BDVA Smart Manufacturing Industry group

To exchange views and learn from each other experiences, on what activities are running in EU and within the different countries

To identify present and future challenges to be addressed and to provide input for policy-makers at EU and member states level.

BIG DATA CHALLENGES IN SMART MANUFACTURING INDUSTRY

A Whitepaper on Digital Europe Big Data Challenges for Smart Manufacturing Industry

Version 2020

BDV BIG DATA VALUE ASSOCIATION

BDV BIG DATA VALUE ASSOCIATION

BIG DATA CHALLENGES IN SMART MANUFACTURING

A Discussion Paper on Big Data challenges for BDVA and EFFRA Research & Innovation roadmaps alignment

Version 1 2018

120+

Subscribed Members

www.bdva.eu

Manufacturing Data Spaces: two scenarios

Agile supply chain management and execution by continuously **monitoring and exchanging status data across the value chain**

Dynamic asset management and predictive/prescriptive maintenance by **continuously monitoring and exchanging industrial data**

Supplier — Supplier — Manufacturer — Customer

Engineering contractors

Supply chain contractors
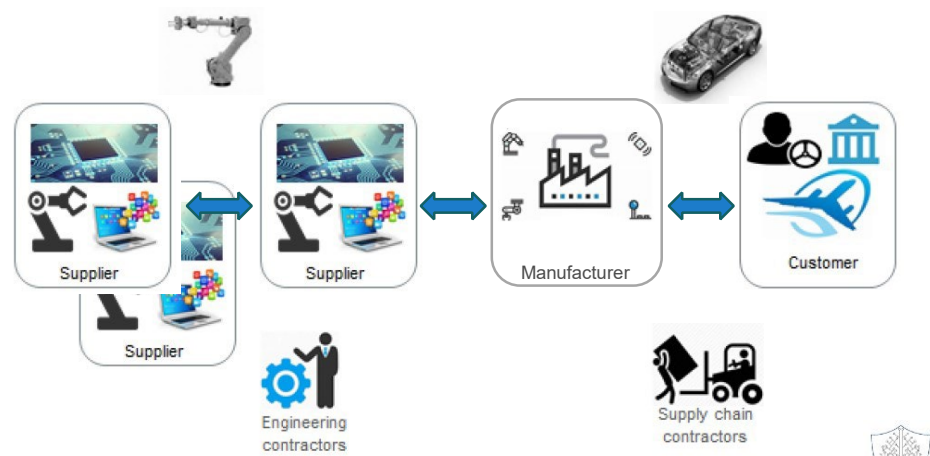
Example inspired by SECOIIA

SeCollA

Data Usage Services
Machine supplier

MES
ERP

Assembly Line

1 0 1
0 1 0 *provides optimisation*

Integrator

Boost 4.0 Example

BDVA Data Sharing Space: the value Wheel
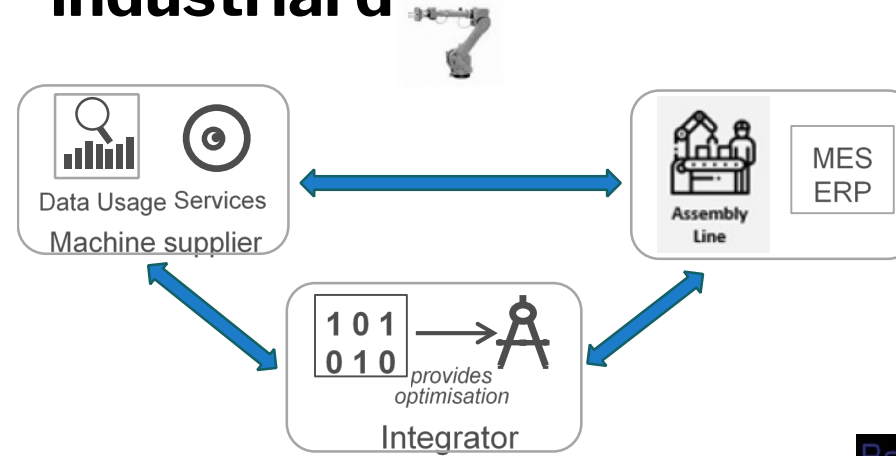
TOWARDS A EUROPEAN-GOVERNED DATA SHARING SPACE
Enabling data exchange and unlocking AI potential

BDVA Position Paper v2
November 2020

BDV BIG DATA VALUE ASSOCIATION
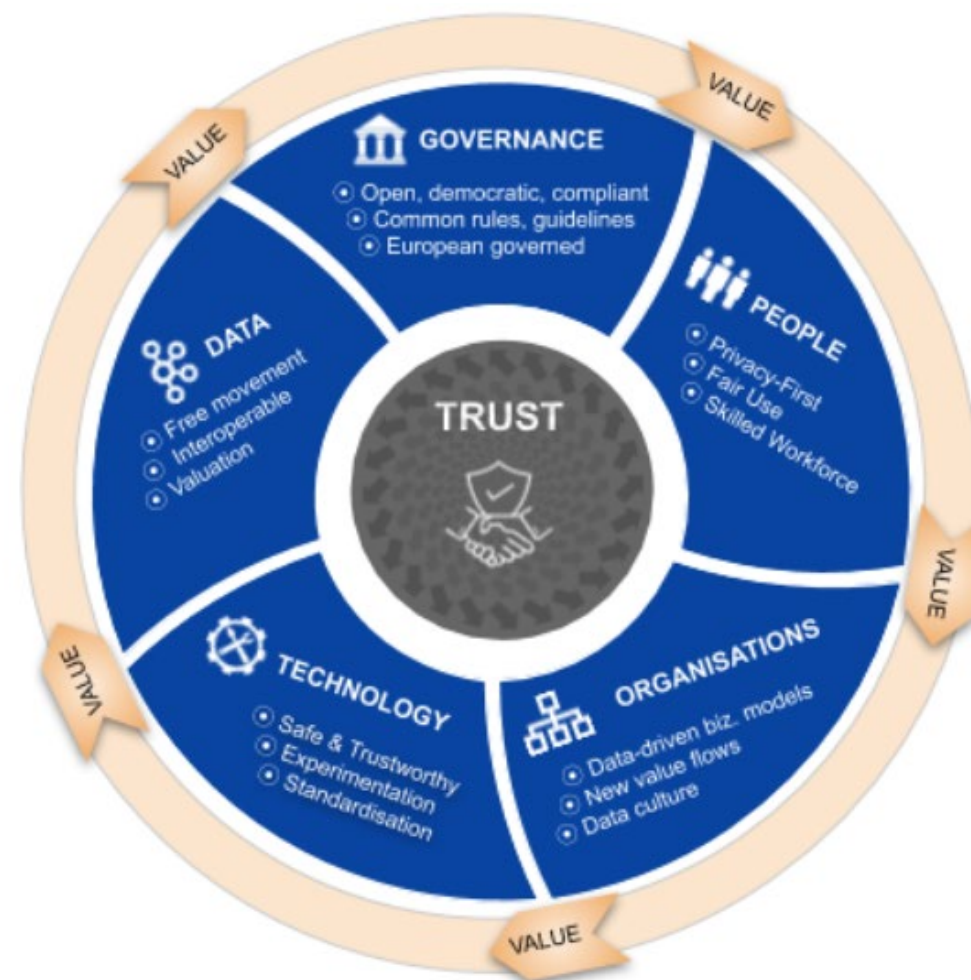
Figure 1 The Data Sharing Value 'Wheel' - core pillars and principles of the envisioned European-governed Data Sharing Space that generate value for all sectors of society.

Embryonic Data Spaces In Smart Manufacturing Industry ecosystem

The IDS viewpoint

and the OPEN DEI Task Force 1

Silvia Castellví – Stakeholder Engagement Senior Consultant
IDSA /OPEN DEI

INTERNATIONAL DATA SPACES ASSOCIATION

OPENDEI

BDV BIG DATA VALUE ASSOCIATION

European Commission

Cap Gemini study: Data powered Enterprises

Figure 5 US, Germany and UK top the charts in data-driven decision making

Decision making in our organization is completely data-driven

	Overall	United States	Germany	United Kingdom	Australia	Sweden	France	China	Singapore	Netherlands	India	Spain	Italy
	50%	77%	69%	69%	61%	48%	46%	44%	41%	40%	34%	30%	26%

Source: Capgemini Research Institute, Data-powered enterprises survey, August 2020, N=1,004 organizations.

Cap Gemini study: Data powered Enterprises

Figure 4 — Banking, insurance, and telecom sectors lead in data-driven decision making
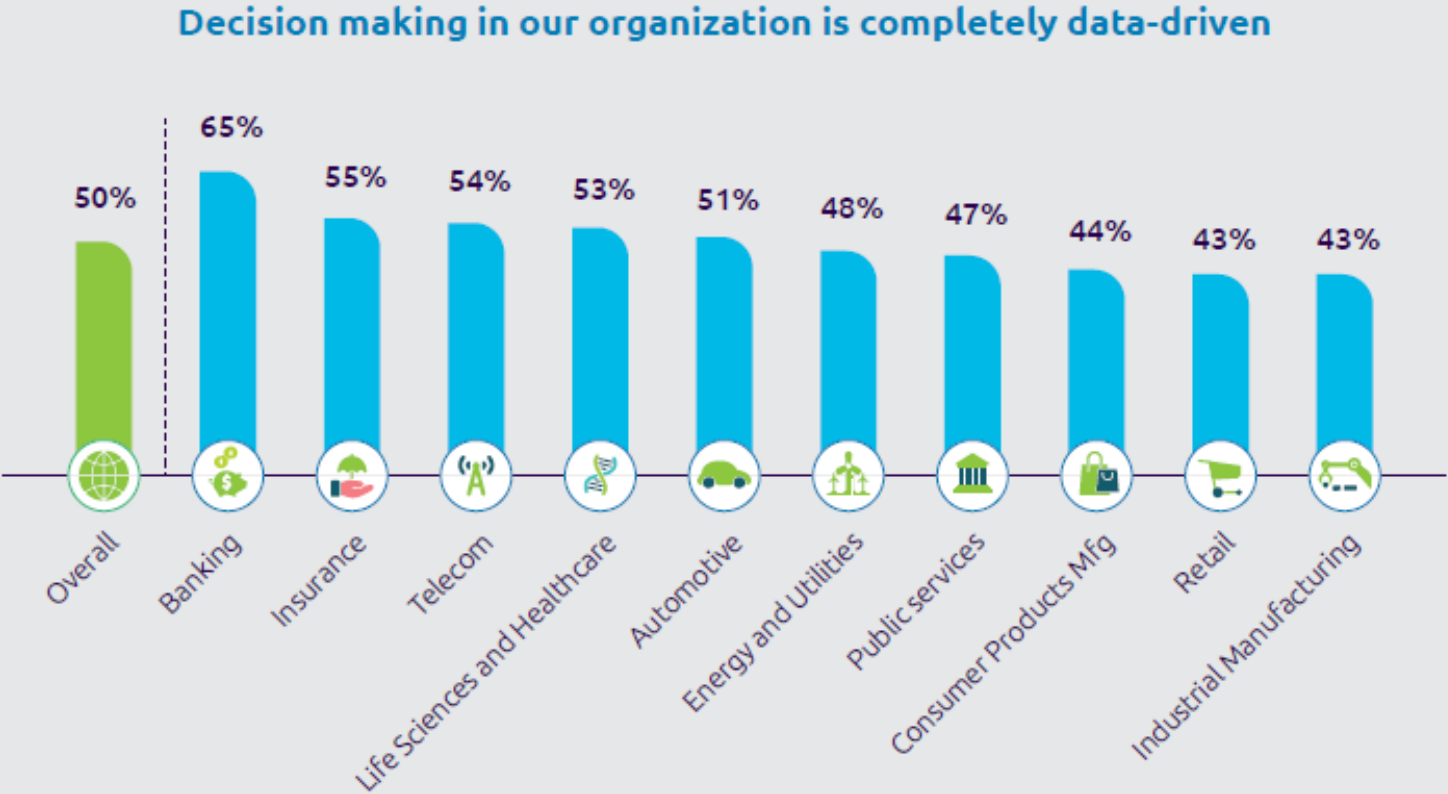
Decision making in our organization is completely data-driven

Overall	Banking	Insurance	Telecom	Life Sciences and Healthcare	Automotive	Energy and Utilities	Public services	Consumer Products Mfg	Retail	Industrial Manufacturing
50%	65%	55%	54%	53%	51%	48%	47%	44%	43%	43%

Source: Capgemini Research Institute, Data-powered enterprises survey, August 2020, N=1,004 organizations.
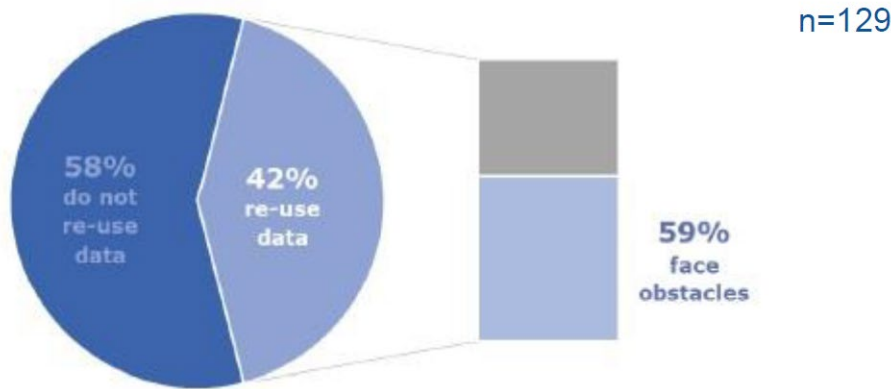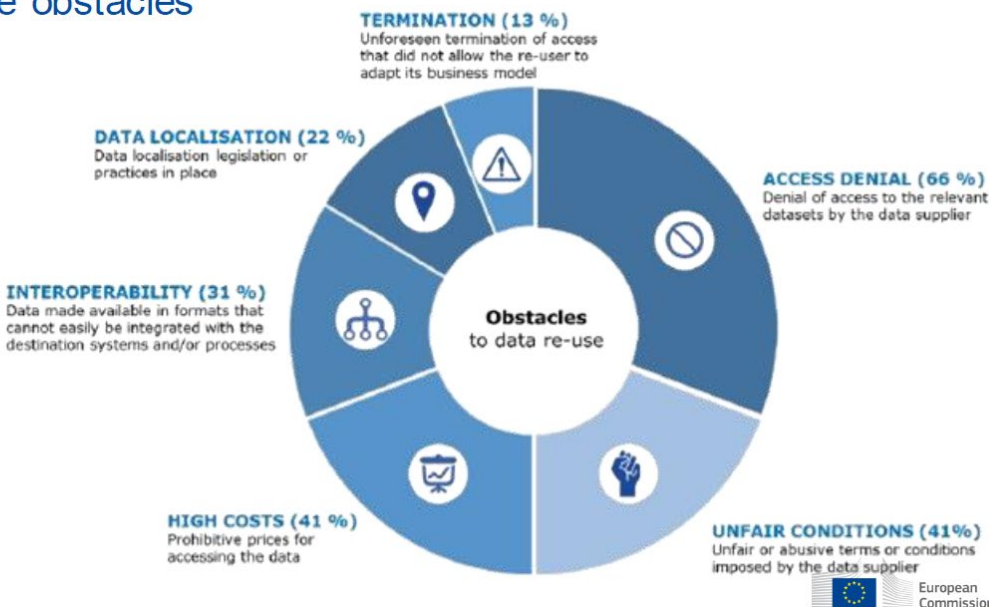
Data Sharing obstacles

Data Reuse

n=129

LIABILITY (15 %)
Uncertainty about liability costs in case of damage caused by the data shared

LICENSING (19 %)
Difficulty to find the suitable means to license data

REPUTATION (19 %)
Fear of reputational costs related to data inaccuracy or misuse

LOCALISATION (27%)
Data localisation restrictions (e.g. legislation, practices) in place

TECHNICAL (73 %)
Interoperability barriers, safety and security requirements, curation and infrastructure costs, etc.

Obstacles to data sharing

SKILLS (38 %)
Lack of skilled data workers inside the company

LEGAL (54 %)
Uncertainty about ownership rights and what can be lawfully done with the data

MONITORING (42 %)
Difficulties to control usage of the data by others

Eur Cor

58% do not re-use data

42% re-use data

59% face obstacles

Figure 56. Companies re-using data and experiencing obstacles

Data Reuse obstacles

TERMINATION (13 %)
Unforeseen termination of access that did not allow the re-user to adapt its business model

DATA LOCALISATION (22 %)
Data localisation legislation or practices in place

ACCESS DENIAL (66 %)
Denial of access to the relevant datasets by the data supplier

INTEROPERABILITY (31 %)
Data made available in formats that cannot easily be integrated with the destination systems and/or processes

Obstacles to data re-use

HIGH COSTS (41 %)
Prohibitive prices for accessing the data

UNFAIR CONDITIONS (41%)
Unfair or abusive terms or conditions imposed by the data supplier

Data Sharing

n=129

61% do not share data

39% share data

52% face obstacles

Figure 54. Companies engaged in B2B data sharing and experiencing obstacles

veris 2018

European Commission

Cap Gemini study: Data driven Transformation
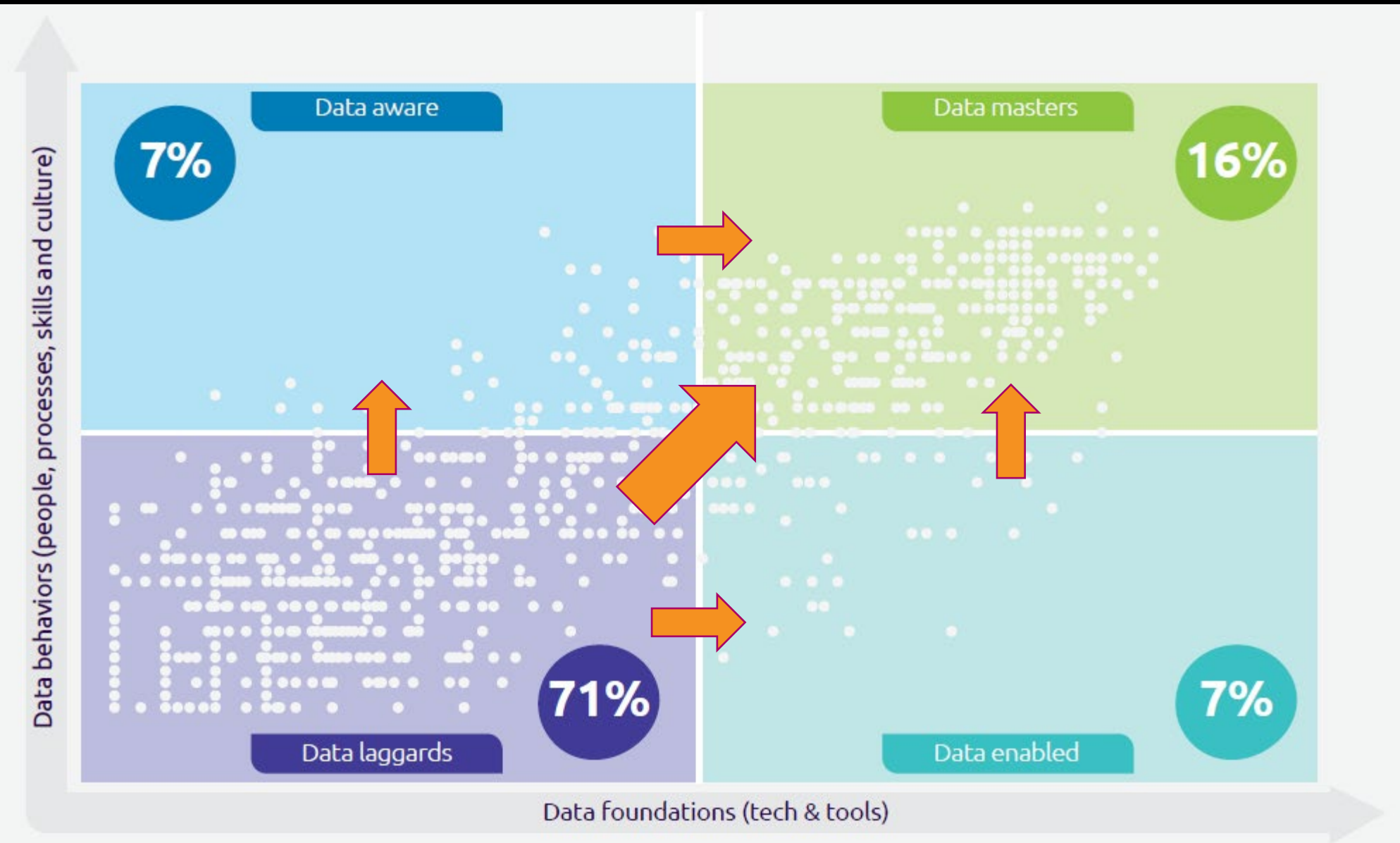
Data Spaces for Manufacturing Pathway

1 — No Data Control

Data are generated, processed and visualised by closed CPPS and I4.0 systems

Data are locked in Smart Products, Value Chains with limited access by external Users and Systems

2 — Data Silos

(Smart Autonomous Factory) Data is locked in SCADA, MES, ERP enterprise applications

(Collaborative Product-Service Factories) Data is locked in CAD, PDM, PLM enterprise applications

(Hyperconnected Factories) Data is locked in ERP SCM CRM enterprise applications

3 — Data Bridges

Ad-hoc Data Bridges are created between Enterprise Applications for specific purposes

Data Integration and Security / Privacy issues are hardly addressed

Heterogeneous Data Sources integrated on a case-by-case basis

4 — Data Interoperability

Data Interoperability by design, standard data models and ontologies adoption

FAIR Data Spaces enable AI-driven applications; Digital Assistants; VR/AR

Industrial Data Platforms for Data Processing and Sharing

Data Governance models for Data Sovereignty / GDPR

5 — Data Valorisation

Data Economy take-up, Data-driven Innovative Business Models

Open Data Ecosystems in Didactic Factories and Experimental Facilities
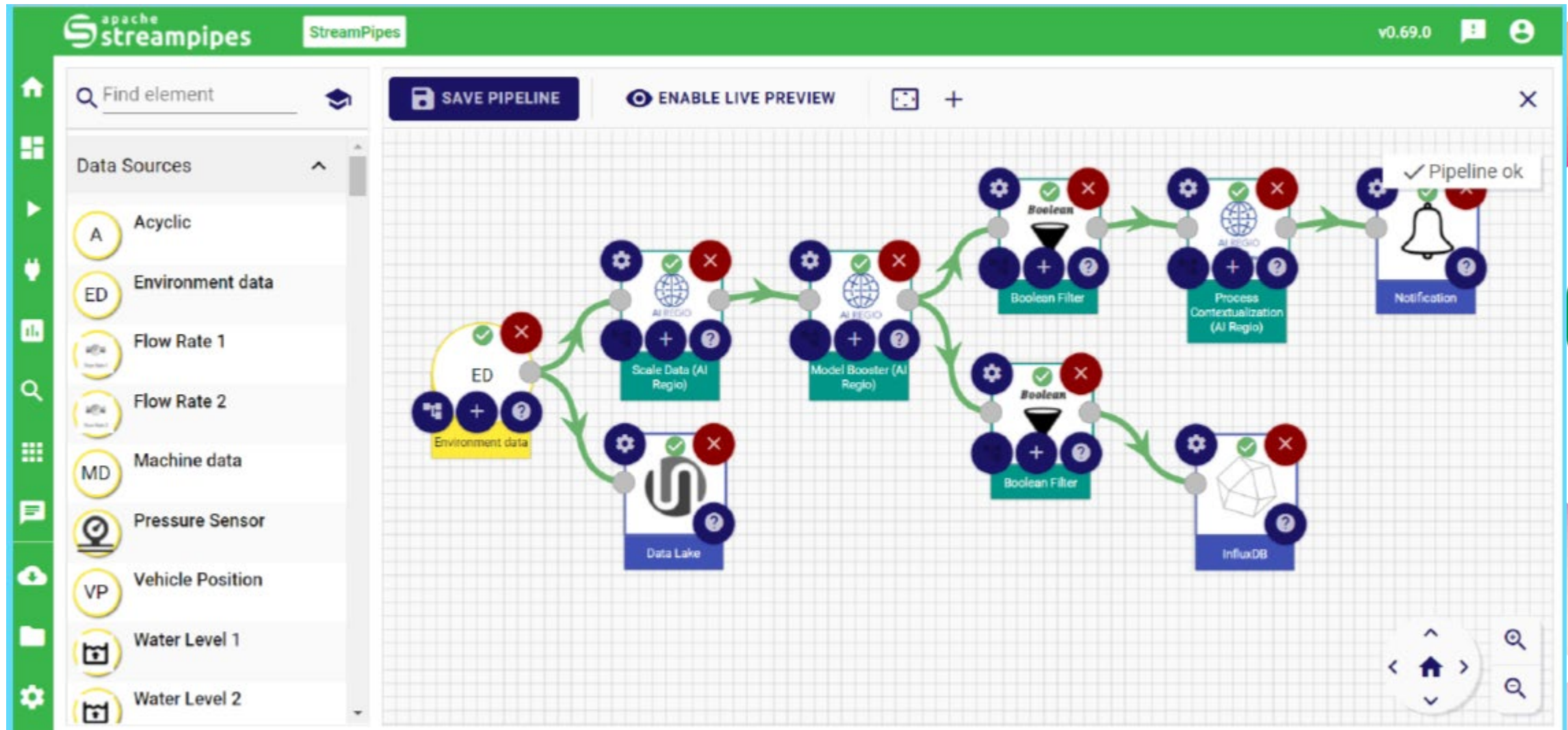
Flexible cross-sector Manufacturing Data Marketplaces

Multi-stakeholder Digital Passports for complex Product-Service Systems

Pathways to digitalisation of manufacturing

The AI REGIO Data Pipeline for Quality

IOTWeek

Dublin —— June 20-23, 2022

Thank you!

Find more:

https://www.opendei.eu/

https://www.effra.eu/connectedfactories

https://kyklos40project.eu/

iotweek.org