SEMANTIC BASIS FOR INFORMATION EXCHANGE IN INDUSTRIE 4.0 APPLICATIONS

Application for the manufacturing industry

SUMMARY

A semantic basis for information exchange in Industrie 4.0 applications – in accordance with existing standards.

CURRENT SITUATION

For systems which rely on collaboration or cooperation with other systems, the semantics of the exchanged information has to be modeled. This applies to machines which independently (re)assign production orders among one another or to sensor data that is merged from spatially distributed measurements. Semantics is even more important if, for instance, the measurement of variations in quality of a component is to be played back online from production to design and simulation tools, calculated there and – based on this calculation – the next production steps for this component have to be adjusted. The partners involved have to “speak the same language”.

PROJECT DESCRIPTION

SemAnz40 shows how applications of Industrie 4.0 can be realized with distinct data semantics based on the German and international standards recommended in the DKE standardization roadmap for Industrie 4.0. SemAnz40 therefore provides a semantic basis for the development of products and processes for Industrie 4.0.

INDUSTRIE 4.0 – FEATURES

Harmonization of various model approaches and their practical application in a 14.0 Asset Administration Shell using machine-readable characteristics and structures from standards.

SOLUTION

Device or component properties and parameters are used as characteristics in all phases of planning and operations. These characteristics of all planning objects are described by a formalized model in accordance with IEC 61360 in eCl@ss. The SEMANZ40 system model (structure, function and behavior model with reference to the formalized process description VDI/VDE 3682) is a specific version of the AutomationML basic model. All intermediate results of all lifecycle phases can be stored in AutomationML based on characteristics. Device parameters can be read out during operation (e.g. PROFIBUS PA, HART, etc.) and input in AutomationML as values of the corresponding data elements (mostly synonymously called characteristics).

POSSIBLE APPLICATIONS

AutomationML - ProDOK NG-Export and device parameters in AutomationML can be brought together to make comparisons between the system “as planned” and “as built”. Implementation and testing of various application scenarios of the 14.0 platform was realized on a Festo MPS500 demo system.

PARTNERS

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