

DATAWEEK²⁴

JOIN.LEARN.SHARE.GET VALUE

Factory-X

12/03/2024 15:30–16:30 (CET)

Thomas Hahn, Siemens AG



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The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412

DSBA



BDV
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gaia-x



INTERNATIONAL DATA
SPACES ASSOCIATION



DATA SPACES
SUPPORT CENTRE

Data Spaces Symposium

Unite. Innovate. Adopt.

Darmstadtium | Frankfurt region

Challenges for digitization in Manufacturing

Internationalization
(e.g. CESMII, KOSMO, RRI)



Security



Data sovereignty



Lack of
connectivity



Lack of
interoperability



Lack of
skills



Lack of
speed



As-a-Service
business models



Standards & Regulations
(e.g. EU CRA, EU Data Act, OPC UA,
AAS, ...)

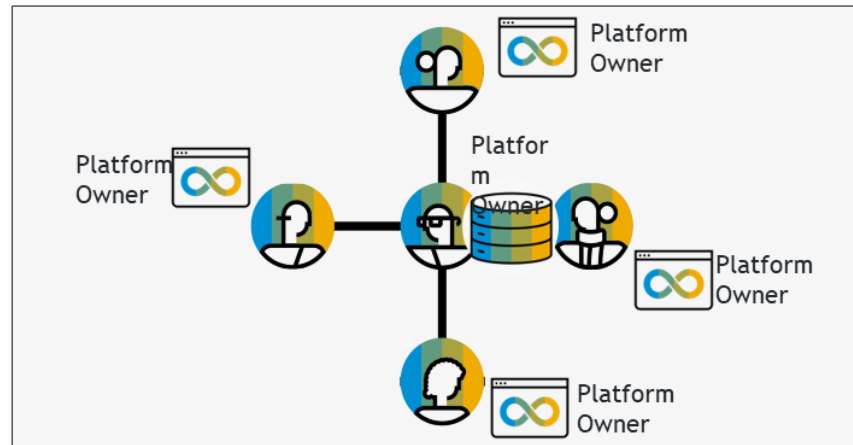


Scalability

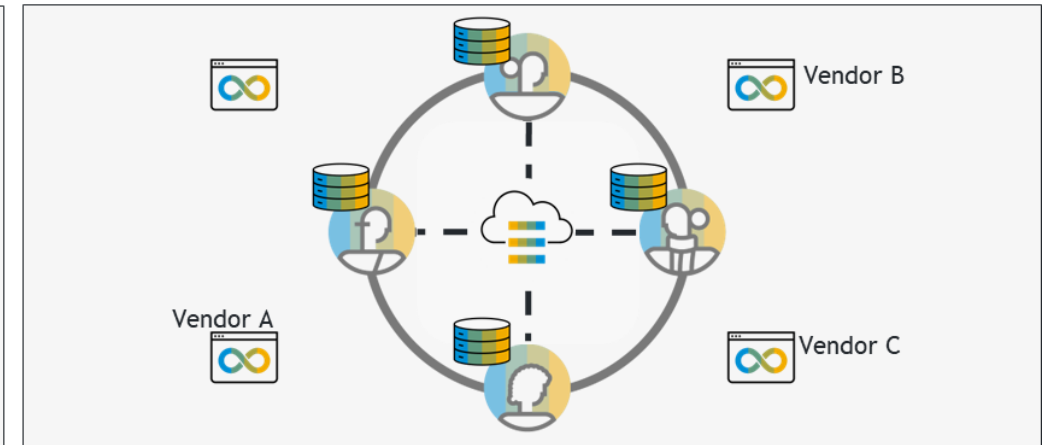


Manufacturing-X: How it is different from traditional Industry Platforms

Traditional Platform



 Manufacturing-X



Applications

Provided by the platform owner all integrated and aligned

Multiple (competing) solutions from various vendors. Each vendor provides and operates his solution

Topology


Central network service

(Slim) federated operating environment provided by an operating company (joint-venture of multiple companies).
Data exchange decentral / directly between network participants

Data Persistence

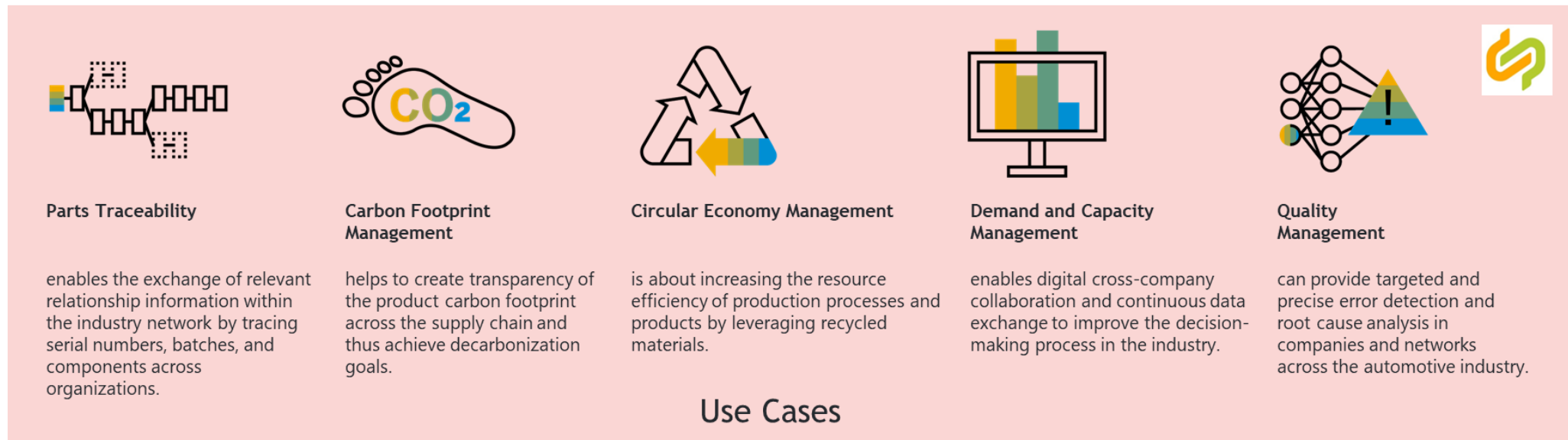
Centrally owned by the platform owner

Decentral data persistence - data resides at data owner who can grant access to others

 = data persistence

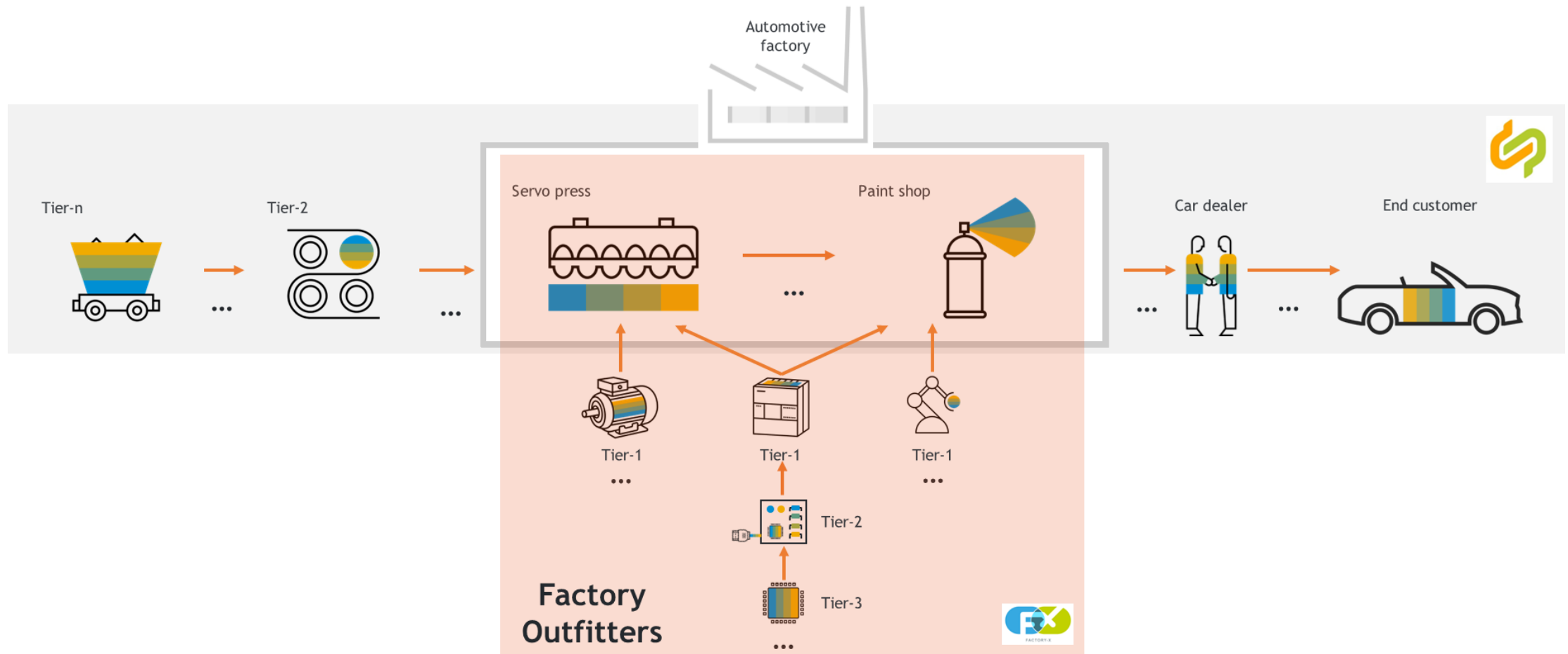
 = application

Catena-X is the first Lighthouse Project: Focus on Supply Chain oriented use cases for the Automotive Value Chain

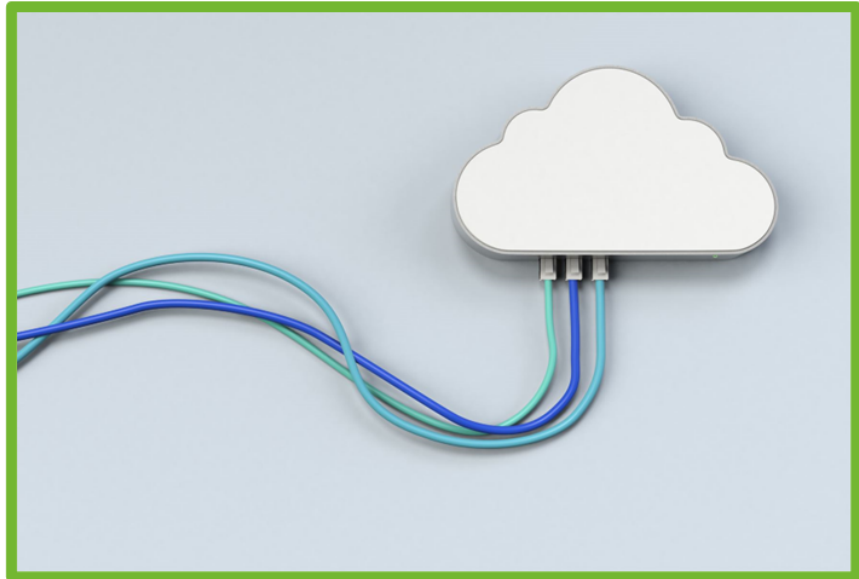


*Road map item

Factory-X is adding the shop floor component



Factory-X objectives



Objectives:



Creation of a Factory-X data space, considering existing standards



Cross-manufacturer data consistency for engineering, device information and condition monitoring



Contribution to sustainability through CO2 footprint- and energy management, as well as digital solutions to support a circular economy



Provision of digital solutions for "as a Service" business models (e.g., marketplace/pay-per-part, remote control/monitoring)



Traceability of materials, data, and products along the entire supply chain



Update and change management for devices in the field



The 11 Use Cases of Factory-X

11 Use Cases für horizontalen- und vertikalen Datenaustausch

Integrated Toolchains
and Collaborative
Engineering



Information Update
and Change
Service



Collaborative
Information
Logistics



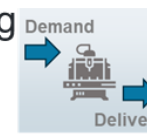
Condition
Monitoring led
Services



Modular
Production



Manufacturing as a
Service – On Demand
Manufacturing



Autonomous
Operation-as-a-
Service



Traceability



Energy-Consumption
and Load
Management



Carbon Footprint
Management



Circular
Economy



Factory-X Kernel & Basis Services

Factory-X

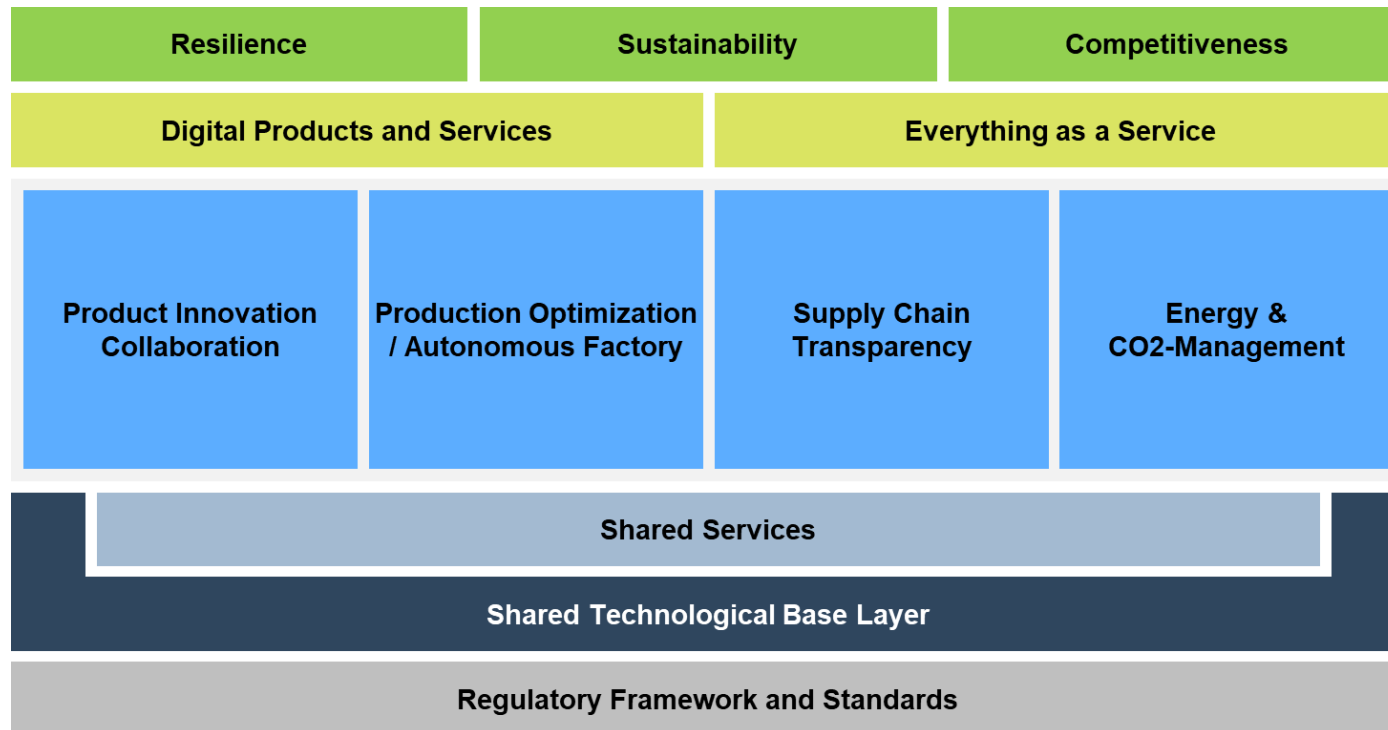
Lighthouse project for Manufacturing-X

- Focus on machine builders & factory operators across 11 dedicated use cases
- Strong consortium consisting of 47 companies/associations/research institutions
- Consortium leadership by Siemens + SAP
- Manufacturing-X wide coordination and establishment of an international M-X network
- Project start on 1st of February 2024

Factory-X consortium:

- | | | |
|--------------------------------------|--------------------------------|-------------------------------------------|
| • August Wilhelm Scheer Institut | • igus | • Scheer |
| • BASF | • inovex | • SCHUNK |
| • Berger Holding | • InstaWerk | • SDFS Smarte Demonstrationsfabrik Siegen |
| • Catena-X e.V. | • ISW - Universität Stuttgart | • SICK |
| • Codewerk | • Lenze | • Siemens |
| • DMG MORI | • LNI e.V. | • SmartFactory-KL e.V. |
| • Empolis | • Matchory | • soffico |
| • EPLAN | • MT Analytics | • Software AG |
| • Estainium | • Open Industry 4.0 Alliance | • TRUMPF |
| • Eviden | • Pakic | • T-Systems |
| • Festo | • Phoenix Contact | • TÜV SÜD Chemie Service |
| • Fraunhofer | • prenode | • Uhlmann Group |
| • German Edge Cloud | • proALPHA | • VDMA e.V. |
| • Hilscher | • RIF Engineering & Consulting | • WITTENSTEIN |
| • ifm diagnostic | • Ruhr-Universität Bochum | • ZVEI e.V. (FE) |
| • IFW - Leibniz Universität Hannover | • SAP | |

Manufacturing-X will establish an open data ecosystem across industries, that is addressing exactly these issues



1. Business Focus

Use cases are defined and agreed jointly by industry representatives, associations and leading companies

2. End 2 end across companies

Use cases and scenarios do not only span inner company silos but also connect companies with in one and adjacent industries

3. Data Sovereignty

An open and trusted data space allows access of relevant data while data sovereignty of the data owner is maintained

4. Standards based

The inherent complexity of the technology used is managed through open source principles and industry standards and architectures like GAIA-X, AAS, OPC-UA and others

5. Scaling from large OEMs to small and medium companies

Access to Manufacturing-X is as easy as connecting to any cloud based network



Manufacturing-X: Make Data Work



Goal

Manufacturing-X is a German **initiative** to digitalize the entire manufacturing and supply chains in industry. It aims at implementing the data space for Industrie 4.0 across industries on a **global scale**. The goal is to enable digital innovations for greater resilience, sustainability and competitiveness.

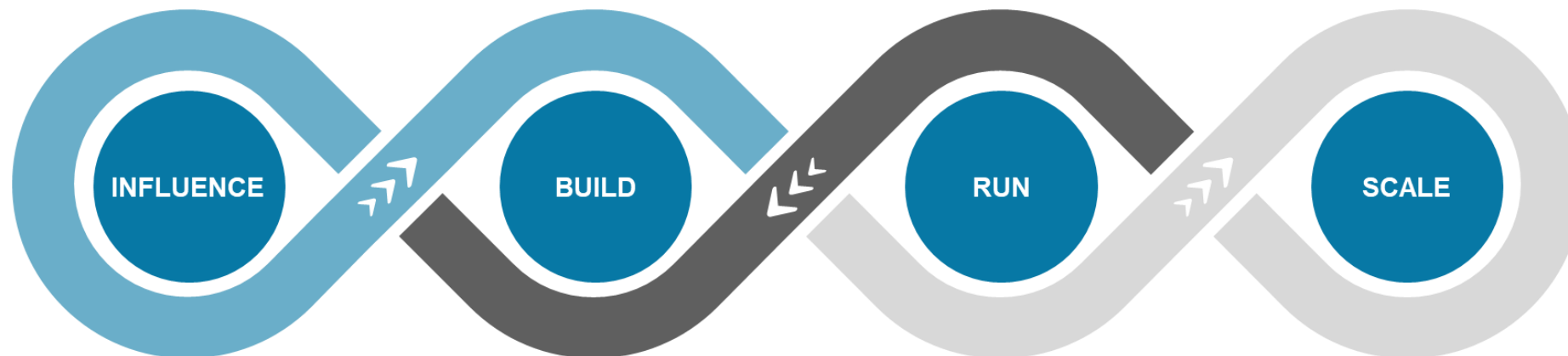
Approach

Companies jointly work together on use cases and shared services to enable data exchange across companies and products of different vendors. Manufacturing-X comprises Catena-X for the automotive industry and a proposed project proposal called Factory-X for Machine Builders and factory operators. It builds on common standards such as the Asset Administration Shell.

Customer value

- **Fast adaptation** of existing **standards** and **technologies**
- Creates **customer value** for concrete use cases
- Fast adaptation of **innovative** ideas and **business** models
- Opportunities for **SMEs** to gain access to technology and infrastructure as basis to provide their digital offerings

How industrial Data Ecosystems WORK?!

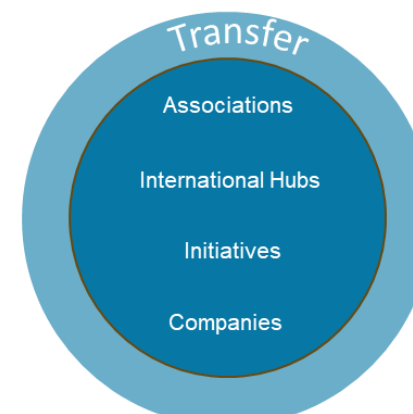
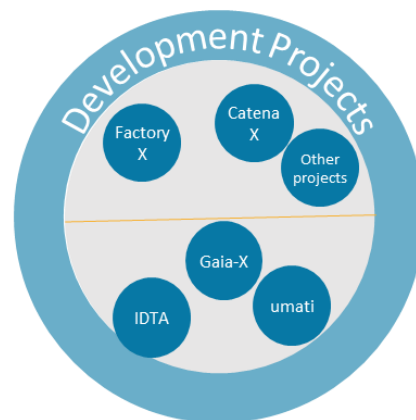


Rules & Governance
Overall Concept
Principles, Guidelines, Policies

X-Association compatible Spec.
Development & Integration
Software | Services | Data Models

Secure and trusted
Operation of enabling services
Distributed Operating Model

SME support activities
Consulting and training
Test beds and test support
Roll out of use cases



Thank you!



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