An Approach for an Automated Adaption of KPI Ontologies by Reusing Systems Engineering Data

Abstract:
Technological progress leads to an increased utilization of data analysis and Business Intelligence that support manufacturing management decisions. Many promising solutions utilize semantic technologies. However, the deployment and maintenance of semantic technologies especially in reconfigurable manufacturing environments require a lot of manual effort. Concepts to embed them in an automated environment, as required by Reconfigurable Manufacturing Systems, are limited. In this paper, we present an approach to reuse systems engineering data to guide an automated process that updates a production data knowledge base. Thereby, an ontology that integrates distributed operational data to compute Key Performance Indicators such as the Overall Equipment Effectiveness index can be updated during the manufacturing reconfiguration process. This reduces the effort to handle the required changes of semantic data integration systems and enables a cost-effective adaption of the Business Intelligence for Reconfigurable Manufacturing Systems.

Stichworte:
Semantics; Modeling; Knowledge based systems; Ontologies; Manufacturing systems; reconfigurable manufacturing systems; semantic data integration; KPI; OEE; systems engineering

Jahr:
2019