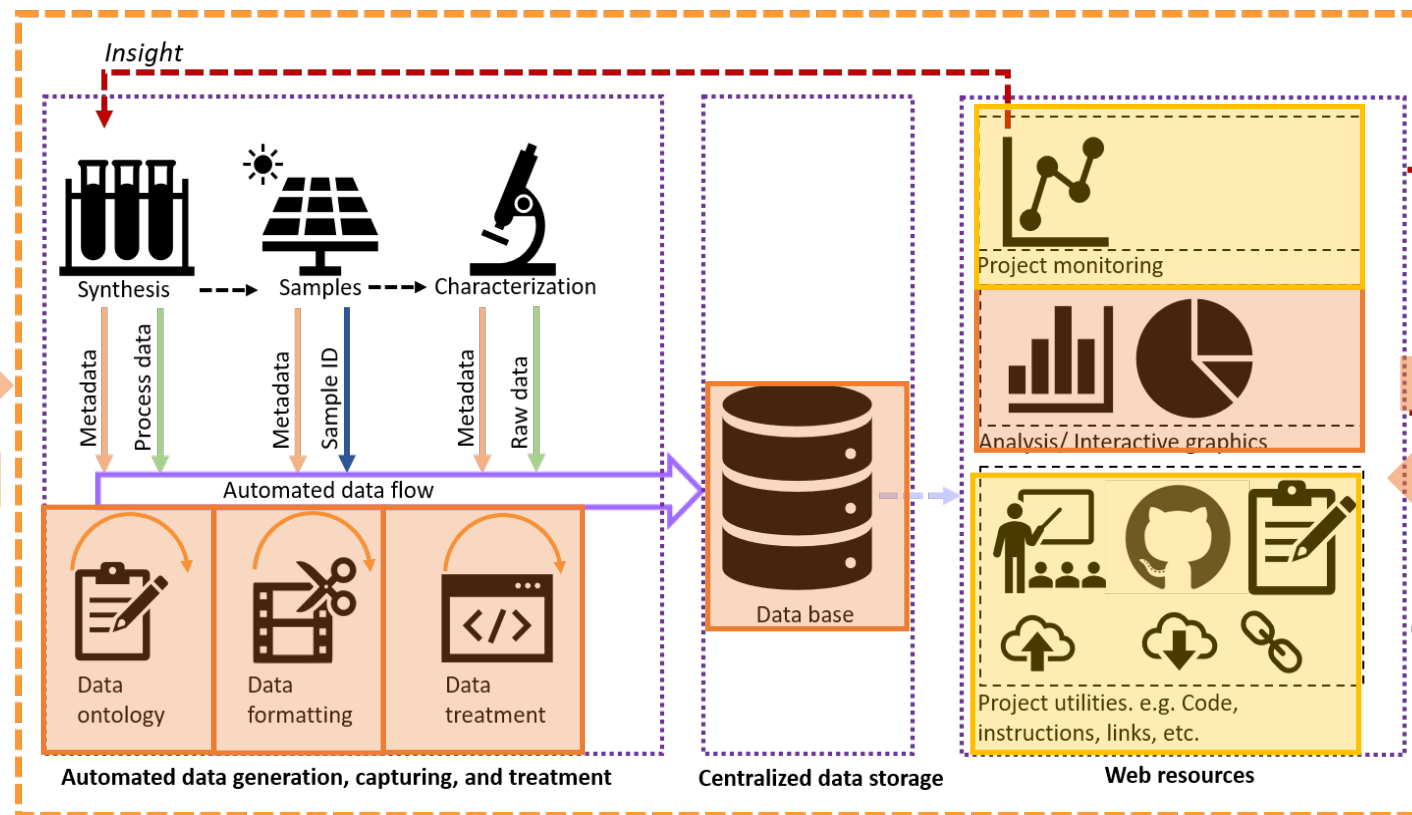
Where do you see the linkage to HMC and how do you plan to integrate your project results?

## Advice

during initiation and operation of the project

- Creating a unified data ontology (experience from other fields)
- Software solutions
- Centralized data storage
- Feedback during project duration to ensure maximum possible beneficial outcome of project

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## Assistance

during dissemination:

- Communicating AutoPeroSols outcomes
- Help ensure utilization of infrastructure created
- Align efforts with related activities within Helmholtz and overall HMC strategy