Chem-X

Intro to Digital Material Passports – What's the difference to DPP?

UNITAR Webinar on Transparency, Traceability and Disclosure

Dr. Torsten Freund

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Already highly regulated Chemical Industry supplies into all affected DPPs

>95% of all Goods on the Market contain Products of the Chemical Industry

Since chemical products are part of end products requiring a DPP, the chemical industry has decided to actively shape the data requirements for DPPs

Products in scope for DPPs

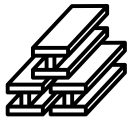
According the ESPR* working plan from April '25


Textile


Furniture


Mattresses


Tires


Steel



Aluminum


ICT


Energy Related Products

Exemplary standalone legislations referring to DPP


Construction


Detergents

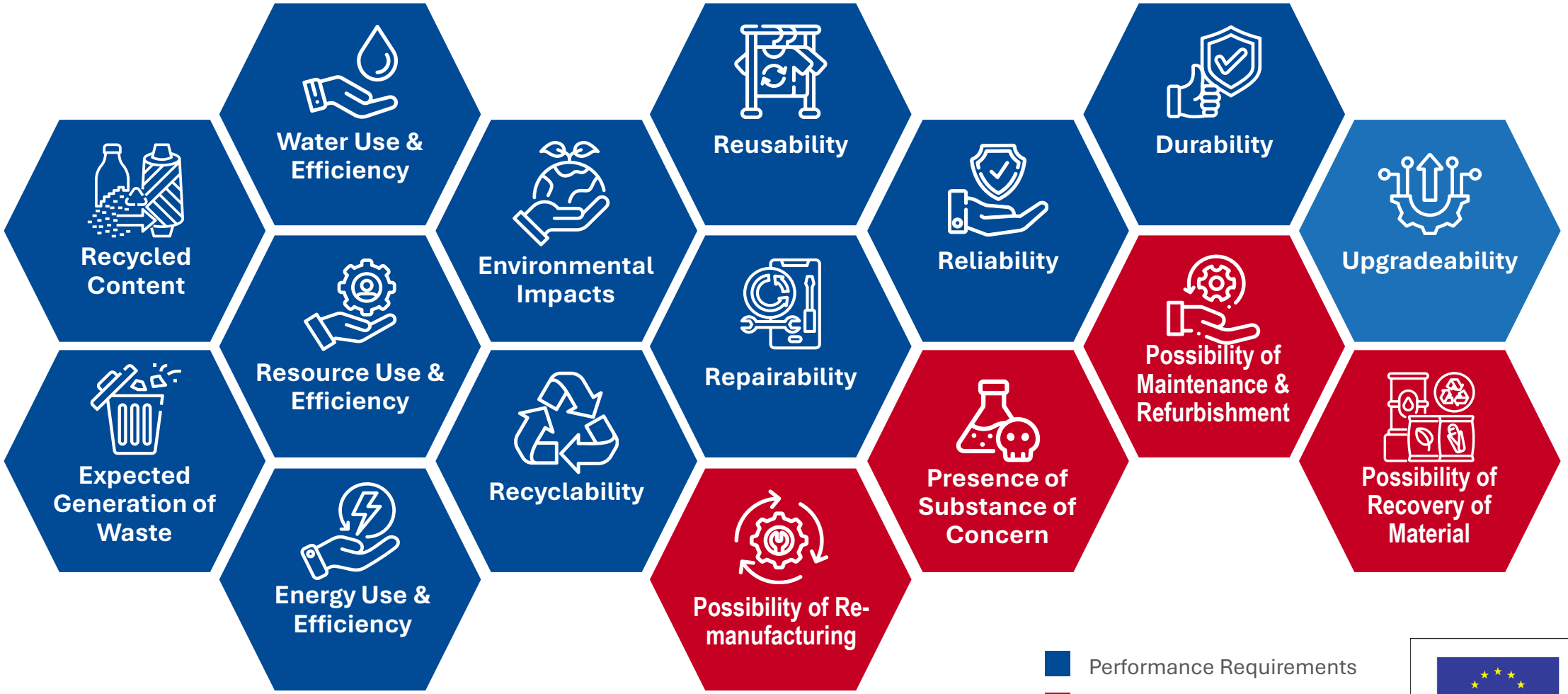

Toys


Batteries

1) E.g. EU 2025/40 PPWR, EU 2024/3110 CPR
* Ecodesign Sustainable Product Regulation

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Huge amount to Data required for Ecodesign Requirements (see ESPR §5)



Source https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ:L_202401781#art_5

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Global Standardization of DPP

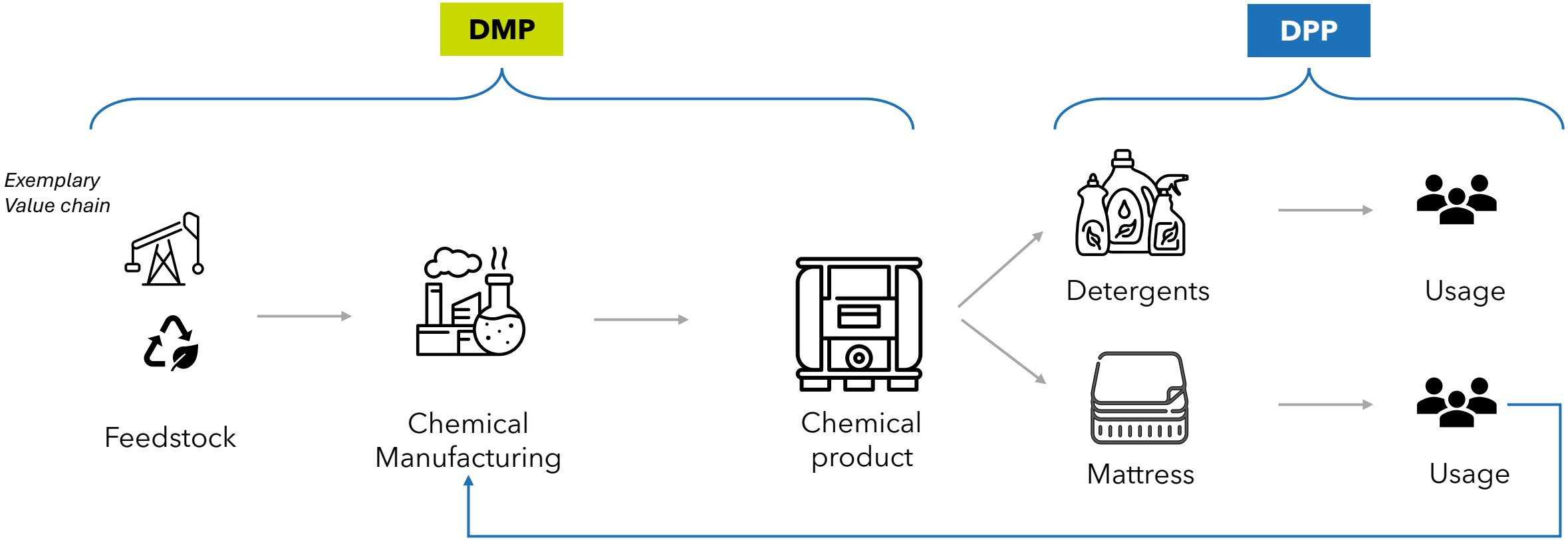


Source https://www.iso.org/committee/11760382.html?view=participation

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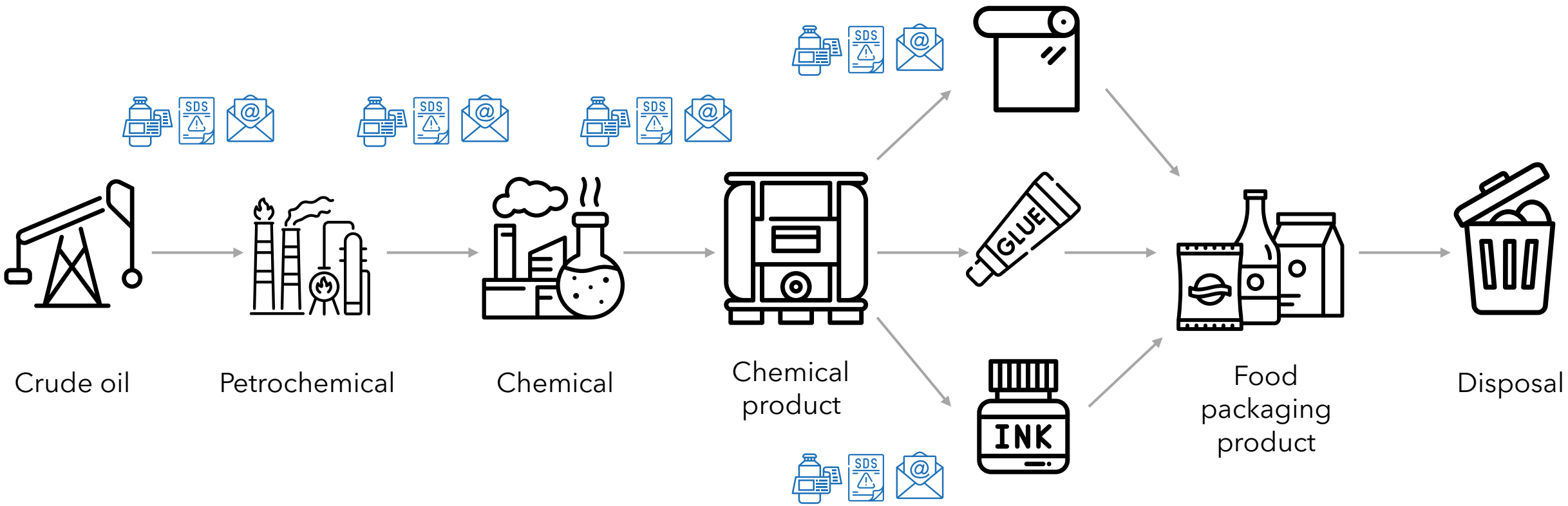
Over 95% of manufactured goods rely on chemical materials: chemical industry data are key enablers



Any DPP will require data of chemical materials: horizontally harmonized chemical digital twins - digital material passports (DMP) - as key enablers

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Chemical industry exchanges multiple different data formats along the value chain



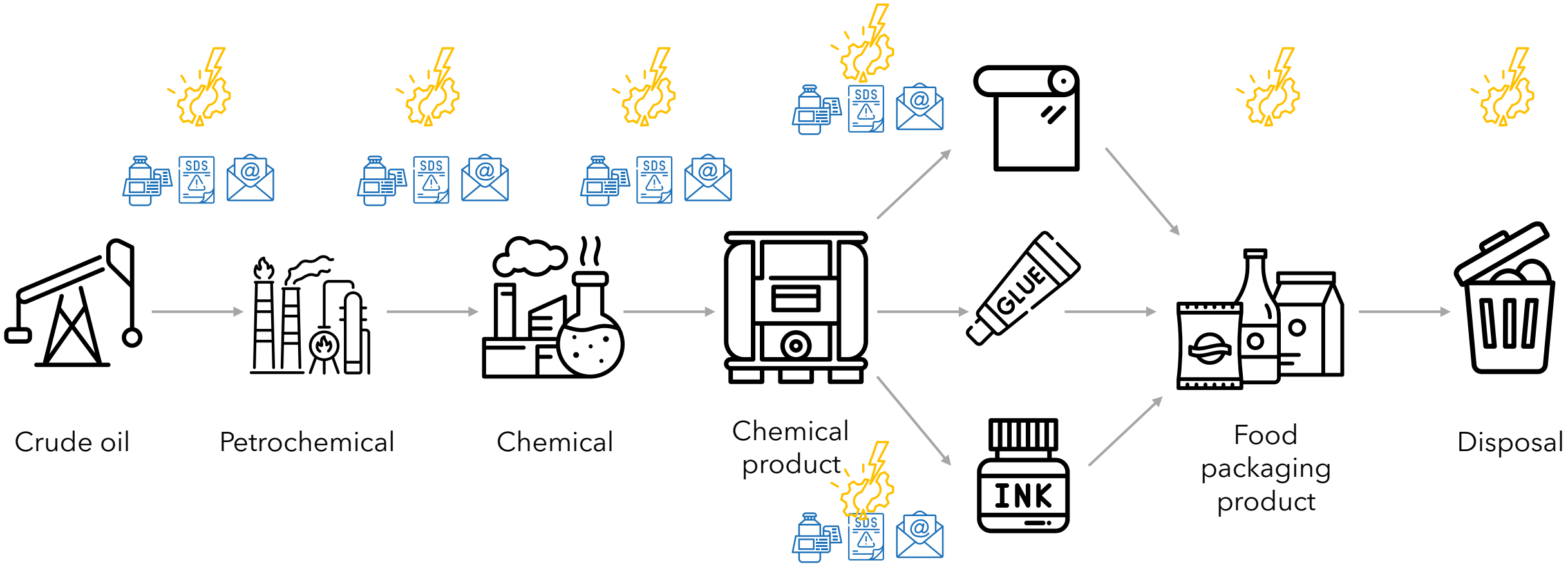
Communication via

E-Mail | Safety datasheet | Label

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Problem: different data formats lead to inefficiencies and information disruption along the value chain



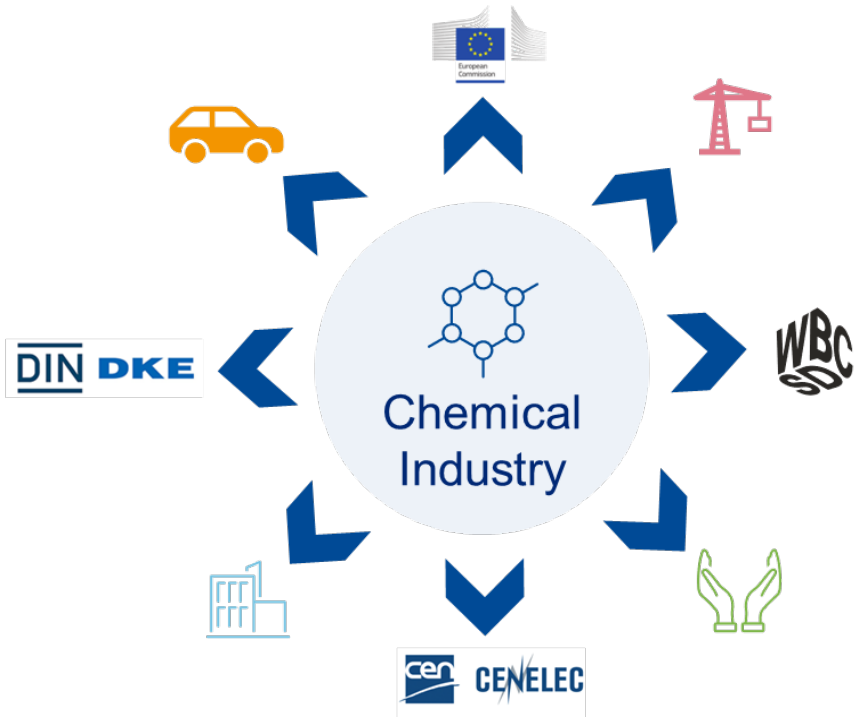
Communication via

E-Mail + Safety datasheet + Label → **Information disruption**

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Chem-X supports a data-driven effective sustainable transformation of supply chains



Primary/supplier-specific data of chemicals based on **harmonized standards** are key to drive and measure progress in the **transformation** of value chains

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A DPP architecture needs Tech & Content: DPP System & DPP Data

EU-example

Technical layer
DPP System



Unique Identifiers



Data carriers



Lookup mechanisms



Access-rights management



Web Portal



Interoperability



Data storage & presistency



Data authentication, reliability & integrity



Data security & privacy



DPP Registry

Standardization request (JTC24)

EU Commission

Content layer
DPP Data



Product groupings & DPP Level (model, batch, item)



Performance & Information requirements



Data determination

Legislator (Delegated acts)

Legislator (Delegated acts) + Standardization

Note: EU regulatory context

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Together, Chem-X consortium develops the solution

- **Project Partners (Chemical & Tech Players):**

- **Associated Partners:**

- **Project finishes:** 30.11.2026
- **Budget :** €20mn
- **Public funding:** Precompetitive Collaboration

Who is participating in the consortia?

Experts in

- Sustainability
- Business requirements
- Digitalization
- Standardization

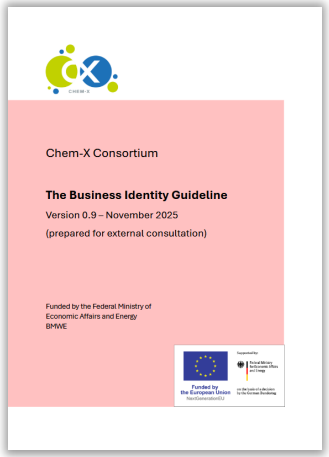
Senior Leadership involvement for steering and guidance

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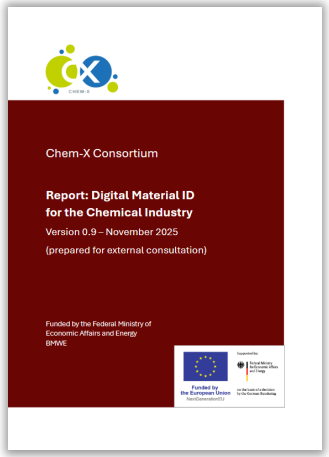
First deliverables:
6 seminal standardization candidate documents

Technical Layer

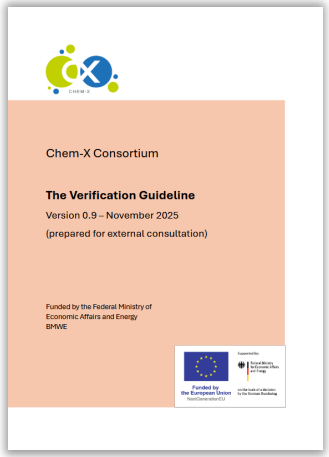
Business identity



Material identity and data chain

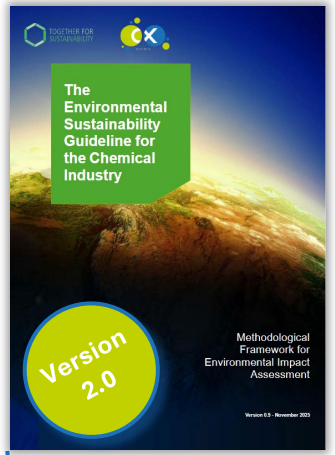


Verification

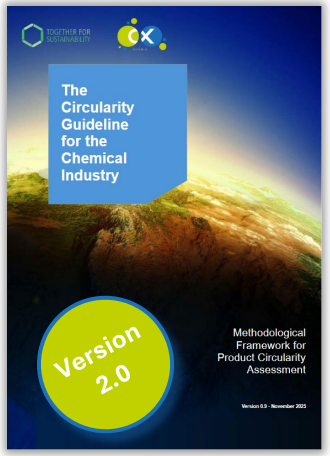


Content Layer

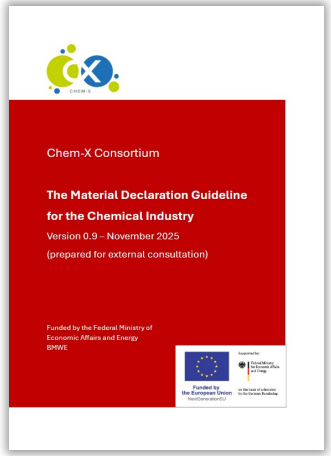
Sustainability



Circularity



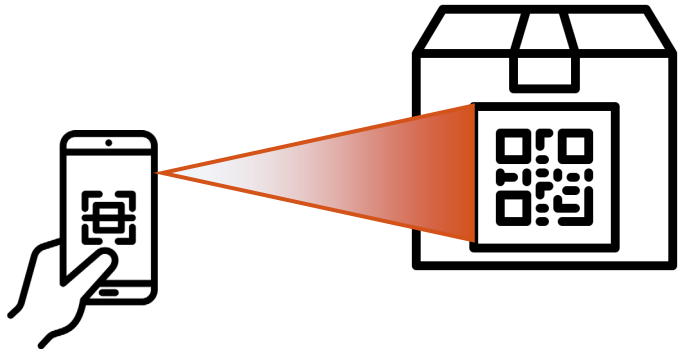
Material declaration



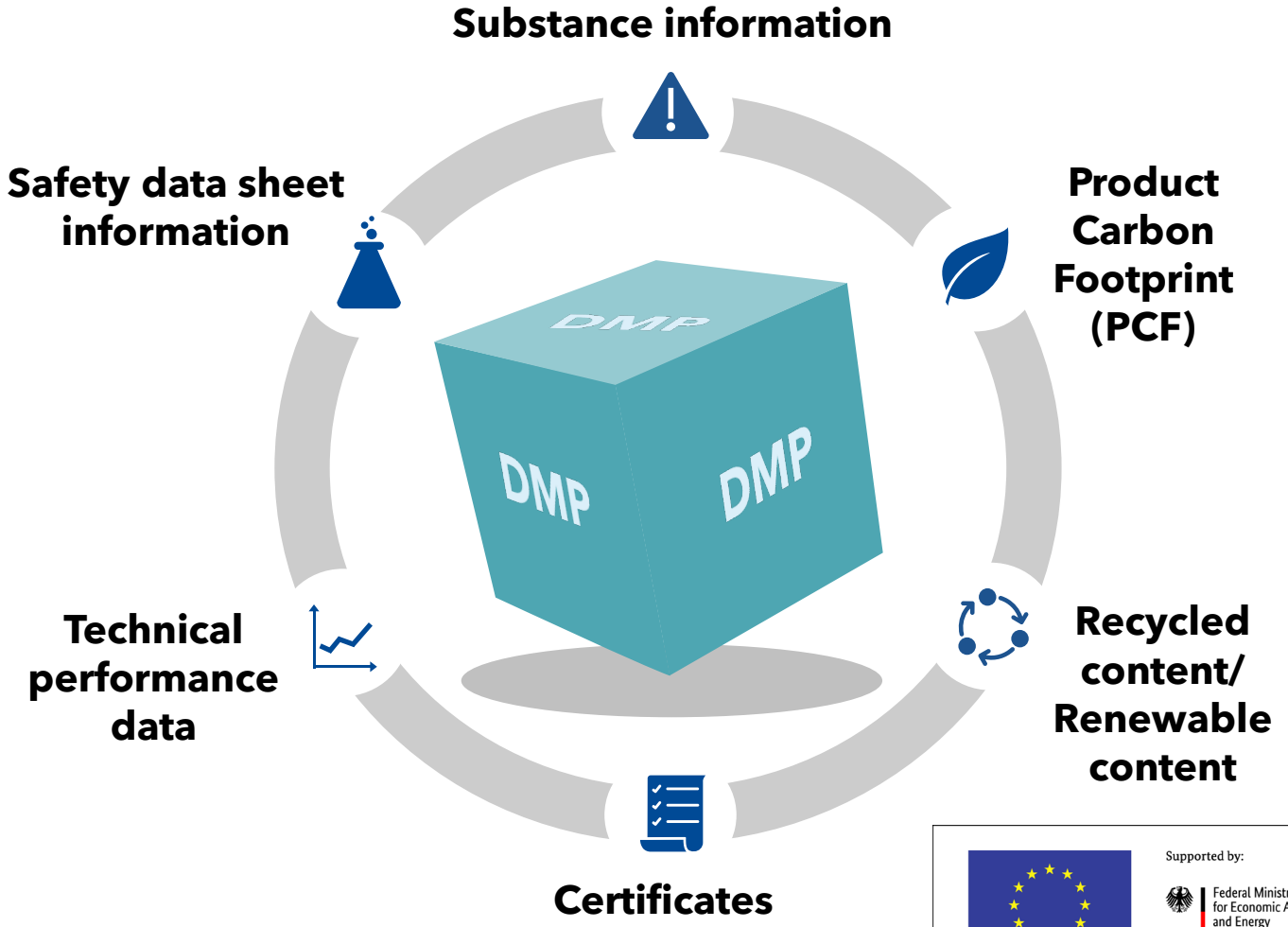
Sectoral category rules for the chemical industry

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The DMP is a modular and expandable tool to exchange chemical material data along the value chain



- From sustainability to compliance, a DMP can be modularly extended to other types of product data,
- Dedicated access rights in respect of confidentiality and “need-to-know” principles



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Digitizing the Chemical Industry!

- Chem-X – it already works.
- Standardized set of need-to-know data is prerequisite for impact and value.
- Collaboration among different stakeholders is key to success.
- Don’t wait for the critical mass. Become active part of change!

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Meet the team!

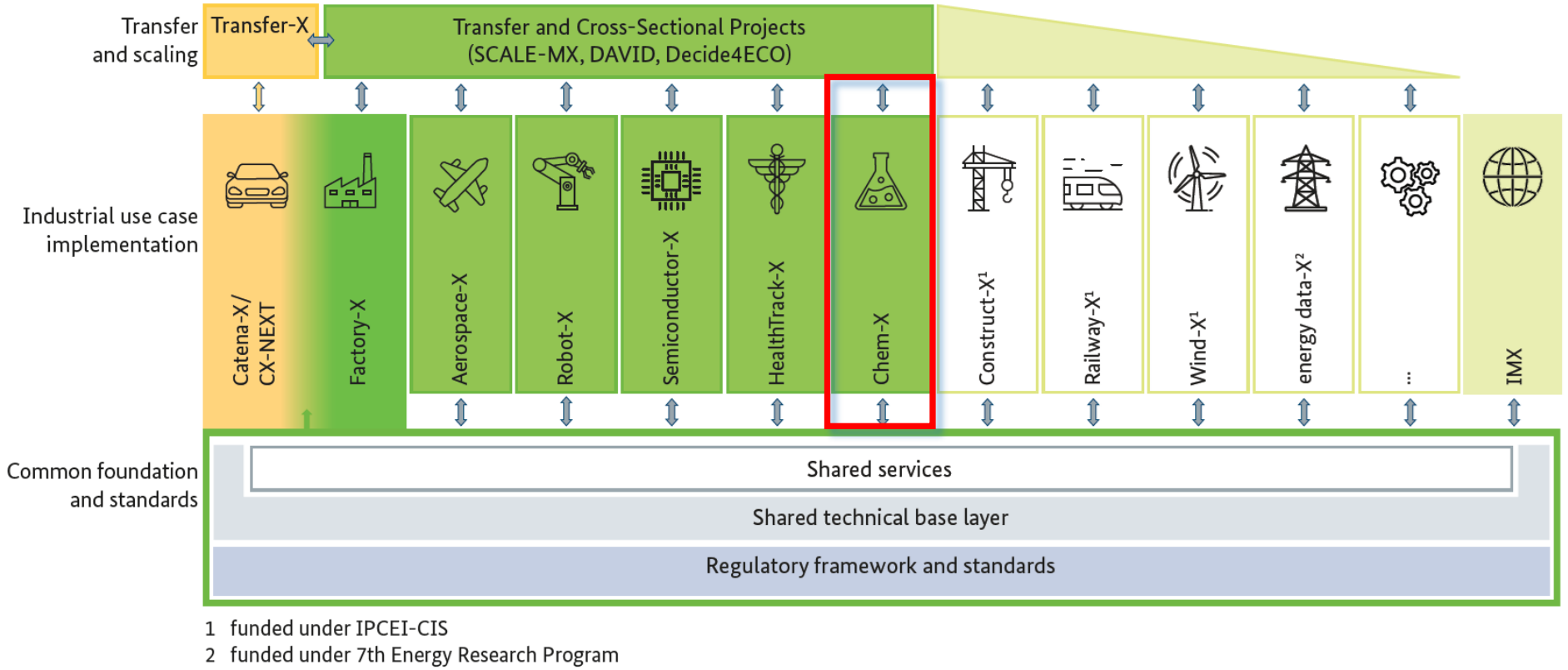
Chem-X Projekt: Übersicht | LinkedIn

Website: CHEM-X

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Cross sectoral interoperability: Chem-X is part of Manufacturing-X



1 funded under IPCEI-CIS
2 funded under 7th Energy Research Program

Goals of Manufacturing-X:

- To implement the DataSpace Industrie 4.0 and the transformation to a digitally networked industry across the board
- Manufacturing-X creates trustworthy data ecosystems based on open standards

Source: https://www.plattform-i40.de/IP/Navigation/EN/Manufacturing-X/Manufacturing-X.html

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