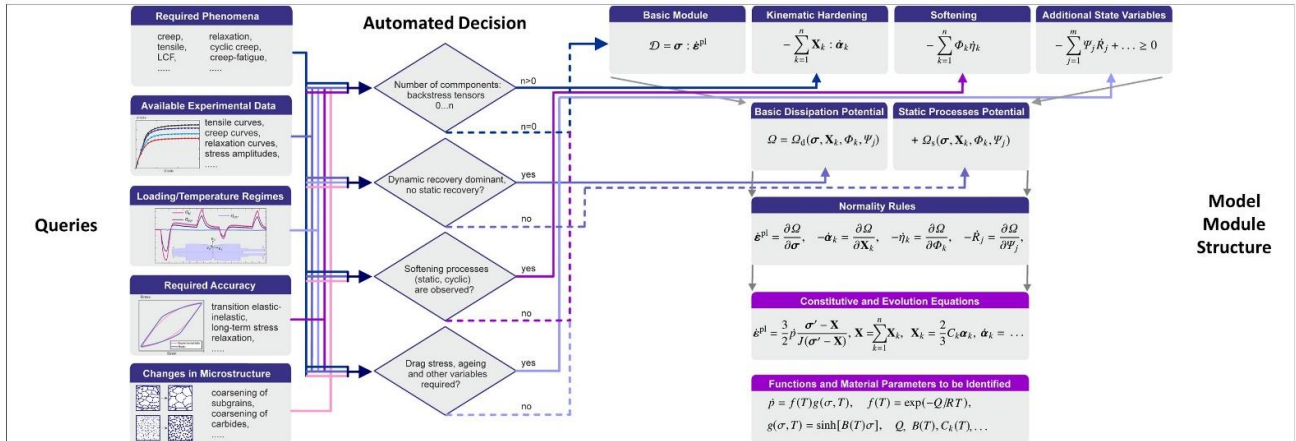


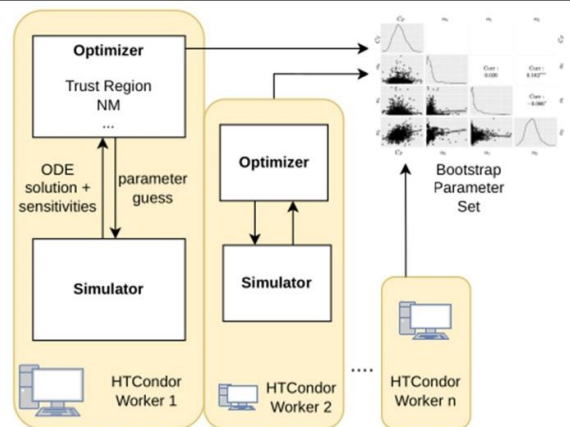
# DigitalModelling. WP3: Module Based Modeling

## Preprocessor: GetConstitutiveModel



## Enhanced Model Parameter Identification with Bootstrap

- Custom modern c++ implementations
  - ODE solver and optimizer
- The solver includes built-in sensitivity analysis capabilities
  - Gradients with respect to the model parameters are computed alongside the ODE system
- The optimizer supports various gradient-based and gradient-free algorithms
- A custom trust-region implementation, fully configurable and tailored to the solver



## Ontology-based Knowledge Graphs for FAIR Material Cards

✓ Target: Reduce the time and effort needed to release validated material cards into industrial applications

**1. Model selection:**  
AI-assisted expert system

**2. Model calibration workflow:**  
pyiron

**3. Knowledge base integration:**  
GraphDesigner App

**4. Digital Product Passport:**  
DPP App

• FAIR  
• Machine-interpretable (RDF)  
• Human-readable (DPP)

Digital Product Passport for: MaterialCardsChaboX\_IN718\_BAM\_v1

process label	file label	file size	file name	file size	file size
CalibrationChaboX_Mat_L1	Documentation_Fa_01	1024	chabo_x_m1_01_fa_01_in718	1024	1024
CalibrationChaboX_Mat_L1	Documentation_Fa_02	1024	chabo_x_m1_02_fa_02_in718	1024	1024
CalibrationChaboX_Mat_L1	ModelCard_01	1024	chabo_x_m1_01_in718	1024	1024
CalibrationChaboX_Mat_L1	ModelCard_02	1024	chabo_x_m1_02_in718	1024	1024
CalibrationChaboX_Mat_L1	ModelCard_03	1024	chabo_x_m1_03_in718	1024	1024
CalibrationChaboX_Mat_L1	ModelCard_04	1024	chabo_x_m1_04_in718	1024	1024

\*) Visit our live demonstrators!

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