Implementing the EU Digital Product Passport with Digital Data Chain and Asset Administration Shell - Overview

VCI – Webinar on DPP Standardization
December 9th, 2024

Christoph Attila Kun (BASF)

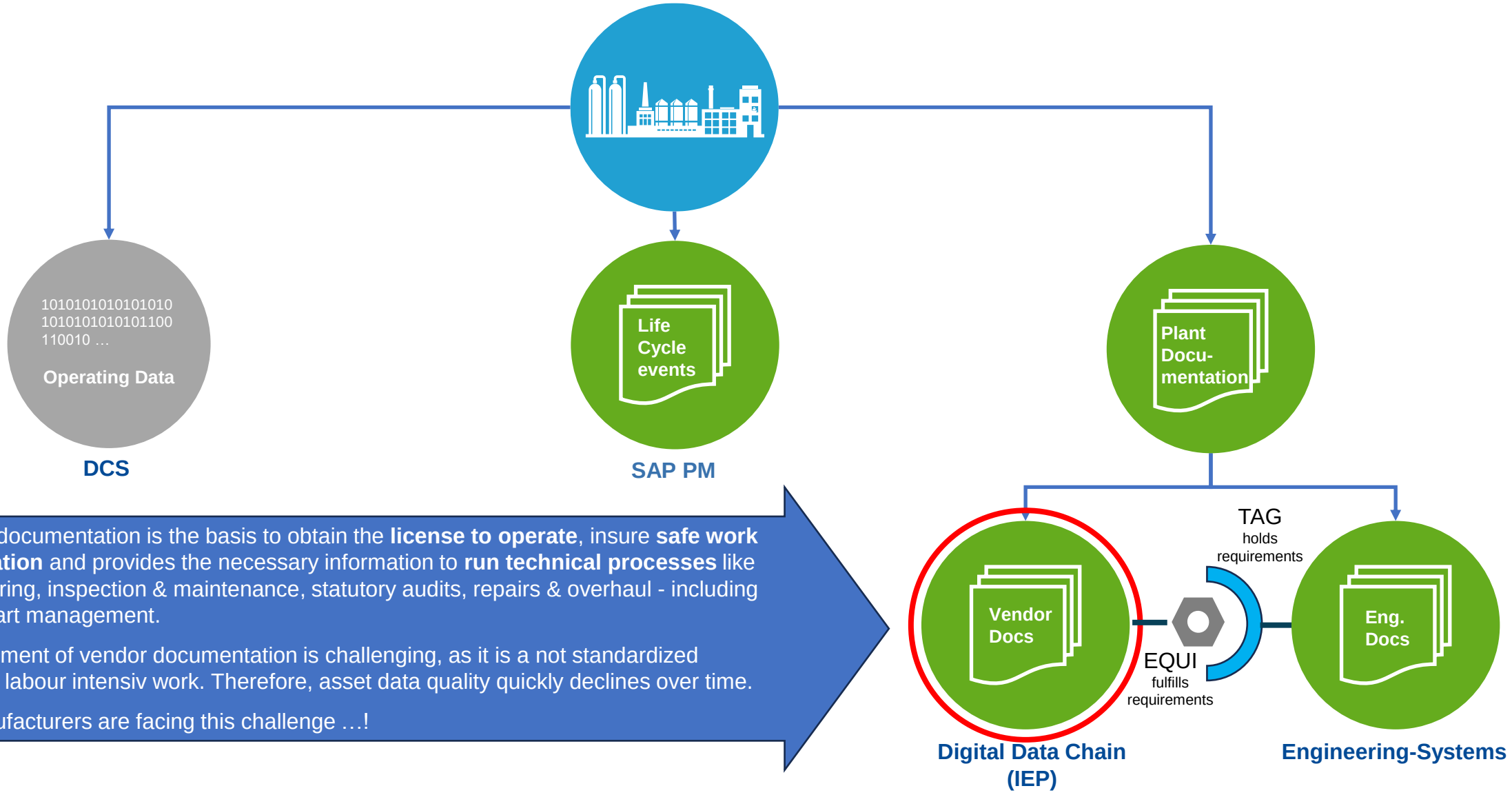
Process Industry …

Chempark Dormagen (Quelle: BAYER AG)

BASF Verbund Site Ludwigshafen (Quelle: BASF SE)

… is an asset intensiv industry.
DPPs / Digital Twins for production assets will play a significant roll in operating our plants!

Motivation: information management in plant operations



Vendor documentation is the basis to obtain the **license to operate**, insure **safe work & operation** and provides the necessary information to **run technical processes** like engineering, inspection & maintenance, statutory audits, repairs & overhaul - including spare part management.

Management of vendor documentation is challenging, as it is a not standardized manual, labour intensiv work. Therefore, asset data quality quickly declines over time.

All manufacturers are facing this challenge …!

The Digital Data Chain Consortium

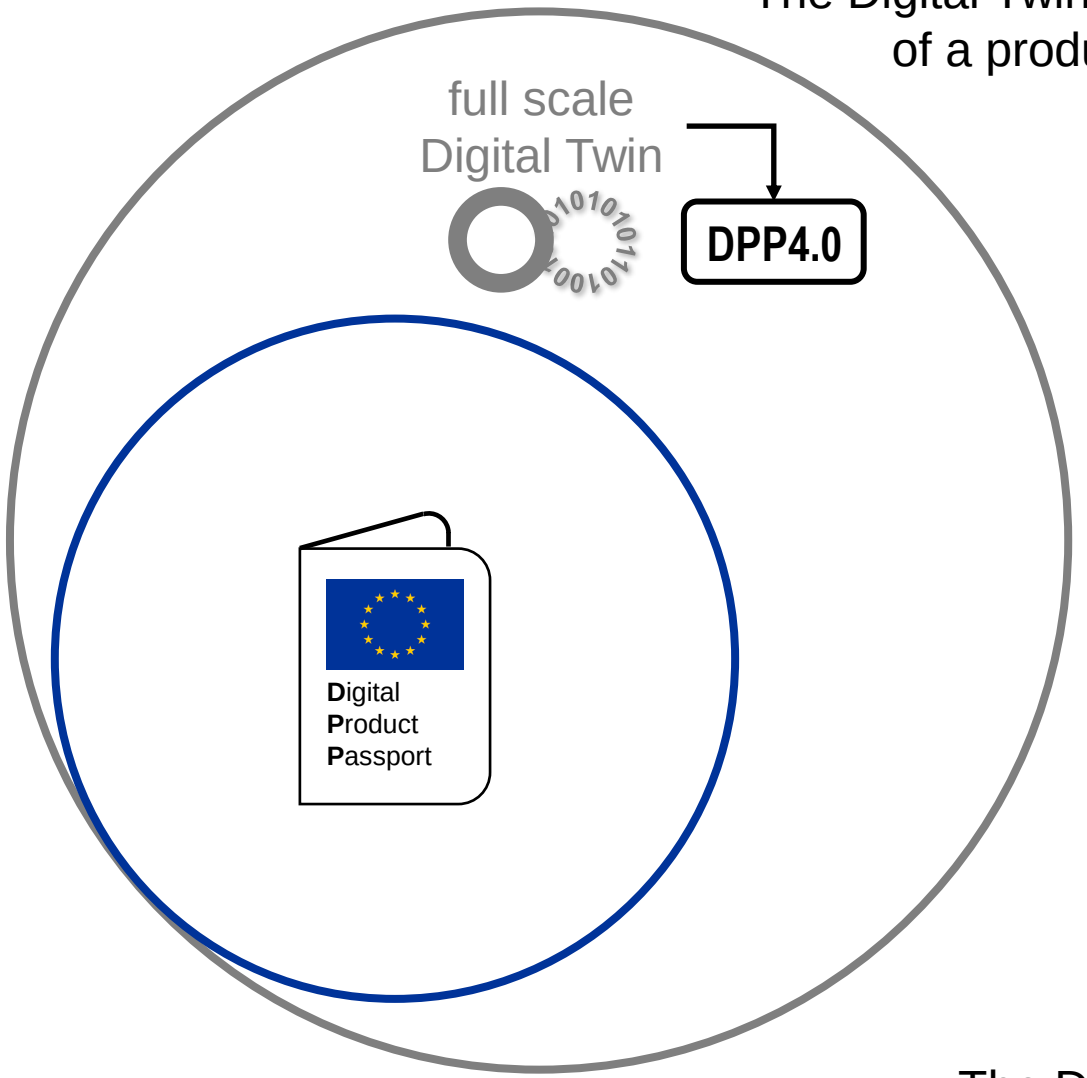
The Digital Data Chain Consortium was founded to automate the information provisioning from manufacturer to owner/operator by:

- developing the necessary technologies,
- achieve international standardization at ISO/IEC, as *must* for global acceptance by operators, suppliers and engineering contractors,
- have the critical mass to create the momentum for growth of the digital ecosystem.

* BASF is the elected Consortium Leader of the Digital Data Chain Consortium (DDCC)
→ www.digitaldatachain.com

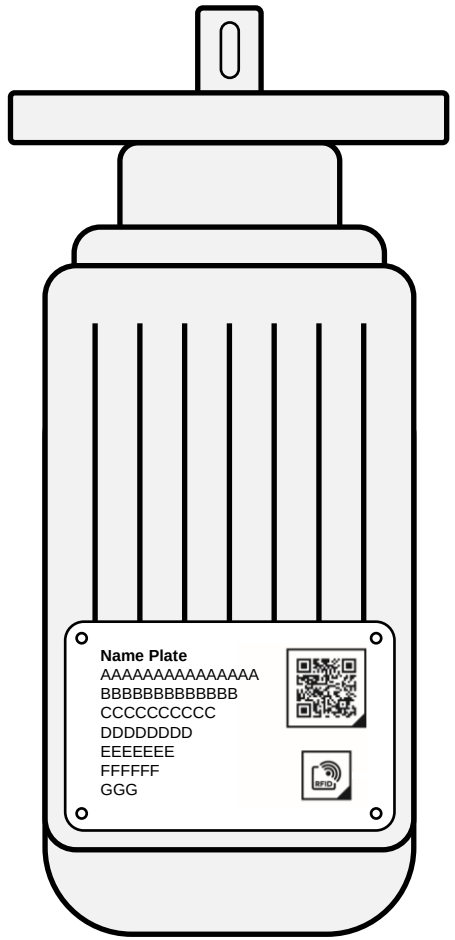
Digital Product Passport or Digital Twin?

The Digital Twin is the collection of all information of a product including the ones of the DPP.

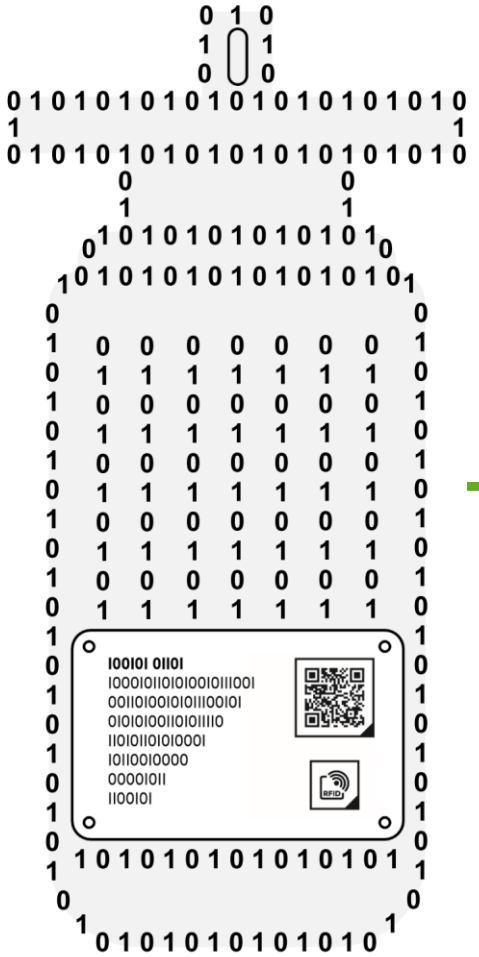


The DPP is the collection of all product information relevant for circularity and authorities.

Simplified data model of a Digital Twin



physical object



digital twin

digital representation of the physical object

functional model

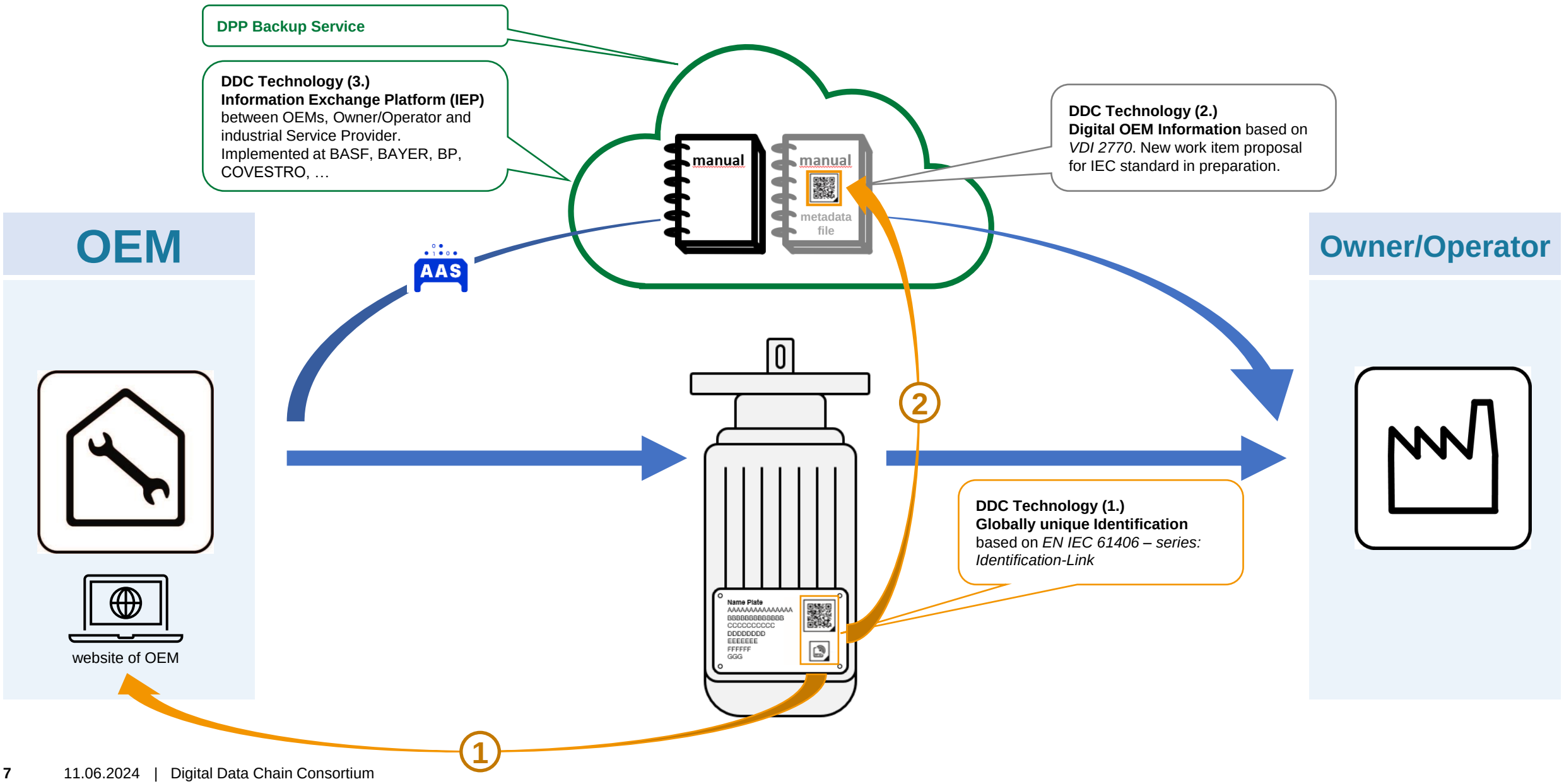
- simulation
- prediction
- condition monitoring
- …

EU DPP

information model

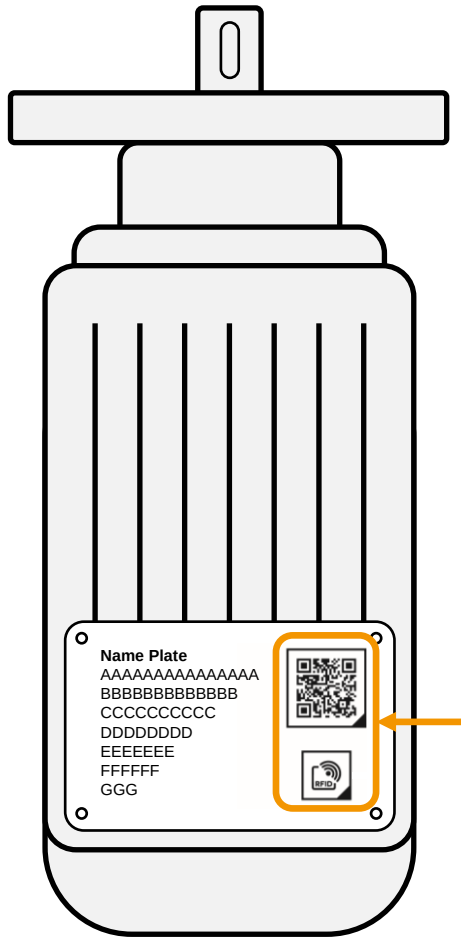
- tech specs
- documentation
- life cycle information
- …

The DIGITAL DATA CHAIN→ Combining the technologies

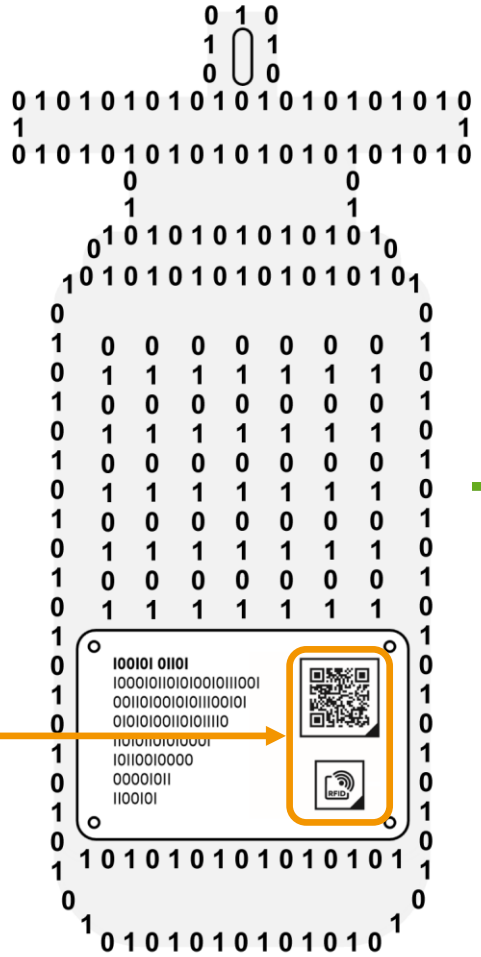


Digital Data Chain-Video → https://www.youtube.com/watch?v=jZk6XZSJlCg

EN IEC 61406 – Identification Link → connecting the physical product to its Digital Twin



physical object



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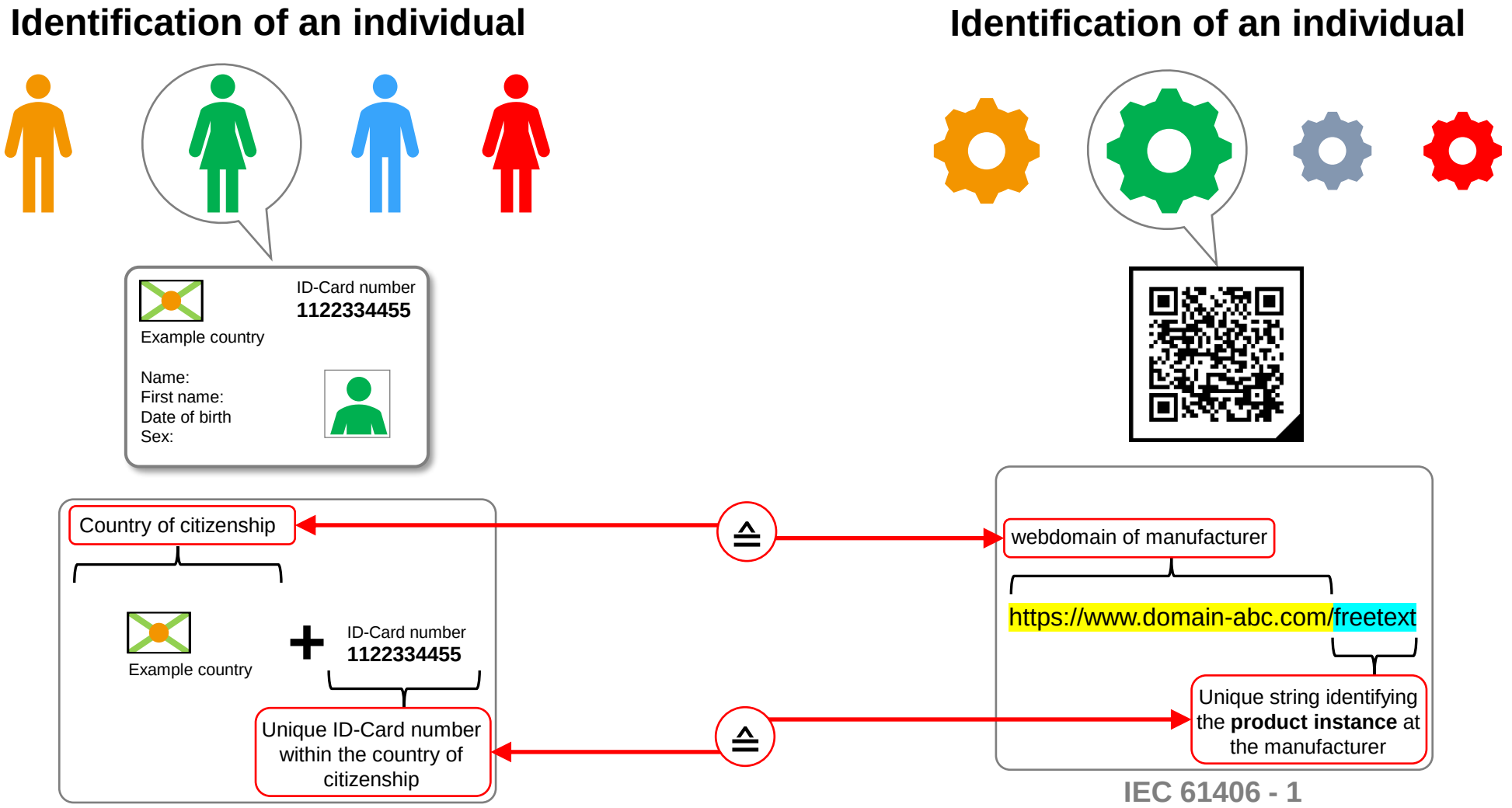
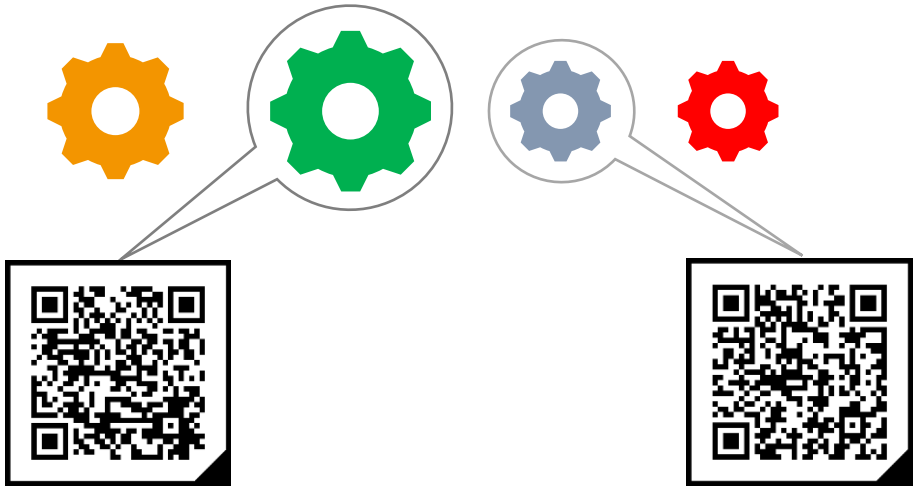
The EN IEC 61406 - series: Identification Link



The EN IEC 61406 - series: Identification Link

Identification of an individium



webdomain of manufacturer

https://www.domain-abc.com/freetext

Unique string identifying the **product instance** at the manufacturer

IEC 61406 - 1

webdomain of manufacturer

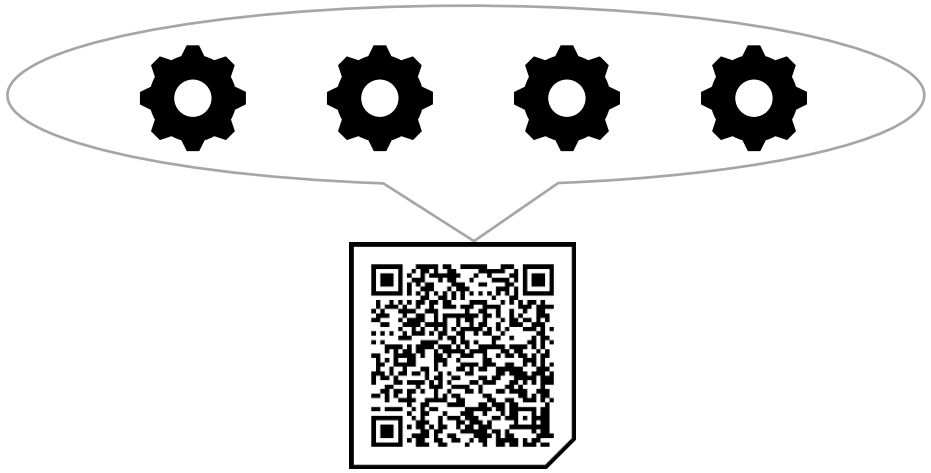
Unique string identifying the **product instance** at the manufacturer

https://www.domain-abc.com/?.S=freetext

SIDI: System Identifier with ISO/IEC 15418 conform Data Identifier, indicating that the item can be identified on **instance level**

IEC 61406 - 2

Identification of an identic group



webdomain of manufacturer

Unique string identifying the **product** at the manufacturer

https://www.domain-abc.com/?.P=freetext_or_legacy_ID_solution

SIDI: System Identifier with ISO/IEC 15418 conform Data Identifier, indicating that the item can only be identified on **product level**

IEC 61406 - 2

Starting point: multiple legacy ID systems and various requirements

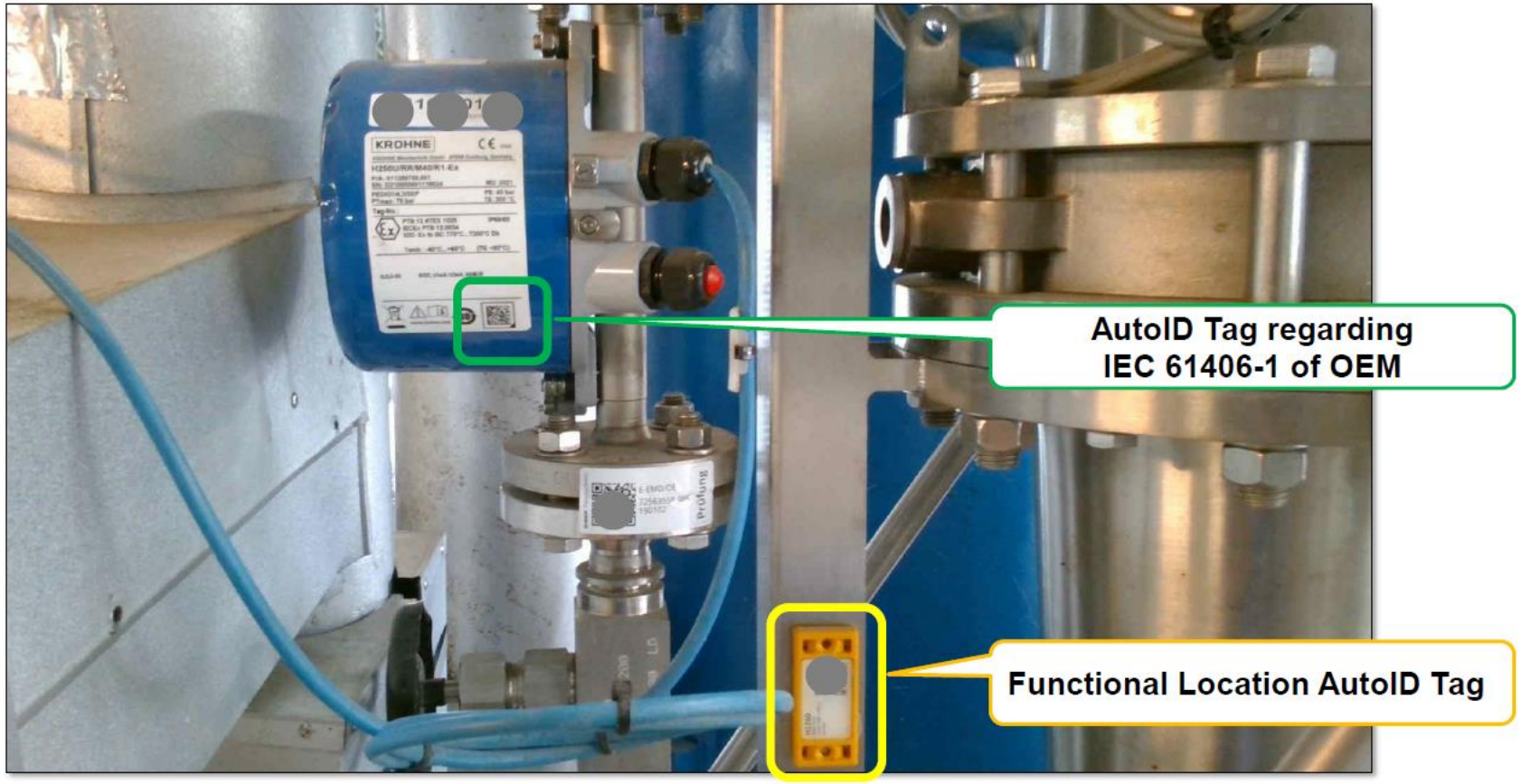
Company name	Company web-domain*	Company type	Industry / branch	Legacy ID system in use	IDs	Interoperable, globally unique object / product identifier created according EN IEC 61406- series – Identification Link	2D-Code / RFID
AAA Steel	aaa-steel.com	medium enterprise	raw materials & commodities	Internationally standardized material name as product code + batch number	H320B 24-04-15-1	aaa-steel.com/?.1P=H320B&.1T=24-04-15-1	
BBB parts	bbb-parts.de	small enterprise	special turned & milled parts	Purchase order number of custom item	PO-240307-232	bbb-parts.de/PO240307-232	
CC Company	cc-comp.eu	large company	factory outfitter	Product code + serial number	Coriolis-maX Cm96-232	cc-comp.eu/?.1P=Coriolis-maX&.S=Cm96-232	
DD Company	dd-comp.eu	major corporation	automotive parts	DUNS number + product code + serial number	123456789 BR55 242131-F	dd-comp.eu/?.18V=UN123456789&.1P=BR55&.S=242131-F	
EE Company	ee-comp.com	large company	consumer goods / food	Global trade item number (GTIN)	9520123456788	ee-comp.com/?.8P=9520123456788	

The EN IEC 61406-series Identification Link is the internationally standardized interoperability solution for globally unique object / product identification.

And it is truly low or no cost, as you can use your existing legacy ID system and just combine it with your company web-domain!

(*) Fictitious, not registered web domains, for illustration purposes only

Implementation of IEC 61406 ID-Link in the plant



What is Product Identification now?

3 in 1

1) It is a string < 100 characters

2) It is an unique identifier made for asset management (any equipment)

3) It is an URI, leading to ABB

https://id.abb/9AAC129110?SN=3K650000554982

Do You see the trick? The same QR code can be used in multiple ways.

WARUM DPP4.0

wöhner

- Vereinfachung zukünftiger Prozesse
- Zukunftsweisende Technologie um Vorgaben der EU besser händeln zu können
- Normiert Plattform zum Datenaustauch (Verwaltungsschale) mit Kunden und Lieferanten
- Weitere Geschäftsmodelle durch Zugangsberechtigungen möglich
- Kosteneinsparung durch Wegfall der Papierdokumentation

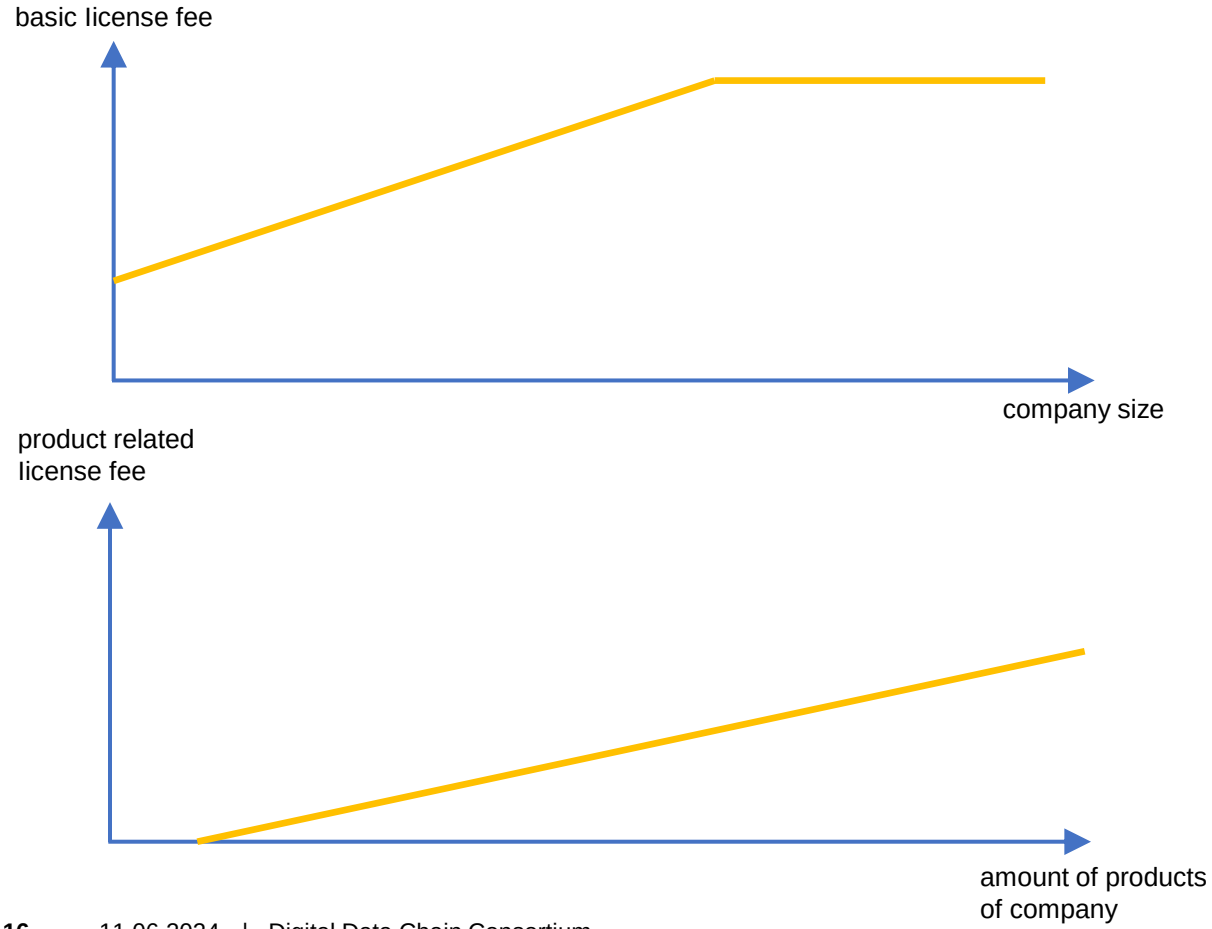
- Simplification of future processes
- Forward-looking technology to better handle EU requirements
- Standardized platform for data exchange (administration shell) with customers and suppliers
- Further business models possible through access authorisations
- Cost savings due to elimination of paper documentation

Why is it so important for industry to participate in the EU DPP standardization

Comparison of costs of potential unique product identifiers for the EU DPP

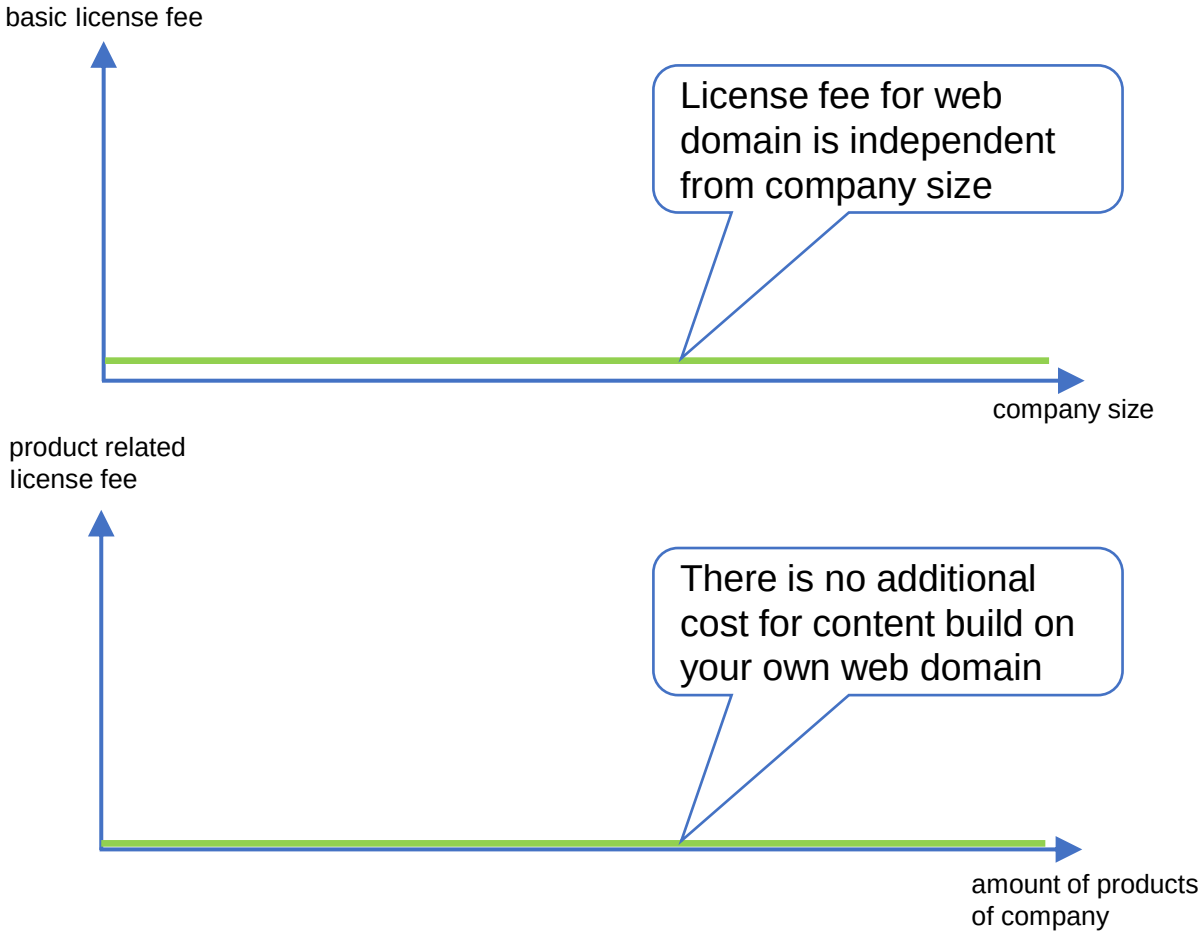
ISO/IEC 15459 based identifier

exemplary license model of issuing agencies, mainly used in retail business



EN IEC 61406 based identifier

mainly used in industry / b2b



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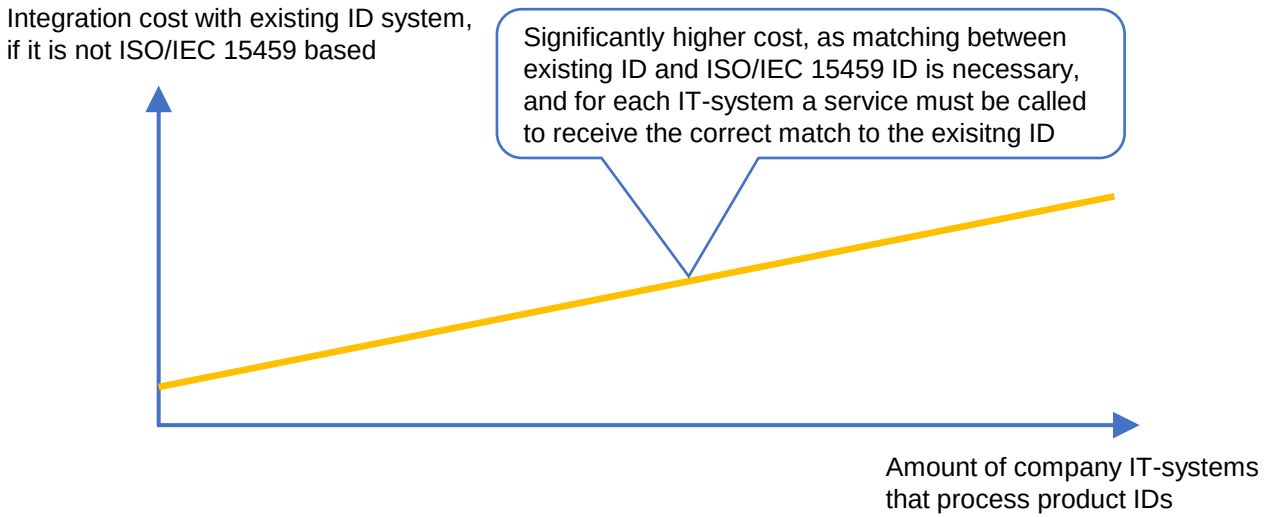
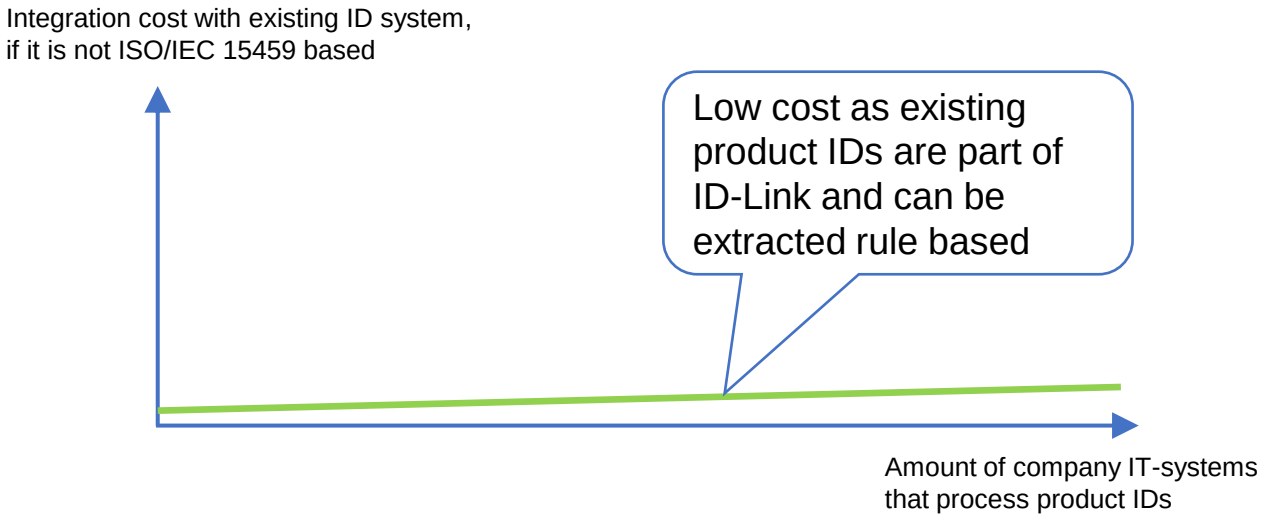
ISO/IEC 15459 based identifier



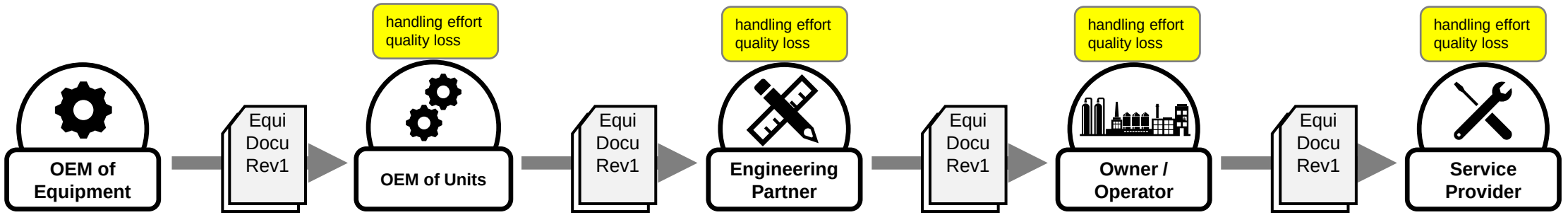
EN IEC 61406 based identifier



The costs for the product identification accumulate in your supply chain. The longer your supply chain, the higher the costs! Therefore, it is so important to minimize costs right from the beginning by ensuring the freedom of choice between different technologies.

To avoid substantial ongoing costs for the industry, the participation in CEN/CENELEC standardization is nececessary.

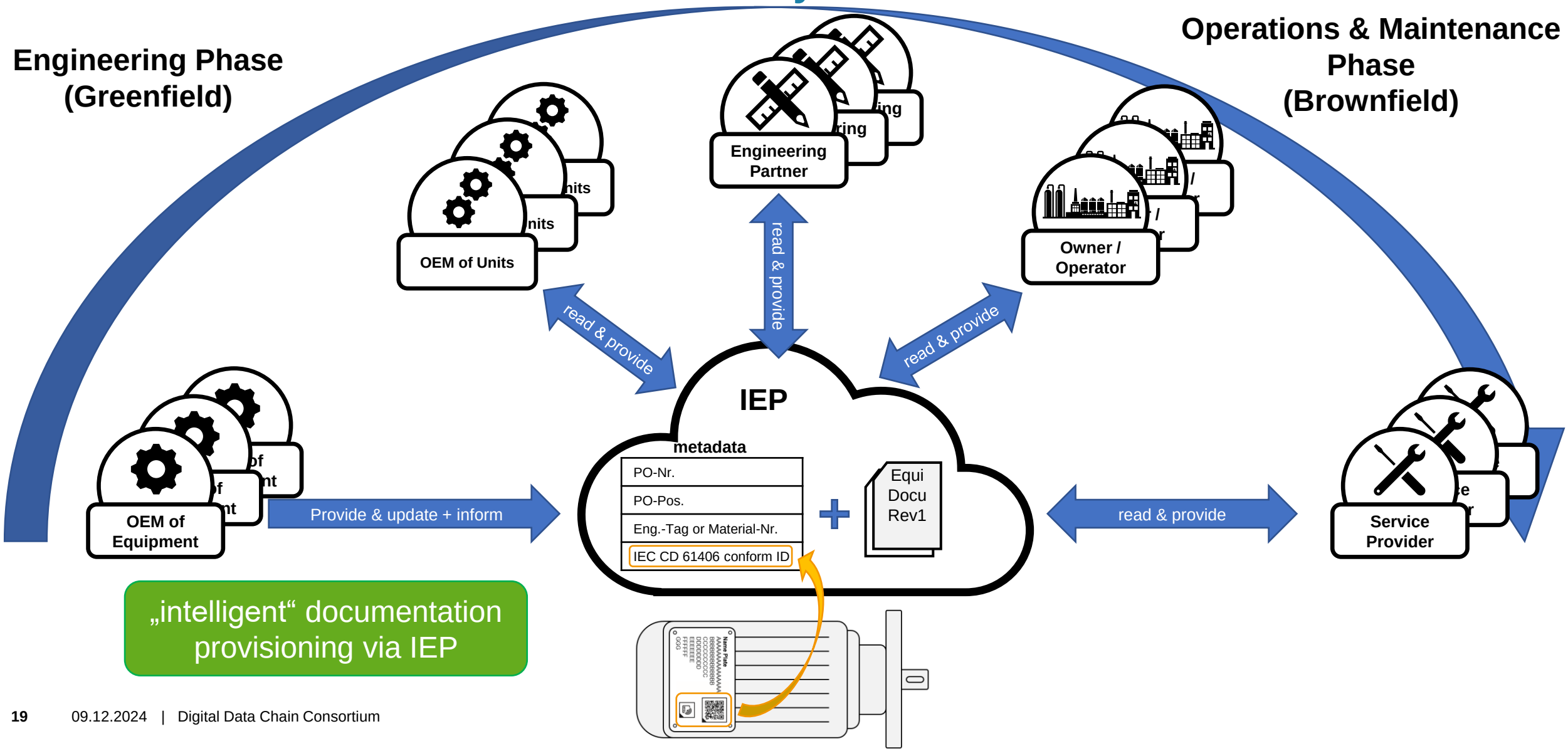
Digital Data Chain (DDC) technologies → the Information Exchange Platform (IEP)



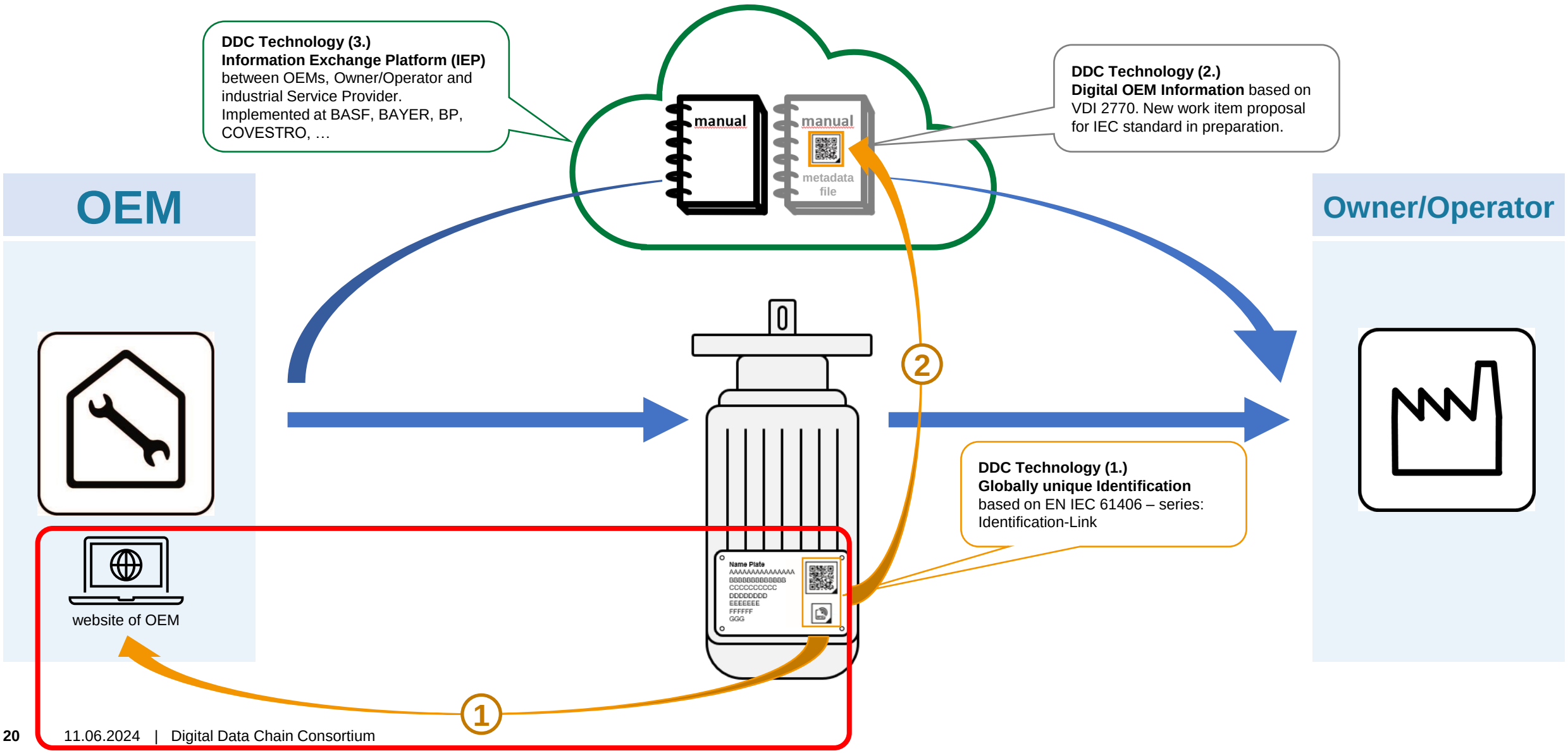
classical, „non intelligent“ documentation provisioning

Digital Data Chain (DDC) technologies → the Information Exchange Platform (IEP)

Lifecycle



The DIGITAL DATA CHAIN→ Combining the technologies



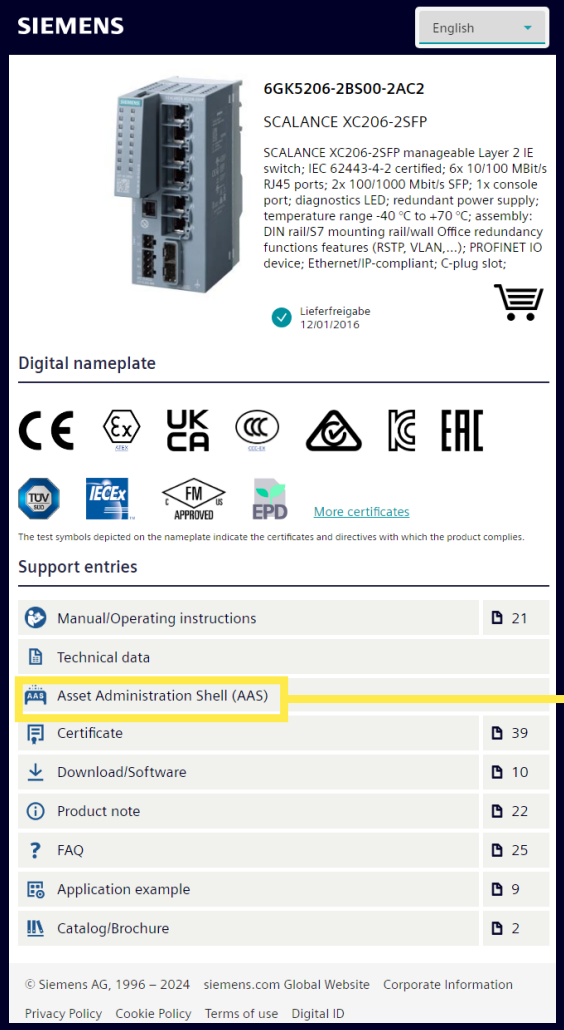
Live Demo: Example Siemens

Product

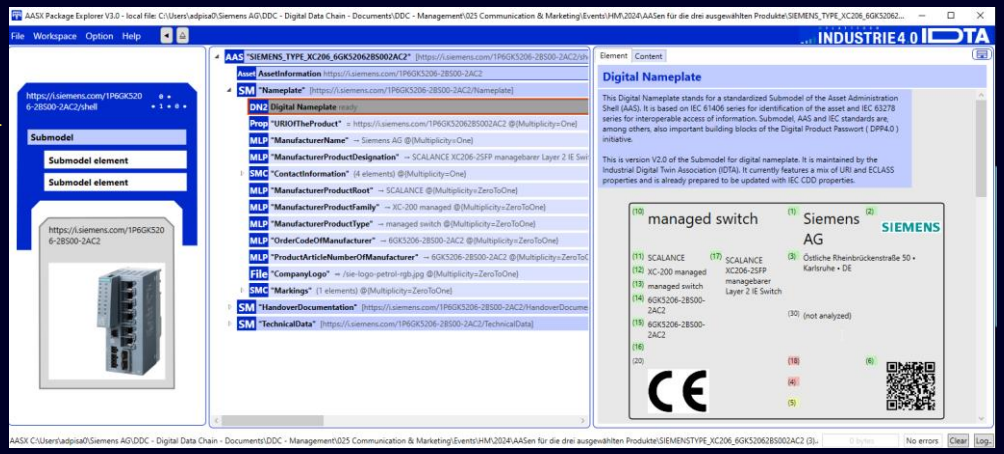
ID Link

i.siemens.com >

Online
Digital Nameplate



View in Asset Administration Shell
with AASX Package Explorer



SIEMENS

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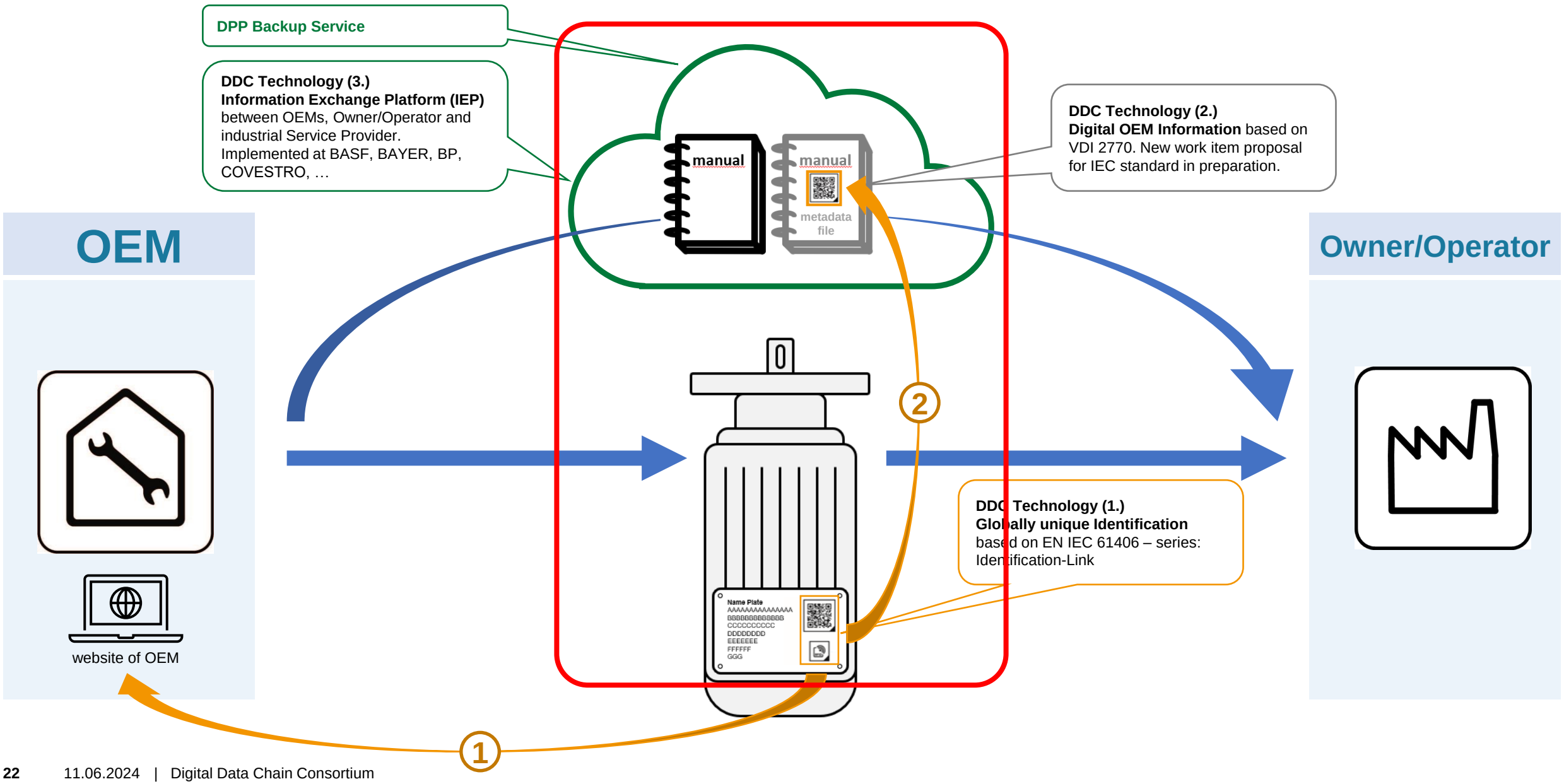
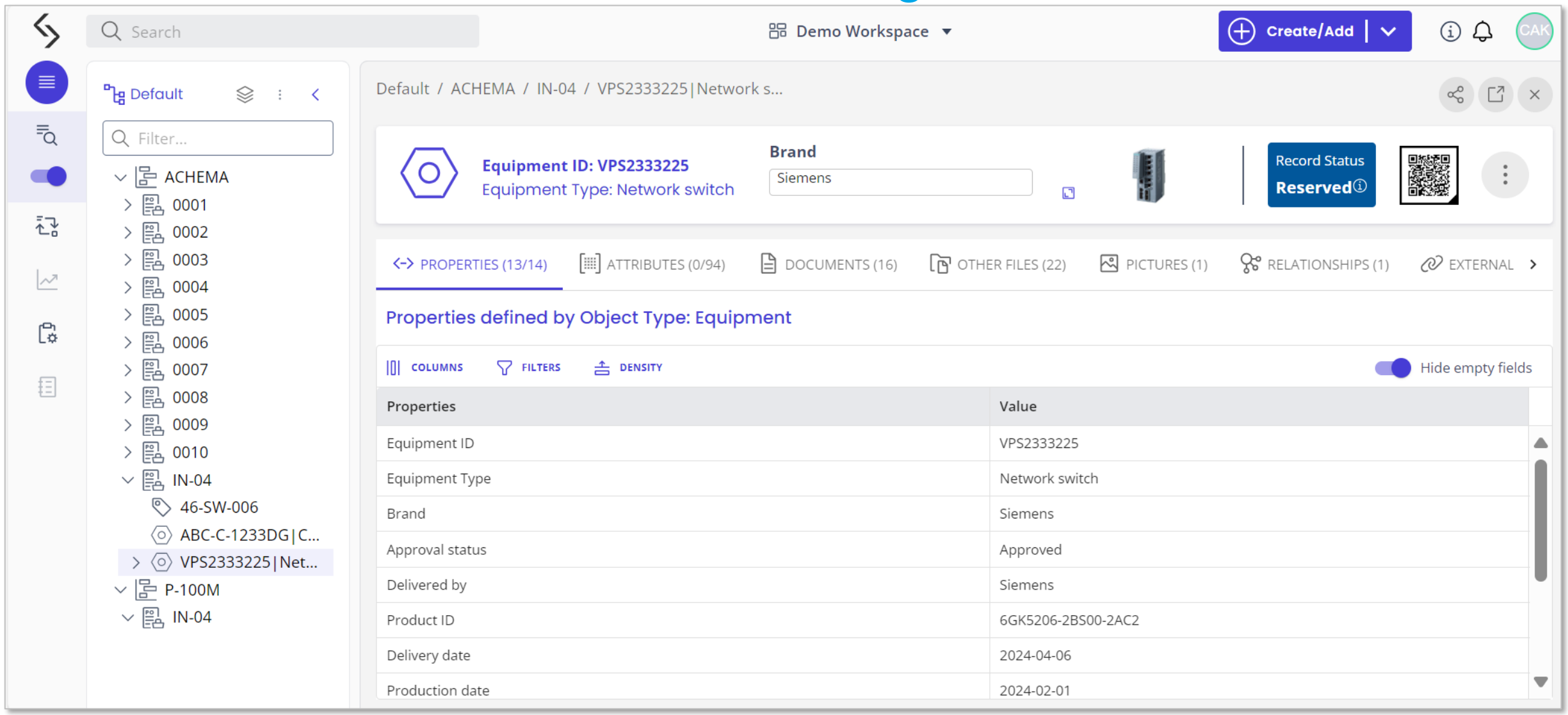


Examples for Information Exchange Platforms:

Sharecat Information Exchange Platform



What about …

Artificial Intelligence

Why do we need a DPP / Digital Twin when we have AI available?

The DPP / Digital Twin is the information source for the AI to provide reliable, comprehensive and trustworthy answers!

Because no AI is a clairvoyant ☺

Contact

Christoph Attila Kun

Global Product Manager *Digital Data Chain* @ BASF
Manager *Digital Data Chain Consortium GbR* → www.digitaldatachain.com
Factory-X Use Case lead: Collaborative Information Logistics
Chairman VDI Experts Council 2770
National delegate CEN/CENELEC JTC 24 – EU Digital Product Passport

Mobil : +49 1522 8866364
Mail: christoph-attila.kun@basf.com

Please don‘t hesitate to contact us, if you are interested in the Digital Data Chain (DDC) and its global implementation!

Digital Data Chain Consortium

www.digitaldatachain.com