Semantic interoperability for Plug-and-Work-functions in Industrie 4.0
- the combination of OPC-UA and AutomationML as industrial standards for interoperability

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# Major challenges for Industrie 4.0

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Goal: Plug-and-work for machines and components

New module added!
AutomationML consists of...

CAEX IEC 62424
Top level format

- Plant topology information
  - Plants
  - Cells
  - Components
  - Attributes
  - Interfaces
  - Relations
  - References

AutomationML
Engineering data

Object A

Object A₁

Object A₂

... 

Object Aₙ

COLLADA
- Geometry
- Kinematics

PLCopen XML
- Behaviour
- Sequencing

Further XML Standard format
- Further aspects of engineering information

Get rid of the paper interface!
www.automationml.org
Description of the content to be communicated by OPC-UA’s information model.
Transfer of configuration data
Secure plug-and-work „integration layer“: authenticates machines and components

Signed and encrypted communication

Secure plug-and-work „integration layer“: authenticates field devices and components

Signed and encrypted communication

Component is „unlocked“, only signed components maybe integrated
## State of the art (1)

**TIGER – first Single-Chip for PROFINET**
- Cooperation with Siemens AG and Phoenix Contact
- First solution to economically integrate PROFINET in simple field devices
- Cost reduction app. 40%
- System-on-chip with 7 Mio. gate equivalents

**One of the smallest OPC-UA servers**
- OPC-UA usable as middleware for continuous nRT-communication from chipevel up to applications
- Demands 5 kB RAM and 10 kB ROM (4 services)
- Runs also on TIGER in parallel to PROFINET
State of the art (2)

Modeller: Graphical editing and modelling of OPC UA server address rooms
State of the art (3)
Common working group

Use cases:

- Seamless exchange of configuration data based on AutomationML between planning systems and operational IT-systems
  - How can these information be modeled using AutomationML structures and attributes?
  - Example: describe a field device in AutomationML and transfer the configuration data via OPC-UA to the controller

- Exchange of AutomationML project data using OPC UA technologies
  - How can AutomationML project structures be represented by OPC UA data model?
  - Use OPC-UA to store and manage AutomationML models
Contact

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