Title: Mapping material data during their life cycle

Problem statement

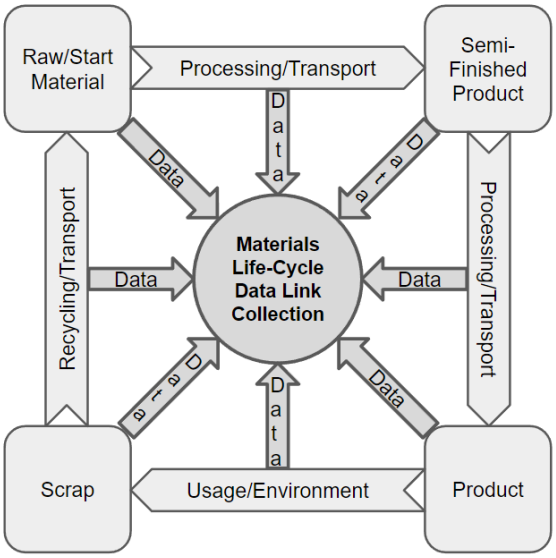
The value chain of an aircraft component is extensive and dispersed. Manufacturing, assembling and commissioning parts involve many stakeholders. This results in the transfer of information in addition to the flow of materials and finances. Moreover, information is constantly updated during the stages of the lifecycle, e.g. data on flight hours and maintenance. So far, each step in the whole material value chain is regarded independently and only very few data are transferred to the next step. In addition, there is no unified standard data collection and the amount as well as the quality of data is low. The data links are broken or not existing. We are interested in ways to develop processes (e.g. identify data, data format, importance, etc.) for collecting high quality material/process data from raw material sourcing to recycling, to reduce the possibility of quality imperfections. Furthermore, the main contributors of the environmental footprint need to be identified and addressed. Additionally, we look for ways to perform data fusion and data evaluation during all steps of the value chain to predict the future and thereby optimize the component quality and the manufacturing/recycling process.

Research question(s)

How can high quality as well as relevant data be generated and collected in each step of the material life-cycle, transferred to the next steps, be evaluated and used to support the next step decisions as well as predict (AI-based) the processing parameters. The focus is on high quality components manufactured in a sustainable way based on data of each step. This might be transferred to a similar material application case.

Expected type of work

Review study (evaluation of the state-of-the-art, availability of data and links, etc.); technical study on a specific test case or general process concept (how to collect data, data quality, data fusion, data evaluation, transfer, AI based prediction options).



References

- Will be communicated during the project

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