Industrie 4.0 and Digital Transformation – where OT meets IT

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Digitalization of Economy

Digital Nameplate to enable „Industrie 4.0“

„Industrie 4.0“ Use Cases CCM
"Digitalization of Economy" is leading to a "Connected World"
"Digital Value Add" means
"Big Data" out of OT-Devices
will be analysed with "Apps" (Algorithms) at SaaS-Layer to "Smart Data"
and distributed via INTERNET as "Smart Services" to the customers.

"Digital Economy" based on "IoT-Platforms" for B2C and B2B
Cross-company Interoperability for OT-Devices enabled by Concept of „I4.0-Component with AAS“

I4.0-Component with AAS (Asset Administration Shell)

Various IoT-Platforms

OT-Devices

Source: Siemens AG

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The Digital Twin for Industrie 4.0

- Ordering and placing of orders
- Product Planning
- Development (Mechanics, E/E, Software)
- Recycling
- Intelligent Production
- Virtual commissioning
Overview

1. Digitalization of Economy

2. Digital Nameplate to enable "Industrie 4.0"

3. "Industrie 4.0" Use Cases @ CCM
The Digital Nameplate 4.0
consistent.sustainable.future-proved.connected

- Saving time and costs
  - Access to product documentation online
  - No costs for paper and logistics

- One valid standard
  - Across companies
  - via DIN SPEC 91406

- Global Access
  - Documents in all languages
  - Locale Certificates (CE, CCC, ...)

- Sustainability
  - Saving resources
  - No paper documentation anymore

www.zvei.org/industrie40

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Overview

1. Digitalization of Economy

2. Digital Nameplate to enable „Industrie 4.0“

3. Use Case: CCM with GAIA-X
The Use Case "Collaborative Condition Monitoring" (short: CCM) deals with the collection and use of operational data to optimize the reliability and lifetime of machines and their components during operation.

In the real world, installed machines come from different machine tool manufacturers, equipped with different products from different manufacturers. Challenge for manufacturer X to access the data of his delivered product X.

CCM supplements the classic version with the aspect of multilateral cooperation:
- Share data across companies and competitors
- Classification of data, including non-brand- and product-differentiating data

Source: Plattform Industrie 4.0

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Collaborative Condition Monitoring 3-fractal

- As an exemplary, simplified process of an operational ecosystem, a three-stage value chain with different actors is considered.

- The smallest possible fractal of a multilateral structure is a tripartite structure, shown here as (1) component supplier, (2) machine supplier, and (3) factory operator.

**Hypothesis:**
- With CCM, an economic advantage can be gained within the digital ecosystem ("digital business model") by increasing the reliability and lifetime of components and machines.
- Collaboration of all participants in the value chain.
- Access to data depending on permissions.

Source: Plattform Industrie 4.0  
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Collaborative Condition Monitoring
Perceptibility in other industries

Example: Production (physical assets)
➢ The smallest possible fractal of a multilateral structure is a tripartite structure, shown here as component supplier, machine supplier and factory operator.

Example: Virtual Assets
➢ The smallest possible fractal of a multilateral structure is a tripartite structure, shown here as Data Producer Data Hybrid (Producer/Consumer), Data Consumer.

Source: Plattform Industrie 4.0
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Collaborative Condition Monitoring
Solution module - neutral platform (e.g. GAIA-X)
Thank you for your attention