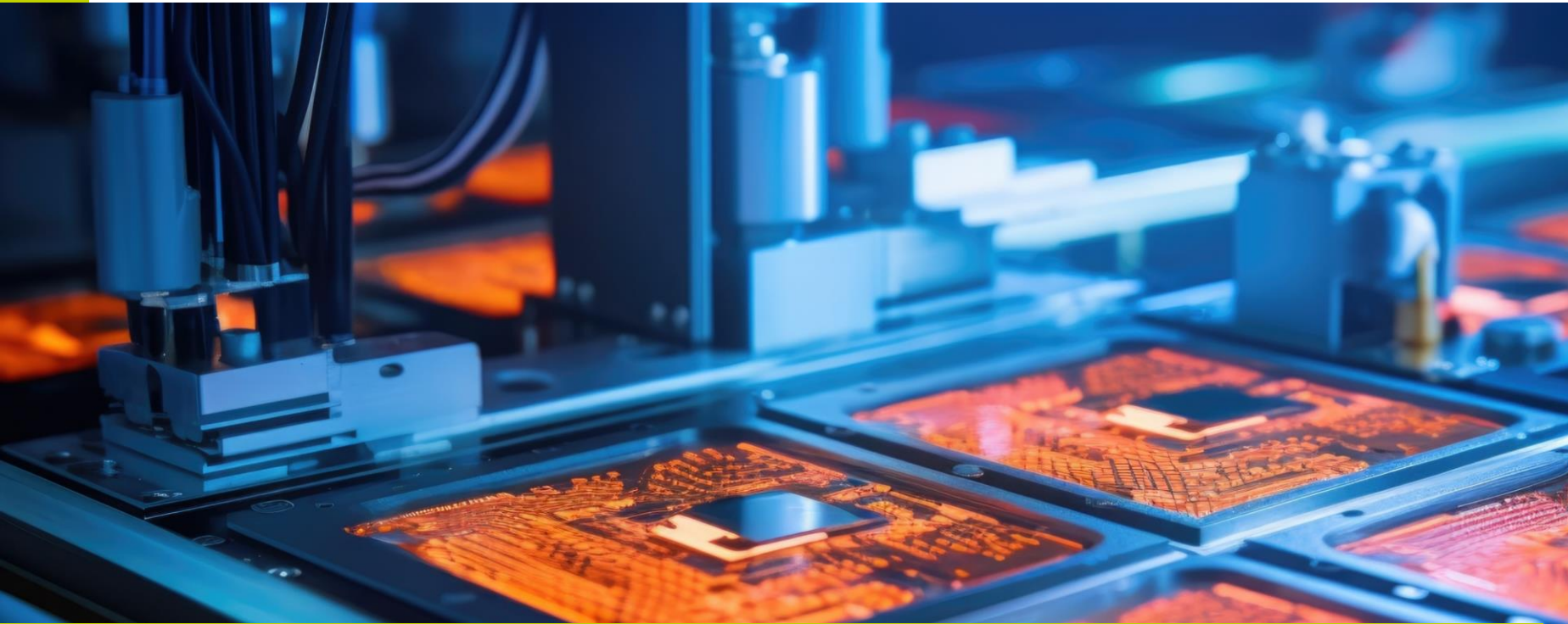




“Semiconductor-X” develops new digital twin technologies to digitally represent the critical planning segment of the semiconductor supply and value chain, adapting the Gaia-X/Catena-X architecture.



**Funded by
the European Union**
NextGenerationEU

Supported by:



on the basis of a decision
by the German Bundestag

SEMICONDUCTOR-X

Digitalization in Semiconductor Manufacturing Supply Chain –
Need of Global Collaboration

Harald Gossner & Stefan Benedikt, Intel

Semiconductor-X Initiative

Objectives of the overall Project and Priorities

„Building a sovereign data ecosystem for the international semiconductor industry to create a resilient value chain“

Globally interoperable data exchange via federated dataspace connected to supplier and customer domains (chemical industry, automotive industry,..)

Open source software solutions for digital twins (process & transaction) for data exchange of semiconductor supply chain use cases

Sovereign and secure exchange of information between trusted partners in the industry

Implementation of the use cases as demonstrators and PoCs

Semiconductor-X Project Team

Partners across Industrial Supply Chain and RnD Organizations

Consortia Lead

Large Industry

Small Medium Enterprises

RnD

Industry Associations

Funded Partners

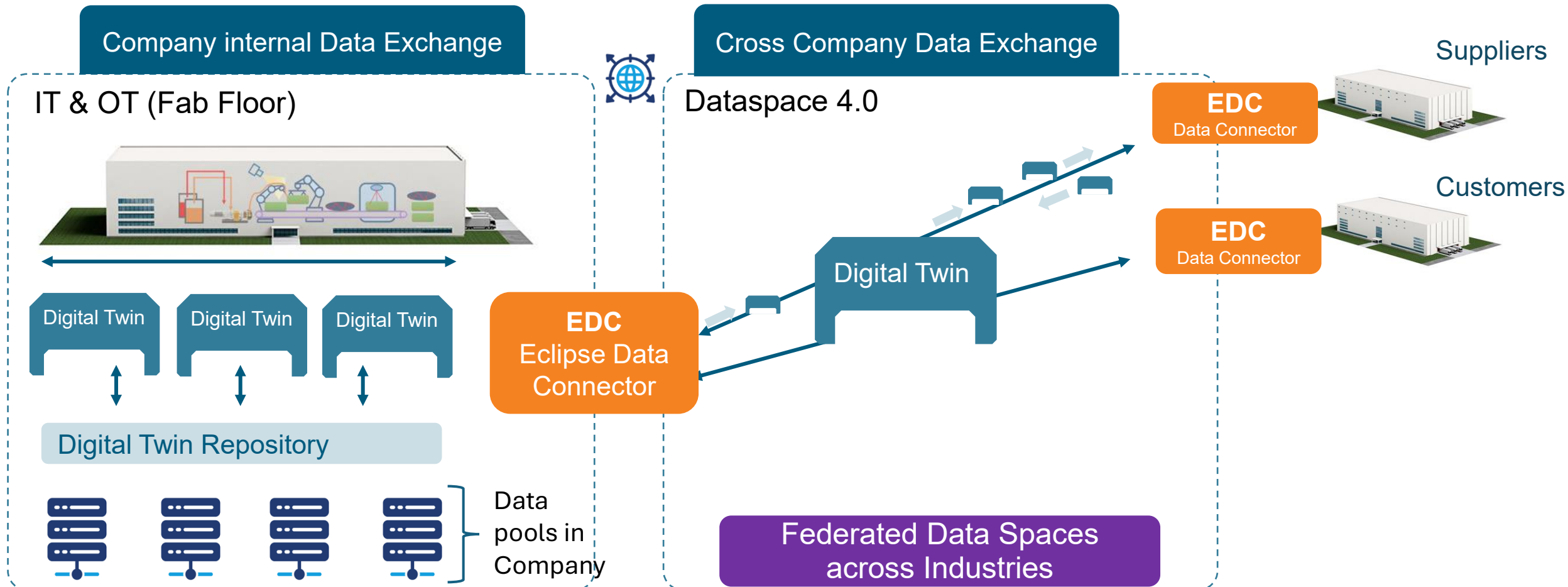
 	     	    	    	
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Associated Partners

	  In cooperation with   	   		   
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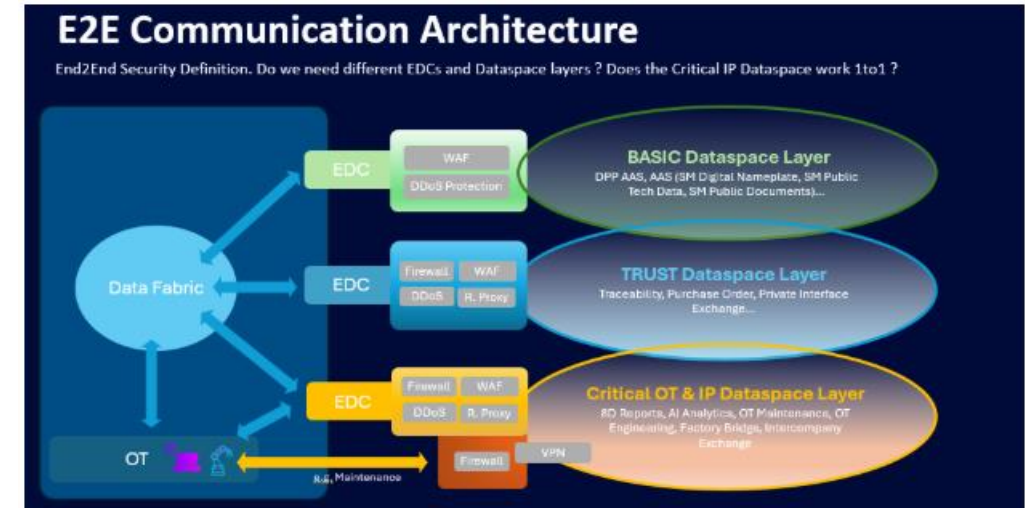
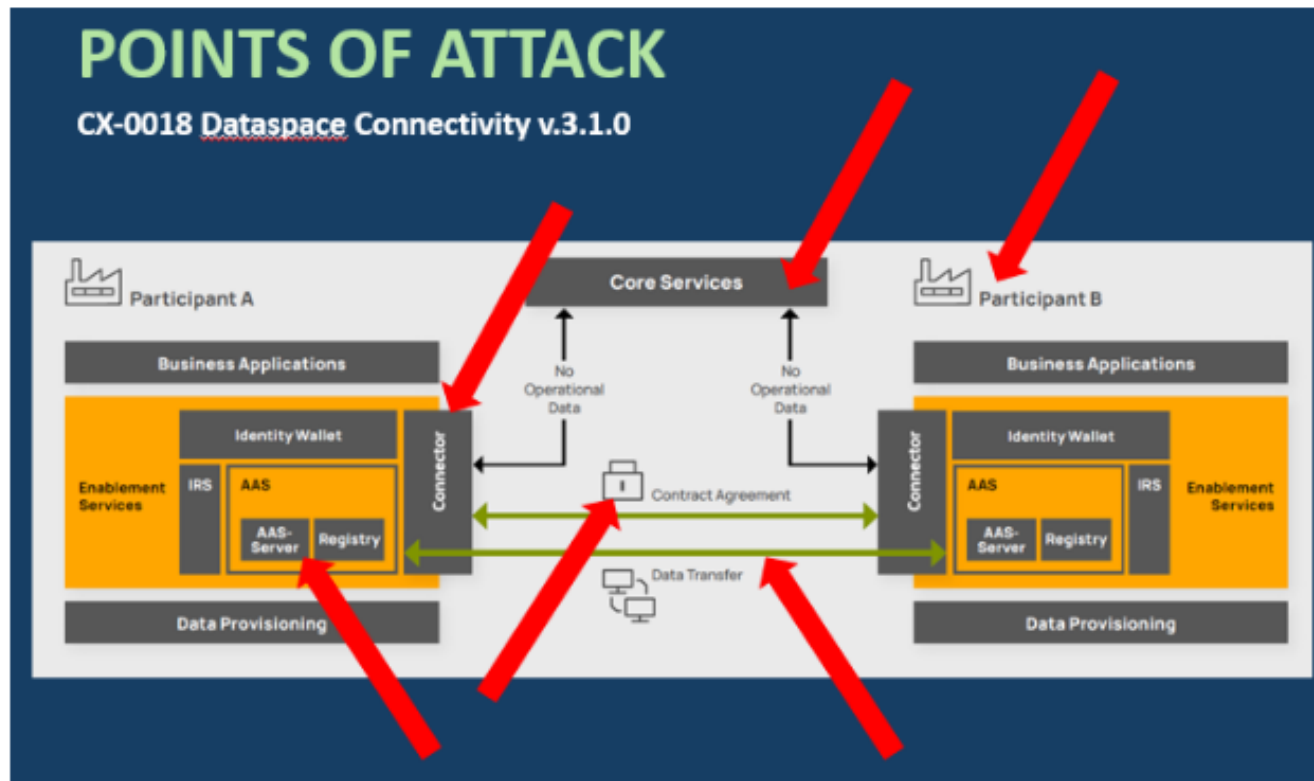
Digital Twin and Interoperability

Open-source software for DT and EDC



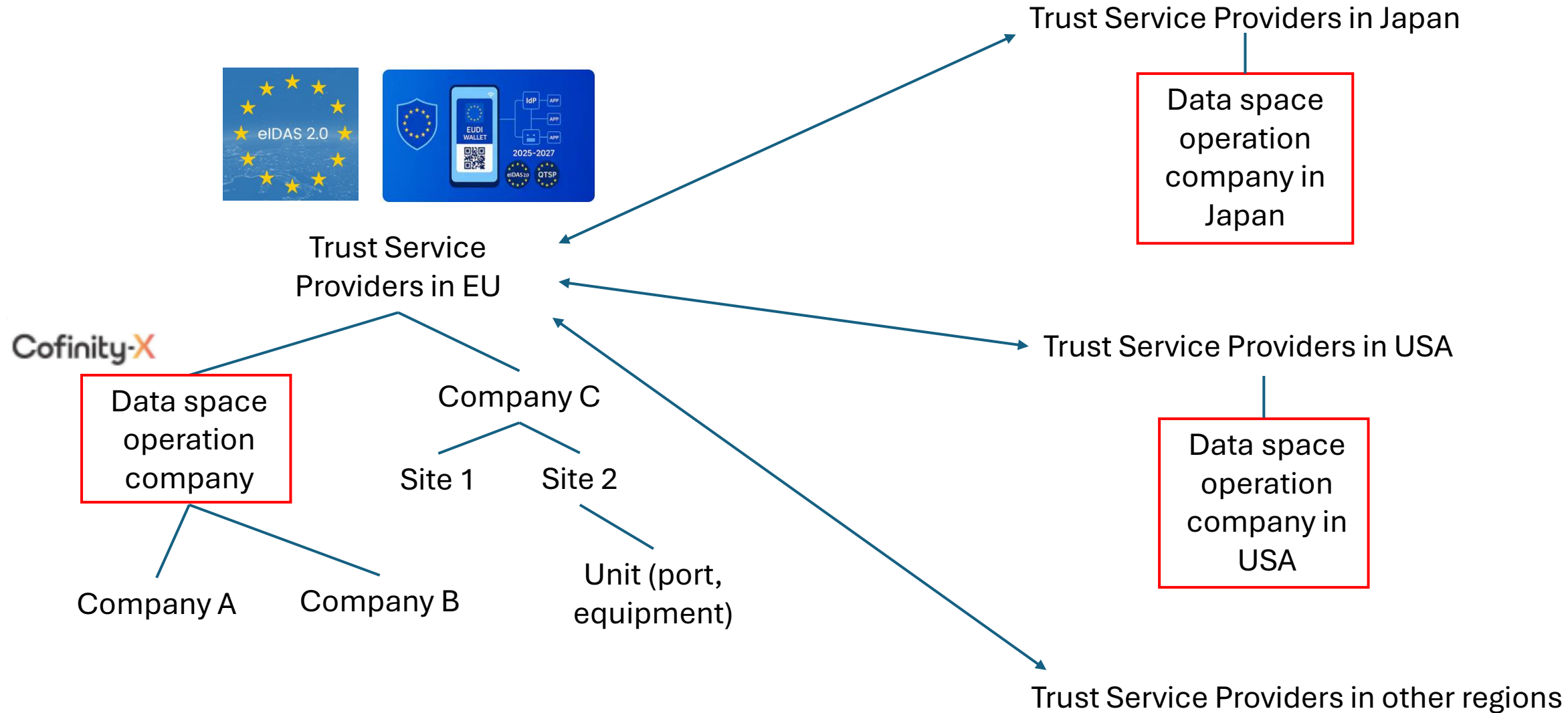
E2E Security @ Semiconductor-X

Key initiative for E2E security of all MX projects (started Oct 2025)



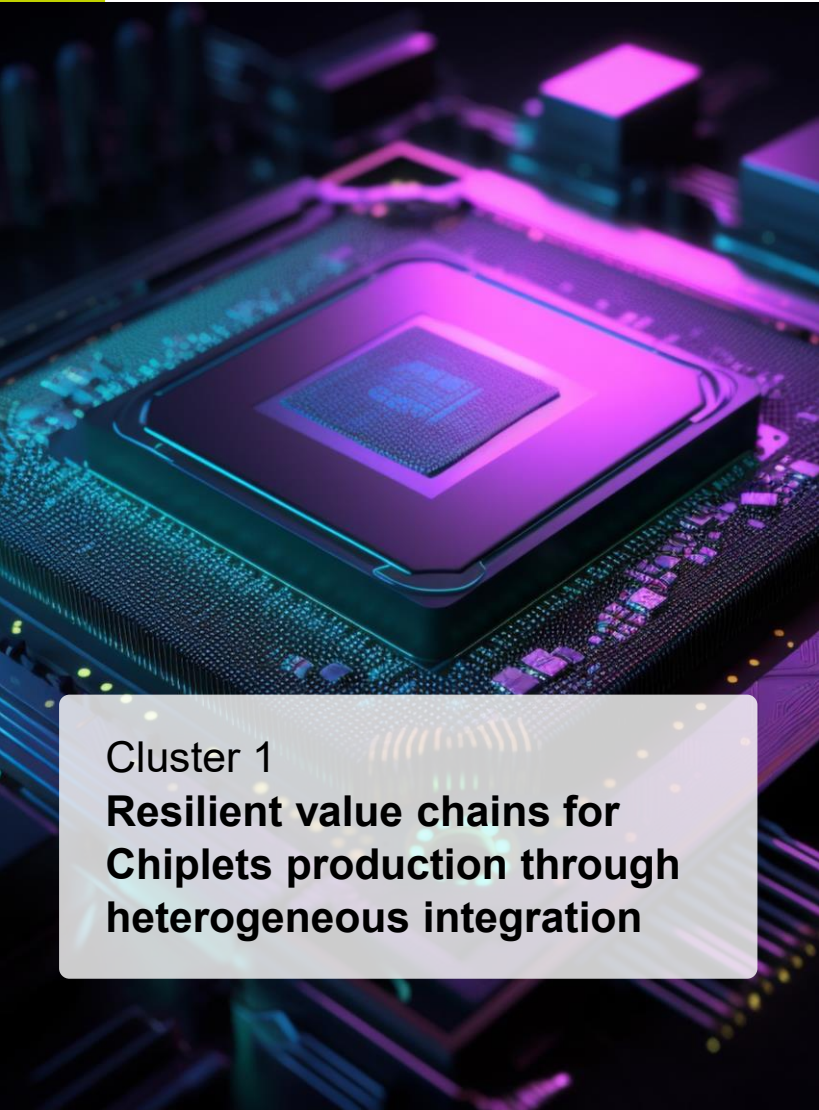
Anchor of Trust and Identity Management

Network of Trust Services



Our Focus and Use Cases

Demonstrate Usage in Industry-relevant Applications



Cluster 1
**Resilient value chains for
Chipselets production through
heterogeneous integration**

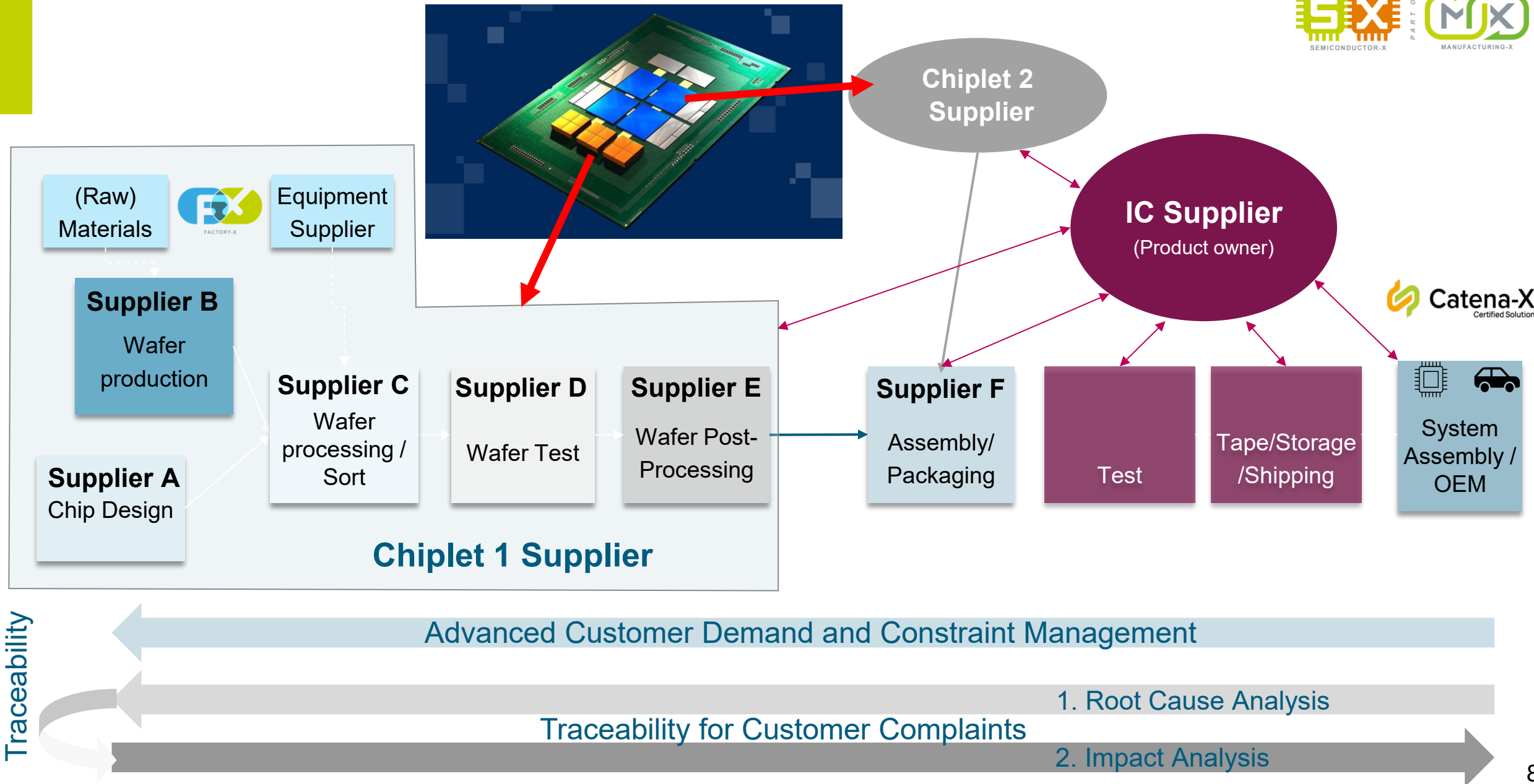


Cluster 2
**Digital Integration for
Optimized Factory Operations**



Cluster 3
**Sustainable Semiconductor
Production for a reduced
environmental footprint**

Use Case: Supply Chain of Chiplet Systems

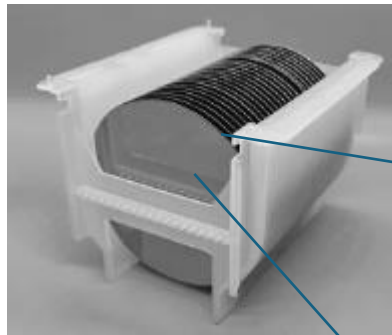


Use Case: Traceability in Semiconductor Supply Chain PLATTFORM **INDUSTRIE4.0**

Addressing changes of types and exploding number of entities –
a challenge for hierarchical digital twins

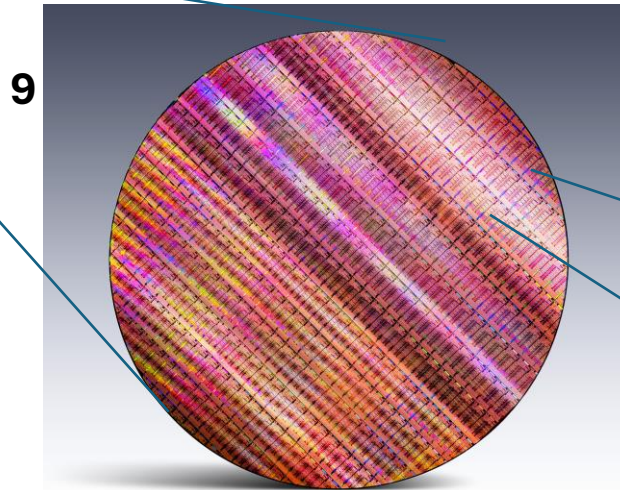


10.000s of Lots



Entity: lot

Millions of wafer



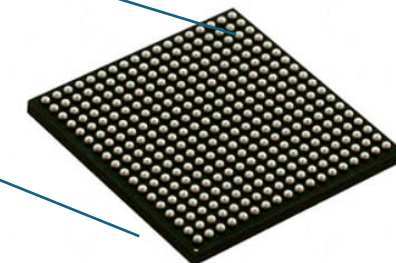
Entity: wafer

Billions of dies



Entity: die

Billions of packaged ICs



Entity: packaged IC

Use Case: Regulatory Data Reporting

Efficient data collection across global supply chain partners needs flexibility for adjustments



Digital Product Pass

Criteria for Success:

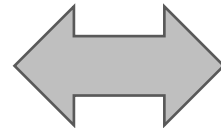
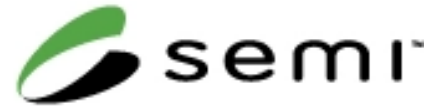
- Automated
- Cost efficient
- Standardized/Certified
- Globally accepted
- Secure

Export Controls Tariffs

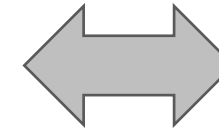
Criteria for Success:

- Flexible
- Automated
- Cost efficient
- Secure

Semiconductor-X – Industry Collaboration & Standardization



Japan
Korea
Taiwan



US Chips Act funded program (USD 285 M)
on Digital Twin for semiconductor supply chain
(started Jan2025)



Enabling digital collaboration through the entire value chain



website



LinkedIn

with trust in federated
Dataspaces

Thank you

Manufacturing-X Drives Digitalization Across the Manufacturing Industries

Semiconductor-X is a specialized Initiative for the Semiconductor Industry

