

OPC DAY
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Benefits and Challenges of OPC UA Information Modeling in Practice

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Introduction

Pyry Grönholm

- CEO at Prosys OPC
- MSc Tech
- 20+ years of experience in industrial software and integrations



Prosys OPC



- Founded in 1995
- Global expert in
 - OPC UA solutions and information modeling
 - IT/OT integration
 - Industrial Security
- An active member of the OPC Foundation and Open Industry 4.0 Alliance

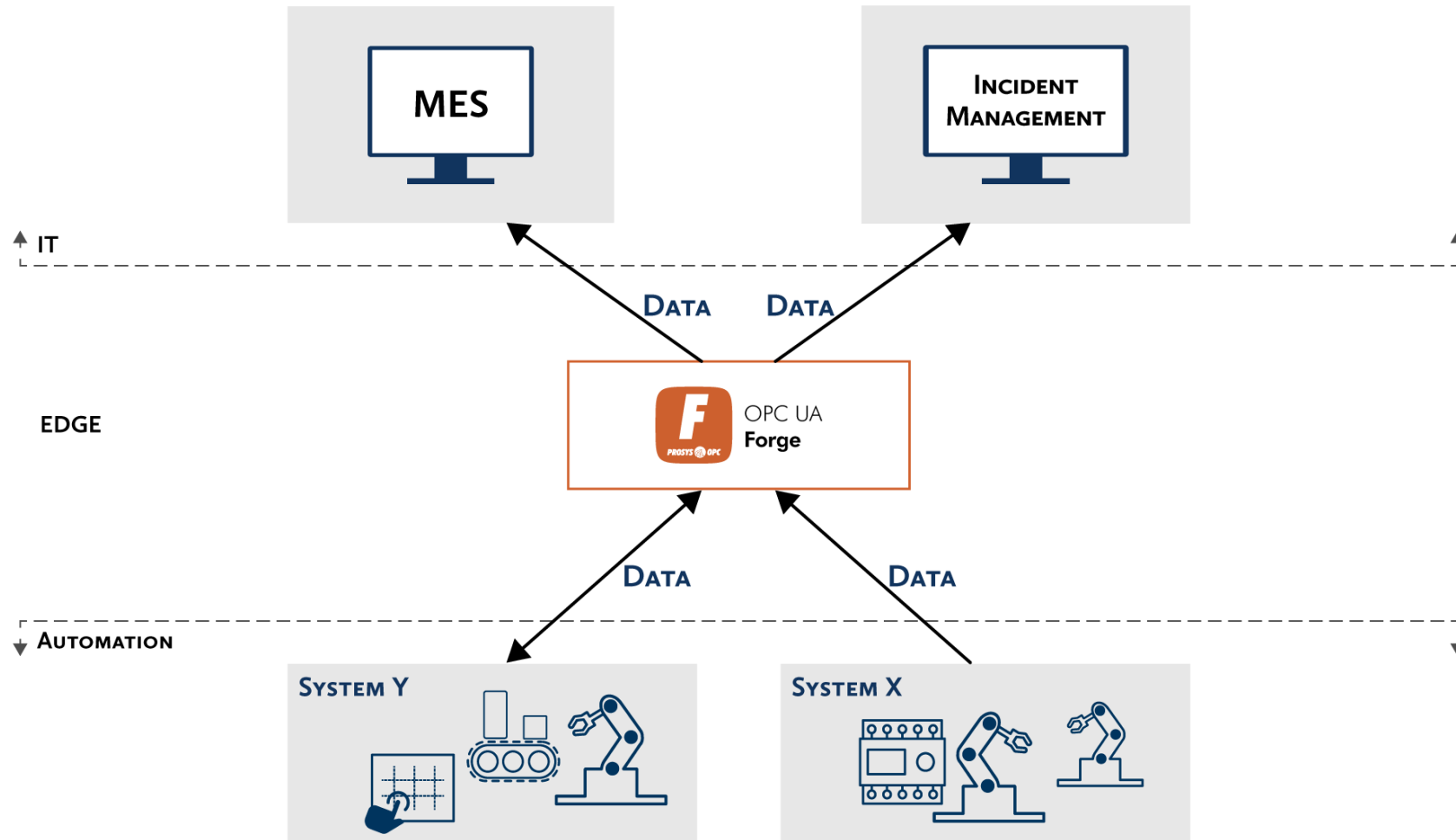


- 50+ countries
- 1000+ customers



Vision

Our Vision of OT/IT integration





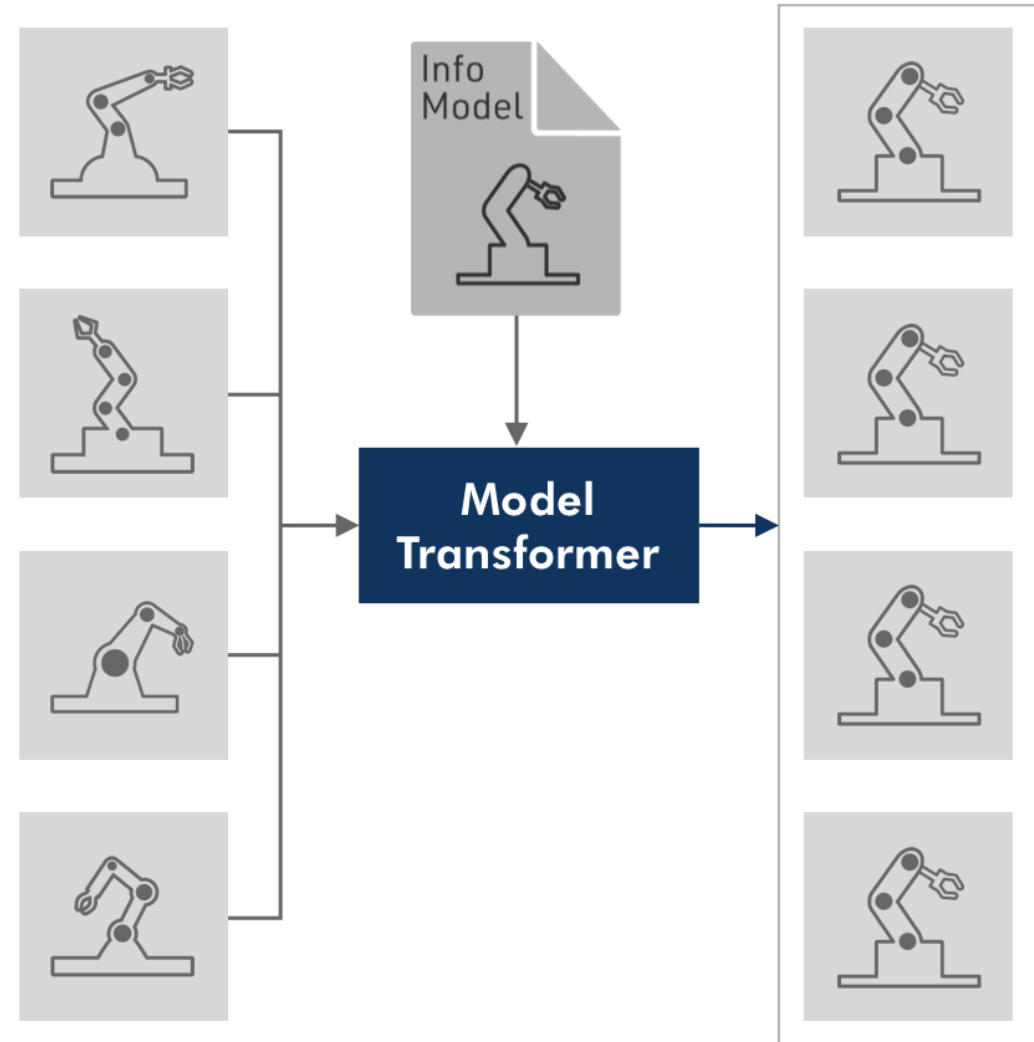
Data Harmonization

OPC UA Information Models

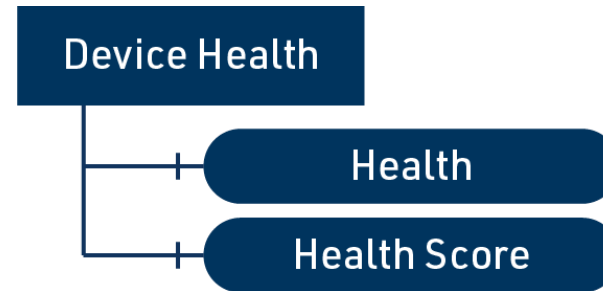
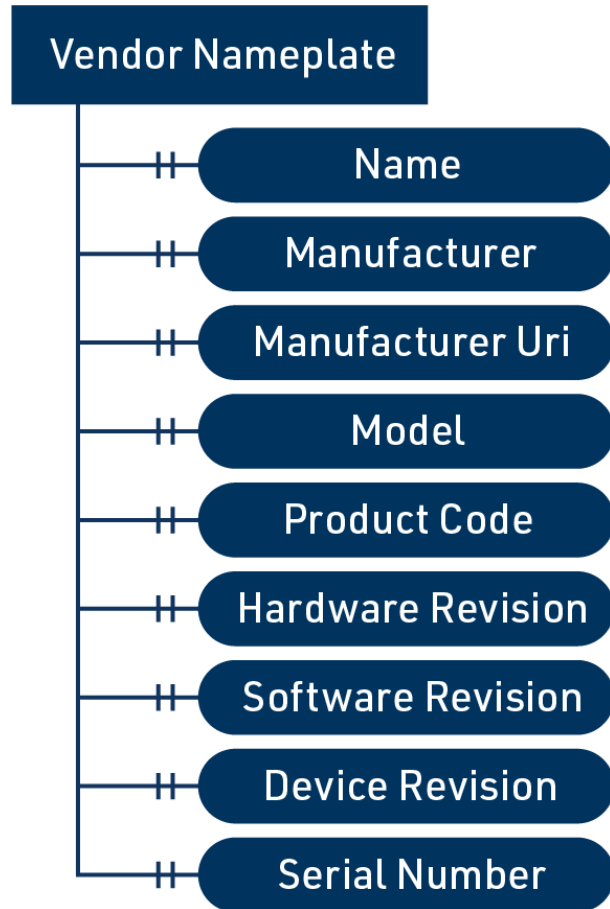
- Companion specifications
 - Standardized information models
 - Generic or domain-specific
 - 82 working groups within the OPCF umbrella
 - Machine description or use case-driven approach
 - Most available in OPC UA Cloud Library
- Company-specific information models
 - Designed to fit company-specific purpose
 - Typically inherited or combined from several companion specification

OPC UA Information Models

- Domain specific models
 - Machine States
 - Job Control
 - Robots
 - Machine Tools
 - Process Automation (PA-DIM)
 - Etc.
- + Custom models
 - Vendor specific
 - User specific

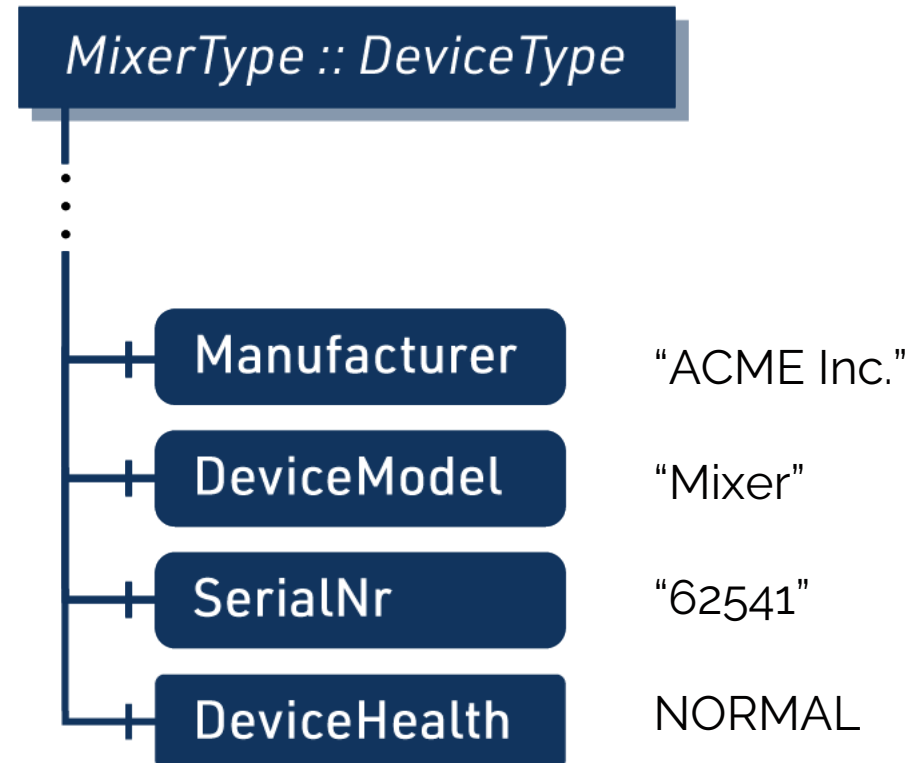


Example: Vendor Nameplate & Health

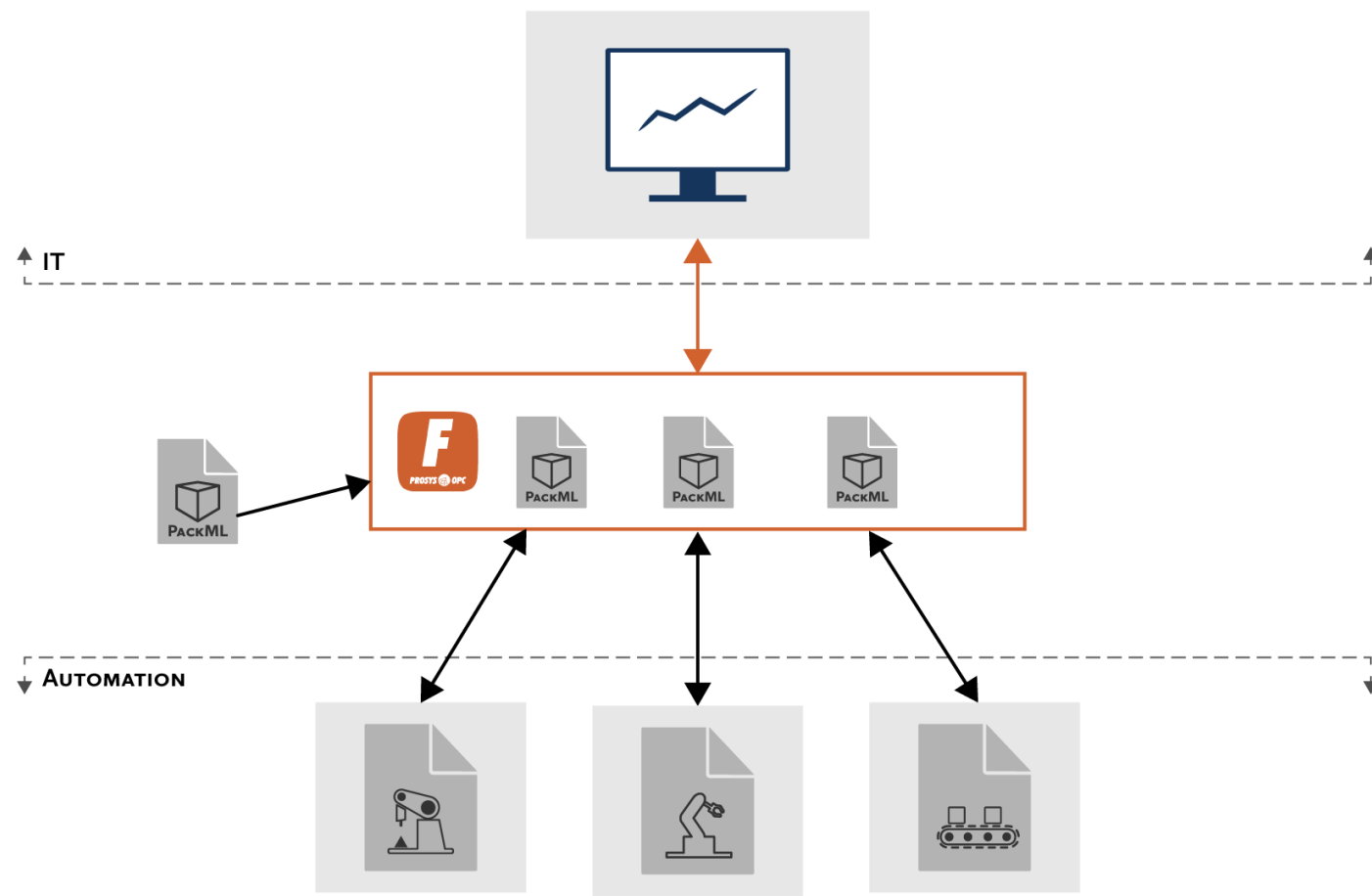


In Practice: Mixer Type

- Vendor Nameplate
 - Manufacturer
 - DeviceModel
 - SerialNr
 - ...
- Device Health
 - NAMUR NE107
- Add data manually/externally

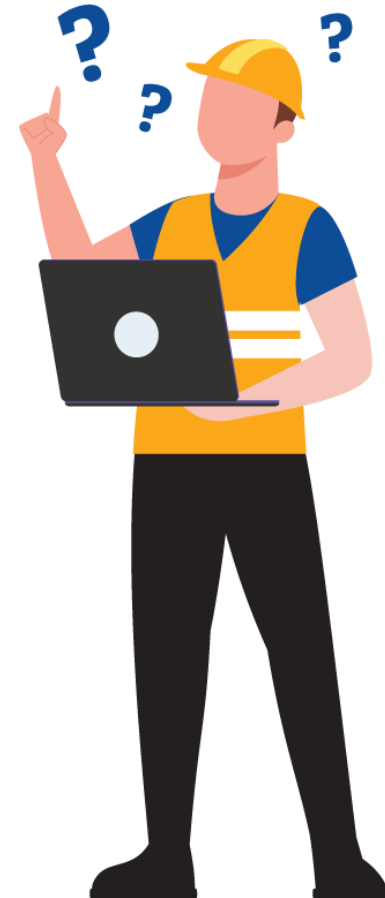


In Practice: How to build systems



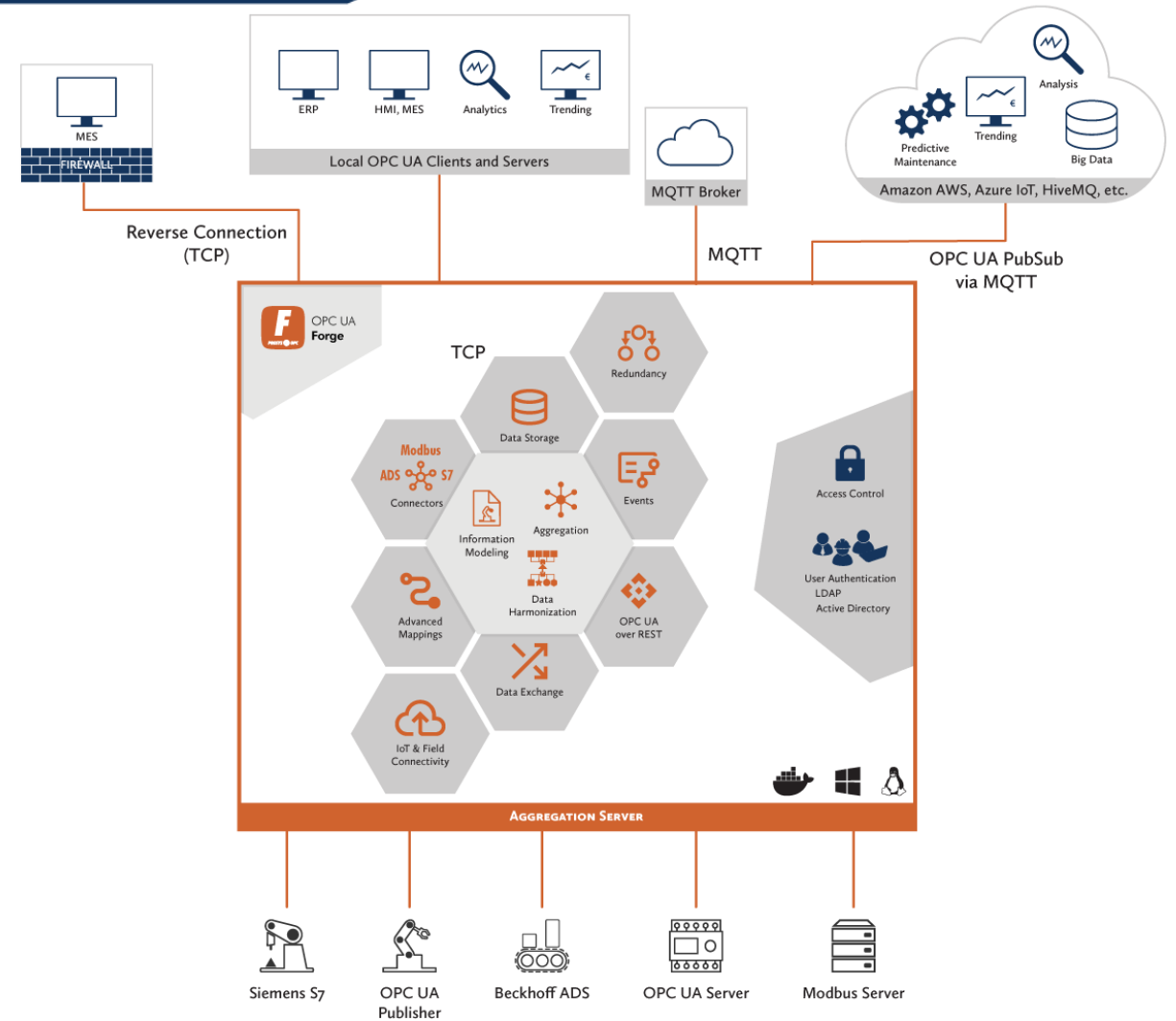
In Practice: Most common challenges

- Varying Engineering Units
- Branching production lines or varying package sizes
- Lack of counter – Just I/O Signals
- Missing events and methods
- Missing source for Required Variables



Prosys OPC UA Forge

- Edge application
- OPC UA Server as the core
- Variety of south- and northbound connectivity
- Business logic tools
- Windows, Linux, Container
- Web configurator
- OpenAPI REST API



Real-world use cases



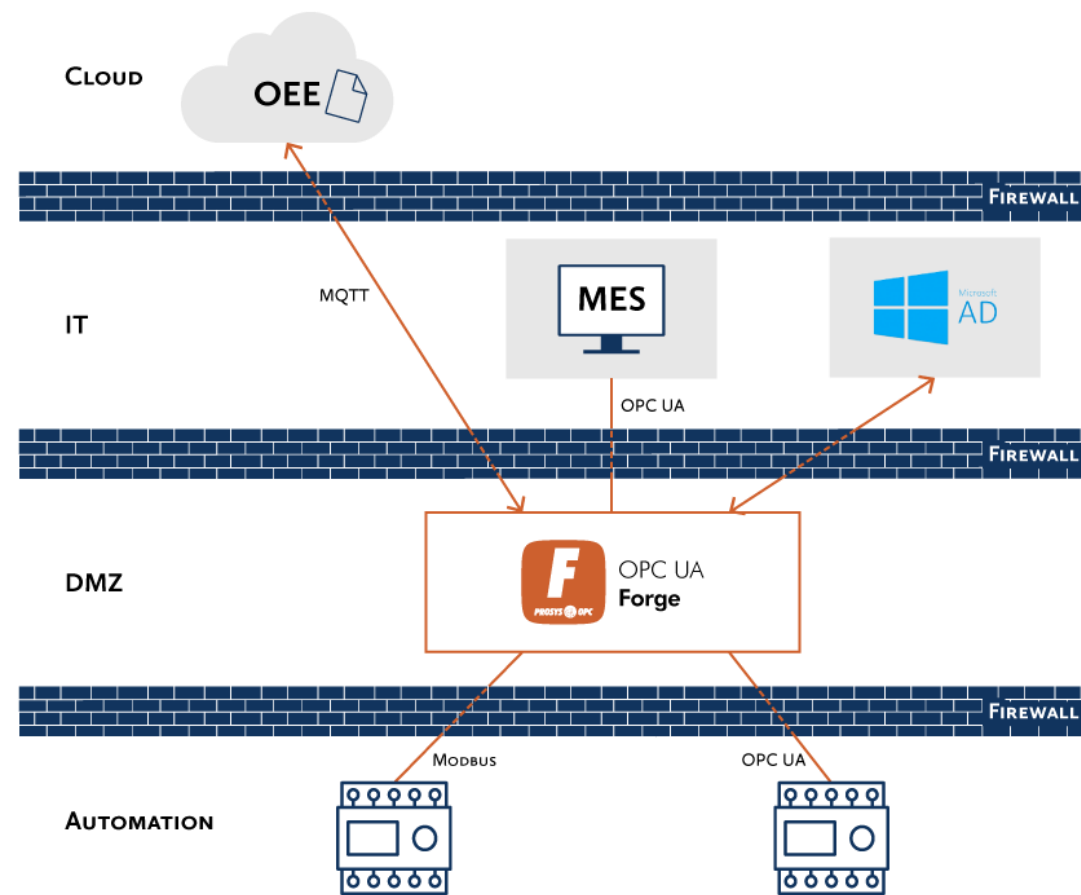
OPC UA
Forge

- Off-the-shelf product: Prosys OPC UA Forge
- Customer cases handled
 - **OEE reporting for Production lines**
 - Custom information model over Omron PLC with OPC UA
 - Published to Azure over MQTT
 - **High-frequency data logging for quality trend reporting**
 - InfluxDB
 - ISA95/UNS hierarchy model
 - **Track completion of production orders**
 - Collect data from process variables and trigger events when the state of production changes
 - Record production events in MES for quality inspections
 - **Mapping state information and array elements to variables for higher-level semantics**
 - Custom model with transformations
 - **Connect OPC UA Client in Cloud to OPC UA Server On-Site**
 - Reverse Connect for secure connection through firewall

Valio OT/IT architecture



- Leading Finnish dairy company
- 12 Factories
- OPC UA Since 2010
- Heterogeneous automation
- One solution for OT/IT integration



Thank you for listening!

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