ONTO COMMONS
ONTOLOGY-DRIVEN
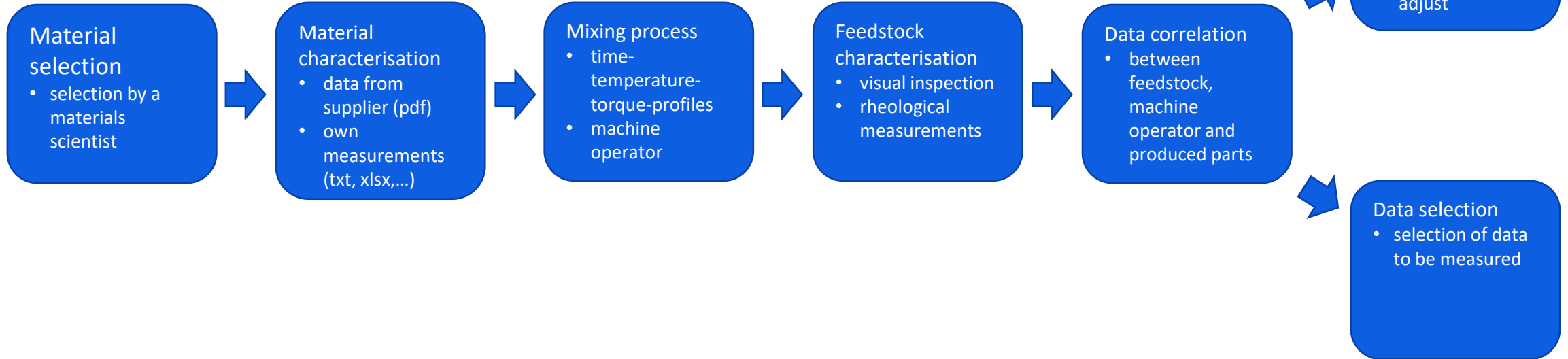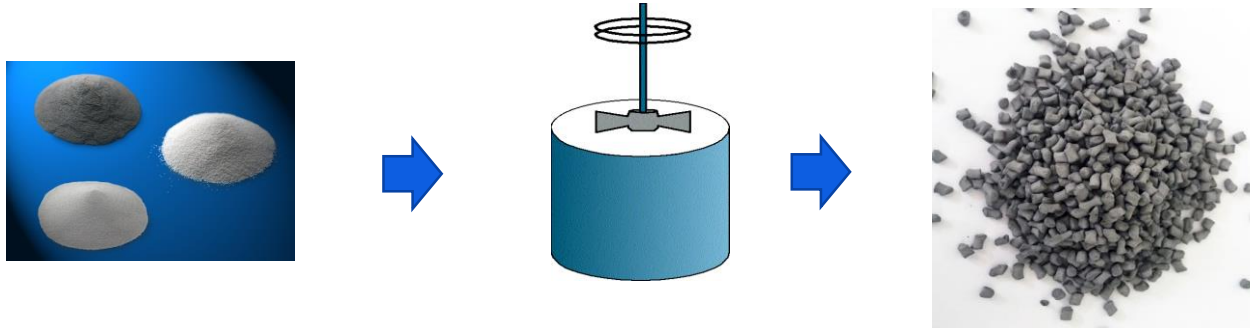DATA DOCUMENTATION
FOR INDUSTRY COMMONS

Feedstock Quality Assurance

Use Case No 7

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Fraunhofer IFAM powder technology

MATERIAL	SHAPING	FUNCTION	TESTING	APPLICATION
· Metals · Ceramics · Polymers · Structural materials · Functional materials · Composite materials	· Powder Metallurgy · Casting · Freeform fabrication · Nano- and microstructuring	Integrating functionalization into manufacturing process · Sensors · Actuators · Functional coatings · Energy storage	· Material analysis · Mechanical testing · Performance tests · System validation · Expert reports	· Automotive · Electromobility · Energy and environmental technologies · Aerospace · Medical technology · Microsystems technology · Machine and equipment construction

Use case UC 7, Feedstock Quality Assurance

Material selection
- selection by a materials scientist

Material characterisation
- data from supplier (pdf)
- own measurements (txt, xlsx,…)

Mixing process
- time-temperature-torque-profiles
- machine operator

Feedstock characterisation
- visual inspection
- rheological measurements

Data correlation
- between feedstock, machine operator and produced parts

Process adjustment
- decision which process (machine) parameters to adjust

Data selection
- selection of data to be measured

Ontology use in the UC 7

- No ontologies are used so far

- EMMO might be used, but is based on physics and materials

- Mixing process is not covered → a further ontology might be needed

- Taxonomy should describe
  - the types of materials (metal powders, binder components) involved in the mixing process
  - the mixing process itself
  - the aspects of quality assurance while mixing
  - the aspects of quality for finally mixed feedstock

UC 7 requirements

- Ontology
  - Feedstock quality
  - Material characteristics for feedstock quality
  - Data sources selection
  - Correlation
  - Understandable ontology
  - Easy maintaining
- Regarding tools
  - Connected ontologies

Main expected benefits

●— Main benefits that we expect to get from OntoCommons demonstrator case

- ●— Digital representation of the whole mixing process
- ●— Recognition of previously unknown correlations
- ●— Decision which process (machine) parameters have to be adjusted
- ●— Consistent quality of feedstock

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