DATAWEEK 24

JOIN.LEARN.SHARE.GET VALUE

Factory-X

12/03/2024 15:30–16:30 (CET)

Thomas Hahn, Siemens AG

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DSBA ■ BDV BIG DATA VALUE ASSOCIATION FIWARE FOUNDATION gaia-x INTERNATIONAL DATA SPACES ASSOCIATION

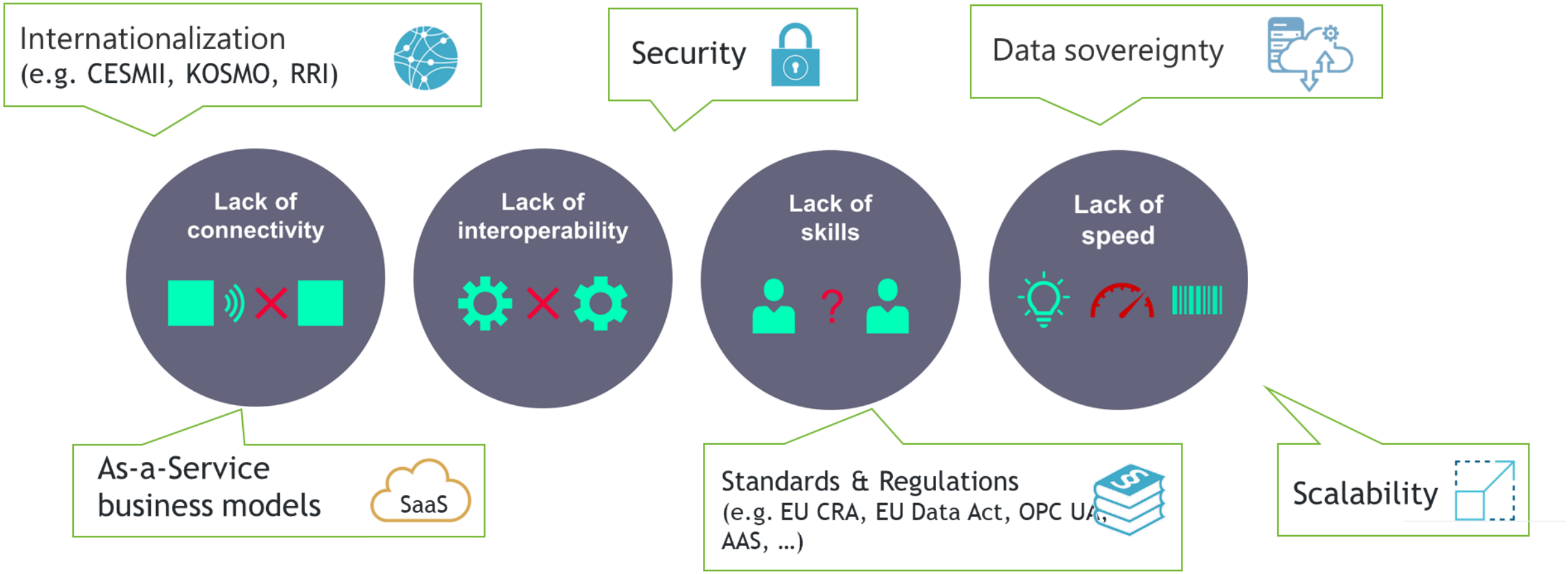
DATA SPACES SUPPORT CENTRE

Data Spaces Symposium

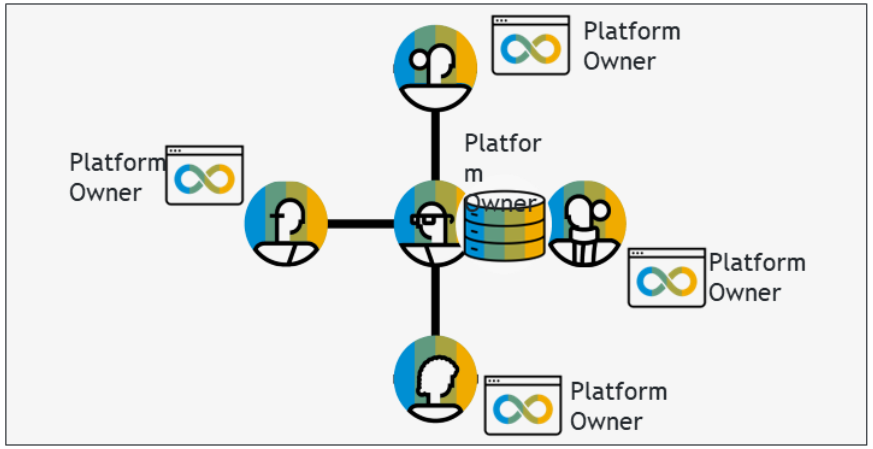
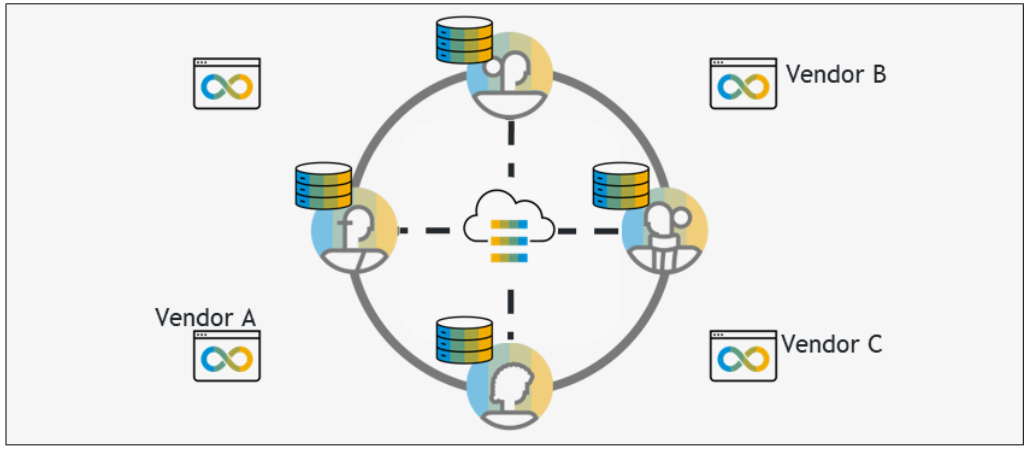
Unite. Innovate. Adopt.

Darmstadtium | Frankfurt region

Challenges for digitization in Manufacturing

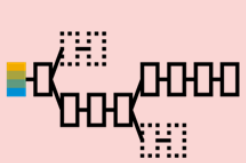


Manufacturing-X: How it is different from traditional Industry Platforms

	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



Parts Traceability

enables the exchange of relevant relationship information within the industry network by tracing serial numbers, batches, and components across organizations.

Carbon Footprint Management

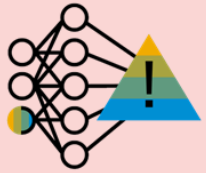
helps to create transparency of the product carbon footprint across the supply chain and thus achieve decarbonization goals.

Circular Economy Management

is about increasing the resource efficiency of production processes and products by leveraging recycled materials.

Demand and Capacity Management

enables digital cross-company collaboration and continuous data exchange to improve the decision-making process in the industry.



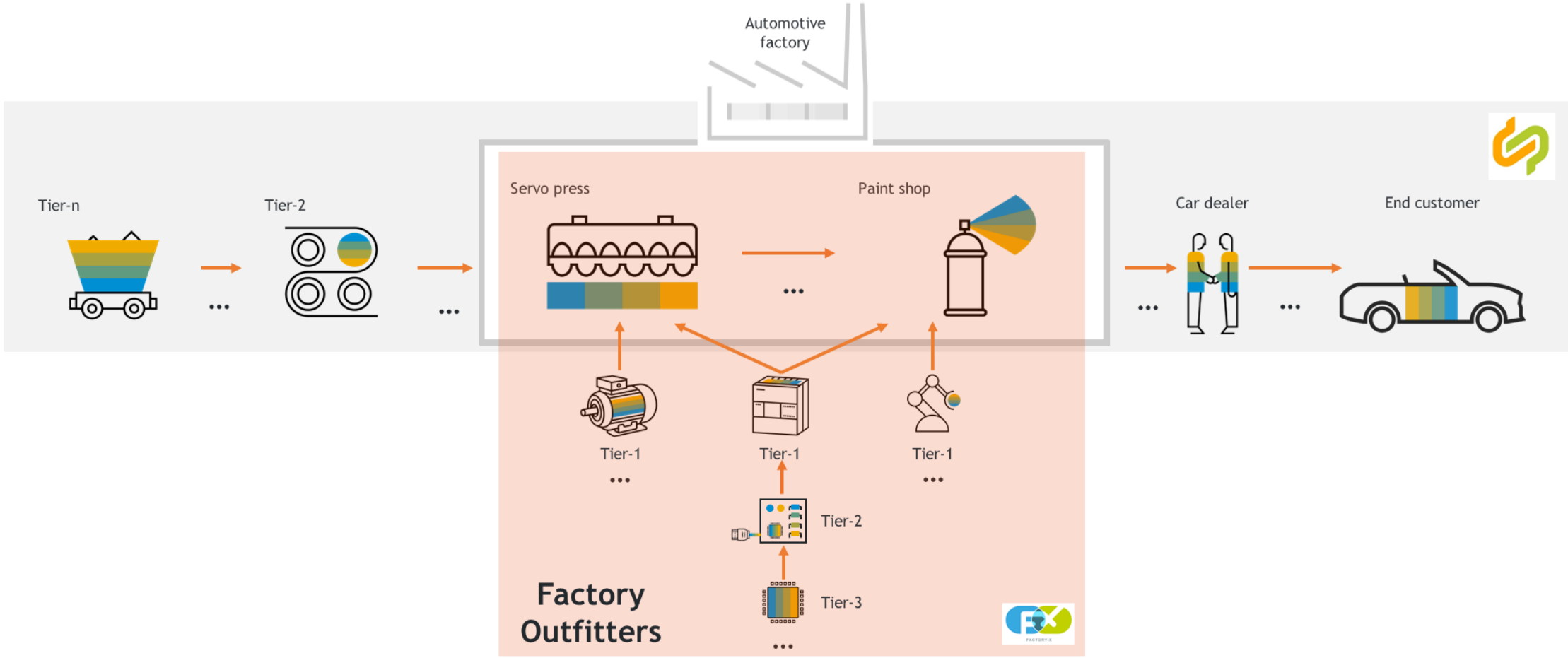
Quality Management

can provide targeted and precise error detection and root cause analysis in companies and networks across the automotive industry.

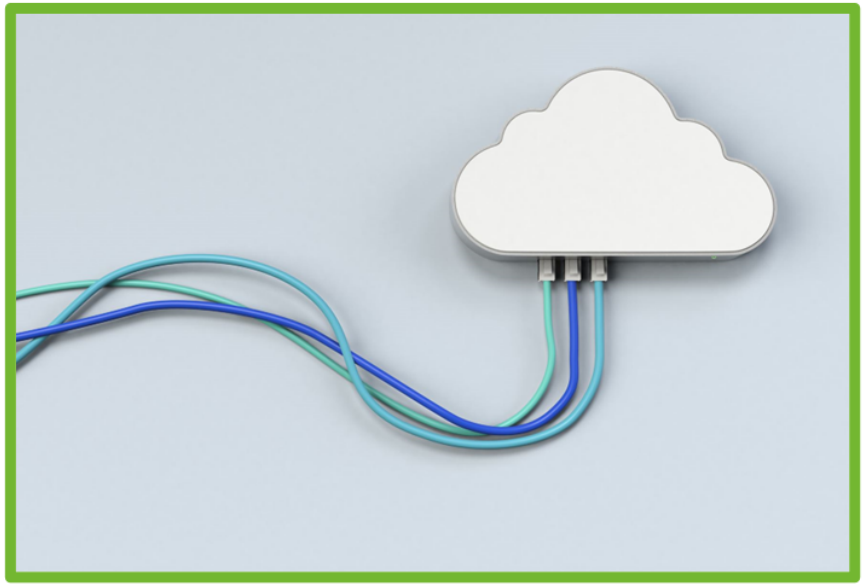
Use Cases

*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

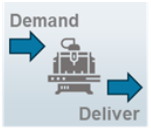
Information Update and Change Service

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

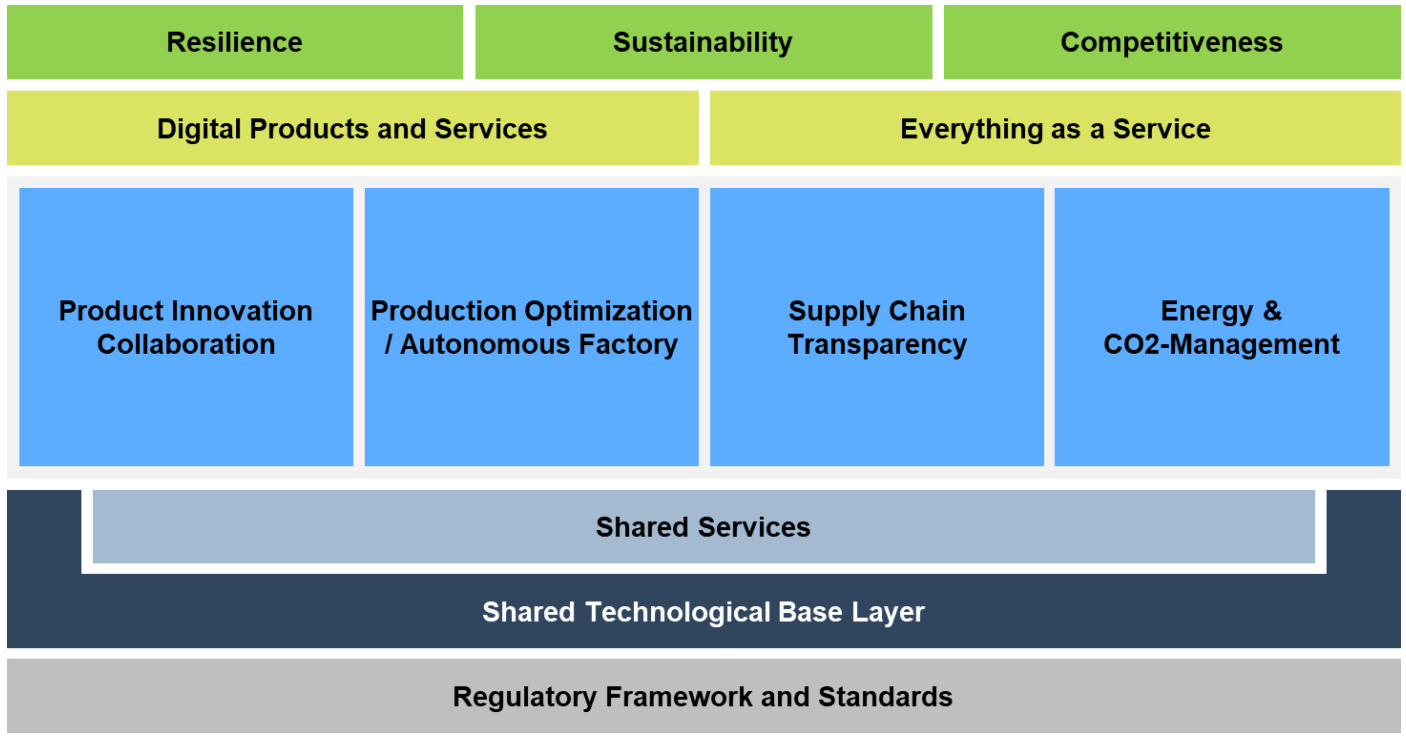
Factory-X
Lighthouse project for Manufacturing-X

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

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.

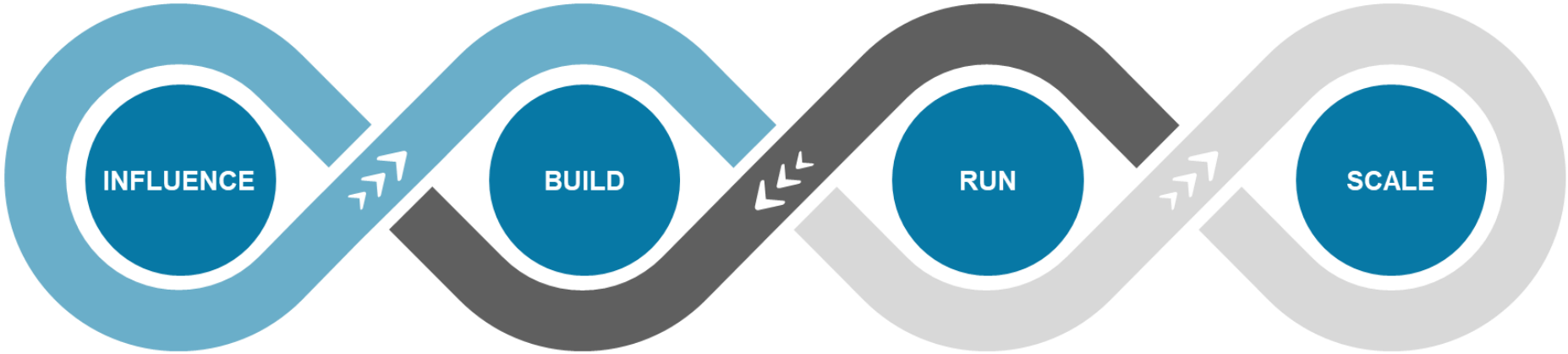
Approach

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?!

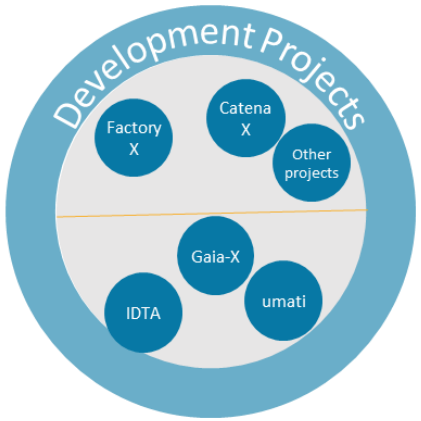


Rules & Governance
Overall Concept
Principles, Guidelines, Policies

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



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Thank you!

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