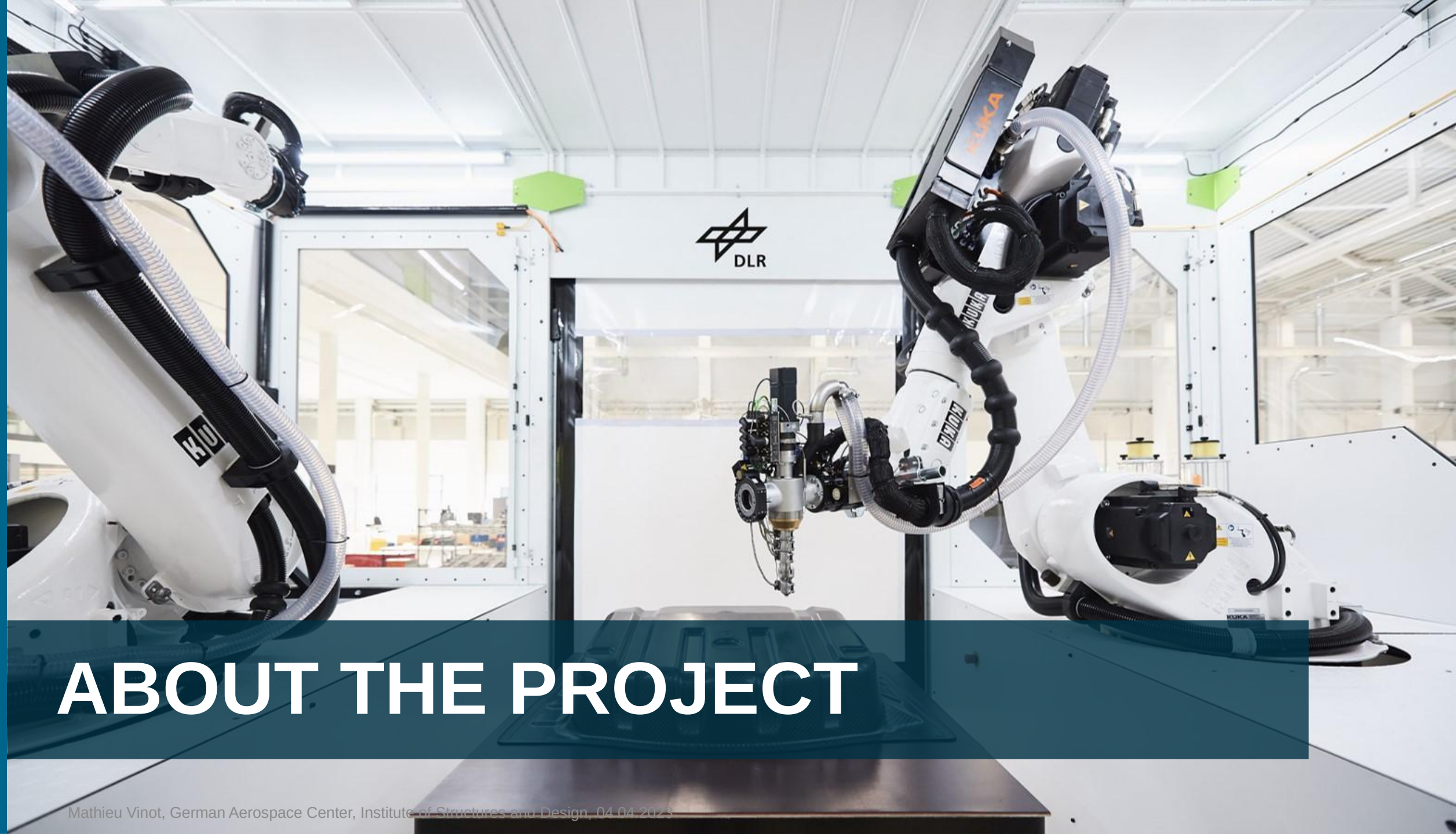
HMC WELCOME MEETING

MEMAS - Metadata **E**nriched **M**anufacturing data for **A**utomated **S**imulation

Mathieu Vinot, German Aerospace Center, Institute of Structures and Design, 04.04.2023

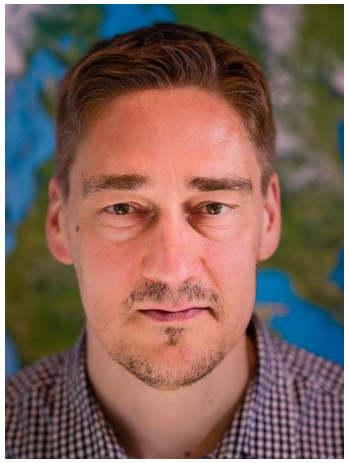


ABOUT THE PROJECT

Project partners

- DLR BT-SIN (aeronautic): Mathieu Vinot
- DLR BT-AQP (aeronautic): Roland Glück
- DLR FK-FLK (automotive): Nicolas Unger, Timo Huse, Pradnil Kamble

Mathieu Vinot



Roland Glück

Nicolas Unger

Timo Huse

Pradnil Kamble

Project goals

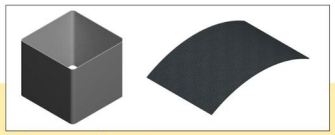
1. Supporting manufacturing processes by predicting the quality of the structure and its load-bearing capacity directly during/after production
2. Storing sustainably manufacturing data for further analysis and correlation between load-bearing capacity and defects

Proposed solution

- Development of digital twins for 3D-printed and tape-layed composite parts
- Development of a metadata based simulation framework (FEM)
- Validation of the tool through mechanical testing

Project structure

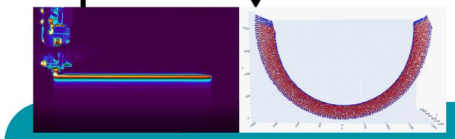

Manufacture parts


Manufacture coupon specimens


Mechanical testing

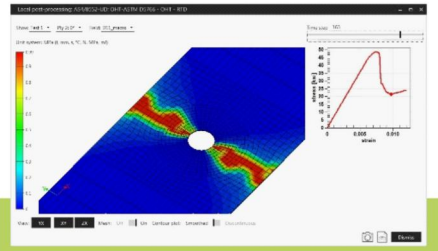
Capture coupon data

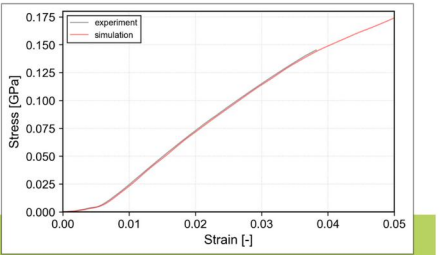
Capture test data


Capture manufacturing data

Provenance
FDO
RDM
Semantic
Custom

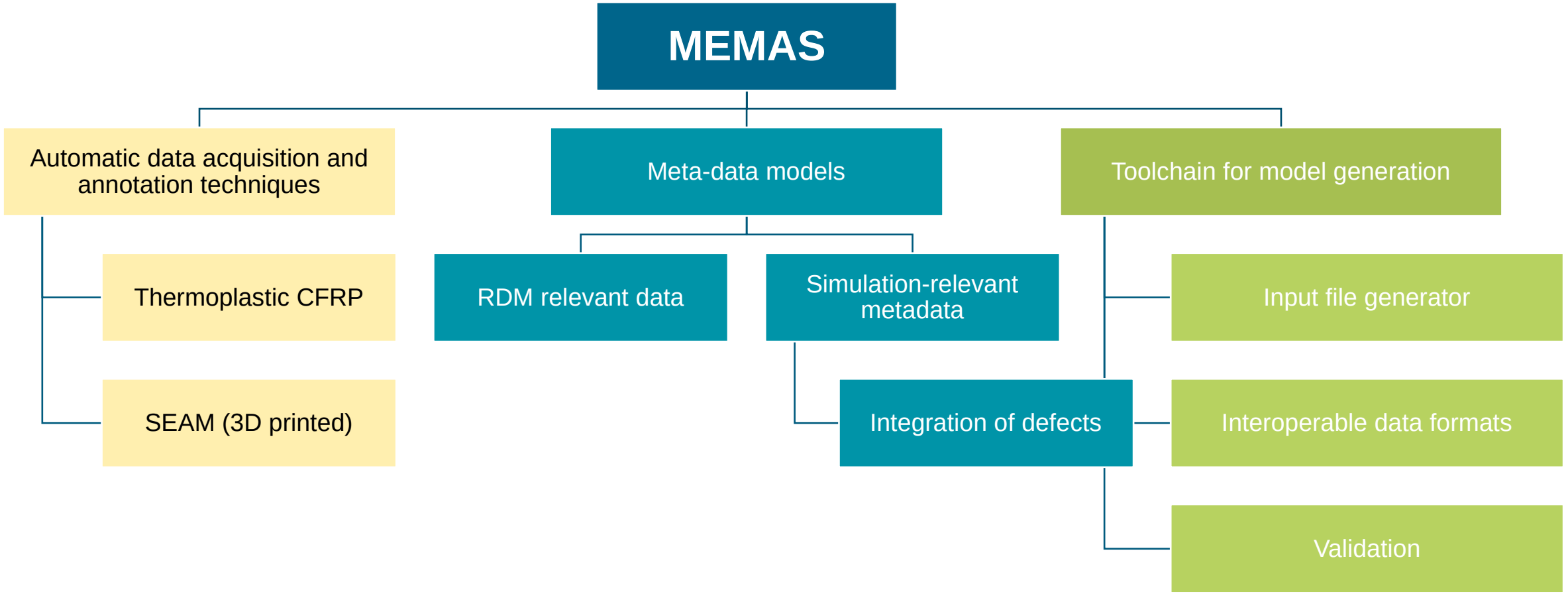
Annotate using HMC profile


Build FE simulation automatically



Validate simulation approach

Work packages



INTERACTION WITH THE HMC

Link to the Helmholtz Metadata Community

How MEMAS can benefit from the HMC

- Get information about best practices and already made experiences in the field of metadata
- Exchange events with experts from this field

How the HMC can benefit from MEMAS

- Support interdisciplinary cooperation in the field of manufacturing
- Couple research on metadata to applied research at DLR BT and DLR FK
- Open access publication of project results and developed tools (i.e. Zenodo)

Imprint

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