



VDMA / OPC Foundation Joint Working Group

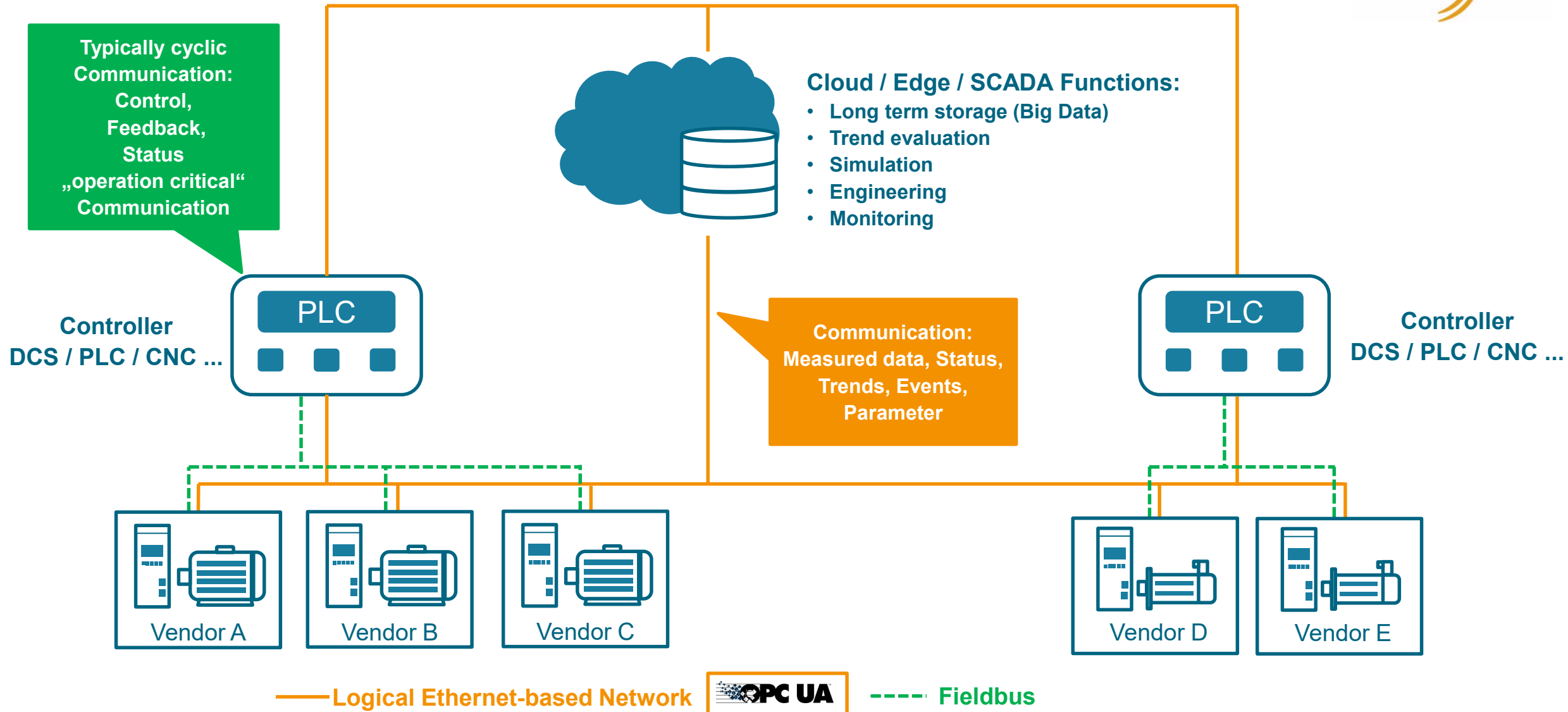
Industrie 4.0 / OPC UA Drive Technology

The left side of the image features a close-up of a grey gear. One of the gear's teeth is white and contains the text "OPC UA" in a bold, red, sans-serif font. Other parts of the gear and some red abstract shapes are visible in the background.

Member Companies of the Joint Working Group Industrie 4.0 / OPC UA Drive Technology



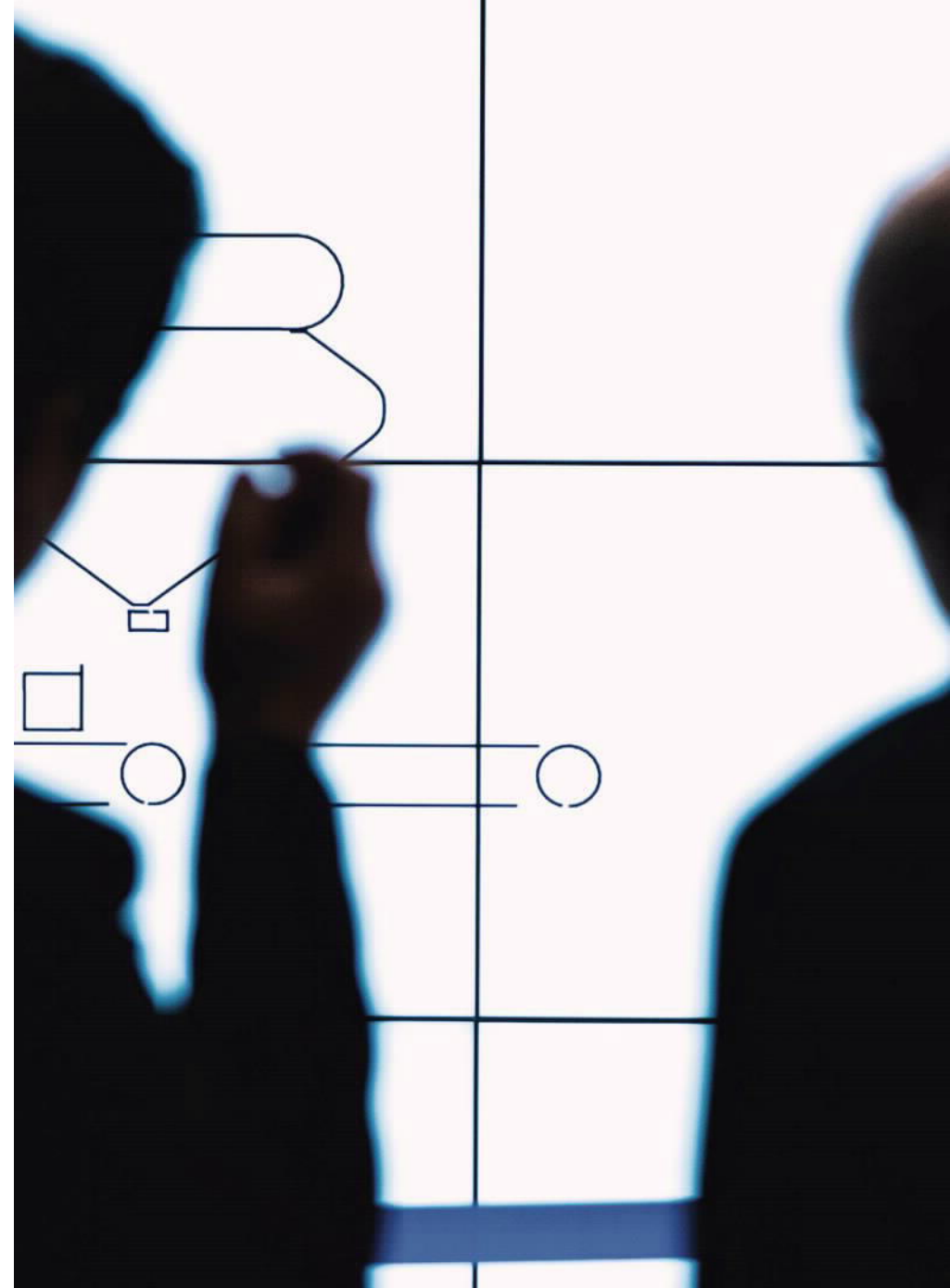
OPC UA Adds Additional Value by Vertical Integration



Scope of the Joint Working Group Industrie 4.0 / OPC UA Drive Technology

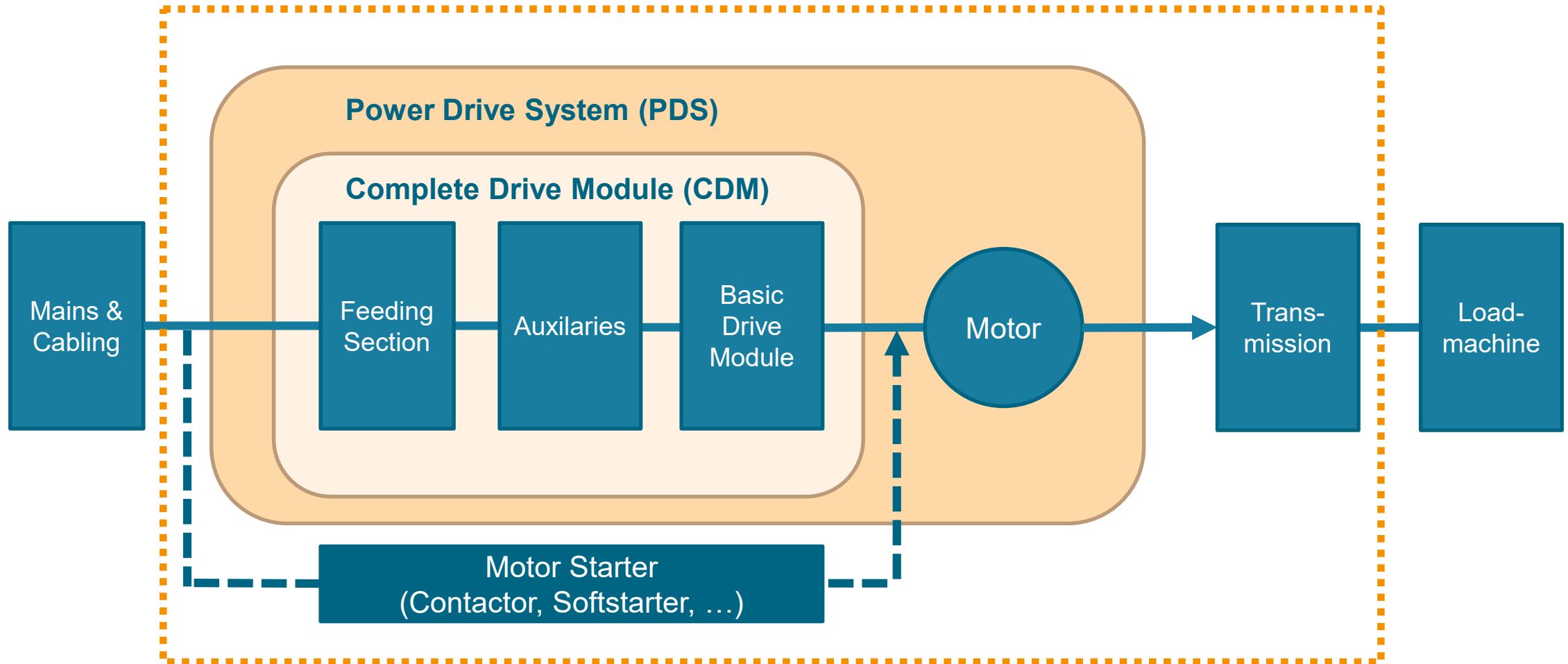
Powertrain stands for a drive system that includes the complete drive module (CDM), electric motor and transmission elements.

- » Joint Working Group will develop the OPC UA information model for the powertrain
- » Specification will be split up into several parts from part 1 to part n.
- » Version 1: Description of the information model for the powertrain. Focusing on Industrie 4.0 topics like asset management and diagnostics.

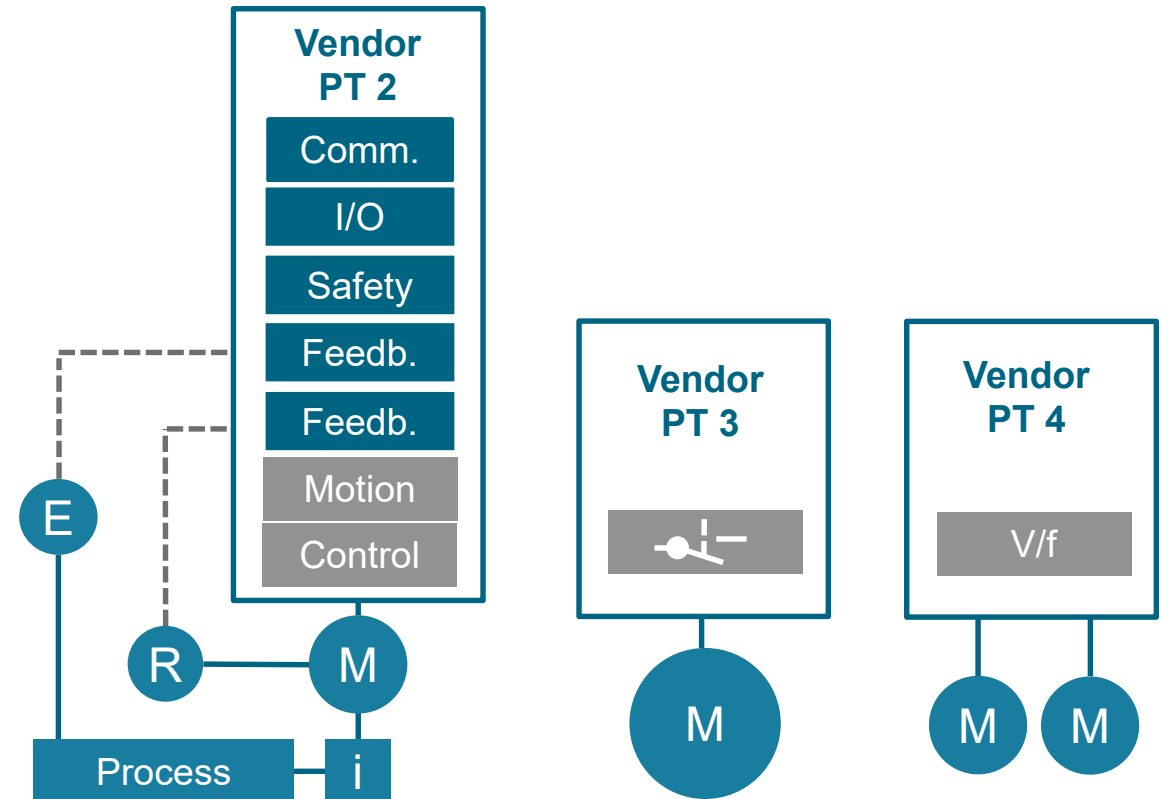
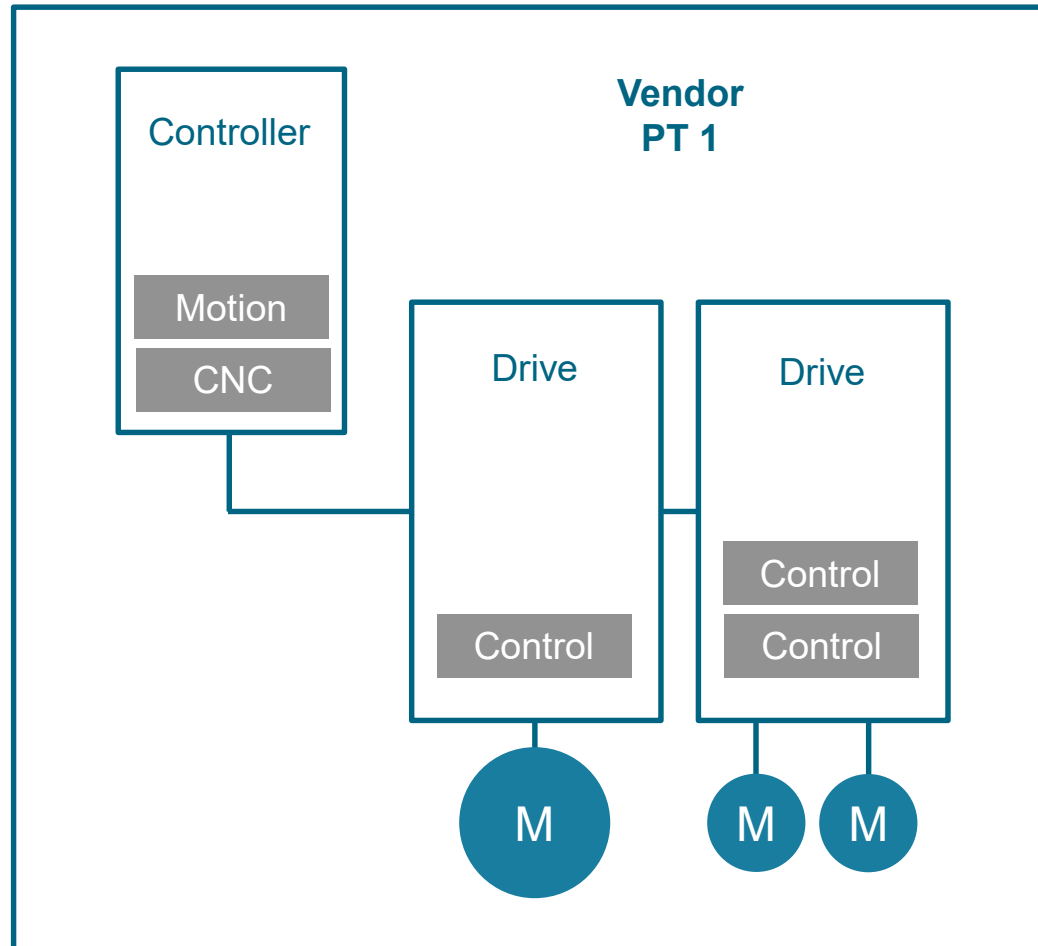


System Boundary of the Joint Working Group

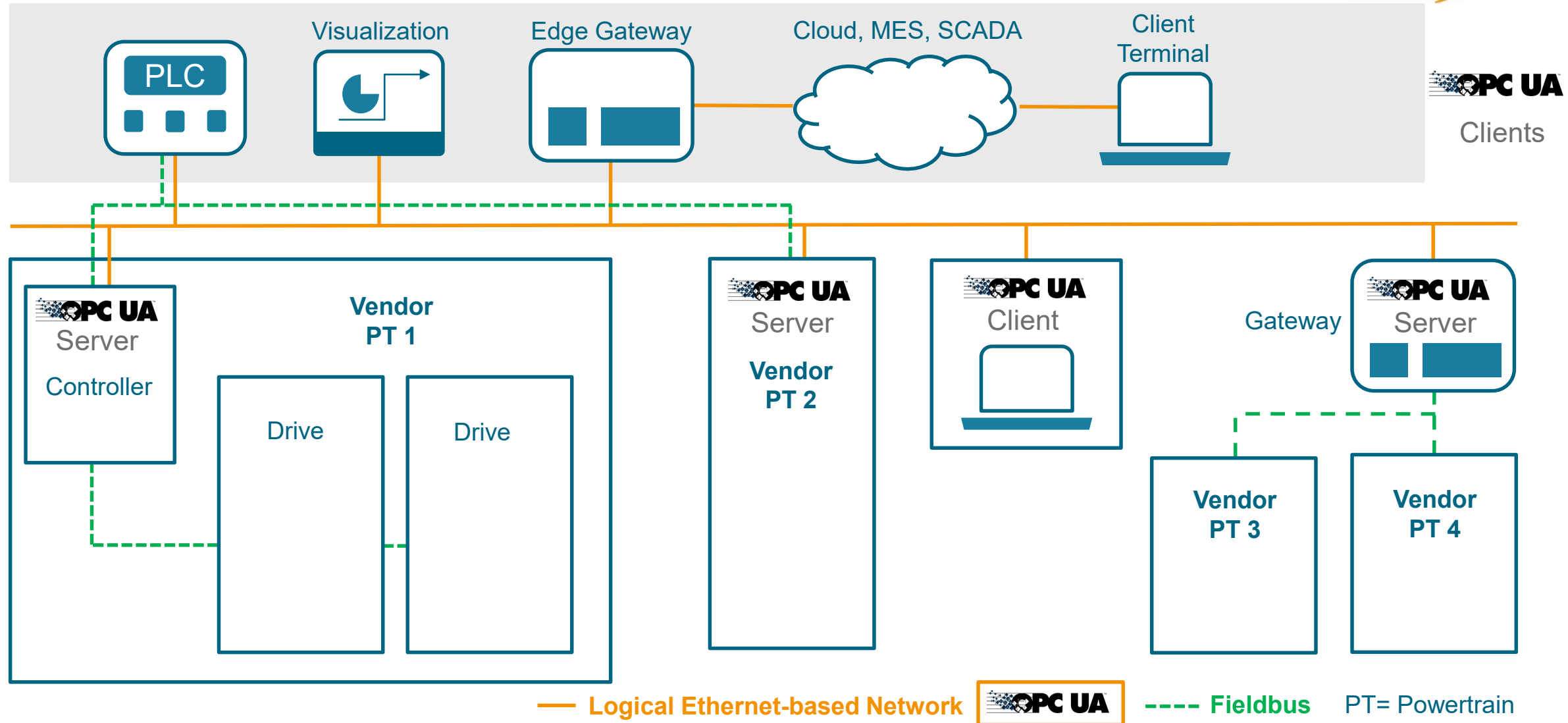
„Powertrain“



Topology Picture of Different Physical and Functional Powertrain Models

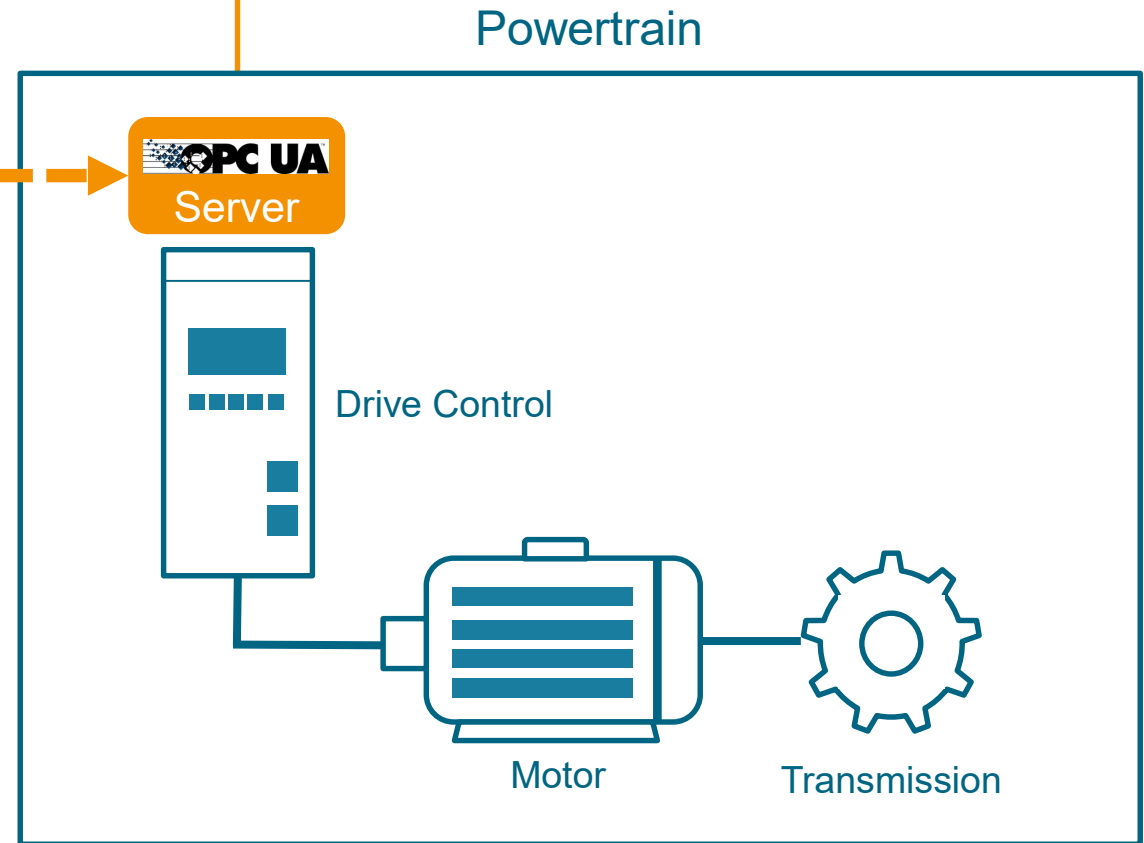
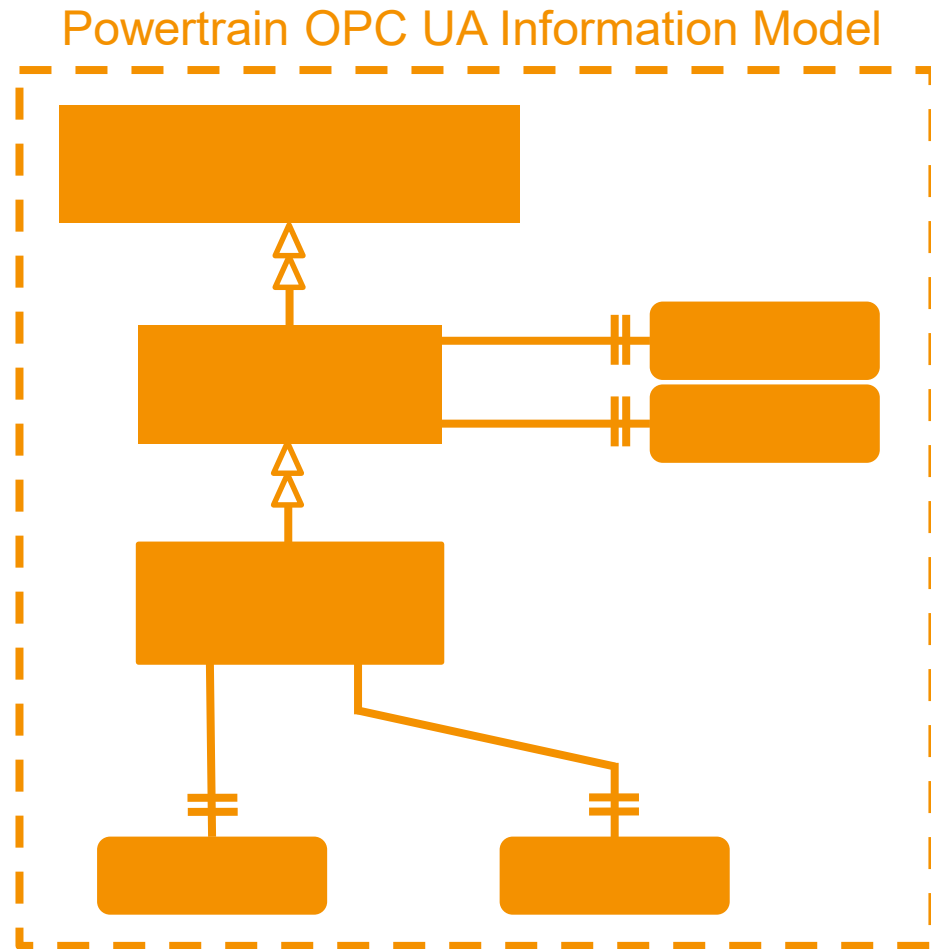


OPC UA Server / Client Locations



Information Model for the Powertrain

Logical Ethernet-based Network

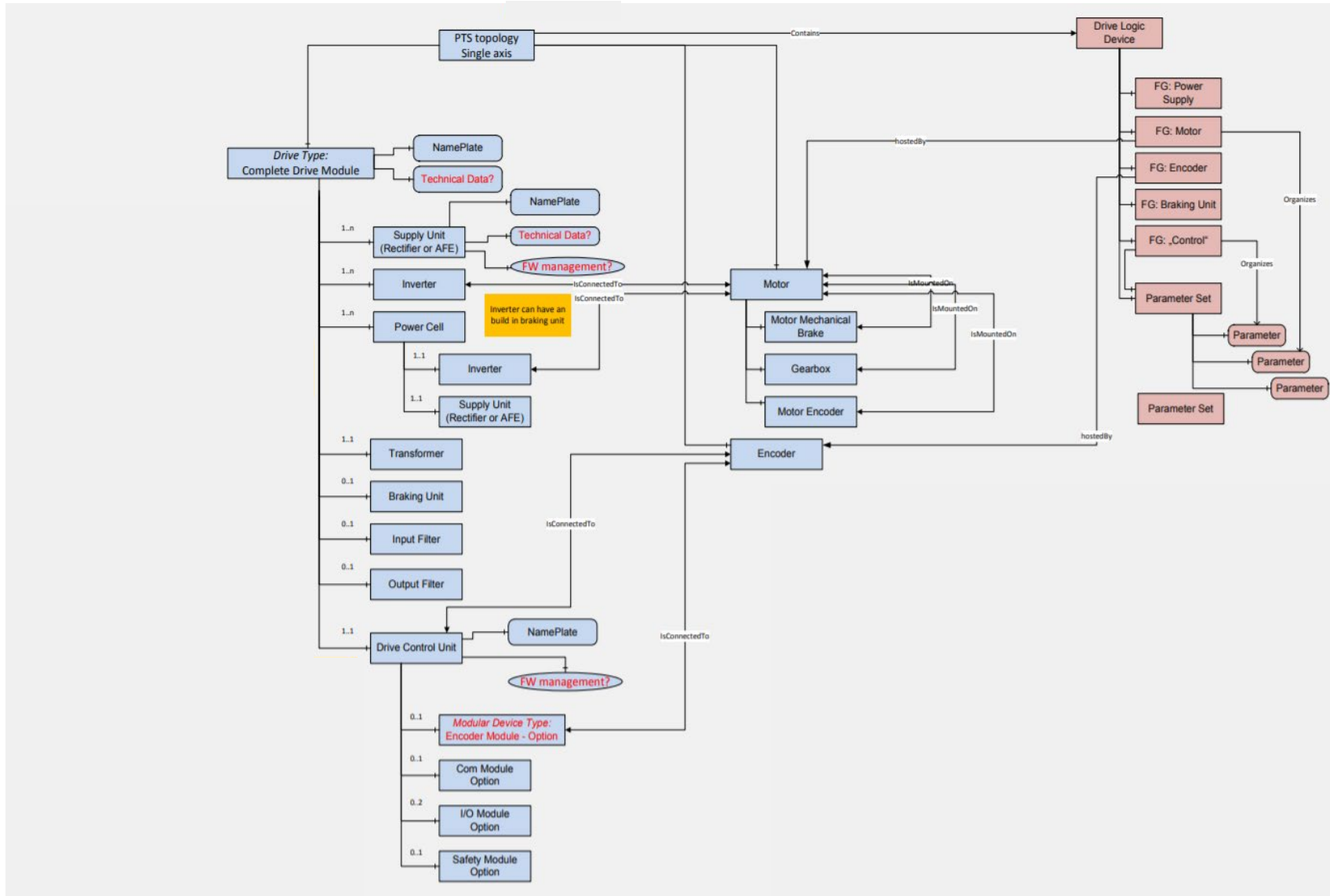


Information Model with Physical and Functional Structure



Physical

Functional



Use Cases as a Basis for the OPC UA Companion Specification

Version 1:
OPC UA Powertrain Information Model for Asset Management and Diagnosis

Release of the OPC UA Companion Specification is planned for End of 2019

Version 2:
Condition Monitoring, Commissioning



Asset Management: Overview of Considered Use-Cases



Overview of Possible Use-Cases

Asset Management (Version 1)

- ✓ **Registration of hardware and software**
- ✗ **Firmware Update**
- ✗ **Backup / Restore**

Condition Monitoring, Commissioning (Version 2)

Use-Case details for Version 1 of OPC UA CS

- Tracking of changes (history)
- Identification of components that are badly accessible or at another location
- Quick verification if a dedicated component (hardware or software) is used in a machine / plant, e.g. in case of quality issues or bug fixes
- Replacement of defect components by similar components that are available in stock

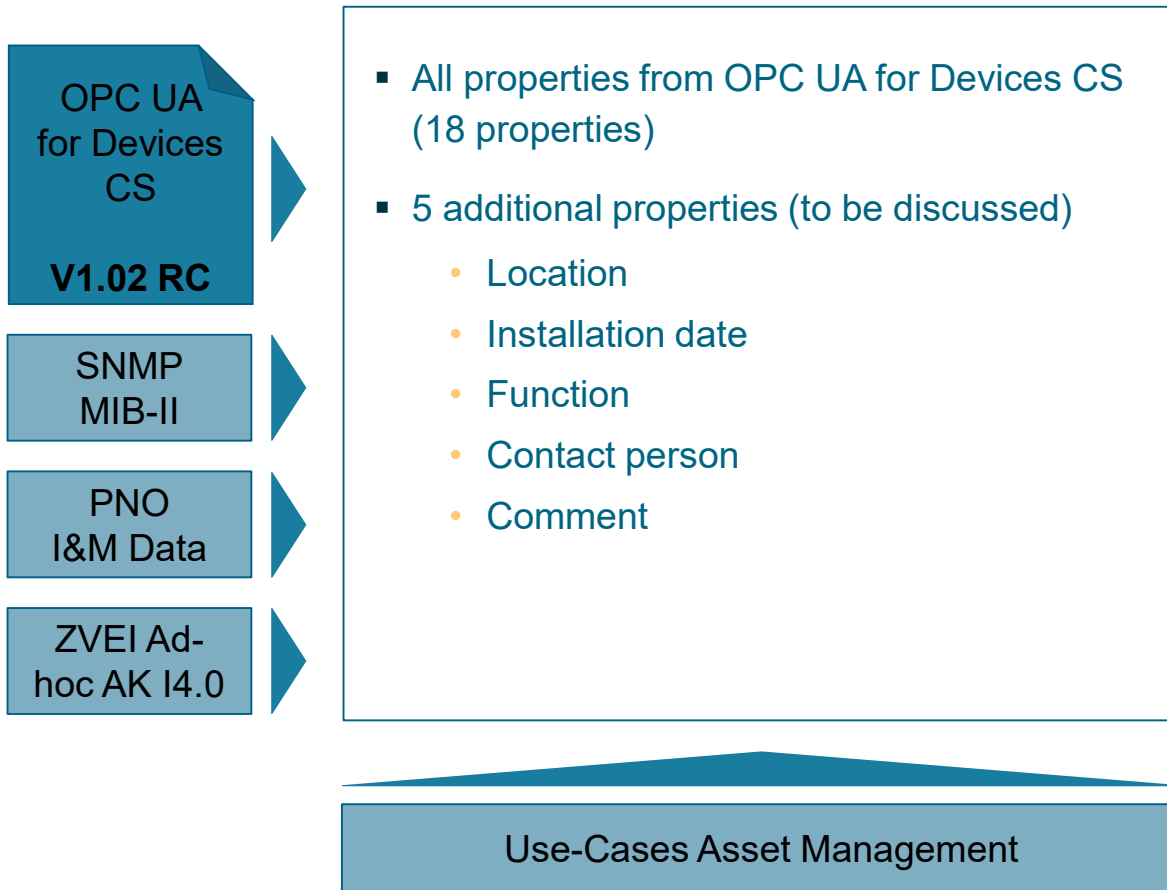
✓: Will be supported in Version 1 of the OPC UA CS

✗: Will **not** be supported in Version 1 of the OPC UA CS because it is included in the OPC UA DI Specification

The First Proposal for Identification Data Variables is to Reuse the Definition of OPC UA for Devices CS and Extend it Only Very Minor



1st Proposal for Identification Data for OPC UA CS for the Powertrain



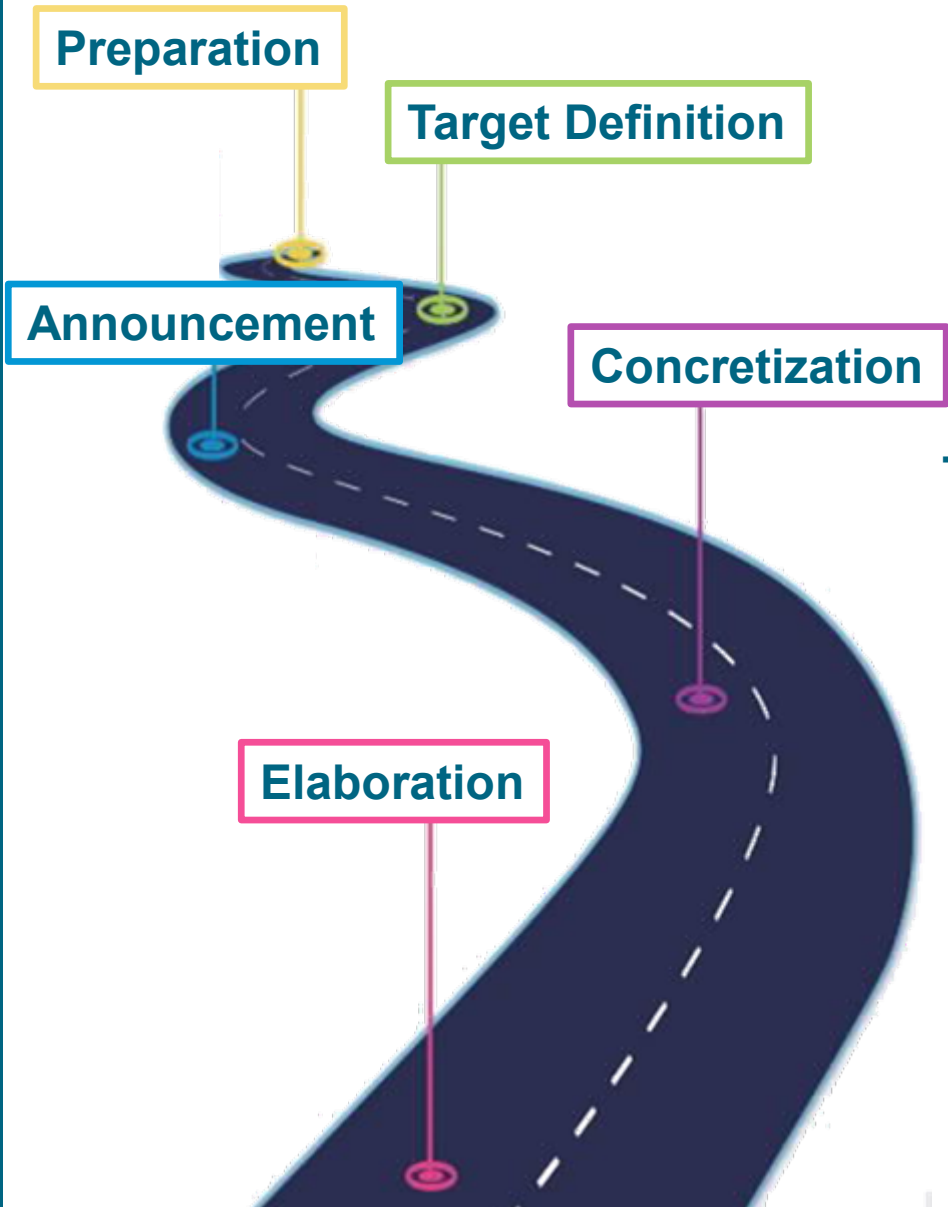
Definition of the required properties

Property Name	Description	Variable	String
SerialNumber	The Serial Number Property is a unique production number of the manufacturing process. This is often stamped on the side of the device and cannot be changed.	Variable	String
RevisionCounter	The Revision Counter Property is a unique production number of the manufacturing process.	Variable	String
Manufacturer	The Manufacturer Property is the name of the manufacturer of the device.	Variable	String
DeviceName	The Device Name Property is the name of the device.	Variable	String
DeviceRevision	The Device Revision Property is the revision level of the device.	Variable	String
SoftwareRevision	The Software Revision Property is the revision level of the software/firmware of the device.	Variable	String
HardwareRevision	The Hardware Revision Property is the revision level of the hardware of the device.	Variable	String
DeviceClass	The Device Class Property is the classification of the device.	Variable	String

Status OPC UA for Devices CS V1.02

- Release Candidate is in Review
- Additional properties are not part of the review version
- Major enhancements regarding modelling
 - DeviceType has been “extended”
 - ComponentType (new)
 - DeviceType
 - SoftwareType (new)
 - Specialized topology elements
 - Configurable components (new)
 - Block devices
 - Modular devices
 - DeviceFeatures Object (new)

VDMA Process for OPC UA Companion Specification



- Preparation** {
 - Working Group Formation
 - Research✓

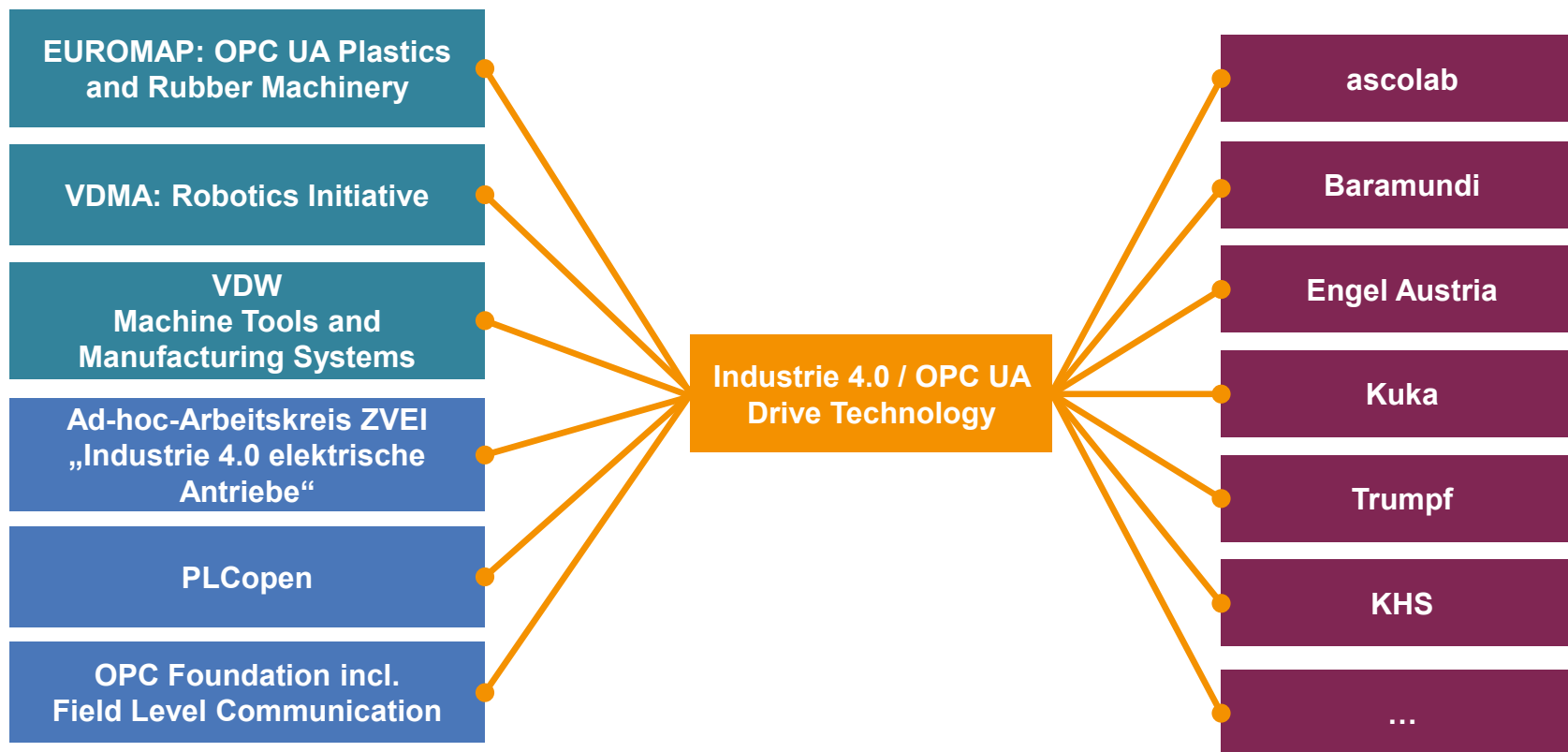
- Target Definition** {
 - Selection of Maschine Type
 - Collecting of Use Cases
 - Section of the Use Case✓

- Announcement** {
 - Announcement at OPC Foundation
 - Announcement at VDMA NAM✓

- Concretization** {
 - Concretization of the Use Case
 - Determination of Parameters⚠

- Elaboration** {
 - Object Orientation & Variable Determination
 - Information Modeling
 - Documentation of the OPC UA CS

Networking avoid Duplication of Work and set`s the Focus on User Requirements



■ VDMA OPC UA Groups
 ■ External Associations
 ■ Companies – External Guests



Join the Joint Working Group Industrie 4.0 / OPC UA Drive Technology



Relevant Components:

- Infeed
- Electric Motor
- Transmission
- Brake
- Feedback Systems

Dr. Oliver Barth
Wittenstein cyber motor

Gregor Dietz
SEW-EURODRIVE

Chairman

Vice Chairman

Joint Working Group



- Ad-hoc Web Meetings
- Weekly Web Meeting
- Working Group Meetings

Thank you
Thank you
for your attention!



Chairman

Dr. Oliver Barth
JWG Industrie 4.0 / OPC UA
Drive Technology
Wittenstein cyber motor



VDMA Contact

Tobias Hitzel
VDMA
Power Transmission Engineering
Phone: +49 69 6603-1180
E-Mail: tobias.hitzel@vdma.org