Case studies on data sharing

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pwc

AluTrace: data-supported product development

Data-supported improvement of an aluminium component based on an algorithm that retrieves data from a data space and links material and process data in the product development process for lightweight components.

Aim: Linking material and process data along the value chain in **additive manufacturing should make it possible to optimise the topology of lightweight components,** resulting in a weight reduction of 20%.

Procedure: Data on **material properties and process parameters from the Materials Data Space (MDS)** is imported, linked and integrated into an algorithm to enable automatic topology optimisation of the lightweight component.

Result: An optimised lightweight design was created that allows for a **23% weight reduction** and a **67% reduction in support structures, with slightly improved functional properties**.

Link: Fraunhofer Institute and research articles

Players
Fraunhofer Institute
German construction office

Type of data
Mechanical material properties and
AM process parameters and post-processing information

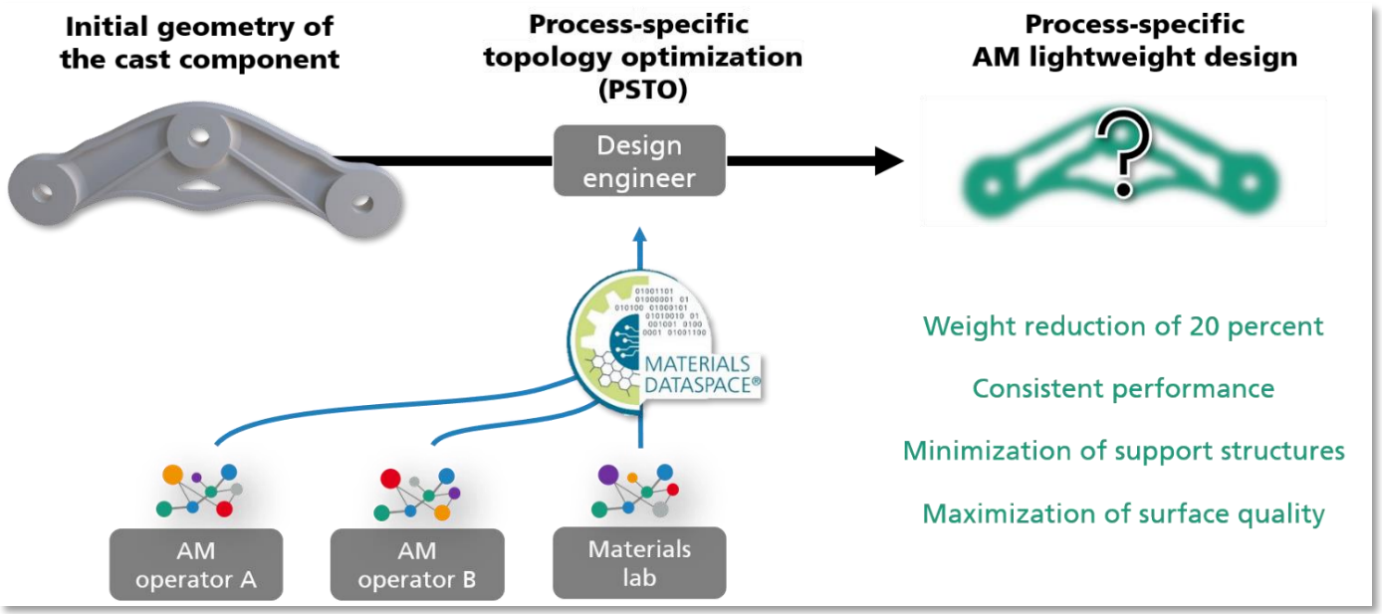
Data space
Fraunhofer Materials Data Space

Economic sector
Manufacturing industry, production of lightweight components for further processing

Data flow
Business-to-Business (B2B)

Geographical category
Unique use case – local in Germany

AluTrace: data-supported product development – key points



Target image and product development process

- The framework parameters and functions of the target state must be specifically defined in order to be able to determine the required data.
- The distributed data is integrated and logically linked at a central location – the Materials Data Space – without impacting data sovereignty.
- The user can easily retrieve this identically structured data and, for example, feed it into an algorithm in the construction office.

Link: Fraunhofer Institute and research articles