

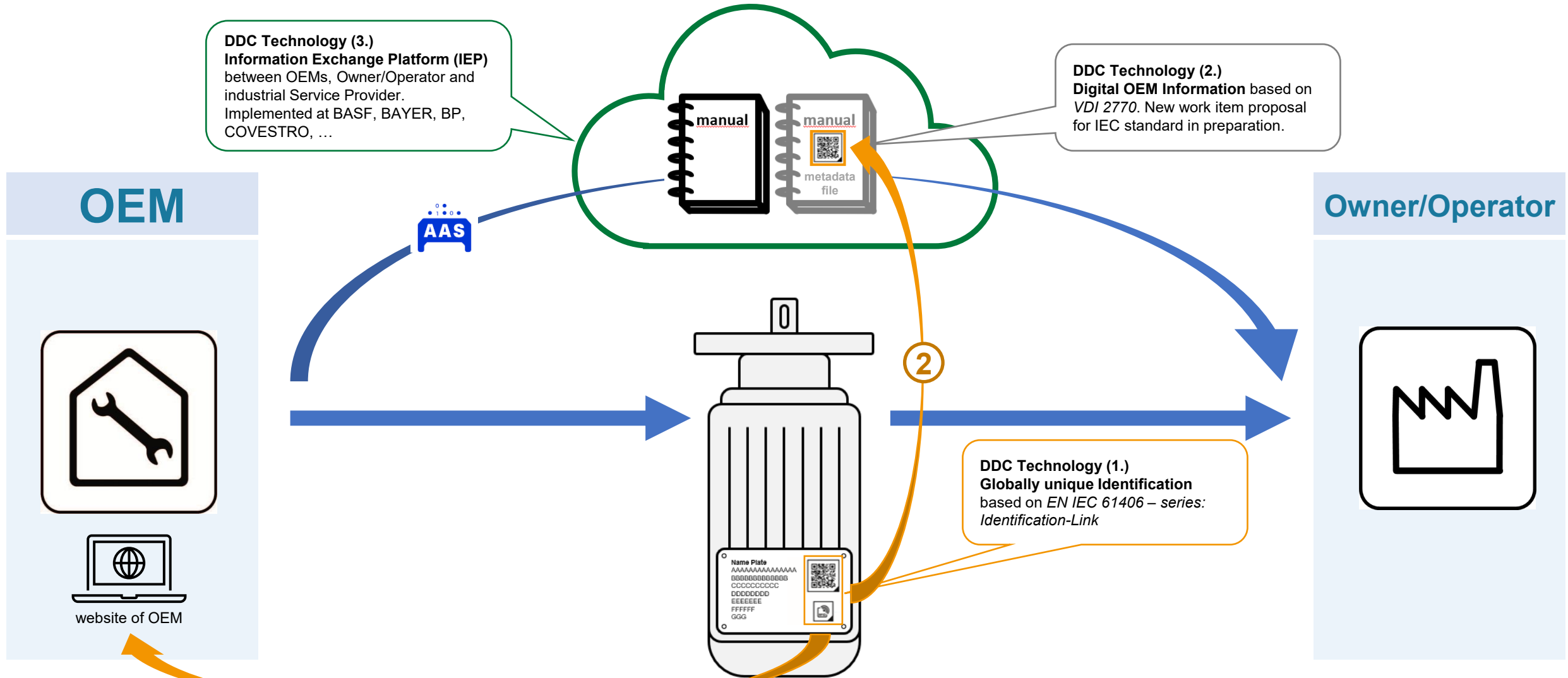
The Digital Data Chain from OEM to Owner/Operator

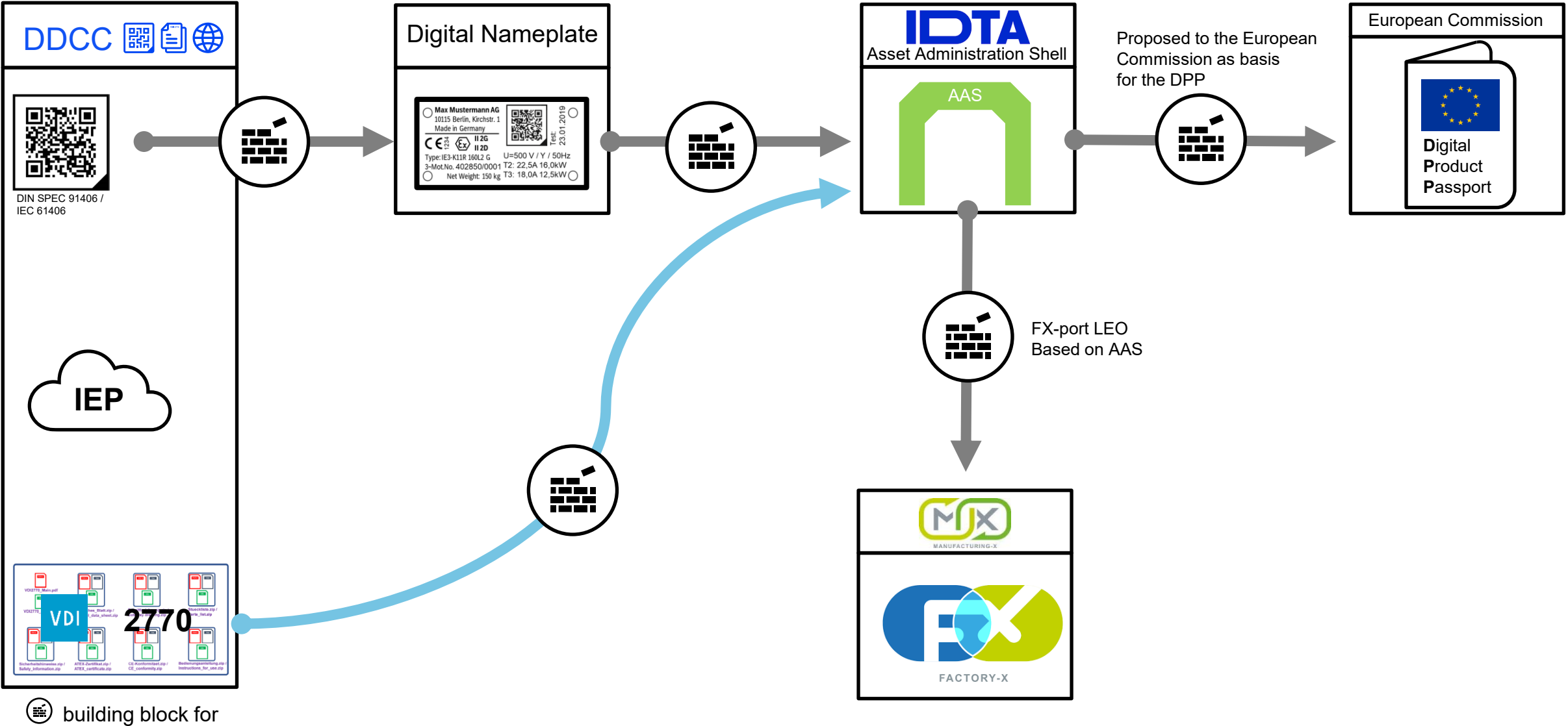
- Update for THTH autumn seminar -

Online Event

Christoph Attila Kun (DDCC / BASF SE)

The DIGITAL DATA CHAIN→ Combining the technologies







The industry needs raw materials to manufacture their products. If the quantity of available raw materials is lower than the demand, this will significantly affect the business.

The distribution of raw materials in the world is unequal. Some raw materials come from politically instable regions or are under the control of the government, and are used as leverage in political conflicts.

Europe must reduce its dependence on raw material, such as rare earth, Mangan, Cobalt, Lithium, oil, gas, etc. to protect business!

The European Commission developed a strategy with two main pillars to reduce industries dependency on raw materials:

- Contracts with countries world wide that are suppliers for raw materials
- Reduce the amount of new raw material by enhancing the circular economy

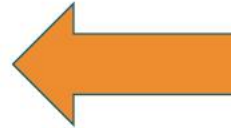
This strategy is represented in regulation via the:

- „Critical Raw Material Act (CRMA)“ in force since May 2024, and the
- „Ecodesign for Sustainable Products Regulation (ESPR)“ in force since July 2024.



2. DPP main design features

DPP-system



DPP-data

(the “**HOW**”. To be developed horizontally for all product groups and legislations)

- The DPP registry
- A searchable Web Portal
- All standards and protocols related to IT architecture:
 1. Unique identifiers
 2. Data carriers and links between physical product and digital representation
 3. Access rights management, information security, and business confidentiality
 4. Interoperability (technical, semantic, organisation)
 5. Data processing , data exchange protocols, and data formats
 6. Data storage, archiving, and data persistence
 7. Data authentication, reliability, integrity
 8. APIs for the DPP lifecycle management and searchability

(the “**WHAT**”. To be developed through **product-group specific dedicated legislation**)

Information to be included in the DPP will be **product-group specific** and identified in delegated act process.

It may include information/data on one or more of the following areas:

- Technical performance
- Environmental sustainability performance
- Circularity aspects (durability, reparability, etc)
- Legal compliance
- Product-related information (e.g., manuals, other labels)

3. What will companies need to do?

Make sure that:

- a product passport **exists**, and it is in compliance with essential requirements established in articles 9 and 10 – exceptions are possible
- the product passport is **complete**, meaning it includes all the mandatory information listed in the corresponding product group-specific Delegated Act.
- the information included in the passport is **authentic, reliable** and **verified** in accordance with requirements established in the corresponding product group-specific Delegated Act.
- a **back-up copy** of the DPP is stored by a [certified] third-party product passport service provider.
- A copy of the data carrier or unique product identifier are made available to **dealers** and **online market places** selling the corresponding product.

Currently, many companies see the DPP as „just another regulation“ they have to fulfill and do not see the potential for cost saving and enhancement of customer value.

Please find here a study regarding the business benefits of the DPP for consumer goods:

[Digital Product Passports Introduce New Sources of Value | Bain & Company](#)

The study comes to the conclusion after an analyzes of general business processes that:

Customer Service Costs

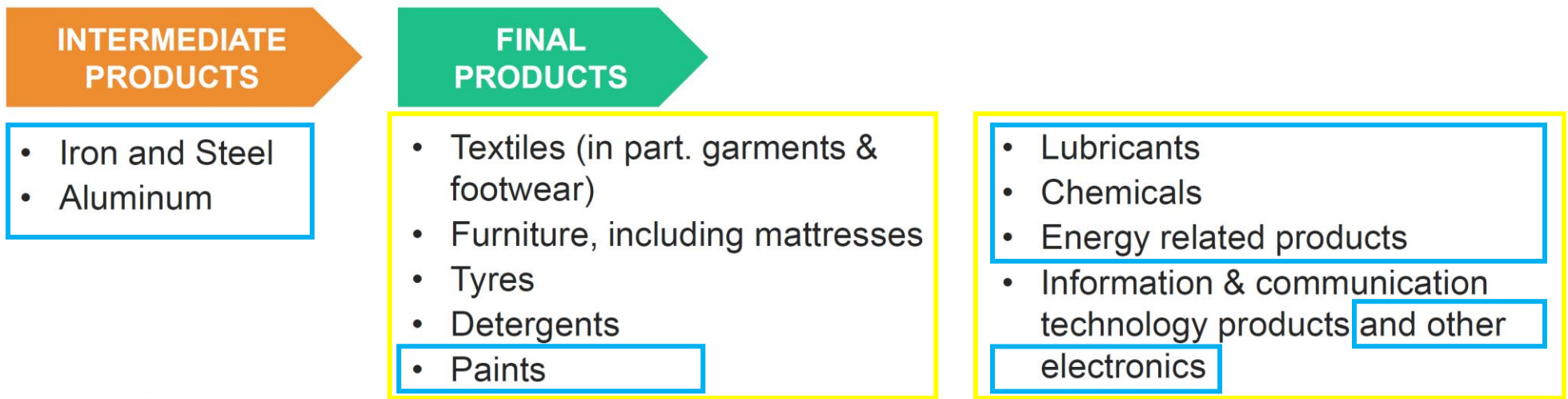
- 20%

→ reduction through customer self-service and digital product information provisioning



ESPR Working Plan

- WP minimum of 3 years, covering ecodesign requirements, including horizontal requirements, and the possible prohibition of destruction of unsold consumer goods.
- First working plan to be adopted in the first 9 months of ESPR implementation and include:



- Justification must be provided for inclusion or exclusion of products.

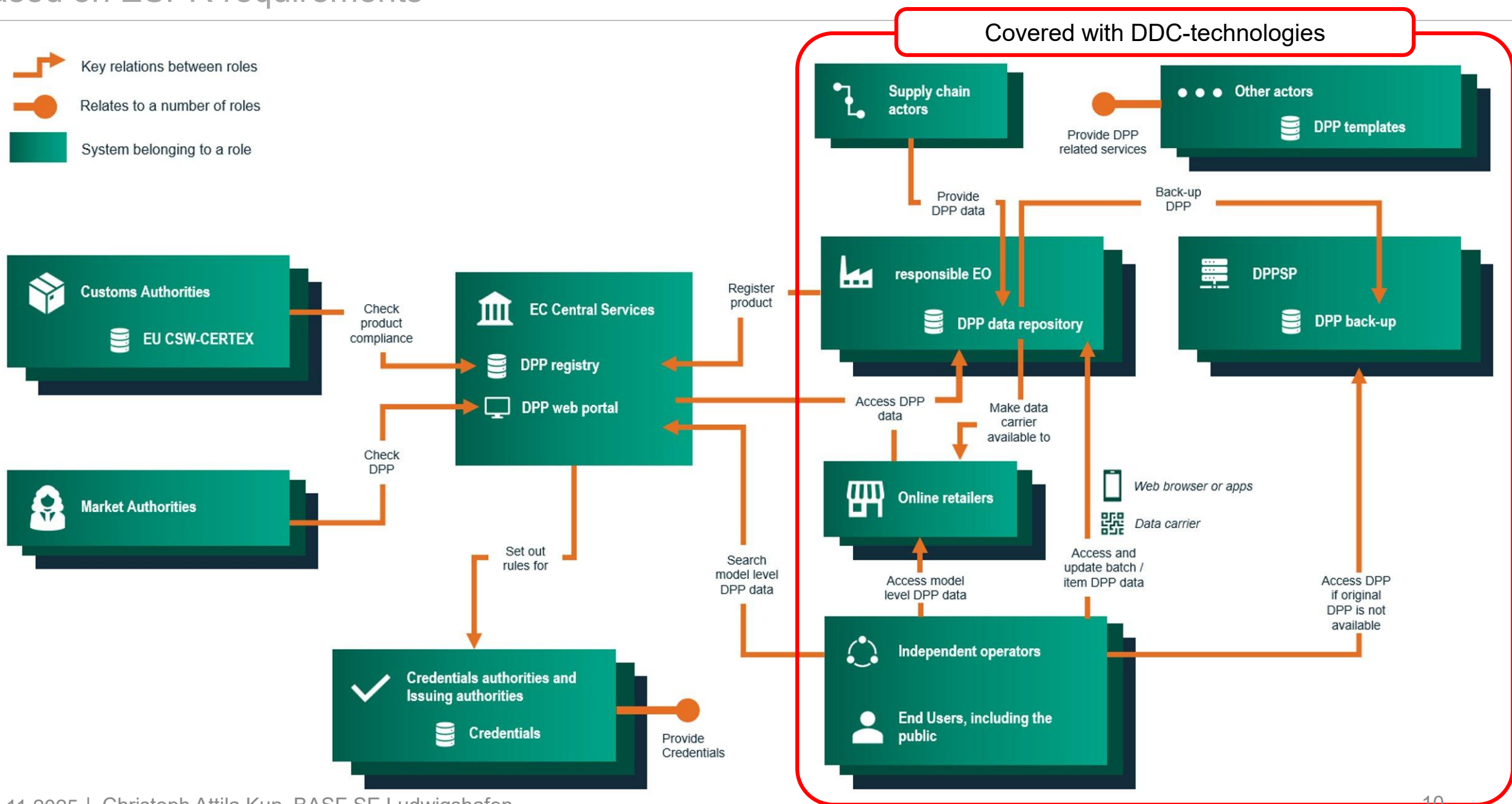
mainly b2b
 Chemicals are main raw material for products



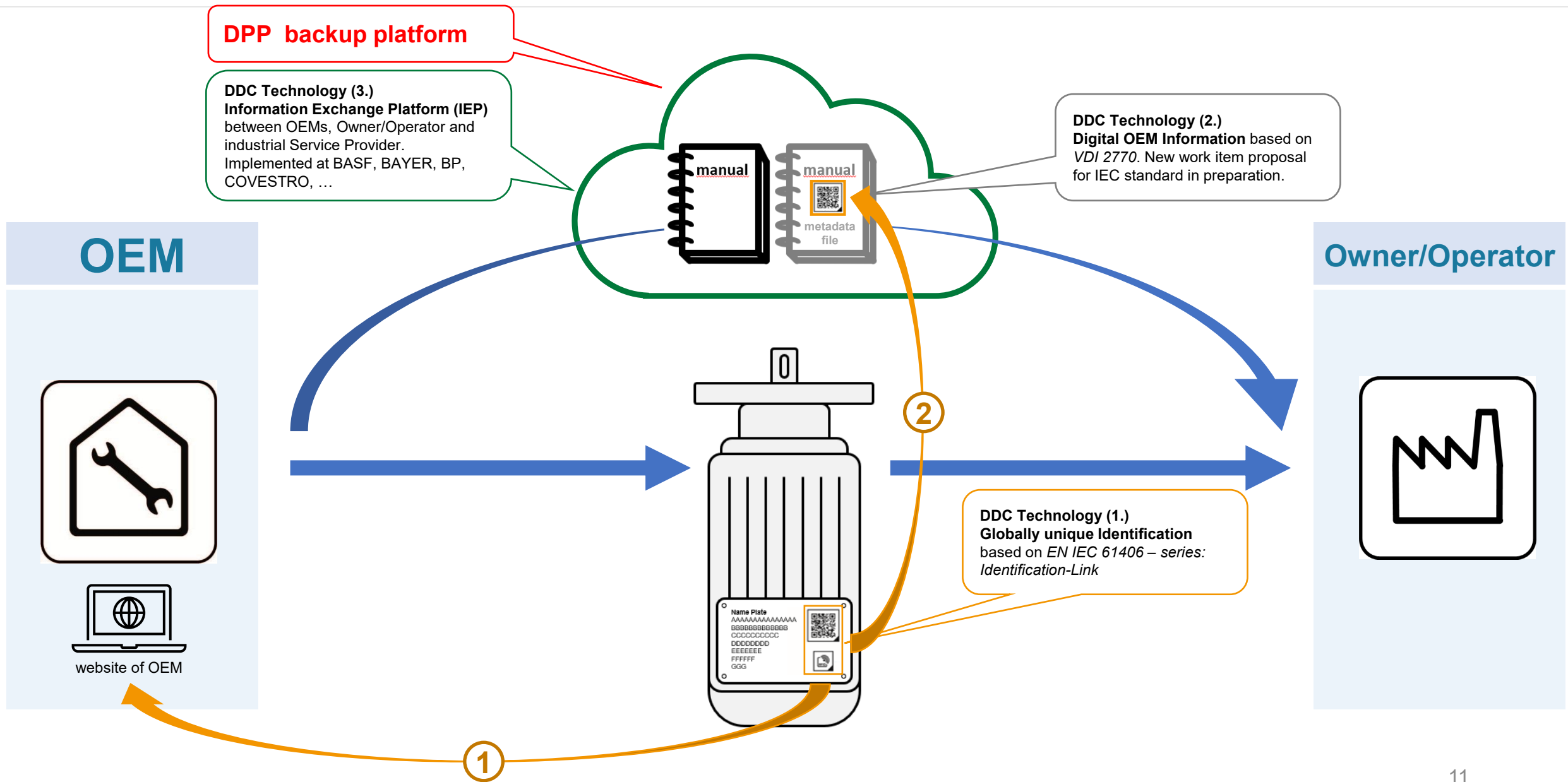
First draft of architecture proposal for DPP system by CIRPASS-2, based on ESPR requirements



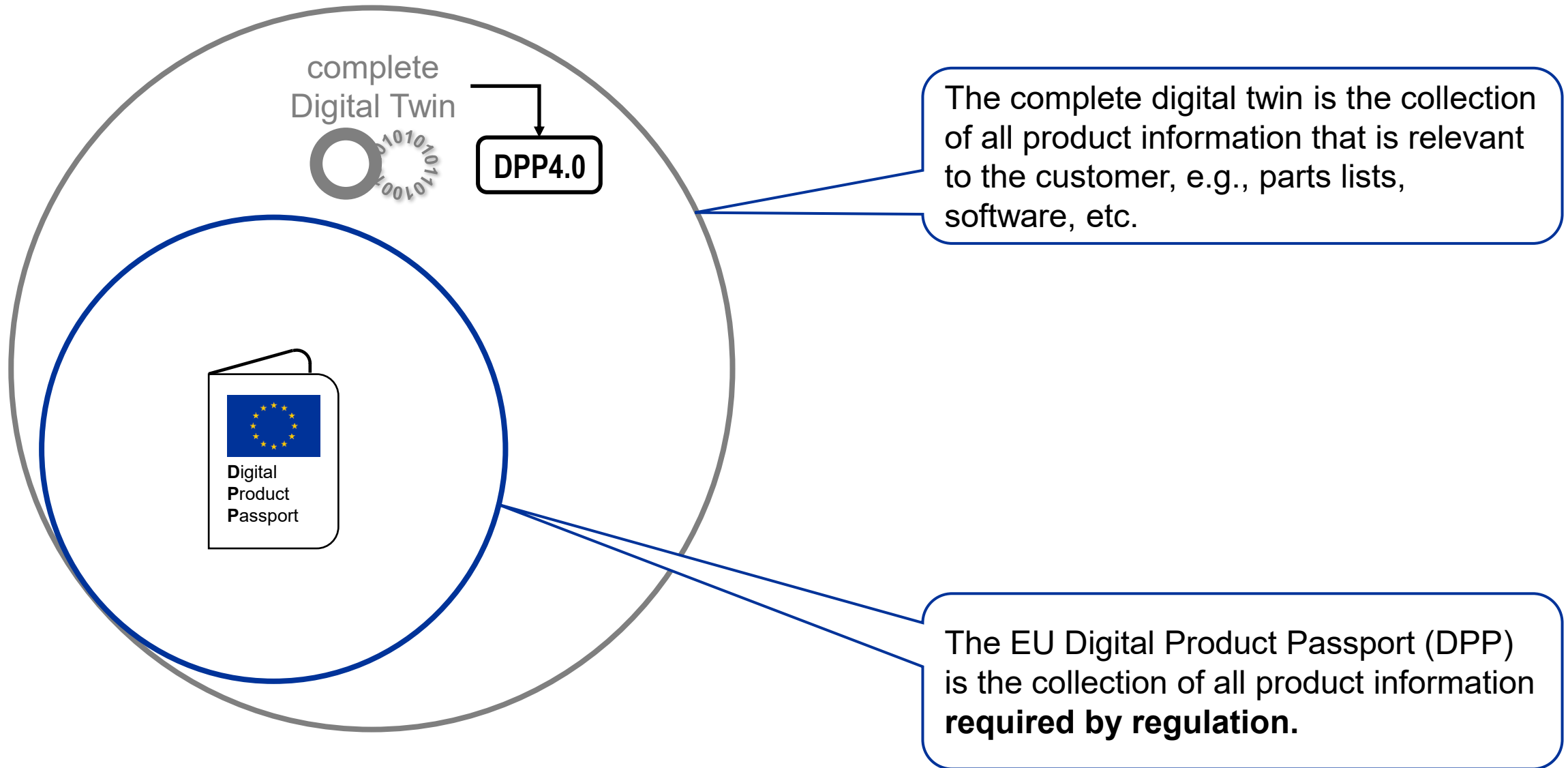
- Key relations between roles
- Relates to a number of roles
- System belonging to a role

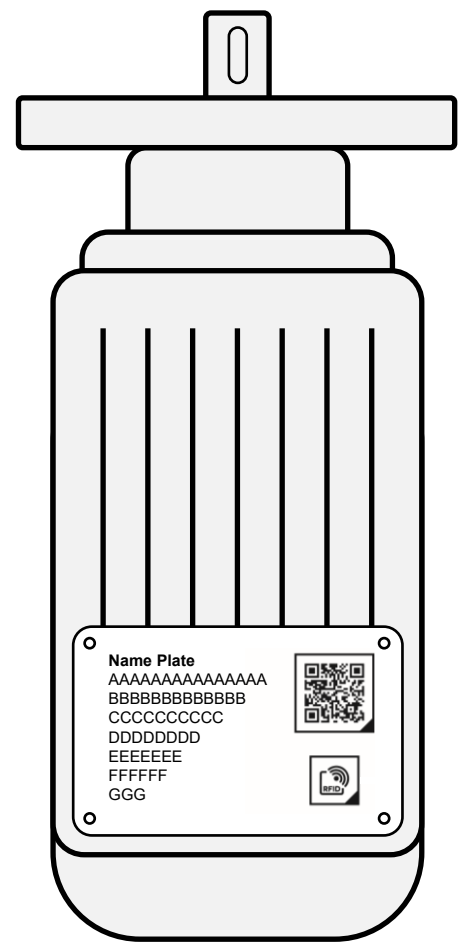


The DIGITAL DATA CHAIN→ Combining the technologies

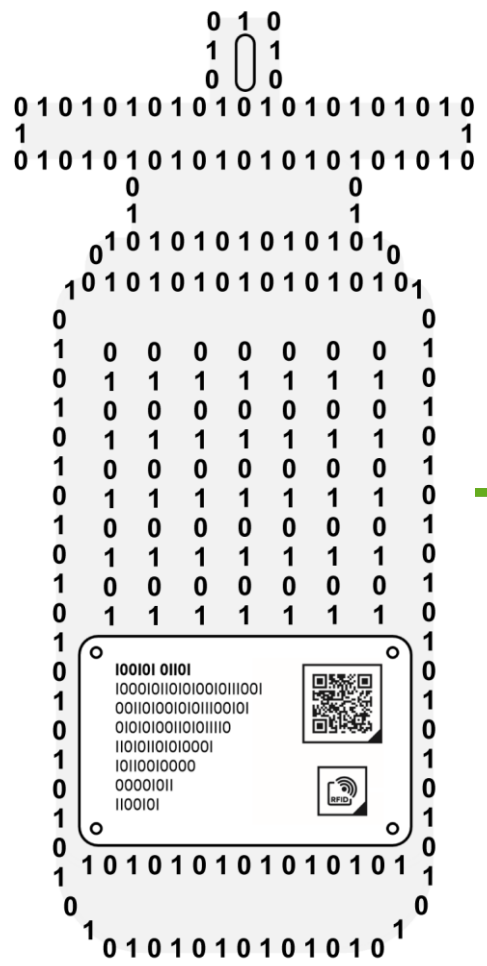


Digital Product Passport or Digital Twin?





physical object



digital twin
digital representation of the physical object

functional model

- simulation
- prediction
- condition monitoring
- ...

information model

- tech specs
- documentation
- life cycle information
- ...



The Digital Product Passport 4.0 (DPP4.0)

Concept „DPP4.0“ based on two new IEC-standards

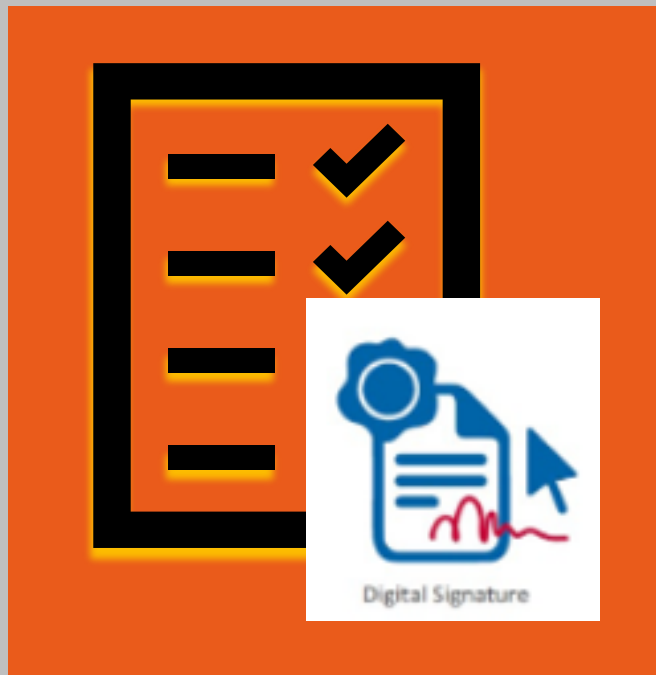
DPP4.0

=

DNP4.0

+

AAS

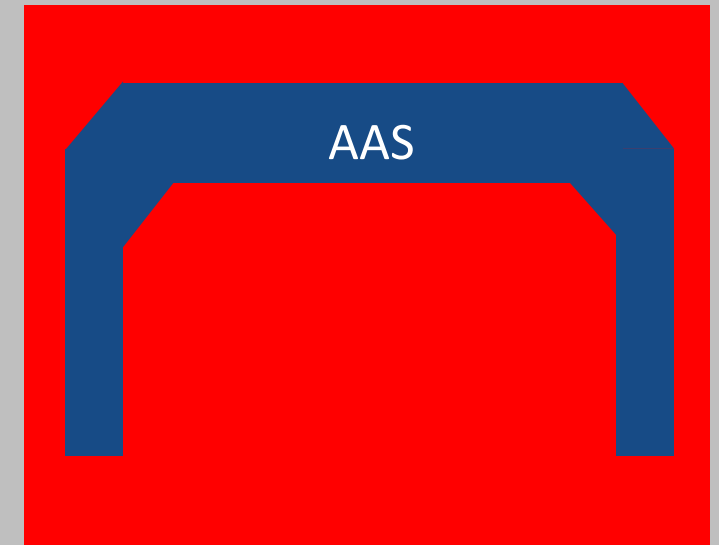


Digital Product Passport 4.0



Digital Nameplate 4.0

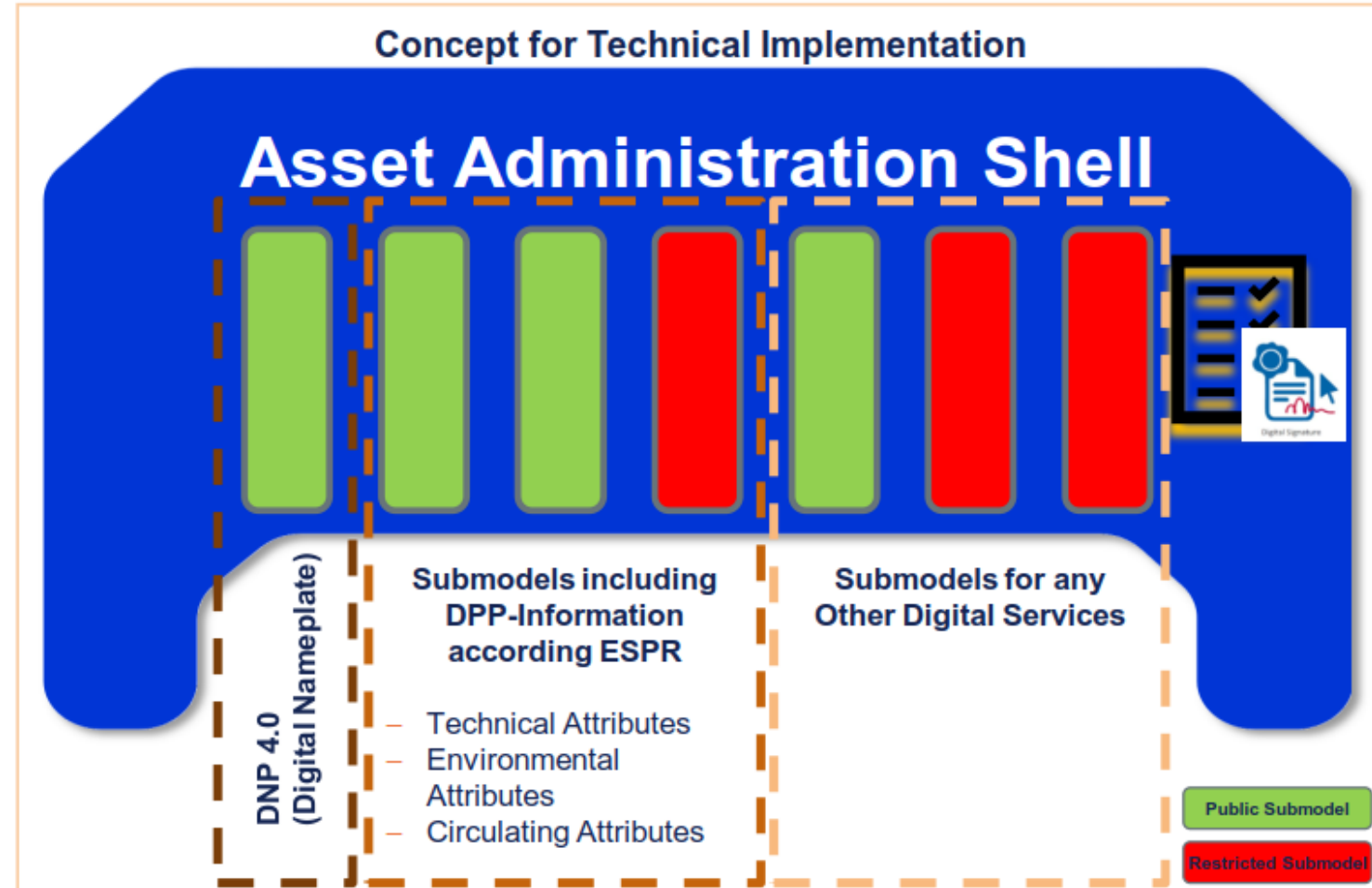
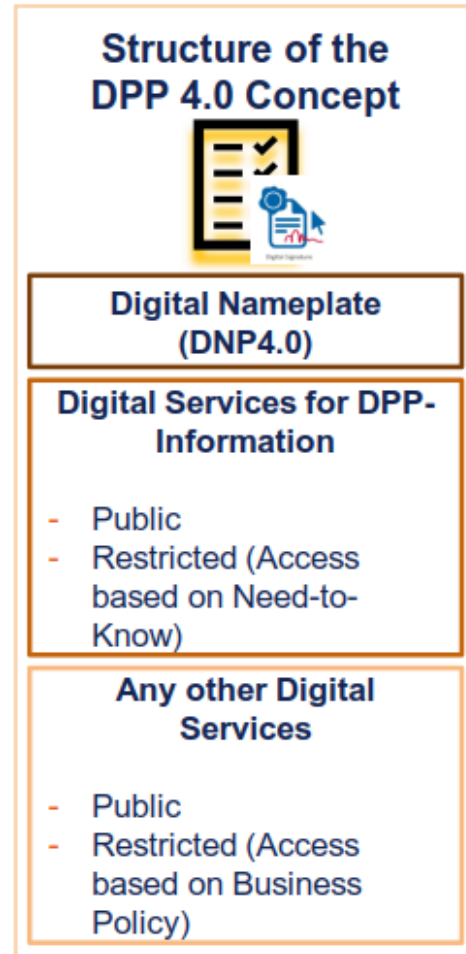
(according IEC 61406-series)



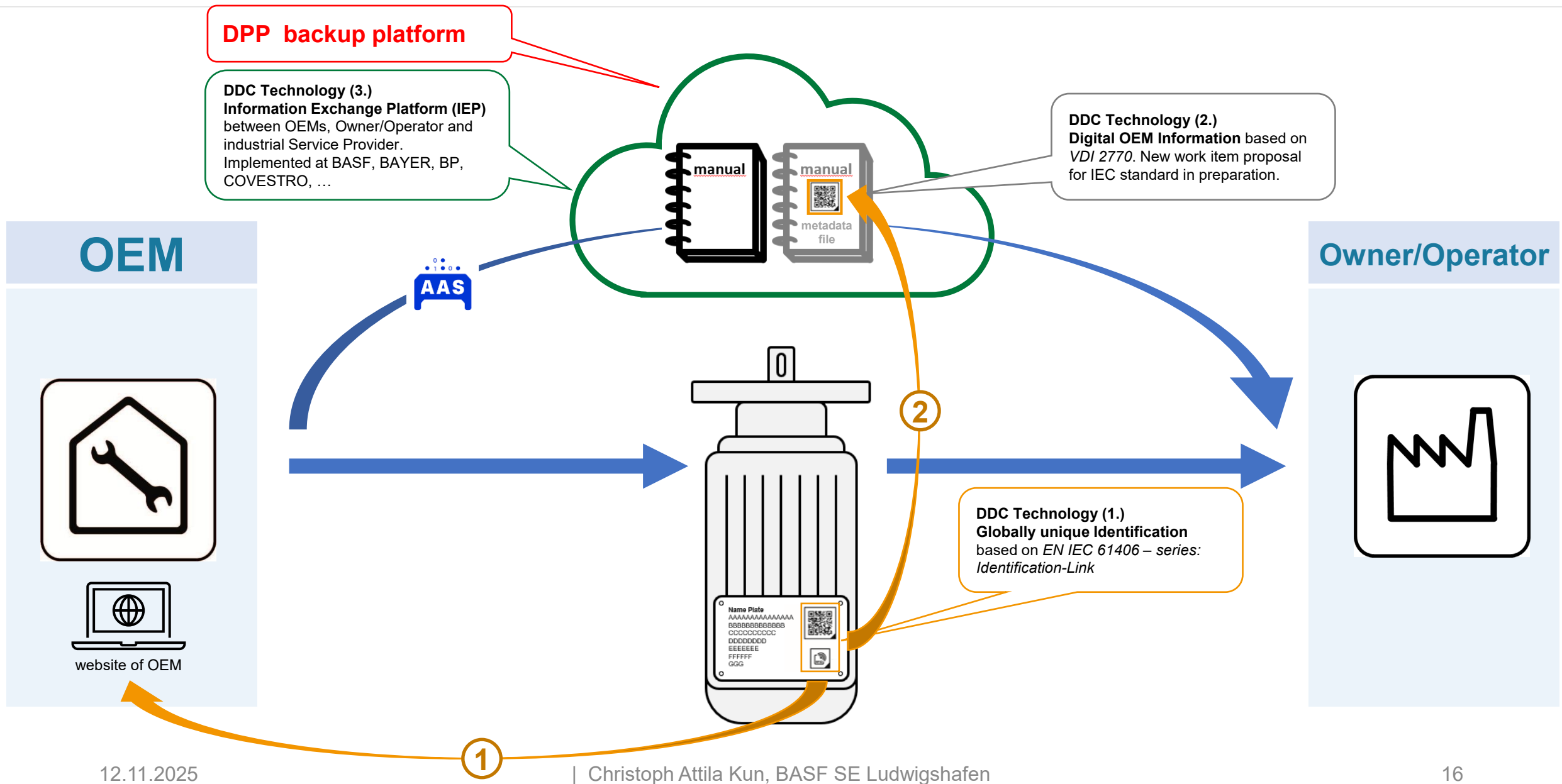
Asset Administration Shell

(according IEC 63278-series)

Industrie 4.0 Konzepte zur Realisierung des Digitalen Produktpass



The DIGITAL DATA CHAIN→ Combining the technologies



Evonik and BASF have started the large scale implementation of the Digital Data Chain.

Till end of 2026 several thousands of OEMs will be onboarded to the completely automated, DDC conform equipment information provisioning process.

Live Demo →

R. STAHL DNP & AAS IMPLEMENTATION



R. STAHL Digital Twin Portal Showing the Instance AAS

STAHL DIGITAL TWIN WELCOME

 ☆
SERIAL NR. 10003817679 ART. NR. 272886
Plug 16 A -

NAMEPLATE	TECHNICAL DATA	DOCUMENTATION	CONTACT INFORMATION
Manufacturer product designation Plug 16 A -	Manufacturer Name R. STAHL Schaltgeräte GmbH	Manufacturer product family Plugs and sockets 16 A 8570	
product article number of manufacturer 272886	Manufacturer order code 8570/12-403-S-XX-X-XX-XXX	Manufacturer product root Plugs and sockets 16 A	
Serial number 10003817679	Date of manufacture 2024-04-30	Hardware Version 1.08	
Software Version 1.2	Firmware Version 1.01		
^ Contact Information			
company R. STAHL Schaltgeräte GmbH	Street Am Bahnhof 30	Zip 74638	City/town Waldenburg
Country code DE	Phone +49 79 42 9...	Fax number including type 079 42 9 43 17 77	
^ Collection file for product markings			
 common name of the marking CHN_00			

AAS-Content:

- SM Digital Nameplate
- SM Technical Data
- SM Handover Documentation VDI 2770
- SM Contact Information

* <https://dt.rstahl.com/?S=10003817679&.1S=30218>



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Factory-X Use Case lead: Collaborative Information Logistics

Chairman VDI Experts Council 2770

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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