




gaia-x

 Hub España

17 de Diciembre

Encuentro Gaia-X España.

Diálogo estratégico para un futuro soberano y competitivo de la Economía del Dato en Europa y España

Gobernanza en espacios de datos

Ayuda 27.08.4671.488 financiado por:



GOBIERNO DE ESPAÑA

MINISTERIO PARA LA TRANSFORMACIÓN DIGITAL Y LA POLÍTICA PÚBLICA

SECRETARÍA DE ESTADO DE INNOVACIÓN Y EMPLEO DIGITAL

SM4RTENANCE

Encuentro Gaia-X España 2025,
Madrid,

Gobernanza en Proyectos Europeos:
SM4RTENANCE

Oscar Lazaro (INNOVALIA)



Who:

**The SM4 global
ecosystem**

Coordinated by

Partners

 **iovalia**
ASSOCIATION

 **DAWEX**
DATA EXCHANGE TECHNOLOGY

 **top-ix**
WE DO CONNECTIONS

 **NTT DATA**

 **OTE**
GROUP OF COMPANIES

 **SCSN**
smart connected
supplier network

 **domina**
data management

 **FIWARE**
FOUNDATION

 **SOVity**

 **DGS**
BUILDING THE FUTURE

 **SQS**
SYSTEMS QUALITY SOLUTIONS

 **TRIMEK**
METROLOGICAL ENGINEERING

 **Cefriel**
POLITECNICO DI MILANO

 **itemalab** 
TEXTILE | INDUSTRIAL

 **PRIMA
INDUSTRIE**

 **FIDIA**

 **COMALI**

 **Schneider
Electric**

 **Fill** YOUR FUTURE

 **DATAPIXEL**
QUALITY CONTROL ENGINEERING

 **TNO**

 **TXT**

 **core**

 **IJssel**

 **UNIMETRIK**
METROLOGY AND CALIBRATION

 **ATLANTIS**
ENGINEERING

 **SYXIS**
innovate together

 **Fraunhofer**
I05B

 **INDUSTRIE 4.0**
AUSTRIA

 **UiO**

 **CERT**
CENTRE FOR RESEARCH IN TECHNOLOGY
HELLAS

 **PIACENZA**

 **AVL**

 **BEMAS**

 **cea**

 **BAI DATA**
| INTEGRATED

 **MADE**
Competition Center 4.0

 **AFNeT Services**

 **INTELLIMECH**
CONSORZIO PER LA MECCATRONICA

 **VDMA**

 **carsa**

 **eit** Manufacturing
CLC SOUTH

**ASSOCIATED
PARTNERS**

 **efnms**

**INTERNATIONAL DATA
SPACES ASSOCIATION**

 **VDI**

Global Manufacturing Data Ecosystems

International operation



CONFINDUSTRIA

PLATFORM INDUSTRIE 4.0



SM4 is part of the International Manufacturing-X Ecosystem

International Manufacturing-X



2023 July Initiation Brussels, Belgium



2023 October Inauguration Tokyo, Japan



2024 February Kick-off Paris, France



2024 Novem. USA/ CESMII



2025 May Athens/ Greece



2025 Novem. Copenhagen/ Denmark

SM4RTENANCE



01. Why: The challenges

The Manufacturing Challenge

New business ecosystems

Legal

Business

Technical

RESILIENCE IN SUPPLY CHAINS



“Today’s peer to peer networks don’t do the job”

EXECUTIVE AWARENESS

SUSTAINABILITY AND REGULATORY REQUIREMENTS



“Collaboration models needed to capture the entire value chain”

DATA ECOSYSTEM

GEO POLITICS AND INNOVATION



“Sharing data is a matter of trust and sovereignty”

EUROPEAN VALUES

ECONOMIC EFFICIENCY



“Network adoption and interoperability takes more than ONE”

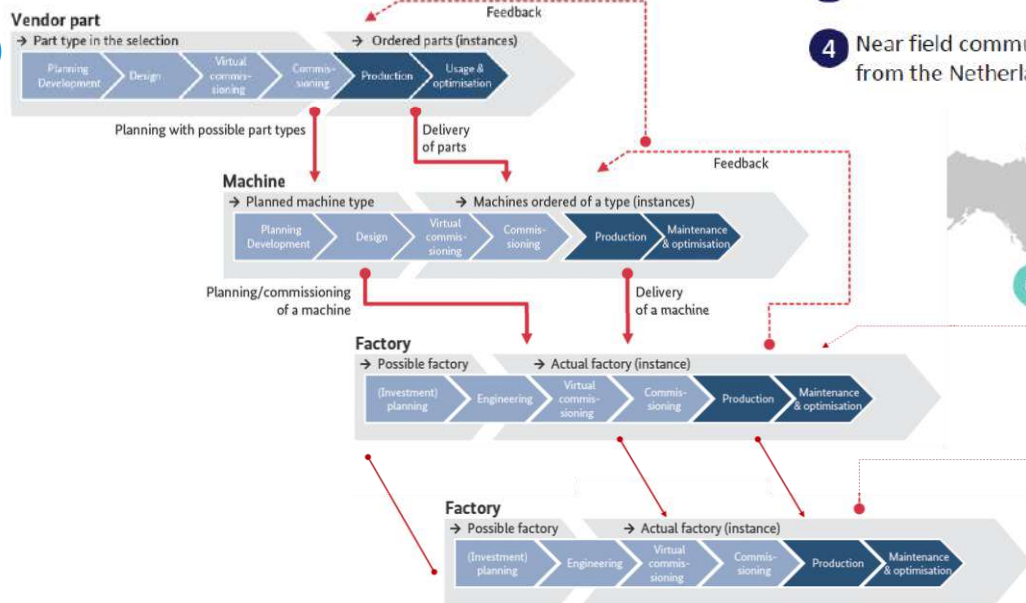
INDUSTRY APPROACH

No single company can solve these challenges alone. To succeed, industry needs to turn manufacturing activities into an interoperable, collaborative, reliable and autonomous business ecosystem.

The Global Challenge



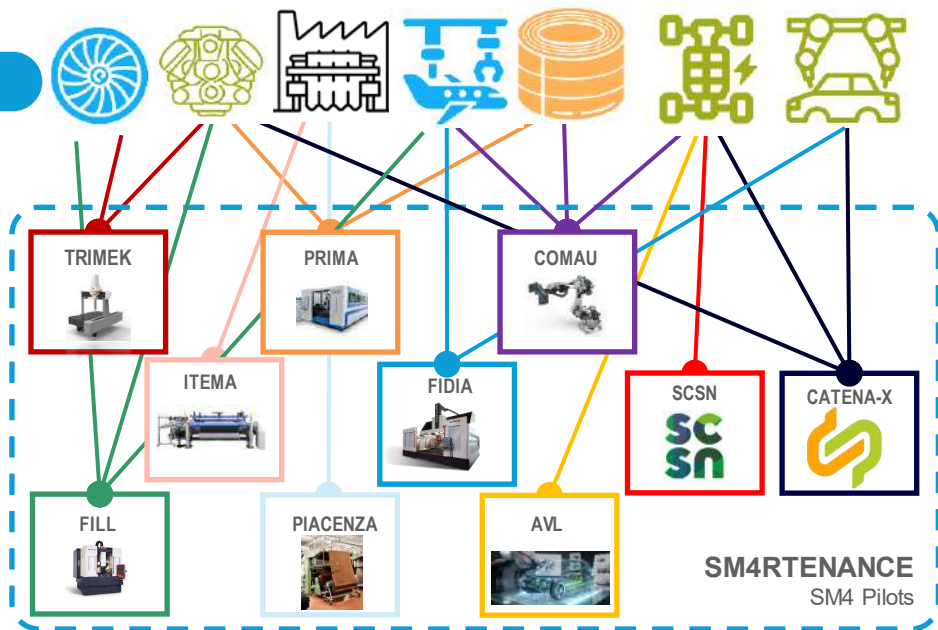
- 1 Metals imported, rare earth metals mined in China¹
- 2 Screen, flash memory from South Korea
- 3 Accelerometer imported from Germany
- 4 Near field communications controller from the Netherlands
- 5 Camera, Compass, LCD screen imported from Japan
- 6 Wi-Fi chip, Audio Chips imported from USA
- 7 Final assembly and testing in Shenzhen, China



The Ecosystem Challenge

Situation today:

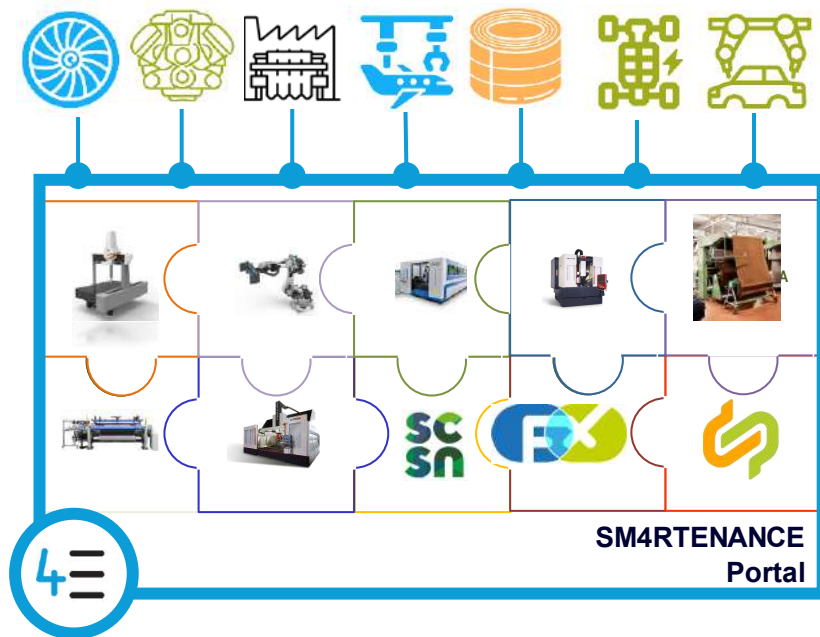
Companies **connect to EACH** digital data ecosystems depending on which value chain they want to participate in



SM4RTENANCE

Our vision:

Companies from all industries **connect ONCE** to collaborate across digital data ecosystems

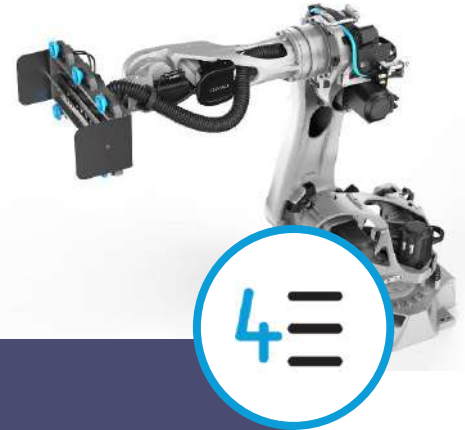
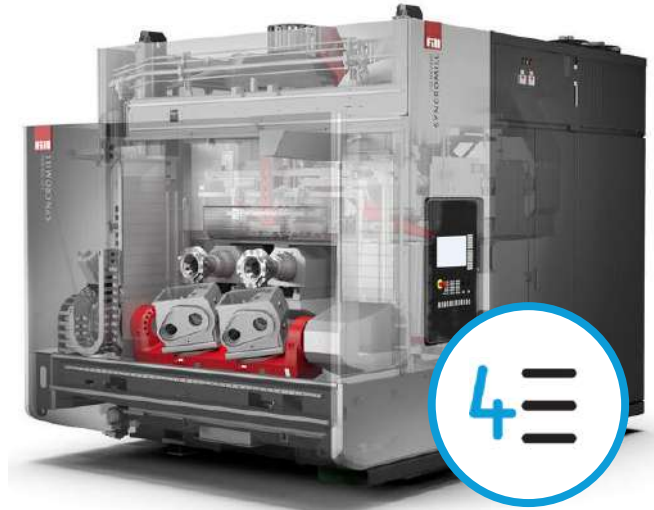




What:

The asset 4.0

- **data space pillars**



ASSETS 4.0

CROSS-SECTORIAL GLOBAL DATA SPACE

National Manufacturing Ecosystems

Status quo

A number of data space initiatives are initiated across EU Member states

- Different business strategies
- Individual ecosystem **scale-up** strategies
- Not economic to **reconcile** all approaches under one ecosystem
- Different **sectors addressed**
- Complementary **business** interests
- Different **governing authorities**

One cannot rule them all

 **Catena-X**
Centro de Competencia

 **scsn**
smart connected supplier network

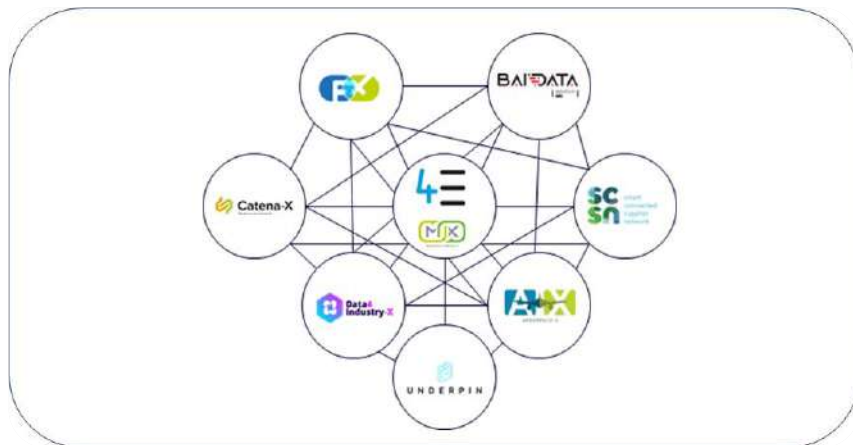
 **MjX**
www.mjx.com

 **DECADE X**
 **Data Industry X**

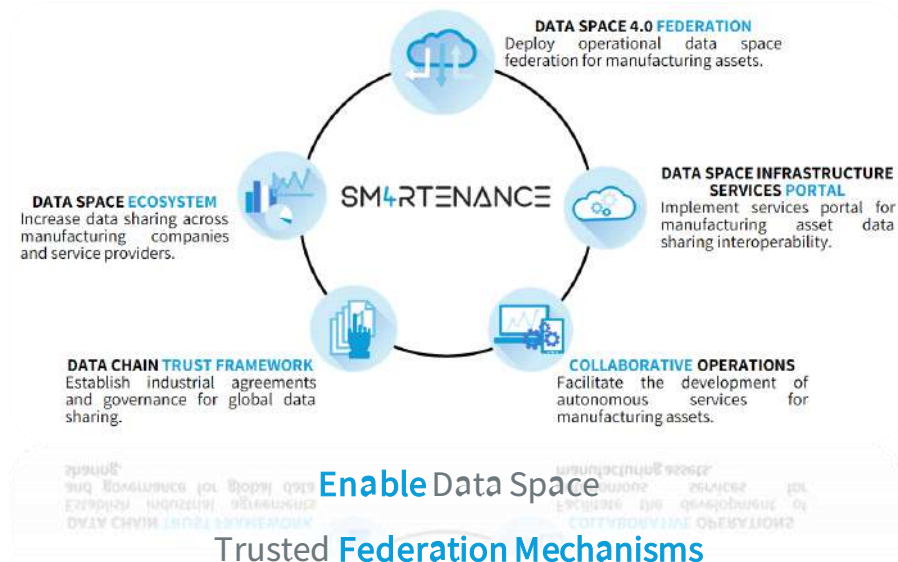
European Data Spaces in Manufacturing

SM4RTENANCE Mission

To facilitate a neutral **cross-sectorial** data space where **trusted** data **transactions** can be enabled along the **complete** asset **lifecycle** among the different stakeholders interacting with **Assets 4.0**.



Connect Evolving Manufacturing
Data Space **Ecosystems**



European Data Spaces in Manufacturing

SM4RTENANCE Pillars

1

Manufacturing equipment ready to plug & share

MX Port - Make data work

2

Reusable data products

International standards **“Better Together”**

3

Value added services

Federated trust & trusted **ecosystem services**

4

Integrated digital manufacturing solutions

Interoperable **data workflows**

5

Data space federation portal

Interoperable **data network**

MX Port

Make asset 4.0 data work



IMX-Qualities

- Interoperability
- Scalability
- Trust & Security
- (Data) Sovereignty

MX-Port Layer	Components for configurations		
MX Discovery	A1	A2	
MX Access & Usage Ctrl.	B1	B2	
	C1	C2	
MX Gate	D1	D2	D3
MX Converter			
MX Adapter	application specific options		

Layer	MX-Port “Hercules”
MX Discovery	Data Space Protocol/ Decentral Claims Protocol
MX Access & Usage Ctrl.	
MX Gate	AAS-REST
MX Converter	AAS sub model
MX Adapter	application specific

Layer	MX-Port “Leo”
MX Discovery	ID-Link
MX Access & Usage Ctrl.	AAS security
MX Gate	AAS-REST
MX Converter	AAS sub model
MX Adapter	application specific

Layer	MX-Port “Orion”	
MX Discovery	Data Space Protocol/ Decentral Claims Protocol	
MX Access & Usage Ctrl.		
MX Gate	UADP	OPC UA TCP
	HTTP(S)	NetConf
MX Converter	OPC UA Companion Spec	
	OPC UA Meta Model	
MX Adapter	application specific	

SM4RTENANCE



... Supply Chain oriented

... Product oriented

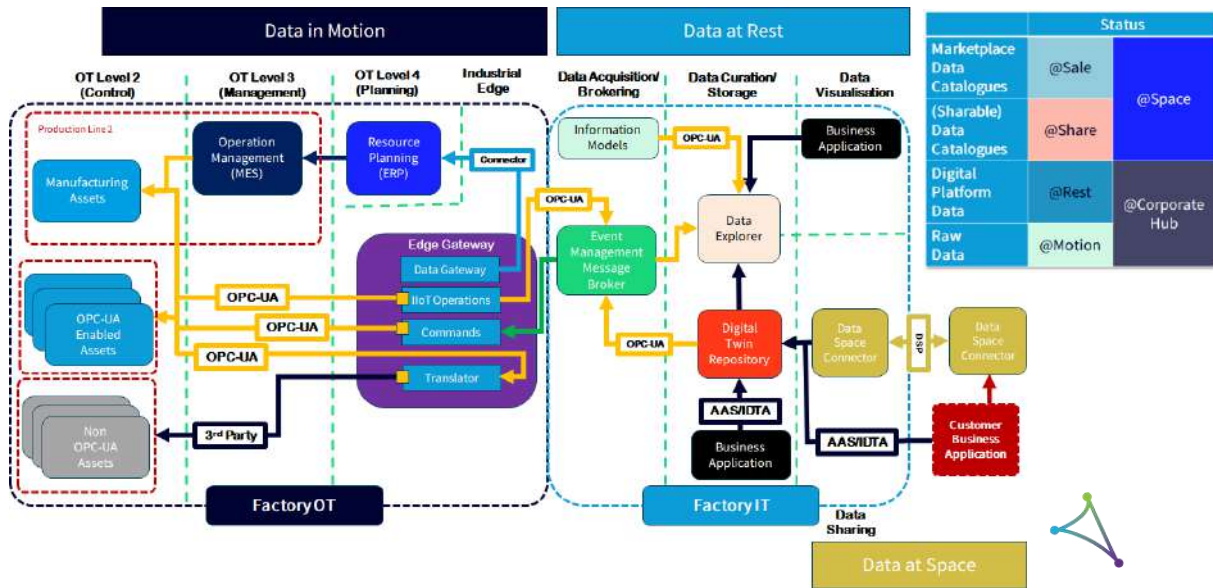
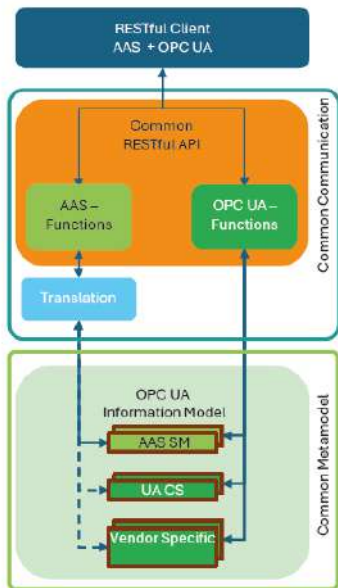
... Asset oriented

... Production oriented

1

Reusable data products

International standards “Better Together”



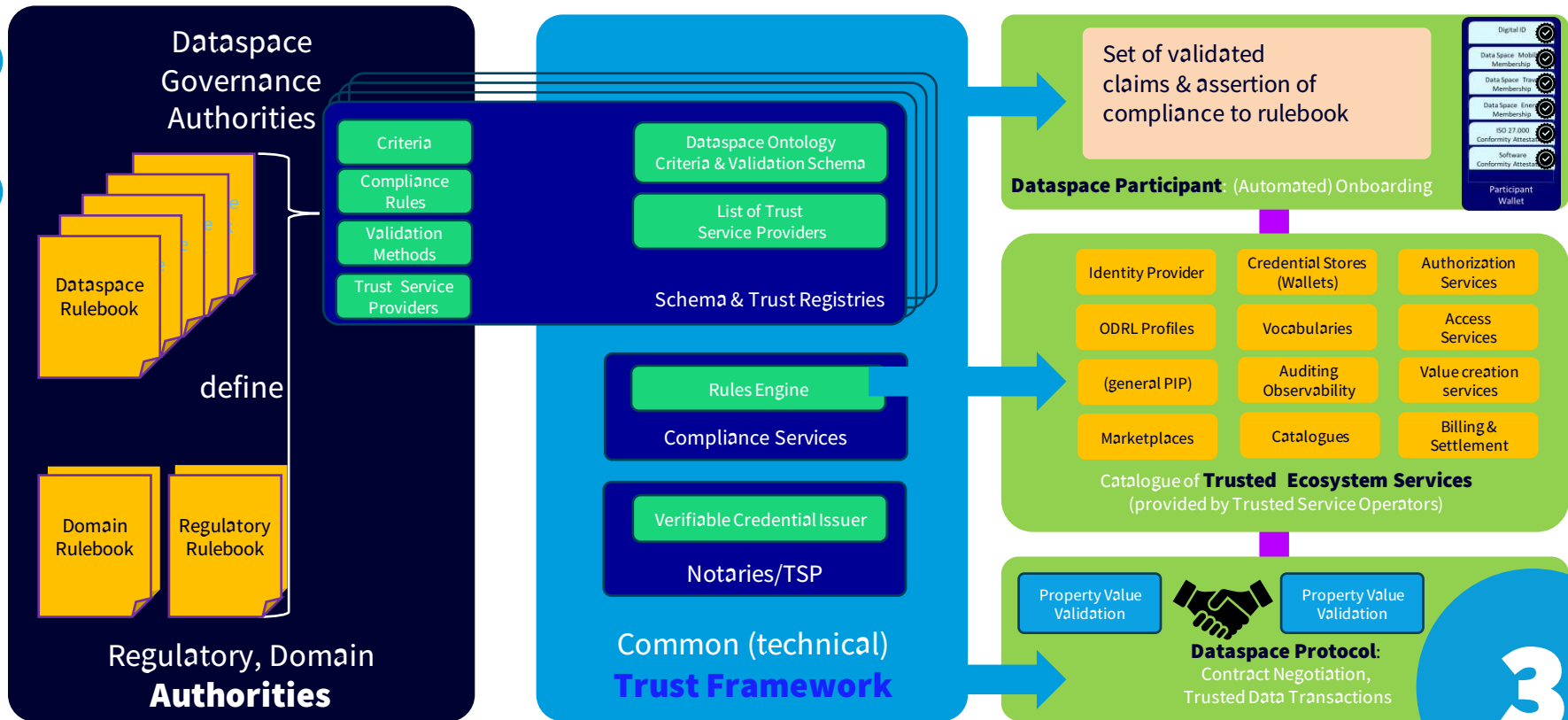
Common Information Models & Communication

SM4RT=NAC=360°
Data Integration Blueprint & Pipeline

SM4RTENANCE

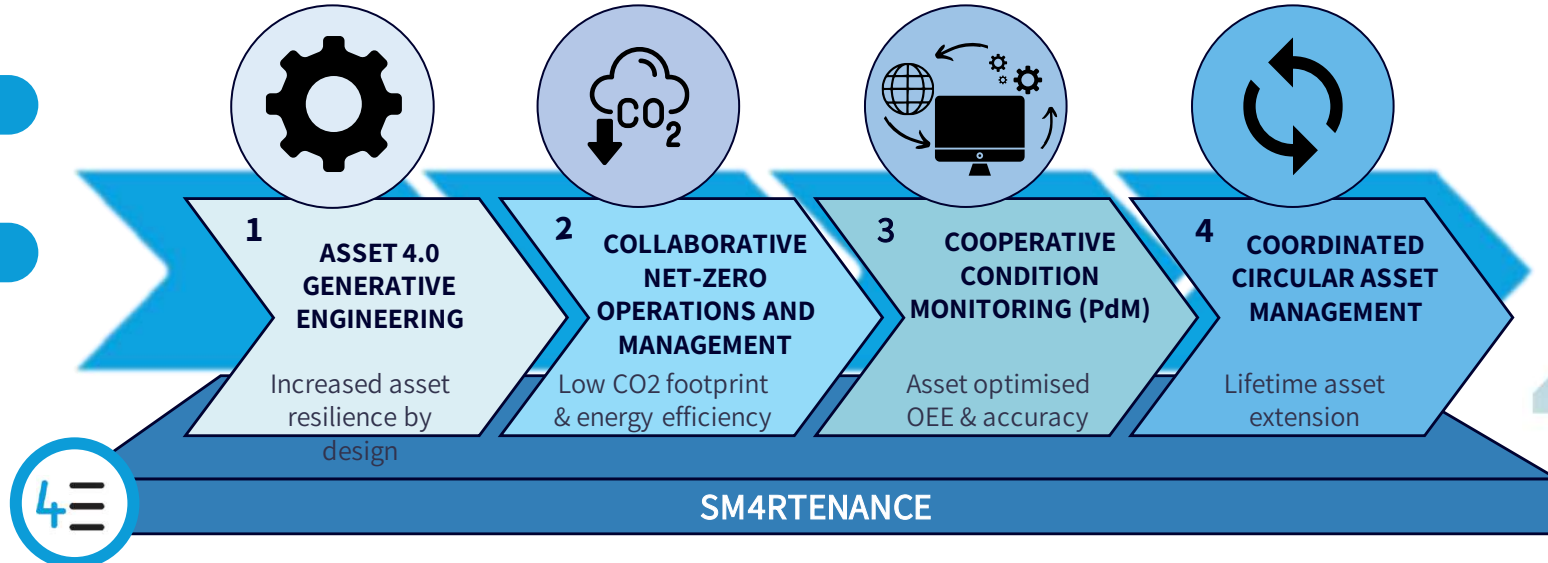
Value added services

Federated trust & trusted ecosystem services

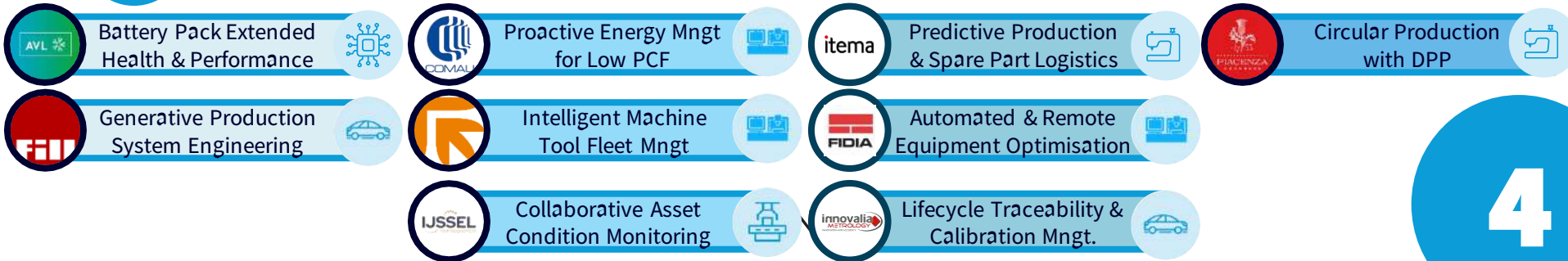


Integrated digital manufacturing solutions

Interoperable data *workflows*



4C Controlled
Coordinated
Collaborative
Cooperative



SM4RTENANCE Portal

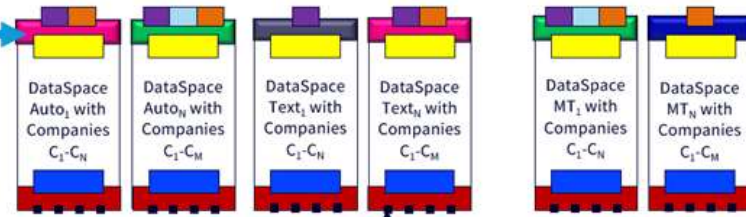
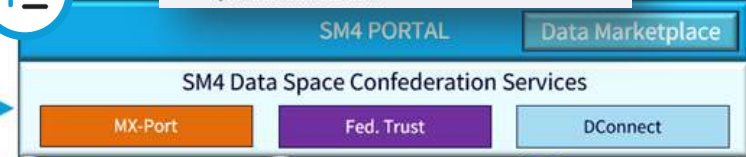
Confederation Model

Trusted Ecosystem Services. Can provide services for multiple Ecosystem Governance Authority and to participants from multiple ecosystems.

Ecosystem Governance Authority. Agree on common policy rules, schemas, trust anchors and compliance rules (individual agreements between ecosystems & or to all ecosystems in the confederation)

Data Space Service Provider . Can provide service to participants across different ecosystems if they adhere to the compliance rule of (all) the respective ecosystem(s)

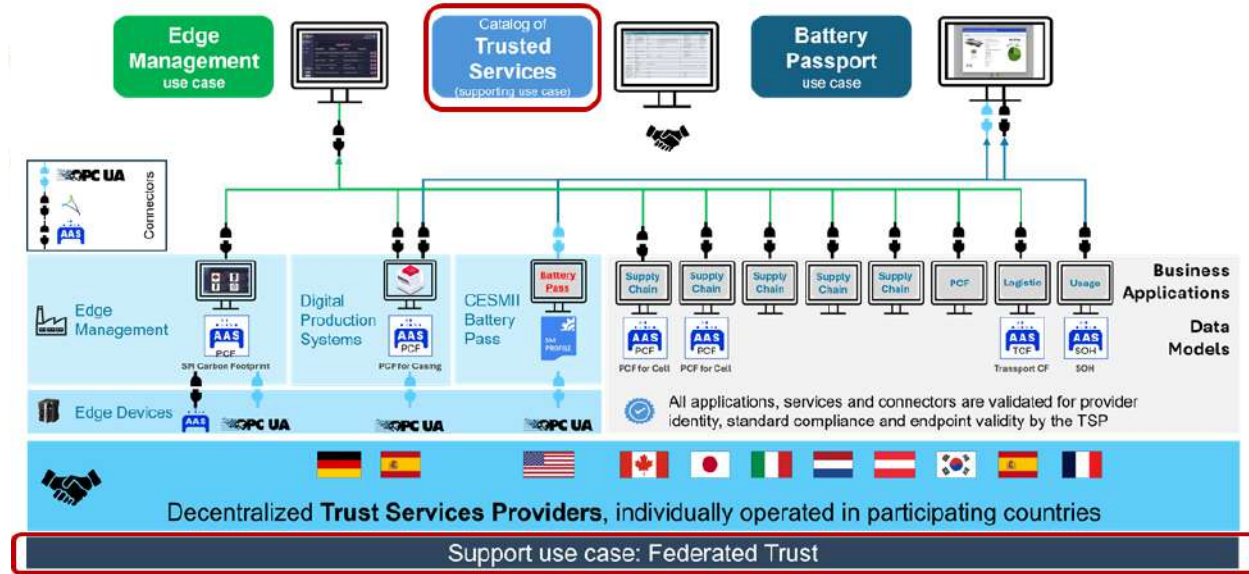
Participants. Offer and/or consume services based on individual negotiation and proof to the ecosystems rules to connect to





SM4RTENANCE

International Data Space Federation at SPS 2025



4
Intern. Workflows
Collect PCF Data
World Wide.

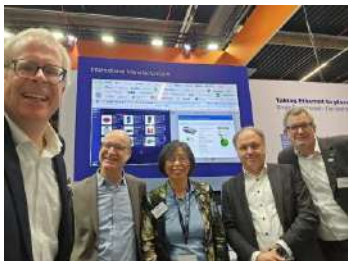
2
Interoperable
Industrial
Data Sharing

3
Federated
Trust &
Trust Services



SM4RTENANCE

International Data Space Federation at SPS 2025



SM4 Battery Pack DPP & PCF Calculation

SM4 Digital Twin & Edge Productionn Data

SM4 Federated Trust

SM4RTENANCE

International Data Space Federation at SPS 2025

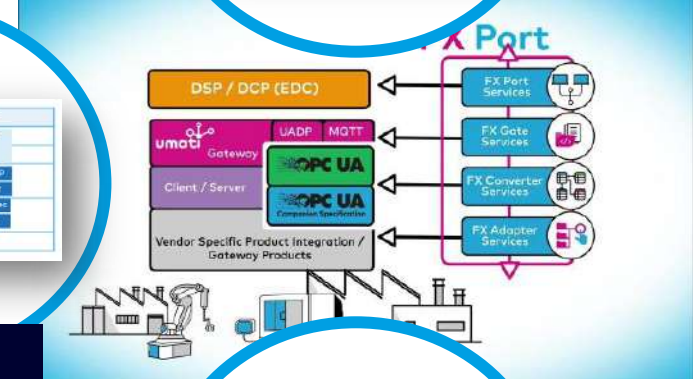


PCF
Business Application



Layer	MX-Port "Orion"
MX Discovery	Data Space Protocol / Decentralized Discovery Protocol
MX Access & Usage Ctrl.	
MX Gate	UADP / OPC UA TCP HTTP(S) / MQTT
MX Converter	OPC UA Compliance Spec OPC UA Meta Model
MX Adapter	application specific

Orion
MX Port



Energy
Consumption

Manufacturing-X Ready Equipment



Gracias