



twinsphere - the enterprise grade

SaaS platform for digital twins

Provide AAS, optimize information flow across the value chain and prepare your company for the upcoming digital product passport

The industry is changing



EXTERNAL pressure

- New legislation / regulations such as the "Digital Product Passport" or "Cyber Resilience Act"
- Stronger demand from customers / corresponding requirements in other sectors
- More and more approaches recognizable in the direct competitive environment

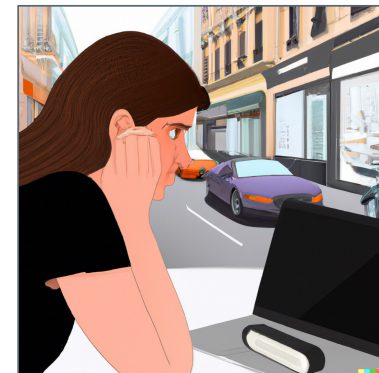


INTERNAL motivation

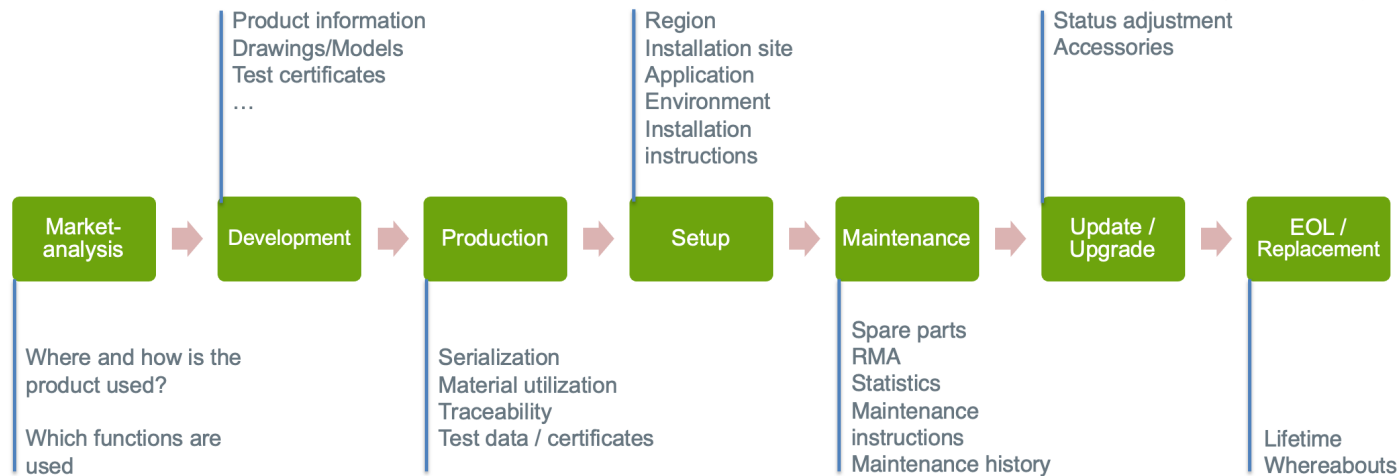
- Improved product data provision, e.g. also for CO2 footprints
- Provision of digital services for the products

Market situation

- Today, the market expects more than just outstanding physical products
- Digital value-added services are playing an increasingly important role in the market
- Digital provision of data also via new technologies (digital twin)
- Often little or no possibility to charge money for it
- Limited revenue opportunities for value-added services or "prime" services
- Competencies often lie in other areas
- Uncertainty about how the market will develop



Information along the product life cycle

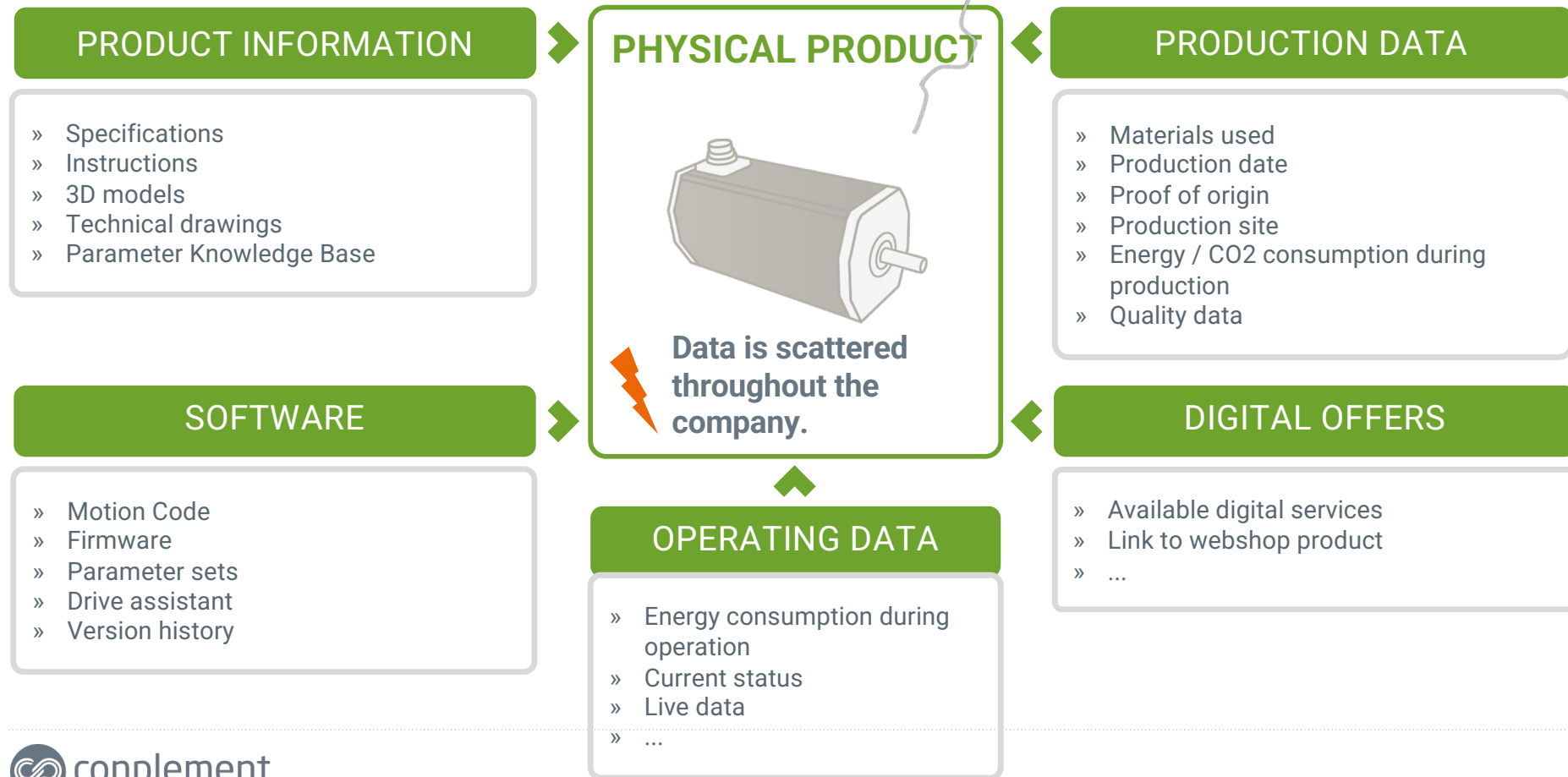


Throughout a product's life cycle, from market analysis to end-of-life, critical information about usage, functions, and product data is created, may need updates and must be made available to stakeholders.

Consider your current information management. How smoothly does information about your products flow across their lifecycle stages in your organization?

Current situation in companies

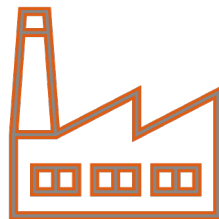
No standardized interface
to provide the data in a bundled form.



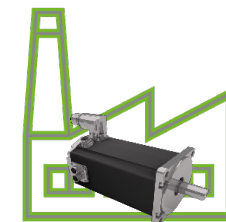
How the Digital Twin can help

Product and production data is recorded in systems at supplier site.

Here a distinction can be made between a component model or type and in individual physical asset.



Customer

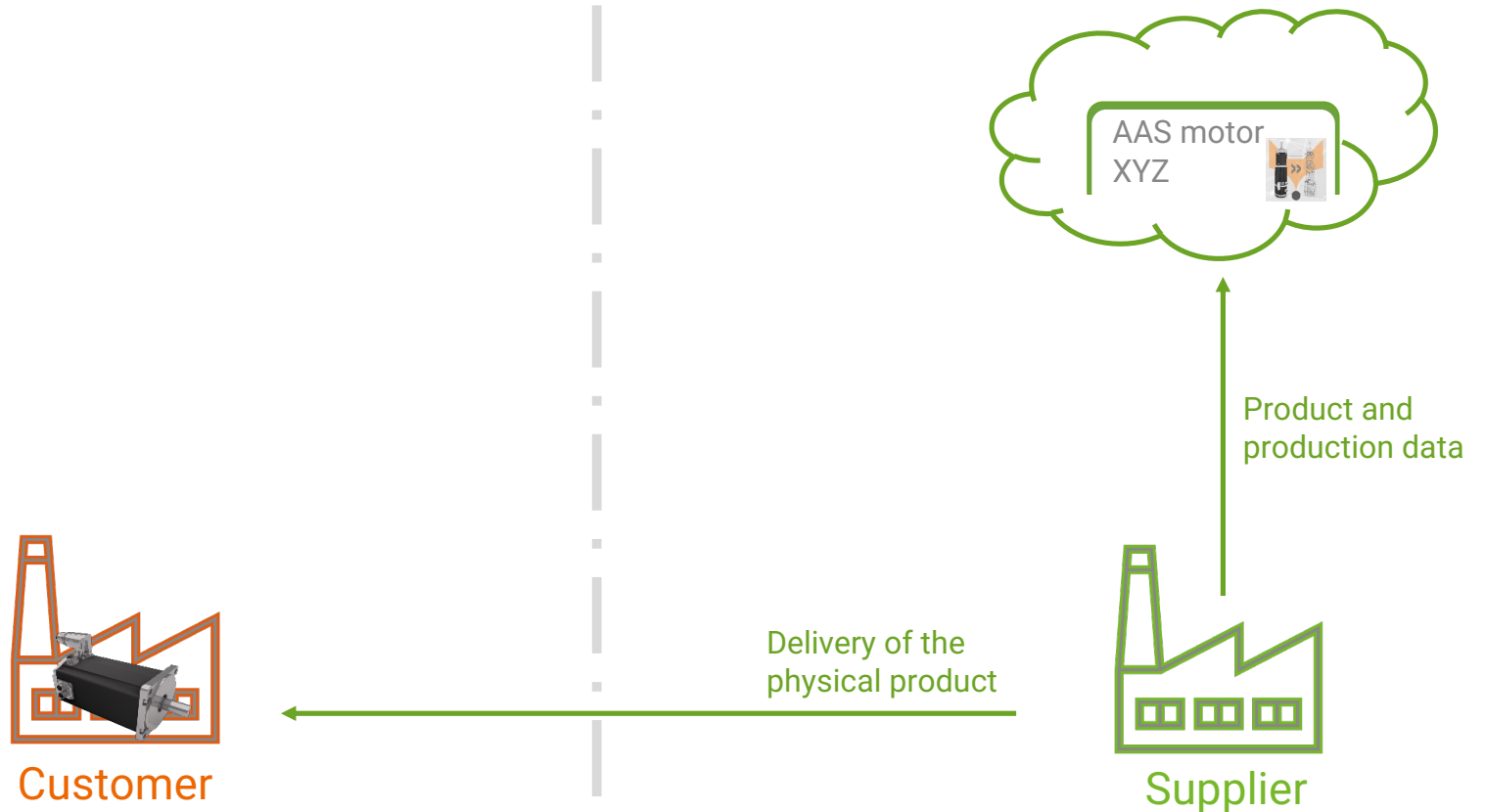


Product and production data

Supplier

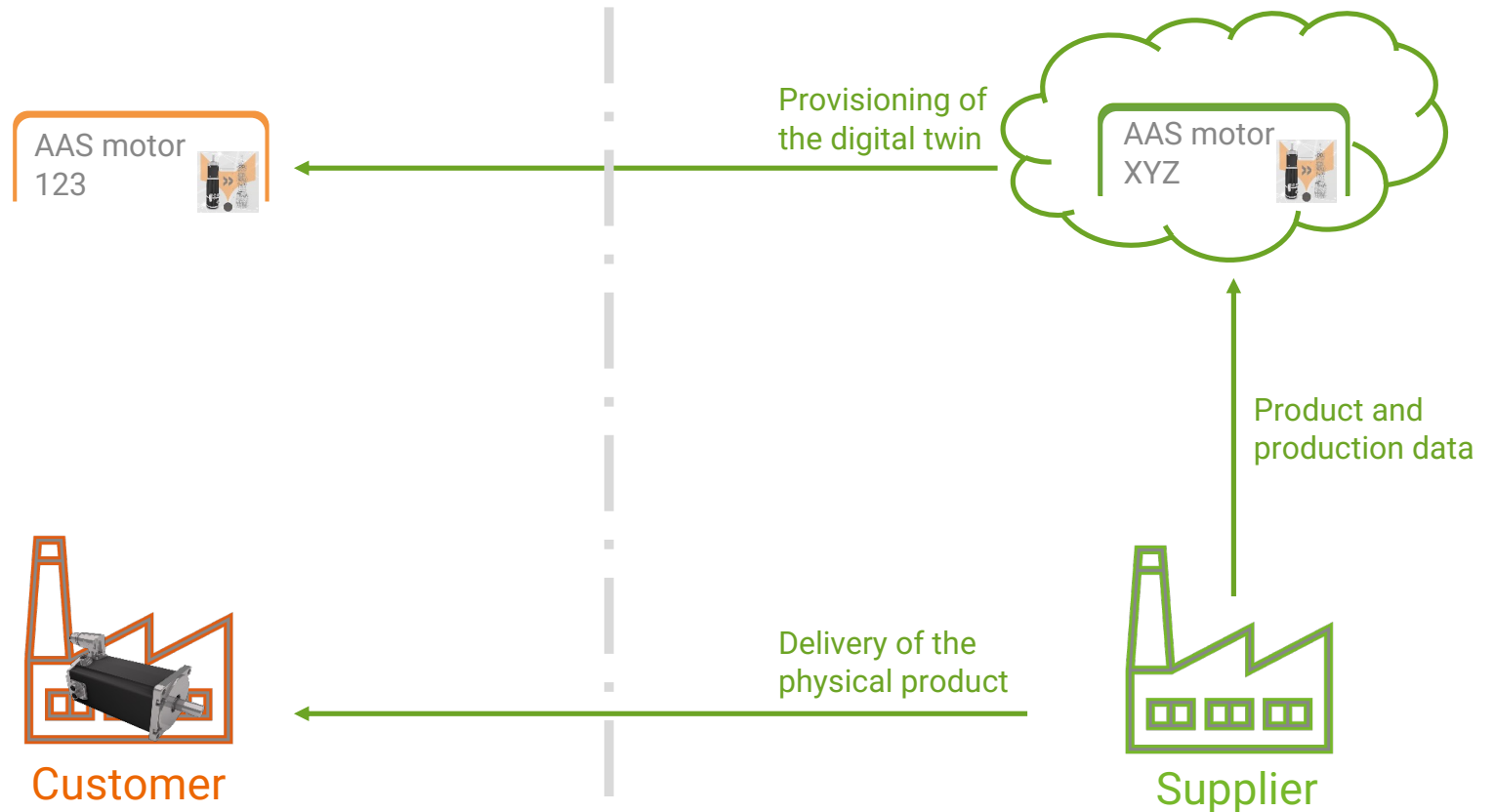
How the Digital Twin can help

An AAS (the Digital Twin) containing data about the asset must be stored in a platform accessible throughout the entire value chain and life cycle of the physical asset.

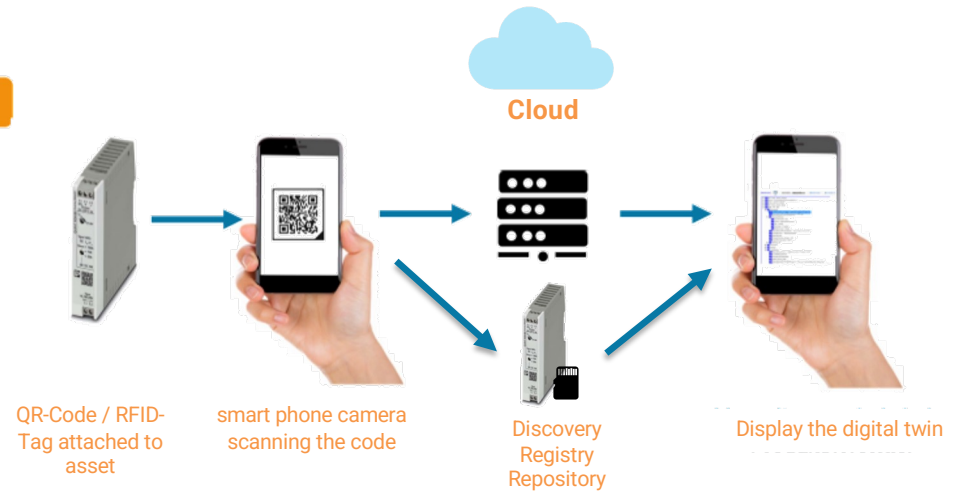
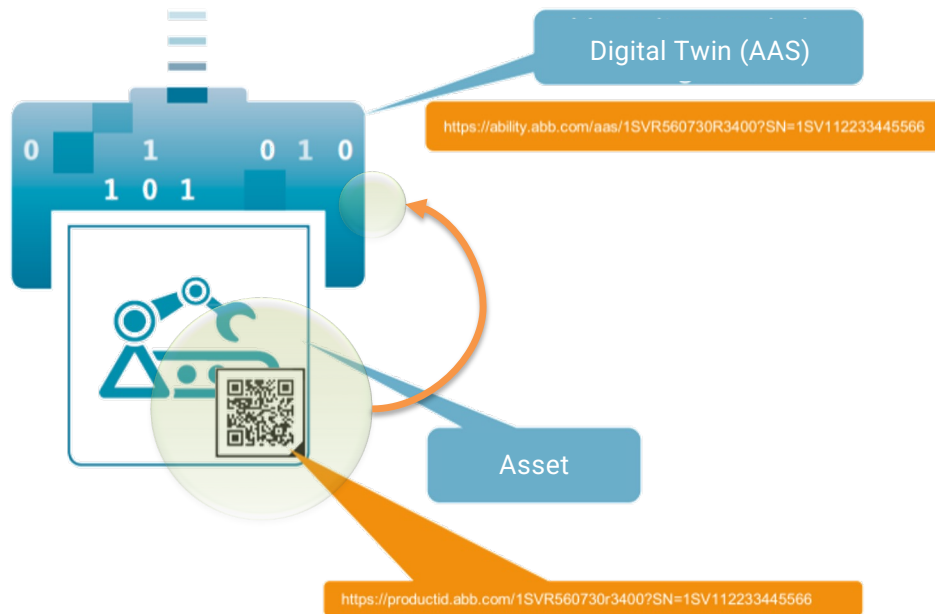


How the Digital Twin can help

By providing access to the Digital Twin for the customer via secured access to the AAS-Platform, both parties can utilize information for process- and product optimization efforts.

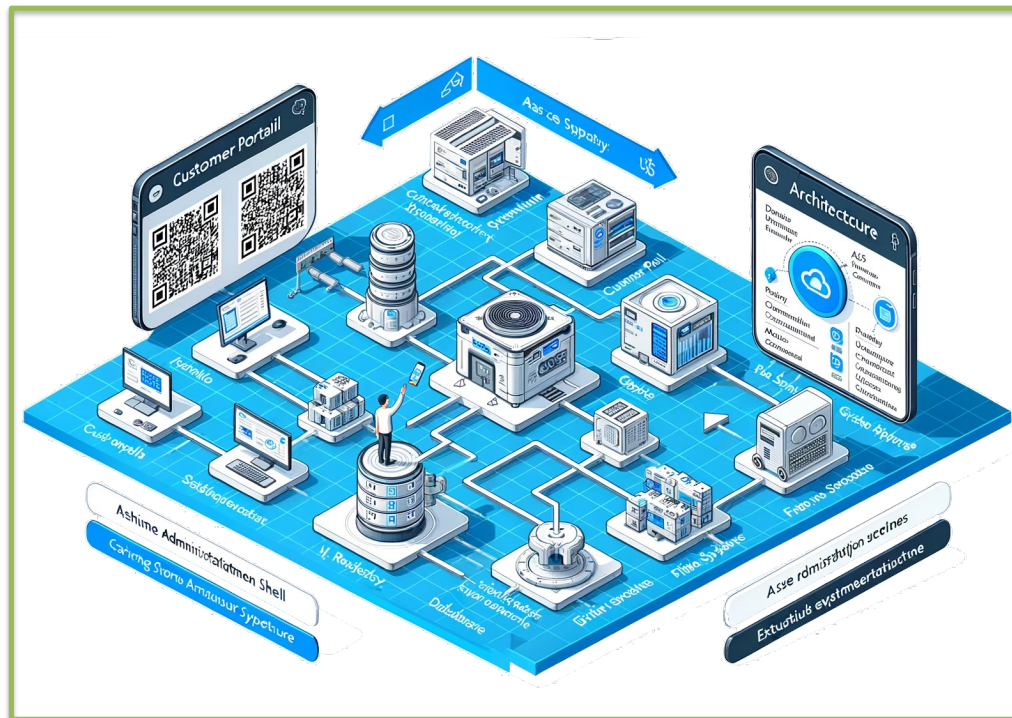


Access to the Digital Twin



What does it take to provide a Digital Twin?

Implementing a Digital Twin can be challenging



Picture generated by OpenAI to showcase access to the digital twin from

To retrieve the information of a physical product and interact with the digital twin, quite a lot of components need to be implemented:

- An **Identification Link** in the form of a QR- / Data Matrix Code or NFC/RFID Tag.
- A **Discovery Service** to translate the Asset ID to the AAS (aka Digital Twin) ID.
- A **Registry Service** to retrieve the information where the digital twin is located.
- An **AAS-Repository** that holds all the information including sub models and files.
- **Connection Layer** to network the AAS with IT systems & shopfloor components.

Does every company need to build it's own platform to integrate Digital Twins in it's value chain?

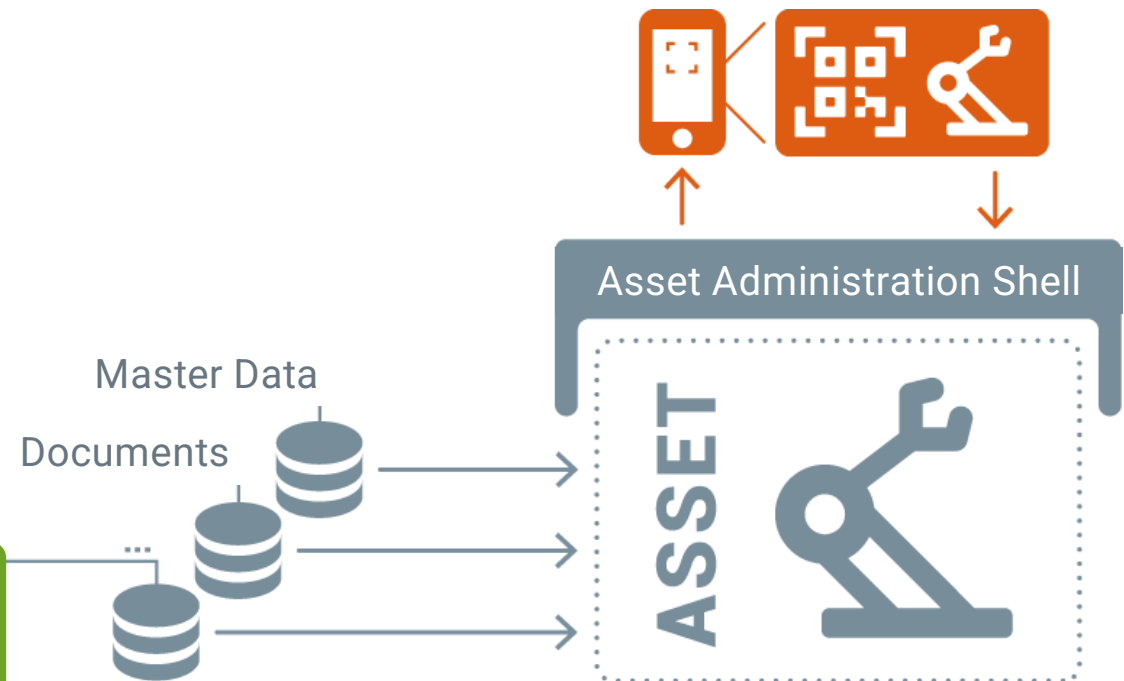
... of course not

twinsphere, the AAS Platform

twinsphere helps with

- creation and provisioning of digital twins based on the AAS
- establishing and optimizing the information flow across organizations
- Setting up notification scenarios where your customers need up to date information in a timely manner
- ...

The twinsphere suite offers functions and services for a standards based, controllable and interoperable network of value chains



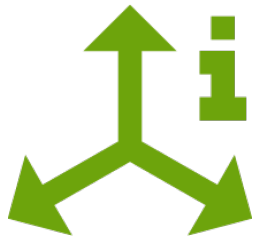
Out of the box use case with twinsphere



twinsphere is the enterprise grade platform for digital twins based on the AAS



Create and provide documents based on the VDI-2770 document container



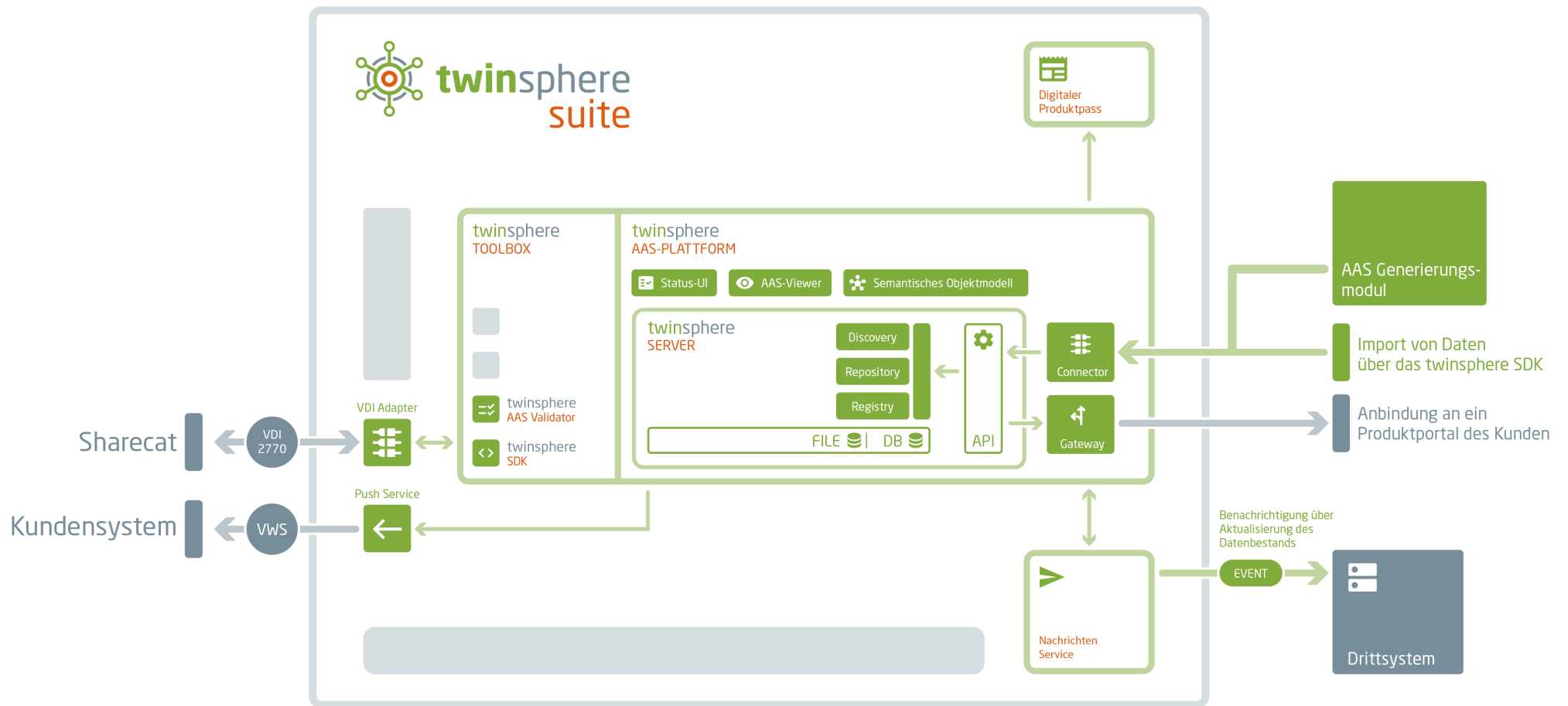
Notification and Push-Funktionen allow for automatic data exchange



Prepare everything for the digital product passport of the EU

Architecture Overview

twinsphere is a suite of components and services



Example use cases per submodel

It's about your added value, not the technology

Digital Nameplate according to VDE V 0170-100

- The digital rating plate, retrieved via a QR code in accordance with the IEC 61406 standard (German DIN SPEC 91406) on your product, opens the way to the digital twin.
- All necessary and legally required information can be stored in the corresponding submodel in our platform.
- This means that your customers always receive up-to-date information in multiple languages.

Documentation handover according VDI-2720-1

- Our VDI-2770 adapter wraps all documents in a standard conform document container according to the VDI-2770 standard and converts source document to PDF-A where necessary
- Documentation is interoperable and fully ECLASS-compliant.
- We map all the necessary models and interfaces for planning, commissioning, spare parts management or operation and, of course, maintenance, repair and other use cases in a standardized way.

Provision of technical features with ECLASS

- Using the Technical Data submodel, you can map all relevant information about your products in an ECLASS-compliant manner and make it available to your customers in a standardized and simple way via our platform.
- This allows you to make technical information usable both for your customers' employees and for machine-to-machine communication.
- This makes it easy and convenient to integrate your products into your customers' engineering process.

The Digital Nameplate

The first use case that already brings value

The digital nameplate brings benefits for everyone involved along the product value chain. It facilitates the identification of assets in large systems and forms the bridge between the physical asset and its Asset Administration Shell

Advantages of the digital nameplate

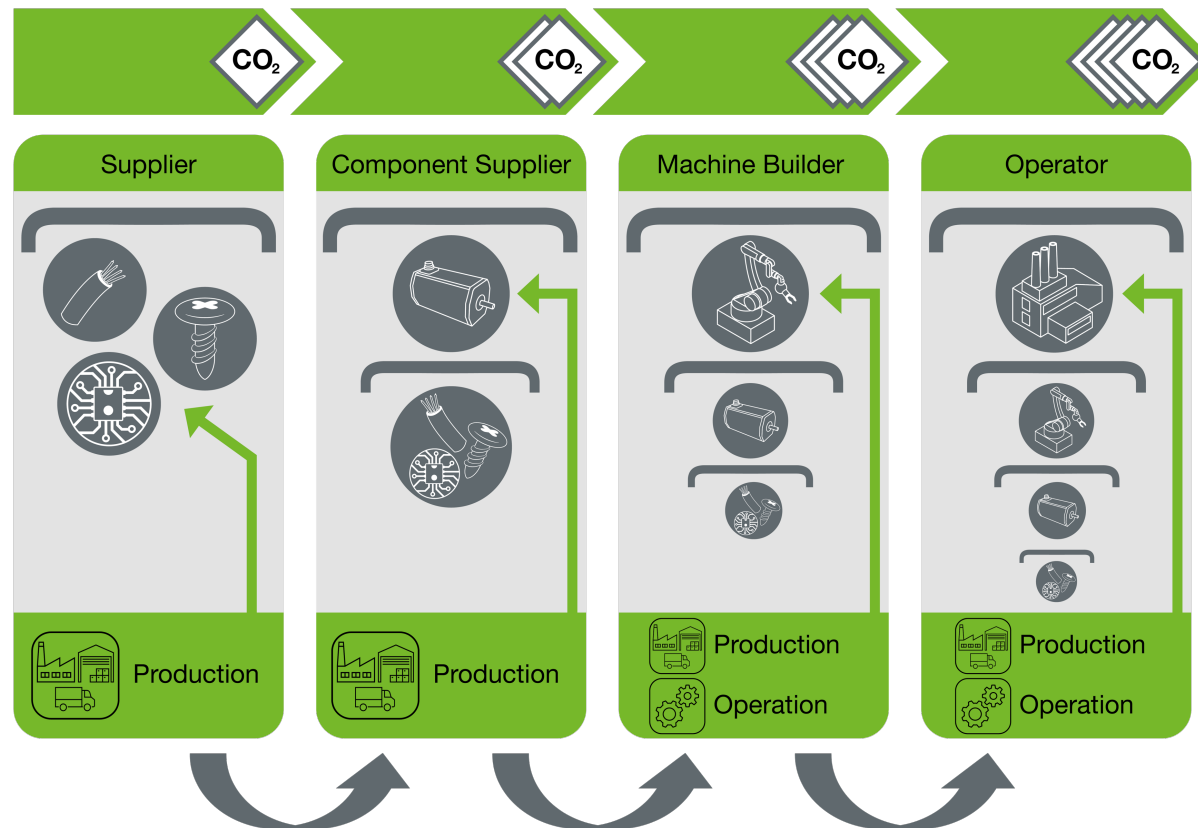
- **Save time and money:** Immediate data access
- **No lack of space:** space reduction possible
- **Multilingualism:** different languages coded
- **Readability:** Barrier-free with significantly more information
- **Reduced costs :** digital information can be updated online
- **Worldwide availability:** All information available in standardized form (customs, international standards)
- **Sustainability:** Reduces paper / material



Bild Quelle: Digitales Typenschild: Grundlage für Industrie 4.0 (dke.de) & Das Digitale Typenschild 4.0: konsistent, nachhaltig, zukunftssicher, vernetzt - zvei.org

Example of information flow for sustainability

Provide the CO₂ footprint along the complete value chain via AAS



The AAS facilitates a comprehensive mapping of a product's CO₂ footprint from raw material extraction to end-of-life.

This allows to standardize and simplify the aggregation and provision of CO₂ emissions data, ensuring readily availability of footprint information.

This approach aids in fulfilling regulatory requirements, such as the upcoming DPP and enhances transparency and accountability in sustainability efforts across industries.

Benefits of the twinsphere suite



Easy usage



Plannable costs



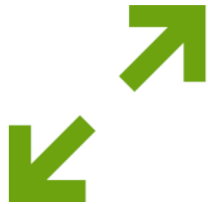
Interoperability



Grow as you go



Flexibility



Scalability



Customer focused



SaaS model

Easy, economical and highly scalable

Premises behind the development of twinsphere

Easy

- Automatic creation of administration shells integrated in your processes
- Validation for correct implementation of sub models.
- Automated upload to the platform.
- Access to digital twins in your own portal or via our web viewer

Economical

- Fast implementation of use cases thanks to ready-made templates for the submodels.
- Customized cost model for every company size.

Highly scalable

- Parallel processing and provision of an extremely large number of asset administration shells including submodels.
- Machine-to-machine communication via type 2 access.
- Standardized endpoints for locating, delivering and working with asset administration shells.



complement

the digital enablers

Thanks for listening!



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