

Evolution of Industry 4.0



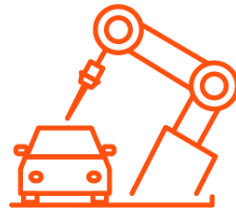
Interface

Asset Administration Shell

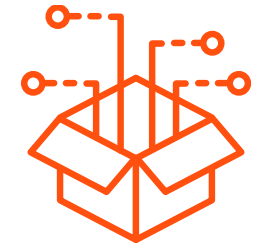
Industrial Implementation

Spin-off

Integration of Open Technologies



Industrial Digital Twin Association



2015

2019

2020

2022

Years of history

Concepts and Specifications

Demonstrator and Use Case

Alliance of Developers and End-users

Open Source, Open Standards, Community

Administration of the entire Asset Life Cycle

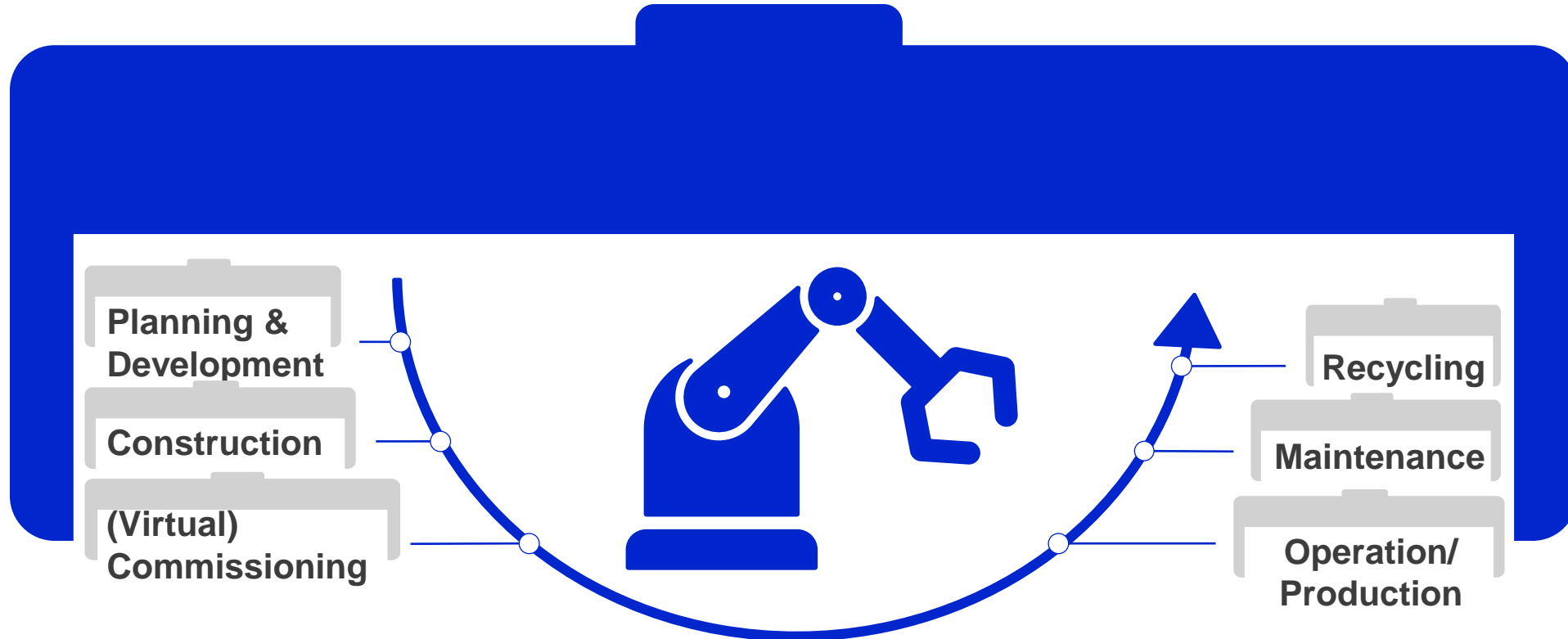


Today

- Application driven
- Specific & Efficient
- Life cycle elements

Goal

- Efficient scaling
- Standardization
- Complete life cycle



Possible data and documents for administration



Engineering

3D geometry models, drawings, designs, simulations and results, characteristics and properties (e.g. via ECLASS), manufacturing instructions and plans

Documentations

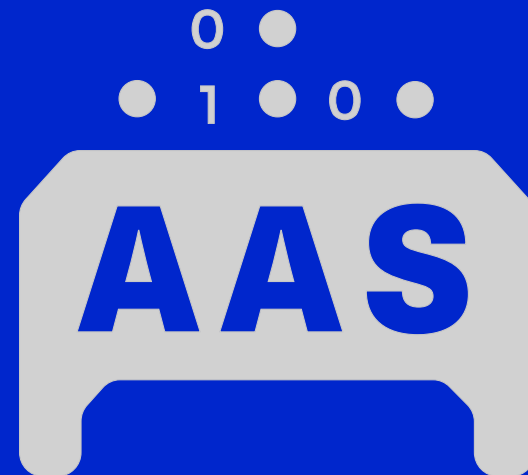
Declaration of conformity, installation instructions, operating instructions, proofs and certificates

Operation

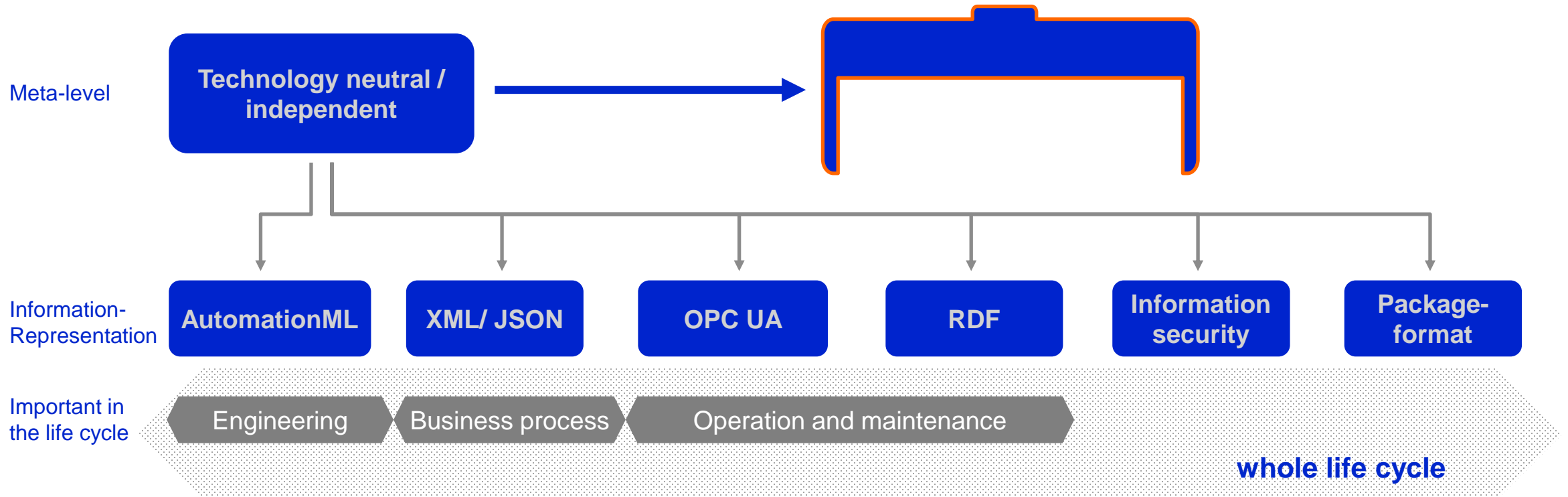
Order data, operating or measurement data, states (e.g. via OPC UA)



Standardising the Industrial Digital Twin



AAS – The structure



Open Source Development with Eclipse Foundation



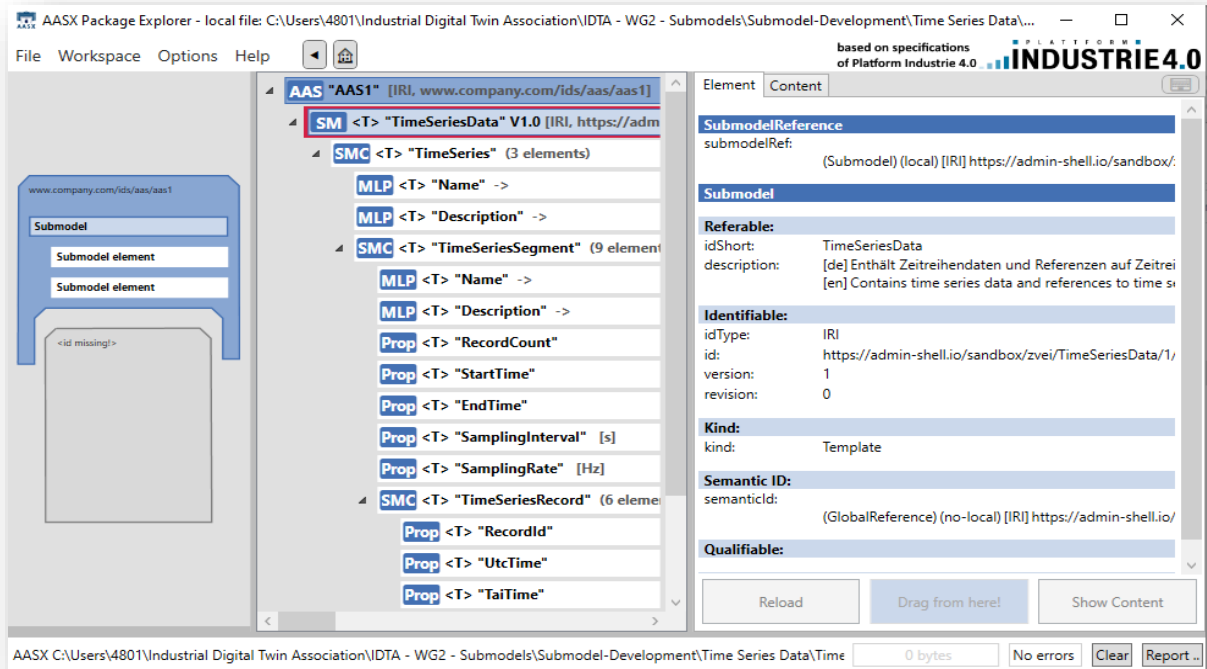
Top Level Project "Eclipse Digital Twin"

Related projects:

- Eclipse AASX Package-Explorer
- Eclipse AAS in Java
- Eclipse Web-AAS-Client
- Eclipse Python AAS Registry

The screenshot shows the Eclipse Foundation website for the Eclipse Digital Twin project. The page features the Eclipse Foundation logo at the top left and the IDTA logo at the top right. A navigation breadcrumb trail reads "Home / Projects / Eclipse Digital Twin". The main heading is "Eclipse Digital Twin". Below the heading is a navigation menu with tabs for "Overview", "Downloads", "Who's Involved", "Developer Resources", and "Governance". The "Overview" tab is selected. The main content area contains a paragraph describing the project as a collaborative, open source initiative at the Eclipse Foundation, providing reference implementations for activities driven by the Industrial Digital Twin Association (IDTA). It further explains that the project provides a space for open source projects to produce and adopt solutions, prototypes, and supporting software to build and consume information models, data models with homogenized semantics, and standardized APIs. The page also lists the licenses: Apache License, Version 2.0 and The MIT License (MIT).

Developments in 2022



Front-End

- GUI for AAS generation
- Toolbox for external collaboration
- Data-Container for internal efficiency

Back-End

- System Integration
- Platform and data model compatibility
- Security embedding (authentication, authorization)
- Server and application interfaces
- Federated catalog with registry interface (GAIA X)

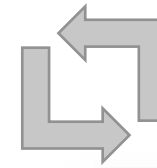


Github

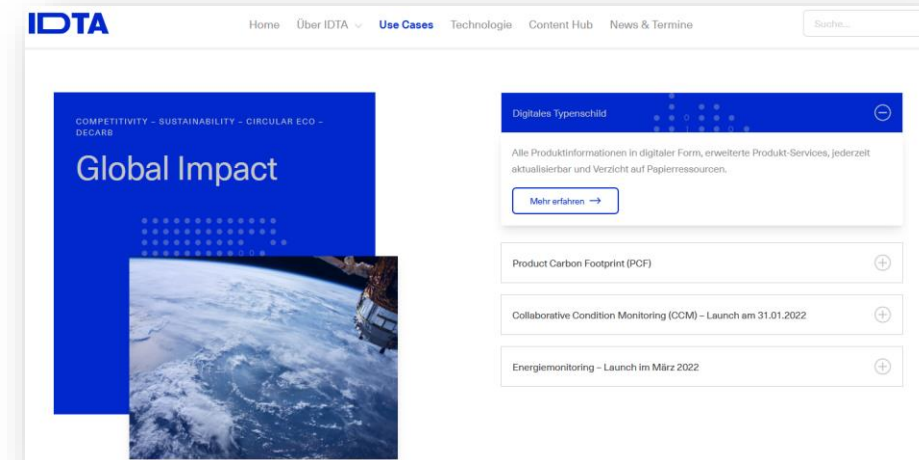
Standardisierte Teilmodelle bilden den Inhalt

Digital Nameplate	Contact Information	Handover Documentation	Module Type Package (MTP)	OPC UA Server Data Sheet
Software Nameplate	Engineering of Power Drives Trains	Product Carbon Footprint	Energy Monitoring	Time Series Data
Technical Data	Bill of Material (BOM)	Service Order Creation	Plant Asset Management	Simulation
Static/Life Cycle related			Active/Functions	

- 25 Submodels in Development
- IPR creates trust
- IDTA = Agile Plattform for Submodels
- Value-added arguments by linking to use cases



www.idtwin.org

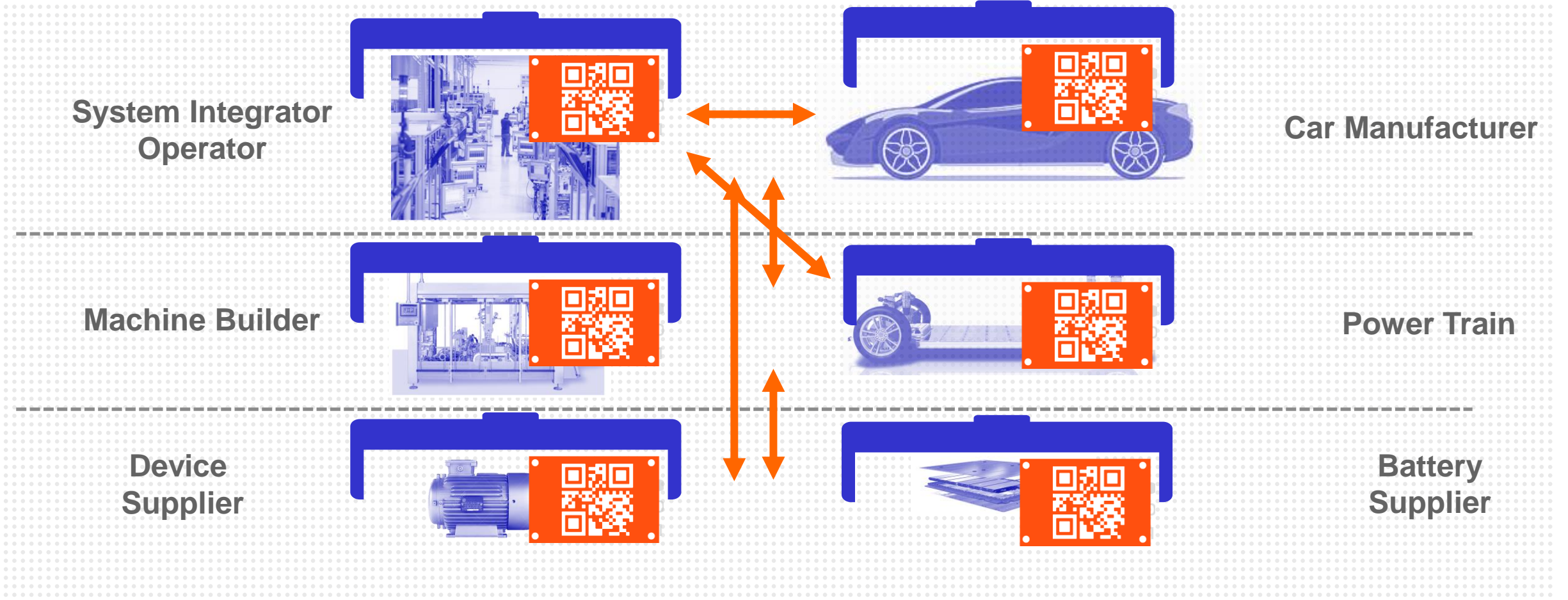


AAS Use Cases: Top 10



- Product Carbon Footprint
- Collaborative Condition Monitoring
- Digital Nameplate**
- R. STAHL Digital Nameplate**
- WITTENSTEIN Service Portal
- Lenze Asset Management System
- AAS-based Pilot Plant
- Asset Onboarding
- Open Industry 4.0 Sensor
- Drives 4.0

Digital Nameplate: Integration of the value-adding partners



Online and Offline

:: Digital Nameplate: Integration of the value-adding partners



- Vertical and horizontal integration possible
- All information on demand
- No space limitation
- Multilingualism and worldwide availability
- Reduced costs, increased sustainability (saving resources in printing, logistics, etc.)

Online and Offline

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, along with a search bar. 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	GitHub →
Digital Nameplate for Industrial Equipment	2006	1.1	In Development	Coming soon

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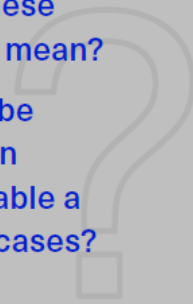
Digital Twin Trainings



Digital twins are at the heart of the industry in the future, and the asset administration shell is the implementation of the digital twin for Industrie 4.0.

The Industrial Digital Twin Association and University4Industry offer two unique, pre-competitive training programs covering basic knowledge and understanding about digital twins and their concrete implementation.

But what do these terms actually mean?
How can they be implemented in practice to enable a variety of use cases?



Target group awareness training: leaders with an interest in learning more about the digital twin



Target group implementation training: developers who would like to start implementing the digital twin



Blended learning
incl. 3-4 live sessions per training



2 hours per week
over 4 weeks per training



399 EUR per user per training
599 EUR for both trainings
Discount for IDTA members

At a glance



- Skill building for the digital twin
- Self-paced online training using video formats
- Led by experts
- Practical exercises
- Live sessions via Microsoft Teams

Training Topics



- Introduction to Digitalization in Industry
- Digital Twin & Asset Administration Shell (AAS)
- Opportunities Offered by the AAS
- Implementation of the AAS
- Practical Use Cases for the AAS

Start Dates in 2022



Awareness Training:

07.02. | 14.03. | 13.06. | 05.09. | 02.11.

Implementation Training:

07.03. | 02.05. | 11.07. | 04.10. | 28.11.

Organization and Fields of Work



Members

Board

Advisory Board

Office

- Infrastructure
- Partner Management
- Member Management
- Management of the WGs

Technology

WG Open Technology

- Open Source
- Security

WG Submodels

- Processes
- Low Hanging Fruits
- Use Cases

WG Quality Management

- Test-Criteria

Scaling

WG Training

- Online Training Curriculum
- Target Group specific

WG Use Cases

- AAS Applications
- How to use

WG Marketing

- Branding
- Visibility



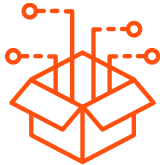
Human



Building a global community

For an international standard of the Industrial Digital Twin

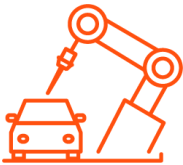
Technology



Open-Source-Software

AAS for all industrial companies at Eclipse Foundation regardless of their size

Scaling



Market access through matching use cases

The AAS as a future prerequisite for new business with data



Value creation by training

The IDTA-Academy brings know-how to the public

IDTA: Members – Suppliers-Users | OT-IT





- 1** Access to all working groups and resources of the IDTA
- 2** Task forces support the implementation of the use cases
- 3** Invitation to network events and hackathons
- 4** 25% discount on the AAS training program at University4Industry



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