

Empowering the All Electric Society 

**100** years of passion for  
technology and innovation

Welcome

**What is AAS and  
demonstration of  
important use cases**



# Andreas Orzelski, Master Specialist Standardization, Industrie 4.0

- Industrial Digital Twin Association (IDTA)
  - Board
  - WG Open Technology, WS AAS, Task Force REST API, Task Force Security, WS Open Source
- AAS Open Source,
  - AASX Package Explorer and AASX Server
- IEC WG 24 „Asset Administration Shell“ (IEC 63278)
- DKE K 931 "System Aspects of Automation"
  - DKE AK 931.0.14 "Smart Manufacturing and Industrie 4.0"
  - DKE AK 931.0.16 „Asset Administration Shell"



# Industrial Digital Twin Association

Home of the Asset Administration Shell - <https://industrialdigitaltwin.org/>

# Release of V3 Metamodel and REST API



The image displays four document covers for the 'Specification of the Asset Administration Shell' (AASX) series, all released in April 2023. Each cover features the IDTA logo, a 'JUST RELEASED' badge, and a 'Download' button with a right-pointing arrow.

- Part 5: Package File Format (AASX)**  
Specification of the Asset Administration Shell Part 5: Package File Format (AASX)  
IDTA Number: 01005-3-0
- Part 3a: Data Specification – IEC 61360**  
Specification of the Asset Administration Shell Part 3a: Data Specification – IEC 61360  
IDTA Number: 01003-a-3-0
- Part 2: Application Programming Interfaces**  
Specification of the Asset Administration Shell Part 2: Application Programming Interfaces  
IDTA Number: 01002-3-0
- Part 1: Metamodel**  
Specification of the Asset Administration Shell Part 1: Metamodel  
IDTA Number: 01001-3-0

<https://industrialdigitaltwin.org/en/content-hub/downloads>

# AAS exhibits on Hanover Fair

## AAS exhibits

**rexroth**  
A Bosch Company

**AAS Product Onboarding | Integrate product data into your system landscape**  
Have a single point of information. Speed-up engineering and commissioning. Enable data-driven decisions. Act sustainably – create your DPP4.0, trace the PCF.

**AAS Process Orchestration | Make your factory processes more flexible**  
Accelerate and ease your commissioning with the Bosch Rexroth Simulation Library (BRSL). Orchestrate your process with the FACTORY Orchestration Platform.

**AAS Factory Supervision | Analyze the big picture with service and support**  
Let your employees get situation-dependent instructions, notifications and live process insights. Get the AAS and contact service experts with the DSA App.

Hall 6  
Booth D26

**SCHUNK**

**Digital Product Pass for SCHUNK smart Products**  
Demonstration of smart products and their integration in data spaces and next generation digital services.

Hall 6  
Booth F21

**VDMA**

**Fluidpower 4.0**  
Live demonstration of AAS for hydraulic and pneumatic products with integrated Submodels like Digital Nameplate and documentation, CAD data, change notification.

Hall 6  
Booth B57

**Fraunhofer**

**AAS-driven Views and Business Cases for Industrial Equipment**  
Connecting industrial equipment and their Digital Twins in the cloud enables the implementation of innovative business cases: A live demonstration with Stäubli.

Hall 7  
Booth D27

**Lenze**

engineered to win

**Lenze Digital Twin - The Future Central Hub of a Machine**  
With the generic architecture, information from machines and components for a wide variety of applications is available to OEMs and operators.

Hall 7  
Booth D28

**FESTO**

**Interoperable Digital Twins for Festo product range**  
Driving the industrial transformation with AAS & AML Digital Twins for battery handling, product carbon footprint and virtual commissioning of handlings.

Hall 7  
Booth D31

**ARENA2036**

**Asset Administration Shell for the wire harness (VWS4LS)**  
The objective of the VWS4LS project is to implement the AAS for development, production and assembly of the wire harness in automobiles.

Hall 8  
Booth E06

**Yuba Chain Platform**

**Life Cycle Assessment (focusing on PCF Tracking) for Battery Industry**  
An introduction of VCP implementing Life Cycle Assessment (focusing on Product Carbon Footprint Tracking) for battery industry using AAS & EDC.

Hall 8  
Booth C14

**GNTPE**

Booth C14

**AAS & private 5G based Smart factory in Korea**  
An introduction of manufacturing operating system (MOS) and VR implemented in Central, an automotive parts factory in Korea, using private 5G and AAS technology.

**NEST + FIELD**

Booth C14

**EV Battery lifecycle Management using AAS**  
An AAS based EV battery pack life cycle management solution that integrating production process data and real-time monitored data from vehicles in operation.

**Meta-Level**

Booth D26

**AAS Suite for Asset Administration Shells**  
AAS Suite provides great tools around AAS. You can easily create, edit, view human readable, share, publish (internal or public), find and instantiate AAS.

**IDTA**

**AAS Data Management**  
Cross-application use of standardized Submodels and integration of engineering projects within the AAS using a repository and AAS management system.

**AAS Product Carbon Footprint**  
Application of the Digital Product Passport for Industrie 4.0 (DPP4.0) using the example of calculating the product carbon footprint of a control cabinet.

Booth D26

**Realtime Demonstrator of an active AAS on Connectivity+**  
Demonstrator of a real-time value case of intelligent connectivity that shows the benefits of the AAS for all stakeholders along the industrial value chain.

**UNIVERSITÄT DUISBURG ESSEN**

Booth D26

**AAS networked**  
Autonomous Digital Twins interact directly with each other and make decisions related to allocation of production resources across company boundaries.

**ILN4.0**

Booth D26

**Germany-USA supply chain CO2 reporting using AAS**  
Production chain consisting of several machines at different locations (Germany and United States) to produce ball pen using several AAS submodels.

**Catena-X**

Booth D28

**Catena-X: The Automotive Value Chain**  
Digital Twins are created using the AAS and enable cross-company interoperability and continuous exchange of data in the automotive value chain.

**SIEMENS**

**Simulation for Automation - Speed up engineering by AAS**  
By utilizing the AAS & Siemens solutions, a standardized Digital Twin exchange across company boundaries is realized to increase efficiency within engineering.

Booth D53

**Realtime Demonstrator of an active AAS on Connectivity+**  
Interoperable Digital Twins enabled by the AAS help us to increase efficiency and data quality within engineering and further lifecycle phases.

**OMRON**

Booth F24

**Dataspace Access Control and Ownership**  
OMRON, NTT and TNO demonstrate full data ownership and access control of data that is generated in a factory, securely shared via an International Data Space.

**PEPPERL+FUCHS**

Booth D76

**AAS - The Future of Asset Communication in your Production**  
Several products are shown, all carry an IEC61406-QR-Code and demonstrate a solution to automatically generate AAS.

**NECEPTION**

Booth D76

**Standardized Digital Access to Product Documentation**  
Several products are shown, all carry an IEC61406-QR-Code to access the AAS. By scanning the code type and instance data related to the product is displayed.

**100**

Booth F40

**Manufacturing-X**  
Phoenix Contact shows for Manufacturing-X how OT security can be ensured by using the AAS to find and access software updates.

**Multi Vendor Condition Monitoring via OI4 and AAS**

Booth D36

Using the OI4 AAS infrastructure, ifm shows the exchange of asset nameplates, health status and calibration certificates between multiple field and cloud vendors.

**zvei**

Booth B29

**ZVEI-Show-Case PCF@Control Cabinet**  
Application of the Digital Product Passport for Industrie 4.0 (DPP4.0) using the example of calculating the product carbon footprint of a control cabinet.

**RITTAL**

Booth E06

**Article data with PCF according to Industry 4.0 with the AAS**  
Rittal and Phoenix Contact show how to use Rittal's digital wiring plan pocket „ePOCKET“ to access the AAS of a component in the cloud.

**HARTING**

Booth C15

**Realtime Demonstrator of an active AAS on Connectivity+**  
For more than thousand connectors the AAS has been made available starting the HANNOVER Fair 2023. This allows seamless integration of connectors in the entire Lifecycle.

**Fraunhofer**

Booth A12

**BaSys in the chocolate factory: Digitalization of production**  
Simulation of production with a Fischertechnik factory and demo of how to use BaSys to digitally network multiple sites and how to create a shared data space.

**SAP**

Booth E17

**The AAS in their various ecosystems**  
SAP demonstrates different scenarios, where the AAS will add value in context of today's and future system landscapes and business processes.

**Realtime Demonstrator of an active AAS on Connectivity+**

Booth E17

The SAP contribution to the joint showcase focuses on the origin of exemplary AAS content (e.g. Material Master) and the linkage of AAS to Business Processes.

**INTERX**

Booth D64

**AAS-based manufacturing data acquisition solution**  
INTERX solution collects various manufacturing data such as injection molding and CNC machine data in AAS format. AI models using acquired data are generated.

**GFT**

Booth F28

**SPHINX OPEN - Home of the Asset Administration Shell**  
Presenting the seasoned SPHINX OPEN platform in the context of Asset Administration Shell (AAS) implementation for industrial applications.

**FABOS**

Booth H07

**FabOS - The Operating System for the Factory of the Future**  
In FabOS, AAS supports the IT and OT hardware resource management in heterogeneous system landscapes to enable dynamic and interoperable service deployment.

**Fraunhofer**

Booth A06

**FA\*ST Eco-Twin and support for time series data**  
This demonstrator shows how the FA\*ST service and tools can be used to combine production data with eco-parameters to create a green product Digital Twin.

**bill-X**

Booth G12

**The runtime for the Digital Twin**  
The ActiveDB digital ecosystem from bill-X as a runtime for the AAS. Use the interactive Digital Twin and bill it directly with bill-X OpenInformer.

**CONTACT**

Booth H20

**Special implementation for AASX/Exchange in AASHub research project**  
CONTACT Elements for IoT drives the consistent automation of processes. Requirements for quality, sustainability, security can be met faster and more flexible.

**BOSCH**

Booth G06

**Bosch Semantic Stack - Product-centric digital transformation**  
Bosch shows how digital twins create added value throughout the entire product lifecycle and enable cross-company data exchange, based on the AAS standard.

**IndustryApps**

Booth E05

**Automated Digital Twin builder - From Data Swamp to Data space**  
Demonstrates how asset informations from distributed systems like ERP, PLM or MES are automatically converted to standardized AAS based Digital Twins.

**Microsoft**

Booth G06

**Realtime Demonstrator of an active AAS on Connectivity+**  
This is the operational phase of the joint Harting, IDTA, Microsoft, SAP and Siemens demonstrator of the Harting "SmEC" product along all 4 lifecycle phases.

⚙️ = Part of joint Demonstrator on AAS for Connectivity+

[https://industrialdigitaltwin.org/en/wp-content/uploads/sites/2/2023/04/2023\\_IDTA\\_AAS-Guide-HM.pdf](https://industrialdigitaltwin.org/en/wp-content/uploads/sites/2/2023/04/2023_IDTA_AAS-Guide-HM.pdf)

# Overview of Submodel Templates on Website



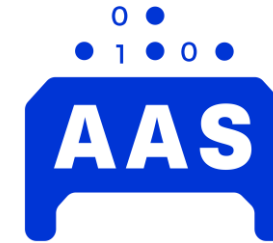
The screenshot shows the IDTA website's 'Registered AAS Submodel Templates' page. The page features a navigation bar with links for Home, Über IDTA, Use Cases, Technologie, Content Hub, and News & Termine. A search bar is located on the right. The main content area displays a table with the following data:

Submodel Template	IDTA Number	Version	Status	View on GitHub
Inclusion of Module Type Package (MTP) Data	2001	1.0	In Review	Coming soon
Contact Information	2002	1.0	In Review	Coming soon
Generic Frame for Technical Data for Industrial Equipment in Manufacturing	2003	1.2	In Review	Coming soon
Handover Documentation	2004	1.2	In Review	Coming soon
Simulation	2005	1.0	In Development	<a href="#">GitHub</a> →
Digital Nameplate for Industrial Equipment	2006	1.1	In Development	Coming soon

<https://industrialdigitaltwin.org/en/content-hub/submodels>



## Test Result



Filename	SMT_qualified_ZVEI_Digital_Nameplate_V10.aasx
File Hash	sha256:05a7236bae192269f94b6781685f164470a16418cc33e59b0d8a7d3e1264d5dc
Testtools	0.1
Specification	3.0RC01
Date	May 12, 2022, 12:49 p.m.
Result	<b>Passed</b>

## Test Log

- aas:aasenv
  - aas:submodels
    - aas:submodel
      - aas:submodelElements
        - aas:submodelElement[1]

1		Compliance Test executed:
2	<b>SUCCESS</b>	Open file
3	<b>SUCCESS</b>	Read file
4	<b>WARNING</b>	aas qualifier on line 54 has more than one constraint, using the first one...
5	<b>ERROR</b>	KeyError aas:valueType on line 57 has no text!

# Industrie 4.0 components

## Assets integrate into the IT world

Integration of *assets* into the world of information

Asset = everything that requires a "connection" for an Industrie 4.0 solution

- ▶ Machines and their components
- ▶ Supply materials, parts and products
- ▶ Exchanged documents (e.g. drawings, wiring diagrams)
- ▶ Contracts
- ▶ Orders
- ▶ ...





# Asset Administration Shell

## Why?

- ▶ The Asset Administration Shell is the **implementation of the „Digital Twin“** for Industrie 4.0
- ▶ The Asset Administration Shell establishes **cross-company interoperability**.
- ▶ The Asset Administration Shell is available for **non-intelligent and intelligent products**.
- ▶ The Asset Administration Shell covers the **complete life cycle** of products, devices, machines and facilities.
- ▶ The Asset Administration Shell enables **integrated value chains**.
- ▶ The Asset Administration Shell is the **digital basis for autonomous systems and AI**.



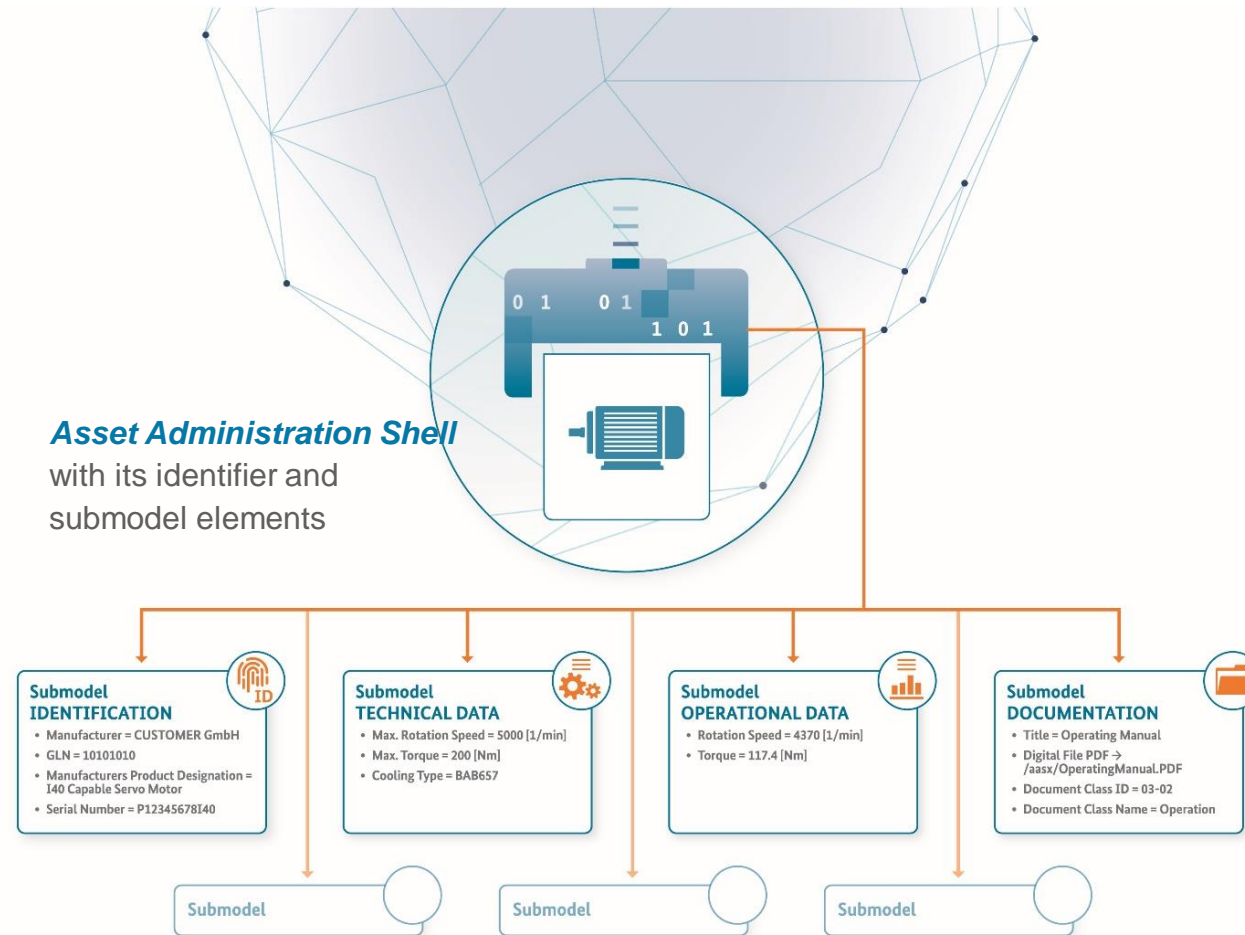
## Examples for the lifecycle of an asset



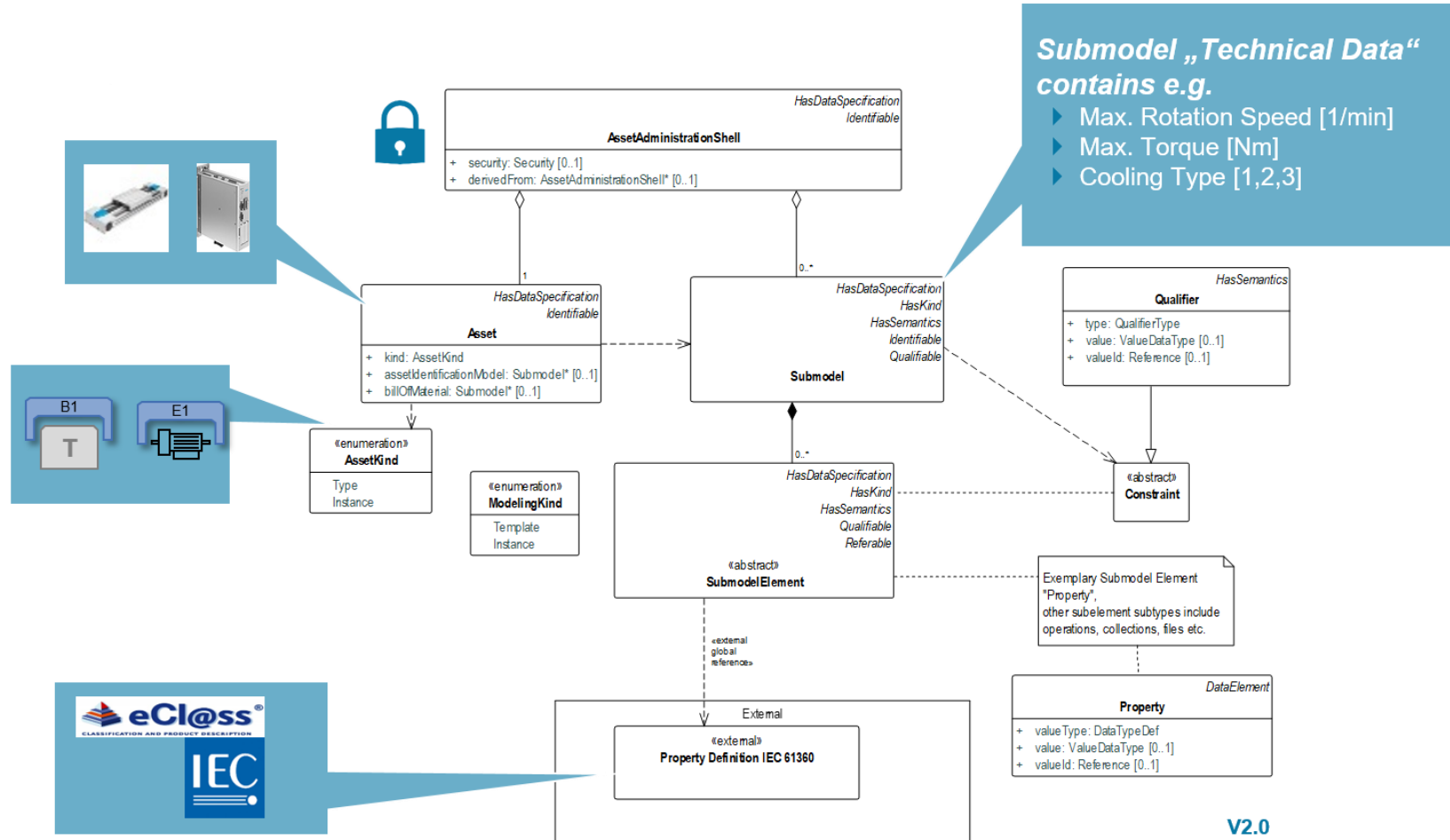
Asset Type (article) and Asset Instance (with serial number)

# Details of the Asset Administration Shell

## The generic structure of the meta-information model

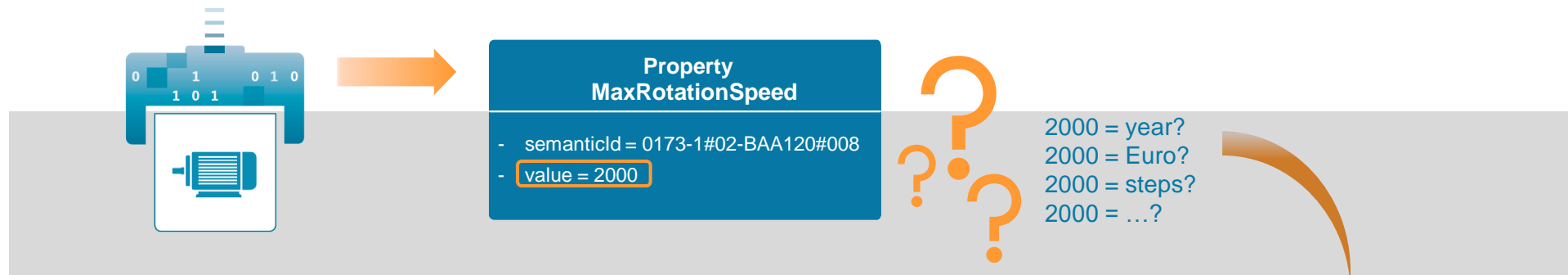


# Details of the Asset Administration Shell Meta information model - Basic



# Details of the Asset Administration Shell

## Use of semantic IDs



semanticId

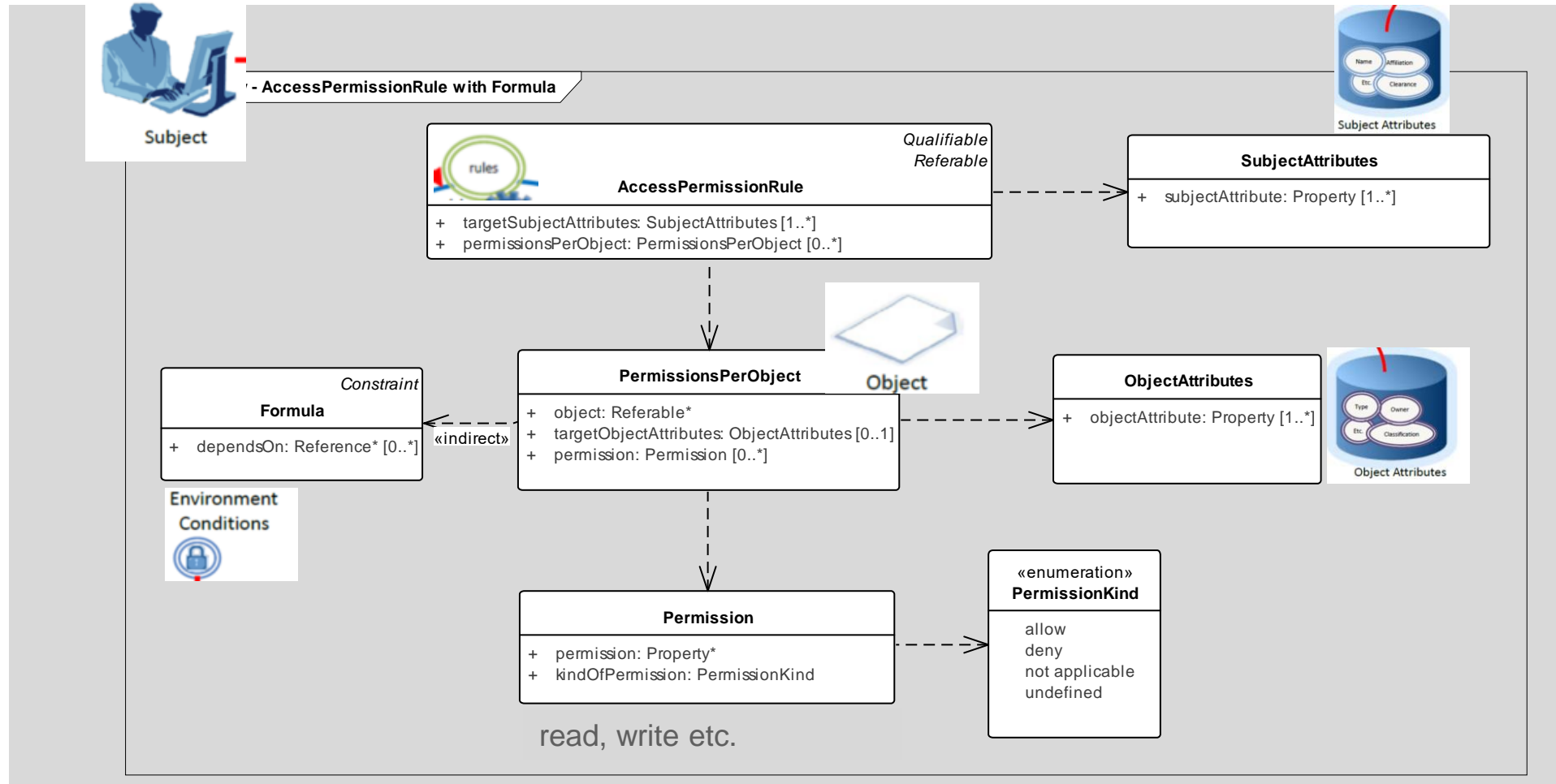


Property	0173-1#02-BAA120#008 Max. rotation speed
Data type	INTEGER_MEASURE
Unit of measure	1/min
Definition	Greatest possible rotation speed with wich the motor or feeding unit may be operated


2000 = Max. rotation speed (1/min)

# Security

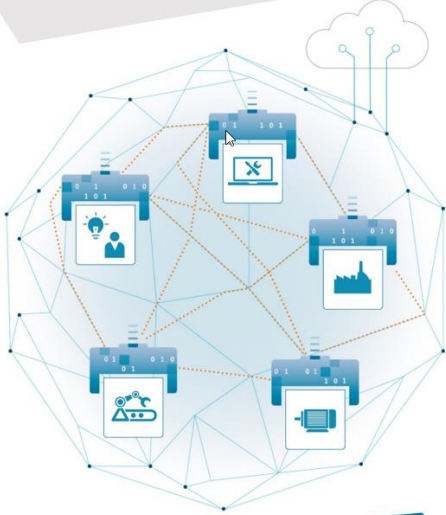
## Access rules




# Details of the AAS Part2: API



SPECIFICATION  
**Details of the Asset Administration Shell**



**Part 2 – Interoperability at Runtime – Exchanging Information via Application Programming Interfaces (Version 1.0RC03)**



Entire-API-Collection ▾ V1.0RC03 ▾

Info  
 Tags  
 Servers  
 Search

**Asset Administration Shell Repository API** ▾

- GET /shells
- POST /shells
- GET /shells/{aasIdentifier}
- PUT /shells/{aasIdentifier}
- DELETE /shells/{aasIdentifier}

**Asset Administration Shell API** ▾

- GET /aas
- PUT /aas
- GET /aas/asset-information
- PUT /aas/asset-information
- GET /aas/submodels
- POST /aas/submodels
- DELETE /aas/submodels/{submodelIdentifier}

**Submodel Repository API** ▾

- GET /submodels
- POST /submodels
- GET /submodels/{submodelIdentifier}

```

29     - 'v1'
30     default: v1
31   paths:
32     /shells:
33       get:
34         tags:
35           - Asset Administration Shell Repository API
36           summary: Returns all Asset Administration Shells
37           operationId: GetAllAssetAdministrationShells
38           x-semanticIds:
39             - https://admin-shell.io/aas/API/GetAllAssetAdministrationShells/1/0/RC03
40             - https://admin-shell.io/aas/API/GetAllAssetAdministrationShellsByAssetId/1/0/RC03
41             - https://admin-shell.io/aas/API/GetAllAssetAdministrationShellsByIdShort/1/0/RC03
42         parameters:
43           - name: assetIds
44             in: query
45             description: A list of specific Asset identifiers
46             required: false
47             style: form
48             explode: true
49             schema:
50               type: array
51               items:
52                 $ref: 'https://api.swaggerhub.com/domains/Plattform_i40/Part1-MetaModel-Schemas/V3.0RC02#/components/schemas/SpecificAssetId'
53             example: '[ { "name": "some-asset-id", "value": "http://example-company.com/myAsset", "externalSubjectId": { "keys": [ { "type": "GlobalReference", "value": "http://example-company.com/example-companys-asset-keys" }, { "type": "GlobalReference" } ] }, { "name": "some-other-asset-id", "value": "12345ABC", "externalSubjectId": { "keys": [ { "type": "GlobalReference", "value": "http://my-own-company.com/keys" }, { "type": "GlobalReference" } ] }, { "name": "globalAssetId", "value": "http://example.company/myAsset", "externalSubjectId": "http://example.company"}, {"name": "myOwnInternalAssetId", "value": "12345ABC", "externalSubjectId": "http://example.company"} ]'
54           - name: idShort
55             in: query
56             description: The Asset Administration Shell's IdShort
57             required: false
  
```

Read Only

**DotAAS Part 2 | HTTP/REST | Entire API Collection**

V1.0RC03 OAS3

The entire API collection as part of Details of the Asset Administration Shell Part 2

[Terms of service](#)

Servers

Computed URL:

Server variables

protocol

host\_name

port

Last Saved: 9:03:06 am - Aug 30, 2022

VALID

# IEC 63278 AAS

- CDV 63278-1 Structure
- Voting successful 😊
- Creating the FDIS
- 63278-2 Metamodel
- Explaining the detailed existing AAS metamodel
- Creating a first CD
- 63278-3 Security
- Mapping IEC 62443 Security requirements to AAS
- Creating a first CD
- 63278-x Usecases



## TC 65 Industrial-process measurement, control and automation

Scope Structure Projects / Publications Documents Votes Meetings Collaboration Platform

Working Documents > [Voting Result: 65/925\(F\)/CDV](#)

### P-Members vote

P-Members Voting	P-Members In favour	In favour %	Criteria	Result
17	17	100	>=66.7%	APPROVED

### All Votes

Total Votes Cast	Total Against	Against %	Criteria	Result
19	0	0	<=25%	APPROVED

[en](#) [fr](#)

Voting Result**APPROVED**

Document 65/925(F)/CDV

**Project : IEC 63278-1 ED1**

IEC 63278-1 ED1: Asset Administration Shell for industrial applications ? Part 1: Asset Administration Shell structure

Reference	Circulation date	Closing date	Downloads
65/925(F)/CDV	2022-05-20	2022-08-05	2189 kB

**Compilation of Comments**

CC file



# AASX Package Explorer – the editor for Digital Twins

AASX Package Explorer - HTTP file: https://admin-shell-io.com/51511/server/getaasx/6

File Workspace Options Help

based on specifications of Platform Industrie 4.0 **INDUSTRIE 4.0**


www.company.com/ids/aas/2520\_6010\_8091\_1277

**Submodel**

Submodel element

Submodel element

www.company.com/ids/asset/8220\_6010\_8091\_3593



Unnamed repository

- "Festo\_357PM0CP4BD", "FPK\_3s7pIfdrs35"  
Assets: HTTP://PK.FESTO.COM/357PM0CP4BD  
AAS: smar.festo.com/demo/aas/1/1/454576463
- "Bosch\_NexoPistolGripNutrunner", "M060884200"  
Assets: http://dc-qt.com?m=060884200&s=917  
AAS: https://boschrexroth.com/shells/060884200
- "Bosch\_R901509807\_1201694127", "R901509807"  
Assets: http://dc-qt.com?m=R901509807&s=184  
AAS: https://boschrexroth.com/ids/aas?p=6523
- "Bosch\_CompactModuleBallRailSystem", "MR036"  
Assets: http://dc-qt.com?m=R036037000&s=100  
AAS: https://boschrexroth.com/shells/R03603700
- "Bosch\_CompactModuleToothedBeltDrive", "MR0"  
Assets: http://dc-qt.com?m=R036447000&s=100  
AAS: https://boschrexroth.com/shells/R03644700
- "Bosch\_PrecisionModulePSK", "MR055732577\_51"  
Assets: http://dc-qt.com?m=R055732577&t=PSK  
AAS: https://boschrexroth.com/shells/R05573257
- "PhoenixContact\_R901278815\_25", "R901278815"  
Assets: www.company.com/ids/asset/8220\_6010\_8091\_3593  
AAS: www.company.com/ids/aas/2520\_6010\_8091\_1277
- "SE\_Tesys\_Island\_Header", "SE\_Tesys\_Island\_Head"  
Assets: www.company.com/ids/asset/8220\_6010\_8091\_3593  
AAS: www.company.com/ids/aas/2520\_6010\_8091\_1277
- "SE\_Tesys\_Island\_Power", "SE\_Tesys\_Island\_Power"  
Assets: www.company.com/ids/asset/8220\_6010\_8091\_3593  
AAS: www.company.com/ids/aas/2520\_6010\_8091\_1277

**AAS** "PhoenixContact\_R901278815\_25" [IRI, www.company.com/ids/aas/2520\_6010\_8091\_1277] of [IRI, www.company.com/ids/sm/4343\_5072\_7091\_3242]

- SM** "Nameplate" [IRI, www.company.com/ids/sm/4343\_5072\_7091\_3242]
  - HSU** Nameplate Submodel of the HSU ready
    - Prop** "ManufacturerName" = PHOENIX CONTACT GmbH & Co. KG
    - Prop** "ManufacturerProductDesignation" = QUINT4-PS/3AC/24DC/20
  - SMC** "PhysicalAddress" (5 elements)
    - Prop** "ManufacturerProductFamily"
    - Prop** "SerialNumber" = 2904622001634T0008
    - Prop** "BatchNumber" = 123
    - Prop** "ProductCountryOfOrigin" = DE
    - Prop** "YearOfConstruction" = 2016
  - SMC** "Marking\_CE" (2 elements)
- SM** "Document" [IRI, www.company.com/ids/sm/2543\_5072\_7091\_2660]
  - SMC** "DeclarationCEMarking" (31 elements)
    - Prop** "DocumentType" = Single
    - Prop** "VDI2770\_DomainId"
    - Prop** "VDI2770\_IdType" = Primary
    - Prop** "DocumentId"
    - Prop** "DocumentDomainId"
    - Prop** "VDI2770\_Role" = Responsible
    - Prop** "VDI2770\_OrganisationId"
    - Prop** "VDI2770\_OrganisationName" = Phoenix Contact
    - Prop** "VDI2770\_OrganisationOfficialName" = PHOENIX CONTACT GmbH & Co. KG
    - Prop** "VDI2770\_Description"
    - Prop** "DocumentPartId"
    - Prop** "DocumentClassification\_ClassId" = 02-04
    - Prop** "VDI2770\_ClassName" = Zeugnisse, Zertifikate, Bescheinigungen
    - Prop** "ClassificationSystem" = VDI2770:2018
    - Prop** "DocumentVersionId"
    - Prop** "DocumentVersion\_LanguageCode" = en, de
    - Prop** "VDI2770\_Title" = EU\_Declaration\_of\_Conformity.pdf
    - Prop** "VDI2770\_Summary"

Element Content

**Asset Administration Shell**

**Referable:**  
idShort: PhoenixContact\_R901278815\_25  
category: CONSTANT

**HasDataSpecification (Reference):**

**Identifiable:**  
idType: IRI  
id: www.company.com/ids/aas/2520\_6010\_8091\_1277

**Asset Reference**  
assetRef: (Asset) (local) [IRI] www.company.com/ids/asset/8220\_6010\_8091\_3593

**Asset**

**Referable:**  
idShort: R901278815\_25

**HasDataSpecification (Reference):**

**Identifiable:**  
idType: IRI  
id: www.company.com/ids/asset/8220\_6010\_8091\_3593

**Kind:**  
kind: Instance




**Submodel references with special meaning**

Reload Drag from here Show Content

Errors: 1 Clear Report


Successfully loaded AASX https://admin-shell-io.com/51511/server/getaasx/6

# AASX Server

AASX Browser  based on specifications of Plattform Industrie 4.0 **INDUSTRIE 4.0**  AASX Model  LICENSE.TXT

- [-] AAS Festo\_3S7PM0CP4BD (21-06-20 11:18:18.813)
- [-] AAS Bosch\_NexoPistolGripNutrunner (21-06-20 11:18:18.813)
- [-] AAS Bosch\_R901509807\_1201694127 (21-06-20 11:18:18.813)
- [-] AAS Bosch\_CompactModuleBallRailSystem (21-06-20 11:18:18.813)
- [-] AAS Bosch\_CompactModuleToothedBeltDrive (21-06-20 11:18:18.813)
- [-] AAS Bosch\_PrecisionModulePSK (21-06-20 11:18:18.813)
- [-] AAS PhoenixContact\_R901278815\_25 (21-06-20 11:18:18.813)
  - [-] Sub Nameplate (01-01-01 00:00:00.000)
    - Prop ManufacturerName = PHOENIX CONTACT GmbH & Co. KG (21-06-20 11:18:18.813)
    - Prop ManufacturerProductDesignation = QUINT4-PS/3AC/24DC/20 (21-06-20 11:18:18.813)
    - [-] Coll PhysicalAddress #5 (21-06-20 11:18:18.813)
      - Prop ManufacturerProductFamily (21-06-20 11:18:18.813)
      - Prop SerialNumber = 2904622001634T0008 (21-06-20 11:18:18.813)
      - Prop BatchNumber = 123 (21-06-20 11:18:18.813)
      - Prop ProductCountryOfOrigin = DE (21-06-20 11:18:18.813)
      - Prop YearOfConstruction = 2016 (21-06-20 11:18:18.813)
    - [-] Coll Marking\_CE #2 (21-06-20 11:18:18.813)
  - [-] Sub Document (01-01-01 00:00:00.000)
  - [-] Sub Service (01-01-01 00:00:00.000)
  - [-] Sub Identification (01-01-01 00:00:00.000)
- [-] AAS SE\_Tesys\_Island\_Header (21-06-20 11:18:18.813)
- [-] AAS SE\_Tesys\_Island\_Power (21-06-20 11:18:18.813)
- [-] AAS SE\_Tesys\_Island\_Starter (21-06-20 11:18:18.813)
- [-] AAS SE\_Modicon\_M262 (21-06-20 11:18:18.813)
- [-] AAS PeFu\_267075\_100078 (21-06-20 11:18:18.813)
- [-] AAS dkeNamePlate (21-06-20 11:18:18.813)
- [-] AAS Siemens\_SITRANS\_P320 (21-06-20 11:18:18.813)
- [-] AAS Siemens\_S7\_CPU1515 (21-06-20 11:18:18.813)
- [-] AAS Lenze\_J950 (21-06-20 11:18:18.813)
- [-] AAS ABB\_TTF\_300 (21-06-20 11:18:18.813)
- [-] AAS Hitachi\_000000001 (21-06-20 11:18:18.813)
- [-] AAS Balluf\_3S7PM0CP4BD (21-06-20 11:18:18.813)
- [-] AAS Festo\_VUVG-L14-T32C-AT-G18-1R8L\_99920200623114915000017235 (21-06-20 11:18:18.813)
- [-] AAS Festo\_SPAU-P2R-W-G18FD-L-PNLK-PNVBA-M8U\_99920200617184803000010084 (21-06-20 11:18:18.813)
- [-] AAS Festo\_OVEL-10-H-15-PQ-VQ6-UA-C-A-B2PNLK-H3\_99920200616233035000015777 (21-06-20 11:18:18.813)
- [-] AAS Festo\_EPCC-BS-32-100-3P-A\_99920200623113326000013225 (21-06-20 11:18:18.813)
- [-] AAS Festo\_EMME-AS-40-M-LV-AS\_99920200617190044000012858 (21-06-20 11:18:18.813)
- [-] AAS Festo\_DPDm-Q-32-10-PA\_9992020061621452000010828 (21-06-20 11:18:18.813)
- [-] AAS Festo\_DGST-16-125-E1A\_99920200616215443000010836 (21-06-20 11:18:18.813)
- [-] AAS Festo\_CMMT-ST-C8-1C-EC-S0\_99920200616193249000010710 (21-06-20 11:18:18.813)
- [-] AAS Wittenstein\_aas\_xNNkj1e (21-06-20 11:18:18.813)

AAS PhoenixContact\_R901278815\_25  
ID [IRI] www.company.com/ids/aas/2520\_6010\_8091\_1277  
ASSET R901278815\_25  
ASSETID [IRI] www.company.com/ids/asset/8220\_6010\_8091\_3593  
ASSETID URLENCODED www.company.com%2Fids%2Fasset%2F8220\_6010\_8091\_3593  
UPDATE 21-06-20 11:18:18.813  
TIMESTAMP  
CREATE 21-06-20 11:18:18.813  
<https://admin-shell-io.com/51511/server/getaasx/6>  
QR CODE  
[https://admin-shell-io.com/51511/server/getaasxbyassetid/www.company.com%2Fids%2Fasset%2F8220\\_6010\\_8091\\_3593](https://admin-shell-io.com/51511/server/getaasxbyassetid/www.company.com%2Fids%2Fasset%2F8220_6010_8091_3593)



<https://admin-shell-io.com/5001/>

# Open Source on GITHUB

- <https://github.com/admin-shell-io>
  - AASX Package Explorer = Editor
  - AASX Server = Server
  - AASX IdentityServer = Security

LICENSE.txt	Add Glob to LICENSE.txt (#285)	6 months ago
README.md	Add reference to project NOVAAS	3 months ago
TestResult.xml	Refactor XML validation into a class (#214)	8 months ago
screenshot.png	Remove git lfs support (#248)	7 months ago

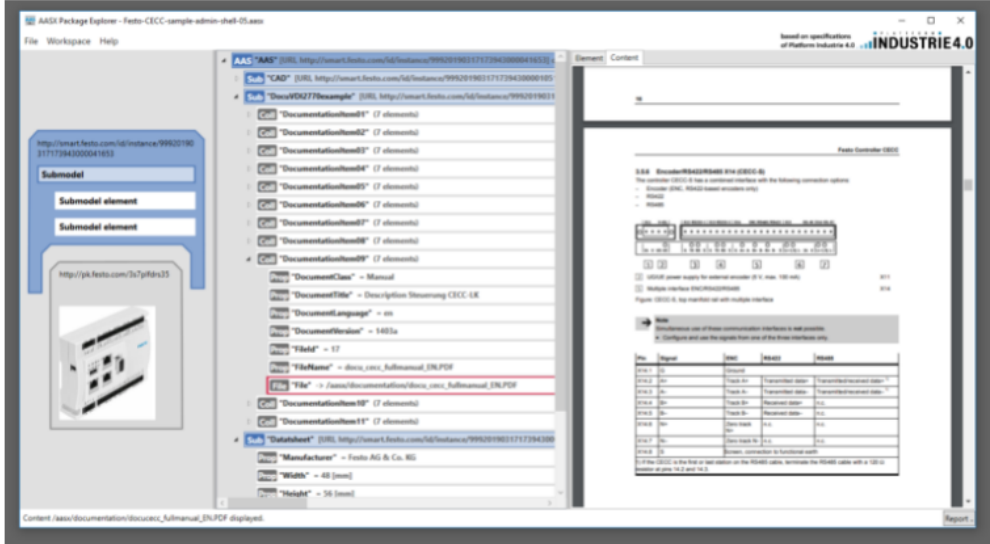
☰ README.md

## AASX Package Explorer

Build-test-inspect passing Check-style passing Check-commit-messages passing Generate-docdev passing coverage 10%

TODOS 91 BUGS 0 HACKS 2

AASX Package Explorer is a C# based viewer / editor for the Asset Administration Shell.



To help you familiarize with the concept of Asset Administration Shell we provide the screencasts (both in English and



Contributors 6

Environments 1

github-pages Active

Languages

- C# 98.0%
- PowerShell 1.8%
- Other 0.2%

# Open Source with Eclipse Foundation



← → ↻ 🏠 projects.eclipse.org/projects/dt

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## Eclipse Digital Twin


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Eclipse Digital Twin Top-Level Project is a collaborative, open source initiative at the Eclipse Foundation fostering the development of reference implementations for the activities driven by the [Industrial Digital Twin Association \(IDTA\)](#).


The Eclipse Digital Twin Top-Level Project provides a space for open source projects to produce implementations and increase adoption of solutions, prototypes and supporting software to build and consume information from digital twins. Standardized metamodels, data models with homogenized semantics and standardized APIs are crucial to ensure interoperability with respect to the information shared and exchanged between digital twins and applications. The Eclipse Digital Twin Top-Level Project supports the ecosystem orchestrated by the Industrial Digital Twin Association (IDTA).

**Licenses:**  
Apache License, Version 2.0  
The MIT License (MIT)

**Active Member Companies:**  
Member companies supporting this project over the last three months.




**Contribution Activity:**  
Commits on this project (last 12 months).



Month	Commits
1	60
2	100
3	120
4	50
5	170
6	80
7	160
8	180
9	120
10	20
11	40
12	50

**PROJECT LINKS**

- Top-level Project Charter



**RELATED PROJECTS**

Project Hierarchy:

- » Eclipse Digital Twin
  - » Eclipse AAS Model for Java
  - » Eclipse AAS Web Client
  - » Eclipse AASX Package Explorer
  - » Eclipse BaSyx™

<https://projects.eclipse.org/projects/dt>

# REST API for AAS and Submodels

The screenshot displays the SwaggerHub interface for the 'Asset Administration Shell Environment V1.0RC03' API. The left sidebar shows the API structure with endpoints for shells, submodels, and submodel elements. The main area shows the OpenAPI specification code, and the right sidebar lists various submodels such as 'Sub Nameplate', 'Sub ArticleInformation', 'Sub ContactInformation', 'Sub HandoverDocumentation', 'Sub TechnicalData', 'Sub BillOfMaterial', 'Sub ServiceNotifications', 'AAS Festo\_3S7PM0CP4BD', 'AAS Bosch\_NexoPistolGripNutrunner', 'AAS Bosch\_R901509807\_1201694127', 'AAS Bosch\_CompactModuleBallRailSystem', 'AAS Bosch\_CompactModuleToothedBeltDrive', 'AAS Bosch\_PrecisionModulePSK', and 'AAS PhoenixContact\_R901278815\_25'.

```
{
  "idShort": "Nameplate",
  "id": "https://aas.digitaltwin-vdma.org/sm/0200_3113_3022_3161",
  "kind": "Instance",
  "semanticId": {
    "type": "GlobalReference",
    "keys": [
      {
        "type": "Submodel",
        "value": "https://admin-shell.io/zvei/nameplate/1/0/Nameplate"
      }
    ]
  },
  "submodelElements": [
    {
      "category": "PARAMETER",
      "idShort": "ManufacturerName",
      "kind": "Instance",
      "semanticId": {
        "type": "GlobalReference",
        "keys": [
          {
            "type": "ConceptDescription",
            "value": "0173-1#02-AA0677#002"
          }
        ]
      },
      "dataSpecifications": [],
      "value": {
        "langStrings": [
          {
            "language": "de",
            "text": "WEISS"
          },
          {
            "language": "en",
            "text": "WEISS"
          }
        ]
      }
    }
  ],
  "modelType": "MultilanguageProperty"
},
{
  "category": "PARAMETER",
  "idShort": "ManufacturerProductDesignation",
  "kind": "Instance",
  "semanticId": {
    "type": "GlobalReference",
    "keys": [
      {
        "type": "ConceptDescription",
        "value": "0173-1#02-AAW338#001"
      }
    ]
  }
}
```

[https://app.swaggerhub.com/organizations/Plattform\\_i40](https://app.swaggerhub.com/organizations/Plattform_i40)

[https://app.swaggerhub.com/apis/Plattform\\_i40/AssetAdministrationShell-Environment/V1.0RC03](https://app.swaggerhub.com/apis/Plattform_i40/AssetAdministrationShell-Environment/V1.0RC03)

<https://v3.admin-shell-io.com/submodels/aHR0cHM6Ly9hYXMuZGlnaXRhbHR3aW4tdmRtYS5vcmcvcv20vMDIwMF8zMTEzXzZMwMjJfMzE2MQ>

<https://v3.admin-shell-io.com/> (click on readme for further explanation)



# OpenAPIs on SwaggerHub Plattform\_i40

The screenshot displays the SwaggerHub interface for the 'Plattform\_i40' organization. The left sidebar contains navigation options: 'Create New', 'MY hub', and a search bar. The main content area shows a list of API specifications, sorted by 'Recently Updated'. Each entry includes the organization name, API title, description, and status (e.g., PUBLIC | PUBLISHED). The API specifications listed are:

- Plattform\_i40**: DotAAS Part 2 | API | Schemas. Description: The schemas implementing Details of the Asset Administration Shell Part 2. Publisher: Industrial Digital. Status: PUBLIC | PUBLISHED. Tags: DOMAIN, OAS3.
- Plattform\_i40**: DotAAS Part 2 | HTTP/REST | Repository Service Specification (deprecated). Description: The entire Repository Service Specification as part of the Specification of the Asset Administration She. Status: PRIVATE | UNPUBLISHED. Tags: API, OAS3.
- Plattform\_i40**: DotAAS Part 2 | HTTP/REST | Submodel Registry Service Specification. Description: The Full Profile of the Submodel Registry Service Specification as part of the Specification of the Asset. Status: PUBLIC | PUBLISHED. Tags: API, OAS3.
- Plattform\_i40**: DotAAS Part 2 | HTTP/REST | Asset Administration Shell Registry Service Specification. Description: The Full Profile of the Asset Administration Shell Registry Service Specification as part of the Specificat. Status: PUBLIC | PUBLISHED. Tags: API, OAS3.
- Plattform\_i40**: DotAAS Part 2 | HTTP/REST | Asset Administration Shell Repository Service Specification. Description: The Full Profile of the Asset Administration Shell Repository Service Specification as part of Specificati. Status: PRIVATE | UNPUBLISHED. Tags: API, OAS3.

At the bottom of the list, it indicates 'SHOWING 1-21 OF 21' and a notification badge with the number '5'.

What is AAS - OSADL COOL - Andreas Orzelski



# OpenAPI for AAS Repository

The screenshot displays the SwaggerHub interface for the 'Asset Administration Shell Environment API'. The left sidebar lists various endpoints such as GET /shells, POST /shells, and GET /shells/{aasIdentifier}. The central code editor shows the OpenAPI specification, including the title 'DotAAS Part 2 | HTTP/REST | Asset Administration Shell Environment API' and the contact information for the project. The right sidebar provides a summary of the API, including the version 'V1.0RC03', a 'Try API Exploration Beta' button, and a 'Servers' section with a dropdown menu showing the computed URL: 'https://admin-shell.io:443/api/v1'. The interface also includes a search bar and a 'Servers' section with a dropdown menu showing the computed URL: 'https://admin-shell.io:443/api/v1'.

What is AAS - OSADL COOL - Andreas Orzelski



# Example AAS Server

The screenshot shows a web browser window with the URL <https://v3.admin-shell-io.com/>. The page title is "Readme(s)" and it features logos for "AASX Browser", "IDTA", and "INDUSTRIE 4.0". The main content area is divided into two columns. The left column contains a list of AAS instances, each with a small icon and a link to its details page. The right column contains a "Welcome to the AAS demo with V3 data model and V3 API" message, followed by instructions on how to use the API, including links to Swagger UI and examples of API calls. A red text overlay "API examples" is positioned over the right column.

[/readme/1 V3 Data Model and V3 API.HTML](#)  
[/readme/2 Queries.HTML](#)  
[/readme/3 NOTE.HTML](#)

- [AAS REGISTRY \(23-03-14 14:40:00.988\)](#)
- [AAS AAS\\_WEISS\\_HN400607 \(23-03-14 14:40:00.988\)](#)
- [AAS Festo\\_3S7PM0CP4BD \(23-03-14 14:40:00.988\)](#)
- [AAS Bosch\\_NexoPistolGripNutrunner \(23-03-14 14:40:00.988\)](#)
- [AAS Bosch\\_R901509807\\_1201694127 \(23-03-14 14:40:00.988\)](#)
- [AAS Bosch\\_CompactModuleBallRailSystem \(23-03-14 14:40:00.988\)](#)
- [AAS Bosch\\_CompactModuleToothedBeltDrive \(23-03-14 14:40:00.988\)](#)
- [AAS Bosch\\_PrecisionModulePSK \(23-03-14 14:40:00.988\)](#)
- [AAS PhoenixContact\\_R901278815\\_25 \(23-03-14 14:40:00.988\)](#)
- [AAS SE\\_Tesys\\_Island\\_Header \(23-03-14 14:40:00.988\)](#)
- [AAS SE\\_Tesys\\_Island\\_Power \(23-03-14 14:40:00.988\)](#)
- [AAS SE\\_Tesys\\_Island\\_Starter \(23-03-14 14:40:00.988\)](#)
- [AAS SE\\_Modicon\\_M262 \(23-03-14 14:40:00.988\)](#)
- [AAS PeFu\\_267075\\_100078 \(23-03-14 14:40:00.988\)](#)
- [AAS ckeNamePlate \(23-03-14 14:40:00.988\)](#)
- [AAS Siemens\\_SITRANS\\_P320 \(23-03-14 14:40:00.988\)](#)
- [AAS Siemens\\_S7\\_CPU1515 \(23-03-14 14:40:00.988\)](#)
- [AAS Lenze\\_i950 \(23-03-14 14:40:00.988\)](#)
- [AAS ABB\\_TTF\\_300 \(23-03-14 14:40:00.988\)](#)
- [AAS Hitachi\\_000000001 \(23-03-14 14:40:00.988\)](#)
- [AAS Balluf\\_3S7PM0CP4BD \(23-03-14 14:40:00.988\)](#)
- [AAS Festo\\_VUVG-L14-T32C-AT-G18-1R8L\\_99920200623114915000017235 \(23-03-14 14:40:00.988\)](#)
- [AAS Festo\\_SPAU-P2R-W-G18FD-L-PNLK-PNVBA-M8U\\_99920200617184803000010084 \(23-03-14 14:40:00.988\)](#)
- [AAS Festo\\_OVEL-10-H-15-PQ-VQ6-UA-C-A-B2PNLK-H3\\_99920200616233035000015777 \(23-03-14 14:40:00.988\)](#)
- [AAS Festo\\_EPCC-BS-32-100-3P-A\\_99920200623113326000013225 \(23-03-14 14:40:00.988\)](#)
- [AAS Festo\\_EMME-AS-40-M-LV-AS\\_99920200617190044000012858 \(23-03-14 14:40:00.988\)](#)
- [AAS Festo\\_DPDM-Q-32-10-PA\\_99920200616214520000010828 \(23-03-14 14:40:00.988\)](#)

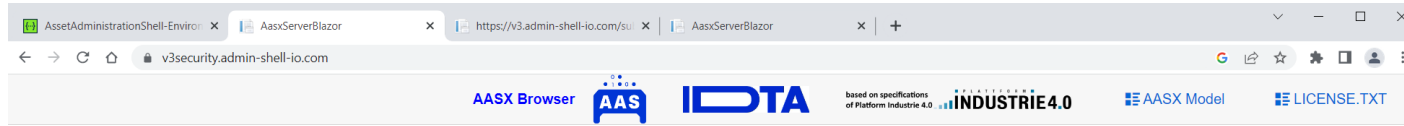
<https://v3.admin-shell-io.com/submodels/d3d3LmNvbXhbnkuY29tL2lky9zbS80MzQzXzUwNzJfNzA5MV8zZmJQy/submodelements>

<https://v3.admin-shell-io.com/>

```
{
  "idShort": "Nameplate",
  "id": "https://aas.digitaltwin-vdma.org/sm/0200_3113_3022_3161",
  "kind": "Instance",
  "semanticId": {
    "type": "GlobalReference",
    "keys": [
      {
        "type": "Submodel",
        "value": "https://admin-shell.io/zvei/nameplate/1/0/Nameplate"
      }
    ]
  },
  "submodelElements": [
    {
      "category": "PARAMETER",
      "idShort": "ManufacturerName",
      "kind": "Instance",
      "semanticId": {
        "type": "GlobalReference",
        "keys": [
          {
            "type": "ConceptDescription",
            "value": "0173-1#02-AA0677#002"
          }
        ]
      },
      "dataSpecifications": [],
      "value": {
        "langStrings": [
          {
            "language": "de",
            "text": "WEISS"
          },
          {
            "language": "en",
            "text": "WEISS"
          }
        ]
      },
      "modelType": "MultiLanguageProperty"
    },
    {
      "category": "PARAMETER",
      "idShort": "ManufacturerProductDesignation",
      "kind": "Instance",
      "semanticId": {
        "type": "GlobalReference",
        "keys": [
          {
            "type": "ConceptDescription",
            "value": "0173-1#02-AAW338#001"
          }
        ]
      }
    }
  ]
}
```



# AAS Security - in a nutshell



[/readme/1 Security.HTML](#)  
[/readme/2 ABAC Access Rules.HTML](#)  
[/readme/3 Queries.HTML](#)  
[/readme/4 Usage Control.HTML](#)

- ⊞ AAS REGISTRY (23-02-01 20:00:33.421)
- ⊞ AAS Festo\_3S7PM0CP4BD (23-02-01 20:00:33.421)
  - ⊞ Sub Nameplate (23-02-01 20:00:33.421)
  - ⊞ Sub Document (23-02-01 20:00:33.421)
  - ⊞ Sub Service (23-02-01 20:00:33.421)
  - ⊞ Sub Identification (23-02-01 20:00:33.421)
  - ⊞ Sub DeviceDescriptionFiles (23-02-01 20:00:33.421)
  - ⊞ Sub SecurityMetaModelForAAS @QUALIFIERS (23-02-01 20:00:33.421)
- ⊞ AAS Bosch\_N...

Sub Document

ID www.company.com/ids/sm/2543\_5072\_7091\_2660 => d3d3LmNvbXBhbhkuY291L2lkcyc9zbS8yNTQzXzUwNzJfNzA5MV8yNjYw

Semantic ID [GlobalReference, https://www.hsu-hh.de/aut/aas/document]

UPDATE 23-02-01 20:00:33.421

TIMESTAMP

CREATE 23-02-01 20:00:33.421

TREE 23-02-01 20:00:33.421

URL: https://v3security.admin-shell-io.com/submodels/d3d3LmNvbXBhbhkuY291L2lkcyc9zbS8yNTQzXzUwNzJfNzA5MV8yNjYw

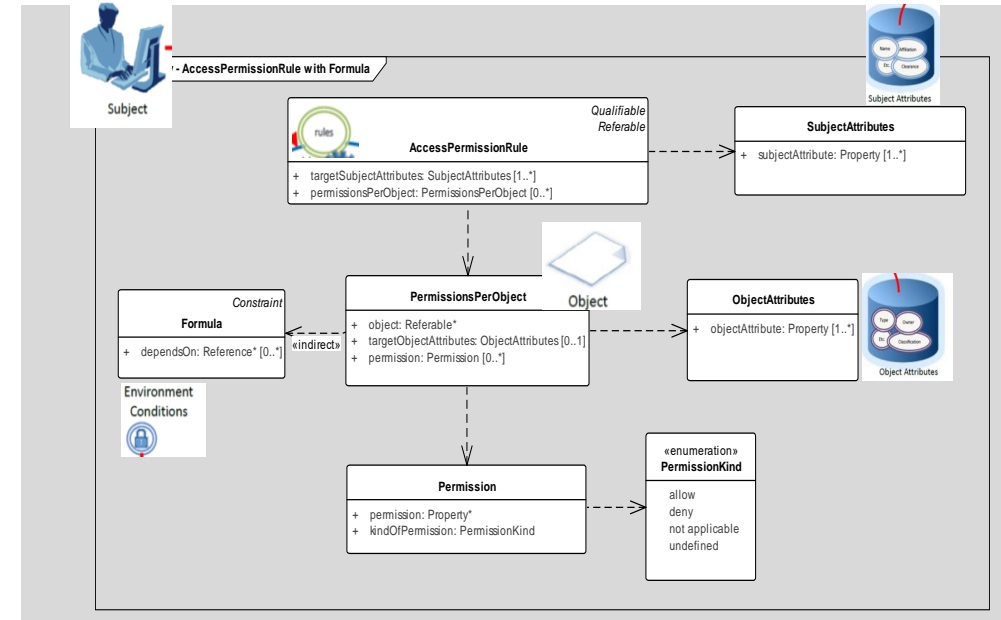
```

{
  "idShort": "Document",
  "id": "www.company.com/ids/sm/2543_5072_7091_2660",
  "kind": "Instance",
  "semanticId": {
    "type": "GlobalReference",
    "keys": [
      {
        "type": "GlobalReference",
        "value": "https://www.hsu-hh.de/aut/aas/document"
      }
    ]
  },
  "submodelElements": [
    {
      "category": "PARAMETER",
      "idShort": "DeclarationCEMarking",
      "kind": "Instance",
      "semanticId": {
        "type": "GlobalReference",
        "keys": [
          {
            "type": "ConceptDescription",
            "value": "0173-1#02-AAD001#001"
          }
        ]
      }
    }
  ],
  "dataSpecifications": [],
  "value": [
    {
      "category": "PARAMETER",
      "idShort": "DocumentType",
      "kind": "Instance",
      "semanticId": {
        "type": "GlobalReference",
        "keys": [
          {
            "type": "ConceptDescription",
            "value": "0173-1#02-AAD001#001"
          }
        ]
      }
    }
  ]
}
    
```

```

{
  "messages": [
    {
      "code": "Forbidden",
      "messageType": "Error",
      "text": "ALLOW not defined",
      "timestamp": "28.02.2023 15:30:35"
    }
  ],
  "success": false
}
    
```

<https://v3security.admin-shell-io.com/>



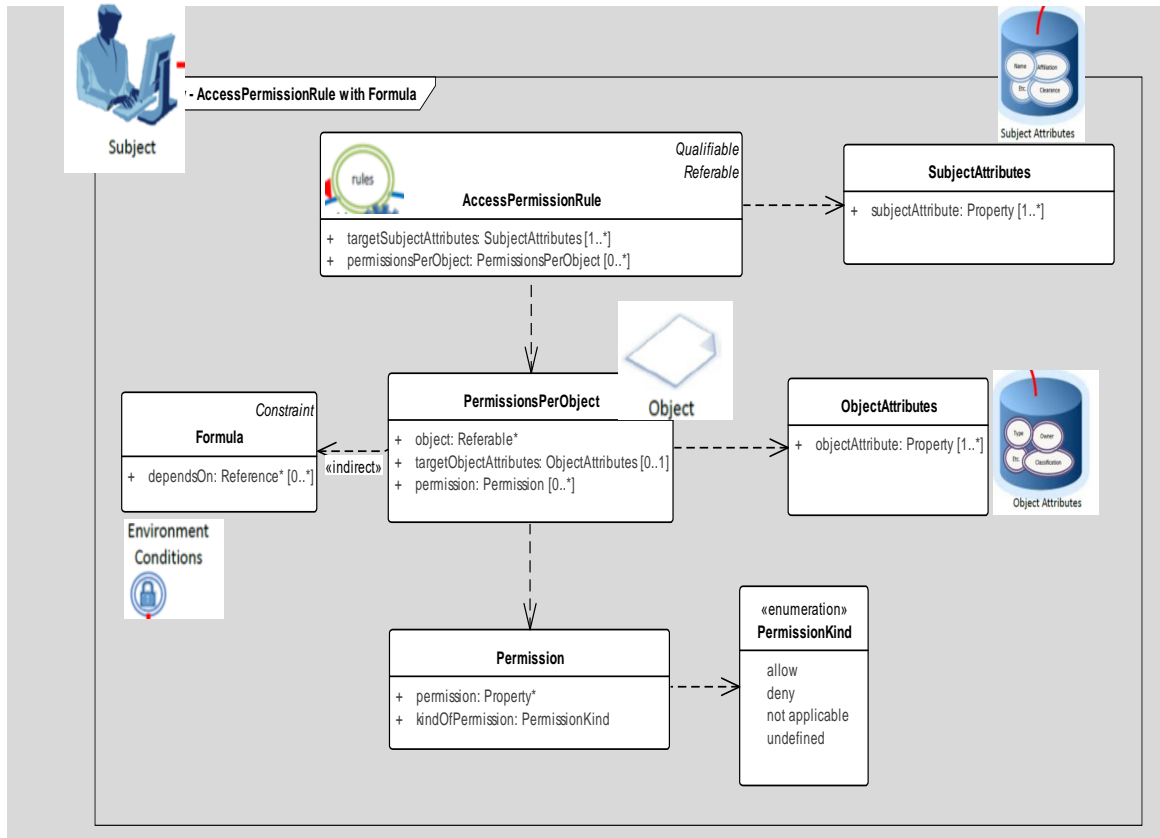
Security Metamodel

- ⊞ AAS myAASwithGlobalSecurityMetaModel (23-02-01 20:00:33.421)
- ⊞ Sub SecuritySettingsForServer @QUALIFIERS (23-02-01 20:00:33.421)
- ⊞ Sub SecurityMetaModelForServer @QUALIFIERS (23-02-01 20:00:33.421)
- ⊞ Col accessControlPolicyPoints #3 (23-02-01 20:00:33.421)
  - ⊞ Col policyAdministrationPoint #2 (23-02-01 20:00:33.421)
    - Prop externalAccessControl = False (23-02-01 20:00:33.421)
- ⊞ Col localAccessControl #1 (23-02-01 20:00:33.421)
  - Col accessPermissionRules #7 (23-02-01 20:00:33.421)
    - Col accessPermissionRule0 #2 (23-02-01 20:00:33.421)
    - Col accessPermissionRule1 #2 (23-02-01 20:00:33.421)
    - Col accessPermissionRule1b #2 (23-02-01 20:00:33.421)
    - Col accessPermissionRule1c #2 (23-02-01 20:00:33.421)
      - Col targetSubjectAttributes #1 (23-02-01 20:00:33.421)
        - Prop isNotAuthenticated (23-02-01 20:00:33.421)
      - Col permissionsPerObject #1 (23-02-01 20:00:33.421)
        - Col permissionPerObject1 #2 (23-02-01 20:00:33.421)
          - Prop object = semanticId:https://www.hsu-hh.de/aut/aas/nameplate (23-02-01 20:00:33.421)
  - ⊞ Col permission #2 (23-02-01 20:00:33.421)
    - Rel permission1 (23-02-01 20:00:33.421)
    - Prop kindOfPermission = Allow (23-02-01 20:00:33.421)

Not authenticated  
Nameplate  
Allow



# AAS Security – Metamodel to define ABAC access rules



```

[-] AAS myAASwithGlobalSecurityMetaModel (23-02-01 20:00:33.421)
  [+] Sub SecuritySettingsForServer @QUALIFIERS (23-02-01 20:00:33.421)
  [-] Sub SecurityMetaModelForServer @QUALIFIERS (23-02-01 20:00:33.421)
    [-] Coll accessControlPolicyPoints #3 (23-02-01 20:00:33.421)
      [-] Coll policyAdministrationPoint #2 (23-02-01 20:00:33.421)
        Prop externalAccessControl = False (23-02-01 20:00:33.421)
      [-] Coll localAccessControl #1 (23-02-01 20:00:33.421)
        [-] Coll accessPermissionRules #7 (23-02-01 20:00:33.421)
          [+] Coll accessPermissionRule0 #2 (23-02-01 20:00:33.421)
          [+] Coll accessPermissionRule1 #2 (23-02-01 20:00:33.421)
          [+] Coll accessPermissionRule1b #2 (23-02-01 20:00:33.421)
          [-] Coll accessPermissionRule1c #2 (23-02-01 20:00:33.421)
            [-] Coll targetSubjectAttributes #1 (23-02-01 20:00:33.421)
              Prop isNotAuthenticated (Not authenticated)
            [-] Coll permissionsPerObject #1 (23-02-01 20:00:33.421)
              [-] Coll permissionPerObject1 #2 (23-02-01 20:00:33.421)
                Prop object = semanticId:https://www.hsu-hh.de/aut/aa
                s/nameplate (2Nameplate0:33.421)
              [-] Coll permission #2 (23-02-01 20:00:33.421)
                Ref permission1 (23-02-01 20:00:33.421)
                Prop kindOfPermission = Allow Allow01 20:00:33.
  
```

Security Metamodel

# Device and Update Management with AAS and OPC UA

VDMA 24903  
SmartPCN

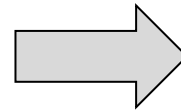
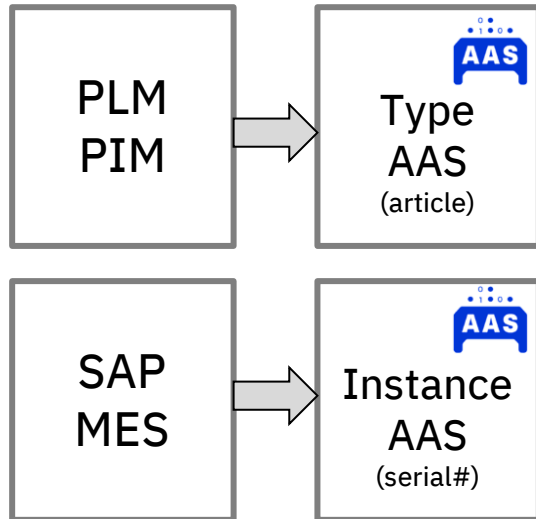
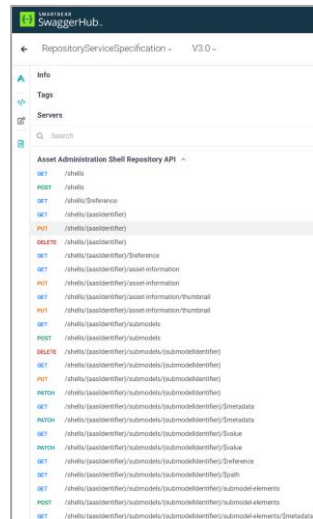
[Home - Fluidpower 4.0 \(fluidtechnik40.de\)](http://fluidtechnik40.de)



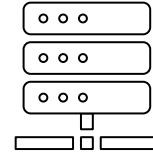
Submodel  
Product  
Change  
Notification

e.g. end of production,  
material change,  
new firmware,  
new function,  
compatible hardware

AAS REST API



Asset Owner  
Repository



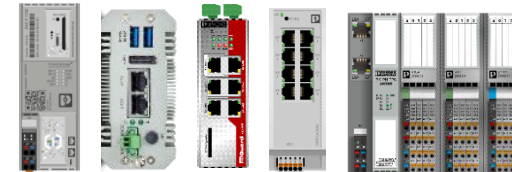
Device and  
Update  
Management



Assets  
without  
Firmware



OPC 10000-100: Devices, 8. Update



Assets  
with  
Firmware

# Operational data

AasxServerBlazor admin-shell-io.com/5001/

AASX Browser AAS IDTA based on specifications of Platform Industrie 4.0 AASX Model LICENSE.TXT

- [-] AAS Festo\_OVEL-10-H-15-PQ-VQ6-UA-C-A-B2PNLK-H3\_99920200616233035000015777 (22-08-23 06:25:09.046)
- [-] AAS Festo\_EPCC-BS-32-100-3P-A\_99920200623113326000013225 (22-08-23 06:25:09.046)
- [-] AAS Festo\_EMME-AS-40-M-LV-AS\_99920200617190044000012858 (22-08-23 06:25:09.046)
- [-] AAS Festo\_DPDM-Q-32-10-PA\_9992020061621452000010828 (22-08-23 06:25:09.046)
- [-] AAS Festo\_DGST-16-125-E1A\_99920200616215443000010836 (22-08-23 06:25:09.046)
- [-] AAS Festo\_CMMT-ST-C8-1C-EC-S0\_999202006161932490001010710 (22-08-23 06:25:09.046)
- [-] AAS Wittenstein\_aas\_xNNkj1e (22-08-23 06:25:09.046)
- [-] AAS SICK\_AHM36B\_S4QC012x12\_1092017 (22-08-23 06:25:09.046)
- [-] AAS SICK\_SIG200\_0A0412200\_1089794 (22-09-08 06:35:23.253)
- [-] AAS SICK\_WTB16I\_24161120A00\_1218669 (22-08-30 19:54:33.120)
- [-] AAS Festo\_579071 (22-08-23 06:25:09.046)
- [-] AAS TimeSeriesAll (22-08-23 06:25:09.046)
  - [-] Sub subTsModbus @QUALIFIERS (22-09-23 04:53:04.941)
    - [-] Evt StructureChange\_of\_whole\_Submodel (22-09-06 10:32:21.832)
    - [-] Evt UpdateValue\_of\_whole\_Submodel (22-08-23 06:25:09.046)
  - [-] Coll data #101 (22-09-23 04:53:04.941)
  - [-] Coll data2 (22-08-23 06:25:09.046)
  - [-] Coll data3 #28 (22-08-23 06:25:09.046)
  - [-] Coll data4 (22-08-23 06:25:09.046)
  - [-] Coll data5 #82 (22-09-22 20:20:45.843)
  - [-] Coll data6 (22-08-23 06:25:09.046)
  - [-] Sub tasks (22-09-23 04:52:51.592)
  - [-] AAS Murrelektronik\_M12\_Male\_M12\_Female\_A\_Kod\_AAS (22-09-09 18:39:40.984)

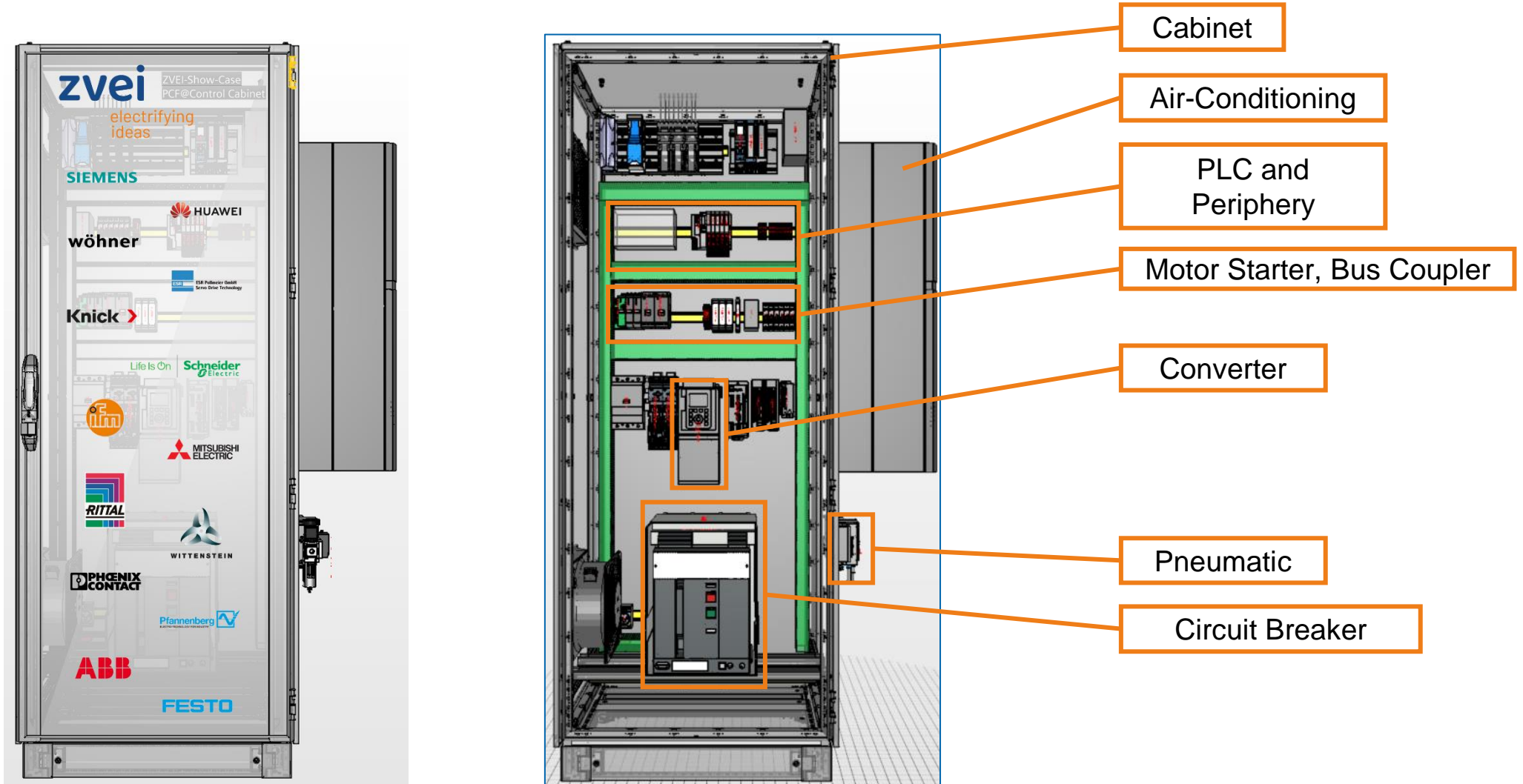
Coll data  
Semantic ID [ConceptDescription, not Local, IRI, https://admin-shell.io/sandbox/zvei/TimeSeriesData/TimeSeries/1/0]  
UPDATE 22-09-23 04:53:04.941  
TIMESTAMP  
CREATE 22-08-23 06:25:09.046  
Filter from 23.09.2019 00:00 Filter to 23.09.2025 00:00  
Apply Reset Today Yesterday Prev day Next day

Image processing took 452 ms (Last update: 22-09-23 04:53:04.941)

# ZVEI-Show-Case “PCF@Control Cabinet”

## Demonstrator: Control Cabinet

ZVEI and  
IDTA Demo  
Hall 8-D26



# PCF Showcase Level 2

**zvei** Product Carbon Footprint Showcase Loaded 459 submodels in 7s Role: Albert Authenticate Disclaimer: displayed PCF values are for demo purposes only

**2079.2 kg CO<sub>2</sub>e as-built**  
**1959.9 kg CO<sub>2</sub>e as-is**

**Submodels:** Host: phoenixcontact.com Show All Collapse All JSON: AAS Submodel

Nameplate **CarbonFootprint** HandoverDocumentation

**ProductCarbonFootprintCradleToGate**

PCFCalculationMethod	ISO 14040
PCFCalculationMethod	ISO 14044
PCFCO2eq in kg	0,05
PCFReferenceValueForCalculation	piece
PCFQuantityOfMeasureForCalculation	1
PCFLiveCyclePhase	A1-A3

**ProductCarbonFootprintProduction**

**ProductCarbonFootprintMaterial**

Further Information Impressum

<https://pcf.dpp40-2-v2.industrialdigitaltwin.org/pcf2>



# PCF Showcase with Security and distributed AAS repositories

**zvei** electrifying ideas **Product Carbon Footprint Showcase** Loaded 459 submodels in 7s Role: Steven   Disclaimer: displayed PCF values are for demo purposes only


**2079.2 kg CO<sub>2</sub>e as-built**  
**1959.9 kg CO<sub>2</sub>e as-is**

**Submodels:** Host: industrialdigitaltwin.org   JSON:

ManufacturerName	ZVEI e. V.
ManufacturerProductDesignation	Control Cabinet PCF Demo
ManufacturerProductFamily	I4.0 Demo
YearOfConstruction	2023

Address

Further Information



**Disclaimer:** The PCF calculations of the control cabinet are intended as examples for the technical proof of concept with no claim for accuracy / correctness since there is no comparability of the product-specific product carbon footprints now. As for now, the total PCF value is calculated by simply adding up PCF values calculated with different PCF calculation methods.

- Combination - Control Cabinet PCF Demo** 1959.95  NP BOM PCF TECH ...
- Control Cabinet PCF Demo** 117.2  NP BOM PCF TECH ...
- Hybrid motor starter** 4.38  NP PCF v1.0 DOC TECH
- Ground modular terminal block** 0.06  NP PCF v1.0 DOC TECH
- Relay Module** 0.55  NP PCF v1.0 DOC TECH
- SACE Emax 2** 398  NP PCF v1.0 DOC TECH
- SACE Emax 2 Fixed Part** 170  NP PCF v1.0 DOC TECH