

Teemu

SPONSORS:

BECKHOFF

Alexey Plifo

Anto

Norta

NAPCON

Harmonizing OPC UA Information Models

Wolfgang Mahnke, ascolab / Unified Automation

PROSYS 🐼 OPC



Wapice

Valmet <

Semantum

Schneider

Life Is On

Dr. Wolfgang Mahnke

- Senior Consultant OPC Consulting & Standardization ascolab GmbH
- wolfgang.mahnke@ascolab.com
- <u>wolfgang.mahnke@unified-automation.com</u>
- Actively involved in OPC UA since 17 years
- Chair of the Harmonization Working Group of OPC Foundation
- Editor of

NAPCON

- Part 16: State Machines
- Part 110: Asset Management Basics
- Part 200: Industrial Automation
- Part 40001-1: OPC UA for Machinery
- Long-time Editor of Part 3 and 5 of base Specification (2005-16)



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Motivation: Standardized Information Models

OPC UA provides

- Common Communication
- Access to Metadata (Semantic)

Standarized Information Model

- Common Structure of Information
- Interoperability on Model



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Motivation: Harmonized Information Models

- OPC UA has powerfull modelling capabilities: Objects, Variables, Methods, Events, etc.
- Problem can be solved differently: e.g. Providing data by Method, Variables or Events
- Desirable to make similar things similar and the same things the same way



Harmonizing Information Models

- Defining generic Models domain-specific Companion Specifications can derive from
 - Part 16: State Machines
 - Part 20: File Transfer

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- Part 22: Base Network Model
- Part 23: Common Reference Types (soon RC)
- Part 100: Devices
- Part 110: Asset Management Basics
- Part 200: Industrial Automation
- Part 40001-1: OPC UA for Machinery WDMA
- Whitepaper: Best Practice Information Modelling
- Template for Companion Specifications

Based on work of Harmonization WG

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> @Wapico

Harmonizing Information Models

Alexey Pirjo



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Harmonizing Information Models

Alexey Philo









OPC 40001-1 OPC UA for Machinery v1.02



OPC 10000-110 Asset Management Basics v1.00

General Idea

- Many Companion Specifications address Asset Management
- Define base that can be applied and extended in various Companion Specs

Approach

- Like Machinery
- Building Blocks: Only needed functionality can be selected
- Support various (also existing) Companion Specs
- Based on existing specifications like Part 100: Devices
- Very similar approach to Machinery, but:
- Machinery: Specialized for Machinery, specifies exactly one solution for a problem
- Asset Management Basics: Open allowing different variations to be applied in various domains
- More work for Client (needs to check for all variations)





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OPC 10000-110 Asset Management Basics v1.00

Use Cases (Version 1.00)

- Identification of Assets
- Based on Part 100: Devices only new Conformance Units
- Compatible to Identification of Machinery
- Discovery of Assets
- Base on Part 17: Alias Names standardized Alias Name Categories
- Health Status
- Based on Part 100: Devices
- High level asset status, specific information, root causes, standardized categories
- Technical Specification
- Version Information, Operation Counters, Supported UA functionality, digital records
- Asset Classification
- Based on Part 19: Dictionary Reference allows various classifications
- Maintenance Events
- Upcoming events, past events, standardized categories



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OPC 10000-110 Asset Management Basics v1.00

Status

- V1.00 out as Release Candidate will be published soon
- Field Exchange will already use Asset Management Basics

Use Cases Version 1.01

- Technical Specification
- Skills / Capabilities
- Requirements
- Localization
- Hierarchical, Time, Digital, Operational
- Structure of Asset

Future Use Cases (Version 1.0x)

• Relative location (waiting for results of Relative Spatial Location Working Group)

• Geospatial location (waiting for result of WG (still to be formed))





Conclusion

- Companion Specifications provide interoperability on Information Model
 - Over 40 companion specifications for various domains have been released
- Harmonizing Companion Specifications provides interoperability across Companion Specifications
 - Best Practice Whitepaper to solve similar problems in a similar way
 - Generic Specifications to solve same problems in the same way
- OPC 40001-1: OPC UA for Machinery

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- Common Specification in domain of Machinery
- Already used in various other Companion Specifications
- OPC 10000-110: Asset Management Basics
 - Common Specification for Asset Management to be extended for specific domains



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