



# Materials Ontology Workshop

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# e-Xstream activities

- Multi-scale material modeling using continuum models
  - *Fed by material data and meta-data coming from :*
    - Experimental measurements.
    - Virtual process simulation.
  - *Feeding structural simulation of parts and assemblies under in service conditions.*
  - *Calibrated on :*
    - Experimental material data
    - Virtual material data (e.g. reduced order models)
  - *Storing related data and meta-data in database.*

# e-Xstream activities

- Material data and process management :
  - *Repositories of experimentally measured and simulated material data and meta-data.*
  - *Self generated and third-parties data.*
  - *Life cycle management (traceability, statistics, coverage,...).*
  - *Support to data-driven modeling.*

*Thus requiring taxonomy and ontologies in between experimental and virtual material data related to continuum models for process, material and structural simulations.*

# On-going related projects

- Data-driven methodologies :
  - *Deep learning algorithms for highly complex phenomena taking place at different scales:*
    - Trained both on experimental and virtual data.
    - Predicting material behavior replacing classical material relations from continuum mechanics.
- Link with discrete models :
  - *Predicting material properties to be used in continuum models.*
- VMAP project on “A new Interface Standard for Integrated Virtual Material Modelling in Manufacturing Industry “ (see <https://itea3.org/project/vmap.html>).
  - *In continuation of participation to ICMEg CSA project (<http://www.icmeg.eu/project.info/>)*