Capability-based semantic interoperability of manufacturing resources: A BaSys 4.0 perspective

Abstract:
In distributed manufacturing systems, the level of interoperability of hardware and software components depends on the quality and flexibility of their information models. Syntactic descriptions of input and output parameters, e.g., using interface description languages (IDL), are not sufficient when it comes to evaluating whether a manufacturing resource provides the capabilities that are required for performing a particular process step on a product. The semantics of capabilities needs to be explicitly modelled and must be provided together with manufacturing resources. In this paper, we introduce concepts developed by the German BaSys 4.0 initiative dealing with semantically describing manufacturing skills, orchestrating higher-level skills from basic skills, and using them in a cognitive manufacturing framework.

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