Industrial Digital Twin Association

Industrial Digital Twin Association

Standardising the Industrial Digital Twin

Evolution of Industry 4.0

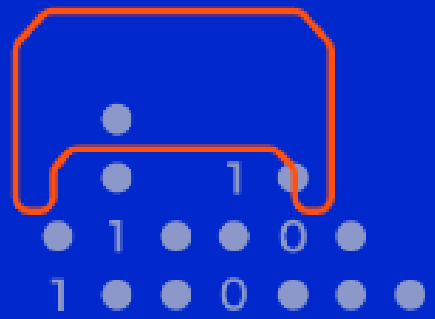
Industry 4.0

PLATTFORM INDUSTRIE4.0

2013

Start of Industry 4.0

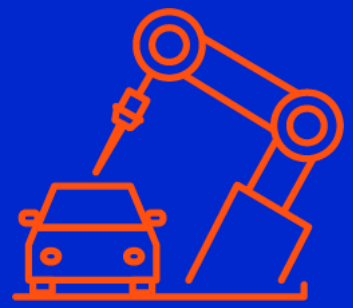
Asset Administration Shell



2015

Concepts and Specifications

Industrial Implementation



2019

Introduction of the Digital Nameplate

Technology Spin-off

IDTA

Industrial Digital Twin Association

2020

Founding of IDTA with 23 Organisations

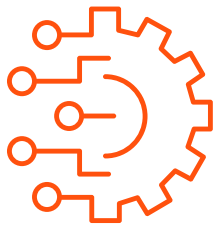
NETWORK

STANDARDISATION

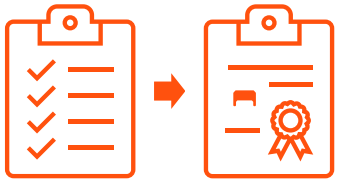
TECHNOLOGY &
(RESEARCH-) TRANSFER

IDTA

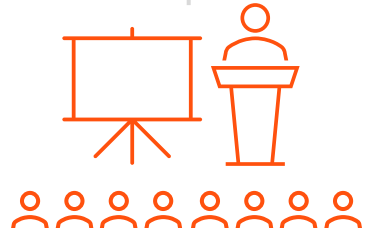
Home of the AAS



INFRASTRUCTURE



TESTING &
CERTIFICATION



CONFERENCES &
EVENTS

IDTA Industrial Digital Twin Association

AAS Asset Administration Shell (dt. Verwaltungsschale)
the Standard for the Digital Twin.

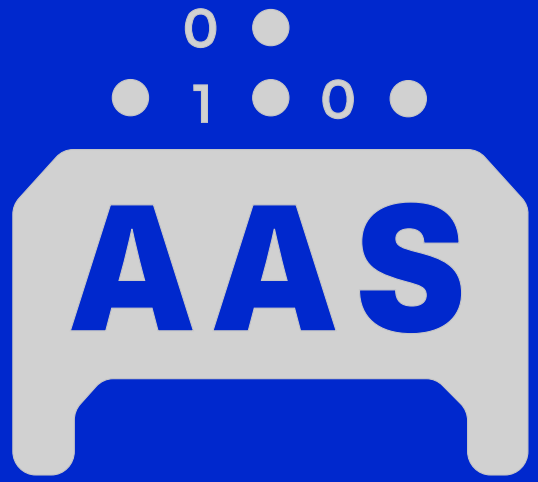
The standard for the provision and exchange of information is the technical solution for the digital twin.

MEMBERS: SUPPLIERS – USERS | OT – IT

123 Members from **19** nations

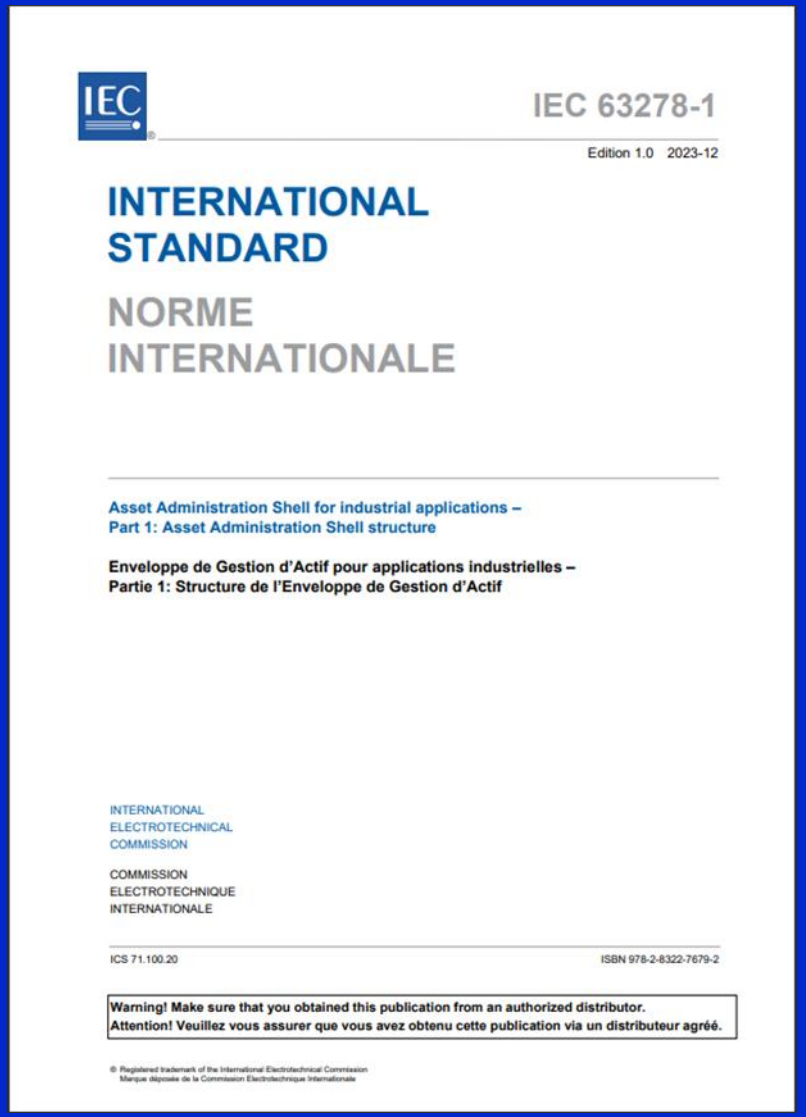
The Vision

Asset Administration Shell



Worldwide Standard for the Industrial Digital Twin

AAS is an International Standard



IEC 63278-1

Edition 1.0 2023-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Asset Administration Shell for industrial applications –
Part 1: Asset Administration Shell structure

Enveloppe de Gestion d'Actif pour applications industrielles –
Partie 1: Structure de l'Enveloppe de Gestion d'Actif

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 71.100.20

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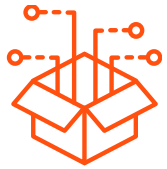
Our Mission

Human

Building a global network

Creating an international standard for the Industrial Digital Twin

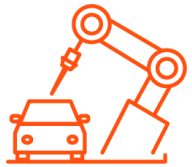
Scaling



Open access to standards, implementations and information models

Making the digital twin available for all industries

Technology



Collaboration along the value chain

Bringing companies together, creating use cases, developing to consortial standards

Organization and Fields of Work

Members

Board

Office

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

Technology

WG Open Technology
- Specifications
- Open Source

WG Submodels
- Harmonization
- Sync of Development Teams

WG Quality Management
- Test-Criteria
- Certification

Scaling

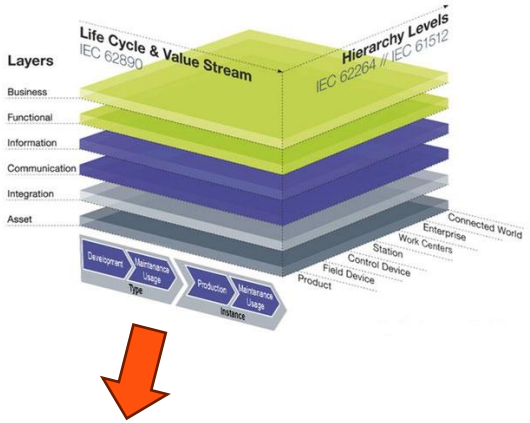
WG Training
- Training Curriculum
- Conceptual Support

WG Use Cases
- AAS Applications
- Connecting Implementers

WG Marketing
- Branding
- Visibility

Todays Digital Twins

- Specific & efficient
- Proprietary
- One life cycle element

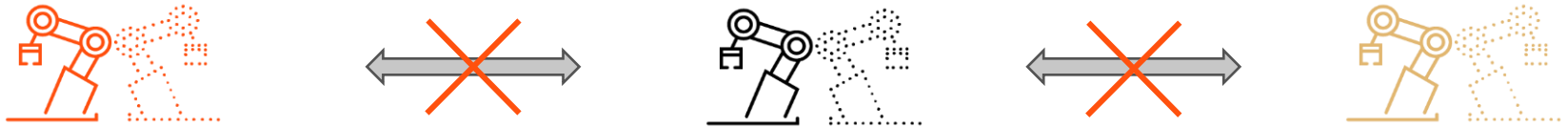


Supplier part

→ Part type in the selection

→ Parts delivery (instances)

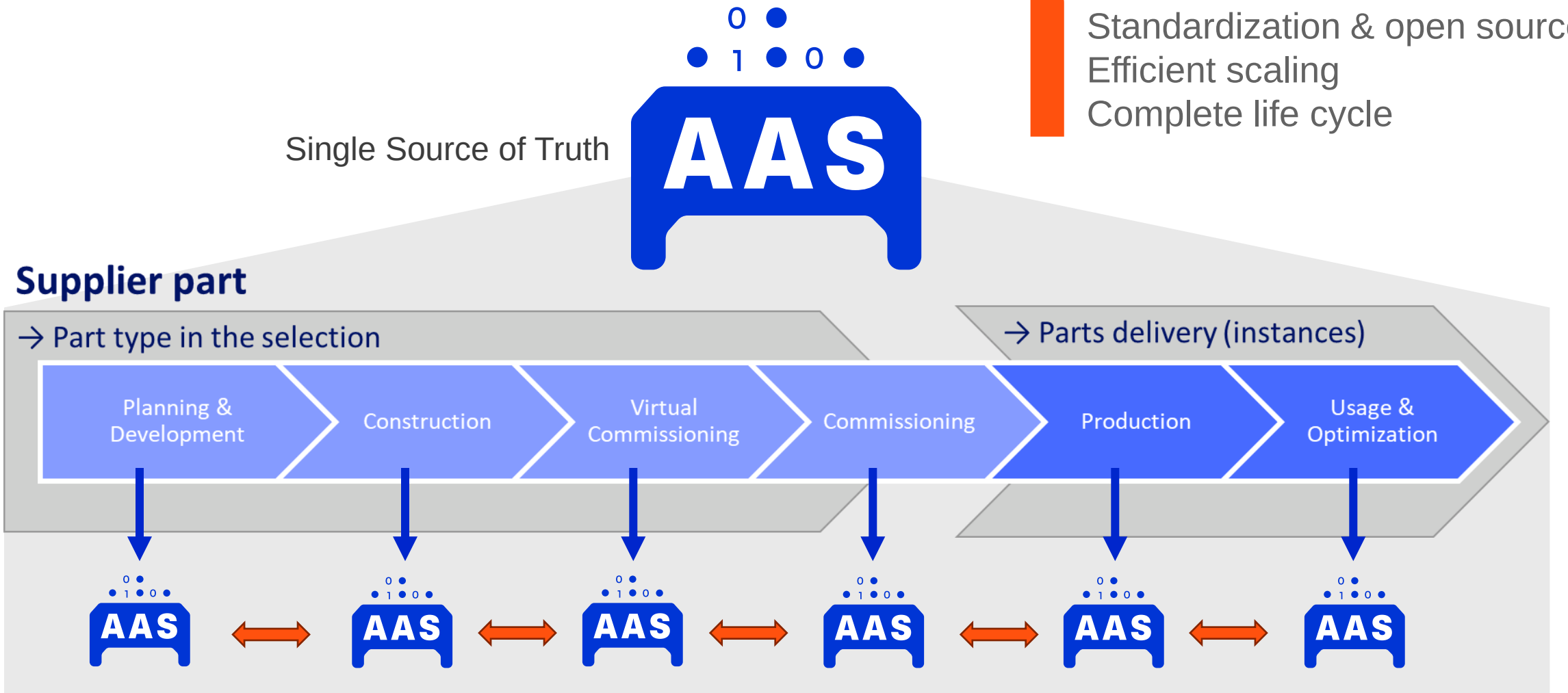
Planning & Development | Construction | Virtual Commissioning | Commissioning | Production | Usage & Optimization



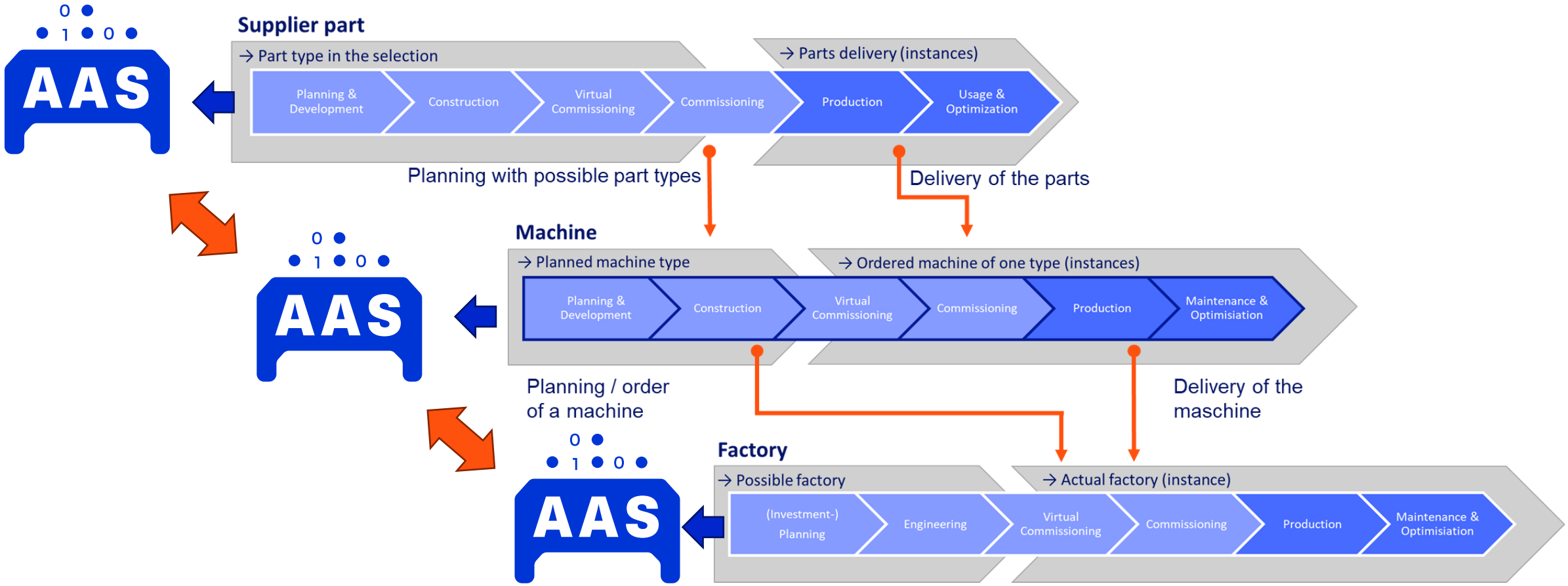
Future Digital Twins with AAS

Standardization & open source
Efficient scaling
Complete life cycle

Single Source of Truth



…and the entire Value Chain



AAS is the Register/Container for Submodels

Digital Twin = AAS + Submodel

AAS
Specification

+

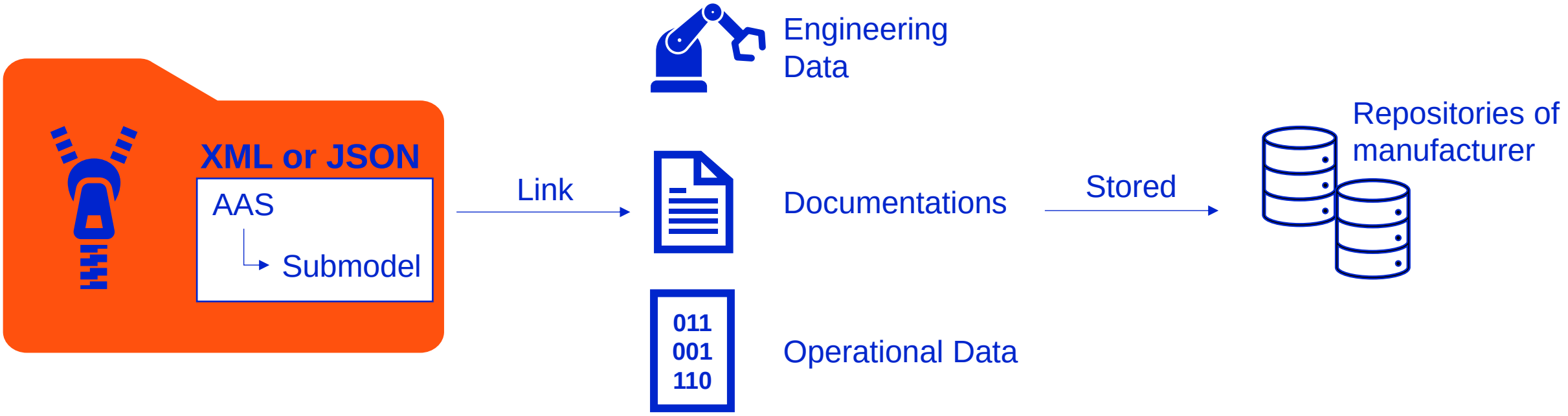
Submodel Template
IDTA approved
- 100% AAS compliant
- Consistent & interoperable
- Released by the AAS experts

AAS

Content of Submodel

Submodels are groups of **properties** about assets for a use case!

AAS is the Register/Container for Submodels



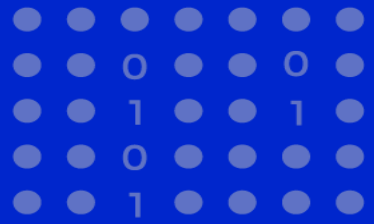
Data and content for Asset Administration Shell

Engineering Data

- 3D geometry models
- Drawings
- Simulation data
- Properties (e.g. via ECLASS)
- …

Documentations

- Installation and operating instructions
- Certificates
- Declaration of conformity
- …

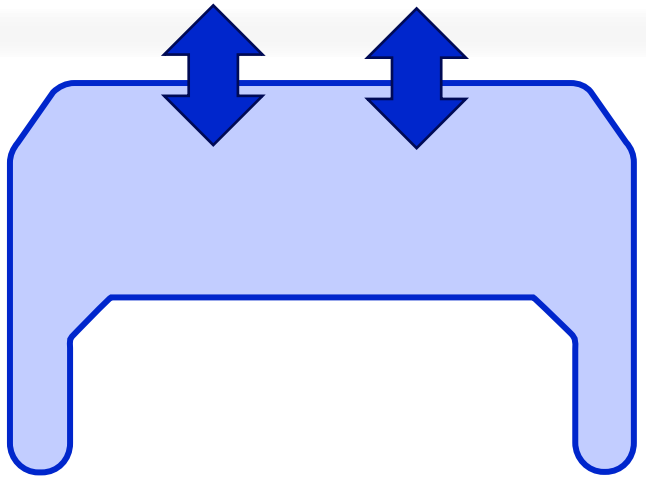


Operation

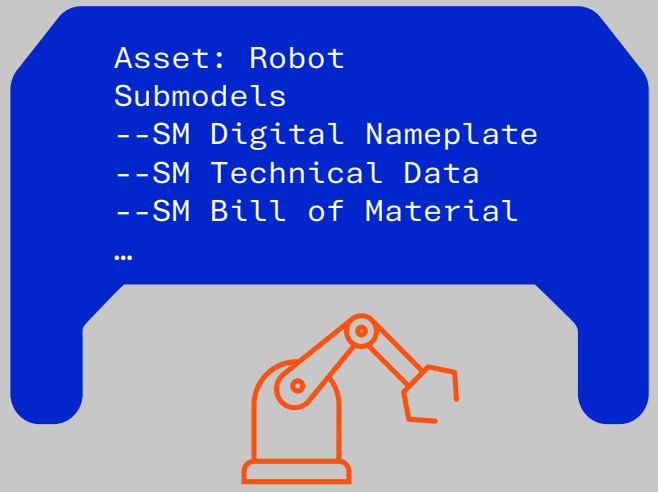
- Order data
- Operating data,
- Service Notice (e.g. via OPC UA)
- …

IDTA conducts two Standardisation Tracks

1. AAS Specification
Standardised
- Software Structure
- Interface

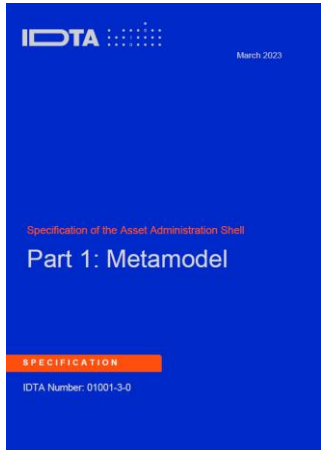


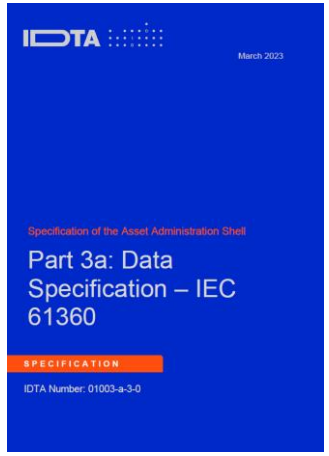
2. Submodels
Standardised information models



AAS Specification: Ready for the industrial Implementation

1.





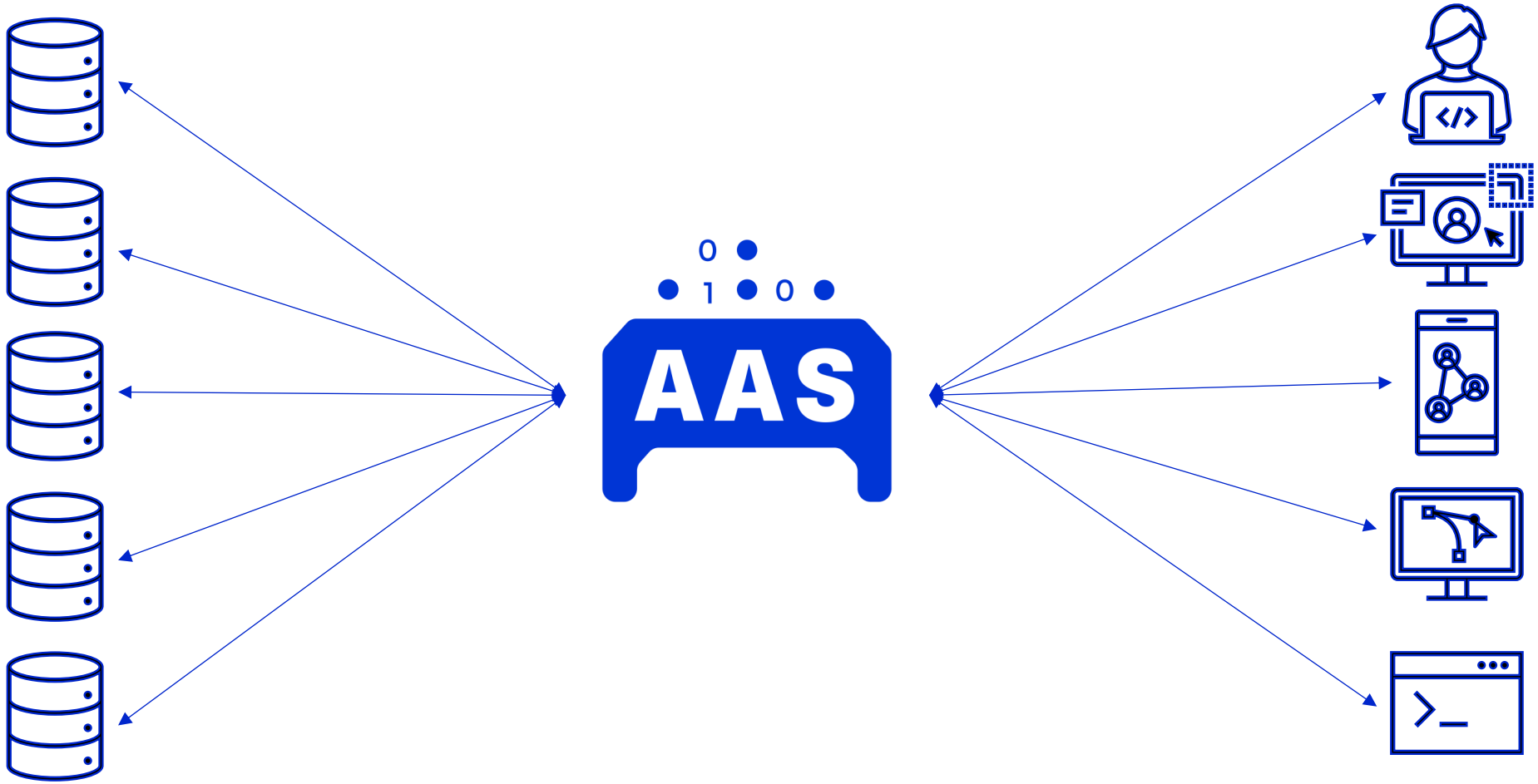
AAS Specification in Version 3.0

- Part 1: Metamodel
- Part 2: Application Programming Interfaces
- Part 3: Data Specification
- Part 4: Security
- Part 5: Package File Format (AASX)

IEC 63278-x

IEC 63278-1 published in December 2023

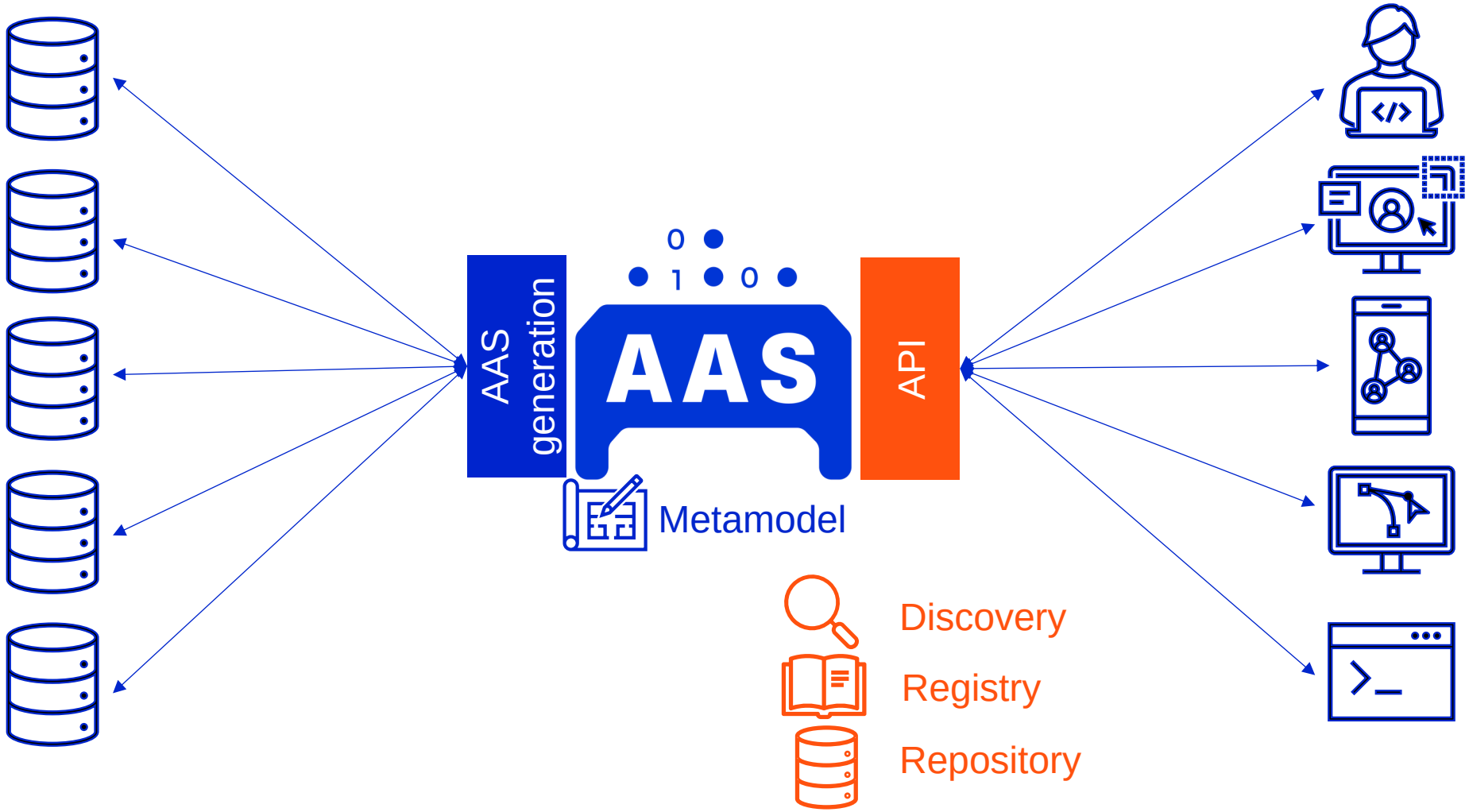
Aim of the specifications - Two perspectives



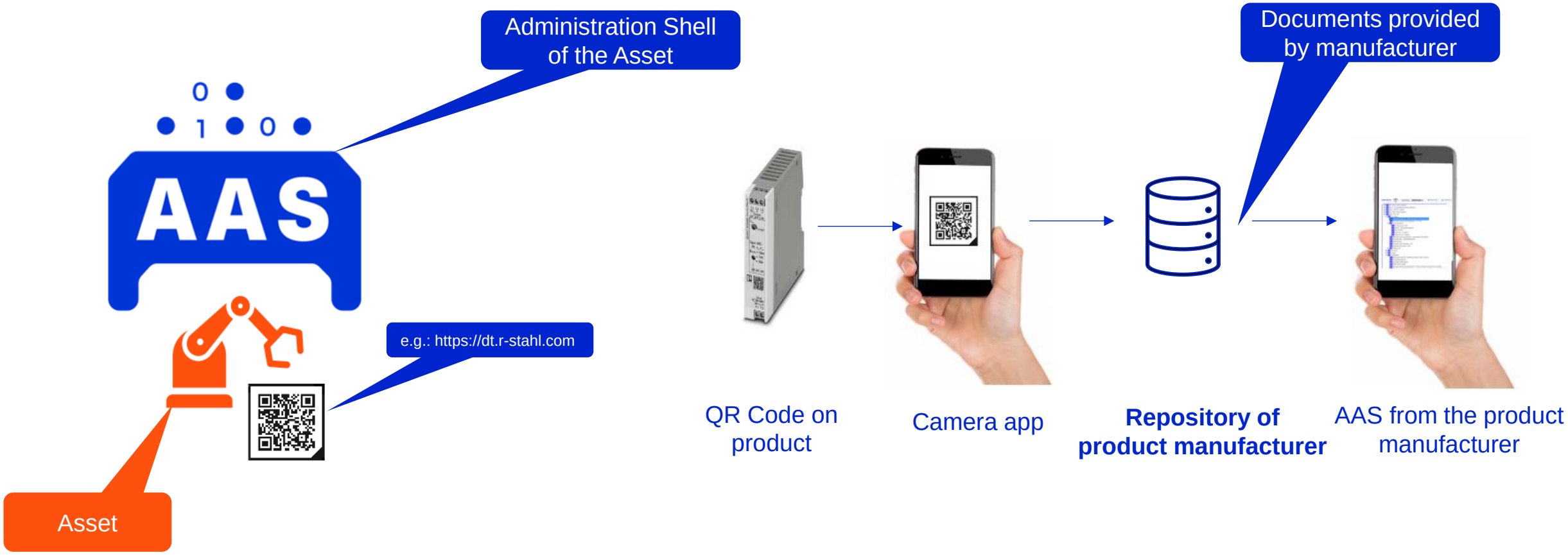
Proprietary data sources

Applications

Aim of the specifications - Two perspectives



Access to the Digital Product Data of Assets



Submodels provide content of the AAS

2. Standardised Information Models

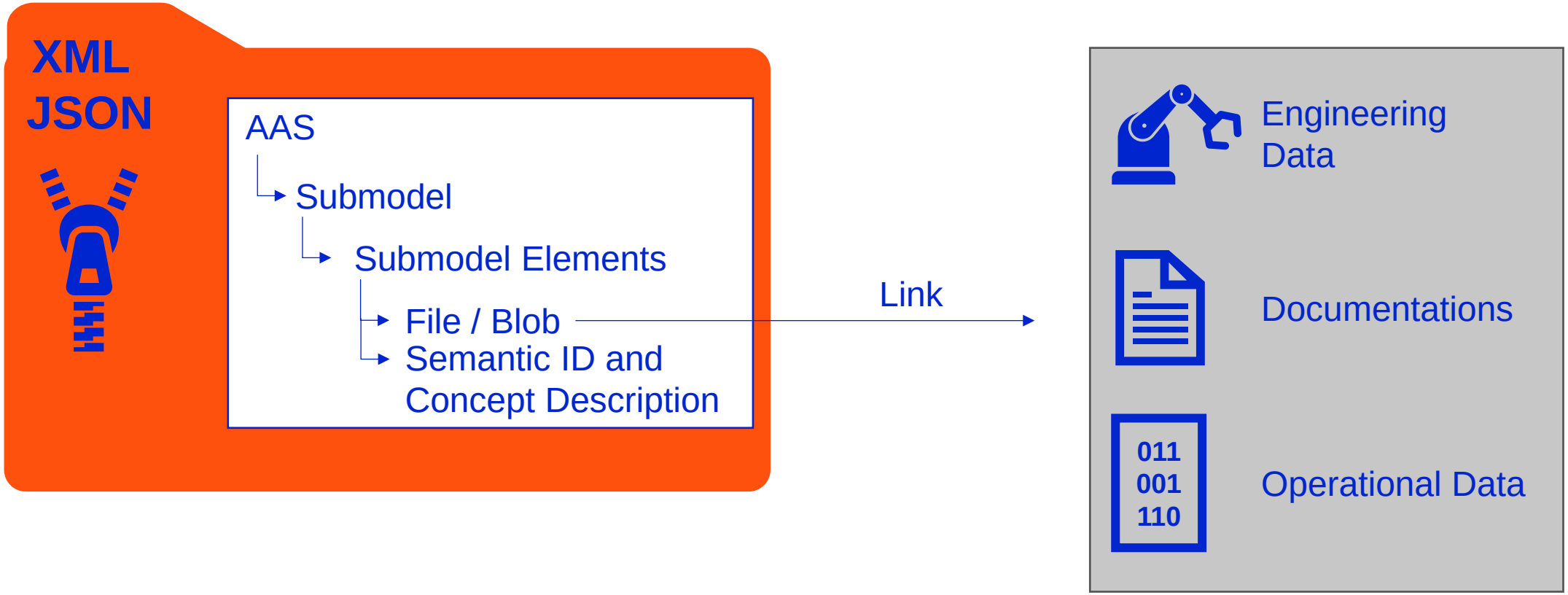
Digital Nameplate	Contact Information	Handover Documentation	Module Type Package (MTP)	OPC UA Server Data Sheet
Software Nameplate	Technical Data	Product Carbon Footprint	Energy Monitoring	Time Series Data
Engineering of Power Drives Trains	Bill of Material (BOM)	MCAD / ECAD	Plant Asset Management	Simulation
Reliability	Functional Safety	Control Component Type/Instance	Service Notification	Sizing of power drive trains
Asset Interface Description	Maintenance	Plant Asset Managment	Capability Description	DEXPI

85+ Submodels in the IDTA repository published or in development
[Submodels (industrialdigitaltwin.org)]

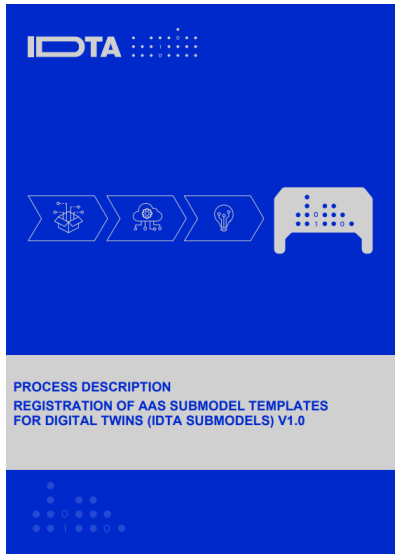
IDTA the platform for agile information models development

AAS the industry solution for the Digital Product Passport

AAS is the Register/Container for Submodels

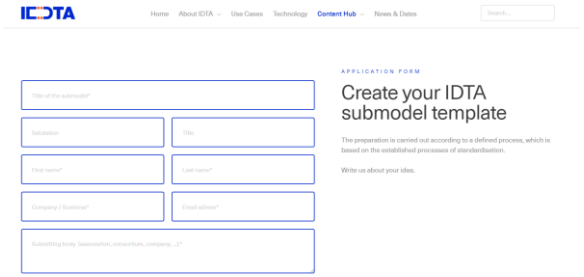


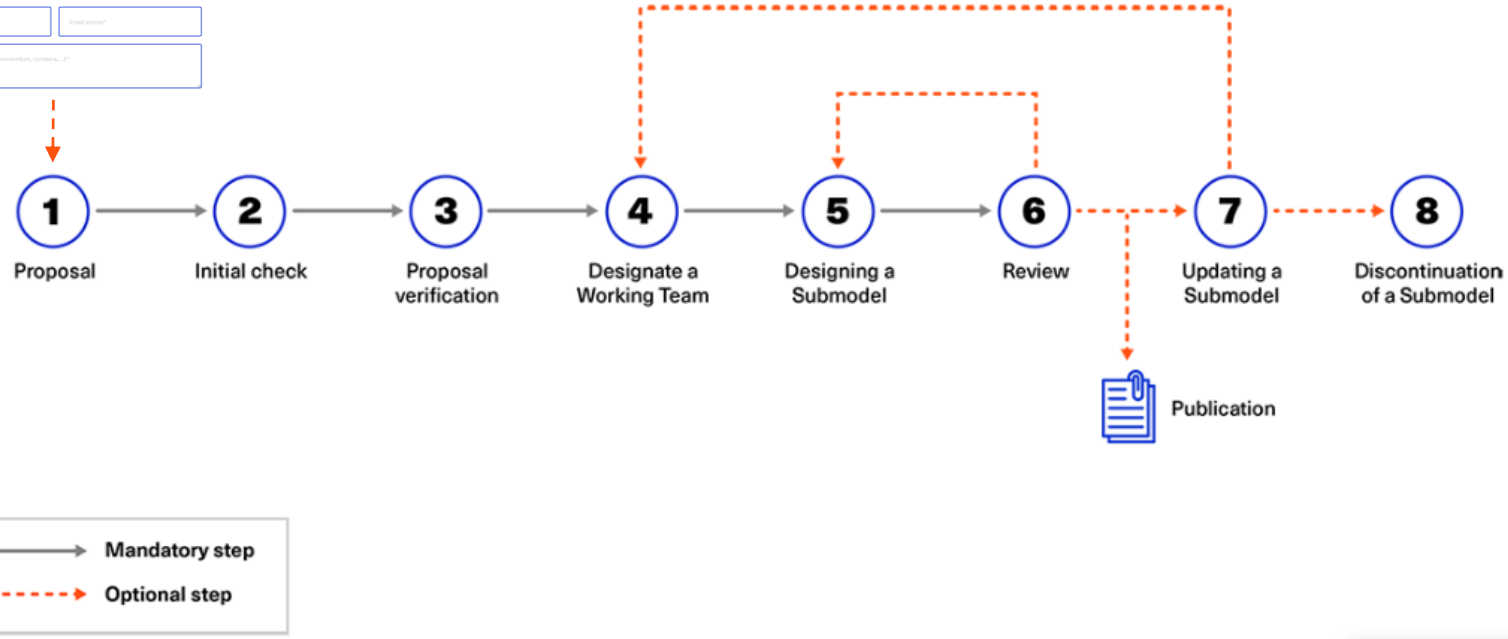
Process for development of Submodel templates (SMT)



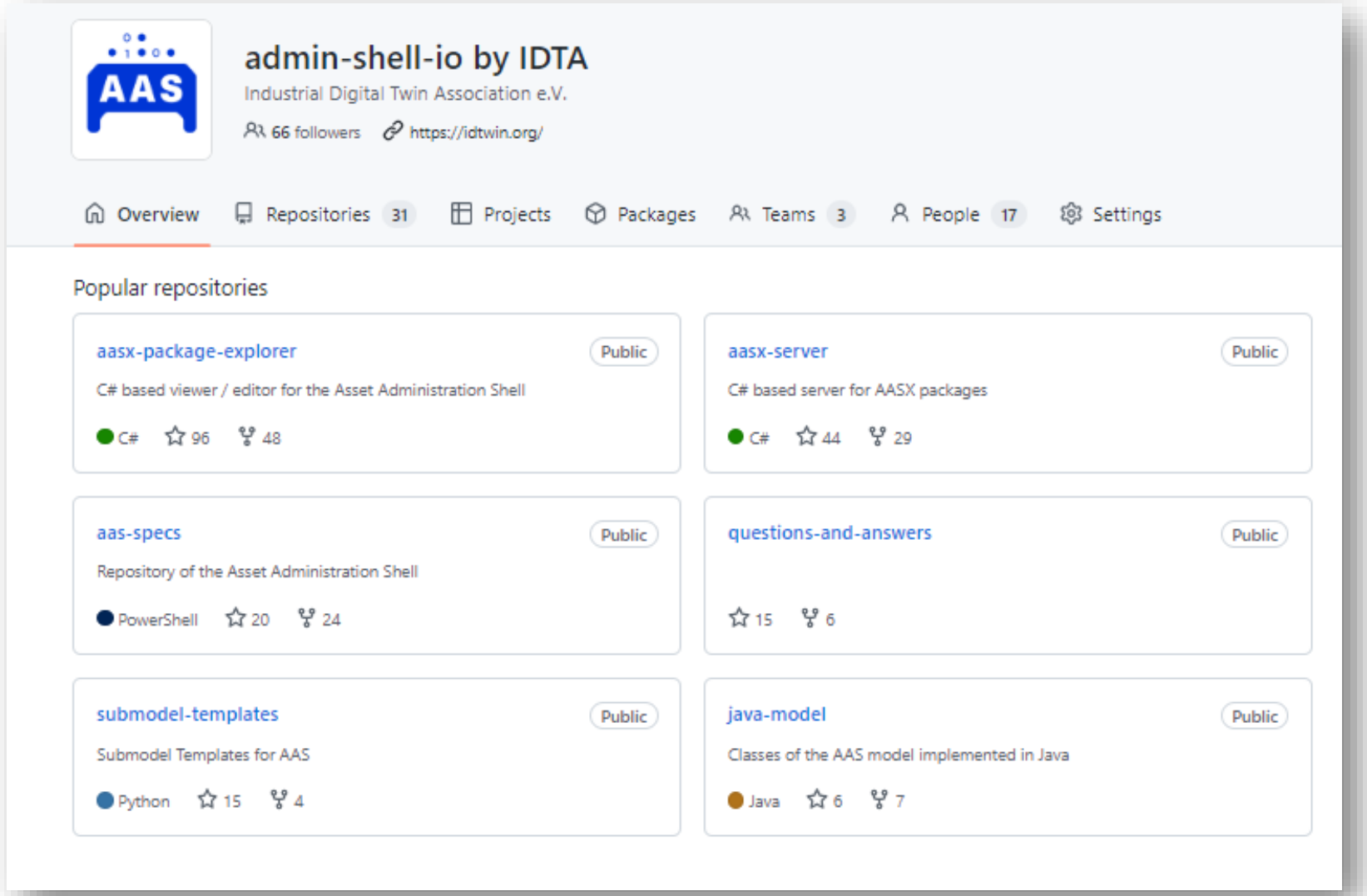
Registration of
AAS Submodel Templates for
Digital Twins (IDTA Submodels) V1.0

WEB Form – create your IDTA Submodel Template





Tools and Apps: Open Source at GitHub



[admin-shell-io by IDTA (github.com)]

Open Source Activities at Eclipse Foundation

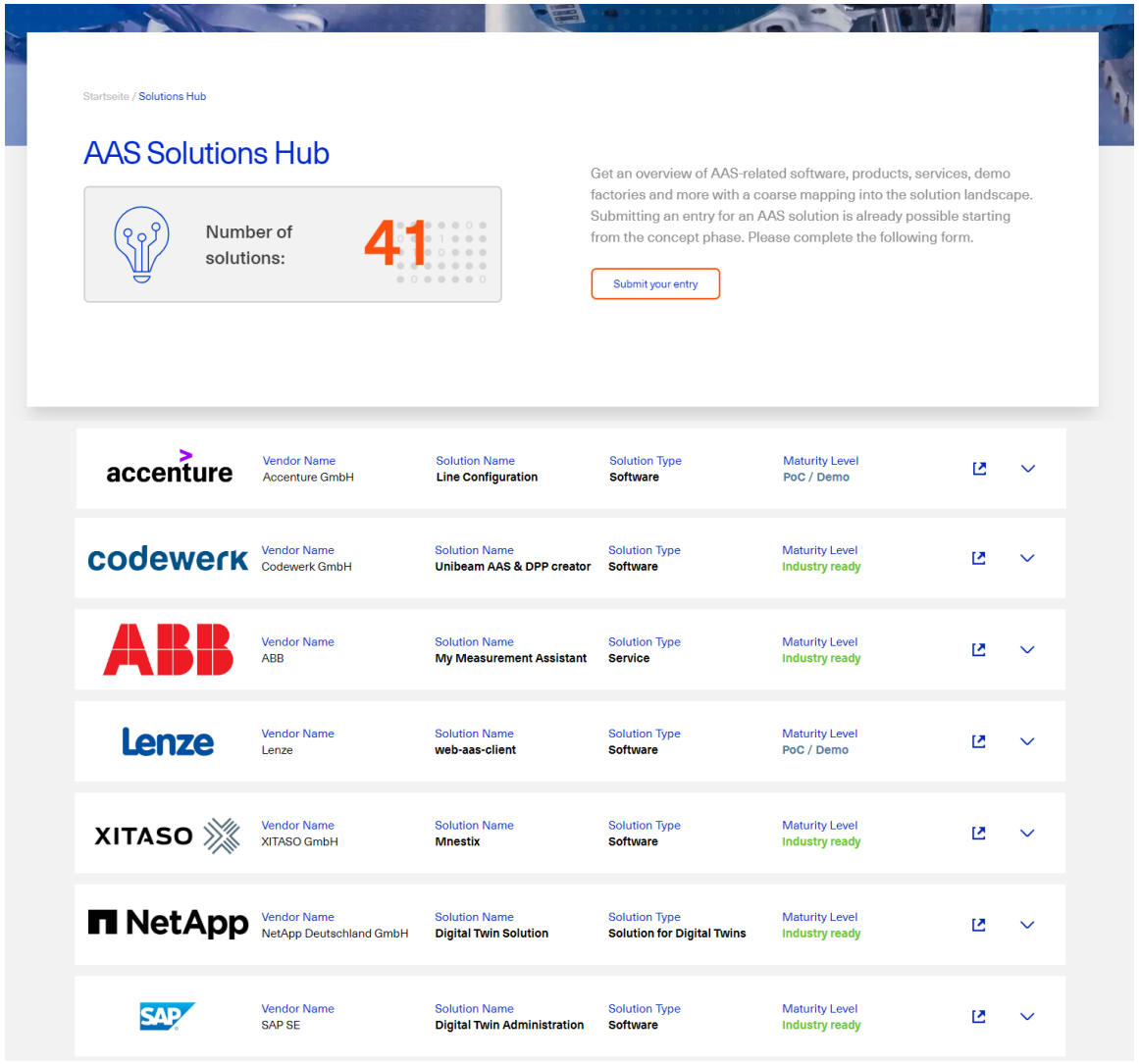
Top Level Project **Eclipse Digital Twin**

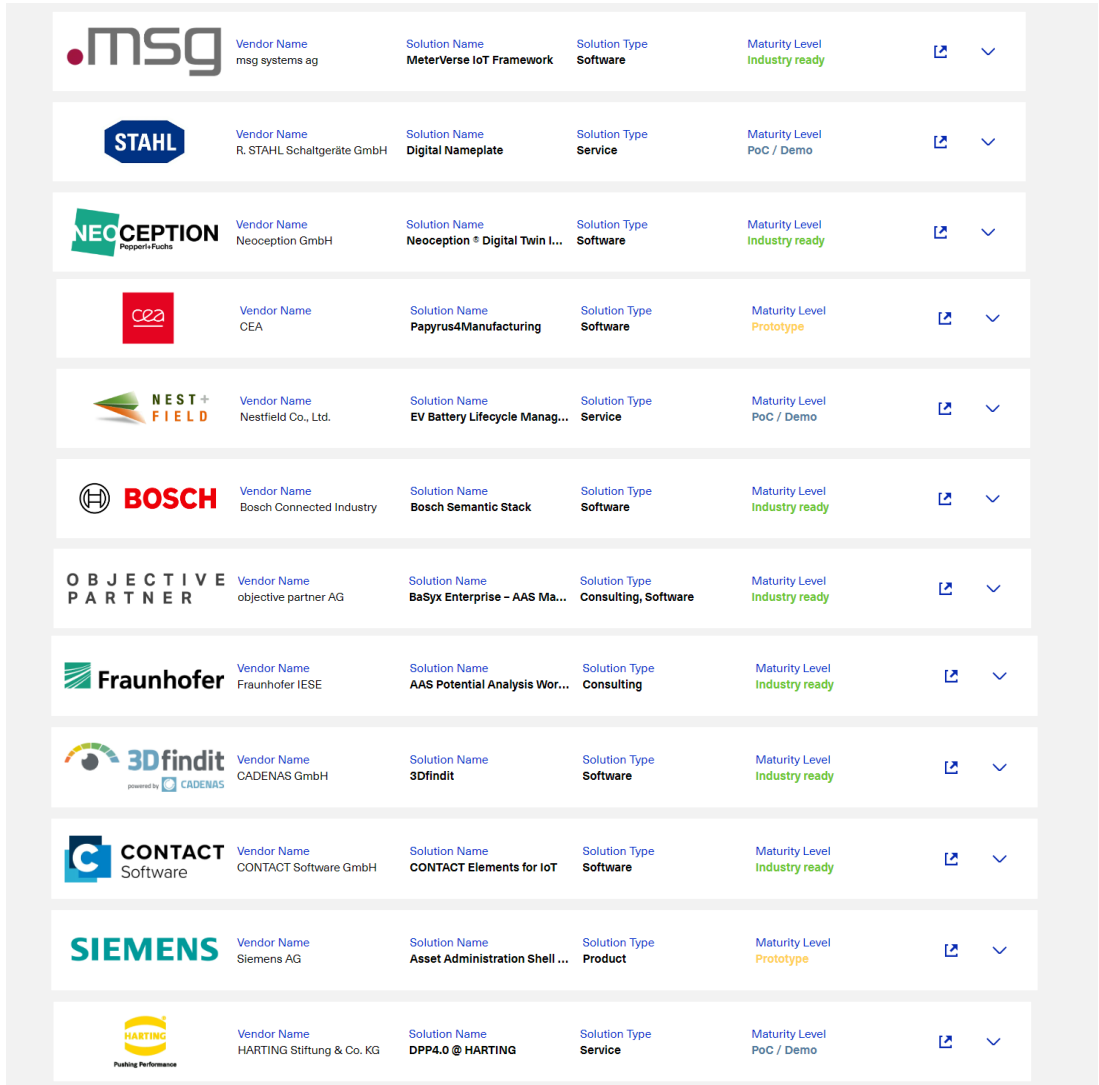
Related projects:

- Eclipse AAS Model for Java
- Eclipse AAS Web Client
- Eclipse AASX Package Explorer and Server
- Eclipse BaSyx
- Eclipse FA³ST
- Eclipse Mnestix AAS Browser
- Eclipse Semantic Modeling Framework (ESMF)
- Eclipse Service Lifecycle Management

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

41 Solutions available in the IDTA Solutions Hub





Find solutions to create, view, provide, manage, operate your AAS here: [Solutions Hub]

AAS in the industrial implementation…

Product type AAS available

Toolchain integration (in process)

many more to come…

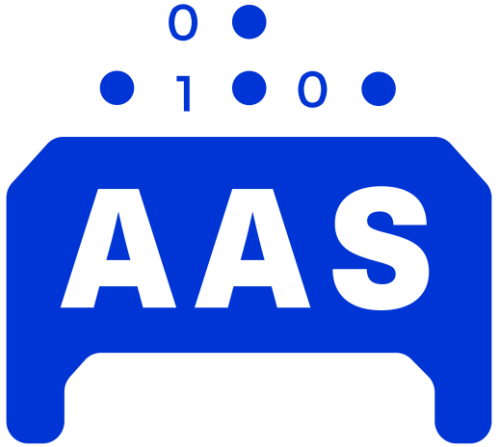
Industry Voices committed to AAS

› Find the full statements here: Press release

EU Digital Product Passport

ID Link
(IEC 61406)

+



AAS
(IEC 63278)

=

With open standards
free to use

IDTA Industrial Digital Twin Association | zvei electrifying ideas

How does it work? Benefits Videos Roadmap Contact TRY YOURSELF ›

The Digital Product Passport for Industrie 4.0

The DPP4.0 is an industry-ready tool for capturing and providing product information in a human- and machine-readable format for various parties, such as companies, authorities and users.

https://dpp40.eu/

IDTA Channels

https://industrialdigitaltwin.org/

Newsletter:
Internal around 10 x year
External around 4 x year

Regular column „Inside IDTA“ in every issue of ATP magazine
https://atpinfo.de/thema/idta-news

https://dpp40.eu

https://github.com/admin-shell-io

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

https://www.linkedin.com/company/industrial-digital-twin-association/

https://www.youtube.com/channel/UCvYk-bRkF9-x0HdpJfEcV7g

Shaping the Digital Twin Ecosystem

Founding Associations

bitkom

PLATTFORM INDUSTRIE 4.0

VDMA

zvei electrifying ideas

SDO Liaison

ISO JTC 1 IEC
INFORMATION TECHNOLOGY STANDARDS

SC41

JTC1/SC41/WG6
„Digital Twin“

cen CENELEC

JTC 24 „Digital Product Passport“

Excerpt of Consortial Liaisons

Alliance INDUSTRIE DU FUTUR

Digital Data Chain Consortium

digital twin CONSORTIUM

EUROMAP
European Plastics and Rubber Machinery

CLASS

ECLIPSE FOUNDATION

KOSMO
스마트제조혁신추진단
KOREA SMART MANUFACTURING OFFICE

NAMUR

OPC FOUNDATION

PI
PROFIBUS • PROFINET

Industrial Digital Twin Association

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Email: christian.mosch@idtwin.org

www.industrialdigitaltwin.org