Compilation of work from various stakeholders

The 3rd RRI Industrial IoT International Symposium for Connected Industries, Tokyo Big Sight

Practical application of openAAS (open Asset Administration Shell)

Ulrich Löwen, November 30th, 2017
Business Viewpoint: Application Scenario Value-Based Services
View on Industrial IoT by Plattform Industrie 4.0

Today

Customer
Product provider

Tomorrow

Customer
Service provider
Platform operator
Product provider

Operator of machine
Provider of machine

Operator of machine
Provider of data-driven services
Operator of service platform
Provider of machine
Business Viewpoint: Application Scenario Value-based Services
Variety of Different Business Setups

Machine & Process Optimization Services
- Operator of machines
- Provider of machine & process optimization services
- Operator of service platform
- Supplier of machines

Data-driven Services
- Operator of machines
- Provider of data-driven services
- Operator of service platform
- Supplier of machines

Manufacturing as a Service
- Operator of machines
- Provider of manufacturing as a service
- Operator of service platform
- Supplier of machines

Production Scheduling Services
- Operator of machines
- Provider of production scheduling services
- Operator of service platform
- Supplier of machines
Usage Viewpoint: Application Scenario Value-Based Service
Example Activity

Spontaneous connection of a sensor for recording additional information

- Request for specific information about the machine
- Selection of appropriate sensor to record required information
- Connection of sensor to communication infrastructure
- Recording required information
- Provision of recorded information
- Disconnection of sensor from communication infrastructure

Main challenges in specifying the usage viewpoint:
- Finding the appropriate abstraction level for the specification
- Adequate number of core activities for an application scenario

Actual status: elaboration within IEC TC65 Smart Manufacturing, driven by Germany-Japan cooperation
Cross-cutting issue in all activities: Digital representations of assets are generated in a variety of different software systems by different stakeholder and need to be managed throughout their entire lifecycle.

## Assets (Examples)

- **Intelligent object**: Asset administration shell deployed on asset
- **Passive object**: Asset administration shell not deployed on asset
- **Complex object**: Asset composed of other assets with own asset administration shells
- **Pure information object**

## Asset Administration Shells (Example)

- **Operator of transportation system**
- **Provider of data-driven services**
- **Transportation system**
- **Socket**
- **Sensor with plug**
- **Recorded information**
- **Carrier**
- **Provider of plug/socket connection**
- **Provider of sensor**

ZVEI funded open source project openAAS as an implementation based on OPC-UA of the asset administration shell.
Practical application of openAAS (open Asset Administration Shell)

Take Away

Customer benefits first

- Digitalization in manufacturing will be successful only if there exists market needs for digitalization solutions
- Create solutions which generate customer benefits

Role of technical concepts

- Distinguish between business, usage, and functional perspective
- Impact of technical concepts ultimately achieved only by dissemination in practice in form of “standards”

Practical application of openAAS (open Asset Administration Shell)

- openAAS is an implementation of the concept of an asset administration shell in the context of a research project
- Implementation based on OPC-UA allows easy integration in existing installations and applications
- We still have to shape the common mutual understanding of purpose and scope of the asset administration shell
- We are facing a difficult balancing act between a “thorough” approach and the risk of not addressing the core issues
Thank you for your attention!

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