Data Spaces Symposium

13:30

How data spaces fuel smart industrial solutions

Domain session [smart industry]





PSNC PSNC PSNC





Moderated by



Thomas Hahn Siemens



Giulia Giussani IDSA



Polish perspective - manufacturing ecosystem based on data

Keynote



Ewa Mikos-Romanowicz Siemens



Date – fuel for economy' growth and value

- Value of data based economy in Poland
 19 Bil. Euro, 2022*
- Estimated value of data based economy in Poland – 24 Bil. Euro, 2025*
- Data re-shape the economy and administration
- Data become new value



DIGI Index 2024

- Machinery 2,2 (vs. 1,8)
- Automotive 2,6 (vs. 2)
- Chemistry & Pharmacy 2,1 (vs 1,8)
- Food & Beverages 2,3 (vs. 1,6)



DIGI Index 2024 – data collection and use

• Companies are making more and more use of the collected data.





DIGI Index 2024 – motivation of data collection & use



Joining the data space initiative.....

Challenges

- Definition of data sharing' rules
- Definition of privacy protection rules
- Data sovereignty
- Data sharing model

Benefits

- More sustainable and resilient delivery chains
- Development of new data based business models
- Identification of production bottle necks – increased quality & efficiency

.....increase significantly the competitiveness of the Polish industry!

Round of pitches





Pitch 1 | SM4RTENANCE



Oscar Lazaro Innovalia SM4RTENANCE



SM4RTENANCE

- The project in a nutshell
 - Start date: October 1, 2023
 - Duration: 36 months
 - Coordinator

Innovalia

 Number of partners: 42 organisations, 3 associated organisations from 11 EU countries

Objective:

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.



SM4RTENANCE

 Use Case: Building a Certified Digital Twin with Data Spaces for Dimensional Quality Control Equipment

Scenario:

Build a dimensional quality control equipment digital twin to implement a CMM cooperative condition monitoring & calibration service workflow for optimised accuracy and OEE.





SM4RTENANCE

Increased Precision & Efficiency in Quality Control and Equipment Calibration

Achieve more precise, real-time calibrations and adjustments, leading to enhanced accuracy in manufacturing processes.

Streamlined Data Management & Digital Twin Fidelity

Optimize the flow and use of data across systems, enabling faster and more informed decision-making.

Seamless and Sovereign Data Exchange

Facilitate secure, real-time data sharing between stakeholders, ensuring confidentiality and integrity.

Boosted Market Competitiveness

Stay ahead of market demands with faster response times and optimized processes, resulting in significant cost savings

Enhanced Customer Trust & Satisfaction

Deliver superior QC solutions, fostering increased trust and loyalty among customers

Regulatory Compliance & Data Security

Ensure sensitive data is protected and maintain full compliance with industry regulations, while providing standardized interoperability with clients and partners.

Easy

Cost-Effective

Accurate



Pitch 2 | UNDERPIN



Elena Politi Harokopio University of Athens



UNDERPIN

- The project in a nutshell
 - Start date: December 1, 2023
 - Duration: 24 months
 - Coordinator
 - Motor Oil Hellas
 - Number of partners: 11 organisations from 5 EU countries
 - Objective:

To create a state-of-the-art Dataspace env that fosters dynamic asset management and predictive/prescriptive maintenance activities.

Use Case: Predictive maintenance in the Refinery

Scenario:

Develop a predictive maintenance mechanism regarding equipment failure as well as detect abnormal behaviour trends in the refinery's selected compressors

- Data sharing benefits: Decreasing downtime by optimising production processes and lowering maintenance costs
- Valuable insights through transparency of the selected production lifecycle.

TANGO

Pitch 3 | TANGO



Dries Verhees



TANGO

The project in a nutshell

- Start date: 01 September 2022
- Duration: 3 years (36 months)
- Number of partners: 34 partners in 13 countries
- Objective:

TANGO = Digital <u>T</u>echnologies <u>A</u>cti<u>Ng</u> as a <u>G</u>atekeeper to information and data fl<u>O</u>ws

- 1. Trustworthy and privacy-preserving data sharing
- 2. Secure and trusted identity management
- 3. Exploit the power of AI for sustainable data operations



TANGO

A selected use case

Scenario:

- Managing the entire data flow, from design to end product
 - Sharing across organizations and end-users
 - Traceability through the entire process flow
- Privacy-preserving and efficient training of AI models
- Partners: Flanders Make & TANGO partners
- Status: First tests performed - Deployment in 2025-Q2
- Data sharing benefits:
 - Data availability to customers and suppliers, allowing for process optimization.
 - Improved accuracy of AI models and efficient use of computational power







Pitch 4 | Circular TwAIn







Angelo Marguglio Engineering



Circular TwAIn https://www.circular-twain-project.eu/ The project in a nutshell

- Start date: 1 July 2022
- Duration: 36 months
- Number of partners: 21 partners, 11 countries
- Objective:

Integrating Digital Twins and Artificial Intelligence for **Circular Manufacturing Data Spaces and Digital Product** Passport, unlocking business opportunities across Circular Value Networks (e.g., new stakeholders in reconditioning, reusing, remanufacturing, recycling)

Processes

covering the

cycle





Circular TwAIn

De- and Re-manufacturing of Li-Ion battery packs in e-mobility



- Scenario: Collaborative robotics and automated disassembly of LIB modules
- Characterization of the LIBs state-of-health
- Optimised mechanical recycling of degraded LIBs
- Market oriented holistic decision-support-system for the LIBs de- and re-manufacturing
- Partners: HAIKI COBAT, RAEEMAN, POLIMI, ENG
- Status: Final developments in progress (ending in June 2025)
- Data sharing benefits: AI enabled Product Process Human Digital Twins for Circular Manufacturing networks
- High Quality Data Sources, also coming from Synthetic Data Generators to properly feed AI enabled Product/Process/Human DTs
- Get manufacturing industry ready to the DPP/DBP revolution
- Not duplicating Data Spaces and Data Infrastructures to implement DPPs, but extend and enrich embryonic existing B2B Data Spaces for B2G and B2C challenges



Pitch 5 | Factory-X



Sebastian Schneider DMG MORI





Factory-X

The project in a nutshell

- Start date: 01.01.2024
- Duration: 30 Months
- Number of partners: 47 full + 10 associated partners
- Objective: Dataspace for outfitter industry, lighthouse project for Manufacturing-X



Factory-X

Autonomous Operation-as-a-Service

EASY OPERATION

• Remote Operation with camera

Advantages customer

- ✓ Less downtime machine
- ✓ Less operators & personnel costs

Advantages machine tool builder

- ✓ Faster service
- ✓ Less effort for service

Condition Monitoring led services

Reduce unplanned service operations

EXTENDED

SPINDLE HOURS

Advantages customer

- Less downtime machine
- ✓ Less service operations & costs

Advantages machine tool builder

- ✓ Better planning of service operations
- ✓ Less service operations (remote service)
- ✓ Reduced stock of spare parts

Energy & Load management

- Reduce energy consumption
- Optimize load management & costs

ENERGY

FFFICIENCY

Advantages customer

- ✓ Reduce energy consumption
- ✓ Optimize machining process

Advantages energy supplier

- ✓ Better planning of energy demand
- ✓ Reduced energy generating costs

Panel discussion

"Data spaces as a prerequisite for industrial AI"



Panel discussion

"Data spaces as a prerequisite for industrial AI"



Jacopo Cassina Holonix



Marcin Plociennik PSNC



Arunav Mishra



Erich Barnstedt Microsoft



Andrzej Soldaty Initiative for Polish Industry 4.0



Guest 1



Jacopo Cassina Holonix



Machinery-X

At a glance

Fully industrial initiative

Born from UCIMU industrial association, self funded by industry

High impact Machinery targeting low hanging fruits

Laser focus on practical, high value application, leveraging on existing components and proven business models expanding an already growing market, with intuitive advantages for all involved actors

Data-Driven, AI-Powered Services

Enhance physical and digital services though data abundancy, unlock the full potential of AI for the machinery sector: predictive maintenance, zero defects, training and involvement of personnel and Financial risk management based on data for full machines servitization

Machinery-X management consortium: <u>Join us!</u>

https://www.machinery-x.eu/



Guest 2



Marcin Plociennik PSNC



Data Space in practice for Agriculture 4.0

At a glance

Data sharing accross agrifood value chain :

Ensure food safety by analyzing data from farm to fork. optimize logistics, reduce food waste, and improve traceability

Dataspaces for AI-Driven Innovation :

Enabler for testing ground for new AI-driven solutions, such as autonomous farming equipment, food processing lines. A prime example - agrifoodTEF that validate AI and robotics solutions

AI-Driven Precision Agriculture :

Aggregation of data from IoT devices, satellites, drones, which AI systems can analyze - require high-quality datasets – DATAMITE provides framework for data products preparation



Guest 3



Arunav Mishra Data Space Solutions



Catena-X and Dataspaces with AI Intelligence

At a glance

Catena-X is an open data ecosystem for the automotive industry Enabling seamless, secure, and traceable data exchange with data sovereignty and interoperability to supporting key use cases like CO₂ footprint tracking and digital product passports.

Scaling Ecosystem Adoption: AI-Powered Self-Service Onboarding Utilize self-service tools, such as AI-powered digital assistants, to simplify the understanding of dataspace principles and standards.

Bridging Digital Maturity Gaps: AI-Powered Data Standardization & Validation

Data gathering from internal IT systems, transformation into standards, and validation become an expensive task that can be made easy with AI



Guest 4



Erich Barnstedt Microsoft



Building Resilient Manufacturing Supply Chains

- Supplier needs to verify component / raw materials are within spec
- ESG Reporting: Supplier needs to report hazards of materials provided
- Manufacturer needs to digitally verify data from supplier on-the-fly during production planning
- Manufacturer needs to calculate carbon footprint of product manufactured (PCF)
- From 2027: Manufacturer needs to produce digital description of product to European Commission



How to provide scalable product data, cross-platform powered by AAS, EDC & OPC UA

Interface: OpenAPI-compatible HTTP REST

Data Format: OPC UA Nodeset file

Data Model: OPC UA Modelling Language

Semantics: I4AAS Companion Spec & Asset Admin Shell Submodel Templates

DATA SPACES SUPPORT CENTRE



Funded by



Data Spaces Symposium 2025

Supporting Consortia



the European Union Programme under grant agreement n° 101083412

OPC Foundation Cloud Initiative Reference Architecture (Dataspace-relevant)





65/1120/NP

NEW WORK ITEM PROPOSAL (NP)

PROPOSER:	DATE OF PROPOSAL:
Secretariat	2025-02-21
DATE OF CIRCULATION: 2025-02-28	CLOSING DATE FOR VOTING: 2025-05-23

IEC TC 65 : INDUSTRIAL-PROCESS MEASUREMENT, CONTROL AND AUTOMATION		
Secretariat: France	Secretary: Mr Didier GIARRATANO	
NEED FOR IEC COORDINATION: SC 3D,SC 41	HORIZONTAL FUNCTION(S):	
ASPECTS CONCERNED: Digital content,Information security and data privacy		

TITLE OF PROPOSAL:

Industrial Automation Product Data

STANDARD	TECHNICAL SPECIFICATION	PUBLICLY AVAILABLE SPECIFICATION
PROPOSED PROJECT NUMBER:		

SCOPE

(AS DEFINED IN ISO/IEC DIRECTIVES, PART 2, 14):

The document contains Industrial Automation Product Data as information models and interfaces with defined semantics for digital use for industrial manufactured products, small and big assemblies and manufacturing systems.

It supports the entire lifecycle and supply chain. Specifically, the data covers lifecycle stages from planning, designing, producing, using, maintaining, repairing, and disposing.

Industrial Automation Product Data with standardized digital information supports industrial digital twins and circular economy, as well as carbon footprint aggregation with the relevant environmental impact factors.

The following standards are leveraged as a baseline: IEC 63283-2 Smart manufacturing - Part 2: Use cases and IEC 63278-4 Asset Administration Shell for industrial applications - Part 4: Applications of Asset Administration Shell. In addition, the IEC 62264 Enterprise-control system integration series is used to define IEC CDD properties with their semantics.

The Industrial Automation Product Data standard defines the semantic of properties in sufficient detail for the general usage e.g. for digital product passports and production systems. The standard specifies how the data are created, collected, used and maintained along the supply chain.

New Working Group in IEC TC65

TARGET DATE(S)	FOR FIRST CD:	2025-12-3	1 FOR PUBLICATION:	2027-12-31
ESTIMATED NUMBER OF MEETINGS: 40	FREQUENCY OF 20 per year	MEETINGS:	DATE OF FIRST MEETING: 2025-06-18	PLACE OF FIRST MEETING: Web

RELEVANT DOCUMENTS TO BE CONSIDERED:

IEC 61360 Common data dictionary

IEC 63278-1 Asset Administration Shell for industrial applications - Part 1: Asset Administration Shell structure

IEC 62541-5 OPC Unified Architecture - Part 5: Information Model

IEC 62541-6 OPC Unified Architecture - Part 6: Mapping

IEC 62541-14 OPC Unified Architecture - Part 14: PubSub

RELATION TO AND IMPACT ON EXISTING WORK:

Standards for the DPP developed in CEN/CLC/JTC 24.

Guest 5



Andrzej Soldaty Initiative for Polish Industry 4.0



From academia to industry

Key takeaways

- Synergy between Academia and Technology Leaders directs the transformation of the manufacturing sector in Poland
- Mission and activities of the Industry 4.0 Centre at the Silesian University of Technology
- The role of Academia in initiatives for a data-driven manufacturing ecosystems in Poland
- Building awareness, shaping competences, substantive support for stakeholders of ecosystems



Panel discussion

"Data spaces as a prerequisite for industrial AI"



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Andrzej Soldaty Initiative for Polish Industry 4.0



Closing



Thomas Hahn Siemens



Giulia Giussani IDSA



Data Spaces Symposium

Break | Grab a coffee & network!

At 15:30 you can choose between these sessions:

Track 1:

Domain session on mobility & tourism data spaces

Realizing multimodal mobility and sustainable tourism with data spaces as enablers

i.	TTACK Z:
I I	Data space tech

session

The importance and limits of building international data spaces by design: standardization and interoperability Track 3:

Data space tech session

Designing and delivering the European single market for data

PSNC

- Breakout track:
- Domain session on
- agricultural data
- spaces
- Towards development
- of the agriculture data

spaces

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Cofinity-X

