



Making Manufacturing-X international

Why – What – How – Who

Tokyo, October 17th, 2024

Thomas Hahn, Siemens

Why?

Why Data Transparency is needed?



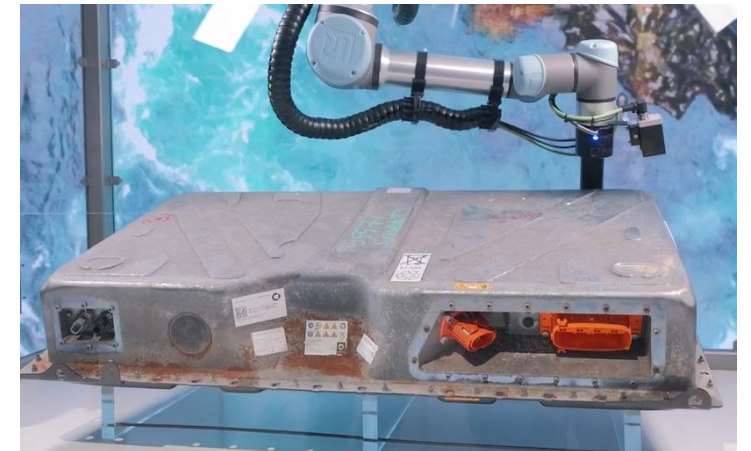
Example: Carbon Footprint

- ~10% of CO2 emissions from industry generated by own factories, ~90% by upstream/downstream supply chain ¹⁾
- To reduce CO2 emissions, transparency along the entire value chain is necessary

1) depending on production

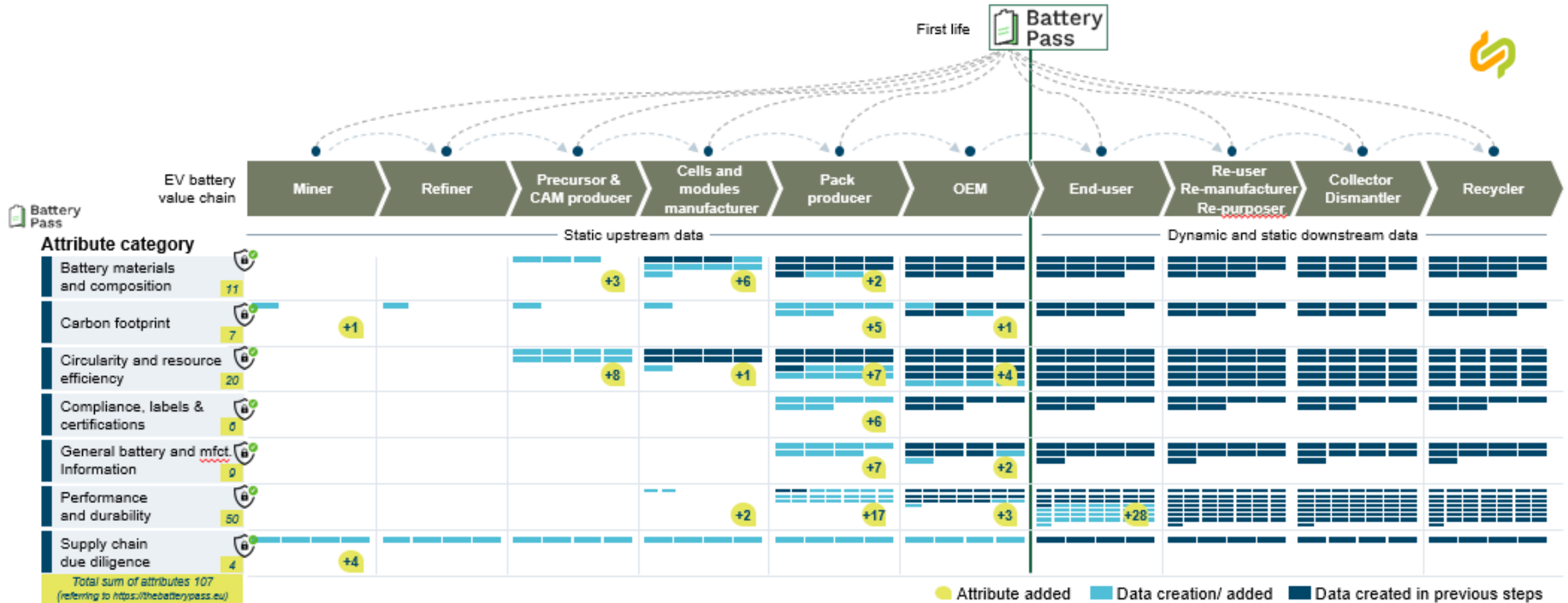
Example: Battery production

- Only if we use the potential of digitalization we can produce batteries more sustainably
- ~ 96% of the ingredients of a battery are recyclable
- Consistent and transparent use of digital twins along the complete cycle the design and production will be more sustainable



Example

Battery Passport

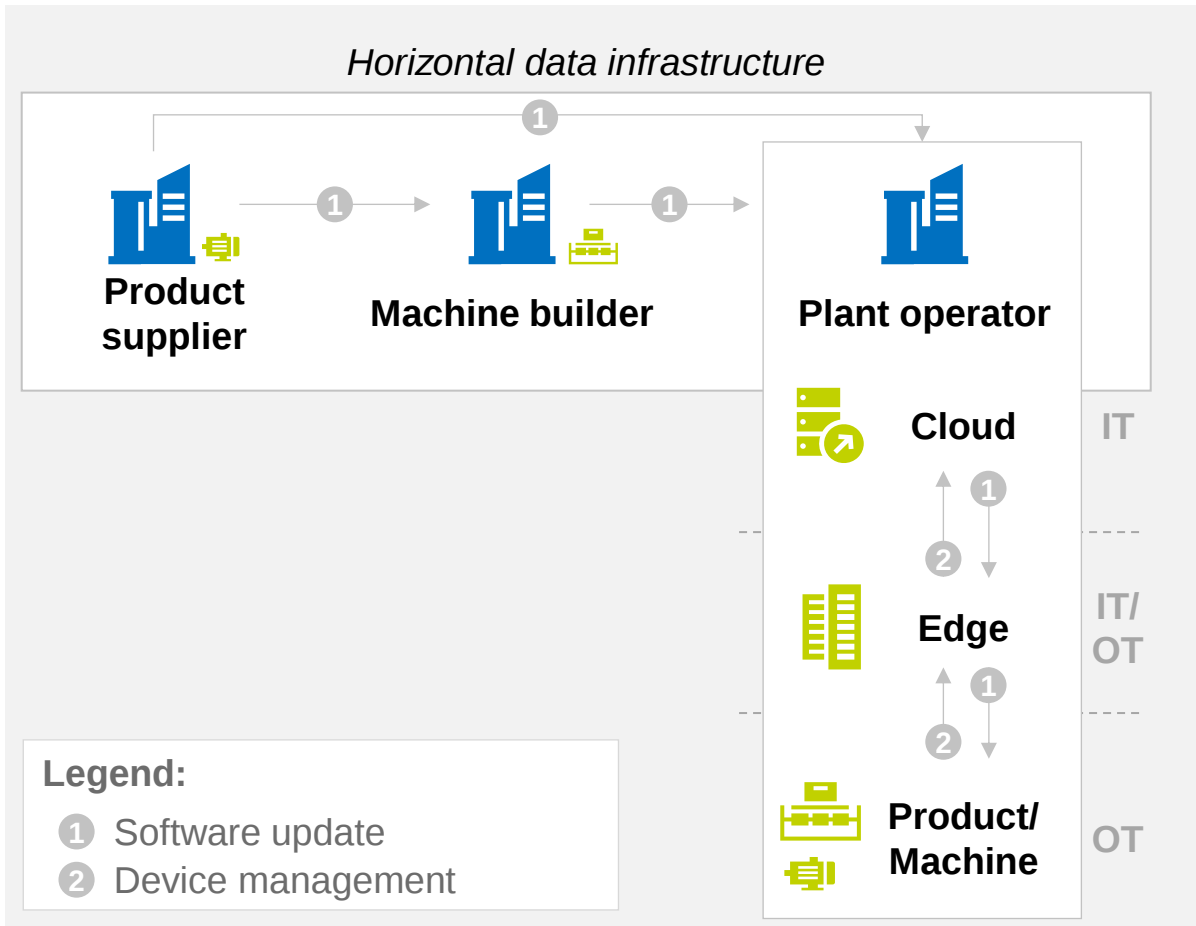


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Example

Information Update and Change Service

Illustrating the use case



Description

Challenge

- Transparency and consistency regarding updates of information and software.

Goal

- Solutions for automated and reliable update services and common device management.

Solution approach

- Information on product and machine lifecycle.
- Standardized information and automated processes for software updates of products and machines.

Benefit for the user

- Consideration of many products from a high number of different suppliers and machine builders.
- Software update processes will be automated.
- Support for regulations like the “EU Cyber Resilience Act”.

Challenges and Opportunities for Global Manufacturing Industries



Deployment needs customization across an infrastructure continuum from cloud to edge, depending on the applications.



Information sharing and data-driven collaboration among manufacturing initiatives across the supply network are becoming more relevant for impactful manufacturing data networks.



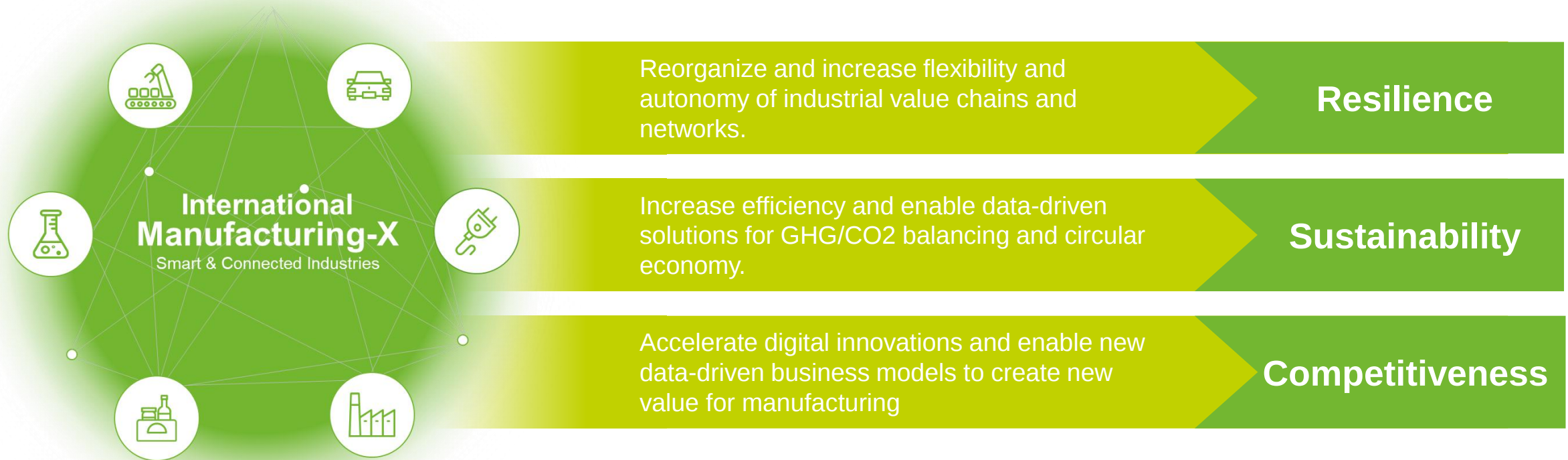
Harmonized standards facilitate business scale-up of data ecosystems, which are becoming essential.



No country, no initiative, no company can achieve this on its own!

International Manufacturing-X (IM-X): Make Data Work

IM-X will implement a federated, decentralized and collaborative data ecosystem for smart manufacturing. Open, global and cross-industry, following FAIR Data Principles.



Motivation & Big Picture

Foundational Framework for IM-X

A common guideline for IM-X activities and international stakeholders.

Strategic Goals

International Manufacturing-X develops the foundations for a resilient and competitive industry in a sustainable society.

Resilience

Sustainability

Competitiveness

Digital Products and Services

Everything as a Service

Exemplary Cross-Industry Use Cases

International Manufacturing-X addresses cross-industry use cases based on a collaborative use of data with high economic and ecological impact.

Product Innovation,
Collaboration &
Product Optimization

Autonomous Factory

Supply Chain,
Transparency &
resilience

Energy &
GHG/CO2
Management

...

...

...

Shared Services

Shared Technological Base Layer

Regulatory Framework and Standards

Business Models

International Manufacturing-X enables innovative business models based on a interoperable data-ecosystems

Capabilities

International Manufacturing-X enables development and deployment of fundamental services driving the federated data ecosystem.

Requirements

International Manufacturing-X builds on a common technical, organizational and legal framework and contributes to the future development in cooperation with international law.

Foundation

International Manufacturing-X defines global standards and runs a basic technical infrastructure to guarantee interoperability and sovereignty.

Landscape of Initiatives in the Context of global manufacturing

Manufacturing-X is international. Our intention is to trigger international R&D, partnerships, cooperation, standardization and deployment with and for customers globally.



Who?

Initiatives Involved in Establishing the IMX Council



What has happened so far:



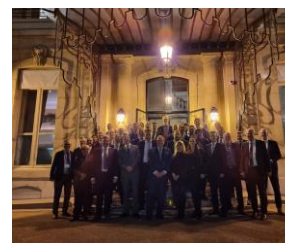
**2023
July**

Initiation
Brussels,
Belgium



**2023
October**

Inauguration
Tokio,
Japan



**2024
February**

Kick-off
Paris,
France

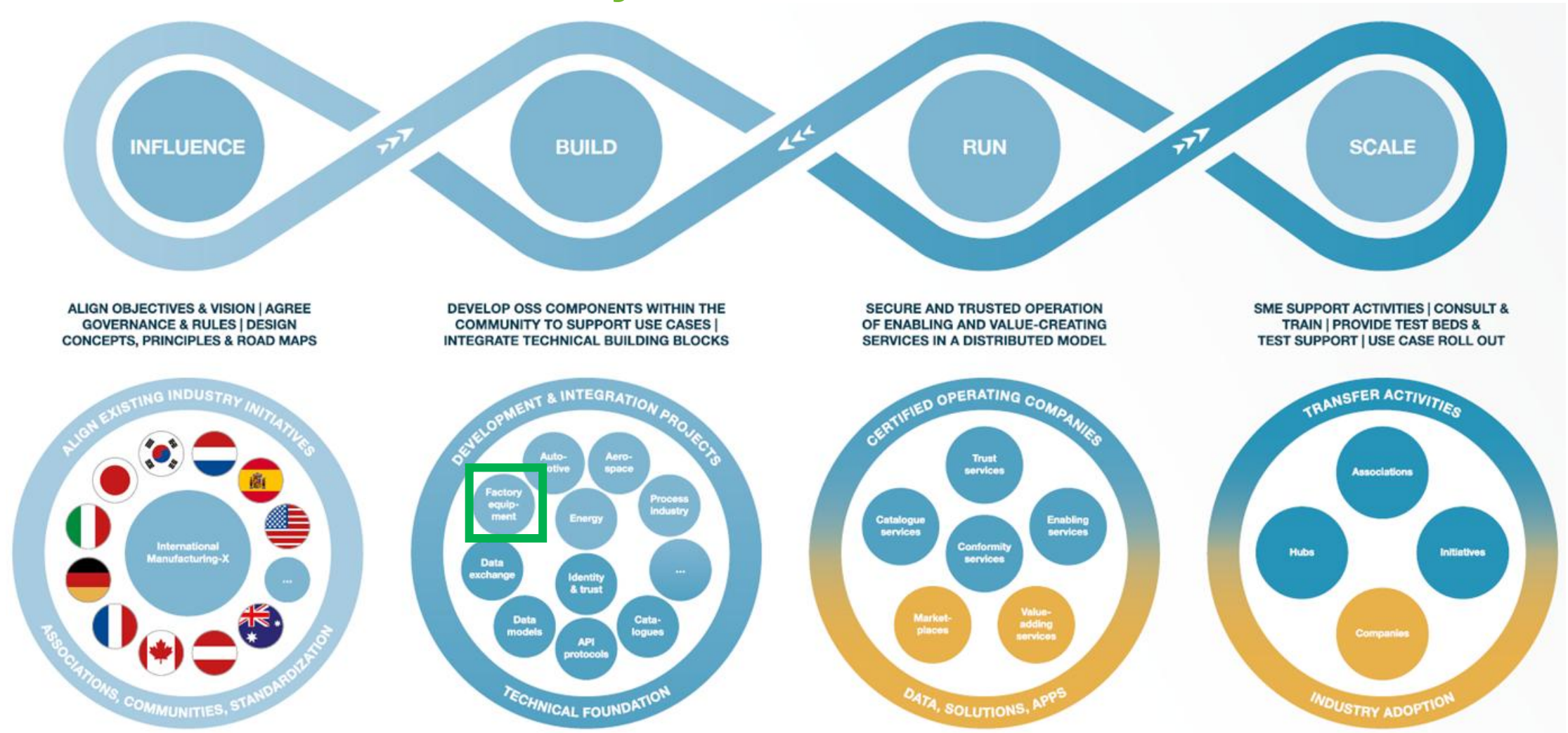


**2024
Novem.**

November 5th
in USA/CESMII

How?

How Industrial Data Ecosystems work



Examples: domain specific projects in Germany

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Factory-X Industry Use Cases

**11 Use Cases für
horizontalen- und
vertikalen
Datenaustausch**

Integrated Toolchains
and Collaborative
Engineering

DPP



Information Update
and Change
Service



Collaborative
Information
Logistics



Condition
Monitoring led
Services

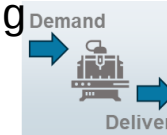


Modular
Production



Manufacturing as a
Service – On Demand
Manufacturing

DPP



Autonomous
Operation-as-a-
Service



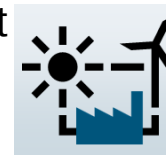
Traceability

DPP



Energy-Consumption
and Load
Management

DPP



Carbon Footprint
Management

DPP



Circular
Economy

DPP



Factory-X Kernel & Basis Services

Trust
Anchor

Examples

International Manufacturing-X Council: Make Data Work



ありがとう

Merci beaucoup

Σας ευχαριστώ πολύ

Dziękuję bardzo

Tack så mycket

Grazie mille

Vielen Dank!

Köszönöm szépen

Mange tak skal du have

Thank you!

Muchas gracias

Ďakujem veľmi pekne

Děkuji mnohokrát

Hartelijk dank

Muito obrigado