# DATA SPACE 4.0

A European Common Digital Manufacturing Infrastructure and Data Space Pathway for Connected Factories 4.0 Data Value Chain Governance

Digital Europe EU Grant Agreement: 101083939

Title	D7.3: Data Space 4.0 community sustainability plan & deployment bootstrapping
Document Owners	INNO
Contributors	ALL
Dissemination	SEN - Sensitive
Date	04/10/2024
Version	01
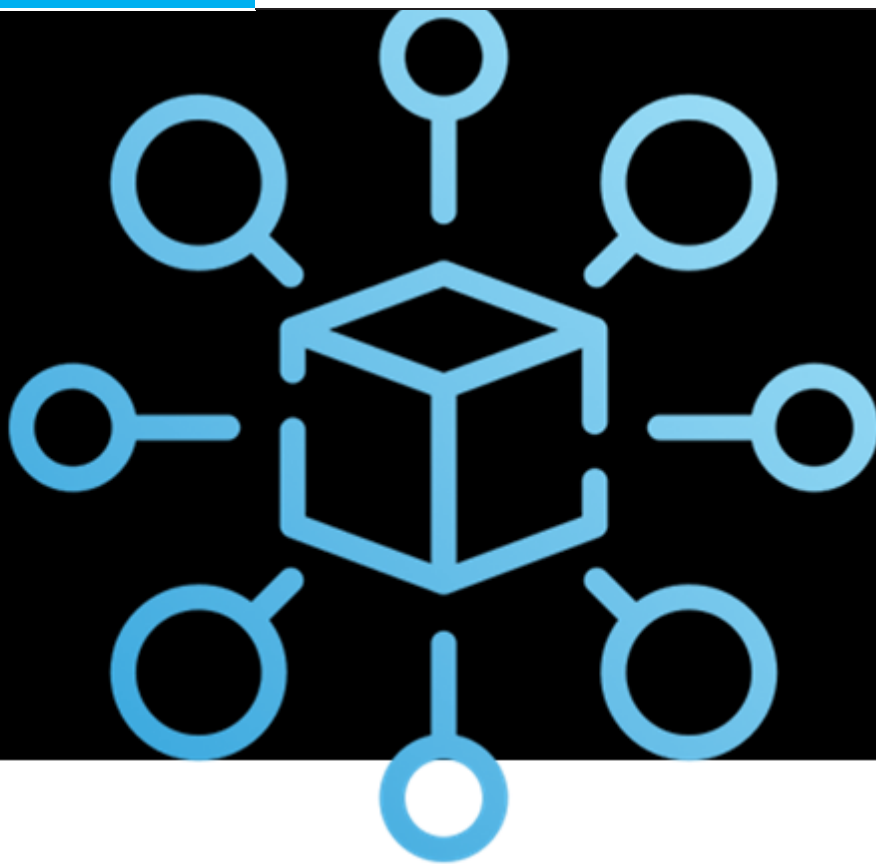
Document History

15/06/2024	Structure of the deliverable
20/08/2024	First draft of the document
02/09/2024	Second draft of the document
23/09/2024	Internal Final version
04/10/2024	Final version submission

Document Fiche

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Workpackage	WP7
Task	T7.1, T7.2, T7.3, T7.4, T7.5
Nature	Report
Dissemination	SEN - Sensitive

Project Partners

Participant organisation name	Acronym
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FONDAZIONE POLITECNICO DI MILANO	FPM
COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	CEA
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INTERNATIONAL DATA SPACES EV	IDSA
ENGINEERING - INGEGNERIA INFORMATICA SPA	ENG
UNPARALLEL INNOVATION LDA	UNPARALLEL
SOFTWARE QUALITY SYSTEMS SA	SQS
FIWARE FOUNDATION EV	FIWARE
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Executive Summary

This deliverable will provide a final update on the dissemination and communication actions implemented, the introductory and advanced training programme syllabus and future workforce digital profiles for the operation of digital data spaces 4.0 developed, the final Standards and Interoperability Action Plan at national and DSBA level, the actions executed in the development of the Manufacturing EDIH and AI TEF Communities Engagement & Sustainability Models as well as the development of the blueprint for a Manufacturing Data Space Deployment Bootstrapping.

In a Collaborative Support Action (CSA), successful dissemination and exploitation of project results are essential factors for achieving the intended impact. This document shows how the strategy, activities, and tools, with which the EU DATA SP4CE Project has communicated with its stakeholders throughout the lifetime of the project, have contributed to the project's sustainability and long-term and after project end impact.

This document briefly references the Dissemination plan (the process of sharing project outcomes with relevant stakeholders, such as researchers, industry partners, policymakers, and the public through various channels, such as scientific publications, conferences, workshops, webinars, social media, and other communication tools) and sums-up the dissemination and communication activities executed throughout the project.

Then, this document aims to provide guidance for any organization that intends to initiate a Data-Space related project, regardless of their starting point or end goals. Whether it is the deployment of an entire Data Space, the deployment of only a Connector to participate in an existing Data Space, or develop a specific application that runs atop of the Data Space infrastructure, this document aspires to indicate the right direction.

Section 4 is designed as a practical roadmap for companies or individuals interested in launching Data-Space based projects. It provides an overview of fundamental resources and tools that facilitate the implementation process, regardless of the project's goals or starting conditions. The guide begins with a brief introduction to Data Spaces, outlining their role in enabling secure and sovereign data sharing. It highlights institutions such as Gaia-X and the IDSA, which are actively shape the Data Space landscape. Having established the context, we

present catalogues of various open-source tools and resources, including. Resources of note include the IDSA GitHub repository and the components from the Eclipse Dataspace ecosystem, which offer foundational software-infrastructure components. This guide also presents existing testbeds that range from infrastructure- to specific-purpose-application validation. Finally, accelerators like the Tractus-X KITs are introduced as ready-made solutions that help streamline project development.

The Manufacturing Data Space landscape is maturing with every passing year, and currently ongoing private and public initiatives seek to bring improvement to different aspects, be they best-practices identification, standards adoption or tools development. This tendency will keep reducing the time-to-deployment, time-to-market or time-to-value of investments in Data Space technology as invariably the deployment procedures become better established, fuelled by a critical mass of diverse open-source components and tools as well as organizations dedicated to raise awareness and provide skilling to the workforce.

Keywords: Manufacturing, Data Space, Connectors, Data Space Interoperability, Open Source Resources, Testbed, Accelerators, networking.

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Acknowledgement

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Abbreviations and Acronyms

Acronym	Meaning
AAS	Asset Administration Shell
AGPL	GNU Affero General Public License
AI	Artificial Intelligence
API	Application Programming Interface
BDVA	Big Data Value Association
CA	Consortium Agreement
CA	Certificate Authority / Consortium Agreement
CaaS	Connector as-a-Service
CPPS	Cyber-Physical Production System
CSV	Comma Separated Values
DAPS	Dynamic Attribute Provisioning Service
DCAT	Data Catalog Vocabulary
DCM	Data Collection and Management
DFA	Digital Factory Alliance
DID	Decentralized Identifiers
DIH	Digital Intelligence Hub
DIN	(DIN Standard)
DoA	Description of Action
DoA	Description of Action
DS	Data Space
DS(s)	Data Space(s)
DSC	Data Space Connector
DSP	Data Space Protocol
DSSC	Data Space Support Center
DVC	Data Value Chain
DVC(s)	Digital Value Chain(s)
EC	European Commission
EDC	Eclipse Dataspace Components
EDWG	Eclipse Dataspace Working Group
ESS	Environment and Social Standards
EU	European Union

GA	General Assembly
GA	Grant Agreement
GDSO	Global Data Service Organisation
GmbH	Gesellschaft mit beschränkter Haftung
GUI	Graphical User Interface
GXDCH	Gaia-X Digital Clearing House
IA	Industry Agreement
IA(s)	Industry Agreement(s)
ICAM	Identity, Credential, and Access Management
IDS	International Data Spaces
IDSA	International Data Spaces Association
IIOC	Intel IONOS Orbiter Connector
IoT	Internet of Things
IPR	Intellectual Property Regulations
ISO	International Organization for Standardization
ISO/IEC	ISO/International Electrotechnical Commission
ISST	(Fraunhoffer) Institut für Software- und Systemtechnik
ITC	SQS Integration Test Camp
KIT	Keep It Together
KPI	Key Performance Indicator
MaaS	Manufacturing as-a-Service
MDB	Metadata Broker
MDP	Model Based Development and Data Processing
MQTT	IoT communication standard
MVP	Minimum Viable Product
ODRL	Open Digital Rights Language
OPC	Open Platform Communications
OPC-UA	Open Platform Communication - Unified Architecture
OSI	Open Systems Interconnection
OSim	Online Control and Simulation
PAS	Publicly Available Standard
PCF	Product Carbon Footprint
POR	Portal
PURIS	Predictive Unit Real-Time Information Service
RDF	Resource Description Framework

REI	Responsible Exploitation & Innovation Board
REST	REpresentational State Transfer
RRI	Responsible Research & Innovation
SCSN	Smart Connected Supplier Network
SIMPL	Secure IoT Middleware
SME	Small and Medium Enterprise
SpA	Società per azioni
TCC	Technical Coordination Committee
TF	Task Force
TRL	Technology readiness level
TSG	TNO Secure Gateway
WP	Work Package
XFSC	Cross Federation Services Components

1 Introduction

The European Data Spaces 4.0 project is focused on unifying data-driven manufacturing efforts across Europe by consolidating various national and EU-based Industry 4.0 initiatives under a cohesive governance framework. It addresses the current fragmentation in data spaces across manufacturing sectors, working to tear silos down both in data sources and among isolated development projects. This initiative strives to improve aspects of manufacturing like engineering, planning, operations, and after-sales services by incentivizing the creation of interconnected data spaces for streamlined data exchange.

The project provides a centralized access point to a diverse portfolio of manufacturing data assets and establishes a governance body to oversee manufacturing data space operations. This framework is developed in coordination with the European Data Space Support Centre (DSSC) to promote standardized processes for the design and large-scale deployment of manufacturing data spaces. It also supports the alignment of data-related projects, facilitating infrastructure migration and ensuring interoperability via a common set of technical blueprints.
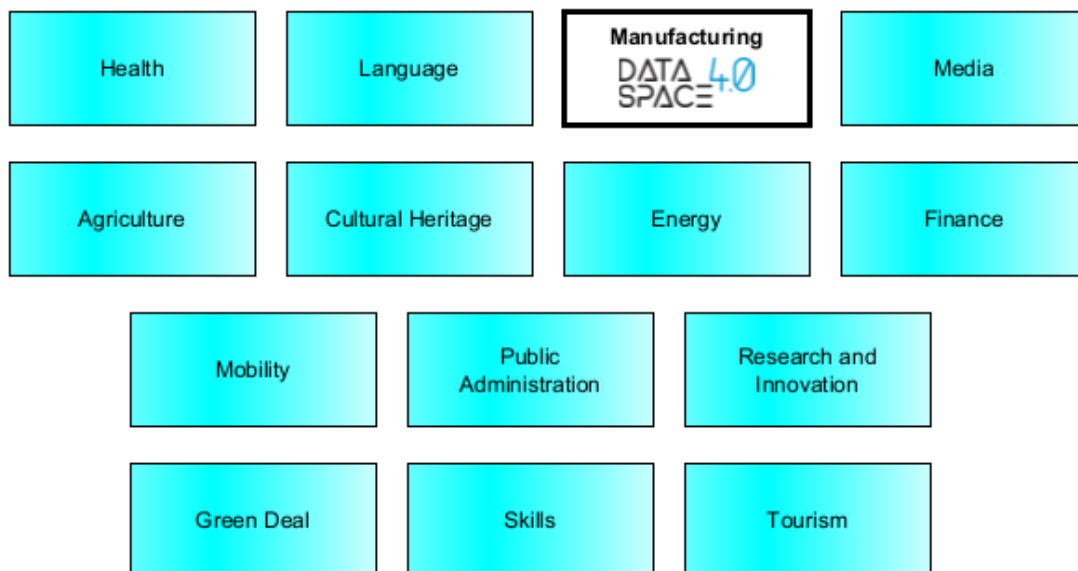
Figure 1. European Data Spaces 4.0 in overall European Data Space sectorial landscape.

1.1 Scope of the document

The strategy outlined in the first deliverable D7.1, the "Dissemination, Communication, and Engagement Plan," is divided into four main stages and objectives, namely Awareness, Interest, Desire, and Action. These objectives are structured based on an evolving period, where the initial phase (M1-M3) focused on building awareness of the EU Data SP4CE project to increase its visibility and recognition. The second phase (M4-M8) intended to generate interest among the target communities through effective dissemination campaigns, publications and visibility in conferences and public events. The third phase(M9-M12) was focused on deepen the engagement of the targeted audiences with the project through events and publications to create additional interests in EU DATA SP4CE. And finally, the mature phase (M13-M20) focused on maximizing target market and industry awareness about the EU DATA SP4CE. Communication and dissemination efforts are supporting the project sustainability and its effective exploitation and market replication.

Along the lifetime of the project there have been plenty of activities with the target of both raising awareness, interest and knowledge to foster the deployment of data spaces in order to achieve the expected results. The project consortium members have taken part in multiple conferences, workshops, and trade fairs to showcase the project and its related interests. Further details regarding these activities will be presented in a later section of this paper.

Another important pursuit was partnering with other projects that are crucial in the preparation activities of manufacturing data space deployments. On this matter, the EU DATA SP4CE consortium has developed and led the development of various strategic EU-funded innovation projects related to manufacturing data space deployments. Their expertise lies in managing Coordination and Support Actions (CSAs) that have nurtured current DIH (Digital Innovation Hubs) networks such as I4MS Gate, I4MS-Growth, Smart4Europe, EUHUBS4DATA, among others. Moreover, they have been actively involved in the development of data-driven transformation and digital manufacturing platforms like DataBench, ConnectedFactories, Connectfactories 2, and Open-DEI. This shows that they have a solid background in the preparation activities of manufacturing data space deployments. The consortium is not limited to the methodological or ecosystem level. Instead, they have strong roots in the development of blueprints for data-driven transformation in industry 4.0 industries, such as Boost 4.0, MIDIH 4.0, MARKET4.0, Eur3ka, DIMOFAC, and INTEGRADDE. This means that they

have a deep understanding of the requirements and challenges of data-driven transformation in the manufacturing industry. In parallel, synergies and collaborative efforts have been established with projects like RE4DY such as participating in workshops together to share relevant information and achieve goals more effectively.

The consortium has contributed to strong regional organic growth, such as AI REGIO, which shows their commitment to developing solutions that address regional needs. Making the consortium's expertise and experience a valuable partner for any organization seeking to deploy data-driven solutions in the manufacturing industry.

In the last months of the project, the primary objective has been to engage the intended audiences by educating them about the technological advancements and commercial advantages of the EU DATA SP4CE. A solid online presence was established by implementing a specific strategy, which is detailed in a later section of this paper, using website and social media platforms. The consortium additionally released pertinent materials to connect with the target markets. For the success of the project objectives, strong networking is crucial, and the project partners attended several significant events, which will be described later in this document. As can be seen in the table below, different stakeholders are being prioritized for specific engagement activities. There were dedicated workshops that were organized in the framework of major events. More details regarding some of the most important workshops will be explained in a later section of this paper. Additionally, tailored dissemination materials were created specifically for these stakeholders, and there were customer-oriented media interactions, including social media and the project newsletter.

Figure 2. Engagement activities

	ENGAGEMENT ACTIVITIES					
QUADRANT	Events	Workshops	Periodic meetings and reviews	Dissemination materials	Social media interactions	Newsletters
Q1	X			X	X	X
Q2	X	X	X	X	X	X
Q3					X	X
Q4				X	X	X

The last phase of the project dissemination strategy is named "Action" and it focuses on maximizing the target market and industry awareness about EU DATA SP4CE. The quality and maturity of the expected outcomes determine the sustainability of the project and its successful implementation. When it comes to the project targets it is important to understand the context where this project is born. The Digital Europe Programme, as seen in the figure

below, is strategic in supporting the digital transformation of the EU industrial ecosystems. EU DATA SP4CE has contributed in the first phase to laying the foundations for the development of manufacturing data spaces, building a community based (national, regional, etc. initiatives) putting efforts into preparatory work on interoperability and governance. As main tangible targets the project aimed to:

- Provide under a unified framework access to a one stop shop inventory of pan-European data platforms.
- Enrich and populate the data spaces use case radar with dynamic asset management, predictive maintenance and agile supply chain use cases.
- Identify common and specific building blocks to implement manufacturing data space middleware and support an edge/cloud and digital twin continuum.

Figure 3. EU DATA SP4CE contribution to DIGITAL EUROPE PROGRAMME
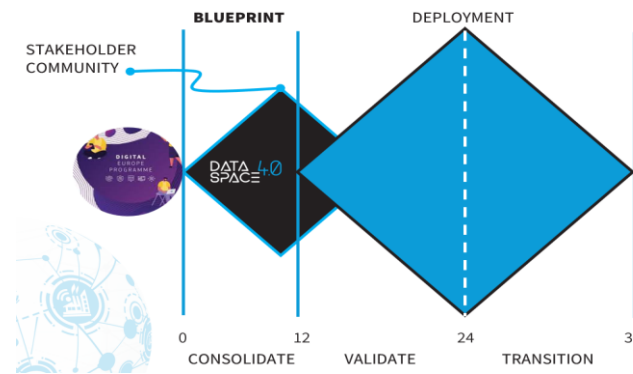
1.2 Structure of the Document

Sections 2 and 3 of the present document give an overview of the dissemination and communication strategy and activities implemented throughout the project. At the same time, the present deliverable provides a brief overview about Data Spaces in Section 4.1, as it is the overarching topic across the project. We review sectorial initiatives in Section 4.2, starting with an exploration of institutions and organizations supporting data spaces, such as BAIDATA, the BDVA, DFA, DSSC, Eclipse Foundation, FIWARE Foundation, Gaia-X, and IDSA. The same section describes three mature Data Spaces: Catena-X, Data4Industry-X, and SCSN. Section 4.3 delves into open-source components and tools, covering resources like the IDSA GitHub repository, Eclipse Dataspace Components, Eclipse XFSC, SIMPL Middleware, Smart Data Models, and FA3ST. Existing connectors are discussed in the next section 4.4, providing an overview of those available for data spaces. This is followed by an examination of connector interoperability through the Dataspace (DS) protocol. In Section 4.7 we cover testbeds, including Gaia-X Digital Clearing House, the IDSA testbed, SQS ITC, and the T-

Systems Living Lab, which are environments for validating data space components. Section 4.8 addresses *accelerators* with a focus on Tractus-X KITs that aids in the deployment of specific-purpose Data-Space-based applications.

2 Dissemination & Communication Strategy

EU DATA SP4CE addresses the full range of potential users and uses along with the related issues concerning the dissemination, exploitation and management of intellectual property rights (IPR), by proactive planning and agreements. The following sections describe in detail the programmed steps and the available tools of the dissemination and exploitation strategy. On the one hand, the <u>Communication objectives</u> are:

1. to reach to the public and raise awareness about the EU DATA SP4CE strategy to support the deployment of data spaces in the manufacturing sector and empower manufacturing industry 4.0 community. Therefore, the communication plan will focus on impacts within the defined target groups,

2. to make the project a valid source of information to approach the main data and data spaces challenges at European level (iii) to create synergies and exchange experience with projects, groups and initiatives active in the field, to join efforts with national/regional/local data spaces initiatives, national platforms, associations and knowledge and innovation communities, and maximize common potential and implementation timings.

On the other hand, the <u>Dissemination and Engagement objectives</u> are:

1. to create public awareness and generate scientific interest for manufacturing data ecosystems for data sharing and data operation,

2. to directly involve stakeholders that could help bringing the gap between data spaces technologies, infrastructure and market demand,

3. to maximize the impacts of the project achievements,

4. to diffuse acquired knowledge, methodologies and technologies developed and tested during the project, and

5. to facilitate the cooperation with the European manufacturing and digital community.

Consequently, the overall timeline for the Dissemination and Communication (D&C) activities has been structured in <u>four main phases according to the AIDA model</u> (Awareness, Interest, Desire, Action). It is a model used by a wide spectrum of organizations and has proved to be suitable for attracting and building relation with stakeholders. The stages that D&C strategy has followed are:

- <u>Awareness</u> / Initial Phase / M1-M3: to build awareness for EU DATA SP4CE, making the project visible and recognizable, sharing its objectives, values and technological innovation(s). Visual identity and logotype, templates, website and social media accounts were set. *Channels & Tools*: Website and social media.

- <u>Interest</u> / 1st Intermediate Phase / M4-M8: The early EU DATA SP4CE results were disseminated via publications and scientific papers to journals, to increase the interest of researchers and scientific communities, presenting in conferences and events. Communication actions continued leveraging the potentials of social media, website and newsletters. Partnering with other projects was another important pursue during this phase. Channels & Tools: Website, newsletter, social media, networks, publications.

- Desire / 2nd Intermediate Phase / M9-M12: This phase focused on further engagement of the targeted audiences with the project. Dissemination of evolving results through events and publications created additional interests in EU DATA SP4CE. Informing target markets about the technological breakthroughs and business benefits of EU DATA SP4CE was also an important part of this phase that worked as a preparatory stage for the final mature phase. Channels & Tools: Website, newsletter, social media, networks, publications.
- Action / Mature-Final Phase / M13-M20: This phase focused on maximizing target market and industry awareness about the EU DATA SP4CE. The results were disseminated through the aforementioned channels. Communication and dissemination efforts supported the project sustainability and its effective exploitation and market replication. All the efforts made in previous phases have been leveraged in this final stage. Channels & tools: Website, newsletter, social media, events/conferences, videos, publications, articles, data.

The consortium partners have important contact networks and communication channels that have helped not only to give visibility to the project, but also to ensure the long-term sustainability of the initiative and the involvement of stakeholders, initiatives, organizations, alliances, etc. within the European digital and manufacturing community that can participate in and benefit from the data ecosystems.

2.1 Timing of dissemination activities

The dissemination activities have differed in intensity based on the evolution of the project. The dissemination activities were carried out in four main phases, spanning throughout the project duration and extend beyond it, starting from the creation of general awareness and concluding with attracting potential supporters and customers/users of the project results. The dissemination activities of the EU DATA SP4CE project were carried out in four main phases. The four phases are summarized below:

Figure 4. Phases for dissemination activities

Phase / Aim /Intensity	Content disseminated	Main target audiences	Dissemination Channels
Phase I: First 3 Months · Awareness raising · Light	Approach-oriented content; project presentation; objectives; expected results	Industrial & Technological communities; Potential end-users.	Website, Exhibitions, Leaflet & Brochures, Conference, Workshops.
Phase II: Till end of Project · Customers &constituency attraction · Medium	Result-oriented content; project intermediate and final results	Potential supporters & end-users, strategic partners.	Exhibitions, Trade fairs, Workshops, Focused publications, Conferences.
Phase III: During the year after the Project · Mature & Commercialise · Strong	Result-oriented content; final results; integrated experiment; showcases & lessons learnt	Potential supporters & end-users, strategic partners	Exhibitions, Trade fairs, Partners leaflets, press releases and publications.

2.2 Main Messages

Firstly, the main messages communicated were the vision and mission of EU DATA SP4CE and the concept of the project per se: EU DATA SP4CE mission is to set a pan-European reference and sustainable data space 4.0 alliance counting with a data space 4.0 governance and guidelines to raise awareness on the importance of the collaborative data spaces for manufacturing industry. EU DATA SP4CE is an opportunity to engage stakeholders across the supply chain (product and process) and across industries to ensure that a more dynamic management of assets, more accurate predictive maintenance of products and assets and more efficient, agile, sustainable and resilient supply networks can be operated. This will provide a better understanding of motivation to build connected and collaborative DVC, concerns, interests, and explore approaches to create a functional cooperation to operationalize the deployment of a data space 4.0 continuum.

Secondly, other messages communicated, conforming to the strategy above, were highly relevant to the following topics:

- What is EU DATA SP4CE about? (EU DATA SP4CE in a nutshell)
- What are EU DATA SP4CE impacts and added value to Industry 4.0?
- What is expected to be achieved by EU DATA SP4CE? (Main objectives & future outputs)
- What are EU DATA SP4CE activities to achieve such expectations?
- Industrial trends affecting EU DATA SP4CE progress

These messages were both be transmitted in visual (e.g., logos, design items, images and videos) and written form. (e.g., press releases, news items, reports, presentations…) However, the messages have been customized according to different circumstances and the need of partners in a decentralized manner, all serving to convince the target audiences about how EU DATA SP4CE has achieved its objectives, contributed to retain European manufacturing competitiveness and solved industry 4.0 challenges through its open transformative shared data-driven Factory 4.0 model. As a result, some deliverables have been or will be made available for the public whereas some of the milestones achieved also served as messages of interest to certain target groups. Below can be found the main project target groups and channels of communications used per aech target group:

Figure 5. Audience of approach and message

Target Groups	Channel
European manufacturing and digital community main representatives: AIOTI, BDVA, GAIA-X, FIWARE FOUNDATION, IDSA, AI4EU, EFFRA, CECIMO, euROBOTICS, etc	Website, Events, LinkedIn, Publications
Networks of European SMEs and DIHs/TEFs: DIH4Industry, EDIH, EUHUBS4DATA, AI REGIO TERESA, LIFT Didactic Factory Networks, etc	Website, Newsletter, Events, LinkedIn, Twitter, Publications, Articles & Press Releases
National platforms: Platform Industrie 4.0, Alliance Industrie du Futur, Industria Conectada 4.0, etc	Website, LinkedIn, Twitter, Events
General Public and Media: EU citizens, online and offline Media, NGOs and others that have general interest in technology, innovation and engineering	Website, LinkedIn, Twitter, Publications, Videos, Articles & Press Releases
Associations and alliances: IDTA, Open Industry 4.0 Alliance, OPC-UA Foundation, AML, ProSTEP, EIT Manufacturing, EIT Digital, EFNMS, etc	Website, Newsletter, Events, LinkedIn, Twitter, Publications
Research & Scientific community: Universities and Research Institutes (fields on AI, Data, IoT, CPPS, Green Digital Production, etc)	Website, Events, LinkedIn, Publications, Articles & Press Releases
Standardisation Bodies	Website, LinkedIn, Twitter, Newsletter, Articles & Press Releases, Videos

The strategy behind the Dissemination and Communication activities relies strongly on the contribution of the whole consortium. In addition. As a result, and as specified in D7.1, the consortium has benefitted from a ecosystem and community network so as to further enlarge the impact and audience of the EU DATA SP4CE project and its results.

2.3 PR Office & Initiatives

2.3.1 PR Office: the Digital Factory Alliance

2.3.1.1 The DFA as the EU DATA SP4CE PR Office

As established in D7.1, the Public Relations and Communication Office, the PR office of the EU DATA SP4CE has been established to be responsible for organizing and conducting communication activities. As mentioned, all activities related with communication have been carried out through the DFA channels. The PR Office is led by DFA who are responsible for all the online presence, including website,

Figure 6. DFA Logo

social media networks, coordinates among partners, organizes webinars and teleconferences, and newsletters. The PR office constructed a mailing list used in internal communication for reporting as well as coordination activities. It also motivates advisory board to become ambassadors for the project, generating word of mouth effect.

As Industry slowly and painfully learned from the fact that Industrial Internet, AI and big data could bring business value to factory operations, several challenges arouse when attempting the replication of such pilots to other factories; proving to be still a very limited, complex, time consuming and expensive process. Initiatives like BOOST 4.0 and Qu4lity evidenced that Industry 4.0 lacks from a common global knowledge platform to facilitates the community to learn from and with the best, accelerating digital transformation leverage. The Digital Factory Alliance was born under the umbrella of groundbreaking European Commission projects aiming at modernizing and digitalizing the assets of the factories of the future, with the strong conviction that these actions will have a critical influence in the way these factories will be operated and managed in the years to come, by promoting the use of Artificial Intelligence Technologies and Data Intelligence to strive for Zero X Manufacturing Environments. This initiative allows its members to get access to the most updated knowledge, trends and "ready-to-deploy" products in the digital manufacturing field, gaining exposure to a growing Zero X Manufacturing marketplace, with the added brand recognition and access to new business opportunities. One of the DFA's most important objectives is to provide an

opportunity to be part of a business network, providing to its participants effective tools and knowledge to respond to crisis scenarios and critical manufacturing demands.

2.3.1.2 DFA Communication activities

One of the DFA most important pillars is the communication throughout the individual factories, the intention is to maintain a data-driven network to support the digital development of its members. INNO and ENG, as founding members of the DFA, described above will make use of this powerful communication channel (not only for the manufacturing sector, but also for the general public), through its website, newsletters, events and social media (+2000 followers on the DFA LinkedIn Profile, +600 followers on the DFA LinkedIn Page, and +1200 followers on Twitter, +1000 subscribers to the newsletter).

The DFA has experience in organizing events of high interest for the manufacturing and digital sectors, involving European projects (RE4DY, SM4RTENANCE, PENELOPE, I4Q, EUR3KA, QU4LITY, SERENA, UPTIME, PRECOM, Z-BRE4K, PROPHESY, imPURE, RESERVIST, COVERSATILE, INTERQ, DAT4ZERO, OPTIMAI, etc.), clustering projects (ForeSee, 4ZDM), people from the EC (HaDEA, DG-RTDI), alliances, associations and organizations (e.g. EFFRA), for very diverse topics (predictive maintenance for optimized manufacturing, zero-defect manufacturing (ZDM), ML and AI for Quality 4.0, manufacturing repurposing, digital innovations, advanced metrology, standardization needs for Autonomous Quality (AQ) and ZDM, AI and Robotics for smart manufacturing, AI approaches towards Industry 4.0, etc.).

As PR Office of the EU DATA SP4CE project, the DFA has hosted EU DATA SP4CE national I4.0 initiatives and EU data space 4.0 innovation community activities, moreover ensuring that all activities; including publications acknowledge the EC support.

With this approach, the DFA has served as a multiplier for the project's dissemination and (pre)marketing activities being the only and unique communication and dissemination channel of results and information. The results obtained and developed throughout the project will be made available within the DFA.

2.3.2 EU DATA SP4CE Engagement Plan

As established in D7.1, as part of the communication strategy an Engagement Plan was defined. This plan aimed to establish the guidelines on how to approach the different stakeholders according to their influence and interest as well as the actions that must be considered, to maximize the outreach among the data space community.

2.3.3 Target groups mapped

One of the main steps into the engagement plan of the project was to know where the target groups interests and influence are. The mapping of the different target audience has helped to take specific engagement actions and create a data space 4.0 community. For this purpose, the following tool was considered to map and analyze the EU DATA SP4CE audience based on the interest on these stakeholders and their capacity of influence. The map sets four-way criteria with the generic bullet points which will guide the specific engagement actions.
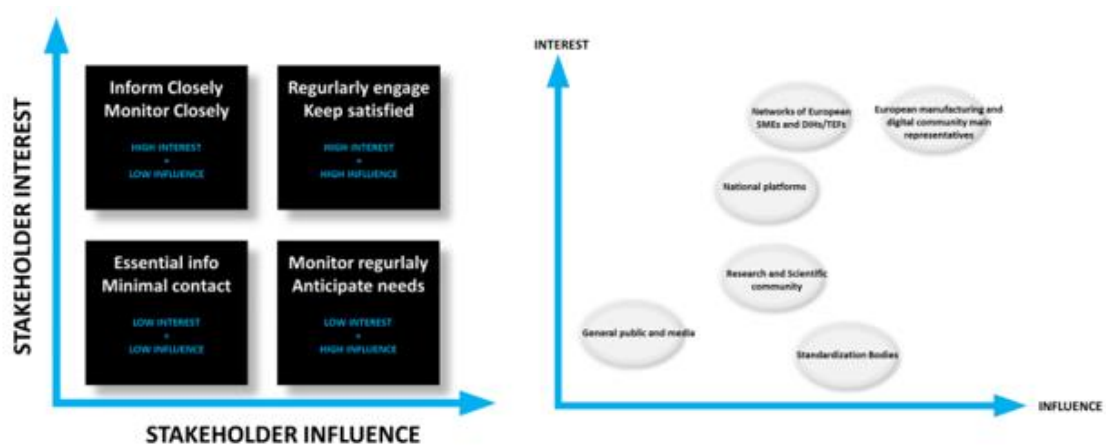
Figure 7. Mapping Stakeholders diagram

As shown in the mapping diagram most of EU DATA SP4CE target audience was placed on the upper right corner, due to the importance on the communication activities of these groups, it has been of high importance that all these representatives are aware of the results and project progress. Nevertheless, the general public and the research and scientific community needed to be taken into account as well, as they represented the first step to spread the information in data spaces to new audience generating new discussions and stakeholders as well as growing the interest of researching into the data spaces field.

The specific engagement actions were directed depending on where the target group has been stablished on the diagram above. Considering the four quadrants defined in the mapping criteria, a series of different engagement actions will be set depending in which of these quadrants the target audience is. The actions carried out maximized the outreach of each target group given one of the main purposes of the project is to create a data space community and make the knowledge a data spaces technologies tools reachable, useful and understandable. Hereby can be fined the quadrant-based methodology:
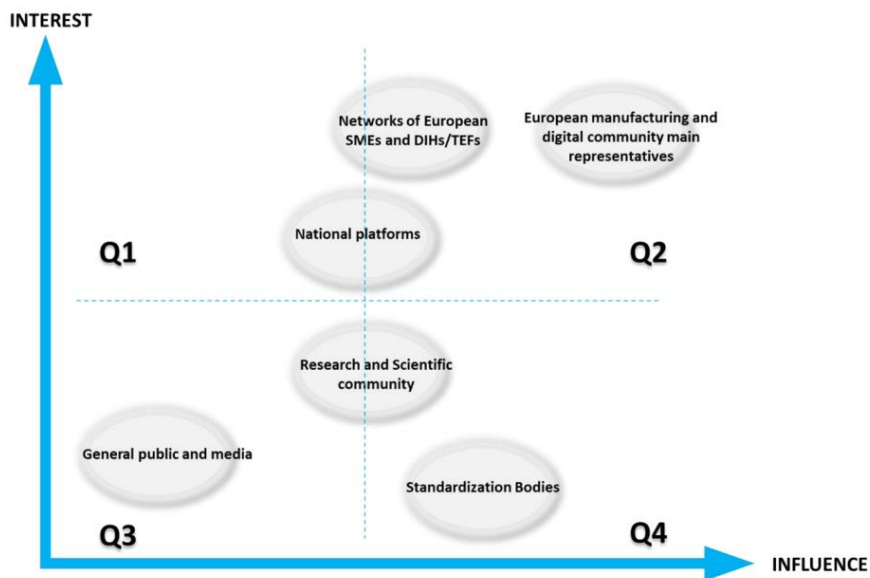
Figure 8. Quadrant based methodology

QUADRANT	ENGAGEMENT ACTIVITIES					
	Events	Workshops	Periodic meetings and reviews	Dissemination materials	Social media interactions	Newsletters
Q1	X			X	X	X
Q2	X	X	X	X	X	X
Q3					X	X
Q4				X	X	X

Figure 9. Quadrant-based engagement activities

As already mentioned, each group was approached according to their specific communication and impact resources. Q1 stakeholders mainly needed to be informed about the project progress and the fulfilment of its milestones although it was a group with no much influence so its outreach was limited, the importance lays on its high interest given as they represent one of the pillars on the creation of the data space community. Q2 groups were definitively key, as this quadrant needed to be not only engaged and actively involved on the

project but also satisfied with its progress. They represent the collaborators and contributors and at the same time the final users which have leveraged of the EU DATA SP4CE community. Q3 audience supported on the dissemination and outreach of the project, they needed to be informed in a comprehensive way to spread the EU DATA SP4CE vision and message and engaged new groups for widening the community for those which had not been involved. Q4 stakeholders gathered the power of engagement of Q3 groups but adding a higher influence level, they were able not only to support the engagement actions but also, as they are close to the companies they have have the tools to collect the companies' feedback when implementing the EU DATA SP4CE approach serving for future developments and enhancements.

2.3.4 Initiatives for engagement

In D7.1, the EU DATA SP4CE consortium identified a first list of ecosystems that consortium partners belonged, coordinated or participated at:

1. FPM has a wide ecosystem of associations and initiatives. In particular, for the Manufacturing side, it is in the Board of [EFFRA](#) and is a member of [A.SPIRE](#) for process industry. Close relationship with the "[Made in Europe](#)" and "[Processes4Planet](#)" Partnerships and their projects in HEP (Cluster 4 Destination 1 and 2) were sought and nurtured. Regarding the Data Space side, FPM is co-chairing the [BDVA](#) group in Smart Manufacturing Industry and it is an active member of [IDSA](#) and [DSBA](#). Dissemination actions to [ADRA](#) (AI Data and Robotics) Partnership were also part of their HEP (Cluster 4 Destinations 3 and 4).

2. VDI organized a similar discussion in the [Data Space Plattform Industrie 4.0](#) in Germany. Particularly, Plattform Industrie 4.0 now brings the heterogeneous stakeholders together to identify the necessary interfaces to establish a common data space for Industry 4.0. The approaches and results of the CSA project contributed to creating a structured discussion field through the planned blueprints for data spaces and thereby have already been exploited while the project and will benefit from project results in the future. The know-how gained by VDI within the CSA also formed the basis for future consulting projects for federal ministries in all areas.

3. BPI has on the [Brainport Industries Campus](#) several DIH's, and have been working with several [EDIHs](#) as well as TEFs as Didactic Factory so through the network of RTO', SME's and Education workshops and whitepapers were organized.

4. IDSA has provided clear knowledge transfer of EU DATA SP4CE results to all IDSA members (170+ companies and RTOs from 28+ countries) and relevant partner initiatives like the [European Industrie 4.0](#) initiatives, various international initiatives concerning data economy and IoT. Results have been implemented in the IDSA roadmap and interactive exchanges with various stakeholder groups and organizations like [EFFRA](#), [ALICE](#), [BDVA](#) among others.

5. IDC intended to directly exploit the assessment of technologies and pilots in their analytical research dossiers and custom research, offering clients testing and evaluation insight from the pilots, which were not in the IDC market offering. They have exploited the dissemination to reach new clients and increase their standing in the competitive technology assessment market.

6. INNO: Through its close relation with the Digital Transformation Accelerator (DTA) and as part of [CIDIHUB EDIH](#), Innovalia Association has direct access and relation with several [European Digital Innovation Hubs (EDIHs)](#) where Innovalia has fostered data space knowledge, promoted the role of EDIHs as digital transformation agents in the process of data space adoption for SMEs and contributed to Testing and Experimentation Facilities (TEFs) and Digital Factories (DFs) so as to ensure knowledge transfer for these agents to be able to simulate and validate data spaces in diverse manufacturing and Industry 4.0 applications and environments. This has also been possible as main moderators of the Data in Manufacturing Thematic Working Group of the EDIH Network.

Having identified the key added value of engaging in diverse initiatives internationally and across Europe, one of the key results of the EU DATA SP4CE project has been the development of an Data in Manufacturing Initiatives Catalogue that has been incorporated into the [Digital Factory Alliance](#) as well as in the [EU DATA SP4CE website.](#) This catalogue has caught interest from non-partner organizations and that will be constant and actively contributing to updating and generating the most complete catalogue of initiatives so as to gather all the information together in one-stop display. Consequently, a few of the Global, European,

International, National and Regional Initiatives identified can be found in the table below, and more in-depth information in Annex 1 within this document:

Name	Description	Contact	Useful links
6G SNS (SNS JU)	It is an EU Association. They aim to facilitate and develop industrial leadership in Europe in 5G and 6G networks and services. Founded in 2021 it includes +27 members. It strengthens Europe's industrial position in the global smart networks and services value chain. It pools EU and industrial resources to accelerate the development of secure, energy-efficient smart networks and services technologies.	• CNECT-E1-SNS@ec.europa.eu	• Website • Reference documentation • Project Porfolio
AG DATA HUB	Agdatahub is the first French intermediary platform for agricultural data with the ambition to interconnect the 380000 farms on the national territory with its 85000 partners while respecting the farmers' consent for the use of their data. Agdatahub provides operational consulting services related to data (project management, technologies, marketing) to support agricultural and agri-food industry players in the use of digital technologies.	• Julie Menez • communication@agdatahub.eu	• Website • Document Library • Educative resources
Alliance Industrie du Futur (AIF)	The Alliance Industry du Futur (AIF), is a non-profit association, brings together the knowledge and expertise of academic and scientific institutions (industrial ecosystem), professional and technological organisations, financial institutions, and businesses to guarantee, among other things, the implementation of the Ministry's Industrie du Futur plan (smart manufacturing).	• contact@industrie-dufutur.org	• Website • Document Library
AIOTI	Alliance for Internet of Things Innovation (AIOTI) aims to lead, promote, bridge and collaborate in IoT and Edge Computing and other converging technologies research and innovation, standardisation and ecosystem building, providing IoT and Edge Computing	• info@aioti.eu	• Website • Resources Library

	deployment for European businesses creating benefits for European society. They cooperate with other global regions to ensure removal of barriers to development of the IoT and Edge Computing market while preserving European values, including privacy and consumer protection.		
BAIDATA	BAIDATA is an association for the development of data sovereignty and the data economy in the Iberian Peninsula, with the aim of supporting companies in the adoption of data sharing spaces. They have start-ups, SMEs and large associated companies, to which they offer activities to display data spaces and structured in four axes: talent, knowledge, ecosystem and innovation.	• info@baidata.eu	• Website • Document Library
BDVA	Big Data Value Association (BDVA) is an association that addresses challenges related to big data, including storage, processing, analysis, standardisation, privacy/security & skill development to develop an innovation ecosystem that enables the data-driven digital transformation of the economy and society in Europe.	• info@core.bdva.eu	• Website • Document Library
CATENA-X	CATENA-X an alliance funded by the German Federal Ministry for Economic Affairs and Climate Action within the funding program of "Future Investments in the Automotive Industry" and the European Union's "Next Generation EU plan. As an association, Catena-X members work together to create technical standards and certification criteria, facilitate development collaborations, gather information and qualification offers and grow the network on a global scale.	• General Email: info@catena-x.net	• Website • Document Library
CHIPS JU	Chips JU (formerly Key Digital Technologies (KDT) JU) encompasses electronic components, their design, manufacture and integration in systems and the software that	• Chips Joint Undertaking	• Website • Document Library

	defines how they work. The overarching objective of this partnership is to support the digital transformation of all economic and societal sectors and the European Green Deal, as well as support research and innovation towards the next generation of microprocessors.	• Email: enquiries@chips -ju.europa.eu	
CLAIRE	The Confederation of Laboratories for Artificial Intelligence Research in Europe (CLAIRE) is an international non-profit association (AISBL) created by the European AI community that seeks to strengthen European excellence in AI research and innovation, with a strong focus on human-centred AI. CLAIRE does not provide AI services or products, but rather represents the interests of its members by promoting European AI through media channels and events, fostering cross-border collaborations, and participating in EU Horizon calls to facilitate community building.	• contact@claire-ai.org	• Website • Document Library
DFA	The Digital Factory Alliance (DFA) is a European/International Alliance Initiative to promote data as a key element of transformation. The DFA includes 2 main areas of development: (1) Innovation Activities: The DFA as an open community to support exploitation and dissemination activities of innovation, and (2) Innovation Solutions: The DFA as showcase and display platform and tool. The DIH Programme intents to incorporate DIHs with expertise in specific Industry 4.0 areas to the DFA network. The DFA will support your DIH to become a service provider and to successfully implement the DFA tools and methodological assets within your local SME ecosystem. Are you a Digital Innovation Hub who is wants to support the DFA transformation path? Do not lose the opportunity to become a certified DFA Hub	• secretary@digit alfactoryalliance .eu	• Website

	and support us to serve the SME digital transformation demand following the DFA principles.		
DSSC	Funded by the European Commission as part of the Digital Europe Program, the Data Spaces Support Centre is a multiyear project. Coordinated by the Fraunhofer Institute for Software and Systems Engineering (ISST), the DSSC project includes a consortium of leading associations and knowledge centres in the domain of data spaces. It was created to support the public sector and companies that want to create sovereign data spaces. The project brings together a multidisciplinary consortium of twelve leading associations and knowledge centres in the domain of data spaces, with a broad membership, an extensive network, national hubs, open-source communities, and data space pioneers.	• contact@dssc.eu • support@dssc.eu • newsletter@dssc.eu	• Website • Document Library
EDIH Network	The European Digital Innovation Hubs (EDIH) Network is the network led by the European Commission and the Digital Transformation Accelerator (DTA) so as to support EDIHs when powering digital transformation in EU SMEs.	• support@edihnetwork.eu	• Website
ELLIS	ELLIS is an association that brings together top researchers from all over the world aiming to shape the future of machine learning and AI. Focus on scientific excellence, innovation, and societal impact. To be able to perform the highest level of research, enabling Europe to shape how machine learning and modern AI can make an impact. To secure Europe's sovereignty in the field of machine learning as the driver for modern AI through the creation of a multi-centric AI research laboratory.	• info@ellis.eu	• Website
EOSC	EOSC is an association that builds on existing infrastructure and services supported by the European Commission,	• info@eosc.eu	• Website • Document Library

	Member States and research communities. It brings these together in a federated 'system of systems' approach, adding value by aggregating content and enabling services to be used together.		
ETP4HPC	The European Technology Platform for High Performance Computing (ETP4HPC) is an initiative that bring together academia, industry, research organisations & policymakers to grow the development and adoption of high-performance computing (HPC) technologies. Aims to shape the strategic agenda for HPC research & innovation in EU. (1) Guiding the development of the European advanced computing ecosystem. (2) Private, industry-led, and non-profit association. (3) Advise, inform and influence advanced computing EU policy and decision makers.	• contact@etp4hpc.euv	• Website • Open Repository Zenodo • Document Library • Trans continuum initiative use cases
EUCLIDA	European Cloud Industrial Alliance, EUCLIDIA, was created back in 2021 as a mean to form the industrial alliance of independent European technology makers for the promotion of digital independence and strategic autonomy. It is focused on providing lawmakers and national policy makers with expertise and vision to help develop and reinforce policies to accelerate the adoption and development of leading cloud technologies made in Europe.	• contact@euclidia.eu	• Website • European Technology Directory
EUDCA (EUROPEAN DATA CENTRE ASSOCIATION)	The European Data Centre Association (EUDCA) is a leading international non-profit organisation representing the interests of data centre operators, service providers, and stakeholders throughout Europe. Established back in 2011, the association is registered under Belgian Royal Charter and is run by and for its members, helping European data centre business to grow, be sustainable and competitive.	• Contact Form	• Website • Doc Library
EU ROBOTICS	EU Robotics is a Brussels based international association for all	• secretariat@eu-robotics.net	• Website

	stakeholders in European Robotics. It aims to strengthen Europe's competitiveness and guarantee the industrial leadership of manufacturers, suppliers, and consumers of robotics technology-driven systems and services through the research, development, and innovation of robotics.			• Resource Library
EURAI	The EurAI (European Association for Artificial Intelligence) was established in July 1982 representing the European Artificial Intelligence community. It aims to promote the research, application, and study of the AI in Europe. Contributing to the advancement in AI technologies and promoting their application in the industry 4.0. AI-driven solutions help optimise manufacturing processes, improve productivity, and drive innovation. The association's efforts are key to shape the future of industrial automation and digital transformation.	• https://www.eurai.org/news?filter=Open%20Calls	• Website • Document Library	
FIWARE	FIWARE, the Open-Source Platform for Our Smart Digital Future. A framework based around supplying a cornerstone function required in any smart solution: the need to manage context information, enabling to perform updates and bring access to context.	• https://www.fiware.org/contact-us/	• Website	
GAIA-X	Gaia-X is an association that represents the core of the organisation. It was founded to develop the technical framework and the Gaia-X Trust Framework. Its members, are either companies with a provider or user background of data infrastructure, IT start-ups, research institutions or business associations that are aligning with Gaia-X to federate cloud services within the existing cloud infrastructures.	• info@gaia-x.eu	• Website • Framework specifications	
GREEN DEAL DATA SPACE	Designed as an open federated ecosystem, the Green Deal Dataspace is the first cross-domain data space for projects and services that allows users to offer their own solutions	• Contact Form	• Website • Data Marketplace	

	or search for and find resources for their own projects. It provides access to projects and services that can be subsumed under this theme. And it goes far beyond previous dataspace offerings.			
IDSA	The International Data Space Association (IDSA) A is on a mission to create a digital future, across Europe and around the world; in which all players can realize the full value of their data through equal access to secure and sovereign data exchange, meaning staying in control of access and usage of your data, among trusted partners.	• info@internationaldataspaces.org • administration@internationaldataspaces.org	• Website • Data Spaces Radar	
INDUSTRIE 4.0	Plattform Industrie 4.0 is the hub of the Industrie 4.0 community, to specify and implement Manufacturing-X. Led by the German Federal Ministry for Economic Affairs and Climate Action as well as the Federal Ministry of Education and Research, and high-ranking representatives from industry, science and the trade unions.	https://www.plattform-i40.de/IP/Navigation/EN/ThePlatform/Contact/contact.html	• Website	
MADE IN EUROPE	Made in Europe is the manufacturing partnership with the European Commission under the Framework Programme Horizon 2021-2027. In May 2019, a Made in Europe Partnership draft proposal was tabled and is since then been discussed between the relevant bodies involved, namely the European Commission, Member States and EFFRA.	• Information: info@effra.eu • Management: zeljko.pazin@effra.eu • General Consultancy: chris.decubber@effra.eu • Communications: Catarina.santos@effra.eu	• Website • Document Library	
MANUFACTURING-X	The International Manufacturing-X Council, a joint effort of partners from science, politics, and business to advance on the establishment of IMX. Its mission is to implement a decentralised, federated, and collaborative ecosystem for smart manufacturing and to enable open, global	• manufacturing-X@plattform-i40.de	• Website • Document Library	

	and cross-sector international operation of cost-effective data networks.		
MOBILITY DATA SPACE (MDS)	The Mobility Data Space (MDS) initiative is aimed to creating an open ecosystem for exchanging mobility-related data in Europe. The community brings together experts from start-ups, SMEs, public transport, and others, offering them a wide range of data and direct contact with numerous groups, networking, and events. Based on equal rights and data sovereignty, the Mobility Data Space is a data marketplace ecosystem supporting user-friendly, creative, and ecologically friendly mobility concepts. The platform is defined by transparency, European data protection requirements and privacy regulations, and member autonomy.	• Julius Meyer Customer Relationship community@mobilitydataspace.eu	• Website • Use cases • Data catalogue
Piano Nazionale Industria 4.0	Inside the Piano Nazionale, 8 National Competence Centres have been created in 2018. The competence centres are public-private partnerships aiming to carry out orientation and training activities for companies on Industry 4.0 issues as well as support in the implementation of innovation, industrial research and experimental development projects aimed at the realization, by user companies, in particular SMEs, of new products, processes or services (or their improvement) through advanced technologies in the industry 4.0 context. The Piano Nazionale Industria 4.0 aimed to strengthen basic and applied research, foster technology transfer, promote digital transformation of production processes and investment in intangible assets. This investment is an evolution of the previous Industria 4.0 program, compared to which it provides; an expansion of the scope of potentially beneficiary companies with the replacement of the hyper-amortization; the	• Carlo Ongini, carlo.ongini@made-cc.eu	• Website

	recognition of credit on investments made in the two-year period 2021-2022; the extension of the eligible intangible investments, the increase of the credit percentages and the maximum amount of the incentivized investments.				
QUANTUM	The Quantum Technologies Flagship is a long-term research and innovation initiative that aims to support the work of hundreds of quantum researchers over 10 years, with an expected budget of €1 billion from the EU. Following the Quantum Manifesto in 2016, the Flagship was launched in 2018, bringing together research institutions, and industry and public funders, consolidating and expanding European scientific leadership and excellence in quantum technologies.	•	info@qt.eu	•	Website • Document Library
SCSN	The Smart Connected Supplier Network (SCSN) focuses specifically on supply chains in the manufacturing industry to simplify data sharing and digitalization of manufacturing companies and their IT-suppliers with high-tech manufacturing supply chain.	• •	General Contact: https://smart-connected.nl/en/contact Mike De Roode, mike.deroode@smart-connected.eu	• •	Website
SMART INDUSTRY	Smart Industry stands for accelerating the digitalization of production processes and customer relations. With the help of ICT, production becomes more efficient, cheaper with better quality and more customization. This change ensures an increase in export, employment and earning power now and in the future. The Netherlands already has a lot to offer, but more companies must hurry to adapt their production and their people to the changes of the digital revolution.	• •	https://smartindustry.nl/contact info@smartindustry.nl	• •	Website Knowledge base
STRUCTURA -X	Structura-X is a lighthouse project for European cloud infrastructure launched to create an ecosystem of independent CSPs,	•	Contact Person: Dr. Vassilia Orfanou, CMO:	•	Website

orchestrated by a shared layer of federation certification and labelling services based on Distributed Ledger Technology (DLT). Around 28 European cloud and infrastructure providers have launched a new initiative to build joint Gaia-X-compliant infrastructure services.	vassilia.orfanou @gaia-x.eu

Table 1. Global, European, International, National and Regional Initiatives

As previously mentioned, more in-depth description and information about the hereby mentioned initiatives can be found in the annex within this deliverable, in the Digital Factory Alliance as well as in the EU DATA SP4CE website. This initiatives catalogue expects to become an active and constantly updated asset for the European Data Spaces community, where the entire EU DATA SP4CE community can be involved, contribute and interact so as to foster the adoption of data spaces throughout Europe.

3 Dissemination & Communications actions

The communication actions hammer into disseminating project concepts through branding kit logos, initial communication materials e.g., fact-sheet leaflets, press exposures, events organization, and participation, as well as full online presence (website, X, YouTube, and LinkedIn Group). This set of communication actions pave the way for further impacts in project achievements, products, and business potential.

Since the Data Space 4.0 kick off to its end, several dissemination and communication actions and activities have been planned and executed. Most of the partners and initiatives have actively put in place their efforts and resources to participate and coordinate events, workshops and webinars among others, which have served to create awareness on the main activities within the Data Space 4.0 framework, as well as its outlook and results. This section, will detail the different communication activities that have taken place and its impact.

3.1 General Communication

3.1.1 Branding logo kit & communication materials

A set of logos and designs items has been created to be used for website, social media accounts, leaflets, rollups, events setting and other occasions. By the first month into the project, the following communication materials are generated:

- Logo kit
- Social network resources
- PowerPoint Presentation template
- Word template
- Newsletter template

The logos and set of communication materials are the fundamentals for future communication activities. Partners have regarded them as communication standards set by the Work Package 1 leader and comply with the visual identity guidelines for all relevant dissemination activities.

3.1.2 Academic Publications, Scientific Journals & Seminars

Scientific community is one of the most important target audience groups in the communication strategy. Research partners have been encouraged to provide infrastructures and learning materials for higher education and training in the industrialists. Scientific essays and publications in scientific journals have been developed as the project developed and showed results.

3.1.3 Earned Media Coverage

The PR office deliberately has worked work with media to cover EU DATA SP4CE and its campaign in regional and national press, magazines and web-based news media. Media coverage has lent added value to project credibility and ensured that the messages were communicated, broadening the reach and impact to public audiences and enhance campaign visibility.

3.2 Onsite & Hybrid Communication

3.2.1 Event presence & organization

The most important type of physical dissemination and communication of the EU DATA SP4CE project is based on its' event presence and organization, represented by consortium partners in a wide variety of events and formats. Consequently, the PR Office has coordinated the gathering of information of the most relevant events organized, attended, participated and managed where the EU DATA SP4CE partners communicated the EU DATA SP4CE project and its results: Therefore, the following table shows the 180+ online, onsite and hybrid events where EU DATA SP4CE was present at divided in 3 categories: Global & European Events, National Events and Private & Internal Events:

Table 2. EU DATA SP4CE Global & European Event List

No.	Event Title	Date	Location	Typology
	EU DATA SP4CE GLOBAL & EUROPEAN EVENTS			
1	EUH4D – BDVA Workshop: Data/AI Standards and European rolling plan for ICT standardization 2023 Plan	2022.10.17	Valencia, Spain	Workshop
2	Digital Transformation Summit 2022	2022.10.24-27	Madeira, Portugal	Summit
3	OPEN DEI Final Event	2022.10.25	ONSITE	Meeting
4	Big Data Value Forum 2022	2022.11.21	Prague, Czech Republic	Forum
5	DSSC Insight Series #01 - Data Spaces Support Centre: Discover how to bring data spaces to life	2022.12.01	ONLINE	Workshop
6	Webinar on Data Spaces in Manufacturing - Info Day Bruxelles	2022.12.07	Hybrid, Brussels, Belgium	Workshop
7	Survey requirement & elicitation workshop	2022.12.13	ONLINE	Workshop
8	DSSC-DS40-CIRPASS-GREAT Workshop	2022.12.15	ONLINE	Workshop
9	Industrial Agreements Workshop	2022.12.20	ONLINE	Workshop
10	DSSC Insight Series #02 - Understanding data spaces	2023.01.26	ONLINE	Workshop
11	DSSC Insight Series #03- The value of data spaces – from theory to practice	2023.02.23	ONLINE	Workshop
12	IDSA Tech Talk	IDSA Rule Book – Overview and how to implement it	February 23, 2023	2023.02.23	ONLINE	Workshop
13	IDSA Q&A Session #01	'Your essential guide to data spaces'	2023.03.02	ONLINE	Workshop
14	EDIH TWG Data in Manufacturing #00 - EDIH World Working Group Meeting KoM	2023.03.07	ONLINE	Meeting
15	Data Spaces Dialogues #03	Dataspace Protocol Preview	2023.03.09	ONLINE	Workshop
16	Data Spaces Dialoguse #01| How the BAIDATA ecosystem helps realice true data spaces	2023.03.15	ONLINE	Workshop
17	Industrialized countries on the way to massive upheaval through online services?	2023.03.15	ONLINE	Workshop
18	MWC Mobile World Congress 2023	2023.03.27	ONSITE	Congress
19	IDSA Tech Talk	The TRUE Connector – Essential in a data space	March 30, 2023	2023.03.30	ONLINE	Workshop
20	IDSA Tech Talk	Semantic Interoperability – Successful data sharing through common understanding	April 6, 2023	2023.04.06	ONLINE	Workshop
21	Global Data Space Roundtable 2023	2023.04.18	ONLINE	Conference

22	Metromeet 2023	2023.04.19	Spain	Conference
23	IDSA Tech Talk #03 | IDS Reference Architecture Model – the standard for sovereign data sharing | April 20, 2023	2023.04.20	ONLINE	Workshop
24	DIGITAL MANUFACTURING INDUSTRIAL SUMMIT 2023	2023.04.25-26	Valencia, Spain	Summit
25	IDSA Update Session | Data Spaces Radar – Stage for promising and mature data spaces	2023.04.28	ONLINE	Workshop
26	IDSA Tech Talk | Legal Interoperability – legal aspects in data spaces | May 4, 2023	2023.05.04	ONLINE	Workshop
27	IM-X Council #02 Meeting	2023.05.11	ONLINE	Meeting
28	EDIH TWG Data in Manufacturing #01 - Kick-off Meeting	2023.05.17	Brussels, Belgium	Meeting
29	DSSC Insight Series #04- Interoperability – crucial for success in data spaces	2023.05.25	ONLINE	Workshop
30	EDIH TWG Data in Manufacturing #02 - 2023 EDIH Annual Summit	2023.05.31	Brussels, Belgium	Meeting
31	IDSA Tech Talk #01 | Data Usage Control – indispensable to enable data sovereignty | June 1, 2023	2023.06.01	ONLINE	Workshop
32	IM-X Council #06 Meeting - Warm up Meeting	2023.06.08	ONLINE	Meeting
33	FIWARE Global Summit 2023	2023.06.12	Vienna, Austria	Summit
34	FIWARE Impact – Stories from big tech companies, Governments & Cities contributing to digital transformation of the territory	2023.06.12	Vienna, Austria	Workshop
35	Webinar CIRPASS – Digital Product Passport	2023.06.12	European Commission	Workshop
36	Tech at the edge: trends reshaping the future with FIWARE	2023.06.12	Vienna, Austria	Workshop
37	DATA SPACE 4.0 WEEK 2023	2023.06.12-22	MULTI-SITE	Conference
38	DATA SPACE 4.0 WEEK 2023: AI Data Lunch «Manufacturing Data Space»	2023.06.13	ONLINE	Workshop
39	DATA SPACE 4.0 WEEK 2023: AI Testing and Experimentation Facilities and Data Spaces	2023.06.13	Hybrid, Bilbao, Spain	Workshop
40	DATA SPACE 4.0 WEEK 2023: CIRPASS: Shaping the future of the Digital Product Passport	2023.06.13	ONLINE	Workshop
41	DATA SPACE 4.0 WEEK 2023: Data Spaces and Data Protection	2023.06.13	Hybrid, Lulea, Finland	Workshop
42	DATA SPACE 4.0 WEEK 2023: Data Spaces for eGovernment and Public Administration	2023.06.13	Hybrid, Lulea, Finland	Workshop
43	DATA SPACE 4.0 WEEK 2023: Data Spaces Monthly Insights (hybrid), proposal	2023.06.13	ONLINE	Workshop
44	DATA SPACE 4.0 WEEK 2023: Digital technologies and processes for sustainable and secure data management, use and re-use of data	2023.06.13	Hybrid, Lulea, Finland	Workshop
45	DATA SPACE 4.0 WEEK 2023: Digital Twins with Data Spaces and Standards	2023.06.13	Hybrid, Lulea, Finland	Workshop

46	DATA SPACE 4.0 WEEK 2023: Do Robots dream of Smart Solutions? (Robotics)	2023.06.13	Hybrid, Vienna, Austria	Workshop
47	DATA SPACE 4.0 WEEK 2023: Smart Manufacturing through Smart Data Sharing	2023.06.13	Hybrid, Vienna, Austria	Workshop
48	DATA SPACE 4.0 WEEK 2023: Data meets Infrastructure at the Edge	2023.06.13-15	Hybrid, Lulea, Finland	Workshop
49	DATA SPACE 4.0 WEEK 2023: Co-Creation Workshop on Data Platform and Datamarketplace Catalogue - 2nd Workshop	2023.06.14	ONLINE	Workshop
50	DATA SPACE 4.0 WEEK 2023: Data management and data sharing for trusted AI applications	2023.06.14	Hybrid, Lulea, Finland	Workshop
51	DATA SPACE 4.0 WEEK 2023: Data spaces for Autonomous (level 4) Factories	2023.06.14	Hybrid, Lulea, Finland	Workshop
52	DATA SPACE 4.0 WEEK 2023: Gaia-X Inside #12: Value creation in industrial services	2023.06.14	Hybrid, Vienna, Austria	Workshop
53	DATA SPACE 4.0 WEEK 2023: II BAIDATA Forum	2023.06.14	Hybrid, Bilbao, Spain	Workshop
54	DATA SPACE 4.0 WEEK 2023: Inside Gaia-X #12 – Business Model Data Sharing	2023.06.14	ONLINE	Workshop
55	DATA SPACE 4.0 WEEK 2023: ISO TC 184 super meeting Cavalcade Day	2023.06.14	Hybrid, Paris, France	Workshop
56	DATA SPACE 4.0 WEEK 2023: Nxtgen Data sharing in manufacturing value networks	2023.06.14	Hybrid, Eindhoven, Netherlands	Workshop
57	DATA SPACE 4.0 WEEK 2023: Swiss Smart Factory Summit 2023	2023.06.14-16	Biel, Switzerland	Summit
58	DATA SPACE 4.0 WEEK 2023: Data Spaces Business Alliance across Europe	2023.06.15	Hybrid, Vienna, Austria	Workshop
59	DATA SPACE 4.0 WEEK 2023: Data spaces for Manufacturing – Italian perspective	2023.06.16	Hybrid, Milano, Italy	Workshop
60	DATA SPACE 4.0 WEEK 2023: Data Spaces for Manufacturing and Digital Product Passports for Circularity: synergies, opportunities & challenges	2023.06.16	ONLINE	Workshop
61	DATA SPACE 4.0 WEEK 2023: DISCOVERING CIDIHUB DATA-CENTRED SERVICES FOR SMES	2023.06.16	Hybrid, Canary Island, Spain	Workshop
62	DATA SPACE 4.0 WEEK 2023: Data Spaces Discovery Day Naples: Business Value of sovereign data sharing	2023.06.16-17	Hybrid, Naples, Italy	Workshop
63	DATA SPACE 4.0 WEEK 2023: Data Spaces Discovery Day Vienna: Business value of sovereign data sharing	2023.06.19	Hybrid, Vienna, Austria	Workshop
64	DATA SPACE 4.0 WEEK 2023: Data spaces for manufacturing and digital product passports for circularity: synergies, opportunities and challenges	2023.06.19	ONLINE	Workshop
65	DATA SPACE 4.0 WEEK 2023: TI-2023 'Next Generation IoT and AI systems for Trusted, Human-Centered Intelligence'	2023.06.20	Coral Bay, Pafos, Cyprus	Workshop
66	DATA SPACE 4.0 WEEK 2023: AUTO-TWIN meets EU Data Space 4.0	2023.06.22	ONLINE	Workshop

67	DSSC Insight Series #05- Governance for Data Spaces	2023.06.26	ONLINE	Workshop
68	Data Spaces Dialogues #02 | Green Deal Dataspace – data sharing for resilient and sustainable business growth	2023.06.27	ONLINE	Workshop
69	Global Manufacturing Data Spaces Roundtable 2023	2023.07.11	Brussels, Belgium	Conference
70	IDSA Tech Talk | The Information Model – key to achieving semantic interoperability | July 20, 2023	2023.07.20	ONLINE	Workshop
71	Technical Common Grounds for Smart and Sustainable Cities' Data Spaces	2023.09.11	ONLINE	Workshop
72	IDSA Update Session | Connector & Certification – In combination, a trusted link to participate in a data space	2023.09.14	ONLINE	Workshop
73	EOSC and Data Spaces: Maximizing the value of research data for data spaces	2023.09.22	ONLINE	Workshop
74	DSSC Insight Series #06 - The Data Spaces Blueprint Version 0.5	2023.10.12	ONLINE	Workshop
75	IDSA Tech Talk #02 | IDS Open-Source – driving data space innovations & implementations | October 12, 2023	2023.10.12	ONLINE	Workshop
76	EDIH TWG Data in Manufacturing #03 - EDIH Best Practices & European Data Act Introduction	2023.10.19	ONLINE	Meeting
77	EBDVF 2023 | Data and AI in action	2023.10.25-27	Valencia, Spain	Forum
78	EBDVF 2023 | Unlocking Interoperability: Dataspace Protocol in research and open-source ecosystems | October 27, 2023 | Part 2 – Recording from Valencia	2023.10.27	ONLINE	Forum
79	EDIH TWG Data in Manufacturing #04- Data in Manufacturing TWG Matchmaking 1	2023.11.14	ONLINE	Meeting
80	DSSC Insight Series #07- How to Build Data Spaces	2023.11.16	ONLINE	Workshop
81	EDIH TWG Data in Manufacturing #05 - EDIH Best Practices in Industrial Metaverse and related technologies	2023.11.20	ONLINE	Meeting
82	ÖCLOUD Technical Expert Group Meeting	2023.11.28	ONLINE	Meeting
83	IDSA Tech Talk | Unveiling the Dataspace Protocol | November 28, 2023	2023.11.28	ONLINE	Workshop
84	IM-X Council #04 Meeting	2023.12.01	ONLINE	Meeting
85	How to drive business value with Digital Product Passports & Data spaces	2023.12.11	ONLINE	Workshop
86	EDIH TWG Data in Manufacturing #06- Webinar State of play	2023.12.13	ONLINE	Meeting
87	DSSC Insight Series #08- Achieving Convergence In Data Spaces	2023.12.14	ONLINE	Workshop
88	EDIH TWG Data in Manufacturing #07 - EDIH Best Practices in Predictive Maintenance	2024.01.24	ONLINE	Meeting

89	IM-X Council #03 Meeting - Foundational Meeting Paris	2024.02.15	Paris, France	Meeting
90	Global Data Space Roundtable 2024	2024.02.26	Online, Europe	Conference
91	DSSC Insight Series #09- Road to the Data Spaces Symposium	2024.02.29	ONLINE	Workshop
92	EU DATA SP4CE - Consortium Meeting #07 - Final Event	2024.05.31	Brussels, Belgium	Meeting
93	DSSC Insight Series #10- The free flow of data from source to fruition	2024.06.06	ONLINE	Workshop
94	EDIH TWG Data in Manufacturing #08 - EDIH Webinar on Generative AI for industry	2024.06.13	ONLINE	Meeting
95	DSSC Insight Series #11- The DSSC Meets SIMPL	2024.06.28	ONLINE	Workshop
96	DSSC Insight Series #12- Standardization in Data Spaces	2024.09.26	ONLINE	Workshop
97	Global Data Spaces Connect 2024	2024.11.12-13	Vienna, Austria	Congress

Table 3. EU DATA SP4CE National Event List

EU DATA SP4CE NATIONAL EVENTS				
No	Event Title	Date	Location	Geographical scope	Typology
1	Gaia-X Inside #2: How to Build Data Spaces	2022.09.06	ONLINE	Austria	Workshop
2	FIWARE Global Summit 2022	2022.09.14-15	Gran Canaria, Spain	Spain	Summit
3	Gaia-X Inside #3: The GXFS Toolbox	2022.09.29	ONLINE	Austria	Workshop
4	IDSA Data Space Discovery Days – Barcelona	2022.09.30	Barcelona, Spain	Spain	Workshop
5	Gaia-X Inside #4: Self Sovereign Identity - What's behind it?	2022.10.27	ONLINE	Austria	Workshop
6	EU DATA SP4CE - Consortium Meeting #03 - General Assembly in Milano, Italy	2022.11.08	Hybrid, Italy	Italy	Meeting
7	Gaia-X Summit 2022	2022.11.17	France	France	Summit
8	Gaia-X Inside #5: Austrian Use Cases I	2022.11.21	ONLINE	Austria	Workshop
9	Working Group meeting "Security of Networked Systems" of Plattform Industtrie 4.0	2022.11.24	Germany	Germany	Meeting
10	Data Space 4.0 - VDMA Workshop	2022.11.30	ONLINE, Germany	Germany	Workshop
11	Gaia-X Inside #6: Implementation examples from Austria	2022.12.15	ONLINE	Austria	Workshop

12	Gaia-X Inside #7: Gaia-X Digital Clearing House	2023.01.18	ONLINE	Austria	Workshop
13	Jour fixe of Group of Working Group Assistants of Plattform Industtrie 4.0	2023.01.30	ONLINE	Austria	Meeting
14	Gaia-X Manufacturing Data Space Event	2023.02.06	ONLINE	Austria	Workshop
15	Gaia-X Inside #8: EuProGigant Applications & Use Cases	2023.02.09	ONLINE	Austria	Workshop
16	VDMA - Data Space 4.0 Cooperation Meeting #02	2023.02.21	ONLINE	Germany	Meeting
17	Gaia-X Inside #9: Autowekstatt 4.0	2023.03.09	ONLINE, Austria	Austria	Workshop
18	Market Conference & Exposition	2023.03.14	Austria	Austria	Conference
19	Data Spaces Symposium 2023	2023.03.21	Netherlands	Netherlands	Symposium
20	Jour fixe of members of funded Catena-X project	2023.03.31	ONLINE	Germany	Meeting
21	Kickoff PRESENT Project	2023.04.04	Austria	Austria	Meeting
22	Onto Commons : Towards Materials & Manufacturing Commons	2023.04.04	Germany	Germany	Workshop
23	TechX hack Bilbao	2023.04.05	Bilbao, Spain	Spain	Hackathon
24	Hannover Messe 2023	2023.04.17	Germany	Germany	Exhibition Fair
25	Hannover Messe 2024	2023.04.18	Hannover, Germany	Germany	Exhibition Fair
26	IM-X Council #01 Meeting	2023.04.18	Germany / hybrid	Germany	Meeting
27	International Panel - Shaping Digital Ecosystems Globally	2023.04.19	Germany / hybrid	Germany	Conference
28	Gaia-X Inside #10: Gaia-X State of Play & Gaia-X activities	2023.04.27	ONLINE, Austria	Austria	Workshop
29	Brainport Industries - Innovation Committee Meeting	2023.05.15	ONLINE	Netherlands	Meeting
30	SUMMIT Industry 4.0	2023.05.23	Austria	Austria	Summit
31	Gaia-X Inside #11: Gaia-X Framework Release Information	2023.05.25	ONLINE, Austria	Austria	Workshop
32	MyData 2023 Conference	2023.05.31	Helsinki, Finland	Finland	Conference
33	EU Industry days 2023	2023.06.04-06	Málaga, Spain	Spain	Conference
34	Making Data Spaces happen! (Data Spaces)	2023.06.12	Vienna, Austria	Austria	Workshop
35	Smart Industry SDIN-CEN-CENELEC	2023.06.29	ONLINE	Netherlands	Workshop
36	Bodenseegespräche 2023	2023.07.05	Austria	Austria	Conference
37	Gaia-X Inside #13: Secure Multi Party Computation	2023.07.25	ONLINE, Austria	Austria	Workshop

38	Gaia-X Inside #14: EuroDaT – the neutral intermediary for a secure data economy	2023.09.26	ONLINE, Austria	Austria	Workshop
39	Gaia-X Inside #15: EUDI Wallet – A Paradigm Shift for Digital Identity in Europe?	2023.10.10	ONLINE, Austria	Austria	Workshop
40	SM4RTENANCE EU Project Launch	2023.11.06	Boroa, Spain	Spain	Meeting
41	Gaia-X Summit 2023	2023.11.09-10	Alicante, Spain	Spain	Summit
42	Brainport Industries Annual Congress 2023	2023.11.15-16	Brabanthallen, Netherlands	Netherlands	Congress
43	Gaia-X Inside #16: Cofinity-X – the operator model of Catena-X	2023.11.20	ONLINE, Austria	Austria	Workshop
44	Gaia-X Inside #17: The Gaia-X Journey & Strategy 2024	2023.12.12	ONLINE, Austria	Austria	Workshop
45	Gaia-X Inside #18: The Eclipse Foundation	2024.03.07	ONLINE, Austria	Austria	Workshop
46	IM-X Council #05 Meeting - Hannover Messe 2024	2024.04.24	Hannover, Germany	Germany	Meeting
47	III BAIDATA FORUM 2024	2024.05.08	Bilbao, Spain	Spain	Forum
48	DSSC Workshop on Interoperability in Data Spaces III	2024.10.01	Budapest, Hungary	Hungary	Workshop
49	2024 European Big Data Value Forum!	2024.10.02-04	Budapest, Hungary	Hungary	Forum

Table 4. EU DATA SP4CE National Event List

EU DATA SP4CE PRIVATE & INTERNAL EVENTS				
No	Event Title	Date	Location	Typology
1	EU DATA SP4CE - Consortium Meeting #01 (Pre-KoM)	2022.07.20	ONLINE	Meeting
2	EU DATA SP4CE KoM - Consortium Meeting #02	2022.10.21	ONLINE	Meeting
3	Biweekly session with DSSC Community of Practice #01	2022.11.11	ONLINE	Meeting
4	Biweekly session with DSSC Community of Practice #02	2022.11.25	ONLINE	Meeting
5	Biweekly session with DSSC Community of Practice #03	2022.12.09	ONLINE	Meeting
6	Biweekly session with DSSC Community of Practice #04	2022.12.23	ONLINE	Meeting
7	Biweekly session with DSSC Community of Practice #05	2023.01.06	ONLINE	Meeting

8	Biweekly session with DSSC Community of Practice #10	2023.01.18	ONLINE	Meeting
9	Biweekly session with DSSC Community of Practice #07	2023.02.03	ONLINE	Meeting
10	Biweekly session with DSSC Community of Practice #08	2023.02.17	ONLINE	Meeting
11	Biweekly session with DSSC Community of Practice #06	2023.02.20	ONLINE	Meeting
12	Biweekly session with DSSC Community of Practice #09	2023.03.03	ONLINE	Meeting
13	EU DATA SP4CE - Consortium Meeting #04 - D7.2 contributions and D&C plan	2023.03.06	ONLINE	Meeting
14	Expert meeting	2023.03.23	ONSITE	Meeting
15	Biweekly session with DSSC Community of Practice #11	2023.03.31	ONLINE	Meeting
16	Biweekly session with DSSC Community of Practice #12	2023.04.14	ONLINE	Meeting
17	Biweekly session with DSSC Community of Practice #13	2023.04.28	ONLINE	Meeting
18	EU DATA SP4CE - Consortium Meeting #05 - WP Status Review Internal	2023.05.05	ONLINE	Meeting
19	Biweekly session with DSSC Community of Practice #14	2023.05.12	ONLINE	Meeting
20	Co-Creation Workshop on Data Platform and Datamarketplace Catalogue - Workshop #01	2023.05.23	ONLINE	Meeting
21	Biweekly session with DSSC Community of Practice #15	2023.05.26	ONLINE	Meeting
22	Biweekly session with DSSC Community of Practice #16	2023.06.09	ONLINE	Meeting
23	Biweekly session with DSSC Community of Practice #17	2023.06.23	ONLINE	Meeting
24	Biweekly session with DSSC Community of Practice #18	2023.07.07	ONLINE	Meeting
25	Co-Creation Workshop on Data Platform and Data marketplace Catalogue - Workshop #02	2023.07.11	ONLINE	Meeting
26	EU DATA SP4CE - Consortium Meeting #06 - GA Brussels	2023.07.12	Brussels. Belgium	Meeting
27	Biweekly session with DSSC Community of Practice #19	2023.07.21	ONLINE	Meeting
28	Biweekly session with DSSC Community of Practice #20	2023.08.04	ONLINE	Meeting
29	Biweekly session with DSSC Community of Practice #21	2023.08.18	ONLINE	Meeting
30	Biweekly session with DSSC Community of Practice #22	2023.09.01	ONLINE	Meeting
31	Biweekly session with DSSC Community of Practice #23	2023.09.15	ONLINE	Meeting
32	Biweekly session with DSSC Community of Practice #24	2023.09.29	ONLINE	Meeting
33	Biweekly session with DSSC Community of Practice #25	2023.10.13	ONLINE	Meeting
34	Biweekly session with DSSC Community of Practice #26	2023.10.27	ONLINE	Meeting

35	Biweekly session with DSSC Community of Practice #27	2023.11.10	ONLINE	Meeting

Table 5. EU DATA SP4CE Event List by Geographical Impact & Typology

Geographic Impact	Typology	Number	TOTAL
National Events	Conference	5	49
	Congress	1	
	Exhibition Fair	2	
	Forum	2	
	Hackathon	1	
	Meeting	10	
	Summit	4	
	Symposium	1	
	Workshop	23	
Private & Internal Events	meetings	35	35
Global & European Events	Conference	5	97
	Congress	2	
	Forum	3	
	Meeting	16	
	Summit	4	
	Workshop	67	

3.3 Online Communication

3.3.1 Website Communication

The EU DATA SP4CE project has benefitted from using two website channels for the project and its results dissemination and communication.

On the one hand, the Digital Factory Alliance (DFA) website that serves as main PR Office managing all events organized by the EU DATA SP4CE project and making sure that all events, workshops, and webinars, were disseminated, communicated and promoted throughout its wide audience (+4.000 people adding up all social media followers and newsletter subscribers) and assuring that project results were properly communicated with news, articles, and events to the proper target audiences while also fostering data spaces adoption throughout several levels and key added value environments.

On the other hand, the EU DATA SP4CE website that provides a general vision of the project key objectives and outcomes. It summarises how Data Space 4.0 is a community that aims to establish a unified voice and governance model to scale up cross-sectorial data spaces for manufacturing. It brings together national Industry 4.0 initiatives, data space think tanks, industrial associations, and networks for SME digital transformation to develop common principles for sharing industrial data in the EU.

3.3.1.1 DFA Website

Having the DFA website up to date and well worked on has been essential for the purpose of the EU DATA SP4CE project dissemination and communicationsince as it has given the first impression and interaction with our partners, associates and target groups.

The main goal of using the DFA website has been to increase the interest of the target communities and achieve their engagement through the events, news, activities… It has also proven to be very accesible, since it provides service 24/7 and enables interaction at any time, from anywhere having global outreach capacities and enabling the audience and target groups to follow activities through the website:

Figure 10. DFA Events Website section
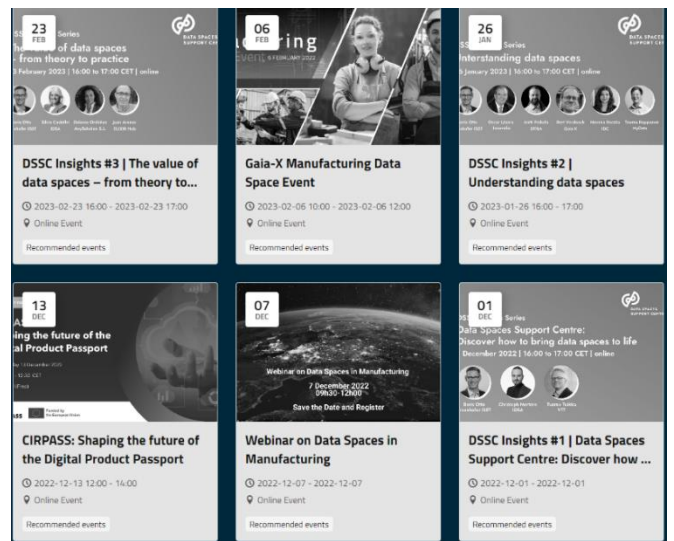
1. Events: The website of the organization features all the events organized by the DFA, providing visitors with relevant details such as event dates, locations, and descriptions. This DFA Events website section has been one of the main channels of the EU DATA SP4CE project and consortium to promote key added value events on the project results and foster data spaces adoption.

2. News: The website also has beneitted from a dedicated section for news updates, enabling visitors to stay updated about the latest developments related to the deployment of data spaces. This DFA website News section has contributed deeply to the "News items" D&C KPI as several news articles were published under the "published in partner website" category, contributing to the widespread of data spaces adoption and data spaces blueprint promotion, among other key impacts identified.

Figure 11. DFA News Website section

3. Digital Corner: Along with events and news, the website also has a digital corner where visitors can access and register to different webinars. These webinars cover a range of topics relevant and offer valuable insights to attendees. These webinars are based on a Vimeo channel where most of the videos about EU DATA SP4CE project, its results and consortium partner contributions have been made available so as to ensure long-term and sustainable knowledge transfer to the previously identified target groups and wide audience about data spaces, its standards, while fostering data spaces adoption.

Figure 12. DFA Digital Corner Website section

4. Newsletter & Contact: Another two important sections of the DFA website are the Newsletter and Contact us sections, wherehave visitors have the option of subscribing to the DFA's newsletter (like +1000 other subscribers). This newsletter provides subscribers with regular updates about events, news, and other relevant information about data spaces, digital factory alliances, data and AI in manufacturing, among others. Additionally, the website offers visitors the opportunity to become members of the organization and also provides a means for contacting the DFA directly.

Figure 13. DFA Newsletter Website section
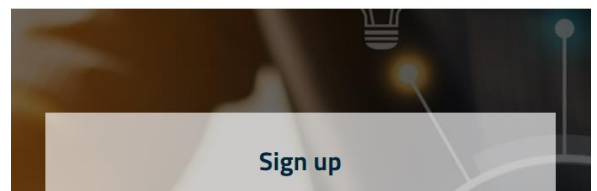
5. DFA Services: In the DFA Services, some of the key EU DATA SP4CE results and assets can be found as highlighted in the figure below:

Figure 14. DFA Services Website section
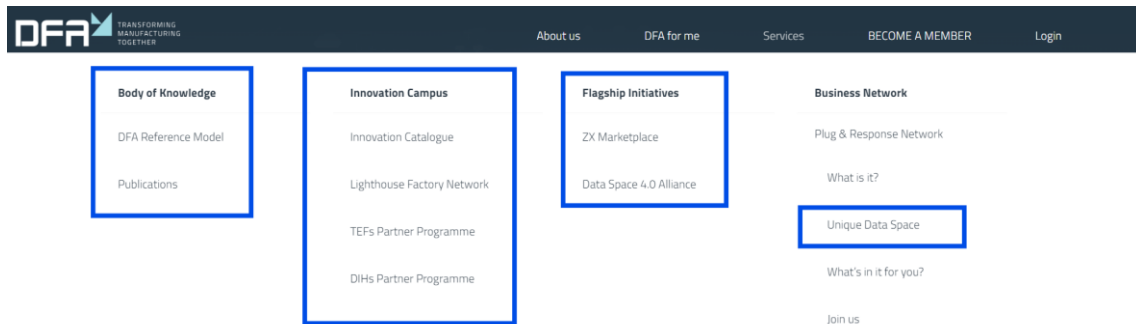
In this Services section, the main EU DATA SP4CE results and assets available at the DFA website are:

1. The Body of Knowledge Catalogue of key resources (documents, reports, guidelines, presentation slides, among others).

2. The Innovation Catalogue of key components and standards with direct links.

3. The Lighthouse Factory Network of Use Cases and Pilot Experimentation Catalogue for SMEs, companies and key target audiences to find out more about data spaces adoption use cases.

4. The DIH and the TEF Programmes where EDIHs and TEFs can request to join the EDIH TWG on Data in Manufacturing and contribute to the amplification of European data space think tanks, promote knowledge and innovation networks for the leading data 4.0 lifecycle standardisation initiatives and coordinate and support the network of the EU DATA SP4CE and European networks for SME digital transformation through DIH and AI TEF for manufacturing networks.

5. The ZXMarketplace for solution display for market-driven innovation

6. The direct access to the DATA SPACE 4.0 Alliance to the EU DATA SP4CE website

7. The promotion of a Unique Data Space of the Plug & Response Network

The website's performance since the EU DATA SP4CE started (November 2022) can be characterized as consistent due to the absence of significant spikes in visitor traffic. Instead, there is a steady stream of visitors that maintains a relatively constant level of activity. This suggests that the website is effectively meeting the needs of its user base without experiencing sudden surges or dips in traffic.

Figure 15. DFA Website Performance
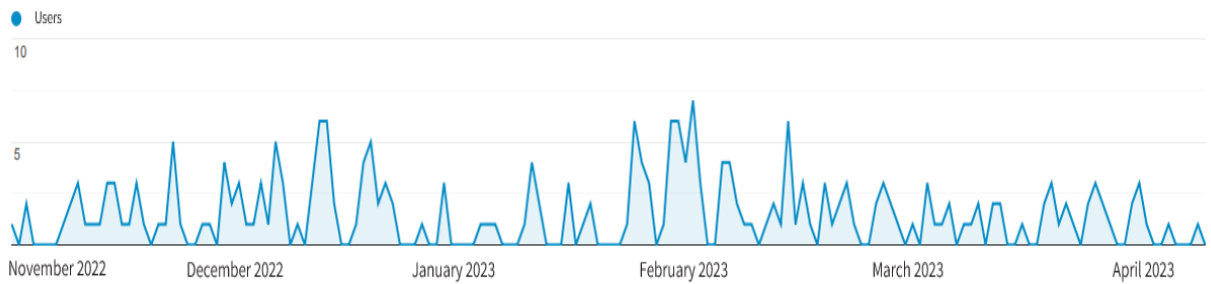
Figure 16. DFA Website global impact

Interestingly, since the project started, there have been visitors mostly from Europe but also from other regions in the world as can be seen in the figure below, reaching a global audientce. This suggests that the its content and design are resonating with users from various cultural backgrounds and geographies.
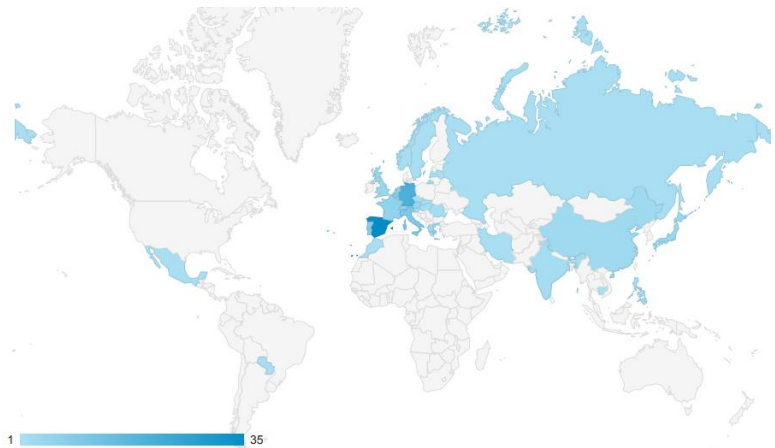
In the 2023 year, the DFA website reached 1.9K page views or visits as it can be shown in the figure:

In conclusion, using the DFA website channel has proven to be an effective decision as the EU DATA SP4CE consortium has been able to use a neutral space for all partner activities promotion, EU DATA SP4CE result knowledge transfer and events and news publication.

Figure 17. DFA Website visits / views

3.3.1.2 EU DATA SP4CE Website

The Data Space 4.0 Website has served its purpose of providing a general vision of the project key objectives and outcomes. It summarises how Data Space 4.0 is a community that aims to establish a unified voice and governance model to scale up cross-sectorial data spaces for manufacturing. It brings together national Industry 4.0 initiatives, data space think tanks, industrial associations, and networks for SME digital transformation to develop common principles for sharing industrial data in the EU. This website also publishes the key events that are relevant for the project consortium, partners and stakeholders to join.

The primary objective of the Data Space 4.0 website is to deal with project management topics and engage with visitors encouraging them to participate in the various initiatives and programs mostly organised and promoted by the DFA or other important stakeholders (like DSSC, IDSA, among others). By providing visitors with opportunities and links to learn about the benefits and potential of data spaces, as well as the tools and resources available for their development, the website hopes to inspire individuals and organizations to get involved and contribute to the creation of a sovereign European manufacturing data space continuum.

Using the EU DATA SP4CE website has also been benefitial for the project as it has served for SEO (Search Engine Optimization) purposes so that to orient the website to rank higher on main search engines and receive more traffic when users and visitors write "data space 4.0"or "manufacturing data space" it is the first result.

3.3.2 Social Media

The PR office of EU DATA SP4CE has designed and implemented an integrated social media strategy to maximize the performance and engagement from the target audience, where, both the DFA and the DATA SPACE 4.0 LinkedIn Pages and X accountas have actively contributed to the EU DATA SP4CE project visibility throughout and beyond the project lifecycle. All actions in social media seek to generate synergies to bridge the gaps of communication as to connect the values of the project and related stakeholders on line with the values of target audience specified in the former chapters. Social media actions aim to lay the groundwork for a future "DATA SPCE 4.0 online community" that has been engaged in diverse activities in the upfront of the trend of big data in factories, smart engineering, big data pipelines, fog computing and other hot topics in Industry 4.0, etc.

3.3.2.1 LinkedIn Page

LinkedIn is the world's largest professional networking platform with over 700 million users. Industry associations like the Digital Factory Alliance and DATA SPACE 4.0 use LinkedIn to connect with professionals and organizations in the industry and network with existing and potential partners/ users. It also provides with an opportunity to build the strategy and establish the credibility as a thought leader in the industry. Research and news updates can be pubhlished to the followers, which helps to increase awareness and establish the DFA and Data Sp4ce 4.0 authority in the field. Linkedin provides as well with a platform to share knowledge and expertise with the followers helping to educate and building a community of data spaces.

On the one hand, the Digital Factory Alliance (DFA) uses two LinkedIn channels: its LinkedIn Profile with +1000 followers and the DFA LinkedIn page with almost 600 followers, reaching an audience of +1600 followers via LinkedIn, posting and promoting EU DATA SP4CE activities, events, news and achievements:

Figure 18. DFA LinkedIn Page
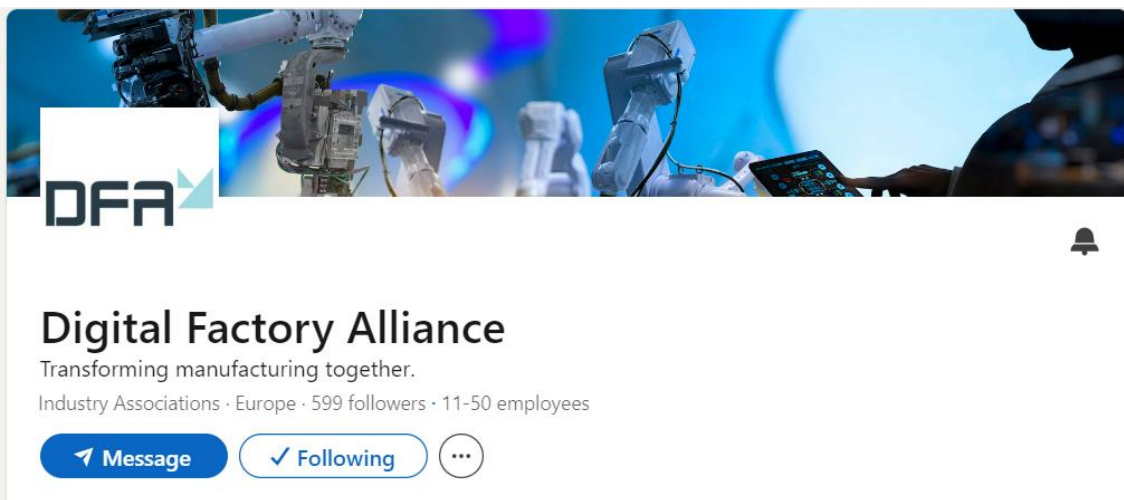
On the other hand, the DATA SPACE 4.0 LinkedIn Page has achieved 450 followers and posted highly from 2022 to 2024:
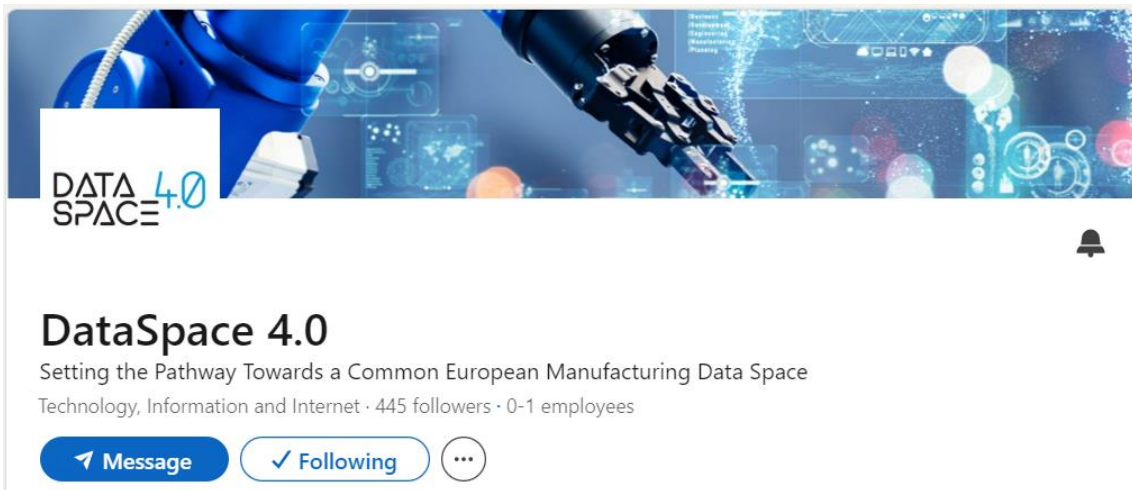
In this context, and as an example of an important activity carried out by the DFA, Linkedin has been used to boost and promote the important survey that the EU project published. The survey's aim has been collecting and rating the requirements that data spaces should have from experts involved in national initiatives and working groups. In that sense and by using Linkedin, the survey has gathered specifically the opinions of smart manufacturing and industry 4.0 specialists participating in discussions on concepts for data spaces in manufacturing in political, business or research networks or having practical experience with their implementation, operation, and use. The EU DATA WEEK was also actively promoted via LinkedIn with impressive results. On paralel, through the LinkedIn account of Data Space 4.0 Linkedin, several posts have been made to motivate and engage followers shaping the future of data spaces inviting them to the sessions and events which happen perdiodically. The ones with more interactions (likes, comments, retweet, etc) are showcased below:

1. Invitation to Webinars on Data Spaces in Manufacturing

2. Motivating the participation to the survey with the goal of Setting a Pathway Towards a Common European Manufacturing Data Space
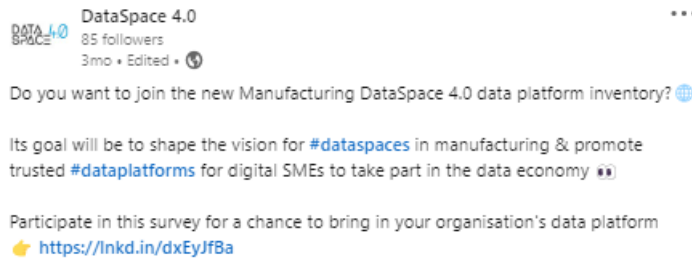
The consortium partners have important contact networks and communication channels that help not only to give visibility to the project, but also to ensure the long-term sustainability of the initiative and the involvement of stakeholders, initiatives, organisations, alliances, etc. within the European digital and manufacturing community that can participate in and benefit from the data ecosystems. Within this framework, here some examples of how they also share and promote project related content:

3. PIA promoting the Survey

4. EFFRA publishing a video demonstrating how Data Spaces are the pathway of Connected Factories

Consequently, both the DFA and the DATA SPACE 4.0 LinkedIn Pages have proven to be effective tools for EU DATA SP4CE project and result promotion as well as to foster data space adoption.
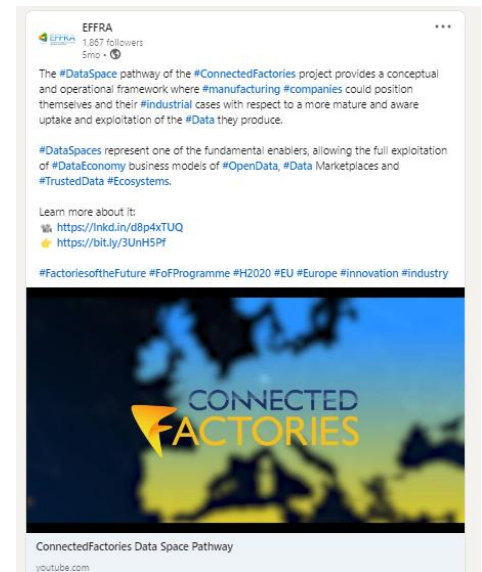
3.3.2.2 Twitter / X

The objective of Twitter / X was to generate as much engagement as possible through likes, retweets, replies, profile links, etc. It aimed to create a dynamic and fast-moving environment for target audience to always stay up to the trend of EU DATA SP4CE activities and industry 4.0. As part of the project Dissemination & Communication strategy, the EU DATA SP4CE project created a DATA SPACE 4.0 Twitter / X account that has achieved 79 followers and posted 68 posts as shown in the figure below:

Figure 20. DATA SPACE 4.0 Twitter / X account

This Twitter / X account has contributed to widening the reach of the Data Space 4.0 community, increasing the impact of the EU DATA SP4CE project and fostering the adoption of dataspaces in the manufacturing sector-

Regarding the Twitter / X online presence of the EU DATA SP4CE project, the consortium has benefitted from several Twitter/X accounts, as established in D7.1. Taking advantage of a dynamic Twitter/X strategy has made possible to reach a bigger potential number of followers attracting more stakeholders and target group members what has proven to make Twitter / X one of the principal online channels to disseminate EU DATA SP4CE messages.

Table 6. Dynamic Twitter / X Strategy

Twitter / X Account	Description	M1 # of Followers	M20 # of Followers
EFFRA	Transforming manufacturing in Europe through the Factories of the Future partnership.	3483	3560
BDVA	Big Data Value is the Public Private ecosystem around Big Data in Europe.	3822	3934
AIOTI	The European Alliance for Internet of Things Innovation.	1934	2045
CECIMO	CECIMO represents globally the common position of European Machine Tool Industries and related Manufacturing Technologies, and promotes cooperation with other organisations worldwide.	2147	2233
DATA SPACE 4.0	EU DATA SP4CE and DATA SPACE 4.0 Community.	0	79
DFA	International Trusted Community for Digital Factories to foster Knowledge Sharing and Industrial Collaboration to Achieve Data Driven Digital Transformation.	1160	1214
GAIA-X	Initiative that develops a software framework of control and governance and implements a common set of policies and rules that can be applied to any existing cloud/ edge technology stack to obtain transparency, controllability, portability and interoperability across data and services.	3814	4471
IDSA	The International Data Spaces Association (IDSA) is a coalition of more than 130 member companies that share a vision of a world where all companies self-determine usage rules and realize the full value of their data in secure, trusted, equal partnerships; and we are making that vision a reality.	2217	NA
FIWARE FOUNDATION	The FIWARE Foundation is the legal independent body providing shared resources to help achieve the FIWARE mission by promoting, augmenting, protecting, and validating the FIWARE technologies as well as the activities of the FIWARE community, empowering its members including end-users, developers and rest of stakeholders in the entire ecosystem.	12000	12100

Combining all the followers of all the main X networks, the EU DATA SP4CE activities have reached near 30.000 people. From the EU DATA SP4CE consortium the main X channels have been the one of the Digital Factory Alliance (DFA) and the the Data Spaces 4.0 Project one and both are very important for several reasons:

- Networking: Twitter allows to connect with potential partners, users, and suppliers in the Data Spaces industry. By following relevant accounts and using hashtags related to the industry, both DFA and DS4.0 can engage with other businesses and individuals who may be interested in their initiatives.

- Branding: Twitter is a powerful tool for building awareness and establishing credibility in an industry. By regularly posting updates on activities and accomplishments, factory alliances can demonstrate their expertise and showcase their unique selling points.

- Customer engagement: Twitter provides a platform for this kind of alliances to interact with their customers and respond to their questions and feedback in real-time. By engaging with customers on Twitter, factory alliances can build stronger relationships and improve customer satisfaction.

- Industry news and trends: Twitter is a great source of industry news and trends. By following relevant accounts and keeping up with relevant hashtags, factory alliances can stay informed about the latest developments in their industry and adjust their strategies accordingly.

The Digital Factory Alliance's Twitter / X account is described as An International Trusted Community for Digital Factories to foster Knowledge Sharing and Industrial Collaboration to Achieve Data Driven Digital Transformation. Most consortium partners are a highly engaged on Twitter / X, regularly disseminating publications and updates related to our project to their respective networks. Their commitment to explaining the goals and outcomes of the project is unwavering, as evidenced by their active participation in online discussions andevents related to our field. Here some examples:

1. EFFRA dissemination of the EU DATA SP4CE CSA in 2022

EFFRA @EFFRA_Live · Dec 7, 2022
Discussing the role of the EU Data Sp4ce, @olazaro74 (@Innovalia_group) asserts that the main goal of the CSA is to connect different #data backgrounds already existing at national level + provide the instruments to harmonize and build a unified voice for the common #EUDataSpace
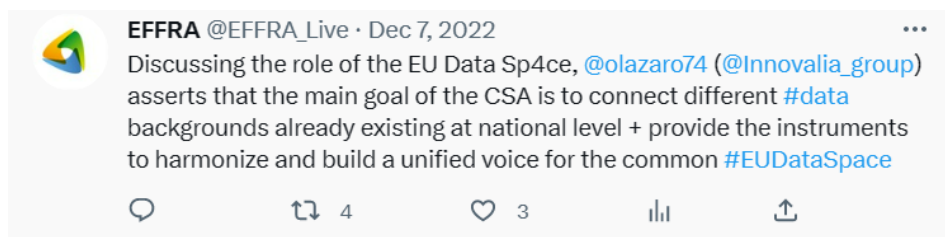
2. IDSA communication of data spaces adoption and connectors:

3. TNO promoting the trusted data transactions activities:

4. FRAUNHOFER widening the impact of data sovereignty through collaborative AI:

5. In may 2023 a post about the DATA SPACE 4.0 presence at the Digital product Passport results at the Tech-X hackathon reached an audience of over 700 impressions as it can be shown in the figure below:

6. The post about the International Expert Dialogue in July 2023 reached over 450 impressions too:

3.4 EU DATA SP4CE Final D&C KPIs

Several KPIs were defined to track and follow the engagement and impact achieved through the marketing campaigns, events and publications which are being done. By the end of the EU DATA SP4CE Project, the consortium has been able to monitor all of the KPIs, as shown below:

Table 7. Final Dissemination & Communication KPI monitoring

Type of Dissemination Activities	Key Performance Indicators (KPIs)	TARGET VALUE	M6 MARCH 2023	M20 JULY 2024
Events	Workshops, Webinars, Fairs…	100	45	180
Website	Average month visits	1000	208,2	5700
	Page views	1500	893	1900
Twitter	# of Followers	1000	1270	1291
	Average month impressions	8000	6969	744
	Engagement rate	5%	10%	58%
News items	Published in media	20	19	22
	Published in EU DATA SP4CE website	20	0	28
	Published in partner website	60	0	85
YouTube	Video	5	0	18
	Views per video	50	0	291
LinkedIn Page	# of Followers	100	116	1044
Dissemination materials	Logo branding set	1	1	1
	Presentation template	1	1	1
	Project factsheet	3	1	3
	Poster	15	0	15
	Roll up	2	0	2
	Infographic design	2	0	2
Newsletter	Subscribers	200	850	1000+
	Newsletter post	2	0	4

For instance, the 180-event list, evidences of the website visits/views, Twitter and LinkedIn followers and impressions have been provided in previous sections. The newsletter subscriber KPI refers to the combination of the DFA and EU DATA SP4CE subscribers reaching more than 1000 subscribers, the EU DATA SP4CE activities have been communicated in 4 Newsletter posts as shown in the next table:

Table 8. Newsletter posts

	Title	Link	Date	Subscribers	Engagement rate
Newsletter posts	DFA Webinar	Available here	2022.12.13	902	52,66%
	Email DFA Data Space 4.0 data platform inventory	Available here	2022.12.19	894	47,33%
	DFA | Newsletter October 2023	Available here	2023.10.10	917	30,75%
	DFA | Newsletter November 2023	Available here	2023.11.24	1051	30,75%

Regarding the videos KPI, there has been a total of 18 videos about EU DATA SP4CE project, its activities, its results and partner contributions spraed throughout several YouTube, Vimeo, and website channels as it can be found in the table below:

Table 9. EU DATA SP4CE Videos

#	Title	Date	Link	Views
1	IDSA Tech Talk | IDS Open-Source – driving data space innovations & implementations | October 12, 2023	2023.10.12	Available here	26
2	IDSA Update Session | Connector & Certification – In combination, a trusted link to participate in a data space	2023.09.14	Available here	212
3	IDSA Tech Talk | Legal Interoperability – legal aspects in data spaces | May 4, 2023	2023.05.04	Available here	345
4	Data spaces for manufacturing and digital product passports for circularity: synergies, opportunities and challenges | CIRPASS part | June 19, 2023	2023.06.19	Available here	33
5	IDSA Tech Talk | Data Usage Control – indispensable to enable data sovereignty | June 1, 2023	2023.06.01	Available here	455
6	IDSA Tech Talk | The TRUE Connector – Essential in a data space | March 30, 2023	2023.03.30	Available here	1000
7	Data spaces for manufacturing and digital product passports for circularity: synergies, opportunities and challenges | June 16, 2023	2023.06.16	Available here	68
8	IDSA Tech Talk | IDSA Rule Book – Overview and how to implement it | February 23, 2023	2023.02.23	Available here	323
9	IDSA Update Session | Data Spaces Radar – Stage for promising and mature data spaces	2023.04.28	Available here	174

10	EBDVF 2023 | Introduction to the session: Dataspace Protocol in research and open-source ecosystems | October 27, 2023 | Part 1 – re-recorded introduction	2023.10.27	Available here	11
11	IDSA Tech Talk | Semantic Interoperability – Successful data sharing through common understanding | April 6, 2023	2023.04.06	Available here	375
12	IDSA Tech Talk | The Information Model – key to achieving semantic interoperability | July 20, 2023	2023.07.20	Available here	431
13	Data Spaces Dialogue | How the BAIDATA ecosystem helps realize true data spaces	2023.03.15	Available here	126
14	EBDVF 2023 | Unlocking Interoperability: Dataspace Protocol in research and open-source ecosystems | October 27, 2023 | Part 2 – Recording from Valencia	2023.10.27	Available here	14
15	IDSA Tech Talk | IDS Reference Architecture Model – the standard for sovereign data sharing | April 20, 2023	2023.04.20	Available here	645
16	IDSA Tech Talk | Unveiling the Dataspace Protocol | November 28, 2023	2023.11.28	Available here	748
17	How to drive business value with Digital Product Passports & Data spaces	2023.12.01	Available here	60
18	Webinar Manufacturing Data Spaces (07/12/2022)	2022.12.07	Available here	192

In conclusion, as it can be seen in the table above, all of the Dissemination and Communication KPIs have been achieved or overachieved within the 20 months of duration of the project, which proves that the project has been able to raise awareness and maximize visibility of EU DATA SP4CE and its vision to facilitate a framework to leverage a harmonized and continuous data space 4.0 across the various national, European and international efforts, interests and technological developments.

4 Data Space 4.0 community sustainability plan & deployment bootstrapping

4.1 Brief Data Space introduction

A data space is a framework that facilitates the exchange of data between various stakeholders, such as companies or organizations, without centralizing the data itself. The data remains under the control of its owner, who can manage access permissions and specify which data is shared and with whom. At the core of a data space are software components like connectors, which allow users to explore data offerings, negotiate sharing terms, and initiate secure, peer-to-peer data transfers. All exchanges are tracked by a Clearing House to ensure accountability and support dispute resolution.

Participants in a data space are authenticated by an authority or its representatives and granted access credentials. Once authenticated, entities can share, consume, or offer services across the data space. The infrastructure can be deployed on-premise or in the cloud, and data offerings are made discoverable through Metadata Brokers. Data spaces enhance collaboration across sectors by allowing seamless, secure data sharing while maintaining data sovereignty for participants.

Besides the technological foundation for data sharing, data spaces ensure that all components and environments are certified for security, functionality, and interoperability. Certification programs assess technological components against standards like DIN 27070 and ISO/IEC 27001, ensuring trust and secure operations within data spaces.

This structured certification ensures that participants in a data space can trust that their data is being handled securely and interoperably, paving the way for a sustainable, trusted data economy. Data spaces are the means to a future where data is shared efficiently across industries and sectors while maintaining strict control over data sovereignty.

4.2 Sectorial Initiatives

4.2.1 Institutions and Organizations

We mention, in alphabetical order, a number of relevant bodies that are organizations that contribute or lead standardization efforts, offer open-source components or general guidance and good practices.

4.2.1.1 BAIDATA

The BAIDATA Association was founded in Spain to support the development of public-private data ecosystems through research, development and training activities. The focus is on regional data space pilot projects. They apply the IDS and Gaia-X standards, as data sovereignty and interoperability are essential. The name, translated from the Basque language, means "yes to data". The initiative's headquarters is in Bilbao, Spain.

4.2.1.2 Big Data Value Association (BDVA)

The Big Data Value Association (BDVA) is an industry-driven research and innovation organization focused on advancing big data technologies, data platforms, data spaces, and industrial AI across Europe. Established in 2014, BDVA initially served as the private counterpart to the European Commission within the Big Data Value Public-Private Partnership. Since then, it has significantly influenced research agendas, innovation roadmaps, and industry guidelines related to big data and AI.

BDVA's mission is to cultivate an innovation ecosystem that accelerates the digital transformation of the European economy and society through data and AI. The association aims to impact policy-making, business, and society positively, drive world-class research, and contribute to a sustainable future. It also focuses on co-creating projects and maximizing their value to ensure European competitiveness in the data-driven and AI-enabled economy. With over 240 members across 31 European countries, BDVA includes a broad spectrum of organizations, ranging from small and medium-sized enterprises to large corporations, as well as research institutions and public sector entities.

4.2.1.3 Digital Factory Alliance (DFA)

Founded in March 2021 by Innovalia Association, Atos, and Engineering Ingegneria Informatica S.p.A., the DFA draws on the insights and best practices from major European digital and manufacturing projects like Boost 4.0 and Qu4lity. These projects served as large-scale trials for big data-driven solutions aimed at optimizing Industry 4.0 processes.

The DFA aims to create an international trusted community that stimulates knowledge-sharing and industrial collaboration to accelerate the digital transformation of the manufacturing industry. Its primary objectives include promoting the early adoption of digital technologies, increasing automation levels, enhancing quality control and management, optimizing resource utilization, and strengthening supply chain integration and resilience. The ultimate goal is to drive significant business growth by improving operational efficiency and maximizing asset utilization.

For technology providers, the DFA offers the opportunity to validate and standardize digital solutions within the DFA Reference Framework, gaining access to the exclusive ZX Marketplace and new business opportunities within the DFA network. For end users, such as manufacturing companies, the DFA provides access to a curated selection of standardized, validated digital solutions that can be seamlessly integrated into production environments, along with support from trusted providers to enhance efficiency and facilitate digital transformation.

4.2.1.4 DSSC

The Data Spaces Support Centre (DSSC) is at the forefront of coordinating the development of common European data spaces, which are critical for the digital transformation across various sectors. The DSSC's mission is to increase the availability of data for economic and societal use while ensuring that individuals and companies retain control over their data and adhere to EU values. To achieve this, the DSSC is creating a comprehensive blueprint for Data Spaces that includes common building blocks addressing business, legal, operational, technical, and social dimensions.

The DSSC blueprints provide a comprehensive framework for data spaces, including key principles such as data sovereignty, interoperability, and security. These principles are crucial

for ensuring that data spaces operate consistently and effectively across different sectors and geographies. By standardizing these foundational elements, the DSSC helps establish a common understanding and approach to data space development.

4.2.1.5 Eclipse Foundation

The Eclipse Foundation's framework for dataspace implementation features several key components designed to facilitate sovereign, cross-organizational data exchange. The Eclipse Dataspace Components (EDC) framework provides a robust foundation for dataspace implementations. It offers a range of functional and non-functional features that can be reused and customized through defined APIs, ensuring interoperability by design. The EDC framework includes a conceptual model, architectural guidelines, source code, and example implementations, all based on the Gaia-X AISBL Trust Framework and the IDSA Dataspace protocol. This framework supports the development of interoperable dataspace solutions, facilitating seamless integration and collaboration across different data and service ecosystems. The Eclipse Dataspace Connector is a core element that orchestrates data sharing and transfer among participants using the IDS framework. This connector includes modules for data querying, exchange, policy enforcement, and monitoring, ensuring secure and efficient data transactions. Their Federated Catalogue aggregates catalogues from multiple participants within a dataspace by employing crawlers that periodically gather and consolidate data from each participant into a local cache.

4.2.1.6 FIWARE Foundation

The FIWARE Foundation is a non-profit organization that promotes the use of open standards and open-source technologies for the development of smart solutions across various domains. It has over 550 members and 30 employees, and is headquartered in Berlin. FIWARE technology is used in more than 300 cities and regions worldwide. It's a curated framework of open-source platform components that accelerates the development of Smart Solutions. The foundation provides shared resources to support its mission and the activities of the FIWARE community. The FIWARE Foundation is one of the parties advocating for the adoption of common data models. They support the creation of data models via the Smart Data Models tool.

4.2.1.7 Gaia-X

Gaia-X is a European initiative that aims to connect the Data and Infrastructure Ecosystems and relies on three conceptual pillars: compliance, federations and data exchange and services. Gaia-X promotes and improves the implementation of Data Spaces using trusted platforms that comply to defined rules. This enables users and providers to establish trust between each other based on objective technological standards, thereby allowing secure and free sharing and exchange of data across various stakeholders. A vertical integration solution is developed to connect machines to the platform, considering the interfaces between machines, tooling and clamping systems, edge devices, on-premises solutions, and systems for business resource planning (Enterprise Resource Planning) and production control systems (Manufacturing Execution System).

4.2.1.8 IDSA

The International Data Spaces Association (IDSA) is a not-for-profit organization that creates standards for sharing data in data spaces, allowing participants to maintain full control over their data. More than 170 members participate in the consortium, with some large-profile and renowned as Siemens, PWC, SAP, Microsoft and Google. IDSA's vision is to enable secure, trusted, and equal partnerships for data sharing, empowering companies to self-determine usage rules and realize the full value of their data. They seek to establish common standards and protocols for data spaces to be interoperable, and therefore rely on consolidated practices, and standards such as W3C ones (e.g., DCAT, ODRL, DID, RDF).

4.3 Mature Data Spaces

4.3.1 Catena-X

The [Catena-X](#) Automotive Network is designed to facilitate secure, standardized data exchange among automotive manufacturers, suppliers, and partners. This initiative aims to create a collaborative and trustworthy Data Space for the automotive industry, aligned with the International Data Spaces (IDS) and Gaia-X standards. Catena-X emphasizes sovereign data exchange, ensuring users retain control over their data, including deciding how and when it is shared. By establishing a unified data ecosystem, Catena-X enables comprehensive data collection throughout a vehicle's lifecycle, unlocking valuable insights from both the utilization phase and the manufacturing process. This initiative supports the development of new data-driven business models and enhances collaboration and efficiency within the automotive sector.

4.3.2 Data4Industry-X

Data4Industry-X is an advanced data exchange solution tailored for the industrial sector, recognized as a Gaia-X Lighthouse project and contributing to the Manufacturing-X initiative. This solution is engineered to enhance data and information exchange across global organizations, subsidiaries, and suppliers, with a focus on boosting competitiveness and reducing carbon footprints. It capitalizes on Dawex Data Exchange technology within an open and cloud-agnostic architecture, ensuring a trusted, secure, and compliant data exchange environment that adheres to Gaia-X standards. The solution also integrates with the Eclipse Dataspace Component framework to enable seamless interoperability between data spaces and utilizes the UDC Prosyst solution to interface with the OPC UA protocol for scalable industrial data retrieval and exchange[1].

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[1]https://www.dawex.com/en/news/data4industry-x-bridging-industrial-data-ecosystems; https://www.dawex.com/en/news/dawex-schneider-electric-valeo-cea-and-prosyst-join-forces-to-create-data4industry-x

Data4Industry-X aims to unify the industrial data ecosystem by enabling organizations of all sizes to securely exchange, distribute, and monetize industrial data. This promotes innovation, better carbon footprint management, and a competitive edge through effective data circulation, contributing to a resilient and sustainable industrial landscape.

4.3.3 SCSN

The Dutch Smart Connected Supplier Network (SCSN) is led by IDSA-member Brainport Industries and supported by TNO. Companies must register once with an SCSN Service Provider and can exchange data with all other affiliated companies in the production chain, such as orders, invoices, technical product data, etc. Therefore, they do not require any separate B2B connection in order to exchange data. As with any data space, a company keeps a grip on its own data, and determines which data is shared to what extent with whom. SCSN bolsters productivity along the supply chain through fast, secure, and interoperable information sharing between participant companies. At the time of writing, its webpage had approximately 300 listed participants.

4.4 Open-Source Components and Tools

This section provides an overview of available open-source resources of varied nature for starting a Data Space related project. While not plug-and-play solutions, as their setup requires personnel with more than a cursory technical background, they can be the basis for building on top of- and around, or issuing an application-specific tool.

4.4.1 IDSA Github repository

The International Data Spaces Association (IDSA) [repository](#), while currently unmaintained[2], contains crucial components essential for data space development, including the source code for the Dataspace Connector and other related elements like the testbed for verifying data space components within IDSA-compliant ecosystems. The repository encompasses a range of resources that facilitate interoperability among data space participants.

At the core of this repository is the Dataspace Connector, which is an implementation of an IDS connector following the IDS Reference Architecture Model. It incorporates the IDS Information Model and utilizes IDS Messaging Services for effective message handling and functionality. The main component provides a REST API to manage resources, allowing for the loading, updating, and deletion of local or remote data enriched with metadata. It also supports conformance with IDS messaging standards and enforces usage control according to specified IDS policy patterns.

The architecture of the Dataspace Connector is container-based and consists of several components, with some being optional. Central to this architecture is the connector core, which manages connector data. Additionally, users can opt for the Dataspace Connector GUI for an enhanced interface. Integration with Jaeger for visualizing collected OpenTelemetry data is also possible, and Portainer can be employed to load and manage IDS-Apps from an IDS-AppStore-Registry. The actual data managed by the connector can be stored both locally and externally, with external IDS-Ecosystem components accessible via IDS messages.

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[2] At the time of writing most recent commits date from five months ago, mostly for documentation, whereas for the software components the most recent commits are nine months old.

4.4.2 Eclipse Dataspace Components

The Eclipse Data Space Components (EDC) framework, under the governance of the Eclipse Foundation, is an open-source initiative aimed at providing a customizable and interoperable platform for building data spaces. It operates based on established protocols like the Gaia-X Trust Framework and the IDSA Dataspace Protocol, ensuring compliance and secure data exchange across different platforms. The main components, including connectors, federated catalogs, and identity hubs, give developers the flexibility to design data spaces that meet specific business needs while enabling participants to control and retain their data.

EDC's architecture centres around its connectors, which facilitate secure data transfer between data owners and consumers. These connectors interact with a federated catalogue, allowing data providers to publish their data offerings and data consumers to search for relevant datasets. The identity hub ensures that data-sharing transactions are only carried out between trusted and verified entities, protecting the integrity of the data space. Importantly, data does not reside within the EDC but remains with its owner, thus preserving data sovereignty.

The EDC framework is supported by repositories that provide sample code and demonstrators, helping developers get started quickly. Its modular design allows developers to extend the framework with additional features as needed, making it adaptable to various industries and use cases. From AI-driven research to supply chain management, EDC offers a flexible and secure way to share data across organizational boundaries without compromising on data control or security.

The EDC is not a comprehensive data storage or processing tool. Instead, it serves as a modular framework that can be integrated with third-party systems to manage data exchanges. With interoperability and flexibility as its main tenets, the EDC ensures that businesses can implement their own data-sharing strategies while adhering to the highest standards of data security and governance.

4.4.3 Eclipse XFSC (Cross Federation Services Components)

The [Eclipse XFSC](#) (Cross Federation Services Components) project focuses on developing software components necessary for establishing a federated data and service infrastructure. Its goal is to connect multiple participants to foster innovation in data-driven services and products within interconnected ecosystems known as federations. The project aligns with Gaia-X's objectives to promote trust and interoperability while allowing participants to maintain control over their data.

The XFSC toolbox consists of various microservices and components that support functionalities such as Self-Sovereign Identities, credential management, and trust services. Key services include Identity, Credential, and Access Management (ICAM) for decentralized authentication, a Decentralized Catalogue for discovering data, and orchestration and monitoring tools for managing ecosystem operations. The Portal (POR) enhances user accessibility to onboarding and service provisioning, facilitating effective collaboration within federated environments. The XFSC elements fit into the long term vision, where Data Space participants can exchange information even when registered to separate Data Spaces.

4.4.4 SIMPL Middleware

The SIMPL (Secure IoT Middleware) project addresses the increasing challenges of secure communication within the Internet of Things (IoT), particularly in the context of loosely coupled devices. The primary aim of SIMPL is to develop a secure communication solution that is independent of the communication middleware used, preventing vendor lock-in while allowing for the concurrent operation of secure and insecure communication. This flexibility enables gradual system extension and migration. SIMPL consists of three main products: Simpl-Open (the core middleware), Simpl-Labs (test environments for developers), and Simpl-Live (production deployments in sector-specific data spaces).

SIMPL adheres to the following principles:

- Security Overlay: SIMPL functions as a security overlay, allowing existing event-based middleware to remain unchanged while enhancing security features.

- Dynamic Communication: The design accounts for the high dynamism of IoT systems, which frequently encounter changing communication partners.

- Resource Considerations: It is specifically tailored to support mobile devices with limited resources, which are prevalent in many IoT applications.

In order to achieve these objectives, SIMPL examines existing security techniques for their applicability and incorporates them into the system. A dedicated management instance is responsible for the dynamic configuration and monitoring of the IoT system, functioning independently of the utilized middleware. The developed concepts are put into practice through a feasibility study, which is subsequently demonstrated and evaluated across various use cases, ensuring the solution meets the needs of diverse IoT environments.

At the time of writing, SIMPL is under development with the goal of delivering an MVP (Minimum Viable Product) with essential functionalities that meet the basic needs of most Data Spaces. Once this state is reached, SIMPL will be released to the community for maintenance and enhancement, fully becoming an open-source programme.

4.5 Smart data models

The [Smart Data Models](#) initiative is designed to enable true data interoperability between diverse systems through the use of open-licensed, standard data models. This initiative, backed by entities such as the FIWARE Foundation, TM Forum, and IUDX, aims to provide shared, flexible, and extensible data models that cover multiple industries and sectors. The idea is to promote seamless data exchange across organizations, ensuring that the data models are easy to use, based on best practices, and supported by a large community of contributors. This ensures reliability and adaptability in various domains.

These models play an essential role in the Data Space landscape by providing a standardized way to represent data. By offering consistent schema definitions and specifications, they enable the harmonization of data across systems, critical for the operation of interoperable digital solutions. For example, in sectors like smart cities, these data models help applications publish and consume data in a way that aligns with global standards, making them a vital component in fostering open innovation.

4.5.1 FA³ST

[FA³ST](#) provides a comprehensive toolkit for developing and utilizing Digital Twins, adhering to Industrie 4.0 standards, specifically the Asset Administration Shell (AAS). As digital twins become integral to industrial processes across the entire value chain, their effectiveness hinges on the universal comprehensibility and integrability of data and services that transcend system and company boundaries. The Industrie 4.0 platform addresses this need through the specification of the AAS, which FA³ST fully implements.

This toolkit includes a suite of tools designed to facilitate the creation and management of interoperable digital twins. Fundamental components include:

- Service: Provision and utilization of an AAS featuring standardized interfaces like OPC UA, MQTT, and HTTPS.

- Configurator: A tool for configuring executable AAS instances.

- OPC UA Crawler: An automated model generator that interfaces with OPC UA servers.

- Model Generator: Generates AAS instances from existing data sources, such as CSV files.

- Registry: A centralized location for the registration and retrieval of Asset Administration Shells.

- Secure Data Exchange: Integrates AAS with the IDS framework to ensure sovereign data communication.

- Visualization: Enables monitoring and interpretation of data and models.

- Manager: Handles the management of AAS execution.

- Client: A library for interaction with AAS instances.

FA³ST supports a wide range of applications, from creating and managing digital twins for production plants and processes to digitizing legacy systems, ensuring quality data acquisition, and providing traceability in production documentation. It harbors data-sovereign communication between manufacturers and customers, enhancing operational efficiency and collaboration within the value chain.

FA³ST not only simplifies the implementation of the AAS specification but also offers a user-friendly web service that allows users to set up their own AAS model instance effortlessly. For more information on installation and usage, visit the project's GitHub page, where step-by-step instructions are provided.

4.6 Existing connectors

Data Space Connectors constitute the basis for the functioning of a Data Space, facilitating interactions among participant entities. They serve as the backbone for peer-to-peer negotiations and data transfers, enabling seamless collaboration within the ecosystem. Importantly, there is no requirement for a one-to-one relationship between users and connectors; a single connector can serve multiple users, each with distinct permission levels to ensure fine-grained access control.

In this section, we explore the various existing connectors, which showcase a broad spectrum of maturity levels. Some are open-source, while others have not disclosed their source code publicly. The accompanying figure illustrates a family tree of the reviewed connectors, highlighting their developmental origins. It identifies whether they are derived from established sources such as the IDSA Data Space Connector, the Eclipse Dataspace

Components Connector, or other independently developed projects, thereby providing insight into the diverse landscape of data space connectors.

Figure 21. Data Space Connectors listed on the IDSA Connector report (September 2024)
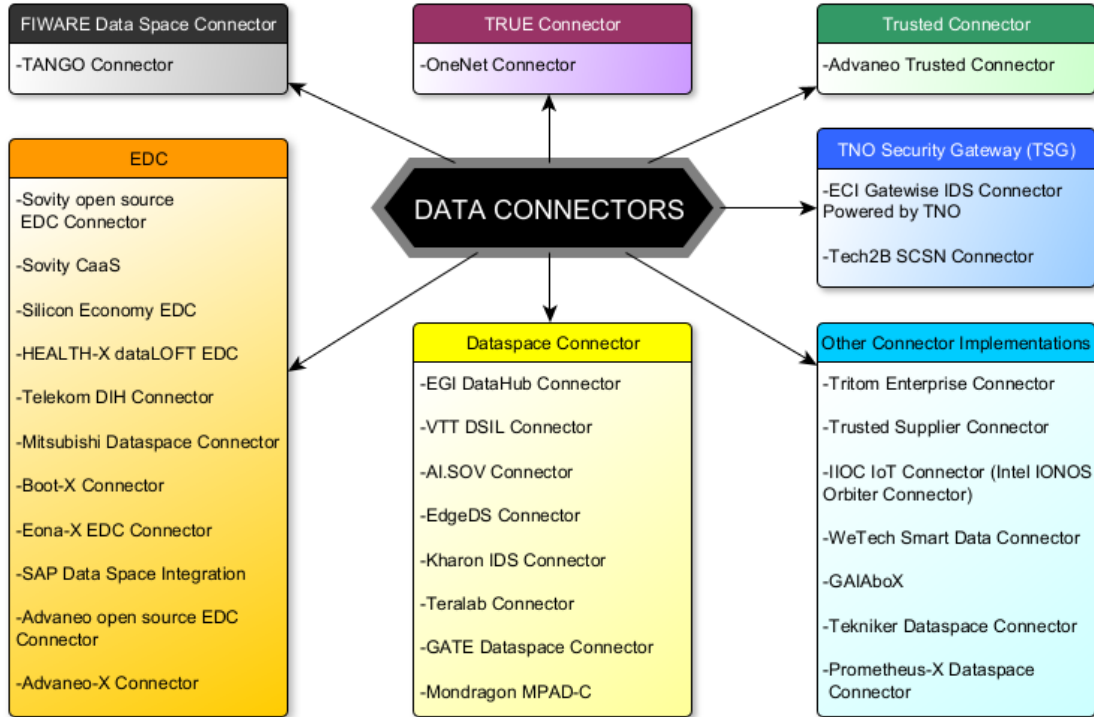
Below we present an extensive table (30+) based on the IDSA Connector report, listing the current Data Space connectors, their maintainer/developer organization, maturity, IDSA certification and other aspects. From the perspective of an upstarting project, the service level, maturity and licensing information can be the most significant. There are alternatives to go the outsourcing route, or to self-manage the deployment if in-house specialized personnel were present. We use the same colouring scheme as in Fig. 2 to denote the code-base origin a given Connector derives from, which, for clarity we replicate here:

EDC	IDS DSC	TSG	FIWARE	TRUE	Trusted	Other

Table 10. Connector catalogue. Based on IDSA Connector Report, September-2024

Name	Maintainer	Service level	Maturity	Portability	License	IDS Certification
Advaneo Open Source EDC Connector	Advaneo GmbH	Self-service	TRL 6	Agnostic	Open source (Apache 2.0) 30	No
Advaneo-X Connector	Advaneo GmbH	Connector as a service	TRL 4	Agnostic	Closed source	No
Advaneo Trusted Connector	Advaneo GmbH	Connector as a service	TRL 7	Agnostic	Closed source	No
AI.SOV Connector	Cefriel	Platform as a service	TRL7	Agnostic	Closed source	No
Boot-X Connector	Huawei	Connector as a service	TRL 7	Agnostic	Open source license not finally determined yet.	No
Data Space Integration	SAP SE	Platform as a service	TRL7	Agnostic	Closed source (SAP Integration Suite	No
ECI Gatewise IDS Connector powered by TNO	ECI Software Solutions and TNO	Connector as a service	TRL 9 (live)	Specific	IDS connector by TNO : open source. ECI Software Solutions developments not open-source.	No
Eclipse Dataspace Components – Framework	Committer Group in Eclipse Foundation		TRL 8-9	Java-based environment	Open source (Apache 2.0)	No
EdgeDS Connector	Intracom Telecom	Connector as a service	TRL 4		Open source (Apache 2.0)	No
EGI DataHub Connector	EGI Foundation	Platform as a service	TRL 4-5	Agnostic	Open source	No
EONA-X EDC Connector	Amadeus	Connector as a service	Production grade	Agnostic	Open source (Apache 2.0)	No
FIWARE Data Space Connector	FIWARE Foundation	Connector as a service	TRL 6-7	Agnostic	Open source (MIT)	No
GATE Dataspace Connector	GATE Institute		TRL 5	Specific	Open source (Apache 2.0)	Yes - self assessment
GDSO Connector - Tyre Information Service	GDSO - Global Data Service Organisation for tyres and automotive components	Platform as a service	TRL 9 - Live	Agnostic	Partially open source.	No

HEALTH-X dataLOFT EDC	Fraunhofer ISST	Self-service	Use-case specific approach	Agnostic	Has not been finally determined yet	No
IIOC IoT Connector (Intel IONOS Orbiter Connector)	truzzt	Connector as a service	Connector live/usable	Agnostic	Open source (Apache 2.0)	No
Kharon IDS Connector powered by the Dataspace Connector	HOLONIX SRL	Connector as a service	TRL 7	Specific	Closed source	No
Mitsubishi Electric Dataspace Connector	Mitsubishi Electric Europe B.V. - German Branch	Self-service.	Early / Sandbox Stage	Specific	Open source (Apache License 2.0)73	-
MPAD-C by Mondragon	Mondragon Unibertsitatea	Self-service	TRL 5	Agnostic	Closed source.	No
OneNet Connector	Engineering Ingegneria Informatica S.p.a. and EUROPEAN DYNAMICS Luxembourg S.A.	Connector as a service	TRL 7 (status Aug. 2023)	Agnostic	Open source	No
Prometheus-X Dataspace Connector	Prometheus-X	Connector as a service	TRL 5	Agnostic	Open source (MIT)	No
Silicon Economy EDC	Fraunhofer ISST	Self-service	TRL 3	Agnostic	Open source (Open Logistics License)	No
sovity CaaS (Connector-as-a-Service)	sovity GmbH	Connector as a service	TRL 9	Agnostic	Closed source	No
sovity Open-Source EDC Connector	sovity GmbH	Self-Hosted	TRL 9	Agnostic	Open source (Apache 2.0)	No
TANGO Connector	Consortium of the TANGO project	Platform as a service	TRL 6	Specific	Partially open source. The FIWARE Dataspace Connector is open source. The TANGO developments are not.	No
Tech2B SCSN Connector	Tech2B	Connector as a service	TRL 7-8	Agnostic	Closed source	No

Tekniker Dataspace Connector	Tekniker	Connector as a service	TRL 7	Agnostic	Open source (CC BY NC ND)	No
Telekom DIH Connector	T-Systems International GmbH	Connector as a service	TRL 9	Cloud - Agnostic	Closed source	Yes
TNO Security Gateway (TSG)	TNO	Self-service	TRL 8	Agnostic	Open source	Yes
Tritom Enterprise Connector	DataSpace Europe Oy	Platform as a service	Used in the Tritom service	Agnostic	Closed source	No
TRUE Connector	Engineering Ingegneria Informatica SpA	Connector as a service	TRL 6	Agnostic	Open source (AGPL version 3)113	Yes
Trusted Connector	Fraunhofer AISEC	Platform as a service	IDS ready Component	Agnostic	Open source (Apache 2.0)	No
Trusted Supplier Connector	German Edge Cloud GmbH & Co. KG	Connector as a service	IDS ready	Agnostic	Closed source	No
VTT DSIL Connector	VTT Technical Research Centre of Finland	Connector as a service	IDS Certification	Agnostic	Closed source at the moment. No final decisions for the license have been made.	Yes
Innovalia Connector	Innovalia	Connector as a service	TRL 4	Agnostic	Closed source at the moment.	No

Of special importance are the IDSA certified connectors. We indicate the IDSA certified connectors separately for easy visualization.

Table 11. IDSA Certified connectors

Name	Maintainer	Service level	Maturity	Portability	License	IDS Certification
Telekom DIH Connector	T-Systems International GmbH	Connector as a service	TRL 9	Cloud - Agnostic	Closed source	Yes (Dec-2023)
TNO Security Gateway (TSG)	TNO	Self-service	TRL 8	Agnostic	Open source	Yes (Mar-2024)

TRUE Connector	Engineering Ingegneria Informatica SpA	Connector as a service	TRL 6	Agnostic	Open source (AGPL version 3)113	Yes (Apr-2024)
VTT DSIL Connector	VTT Technical Research Centre of Finland	Connector as a service	IDS Certification	Agnostic	Closed source at the moment.	Yes (May-2024)
GATE Dataspace Connector	GATE Institute		TRL 5	Specific	Open source (Apache 2.0)	Yes (Sep-2024) - Self Assessment.

As evidenced in the table, the IDSA Certified Connectors come from a variety of original source trees: Dataspace Connector, EDC Connector, TNO Secure Gateway and Engineering TRUE Connector.

4.7 Connector Interoperability: DS protocol.

Interoperability between Data Space Connectors requires the ability to exchange the data following mutually understandable way as well as being able to transmit it using a common protocol. The former is related to how the data is arranged into data models, while the latter refers to the data transmission itself. This section covers the latter aspect, in the form of the IDSA Data Space Protocol.

The Data Space Protocol is a comprehensive set of specifications aimed at facilitating interoperable data sharing among autonomous entities while adhering to usage control principles and utilizing web technologies. It establishes the necessary schemas and protocols for entities to publish data, negotiate agreements, and access datasets within a federated system known as a Dataspace.

The Data Space Protocol comprises the following areas:

- Metadata Provisioning: The protocol defines how datasets are deployed as DCAT (Data Catalog Vocabulary) catalogues, with usage control expressed through ODRL (Open Digital Rights Language) policies.
- Agreement Negotiation: It specifies how agreements governing data usage are syntactically expressed and electronically negotiated among entities.
- Data Access: The protocol outlines how datasets can be accessed using defined transfer process protocols.

Building on the protocols established in the ISO OSI model, specifically those related to application layer protocols like HTTPS, the Data Space Protocol aims to clarify interactions between systems regardless of their underlying protocols. It provides an unambiguous and extensible framework by detailing the messages exchanged during the process, alongside the states and their transitions specified as state machines. Additionally, it describes how these interactions can be bound to data transfer protocols, ensuring a coherent approach to data sharing in a federated environment.

Having Connectors be able to interact in a common language is not only a requirement for internal compatibility, but also paramount to the further objectives of Data Space Federation

and Data Space Decentralization, i.e., the ability to exchange information with participants of other Data Spaces.

Currently, the evolution and expected enshrinement of the DSP as an ISO standard is dictated by the interplay of three organizations. First, the IDSA Working Group Architecture designs and organizes the Dataspace Protocol. Following this, the Eclipse Dataspace Working Group (EDWG) oversees the Eclipse Dataspace Protocol Specification project, which includes the development of the Dataspace Technology Compatibility Kit for ensuring interoperability and compliance. This work is subsequently submitted to ISO/IEC as a Publicly Available Standard (PAS). The standardization process will be conducted by the Joint Technical Committee 1 (JTC1) under ISO/IEC, leading to the official publication of the protocol as an ISO/IEC standard.

4.8 Testbeds

In this section we present a series of existing testbeds meant to evaluate different types of Data-Space related functionalities. They range from evaluating fundamentals and infrastructure into a more use-case or application-testing focus.

Figure 22. Data-Space related Testbeds[3]
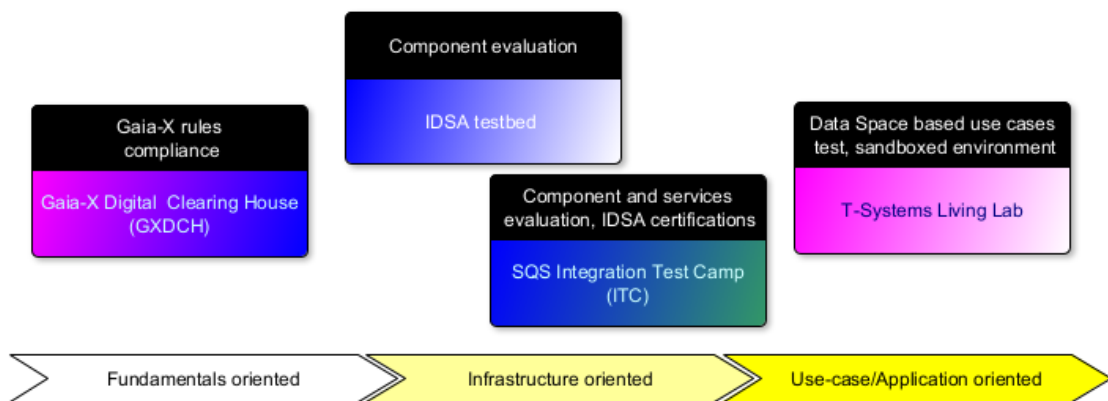
The SQS and T-Systems testbeds are 3rd party solutions directly managed by the service providers, while the Gaia-X and IDSA testbeds are source-available solutions that the

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[3] Please note that testbeds placement in the Fundamentals-Infrastructure-Application continuum orientative, and no hard boundaries exist.

interested entity can either implement by themselves or seek an intermediary to outsource the process to.

4.8.1 Gaia-X Digital Clearing House

Gaia-X is a European initiative that aims to create a federated and decentralized digital infrastructure for data sovereignty and collaboration. It focuses on enabling businesses and institutions across Europe to securely share and utilize data through a standardized, transparent, and interoperable ecosystem. By fostering trust, data sovereignty, and innovation, Gaia-X seeks to counterbalance the dominance of non-European cloud service providers, creating an open ecosystem where data can be shared and utilized according to defined, trustworthy standards. The framework is grounded in compliance with European laws and regulations, promoting interoperability across industries and sectors.

The Gaia-X Digital Clearing House (GXDCH) automates compliance with Gaia-X rules, ensuring that entities can operate within the Gaia-X ecosystem securely and efficiently. The GXDCH consists of a network of nodes that validate adherence to Gaia-X's decentralized standards, enabling service providers to become compliant without a central governing body controlling the process. By running compliance checks on open-source software components, the GXDCH serves as a decentralized mechanism, operated by multiple market providers, to validate and guarantee that companies adhere to Gaia-X's technical and functional requirements.

4.8.2 IDSA testbed

The IDSA Reference Testbed is an open-source platform developed by the IDSA community to facilitate the creation and testing of components compliant with the International Data Spaces (IDS) standards. This testbed allows organizations to assess their components' interoperability, ensuring they can effectively connect and communicate within the broader IDS ecosystem. By providing a real-time environment, it serves as an ideal testing ground for developers, enabling them to prepare their components for certification and validate their functionality against established IDS specifications.

Figure 23. IDSA testbed architecture.
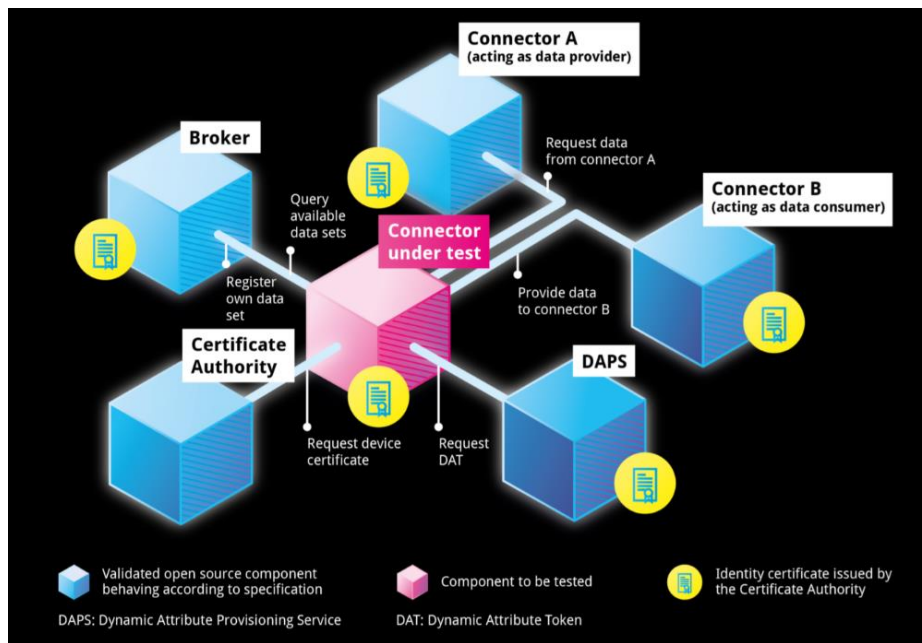
Available to the public, the IDS Testbed includes essential infrastructure components such as the Certificate Authority (CA), Dynamic Attribute Provisioning Service (DAPS), and Metadata Broker (MDB), along with various connectors. These elements collectively support companies in verifying that their solutions align with IDS standards, thereby promoting the principles of data sovereignty and trusted data sharing. This initiative not only enhances the capabilities of individual components but also contributes to the broader goal of realizing a thriving data economy.

4.8.3 SQS ITC

The SQS Integration Test Camp (ITC) is a framework designed to assess the compatibility of Data Space components with the International Data Spaces Association (IDSA) standards. Accessible remotely, the ITC allows component developers to participate in dedicated testing sessions lasting from two to four hours. During these sessions, participants can evaluate the interoperability of their components within a dynamic IDS architecture, ensuring they meet the required specifications for effective data sharing and management.

Throughout the testing period, participants are supported by SQS engineers, who provide real-time guidance and assistance. The ITC offers 50 standard interoperability test cases that cover various scenarios, including Connector to Connector interactions, connections to Data Access Points (DAPs), and Broker communications. Prior to each event, SQS collaborates with

participants to determine the scope of testing and may include additional test cases tailored to specific needs, enhancing the overall evaluation process.

Since February 2023, and at the time of writing, SQS is the only laboratory accredited for validating data space components according to IDSA standards. This accreditation enables SQS to prepare independent validation reports, certifying the technological components of participants. The goal is to facilitate secure data sharing and ensure complete interoperability, regardless of the manufacturers or data models used, thereby supporting the broader objective of trust and reliability within data spaces.

4.8.4 T-Systems Living Lab

The [T-Systems Living Lab](#) provides a controlled, ready-to-use sandbox environment for testing and developing new use cases within a data space infrastructure. This pre-configured setup removes many complexities typically associated with managing data spaces, allowing users to focus on application development, prototyping, and upgrading existing solutions. By leveraging this environment, organizations can benefit from data sovereignty, secure infrastructure, and efficient data handling. The Living Lab simplifies the process of creating value from data without needing to worry about the technical intricacies of data spaces.

At the centre stage of this offering is the Data Intelligence Hub (DIH), a connector designed for secure, standardized data-sharing services. Built on strict security protocols aligned with frameworks like GAIA-X and the International Data Spaces Association (IDSA), DIH enables organizations to maintain data sovereignty while collaborating in data-driven ecosystems. This solution ensures compliance with data regulations and delivers high security through its decentralized data management and trust architecture

In collaboration with NTT Communications, T-Systems announced plans to deploy a Data Space test environment in Japan, aiming to bolster the data ecosystems development in the country and their interaction with European initiatives. This endeavour is powered at its foundation by the EDC components and the Tractus-X project.

4.9 Accelerators : Tractus-X KITs

KITs (Keep It Together) are essential toolsets designed to facilitate the deployment and operation of projects within the Catena-X data space. These toolsets integrate the necessary software components, standards, policies, and deployment scripts to streamline participation in Catena-X use cases, serving both data producers/consumers (adopters) and app/service providers (solution providers). A KIT serves as a comprehensive resource for stakeholders—whether operators, data providers, or solution/app providers—looking to engage with the Catena-X data space. It consolidates all necessary information in one place, eliminating the need to seek additional resources. Each KIT includes critical artifacts such as API explanations, specifications, and deployment instructions.

KITs for Data Producers/Consumers

Companies involved in the automotive value chain, such as manufacturers needing to exchange data on carbon footprint with partners, often face challenges aligning with Catena-X standards. KITs provide adopters—those participating in Catena-X use cases—with all the necessary tools to engage effectively. By consolidating key technical components and resources, KITs reduce complexity and ensure that these companies can meet the data-sharing requirements without significant additional technical investment.

KITs for App/Service Providers

For companies offering applications or services on Catena-X marketplaces, alignment with Catena-X conformity standards is paramount. KITs offer solution providers technical support and guidelines to adapt their offerings accordingly. This allows them to integrate seamlessly into the ecosystem, ensuring that their applications meet the technical and operational requirements of Catena-X while still offering value to adopters, including SMEs.

KITs simplify technical integration, therefore facilitating KITs broad participation and accelerate the development of network effects within Catena-X. This ease of entry is critical in promoting adoption across the ecosystem, ensuring that stakeholders, regardless of size, can quickly deploy and operate within the data space.

Main Objectives and Benefits of KITs:

- Transparency: Developed under the Eclipse Tractus-X open-source project, KITs ensure transparency across the ecosystem. The open nature of the project allows stakeholders to review, understand, and contribute to the source code, identifying potential issues and enhancing the system. This fosters a collaborative environment that promotes trust and continuous improvement.

- Cost Reduction: KITs enable companies to reuse existing software components, reducing the need for redundant development. This reuse leads to significant cost and time savings, especially for adopters who no longer need to build solutions from scratch. It also simplifies the path to compliance with Catena-X standards.

- Innovation: The collaborative nature of KITs encourages contributions from a diverse set of stakeholders, regardless of company size. This diversity of input fosters an environment where new ideas and approaches can thrive, leading to a continuous cycle of innovation within the Catena-X ecosystem.

- Interoperability and Standardization: KITs are aligned with the principles of interoperability and standardization central to Catena-X. By adhering to the semantic structures of specific use cases, KITs help establish a shared framework for communication between different technologies, ensuring that solutions from various providers can work together seamlessly.

- Ecosystem Development: KITs promote the growth of the Catena-X ecosystem by encouraging collaboration among different stakeholders. This collaboration leads to the creation of tailored solutions for specific needs, expanding the range of available options and fostering new partnerships. As a result, the ecosystem grows in both scope and capability, offering increased value to all participants.

Each KIT is classified into one of three maturity levels: sandbox, incubating, or graduated. These maturity levels indicate the quality, completeness, and proven value of the use case to stakeholders. Progression from one level to another requires developers to meet specific criteria, with distinct mandatory ($\checkmark$) and recommended (($\checkmark$)) deliverables defined for each stage. To advance, a KIT must fulfill all necessary items from the previous level and at least one required item from the next. Upon meeting these criteria, a promotion request can be made.

Achieving graduated status necessitates the completion of a case study with a community partner. This study aims to validate the KIT's content by addressing a specific problem using only the resources within the KIT. The partner's feedback may lead to suggested improvements, ensuring the KIT remains a valuable tool for its users.

We summarize the entire KITs catalogue in the following table, providing a short description and links.

Table 12. Tractus-X KITs compendium.

KIT Name	Description
Agents Kit	The Agents Kit enables the establishment of agents that act autonomously to assist in various tasks, enhancing efficiency and decision-making within manufacturing processes.
Behaviour Twin KIT	The Behaviour Twin KIT provides insights into the behavior of production processes, allowing for better prediction and optimization based on real-time data and historical performance metrics.
Business Partner KIT	The Business Partner KIT facilitates the creation and management of business relationships in a structured manner, enabling effective collaboration across various stakeholders in the manufacturing ecosystem.
Circularity KIT	The Circularity KIT focuses on sustainable practices in manufacturing, promoting the circular economy by facilitating the reuse and recycling of materials throughout the supply chain.
Connector KIT	The Connector KIT establishes the necessary infrastructure for seamless communication and data exchange between different systems and stakeholders, ensuring interoperability and efficiency.
Data Chain KIT	The Data Chain KIT provides a framework for tracing and managing data throughout the manufacturing process, ensuring data integrity and compliance with industry standards.
DCM KIT	The DCM KIT focuses on data collection and management in manufacturing processes, enhancing data visibility and accessibility for stakeholders.
Data Governance Kit	The Data Governance Kit establishes guidelines and frameworks for managing data responsibly and ethically within manufacturing networks, ensuring compliance with legal and regulatory requirements.
Digital Twin KIT	The Digital Twin KIT enables the creation of virtual representations of physical assets, allowing for real-time monitoring and analysis of performance, leading to enhanced decision-making and predictive maintenance.
Eco Pass KIT	The Eco Pass KIT focuses on environmental sustainability within manufacturing, promoting practices that minimize environmental impact and enhance resource efficiency.
ESS KIT	The ESS KIT provides a framework for integrating energy management solutions into manufacturing processes, enabling stakeholders to optimize energy consumption and reduce costs.

Industry Core KIT	The Industry Core KIT establishes foundational standards and protocols that enable interoperability and data exchange across the manufacturing ecosystem, facilitating collaboration and efficiency.
MDP KIT	The MDP(Model Based Development and Data Processing) KIT focuses on model-based development approaches in manufacturing, enabling enhanced data processing and analysis for improved operational efficiency.
Modular Production Kit	The Modular Production Kit enables flexible and efficient production processes by promoting modularity in manufacturing systems, allowing for rapid adaptation to changing demands.
Manufacturing as a Service KIT	The Manufacturing-as-a-Service (MaaS) KIT defines the mechanisms and services required for an interoperable, federated network of networks where manufacturing demand meets manufacturing capabilities.
OSim Kit	The Online Control and Simulation (OSim) Kit links production simulation with logistics simulation to identify delivery problems earlier and respond to changes in customer requirements.
PURIS Kit	The Predictive Unit Real-Time Information Service (PURIS) enriches a company's resilience strategy through standardized data sharing, improving operational efficiency and resilience within the Catena-X network.
Supply Chain Disruption Notifications KIT	The Supply Chain Disruption Notifications within the Catena-X framework provides standardized communication for supply chain disruption notifications, empowering stakeholders to act swiftly and effectively.
PCF Exchange KIT	The PCF Exchange KIT focuses on the product carbon footprint (PCF), providing standards and guidelines for calculating and exchanging PCF data in a decentralized ecosystem.
Quality KIT	The Quality KIT enables data exchange and analysis across OEM-n-Tier chains, leading to earlier failure detection and faster root cause analysis to enhance product quality.
Traceability KIT	The Traceability KIT provides standards and processes for tracing parts and materials across the value chain, enhancing quality issue resolution and compliance with security requirements.

5 Conclusions

Work Package 7 was strategically set to raise awareness and maximize visibility of EU DATA SP4CE and its vision to facilitate a framework to leverage a harmonized and continuous data space 4.0 across the various national, European and international efforts, interests and technological developments.

To accomplish the objective, a communication strategy through DFA was defined and implemented, with a timeline and main messages in accordance with communication actions so as to reach the target audience and achieve impacts. In addition, an engagement plan was defined, the main purpose so as to build up a Data Space 4.0 community oriented to data spaces 4.0, which has brought new initiatives and opportunities across different sectors.

Different communication tools in digital and print media have been used to reach the public and engage the Data Space 4.0 community so as to also make the project a valid source of information, and create synergies with other initiatives. Other achieved dissemination and communication objectives include creating public awareness and scientific interest, involving stakeholders, maximizing project impacts, diffusing acquired knowledge, and facilitating cooperation with the European manufacturing and digital community.

This deliverable D7.3 has focused on an overview of the overall communication, dissemination, sustainability, bootstrapping and community outreach. Consequently, the deliverable covers all tasks within the WP7 on Manufacturing Data Space Outreach, Community Scale Up and Sustainability: starting with T7.1 - Dissemination and Communication, following with T7.2 - Training and Skills for Manufacturing Data Spaces, as well as T7.3 - Standards and Interoperability Action Plan, as well as T7.4 - Manufacturing EDIH and AI TEF Communities Engagement & Sustainability Models, and finally T7.5 - Manufacturing Data Space Deployment Bootstrapping.

As the EU DATA SP4CE project has involved over 30.000 people in its DATA SPACE 4.0 Community through online, onsite and hybrid activities involving key initiatives, organizations, ecosystems and focused at fostering digital transformation and data spaces adoption, so as to contribute to the Digital Europe Programme objectives.

The after-project future and long-term sustainability of the project lies in the activities developed in the overarching role within the IM-X Council as well as the moderators of the Thematic Working Group on Data in Manufacturing within the EDIH network, providing with best practices and success stories for+130 individual participants of +78 EDIHs and present in +28 EU countries through at least 8 TWG meetings from 2023 to 2024. The long-term impact of EU DATA SP4CE will also be ensured through the Digital Factory Alliance (DFA) as a neutral one-stop-stop for some of the EU DATA SP4CE results:

1.   The Body of Knowledge Catalogue of key resources (documents, reports, guidelines, presentation slides, among others).

2.   The Innovation Catalogue of key components and standards with direct links.

3.   The Lighthouse Factory Network of Use Cases and Pilot Experimentation Catalogue for SMEs, companies and key target audiences to find out more about data spaces adoption use cases.

4.   The DIH and the TEF Programmes where EDIHs and TEFs can request to join the EDIH TWG on Data in Manufacturing and contribute to the amplification of European data space think tanks, promote knowledge and innovation networks for the leading data 4.0 lifecycle standardisation initiatives and coordinate and support the network of the EU DATA SP4CE and European networks for SME digital transformation through DIH and AI TEF for manufacturing networks.

5.   The ZXMarketplace for solution display for market-driven innovation

6.   The promotion of a Unique Data Space of the Plug & Response Network

In addition, this report has presented a comprehensive roadmap for individuals and organizations aiming to launch Data Space projects. We catalogued a variety of open-source tools, connectors, testbeds, and sector-specific initiatives, with the goal of simplifying the process of navigating the complex Data Space landscape. We outlined resources like the IDSA GitHub repository, Eclipse Dataspace components, and Tractus-X accelerators, that offer practical guidance for implementing the necessary technical infrastructure and streamlining development efforts.

We introduced some of the most influential organizations that lead the way forward actively shaping the standards and frameworks that drive Data Space adoption. Bodies like IDSA, the DSSC, the Eclipse Foundation, the FIWARE Foundation and others. We referenced three currently operational Data Spaces from the manufacturing domain, which, depending on their specific needs, a newcomer could choose to join. At the time of writing, these are Catena-X, SCSN and Data4Industry-X.

As standards continue to emerge and the landscape evolves, the eventual obsolescence of this manuscript may signify that the scene has outgrown this temporal snapshot. Outdated resources could indicate that Data Space adoption has progressed significantly, with technologies maturing and well-defined standards and best practices having solidified. The goal is a landscape where Data Spaces integrate across industries, enabling secure data sharing and innovation, valorising most of the data which to this date remains uncapitalized. This would constitute a milestone in realizing the potential of Data Spaces, not only as technical infrastructures but as catalysts for data sovereignty and collaborative growth across the European Union and into a worldwide level.

6 Annex: Data Space Initiatives

1 - 6G SNS (SNS JU)

6G SNS

Nature of the Initiative	European Project |International Project | Regulation
Mission	They aim to facilitate and develop industrial leadership in Europe in 5G and 6G networks and services.
Sector(s) addressed	Green Deal (including Smart Communities) | Agriculture | Mobility | Health | Manufacturing | Energy | EOSC (Research)
Leading organisation	European Commission & 6G Industry Association
Members (approx.)	27+
Founded (Year)	2021
Social Media Presence	LinkedIn | Twitter – X | YouTube
Relevance for Industry 4.0	It strengthens Europe's industrial position in the global smart networks and services value chain. It pools EU and industrial resources to accelerate the development of secure, energy-efficient smart networks and services technologies.

Key information	Levels	Important links
Data Space Technical Specifications	★	Website
Data Space Governance	★★★★	Reference Documentation
Data Space Demonstration	★★★★	Events, EuCNC & 6G Summit 2024
Data Space Adoption	★★★★	Project Portfolio Link
Connected Data Space 4.0 Initiatives	ETP 4 HPC, Chips JU (formerly known as KDT JU), Quantum Flagship	

Additional Information	
Contact (Name/E-mail)	Organisation: SNS JU Email: CNECT-E1-SNS@ec.europa.eu

Report

What is 6G SNS?
The Smart Networks and Services Joint Undertaking (SNS JU) is a public-private partnership with a double mission to:
- foster Europe's technology sovereignty in 6G

- boost 5G deployment in Europe

The SNS JU funds research and innovation (R&I) projects to strengthen Europe's industrial position in the global smart networks and services value chain. It pools EU and industrial resources to accelerate the development of secure, energy-efficient smart networks and services technologies.

It shapes a strategic R&I roadmap and deployment agenda to make the EU 6G vision a technological and business reality. The SNS JU targets a massive digitalisation of societal and business processes through intelligent and sustainable connectivity across the human, physical and digital worlds.

The SNS JU aims to lead the conception, development, and standardisation of next generation connectivity technologies and encourage early market adoption of 6G by the end of the decade. To do so, it works with a critical mass of European stakeholders and facilitates international cooperation on various 6G initiatives.

The SNS JU also aligns with EU countries on 6G R&I programmes and ensures strategic coordination to boost advanced 5G deployment in Europe.

Mission & Objectives

The SNS JU has two main missions:
1. Fostering Europe's technology sovereignty in 6G by implementing the related research and innovation (R&I) programme leading to the conception and standardisation around 2025. It encourages preparation for early market adoption of 6G technologies by the end of the decade. Mobilising a broad set of stakeholders is key to address strategic areas of the networks and services value chain. This ranges from edge- and cloud-based service provisioning to market opportunities in new components and devices beyond smartphones.
2. **Boosting 5G deployment in Europe** in view of developing digital lead markets and enabling the digital and green transition of the economy and society. For this objective, the SNS JU coordinates strategic guidance for the relevant programmes under the Connecting Europe Facility, in particular 5G Corridors. It also contributes to the coordination of national programmes, including under the Recovery and Resilience Facility and other European programmes and facilities such as Digital Europe Programme (DEP) and InvestEU.

General objectives

- Foster Europe's technological leadership in future smart networks and services by reinforcing current industrial strengths and by extending the scope from 5G connectivity to the broader strategic value chain including cloud-based service provisioning as well as components and devices;
- Align strategic roadmaps of a wider range of industrial players, including not only the telecommunication industry, but also actors from the Internet of Things, cloud, and components and devices;
- Advance European technological and scientific excellence to support European leadership to shape and master 6G systems by 2030;
- Strengthen the deployment of digital infrastructures and uptake of digital solutions in the European markets, in particular by ensuring a strategic coordination mechanism for the CEF2 Digital programme as well as synergies within CEF2, and with DEP and InvestEU as part of the scope and governance of the Smart Networks and Services Joint Undertaking;
- Prepare the European smart networks and services supply industry for the longer-term opportunities emerging from the development of vertical markets for 5G and later 6G infrastructures and services in Europe;
- Facilitate digital innovation, by 2030, meeting European market needs and public policy requirements, including the most demanding requirements of vertical industries, as well as societal requirements in fields including security, energy efficiency and electromagnetic fields;
- Support the alignment of future smart networks and services with Union policy objectives including European Green Deal, network and information security, ethics and privacy, as well as a human-centric and sustainable internet.

Governance

The governance bodies of the SNS Joint Undertaking are:

- The Governing Board (GB)
- The States Representatives (SRG)
- The Executive Director

- The Stakeholders Group

Events

- **EuCNC & 6G Summit 2024**

The 2024 EuCNC & 6G Summit builds on putting together two successful conferences in the area of telecommunications: EuCNC, in its 33rd edition of a series, supported by the European Commission; the 6G Summit, in its 6th edition, originated from the 6G Flagship programme in Finland, one of the very first in its area. The conference addresses various aspects of Beyond 5G/6G communications systems and networks. It brings together cutting-edge research and world-renown industries and businesses, globally attracting in the last years more than 700 delegates from more than 40 countries all over the world, to present and discuss the latest results, and an exhibition with more than 50 exhibitors, for demonstrating the technology developed in the area, namely within research projects from EU R&I programmes.

In the following link you will be able to find more information about the event: **https://smart-networks.europa.eu/event/eucnc-6g-summit-2024/**

2 - AGDATAHUB

Nature of the Initiative	Platform | European Project | Data Space
Mission	Their mission is to provide agriculture with a shared and sovereign technological infrastructure to guarantee the development of digital agriculture in France and Europe.
Sector(s) addressed	**Green Deal** (including Smart Communities) | **Agriculture** | Mobility | Health | Skills | Manufacturing | Public Administrations (Procurement, Legal) | Financial | Tourism | Language | Cultural Heritage | Energy | Media | EOSC (Research)
Leading organisation	Sébastien Picardat, CEO
Members (approx.)	15 members
Founded (Year)	2016
Web (URL)	https://agdatahub.eu/en/
Social Media Presence	LinkedIn | Twitter - X | YouTube
Relevance for Industry 4.0	It is the first French intermediary platform for agricultural data with the ambition to interconnect the 380000 farms on the national territory with its 85000 partners while respecting the farmers' consent for the use of their data.

Key Information	Levels	Important links
Data Space Technical Specifications	★	GitHub (Agri-Hub)
Data Space Governance	★★	Document Library Link (Resources)
Data Space Demonstration	★★★★	Monitoring, events, and views about AgDataHub (Link)
Data Space Adoption	★★	Education and research,
Connected Data Space 4.0 Initiatives	Gaia-X, Manufacturing-X, DSSC, IDSA, Agri Data Space, Agri Data Value, DIVINE, FlexiGroBots	

Additional Information	
Contact (Name/E-mail)	Name: Julie Menez Email: communication@agdatahub.eu Tel: 33 (0) 6 70 36 24 54 // 33 (0)1 87 16 41 66

What is AgDataHub?

AgDataHub is the first French intermediary platform for agricultural data with the ambition to interconnect the 380000 farms on the national territory with its 85000 partners while respecting the farmers' consent for the use of their data.

Mission

Their **mission** is to provide agriculture with a shared and sovereign technological infrastructure to guarantee the development of digital agriculture in France and Europe.

AgDataHub Solutions & Key Assets

- **Consent: secure the use of farm data**
  AgDataHub develops technological solutions that ensure that the consent of agricultural producers is taken into account before any exchange of data from their farms or livestock.
- **Exchange: deploy the value of your data agricultural and agri-food data**
  Their exchange service is trusted third party for all players in the agricultural and agri-food sectors. Thanks to the tailored framework we have put in place, our data exchange solution provides intermediation between issuers and purchasers of qualified agricultural, agri-food or environmental data.
- **CapData: benefit from tailor-made support for your data projects**
  Their experts provide operational advice and technical support on all subjects related to the use of agricultural data.

Events

They do not have a specific section for the event. However, the publish them on the "news" section. Some events:

- **Open Wine Data (**Link**)**
  AgDataHub was on the World Congress of Vine and Wine organised by the Organización Internacional de la Viña y el Vino (OIV) held from 5 to 9 June 2023 in Spain.
  Open Wine Data is a data collection, exchange and processing platform carried by and for the wine industry, with the support, in particular, of the Wine Tech. the platform is jointly operated by AgDataHub and Aveine. AgDataHub will provide data intermediation, via its Agri-trust (consent management) and API-Agro (data exchange) products.
- **Salon International de l'Agriculture (SIA) (**Link**)**
  The Salon International de l'Agriculture (SIA) was held from February 25th to March 5th 2023. On the event, AgDataHub showcased the applications of its solutions and the uses of agricultural data in three main verticals, via three dedicated animation areas. The aim was to kick-start the mass use of agricultural data in 2023. The programme featured solutions with which AgDataHub is/has been collaborating or plan to collaborate:
  - The Wine Industry: Open Wine Data (OWD) is the first platform for open, reliable, exhaustive and standardised digital data on wine. It's open to all and it offers a marketplace between suppliers of data or services based on this data and companies in the wine industry in the broadest sense.
  - Environmental Scoring: Food Pilot enables farmers and the agri-food industry to accelerate the reduction of their environmental footprint and decarbonisation. The platform provides an innovative and simple solution for efficiently collecting real, accurate and verified data through food production chain.
  - The Carbon Issue: Oleo ZE is the first online sales solution to pay for rapeseed and sunflower seeds above market prices thanks to an additional GHG bonus. Through the intermediary of Saipol's partner storage organisations (AVRIL Group), Oleo ZE rewards sustainable agricultural practices that promote carbon storage, using a scientific method to enable the production and marketing of low-GHG biodiesel.
- **Gaia-X Summit (**Link**)**
  AgDataHub took part in the third summit of Gaia-X on November 17 and 18 in Paris. The event attracted several hundred participants from all over Europe. The aim of the summit was to present the "Gaia-X framework" and how to use it. As a flagship project for the agricultural sector, AgDataHub embraced the principle of Gaia-X which is guaranteeing greater control, openness and transparency in digital exchanges.

3 - AIF (Alliance Industrie du Futur)

Nature of the Initiative	Association/Foundation | National Project | Data Space
Mission	To modernise French industrial facilities of initiatives, projects, and SMEs and transforming their business models through new technologies and solutions.
Sector(s) addressed	Skills | Manufacturing
Leading organisation	Independent lead by Frédéric Sanchez (President de l'AIF)
Members (approx.)	11 Funding members, 33 members
Founded (Year)	2015
Social Media Presence	LinkedIn | Twitter - X | YouTube
Relevance for Industry 4.0	Accelerates initiatives and projects to create digital solutions and innovative technologies in the industry within the French industrial landscape.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★	Website
Data Space Governance	★ ★ ★	Document Library Link
Data Space Demonstration	★ ★ ★	Events
Data Space Adoption	★ ★ ★	- Osons l'Industrie (Let's Dare industry): to provide information on the evolution of professions, qualifications and skills to both young people and employees. - Vitrine Industrie du Futur label: Distinguishes emblematic French industrial achievements. - Projects on the sector hub
Connected Initiatives	Smart industry / Platform Industrie 4.0 / Industria Conectada 4.0 / Piano Nazionale Industria 4.0	

Additional Information	
Contact (Name/E-mail)	Tel: +33 01 45 0570 46 Email: contact@industrie-dufutur.org

Report
What is AIF?

Founded in 2015, with the encouragement by the then Minister of Economy, Industry and Digital Economy, the Alliance Industry du Futur (AIF), is a non-profit association, brings together the knowledge and expertise of academic and scientific institutions (industrial ecosystem), professional and technological organisations, financial institutions, and businesses to guarantee, among other things, the implementation of the Ministry's Industrie du Futur plan (smart manufacturing).

Chaired by Frederic Sancez since 2021, the AIF supports the Comité Stratégique de Filière "Solutions Industrie du Futur" ("Industry of the Future Solutions" Strategic Sector Committee) as part of the National Industry Council (CNI) and it is founding member of "La French Fab".

The AIF is the support organisation for the new "Solutions Industrie du Futur (SIF)" (industry of the Future of Solutions"). In this website we can find projects under construction on the sector hub.

- ❖ Presidency of Mr. Frédéric Sanchez (President); Mr. Pascal Daloz (Honorary President)
- ❖ 33 members divided into 4 areas
    - o Professional organisations (AFPC, GIMELEC, France Industrie, …)
    - o Academic organisations (ISTP, IMT, …)
    - o Technology organisations (CEA, CETIM, …)
    - o Business financing organisations (France invest, …)

Mission
It's to support French companies and in particular SMEs in the modernisation of their industrial tools and the transformation of their economic models, through digital and non-digital technologies. The AIF's approach is to integrate employees as key factors in the success of this transformation with their know-how and interpersonal skills; In conclusion, to **adjust the French solution offer in the industry to create a digital and low-carbon sector.**

Solutions & Key Assets

Working groups of the AIF
- ❖ Transformation of SMEs, ETIs and sectors in the territory
- ❖ Development and integration of future technologies and their standardisation
- ❖ Development of future skills
- ❖ Communication
- ❖ Transversal actions

Osons l'Industrie → Professions and training for the future

It's a collaborative project coordinated by the AIF and in partnership other organisations/associations to provide information of the professions, qualifications and skills to young people and employees working or in training. Areas: Maintenance, big data, production, supply chain**…**

Funding & Memberships

The AIF is financed by members contributions and industrial partners' support. There are 2 membership types.
(1) Active members → professional organizations or groups of professional organisations under French law (unions/associations); organisations in technological or academic field of French law with a national vocation (design, development, and production of an industrial offer); financing organisations understood as structures (national) with purpose of financing business).
(2) Associate members → When they do not meet the criteria to become Active members. They are not eligible for the Board of Directors or the functions of President and Treasurer and have no voting rights although they participate in General Assemblies and Coordination Committees.

Interesting links
- March 2018 Edition – Industry of the Future Technology Guide – Issues and Overview of Solutions
- Jumeau Numérique (2023) – Leveir majeur de la transformation digitale de l'industrie
- Référentiel national Industrie du Futur
- Platform Industrie 4.0 & Alliance Industrie du Futur - Common List of Scenarios

4 - AIOTI

AIOTI
Alliance for Internet of Things Innovation

Nature of the Initiative	Association I European Project
Mission	To strengthen the dialogue and interaction between Internet of Things actors in Europe and contributing to the creation of a dynamic ecosystem to accelerate the adoption of IoT.
Sector(s) addressed	Green Deal (including Smart Communities) | Agriculture | Mobility | Manufacturing | Energy
Leading organisation	Independent lead
Members (approx.)	150
Founded (Year)	2015
Web (URL)	https://aioti.eu/
Social Media Presence	LinkedIn | Twitter - X |YouTube
Relevance for Industry 4.0	• Creates horizontal platforms linked to vertical platforms, fostering the cross-cutting application of APIs, GUIs and TUIs developed by industry or tools derived from academic research. • Fosters practical experimentation projects that enable best practice learning, open access and data rich. • Identifies and involve all stakeholders early on in pilots (problem owners, end-users, innovators, public sector representatives, regulators, manufacturers).

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★★★	GitHub Link
Data Space Governance	★★★★	Resources
Data Space Demonstration	★★★★	AIOTI Signature Event 2023
Data Space Adoption	★	Events
Connected Data Space 4.0 Initiatives	Structura-X, Euclidia, SWIPO	

Additional Information	
Contact (Name/E-mail)	AIOTI I info@aioti.eu
Report	

What is AIOTI?

Alliance for Internet of Things Innovation (AIOTI) aims to lead, promote, bridge and collaborate in IoT and Edge Computing and other converging technologies research and innovation, standardisation and ecosystem building, providing IoT and Edge Computing deployment for European businesses creating benefits for European society. They cooperate with other global regions to ensure removal of barriers to development of the IoT and Edge Computing market while preserving European values, including privacy and consumer protection. They have different work packages:

- WG 1: IoT European Research Cluster
- WG 2: Innovation Ecosystems (developing innovation ecosystems by stimulating start-ups, encouraging the use of open IoT platforms, scale-up pilots and linking large and small companies through open innovation).
- WG 3: IoT Standardisation
- WG 4: IoT Policy
- WG 5: Smart living environment for ageing well
- WG 6: Smart Farming and Food Security (use scenarios / use cases that allow to monitor and control the life cycle of plant and animal products "from farm to fork").
- WG 7: Wearables
- WG 8: Smart Cities
- WG9: Smart Mobility
- WG10: Smart Water Management (IoT solutions that improve the efficiency of water management by monitoring and controlling surface water retention, flooding, etc.)
- WG 11: Smart Manufacturing (revolution in the development & application of manufacturing intelligence)
- WG12: Smart Energy
- WG13: Smart Buildings and Architecture

Management Board

The Management Board has the responsibility to conduct the management of the Association, including providing strategic direction, communications, membership, finance and overall management of the Association. Members of the Management Board are elected by the General Assembly every three years.

Steering Board

The Steering Board consists of the chairs of the Working Group. The Steering Board has responsibility for the development of the content, providing directions to and coordinating work between the groups, and for relations with external partners.

Members

A full list of all the members can be found on the following link: https://aioti.eu/members/

Events

AIOTI Days 2024

AIOTI is organising annual event that builds upon five successful editions of AIOTI Signature gatherings. AIOTI Days 2024 will feature the Thematic and Project sessions, Hackathon and the Scientific Conference GIECS, guaranteeing a rich and comprehensive experience for all participants.

At the core of AIOTI Days 2024 is the exploration of how the continuum and digital twins meet virtual worlds in the industrial space, creating a physical-digital virtual continuum.

Link for the event: **https://aioti.eu/aioti-days-2024/**

5 - BAIDATA

Nature of the Initiative	Association | National Project |International Project | Demonstrator | Test-Bed | Data Space
Mission	- Connect and provide an interface between European and Regional Data Spaces and their public-private ecosystems. - Transmit and dynamize innovative initiatives from the European Data Spaces to the different regions - Add efforts & actors to develop pilot actions, training, promotion & internationalisation actions around the use of data. - Materialise new business models, increasing the productivity, sustainability and efficiency of companies and organisations. - Increase the efficiency of companies and organisations to extract maximum value and opportunities from data spaces.
Sector(s) addressed	Green Deal (including Smart Communities) | Mobility | Health | Skills | Manufacturing | Public Administrations (Procurement, Legal) | Tourism | Energy | Media | EOSC (Research).
Leading organisation	Independent Lead
Members (approx.)	50+
Founded (Year)	2022
Web (URL)	https://baidata.eu/
Social Media Presence	LinkedIn | X
Relevance for Industry 4.0	It is an association for the development of data sovereignty and the data economy in the Iberian Peninsula, with the aim of supporting companies in the adoption of data sharing spaces. They have start-ups, SMEs and large associated companies, to which they offer activities to display data spaces and structured in four axes: talent, knowledge, ecosystem and innovation.

Key Information	Levels	Important Links
Data Space Technical Specifications		GitHub/Eclipse Link: N/A
Data Space Governance	★★★★	Document Library
Data Space Demonstration	★★★★	Events | Foro BAIDATA III
Data Space Adoption	★★★★	BAIDATA Radar

Connected Data Space 4.0 Initiatives	IDSA, GAIA-X, FIWARE, BDVA , SM4RTENANCE
Additional Information	
Contact (Name/E-mail)	Email: info@baidata.eu
Report	

What is BAIDATA?

It is an association for the development of data sovereignty and the data economy in the Iberian Peninsula, with the aim of supporting companies in the adoption of data sharing spaces. They have start-ups, SMEs and large associated companies, to which they offer activities to display data spaces and structured in four axes: talent, knowledge, ecosystem and innovation.

Mission

- Connect and provide an interface between European and Regional Data Spaces and their public-private ecosystems.
- Transmit and dynamize innovative initiatives from the European Data Spaces to the different regions
- Add efforts and actors to develop pilot actions, training, promotion and internationalisation actions around the use of data.
- Materialise new business models, increasing the productivity, sustainability and efficiency of companies and organisations.
- Increase the efficiency of companies and organisations to extract maximum value and opportunities from data spaces.

Members

The number of members continues to grow since its creation in 2022. Among its partners are Inetum, Tecnalia, Vicomtech, Bilbao Port, and many more.

Key Assets

- BAIDATA Academy: BAIDATA Academy is the training service for members of the Association that aims to help individuals and organisations develop their knowledge and skills in the field of data. BAIDATA Academy offers partners different contents so that they can expand their knowledge in the field of data.
- BAIDATA Accreditation: BAIDATA Accreditation is an international professional certification programme that certifies different skills and knowledge in the field of data spaces. It provides an independent assessment of the skills and knowledge of data space professionals according to the standards of the International Data Spaces Association (IDSA).
- BAIDATA Test: it is a testing programme offered by BAIDATA to organisations that are developing or using data spaces. The programme aims to help organisations assess the interoperability of their data space components. This service is aimed at all organisations that are developing components, applications or services based on data spaces.
- BAIDATA Certify: It is a service offered by BAIDATA to organisations that want to certify their IDS components and operating environments. The service aims to help organisations meet the requirements of the International Data Spaces Association (IDSA) for certification. It is aimed at all organisations, public and private, that want to certify their IDS components and operating environments.
- BAIDATA Open/Support: Baidata Support is a service offered by BAIDATA to organisations that are developing or using data spaces. The service aims to provide information and technical support to organisations working in the field of data spaces. It is aimed at all organisations, public and private, that want to develop components or applications and services based on dataspaces.

Events

- III Foro BAIDATA: They bring together representatives of companies that want to explore in depth how European Data Spaces enhance the competitiveness of companies, as well as learn about the latest technological advances and trends in the field of industrial data sharing.
- Hannover Messe: Data spaces for industry event: Boosting industrial innovation with data spaces
- IDSA Winter Days: The Winter Days provide an interactive platform for addressing questions, overcoming challenges, contributing knowledge and gaining inspiration to impact the evolving landscape of data spaces.

6 - BIG DATA VALUE ASSOCIATION – BDVA

Nature of the Initiative	Association
Mission	To develop an **innovation ecosystem** that enables the **data-driven digital transformation** of the economy and society in Europe.
Sector(s) addressed	Agrifood | Automotive | Earth Observations & Geospatial | Energy | Finance | Healthcare | Media | Mobility & Logistics | Security | Smart Governance & Smart Cities | Smart Manufacturing Industry | Telecom
Leading Organisation	Independent lead composed by a members-based General Assembly, that selects a Board of Directors & coordinated by the Secretary General.
Members (approx.)	+240 members | 31 different countries
Founded (Year)	2014
Web (URL)	https://www.bdva.eu/
Social Media Presence	LinkedIn | Twitter – X | YouTube | Flickr
Relevance for Industry 4.0	It addresses challenges related to big data, including storage, processing, analysis, standardisation, privacy/security & skill development

Key Information	Levels	Important Links
Data Space Technical Specifications	★	GitHub/Eclipse Link: NA
Data Space Governance	★★★★	Document Library Link
Data Space Demonstration	★★★	Events, Data Week 2024, European Big Data Value Forum (EBDVF) 2024
Data Space Adoption	★★★	DEP Data Spaces, Data-Driven nnovation (DDI) Framework,
Connected Data Space 4.0 Initiatives	The Data Spaces Business Alliance / Team Data Spaces / The Data Driven Innovation (DDI) Framework	

Additional Information	
Contact (Name/E-mail)	Email: info@core.bdva.eu
Report	
What is BDVA?	

BDVA enables existing regional multi-partner cooperation through the provision of tools and know-how to support the co-creation, development, and experimentation of pan-European data-driven and AI applications and services, and know-how exchange.

Focused on advancing in areas such as big data technologies and services, data platforms and data spaces, industrial AI, data-driven value creation, standardization and skills.

BDVA has been the private side of the H2020 partnership Big Data Value PPP, it is a private member of the EuroHPC JU, is also one of the founding members of the AI, Data and Robotics Partnership and is a founder and supports the organization of Adra (the AI, Data and Robotics Association). BDVA has developed a strong and growing cooperation with Gaia-X, IDSA and FIWARE through the Data Spaces Business Alliance (DSBA), it is a partner of the Transcontinuum Initiative (TCI) and collaborates with many industry-driven AI national initiatives and other European communities.

Members

BDVA members include large industries, SMEs, research organizations and data users and providers to support the development and deployment of the EU Big Data Value Public-Private Partnership with the European Commission (over 230 members). There are two types of memberships:
- Full members can participate in all the activities of the Association have full voting rights in the general Assembly and can be elected to be part of the BoD.
- Associate Members can participate in the activity of the Association without voting rights.

Solutions & Key Assets:
- BDVA i-Spaces

BDVA offers what's called i-Spaces, Innovation Hubs for SMEs and startups to allow them get their data-driven and AI-related services, products and applications quickly tested, piloted, and exploited. They're acceleration environments for data-driven innovation in many industrial sectors like Manufacturing 4.0, Logistics, e-Commerce, Media, Aerospace, Automobile, Energy, Agriculture and Agroindustry, Pharmacy, e-Government, Environment, Public Health and Smart Cities. The basis of i-Spaces is an existing infrastructure and that they federate, complement and leverage activities of similar national incubators/environments, research and innovation projects and other national or European initiatives (EDIHs). i-Spaces are federating efforts and expanding through the EUHubs4Data Project. This project has a catalogue of federated services, datasets and training.

- Data-Driven Innovation (DDI) canvas

BDVA also offers a DDI canvas, a framework and a tool or companies to develop a strategies and comprehensive content for exploring data-driven business opportunities. Finally, to ensure quality, BDVA set up the i-Space label. By this labelling process, the BDVA recognizes the quality of existing data experimentation and innovation hubs and guarantees that the innovation environments provided by those initiatives meet the necessary requirements to boost data-driven and AI-based innovation at local level.

- Task Forces

Task Forces (TFs) are the main instrument to develop BDVA activities and are established to take care of specific matters within the 'Objectives' of the Association under the authority of the BoD. In the BDVA TFs, the members contribute to the European data, and AI R&I agenda and develop guidelines and strategic roadmaps for industry and policymakers. Their events give opportunities to build collaborations and co-create projects. Through the BDVA community, the members gain higher visibility on the European level. The services provided by the BDVA are designed to give timely updates on all the latest developments in the fields of data and AI.
- ❖ Cross sectorial Task Forces include: Business, Data and AI Technologies, Data Protection, Data Spaces, Emerging Topics, Ethical and Trustworthy Artificial and Machine Intelligence, HPC – Big Data – AI, I-Spaces, Policy, Societal and Regulation, Skills, Standards and Benchmarking and Trustworthiness of industrial AI.
- ❖ Sector-specific Task Forces include: Agrifood, Automotive, Earth Observations & Geospatial, Energy, Finance, Healthcare, Media, Mobility and Logistics, Security, Smart Governance and Smart Cities. Smart Manufacturing Industry, and Telecom.

Events
- EuroHPC Summit 2024 (Link) Date: Monday 18th March 2024 to Thursday 21st March 2024. Location: Antwerp, Belgium.

The EuroHPC Summit 2024 will bring together relevant European supercomputing stakeholders, public and private, as well as decision makers, allowing them to share the latest technological developments, define synergies, express their current and future needs, and participate in shaping the future of Europe supercomputing.

- <u>Yearly Data Week</u>
  . During the event, the participants share knowledge and results, discuss topics of common interest, find synergies, build new collaborations, and identify new challenges and recommendations.

7 - CATENA-X

Catena-X — Your Automotive Network

Nature of the Initiative	Association | European Project |International Project | Data Space
Mission	To create a global common open data ecosystem for the automotive industry, allowing digital traceability of assets throughout the entire supply chain. To solve the automotive sector's main business challenges and provide secure operating frameworks.
Sector(s) addressed	Manufacturing | Automotive
Leading organisation	Independent lead, organized by the Management Board, coordinated by Oliver Ganser, CEO of Catena-X Association & Head of Catena-X Consortium (BMW Group).
Members (approx.)	170 members
Founded (Year)	2021
Web (URL)	https://catena-x.net/en/
Social Media Presence	LinkedIn | YouTube
Relevance for Industry 4.0	First collaborative and open data ecosystem within the automotive industry to improve business processes using data-backed value chains.

Key Information	Levels	Important Links
Data Space Technical Specifications	★★★★★	GitHub
Data Space Governance	★★★	Document Library Link
Data Space Demonstration	★★★★	Events: Launch event in North America , Eclipse Tractus-X project (online), IAA Mobility 2023 , Data Driven Value chains (virtual), Quality Management use case (virtual), Web Seminar (online) Going live (online)
Data Space Adoption	★★	First E2E adopter journey tutorial
Connected Initiatives	Mobility Data Space / SCSN / Manufacturing-X / agdathub	

Additional Information	
Contact (Name/E-mail)	General Email: info@catena-x.net
	Management, Operations & Governance: Hanno Focken, hanno.focken@catena-x.net
	Business Owner Ecosystems: Daniel Miehle, daniel.miehle@catena-x.net
	Business Domain Ecosystems: Maximilian Ong, maximilian.org@catena-x.net
	Customer Involvement customerinvolvement@catena-x.net

Report

What is Catena-X?

[Catena = chain] + [X = partners] → Catena-X = network of partners of the automotive value chain.

Based in Berlin, Catena-X (first implementation project of Gaia-X) is an alliance funded by the German Federal Ministry for Economic Affairs and Climate Action within the funding program of "Future Investments in the Automotive Industry" and the European Union's "NextGenerationEU plan."

Leading companies in the automotive industry joined to create a network called "Automotive Alliance" back in 2020 and, eventually, it was officially established as Catena-X. It is a sectorial flagship project that employs Gaia-X Trust Framework and runs from 1st August 2021 to July 31st 2024. Throughout the course of its operational life, new and diverse members will continue joining the project: IT specialists, car suppliers and SMEs among others.

Based on the IDS standard and the European cloud Infrastructure of Gaia-X, it can easily be defined as a data ecosystem within the automotive industry. An open-source data ecosystem for secure and cross-company data exchange in the automotive industry whose objective is to boost the automotive industry's competitiveness, improve efficiency, transparency and quicken processes through data sharing and standardization. It will tackle future challenges like CO_2 reduction, circular economy, and supply chain security whilst upgrading the quality of vehicles.

As an association, Catena-X members work together to create technical standards and certification criteria, facilitate development collaborations, gather information and qualification offers and grow the network on a global scale.

The target group of Catena-X are SMEs, OEMs, and their suppliers.

Mission & Objectives

- Build data chains across the complete value chain.
- Increase competitiveness of the automotive industry.
- Create new data-based business models.
- Create a common standard for the secure exchange of data, important for cross-sectorial collaboration. Data exchange and interoperability.
- Create a network for automotive companies and everyone involved in it.
- Establish a transparent strategy for the cooperative advancement of a just data economy. Open, transparent, and fair development.

How does Catena-X work

Phase 1. *Pillars for the data ecosystem.* Create processes and work on proposals for well-organised structures and the development of standards and certificates.

Phase 2. *Standardization, certification, and establishment of the operation.* The association is based on open-source principles.

Phase 3. *Scaling and international growth.* Global participation in this data ecosystem. They need to consider requirements from Phase 1 and Phase 2.

Roles & Members

Catena-X offers 7 different roles within the operational area in which new organizations can participate and provide. There are three main areas, e.g., business applications to solve business issues (i.e., traceability); enablement services to provide or consume data (interoperability and data sovereignty) and core services to enable the basic functionality (commercial services) of the association. It is composed/based of 3 separate organizational elements:

- The Association. The Catena-X Automotive Network e.V., central institution.
- Operating Environment. Cofinity-X (operating company founded by 10 members of Catena-X). Handles the association's operations.
- Catena-X Development Environment. Development is done by developing several candidate standards. To develop one or more, members band together (sometimes with additional third parties) to form cooperations, consortia, or initiatives outside the association.

Founding members include e.g., BMW AG, Deutsche Telekom AG, Robert Bosch GmbH, SAP SE, Siemens AG and ZF Friedrichshafen AG… Other members include: CX Hub Sweden, CX Hub France…

Solutions & Key Assets

- Tractus-X open-source project & Eclipse Foundation

Catena-X provides developers with solutions to contribute to its ecosystem through the Tractus-X project (fully mature open-source project). The goal of Catena-X is to assist developers in accelerating the creation of solutions that will play a key role in the rapid growth of the Catena-X ecosystem. As a result, Catena-X offers two kinds of services to the Eclipse Tractus-XTM project: (1) Core Services (such as portals and marketplaces for core service providers) and (2) Kits (such as for solution suppliers). The Tractus-X project is the open-source project of Catena-X. It is covered by the Eclipse Foundation's scope. This foundation provides an environment for open-source collaboration and innovation. It provides four key services to the community (IP management, Ecosystem development and marketing, Development process and IT infrastructure). First Eclipse Tractus-X Community Days (7th-8th December 2023) in Stuttgart.

- Use cases to help solve problems of automotive value are based on Gaia-X standards that set out the technical requirements to create a sovereign and federated data infrastructure. The use cases are: Traceability (product relevant asset), Quality Management, Sustainability (CO2 footprint, compliance with social standards), Circular Economy (CO2 footprint), Demand and Capacity Management, Digital Behaviour Twins, Business Partner Data Management, Modular Production, Online Control and Simulation, Manufacturing as a Service (MaaS).

Technical Specifications

- EDC (Eclipse Data Connector). Secured interface for data exchange. Catena-X relies on open-source software such as this, which designs technology blueprints for future data spaces.
- BPN (Business Partner Number). ID for partners.
- KITs (Keep-It-Together) (for solution providers, stakeholder groups and data providers) Standard rules for the adoption, development, and use of data. They provide tools for the software developers to build applications and companies to connect to the Catena-X space.
- The standard library provides a set of standards for the organizational roles and briefly mentions the use cases to describe benefits within the organization.

Events
So far, the association has taken part in both virtual and in person events. A couple of them are the IAA Mobility 2023 and the latest one, on October 2023 in which Catena-X went live for the first time. More releases and future events can be read here. The first event on Tractus-X will be held on December 7th and 8th in Stuttgart. For more information click here.

Other useful links:
- About Catena-X library
- Data Space governance 101
- General presentation
- Operating model (oct 2023)
- FAQ → Objectives, structure, current topics, information security and much more. Check the list

8 - Chips JU (formerly KDT JU)

Nature of the Initiative	European Project
Mission	To foster the European Union's strategic autonomy in electronic components & systems. To promote scientific excellence & innovation leadership in emerging technologies. To facilitate the involvement of SMEs, address societal & environmental challenges. To advance semiconductor technologies for enhanced design, systems integration, and chip production capabilities within the EU.
Sector(s) addressed	Green Deal (including Smart Communities) | Mobility |Manufacturing
Leading organisation	Led by the European Commission together with participant Member States and 3 private Industrial Association members (AENEAS, EPoSS, & INSIDE)
Members (approx.)	49
Founded (Year)	2023
Social Media Presence	LinkedIn | Twitter - X | YouTube
Relevance for Industry 4.0	In the ever-evolving landscape of technology, the European semiconductor ecosystem stands as a crucial pillar of progress. At the heart of this dynamic field lies the Chips Joint Undertaking (Chips JU), a pioneering initiative committed to catalysing research, development, & manufacturing capabilities across Europe.

Key Information	Levels	Important Links
Data Space Technical Specifications	★	Website
Data Space Governance	★★★★	Document Library Link
Data Space Demonstration	★★★★	Events
Data Space Adoption	★	NA
Connected Initiatives	Quantum, 6GSNS, ETP4HPC	

Additional Information	
Contact (Name/E-mail)	Name: Chips Joint Undertaking I Email: enquiries@chips-ju.europa.eu I Telephone: 00 32 2 221 81 02

Report

What is Chips JU?

Chips JU (formerly Key Digital Technologies (KDT) JU) encompasses electronic components, their design, manufacture and integration in systems and the software that defines how they work. The overarching objective of this partnership is to support the digital transformation of all economic and societal sectors and the European Green Deal, as well as support research and innovation towards the next generation of microprocessors.

On 22 September 2023 the European Chips Act and the amendment to the Regulation establishing the Joint Undertakings under Horizon Europe entered into force, paving the way for strategic developments in the chip technology sector. One significant outcome of these changes is the expansion and renaming of the Key Digital Technologies Joint Undertaking (KDT JU), which will now be known as the Chips Joint Undertaking (Chips JU).

Mission & Objectives

In the coming years, Chips JU will develop, together with the European nanoelectronics community and the Member States, a strong portfolio comprising several pilot lines for:

- advanced nanoelectronics' technologies
- a design platform for the design of advanced chips
- a broad set of projects that make use of those technologies to innovate all along the value chain in mobility, energy, health, robotics, and chip manufacturing

This portfolio of actions will be supported with a network of competence centres all over Europe that will facilitate the access to those actions for European start-ups, SMEs, universities, and larger companies. The general objectives are:

- to reinforce the EU's strategic autonomy in electronic components and systems to support future needs of vertical industries and the economy at large
- to establish the EU's scientific excellence and innovation leadership in emerging components and systems technologies, and promote the active involvement of SMEs
- to ensure that components and systems technologies address Europe's societal and environmental challenges
- to enable the development and deployment of cutting-edge semiconductor technologies, cutting-edge quantum technologies and the innovation of established technologies that will reinforce advanced design, systems integration and chip production capabilities in the EU

Members and partners

- the EU, represented by the European Commission;
- the following participating states: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Türkiye;
- the following industrial associations: AENEAS, EPoSS and INSIDE representing the micro- and nanoelectronics, smart integrated systems, and embedded/cyber-physical systems sectors.

Events

Through the year they organise a few events related to their objectives, as well as partners' events. One of the main events is the EPoSS annual event. This year it will be hold on June 18-21 in Cork, Ireland. This time, EPoSS member Tyndall National Institute will host the event which follows the motto Sensing the Future of Smart Systems: Bridging Minds and Microelectronics. In order to present the latest developments in Smart Systems Integration (SSI), they invited people to send their abstracts for presentations or posters and showcase their latest Smart Systems innovations or technology developments for Smart Systems Integration.

9 - CLAIRE

Nature of the Initiative	Association | European Project | International Project
Mission	To establish a world-wide brand recognition for "AI made in Europe" (at the level of CERN), and to position Europe in control of its own future.
Sector(s) addressed	Language | EOSC (Research)
Leading organisation	European AI Community
Members (approx.)	25,000
Founded (Year)	2018
Social Media Presence	LinkedIn | Twitter - X | YouTube |Facebook
Relevance for Industry 4.0	They represent the interests of its members by promoting European AI through media channels and events, fostering cross-border collaborations, and participating in EU Horizon calls to facilitate community building.

Key Information	Levels	Important Links
Data Space Technical Specifications	★	Website
Data Space Governance	★★★★	Document Library
Data Space Demonstration	★★★★	Events
Data Space Adoption	★	CLAIRE All Questions Answered (AQuA) Event
Connected Data Space 4.0 Initiatives	EurAi, euRobotics, ellis	

Additional Information	
Contact (Name/E-mail)	Email: contact@claire-ai.org

Report

What is CLAIRE?

The Confederation of Laboratories for Artificial Intelligence Research in Europe (CLAIRE) is an international non-profit association (AISBL) created by the European AI community that seeks to strengthen European excellence in AI research and innovation, with a strong focus on human-centred AI.

CLAIRE does not provide AI services or products, but rather represents the interests of its members by promoting European AI through media channels and events, fostering cross-border collaborations, and participating in EU Horizon calls to facilitate community building.

CLAIRE aims to establish a world-wide brand recognition for "AI made in Europe" (at the level of CERN), and to position Europe in control of its own future. CLAIRE was launched in June 2018 and now has the support of more than 3,900 people, most of them scientists, technologists, and researchers in Artificial Intelligence. The supporters represent the vast majority of Europe's AI community, spanning academia and industry, research and innovation. Among the supporters are more than 140 fellows from various key scientific associations.

Mission & Vision

The CLAIRE initiative aims to establish a pan-European network of Centres of Excellence in AI, strategically located throughout Europe, and a new, central facility with state-of-the-art, "Google-scale", CERN-like infrastructure – the CLAIRE Hub – that will promote new and existing talent and provide a focal point for exchange and interaction of researchers at all stages of their careers, across all areas of AI. The CLAIRE Hub will not be an elitist AI institute with permanent scientific staff, but an environment where Europe's brightest minds in AI meet and work for limited periods of time. This will increase the flow of knowledge among European researchers and back to their home institutions.

- CLAIRE will focus on trustworthy AI that augments human intelligence rather than replacing it, and that thus benefits the people of Europe.
- CLAIRE will work for a major increase in funding towards existing scientific strengths in AI, novel research opportunities and key European interests.
- CLAIRE will work with key stakeholders to find mechanisms for citizen engagement, industry and public sector collaboration and innovation-driven startup and scale-up.
- CLAIRE will in this way define and address challenges in various sectors and across a wide range of applications, including health, manufacturing, transportation, scientific research, sustainable agriculture, financial services, public administration and entertainment.

Events

CLAIRE All Questions Answered (AQuA) Event:

It is a forum organised by CLAIRE (Confederation of Laboratories for Artificial Intelligence Research in Europe) where experts and stakeholders come together to discuss various topics related to artificial intelligence (AI). It provides an opportunity for participants to ask questions, share insights, and engage in dialogue about AI research, applications, ethics, policy, and other relevant issues.

AQuA – EDIH Best practices: Sustainable AI

The focus of the session on sustainable AI is to explore the strategies employed by European Digital Innovation Hubs in addressing green deal issues. This involves the incorporation of sustainability considerations into services designed to assist organisations and companies grappling with digital transformations.

In addition, the webinar will discuss the influence of AI, data, and robotics technologies on sustainability matters, emphasising their potential contribution to achieving sustainable development goals.

10 - Data Space Support Centre (DSSC)

Nature of the Initiative	Multidisciplinary consortium and project created to support the public sector and companies that want to create sovereign data spaces.
Mission	To contribute to the creation of common data spaces, that collectively create a data sovereign, interoperable and trustworthy data sharing environment, to enable data reuse within and across sectors, fully respecting EU values, and supporting the European economy and society.
Sector(s) addressed	Green Deal (including Smart Communities) | Agriculture | Mobility | Health | Skills | Manufacturing | Public Administrations (Procurement, Legal) | Financial | Tourism | Language | Cultural Heritage | Energy | Media | EOSC (Research).
Leading organisation	Fraunhofer
Members (approx.)	There are 12 consortium partners and 16 associated and collaboration partners
Founded (Year)	2022
Web (URL)	https://dssc.eu/
Social Media Presence	Data Spaces Support Centre: Resumen | LinkedIn | Data Spaces Support Centre - YouTube
Relevance for Industry 4.0	The principal goal is to support the establishment of common data spaces in Europe by making technologies and standards widely available across sectors.

Key Information	Levels	Important Links
Data Space Technical Specifications	★	GitHub/Eclipse Link: N/A
Data Space Governance	★★★★	Document Library Link
Data Space Demonstration	★★★★	Events, DSSC Events
Data Space Adoption	★	Knowledge Base

Connected Data Space 4.0 Initiatives	Common european data space for cultural heritage, European Federation for CAncer IMages (EUCAIM) , Interoperability Network for the Energy Transition (IntNET), AgriDataSpace, Language Data Space, Prep. Action Green Deal, EU Data Sp4ce, IDSA
Additional Information	
Contact (Name/E-mail)	Emails: contact@dssc.eu, support@dssc.eu, and newsletter@dssc.eu

Report

What is DSSC?

Funded by the European Commission as part of the Digital Europe Program, the Data Spaces Support Centre is a multiyear project. Coordinated by the Fraunhofer Institute for Software and Systems Engineering (ISST), the DSSC project includes a consortium of leading associations and knowledge centres in the domain of data spaces. It was created to support the public sector and companies that want to create sovereign data spaces. The project brings together a multidisciplinary consortium of twelve leading associations and knowledge centres in the domain of data spaces, with a broad membership, an extensive network, national hubs, open-source communities, and data space pioneers.

Mission

- Blueprint for data spaces in Europe:

The Data Spaces Support Center will identify standards, technologies, and tools to enable the public sector and European businesses to use and share data across sectors. It will carry out comparisons in regard to sectoral requirements for security, access procedures, while considering sector-specific standardization activities.

The project will create appropriate conditions for building an open data ecosystem characterized by interoperability and mutual trust between all participants. The goal is to provide a blueprint for data spaces that comprises common building blocks for business, legal, operational, technical, and societal aspects.

- Support activities and knowledge transfer:

To foster the adoption of common building blocks and standards for data spaces, the Data Spaces Support Centre will provide support activities such as a knowledge and resource sharing web portal, a help desk, toolboxes, and active stakeholder engagement. It will also support the work of the envisaged Data Innovation Board in view of enhancing the interoperability of data as well as data sharing services between different sectors and domains.

Key Assets

One of the most relevant outputs of the DSSC is the Data Space Blueprint: Data Spaces Blueprint | Version 0.5 | September 2023 - Blueprint - Data Spaces Support Centre (dssc.eu). The organisation publishes the seminars and forums through its website in the events link. This service helps to disseminate knowhow on data spaces; there is an insight online meeting monthly Events - Data Spaces Support Centre (dssc.eu)

On the other hand, it participates in some of the most relevant events such as:
- DATA SPACES SYMPOSIUM: 2024, March 12-14- Germany
- European BIGDATA VALUE FORUM: EBDVF 23 | Data and AI Event | SAVE THE DATE → 25-27 Oct | Valencia (Spain) (european-big-data-value-forum.eu)
- IDSA Data Space Discovery day: Data Spaces Discovery Day Vienna | Business value of sovereign data sharing - Events - Data Spaces Support Centre (dssc.eu)
- Open Science symposium of the EOSC association: EOSC Symposium 2023 Homepage - EOSC Symposium 2023 (eoscfuture.eu).

Events
- DSSC Insight series: This monthly webinar focused in different topics, such as on the DSSC Toolbox and what can open data do for common European data spaces.

11 - ELLIS

Nature of the Initiative	Association |European Project
Mission	To be able to perform the highest level of research, enabling Europe to shape how machine learning and modern AI can make an impact. To secure Europe's sovereignty in the field of machine learning as the driver for modern AI through the creation of a multi-centric AI research laboratory.
Sector(s) addressed	Green Deal (including Smart Communities) | Mobility | Health | Skills | Manufacturing | Public Administrations (Procurement, Legal) | Financial | Energy | Media | EOSC (Research)
Leading organisation	Independent lead by Bernhard Schölkopf (board member and President) selected by Management Board (9 members)
Members (approx.)	+ 1000 AI researchers (Board members, guests, alumni, coordination office, supporters, fellows, and scholars…Network distributed across Europe and Israel. 41 ELLIS units.
Founded (Year)	2018
Social Media Presence	LinkedIn | YouTube | X |Facebook
Relevance for Industry 4.0	Brings together top researchers from all over the world aiming to shape the future of machine learning and AI. Focus on scientific excellence, innovation, and societal impact.

Key information	Levels	Important Link
Data Space Technical Specifications	★★	Website
Data Space Governance	★	Document Library: N/A
Data Space Demonstration	★	https://ellis.eu/events
Data Space Adoption	★★★	https://ellis.eu/sites Sites, programmes, projects building on Ellis
Connected Initiatives	CLAIRE / EurAI / euRobotics	

Additional Information	
Contact (Name/E-mail)	Email: info@ellis.eu
Report	

What is ELLIS?

Back in 2018, researchers and experts identified considerable **barriers regarding the role that AI had in Europe** both in our personal everyday lives and the impact it would have at global scale. The European continent was not on par with North America and China in terms of appealing to talented scientists and a lot of the research is done by industry, i.e., research freedom and quick commercialization of results. In essence, Europe was suffering from a lack of excellence.

Renowned European AI researchers joined to create **the cross-national European Laboratory for Learning and Intelligent Systems (ELLIS),** a pan-European scientific inter-governmental organization focused on the research and enhancement of current AI, a network created as a **"grassroots initiative,"** that is, a form of association made up of members from the same community. It was officially established on December 6th 2018.

The association aims for the best basic research to be performed in Europe and to have an economic impact.
- Mainly focuses on modern AI through machine learning methods.
- Perform basic research on modern AI.
- Become the top employer in machine intelligence research.
- Boost Europe's sovereignty over AI.
- Connect top researchers with excellent and talented minds.

Members

ELLIS member includes Pan-European AI network with over 1000 AI researchers. There are also different memberships: Board members, guests, alumni, coordination office, supporters, fellows, and scholars… This network is distributed across Europe and Israel.

Solutions & Key Assets: Three-pillar strategy
ELLIS tackles the barriers that Europe faces throughout a three-pillar strategy based on:
a. [Research programmes and fellows.](#) Already established 11 fellow programmes with diverse topics and there are 14 research programmes. Focused on high impact problem areas.
b. [Pan-European PhD and Postdoc programmes](#). Identify, inspire, nurture, and connect brilliant minds and create a network with top researchers.
c. [Network of ELLIS units and ELLIS institutes](#). Creation of a network where both existing and new institutions are committed and invest towards network activities.

Projects building within ELLIS

- [ELISE](#) (European Network of AI Excellence Centres). AI research hubs and associated fellows. Contributes to ELLIS through mobility programmes.
- [ELSA](#) (European Lighthouse on Secure and Safe AI). Connects exceptional experts/researchers to share their knowledge and experience about AI and machine learning, at the same time leading the research about safe and secure IA methodologies.
- [ELIZA](#) (Konrad Zuse School of Excellence in Learning and Intelligent Systems). Connects seven German Units and focuses on [four areas.](#)
- [ELIAS](#) (European Lighthouse of AI for Sustainability (ELIAS). Establish Europe as leader in AI research to guide sustainable innovation and economic progress.

Events

So far, the association has taken part in both virtual and in person events. A couple of them have been the ELLIS Doctoral Symposium 2023 and ELLIS Summer School in the Manchester Unit. The next event will take place at the ELLIS Unit at Amsterdam, on foundation models. More releases and future events can be read [here](#).

Interesting links:
- [European experts paving the way to modern AI](#)
- [Neural Information Processig Systems Foundation](#)
- [ELLIS launch press release](#)

12 - EOSC

Nature of the Initiative	Association/Foundation | European Project | Data Space
Mission	Their mission to develop a 'Web of FAIR Data and Services' for science in Europe
Sector(s) addressed	EOSC (Research)
Leading organisation	European Commission
Members (approx.)	100+
Founded (Year)	2015
Web (URL)	https://eosc.eu/
Social Media Presence	LinkedIn | X | YouTube
Relevance for Industry 4.0	EOSC will be a multi-disciplinary environment where researchers can publish, find and re-use data, tools and services, enabling them to better conduct their work. EOSC builds on existing infrastructure and services supported by the European Commission, Member States and research communities. It brings these together in a federated 'system of systems' approach, adding value by aggregating content and enabling services to be used together.

Key Information	Levels	Important Links
Data Space Technical Specifications	★	GitHub/Eclipse Link: N/A
Data Space Governance	★★★★	Document Library Link (zenodo)
Data Space Demonstration	★★★★	EOSC Symposium 2024 , Events
Data Space Adoption	★★★	The Macro-Roadmap , The Strategic Research & Innovation Agenda and its Multi-Annual Roadmap
Connected Data Space 4.0 Initiatives	CLAIRE, EurAi, ellis, euROBOTICS	

Additional Information	
Contact (Name/E-mail)	Email: info@eosc.eu I Tel: +32 2 537 73 18

Report
What is EOSC?

The implementation of EOSC is based on a long-term process of alignment and coordination pursued by the Commission since 2015. This has involved a diverse range of stakeholders across the European research landscape.

- 2018-2020

In the initial phase of implementation (2018-2020) the European Commission invested around €250 million to prototype components of the EOSC through calls for projects under Horizon 2020. The European Commission also launched an interim EOSC Governance to prepare the strategic orientations for the EOSC implementation post-2020.

- 2021-2030

The current phase of implementation (2021-2030), is taking place in the context of the European Co-programmed Partnership for EOSC launched at the Research and Innovation Days 2021.

The Work Programme and priorities are defined according to the Strategic Research and Innovation Agenda (SRIA) which is co-developed with the entire EOSC community. EOSC is transitioning to a more stakeholder-driven approach with a shared vision, common objectives and complementary contributions at European, national & institutional levels.

A co-investment (with in-kind and financial contributions) by the EU and non-EU partners of at least €1 billion is foreseen through 2027. The EOSC Association and the Commission are engaged in a process to define the EOSC evolution and operations post-2027, including considerations of governance, funding and the future of the EOSC Partnership.

Key Assets: The Macro-Roadmap

The Macro-Roadmap for the implementation of EOSC is a visual mapping of the results of EU projects developing EOSC and the in-kind contributions of EOSC Association member organisations. In the following link, you will see the EOSC Implementation 2021-2026: https://eosc.eu/macro-roadmap/

Members

The Association is comprised of Members and Observers. They must:
- Be a legal entity established in accordance with the laws and customs of the country of origin or be constituted as an intergovernmental organisation pursuant to an international treaty in accordance with principles of international law. They cannot be a department of national governments or ministries;
- Confirm in writing that they embrace and endorse the vision of the Association and adhere to its values;
- Have a substantial and significant interest in, and potential contribution to or impact on, EOSC;

Fall into one or more of the following categories of organisations: a. Research funding organisation; b. Research performing organisation; c. Service providing organisation; d. Other organisation.

All Members should have a presence in an EU Member State or Associated Country, or any other country associated with the EU Framework Programme for Research and Innovation. Observers may be established outside this area. Each Member State or Associated Country that has one or more organisations that are Members of the Association may appoint one Member to act as its Mandated Organisation, to represent national interests. In addition, the EIROforum is permitted to mandate one of its members to represent the views of the Forum. Mandated Organisations can fall into any member category. The General Assembly is the supreme authority of the Association and is composed of one Delegate per Member with voting rights and one Representative per Observer without voting rights.

Events

- EOSC Symposium 2024: EOSC Symposium 2024 will take place under the patronage of the German Minister for Education and Research Bettina Stark-Watzinger. The event is being organised by the EOSC Association, the EOSC-A German Mandated Organisation, NFDI, the ZBW – Leibniz Information Centre for Economics, an EOSC-A Member, and with the support of the Horizon Europe project EOSC Focus. In order to capitalise on the synergies between the EOSC and NFDI communities, NFDI will hold a meeting with representatives of its community and other relevant stakeholders back-to-back to the EOSC Symposium to facilitate collaboration between the target groups. The EOSC Symposium 2024 will be hosted in Berlin at the H4 Hotel Alexanderplatz. Link available here.

13 - ETP4HPC

ETP 4 HPC — EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

Nature of the Initiative	Association |European Project
Mission	Guide the development of the European advanced computing ecosystem. Accelerate the strategic growth, adoption, and deployment of high-performance computing technologies in business, academia, research, and public sector applications to improve Europe's competitiveness, encourage innovation, and tackle societal issues. Establish Europe as a leader in the future of High-Performance Computing.
Sector(s) addressed	Skills | Networking | Education | Innovation | Strategy development | HPC and Big Data | EOSC (Research).
Leading organisation	PRACE (Partnership for Advanced Computing in Europe)
Members (approx.)	More than 100 members Chairman Mr. Jean-Pierre Panzierra See here organisation ETP4HPC is managed by a board of 15 members representing research centres (5), European SMEs (3), European controlled corporations (5) and international companies with R&D in Europe (2)
Founded (Year)	2012
Web (URL)	https://www.etp4hpc.eu/
Social Media Presence	LinkedIn | X | Youtube
Relevance for Industry 4.0	ETP4HPC plays a relevant key role in advancing high-performance computing technologies that support Industry's 4.0 digital transformation. Using the potential of HPC European industries may gain more innovation, efficiency, competitiveness, and sustainability.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★★★	Zenodo (open repository)
Data Space Governance	★★★★★	Document Library Link

Data Space Demonstration	★★★★★	Events
Data Space Adoption	★★★	Use cases (TransContinuum Initiative)
Connected Data Space 4.0 Initiatives	Quantum / 6GSNS / KDT JU / AIOTI / BDVA / ECSO / EU-MATHS-IN / 6G-IA / UGENT	

Additional Information	
Contact (Name/E-mail)	Email: contact@etp4hpc.eu

Report

What is ETP4HPC?

The European Technology Platform for High Performance Computing (ETP4HPC) is an initiative that bring together academia, industry, research organisations & policymakers to grow the development and adoption of high-performance computing (HPC) technologies. Aims to shape the strategic agenda for HPC research & innovation in EU.

- Guiding the development of the European advanced computing ecosystem.
- Private, industry-led, and non-profit association.
- Advise, inform and influence advanced computing EU policy and decision makers

Membership

Any organisation interested in HPC technology research and use in Europe can become a member of ETP4HPC.

- Full members. Any organisation which carries out significant research & development activities in the field of HPC technology in Europe
- Associated members. Any organisation with activities related to HPC technology. Cannot vote/be elected to the board.

There are membership fees.

Mission

- Strategic Research Agenda (SRA)

One of the missions of the association is to create, maintain and share the European advanced computing technology roadmap, the ETP4HPC Strategic Research Agenda (SRA). It serves as a strategic guide for research, innovation, and development activities within the HPC ecosystem.

Hardware architectures, software environments, applications, and system integration are just a few of the disciplines in which the SRA finds significant issues, prospects, and research objectives. It seeks to overcome technological barriers, boost innovation, and foster collaboration among industry, academia, and research institutes.

The SRA outlines specific objectives and goals for advancing HPC capabilities in Europe. Enhancing the energy efficiency, scalability, and reliability of HPC systems; optimising software tools and programming models for performance and productivity; and advancing application domains ranging from scientific computing to emerging data-intensive applications like artificial intelligence (AI) and big data analytics are just a few.

By aligning research and innovation efforts with the ETP4HPC SRA, stakeholders can collectively work towards enhancing Europe's competitiveness in HPC, fostering technological leadership, and addressing societal challenges through advanced computing solutions. The SRA serves as a guiding framework for shaping the future of HPC in Europe and ensuring its relevance and impact across diverse sectors and industries.

- ETP4HPC's SRA 5 (European HPC Research Priorities 2023-2027) (the next SRA is currently on work, deadline of November 2024.

Key Assets

- Digital Continuum

The concept underscores the interconnected nature of digital technologies and workflows, where HPC plays a key role in enabling efficient and effective processing, analysis, and utilization of data to drive innovation, competitiveness, and societal impact. The digital continuum emphasizes several aspects, such as data generation and collection, simulation and modelling, and end-to-end integration, among others.

- **TransContinuum Initiative (TCI).** The ETP4HPC coordinates the TransContinuum Initiative (TCI), a collaboration between associations and projects involved in the IT technology, application and service provisioning for the Digital Continuum. The TCI focuses on various objectives, like generating and fostering an interdisciplinary network of experts in in sciency and industry and contributing to the 5 Horizon Europe missions.
- **Strategic Technology Agenda for DestinE**. DestinE is an initiative of the EC to create digital twins of our plane to better predict future effects and build resilience on the climate change.

The ETP4HPC provides Strategic Technology Agenda for DestinE. It leads the consortium involved in the TCI.

Interesting links/documents

- HPC importance for Europe
- Hand book of European HPC projects

14 - EUCLIDIA (European Cloud Industrial Alliance)

Nature of the Initiative	Association | Industry Alliance
Mission	To **foster innovation** in the **European cloud space**, specifically for the supply and operation of cloud infrastructures. To hasten the implementation European-developed cloud technology. The association is dedicated to promote the opportunity in creating a strong eco-system and SME-friendly environment in the European cloud sector.
Sector(s) addressed	Cloud Industry
Leading organisation	Independent lead composed by board members-based CEOs of European companies that create original cloud technology
Members (approx.)	28 Full members and 7 Associated members and partner organisations
Founded (Year)	July 2021
Social Media Presence	LinkedIn | X
Relevance for Industry 4.0	Soon-to-be industry standard in both edge, cloud, and telecommunications. Automotive industry is expected to be among the top industries for AI-enabled cloud service providers by 2030.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★★	Website
Data Space Governance	★★	Cloudrepo.eu – European Technology Directory
Data Space Demonstration	★★	Publications
Data Space Adoption	★	News - Events
Connected Initiatives	GAIA-X / AIOTI / Structura-X / SWIPO /Industria Conectada 4.0	

Additional Information	
Contact (Name/E-mail)	Email: contact@euclidia.eu Representatives: - Dr. Jean-Paul Smets, CEO Rapid.Space, Co-President of EUCLIDIA (interim) - Philipp Reisner, CEO Linbit, Vice-President of EUCLIDIA (interim)
Report	

What is Euclidia?

European Cloud Industrial Alliance, EUCLIDIA, was created back in 2021 as a mean to form the industrial alliance of independent European technology makers for the promotion of digital independence and strategic autonomy.

It is focused on providing lawmakers and national policy makers with expertise and vision to help develop and reinforce policies to accelerate the adoption and development of leading cloud technologies made in Europe.

Today, European cloud technologies are seen as key factor to operational efficiency and transformation, with more than 90% of European companies ranking their cloud programmes high but they struggle to capture all the value. The ability to go beyond cloud adoption and take advantage of new technologies like gen AI depends a lot on those cloud programmes (Betley et al., 2024).

A rich ecosystem (thanks to the cloud technologies) means extremely competitive solutions and mitigation of risks posed by extraterritorial laws. EUCLIDIA helps with this to governments and corporations, while guaranteeing trust and fast access to public markets for cloud technologies.

Some members of EUCLIDIA are also members of GAIA-X, although they have different nature and goals.

Mission

- Promotion of digital independence and strategic autonomy
- Reinforce policies to develop leading cloud technologies, reflecting European values like protection of privacy and fair competition.
- Carry out **advocacy and competition to foster innovation**
- Achieve more than 10 distributed **edge cloud platforms** through government or EU funding

Members

Who can join? Independent European original technology manufacturers and SMEs working on the cloud industry. There are two types of membership:

- Full membership: SMES that are majority owned by European-based shareholders. These become part of EUCLIDIA's board, which decides on the action plan for the next period, providing guidelines and reviews. This includes cloud service providers who are prepared to grant specific parties (like governments) a licence to use all or a portion of their technology assets.
- Associate membership: other Europe-based industry partners. Including qualified suppliers, cloud service providers, and other relevant industry partners with a presence in Europe.

Events

First event Euclidia Now Event is being organised for September 2024 in Brussels, featuring speakers from the industrial and political areas.

Interesting links

- Peertube – EUCLIDIA videos
- The European Alliance for Industrial Data and Cloud Youtube debate – full recording
- 23 European Cloud Technology Companies form the European Cloud Industrial Alliance (EUCLIDIA) (news)
- The state of cloud computing in Europe (article)

15 - EUDCA (EUROPEAN DATA CENTRE ASSOCIATION)

Nature of the Initiative	Association | Platform
Mission	To provide European data centre operators with a political platform that fosters and advances industry growth.
Sector(s) addressed	Procurement / Legal
Leading organisation	Independent lead managed by the Board
Members (approx.)	47
Founded (Year)	2011
Social Media Presence	LinkedIn | X | YouTube
Relevance for Industry 4.0	Key role facilitating advancements in Industry 4.0 y offering reliable data centre infrastructure, cloud services, IoT services and cybersecurity solutions. The initiative helps ensure that Industry 4.0 activities are successfully implemented and sustained through Europe, supporting innovation, industry standards and collaboration.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★	Website
Data Space Governance	★★★★★	Document Library Link
Data Space Demonstration	★★★★★	Events
Data Space Adoption	★★★	Knowledge hub Energy Efficiency Directive. European database to foster transparency and sustainable development of the industry
Connected Initiatives	Smart Industry / ETP4HPC / Quantum	

Additional Information	
Contact (Name/E-mail)	Michael Winterson, Managing Director, managingdirector@eudca.eu Nikolas Kockelmann, PO for CNDCP, Taxonomy, Energy, nikolas@eudca.eu Tiago Carolino, Policy Officer for Energy, Circular Energy, tiago@eudca.eu Sofia Scarpellini, PO for Circular Economy, Chemicals, sofia@eudca.eu Jules Bertemes, PO for Circular Energy, Cybersecurity, jules@eudca.eu **Contact form**

Report

What is EUDCA?

The European Data Centre Association (EUDCA) is a leading international non-profit organisation representing the interests of data centre operators, service providers, and stakeholders throughout Europe. Established back in 2011, the association is registered under Belgian Royal Charter and is run by and for its members, helping European data centre business to grow, be sustainable and competitive.

Mission & Objectives

To supply European data centre operators with a political platform that fosters and develops industry growth.

Roles & Members – Membership

The board of directors and executive leadership governs the organisation, there is no specific leader but rather a whole. This board is held by notable people from member organisations in the data centre sector. The Association Board consists of up to 12 members made up of operators, vendors, and national trade associations, representing all aspects of the datacentre industry.

To join the EUDCA and contribute, the interested party needs to fill out an application form or it may be nominated by any other participant or at the invitation of the Association Board.

Solutions & Key Assets

Energy Efficiency Directive (EED) Knowledge Hub

The EU has established new reporting requirements for datacentres across Europe beginning in 2024. To promote openness and the industry's sustainable growth, the reporting scheme would oblige datacentre operators to yearly provide a set of data to the specific European database.

You can see here the first reporting deadline and, progress made and documents.

Climate Neutral Data Centre Pact (CNDCP)

Committed to the European Green Deal, data centre operators and trade associations agree to take the actions related to *energy efficiency, clean energy, water, circular economy and circular energy system* to make the data centres climate neutral by 2030.

Policy Committee

The EUDCA Policy Committee was established to promote cooperation in developing a unified and constructive stance that backs Europe's digitalisation. The association collaborates with National Trade Associations (NTAs), industry stakeholders, and European lawmakers to stay informed about potential legislation that could affect the data centre industry, particularly its members.

Technical Committee

The EUDCA Technical Committee is a platform for industry experts to discuss new developments in data centre technologies and trends

Events

Future events include, among others the Data cloud Global Congress in Cannes and the Future Data Summit.

16 - EurAI (European Association for Artificial Intelligence)

Nature of the Initiative	Association |European Project
Mission	To harness AI technologies for societal benefit. To promote the advancement of Ai research, development, & deployment in Europe.
Sector(s) addressed	Green Deal (including Smart Communities) | Agriculture | Mobility | Health | Skills | Manufacturing | Public Administrations (Procurement, Legal) | Financial | Tourism | Language | Cultural Heritage | Energy | Media | EOSC (Research)
Leading organisation	Independent Lead
Members (approx.)	9 Board Members (including the president) | 26 member countries' AI national society
Founded (Year)	Formerly ECCA, it was established in July 1982
Social Media Presence	LinkedIn | X
Relevance for Industry 4.0	Contributing to the advancement in AI technologies and promoting their application in the industry 4.0. AI-driven solutions help optimise manufacturing processes, improve productivity, and drive innovation. The association's efforts are key to shape the future of industrial automation and digital transformation.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★	Website
Data Space Governance	★★	Document Library Link
Data Space Demonstration	★★★	Events | News | ECAI conference
Data Space Adoption	★★	ESSAI+ACAI Courses
Connected Initiatives	BDVA / euROBOTICS / CLAIRE / ellis / Platform Industrie 4.0	

Additional Information	
Contact (Name/E-mail)	Contact form

What is EurAI?

The EurAI (European Association for Artificial Intelligence) was established in July 1982 representing the European Artificial Intelligence community. It aims to promote the research, application, and study of the AI in Europe.

The EurAI sponsors international <u>conferences and education programmes</u> in Artificial Intelligence.

Mission & Objectives
- Advance AI research and technology across Europe.
- Encourage the creation of a computer network through Europe
- Promote AI education
- Release an AI information journal in Europe
- Provide funding for a biennial conference that one or more of the member societies organises

Members & Roles

It is composed by active members (scientific European associations concerned with AI - with at least 25 members working on this field) with independent legal status. Every national AI association can apply for membership whereas individuals and companies are not direct members and need to join their relevant national AI association. There are currently 26 members.

Solutions & Key assets

<u>Applications</u>

The EurAI offers a wide range of fellow programmes and services as well as dissertation awards and others. These can be checked <u>here</u>.

<u>Activities</u>
- <u>ECAI</u> (European Conference on Artificial Intelligence) conferences
- <u>ESSAI+ACAI</u>. Advanced courses on AI
- <u>Sponsored activities.</u>

Events

EurAI has several <u>events</u> regarding previously mentioned activities, i.e., ECAI, ESSAI (summer school on AI) and ACAI (Advanced Course on AI)

Interesting links

- <u>EURAI Charter</u>
- <u>Opening minds up to the potential of AI</u>
- <u>EurAI</u> - winter meeting (2021-2022)
- <u>The EU's AI Landscape</u> – Survey of the European Union's artificial intelligence ecosystem

17 - euROBOTICS

Nature of the Initiative	Association/Foundation
Mission	To grow and develop robotics in Europe, promoting excellence, advancing in its research, innovation, & adoption to benefit society & drive economic growth.
Sector(s) addressed	Agriculture; Healthcare; Industrial Robotics; Logistics and Transport; Robot Companions for Assisted Living; Space Robotics; Construction; Laboratory Robotics; Inspection and Maintenance; Marine Robotics; Aerial Robotics; Bio-Inspired Robotics; Miniaturised Robots; Standardisation; Wearable Robotics; Harsh Environment Robotics; Safety; AI and Cognition; Autonomous Navigation; Mechatronics; Software Engineering, Systems Integration and Systems Engineering; Perception; Socially Intelligent Robotics and Societal Applications; Sustainability; Telerobotics and Teleoperation; Cloud Robotics; Cybersecurity; Education and Training; Entrepreneurship; Ethical Legal and Socio-Economic; Benchmarking and Competitions
Leading organisation	euRobotics AISBL. Independent lead managed by Board of Directors.
Members (approx.)	+250
Founded (Year)	2012
Web (URL)	https://eu-robotics.net/
Social Media Presence	Facebook	X	LinkedIn	Instagram	YouTube
Relevance for Industry 4.0	Driving innovation, collaboration, and standardisation in robotics, it contributes to the digital transformation of European industries and the realisation of data-driven manufacturing industries.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★★	euRobotics League github
Data Space Governance	★	Resource library
Data Space Demonstration	★★★	Upcoming events
Data Space Adoption	★★★	Flagship events
Connected Initiatives	CLAIRE / BDVA / ELLIS / EurAI	

Additional Information	
Contact (Name/E-mail)	Contact form	Email: secretariat@eu-robotics.net	Phone: +32/2/706-8198

Report

What is euRobotics?

euRobotics is a Brussels based international association for all stakeholders in European Robotics. It aims to strengthen Europe's competitiveness and guarantee the industrial leadership of manufacturers, suppliers, and consumers of robotics technology-driven systems and services through the research, development, and innovation of robotics.

Mission & Objectives
- To boost European robotics research, development, and innovation
- To foster a positive view of robotics

Members & Roles

Members must be organisations that can be formally represented by a person or an entity, be it departments, laboratories, or other groups. Members with voting rights are divided into industry or research.

To apply as a member, need to fill in the euRobotics AISBL Application form

Partnerships - Alliances
- euRobotics is a founding partner of ADRA (AI, Data and Robotics Partnership).
- CLAIRE (Confederation of Laboratories for Artificial Intelligence Research in Europe)
- BDVA (Big Data Value Association)
- Ellis (European Laboratory for Learning and Intelligent Systems)
- EurAI (European Association for Artificial Intelligence)

Topic Groups

Topic groups (collaborative groups) identify problems and challenges unique to their topic, identify solutions and checkpoints along the way. Members and non-members discuss innovations to turn theory to practical reality.

We find topic groups covering medical and healthcare, service, industrial sectors… service providers, system integrators, and more; covering from basic research, technological advancements, concrete innovation to knowledge transfer.

Solutions and key assets: Innovation Networks and euRobotics

The collaboration between euRobotics and Innovation Networks aims to develop and promote research, innovation and deployment of Inspection and Maintenance, Healthcare, Agile Manufacturing, Agrifood and Robotics. The objective is to understand how to collaborate within these areas and create activities to benefit them. Networks involved: RIMA (Innovation Network Robotics for Inspection and Maintenance), Trinity (Innovation Network Agile Manufacturing), agROBOfood (Innovation Network Agri-Food Robotics), DIH Hero (Digital Innovation Hubs in Healthcare Robotics)

Flagship Events
- European Robotics Forum (ERF) → upcoming edition 20-27 March 2025, Stuttgart (Germany).
  Annual event covering field of robotics.
- European Robotics Week (ERW) → upcoming edition between 15-24 November 2024.
  Bring robotics research and development closer to the public.
- European Robotics League (ERL) →
  Tournaments in which teams compete in three fields of robotics under the theme of smart urban environments.
  ERL Categories: Emergency; Consumer; Professional; Smart cities
- euROBOTICS Awards → Awards three prizes annually at the European Robotics Forum: the TechTransfer Award, the Entrepreneurship Awards, and the George Giralt PhD Award.
  - the **TechTransfer Award**: Remarkable cases of technology transfer in robotics and automation that occur due to collaborative efforts between academia and business qualify
  - the **Renaud Champion Entrepreneurship Award**: Small, creative businesses get the opportunity to present their ideas for the next big thing in robotics to a panel of technology investment experts during the Entrepreneurship workshop. Participants can learn important pitching techniques and maybe attract interest from the investment community for their business.
  - the **George Giralt PhD Award**: scientific prize for extraordinary contributions in robotics. All robotics-related dissertations that have been successfully defended at a European university can take part. The *Dick Volz Award (Best US PhD Thesis in Robotics and Automation)* is the equivalent in the US-America.

18 - Gaia-X Association

Nature of the Initiative	Association
Mission	To design and implement a data sharing architecture that consists of common standards for data sharing, best practices, tools, and governance mechanisms
Sector(s) addressed	Aerospace | Agriculture | Tourism | Education | Energy | Finance | Geoinformation | Health | Manufacturing | Media | Mobility | Public Sector | Smart Cities | Smart Living | Construction & Logistics
Leading organisation	Independent lead
Members (approx.)	350+
Founded (Year)	2021
Social Media Presence	LinkedIn | Twitter – X | YouTube
Relevance for Industry 4.0	Supports the creation and development of data spaces and projects, aiming to share data space knowledge; collect cross-country use-cases and enable members to network, collaborate and identify open standards related to specific domains.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★★★★	Website
Data Space Governance	★★★★	Framework Specifications
Data Space Demonstration	★★★★	Policy Rules
Data Space Adoption	★★★	
Connected Initiatives	AGDATAHUB / Catena-X / ELINOR-X / EONA-X / The European Production Giganet (EuProGigant) / Mobility Data Space (MDS)	

Additional Information	
Contact (Name/E-mail)	Mail: info@gaia-x.eu

Report

What is Gaia-X?

Gaia-X represents the core of the organisation. It was founded to develop the technical framework and the Gaia-X Trust Framework. Its members, are either companies with a provider or user background of data infrastructure, IT-

start-ups, research institutions or business associations that are aligning with Gaia-X to federate cloud services within the existing cloud infrastructures.

Mission & Objectives

Gaia-X aims to connect the Data and Infrastructure Ecosystems and relies on 3 conceptual pillars to achieve that:

- Compliance: for a common digital governance based on European values.
- Federation: enables interoperable & portable (Cross-) Sector data-sets and services.
- Data exchange: A mean to perform data exchange and anchor data contract negotiation results into the infrastructure.

For each of the pillars there are 3 types of deliverables: Functional specifications, Technical Specifications & Software.

Solutions & Key Assets

1. Working Groups

The specifications describe how Gaia-X works in terms of functional requirements and technical requirements. Within the framework of the 3 pillars indicated above, Gaia-X has several working groups that cover the following topics:

Data portability, Data consent for processing, Data transaction traceability
Credential management, Policy negotiation, Identities
Federated catalogue, catalogue synchronisation, Agent and Wallet,
Entity-Relation model, Compliance schema model

Then, the specifications are translated into open-source code by Gaia-X, which is made available to members and non-members through GitHub. (https://gitlab.com/gaia-x/gaia-x-community/open-source-community).

2. Projects

The complete list of projects developed by Gaia-X is available in the Gaia-X Framework. The Gaia-X Framework describes functional specifications, technical requirements, and SW assets necessary to be Gaia-X compliant.

3. Functional specifications

Within the Gaia-X Framework, we can find functional specifications for each of the pillars:
- Compliance - Policy Rules Conformity Document
- Federation and Data Exchange (architecture document)

4. Technical specifications
- Trust Framework: Set of rules that define the minimum baseline to be part of the Gaia-X Ecosystem.
- Federated Catalogue
- Identity, Credential & Access Management
- Data Exchange services

5. Software Components

In the GAIA-X Framework you can also find the different Software components in the 3 pillars (Compliance, Federation and Data Exchange) that have been developed, and that must be used to develop Gaia-X compatible solutions that connect data and infrastructure ecosystems.

6. GXDCH (Gaia-X Digital Clearing House) ensures that all participants comply with Gaia-X standards, promoting secure and transparent data exchange.

IDSA

INTERNATIONAL DATA
SPACES ASSOCIATION

Nature of the Initiative	Association	European Project |International Project	Data Space
Mission	IDSA is on a mission to create a digital future, across Europe and around the world; in which all players can realize the full value of their data through equal access to secure and sovereign data exchange, meaning staying in control of access and usage of your data, among trusted partners.
Sector(s) addressed	Multisector (Agriculture | Mobility | Health | Manufacturing | Tourism | Energy)
Leading organisation	Lars Nagel, CEO
Members	140+ Members	17 Hubs, Competence Centres & Labs	28 Countries
Founded	2016
Web	https://internationaldataspaces.org/
Social Media Presence	X	YouTube	LinkedIn
Relevance for Industry 4.0	The IDSA standard enables data sharing through data spaces characterized by uniform rules, certified data providers and recipients and trust among partners.

Key Information	Levels	Important Links
Data Space Technical Specifications	★★★★★	GitHub Link
Data Space Governance	★★★	IDSA Rulebook
Data Space Demonstration	★★★★	Fairs & events
Data Space Adoption	★★★★★	Data Space Radar, Implementation Partners, Education Data Space Adoption
Connected Data Space 4.0 Initiatives	Gaia-X, Catena-X, DSSC, FIWARE, BDVA	

Additional Information	
Contact	Emails: info@internationaldataspaces.org & administration@internationaldataspaces.org
Report	

What is IDSA?

The International Data Space Association (IDSA) was founded in 2016 with the mission to unite companies and organisations around the world that believe in the economics of data, its free flow and the ability of the data owner to decide the conditions and restrictions they consider appropriate for the data they share (what has been define as data sovereignty), as well as to participate in the value generated by data. Moreover, they are a global organization that represents the economic interest of the IDS initiative and they are dedicated to maintaining and spreading its ecosystem by adapting it to the requirements of the different industrial sectors.

Mission

The goal is to make IDS the market´s system of choice for sharing data securely, reliably and respecting digital sovereignty.

Members

Currently, IDSA has 14 board members representing some of the most respected organisations in the world. Therefore, in order to achieve the above-mentioned objectives IDSA has inspired a strong network of international hubs and competence centres that share knowledge and information about IDS in countries around the world (e.g., Hub Spain, Competence Centre Spain, Hub Belgium, etc.). As well as supporting and overseeing initiatives for research and development aimed at advancing the IDS standard. Additionally, they also use "use cases" to show how their research applies to real-life challenges (see examples here).

Solutions & Key Assets

- The IDS Reference Architectural Model

Regarding their architecture reference, data will become an even more important source of competitive advantage— but only if you can securely exchange it and confidently decide how to use it. This type of secure exchange can take place in data spaces, and IDS-RAM establishes the benchmark for creating IDS ecosystems, products, and services. Furthermore, it contains the global and European standards for secure and sovereign data exchange, certification and governance.

- Certification: The basis of trust

Trust is the fundamental principle of IDS, and it is built via a rigorous, open certification procedure. The IDS Connector is the most crucial part of a data space. Assuring that everything works as it should, every IDS Connector and every data sharing participant is certified against specific security standards. For that reason, participants can begin their actual data exchange on the basis of trust. The IDS employs a certification scheme that includes all procedures, guidelines, and standards managing the certification process in order to guarantee a uniform procedure for the certification of participants and core components. The IDS Certification Scheme incorporates internationally known certification concepts and best practices. As a result, IDS certification has two types:

1. *Core Component Certification*: it evaluates and certifies the core components of IDS.
2. *Operation Environment Certification*: This evaluation provides an assessment of the trustworthiness of the physical environment, defined processes, and organizational rules.
- Adoption: Data Space Radar

Data Space Radar has been a crucial asset for IDSA and its ecosystem for years. Nowadays, it hosts over 120 entries and it is home to many of the most important IDS-based data spaces and use cases across various domains.

What is Data Space Radar?

Acknowledged by the European Commission as a valuable source of information regarding data spaces, Data Space Radar is a tool to give visibility to all data space endeavours out there, transparency on their achievements and identify the most promising ones, to foster evolution and matchmaking. In addition, it covers use cases of different degrees of maturity from the phase of creating a business case to real data spaces (see here the data space radar).

How can you join?

It is open to everyone who would like to bring their use cases and data spaces and to join it you just need to fill up this document.

- Adoption: Implementation partners

IDSA offers experienced partners to have at your side to help you implement data spaces. IDSA works together with many different organizations who serve as implementation partners, ready to help you along your adoption journey. Business Implementation Partners helps you with onboarding, helps you understand the value that is created by sovereign data sharing and the advantages of secure and trustworthy equal partnerships. However, Technology Implementation Partners helps you with bringing your use case from the drawing board into the real world.

- Adoption: Education

IDSA partners offer hands-on trainings and seminars where you can learn about implementing IDS – and speed up your journey to sovereign data sharing. For instance, BAIDATA offers introduction to data spaces or configuration and use of data spaces courses.

Events

IDSA regularly sponsors events, roundtables and workshops related to building the data economy of the future (click here to see future events). A recent event has been their new hub inauguration in Japan. The Japanese IDSA Hub is co-organised by the University of Tokyo and the Data Society Alliance; with the official signing of the Memorandum of Understanding (MoU) during Tokyo's Data Spaces Discovery Day. The event showed a great desire for cooperation and the pursuit of innovative opportunities among attendees. While focusing on the idea of data sovereignty, its commercial value, and the creation of methods to link current data spaces (see this article for more information).

20 - Industria Conectada 4.0

Nature of the Initiative	National Project
Mission	To increase industrial added value and skilled employment in the market. To promote a model for the industry of the future by developing the local supply of digital solutions. To promote differential competitive advantages to support Spanish industry and boost its exports.
Sector(s) addressed	Agriculture | Mobility | Manufacturing
Leading organisation	Led by the Spanish General Secretary for Industry & SMEs of the Ministry of Industry, Trade & Tourism
Members (approx.)	+100
Founded (Year)	2015
Social Media Presence	LinkedIn | X | YouTube
Relevance for Industry 4.0	Markets are increasingly globalised, demanding and competitive and industry has to adapt and undertake digitalisation processes to maintain competitive positions. This opportunity implies a radical change that offers Spain and Spanish industry a great opportunity for transformation and evolution that must be seized. Industry has a multiplier effect that extends to areas such as research or the development of technology-based services and is, therefore, a guarantee of growth, quality employment, competitiveness and prosperity.

Key Information	Levels	Important Links
Data Space Technical Specifications	★	Website
Data Space Governance	★★★	Document Library Link
Data Space Demonstration	★★★★	Events
Data Space Adoption	★	GitHub/Eclipse Link: N/A
Connected Data Space 4.0 Initiatives	Smart Industry, Plattform Industry 4.0	
Additional Information		
Contact (Name/E-mail)	Ministerio de Industria, Comercio y Turismo I Telephone: 91 349 46 40	

Report

What is Industria Conectada 4.0?

The initiative, presented by the Minister, Mr. José Manuel Soria, on 8 October 2015, has a triple objective: to increase industrial added value and skilled employment in the sector; to favour the Spanish model for the industry of the future and develop the local supply of digital solutions; to develop differential competitive levers to favour Spanish industry and boost its exports.

This plan contains four lines of action developed with the support of Indra, Telefónica and Banco Santander to provide companies with strategies and initiatives to support their digital transformation towards Industry 4.0:
- Awareness and training on digitalisation in industry to raise awareness of its benefits and develop the necessary skills.
- Creation of collaborative environments and tools that favour the transfer between industry and technology suppliers.
- Consolidation of new technologies in Spain, boosting R&D&I funding, defining standards and fostering international alliances.
- Support for the implementation of new digital technologies, with the fundamental objective of overcoming existing barriers to their implementation.

The execution of these lines will enable industry to be more competitive, affecting the incorporation of these technologies into its products, production processes and current business models.

In 2016, the General Secretariat for Industry and SMEs will allocate 97.5 million euros to the project, a budget to which the contribution of other secretariats and ministries will have to be added.

Mission & Objectives

The digitalisation of society and industry poses challenges and creates opportunities for the industrial sector, which will have to adapt its processes, products and business models.Thanks to hyperconnectivity, customers are now more informed and have immediate access to the offerings of industrial companies around the world. This is a highly competitive environment, but one with many opportunities for Spanish companies.

Facing these challenges successfully will generate a new industrial model in which innovation is collaborative, production means are connected and completely flexible, supply chains are integrated and distribution and customer service channels are digital.

For this reason, the Connected Industry 4.0 strategy responds to a triple objective:
1. To increase industrial added value and skilled employment in the industrial sector.
2. To promote the industrial model of the future for Spanish industry, in order to boost the industrial sectors of the future of the Spanish economy & increase their growth potential, while developing the local supply of digital solutions.
3. To develop differential competitive levers to favour Spanish industry and boost its exports.

In order to achieve these objectives, the General Secretariat for Industry and SMEs has been designing a series of support programmes for industrial companies in order to face their digital transformation with more guarantees:

1. HADA
2. ACTIVA Industria 4.0
3. ACTIVA Financiación
4. ACTIVA Startups
5. ACTIVA Ciberseguridad
6. ACTIVA Crecimiento
7. DIH

National Connected Industry 4.0 Awards

In order to recognise the efforts and merit of Spanish industrial companies in the field of digitalisation, the Ministry of Industry, Trade and Tourism, through its General Secretariat for Industry and SMEs, created in 2019 the National Connected Industry 4.0 Awards, endorsing the prestige of the Spanish industrial sector and contributing to support the "Spain Brand".

The National Connected Industry 4.0 Awards recognise those organisations, companies and industries that have made an outstanding effort in their digital transformation, achieving business excellence in activities included in Section C, Divisions 10 to 32, of the National Classification of Economic Activities 2009 (CNAE 2009).

The aim of these Awards is to give greater social prestige to the industrial sector, presenting it in an environment of quality and excellence, recognising the merits of industrial companies that stand out for their digitalisation projects and actions and for their innovation plans in terms of organisation and processes under the main dimensions that define the paradigm of Connected Industry 4.0: Business and Market Strategy, Processes, Organisation and People, Infrastructures, and Products and Services.

The Awards aim to increase the awareness of the Spanish industrial fabric about the necessary digital transformation and to promote the visibility of the support instruments in this process. At the same time, they are a tool for the identification, dissemination and recognition of successful Spanish projects in Industry 4.0, helping to increase industrial and digital vocations among our young people.

Two modalities of National Awards for Connected Industry 4.0 are established:
- National Connected Industry 4.0 Award to the Large Industrial Company.
- National Connected Industry 4.0 Award for Small and Medium-sized Industrial Enterprises.

Events

- National Congress of Industry and SMEs: The National Congress of Industry and SMEs is the national event par excellence that integrates industry and SMEs, bringing together all professionals and experts in the value chain committed to economic and industrial development.

21 - MADE IN EUROPE

Nature of the Initiative	Platform |European Project | Data Space
Mission	Bring together key players from European manufacturing ecosystems to support their advancement towards flexibility, circular industries, ang global leadership in technology.
Sector(s) addressed	Manufacturing | Technology
Leading organisation	EFFRA (European Factories of the Future Research Association)
Members (approx.)	200+
Founded (Year)	2021
Web (URL)	https://www.effra.eu/
Social Media Presence	EFFRA LinkedIn |EFFRA X |EFFRA YouTube
Relevance for Industry 4.0	The industrial value chains and the local and regional manufacturing innovation ecosystems will benefit from the Made in Europe (MiE) initiative as they move closer to sustainability and competitiveness. At the core of a dual ecological and digital revolution, European manufacturing is both a driver and a subject of these developments.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★	GitHub/Eclipse Link: N/A
Data Space Governance	★★★	Document Library Link
Data Space Demonstration	★★★	Events | Webinar
Data Space Adoption	★★★	MiE projects
Connected Initiatives	IMX / SCSN / Mobility Data Space / agdatahub	

Additional Information	
Contact (Name/E-mail)	Information : info@effra.eu Management : Željko Pazin, zeljko.pazin@effra.eu General Consultancy: Chris Decubber, chris.decubber@effra.eu Communications & Events : Catarina Santos, Catarina.santos@effra.eu
Report	

What is MADE IN EUROPE?

Made in Europe is the manufacturing partnership with the European Commission under the Framework Programme Horizon 2021-2027. In May 2019, a Made in Europe Partnership draft proposal was tabled and is since then been discussed between the relevant bodies involved, namely the European Commission, Member States and EFFRA.

Mission & Objectives

The Made in Europe (MiE) partnership takes a key role in transforming manufacturing into a profitable, environmentally friendly industry that considers the welfare of society and its workforce. It will take additional digital revolution of the manufacturing sector to realise these ideas.

- Maintain Europe's technological leadership and sovereignty in manufacturing
- Help companies become more resilient, sustainable, and digital

The partnership has four main objectives related to EU policies:

1) Ensure European leadership and manufacturing excellence (Industrial Strategy for Europe)
2) Achieve circular and climate-neutral manufacturing (European Green Deal)
3) Create attractive added-value manufacturing jobs (Economy that works for people)
4) Master the digital transformation of manufacturing sector (Europe fit for the digital age)

Key Assets

- Why a partnership?

European manufacturing is very diverse. There are numerous technologies, professions, application sectors…and they all differ from each other. In order to put together all the groups from different sectors, a partnership provides several advantages, such as a structured and strong cooperation, create impact, provide strategic orientation, lead to calls for proposals that are relevant to the manufacturing sector, strengthen unity and sovereignty of the sector, among others.

The performance of the partnership is to be monitored through – macro-economic, programme, project, and company level – KPIs. Some of these indicators are the number of high TRL demonstrators per sector and the increasing safety and wellbeing in the factory.

The main expected impacts from this Made und Europe partnership is creating a European manufacturing industry that is world-wide competitive, brings prosperity, leads implementation of digital solutions, is technology leading, is resource-efficient and offers high quality jobs.

Interesting links/documents

- Made in Europe (April 2023)
- Partnership fiche
- Newsletter EFFRA
- Horizon Europe Work Programme 2023-2025 pdf

22 - MANUFACTURING-X

Nature of the Initiative	International Project | Data Space
Mission	To implement a decentralised, federated, and collaborative ecosystem for smart manufacturing. To enable open, global and cross-sector international operation of cost-effective data networks.
Sector(s) addressed	Manufacturing
Leading organisation	Plattform Industrie 4.0 is the hub of the Industrie 4.0 community, in order to specify and implement Manufacturing-X.
Members (approx.)	+30 German Members in Steering Committee
Founded (Year)	2023
Social Media Presence	LinkedIn | Twitter - X
Relevance for Industry 4.0	Focus on advancing digital transformation and innovation in manufacturing. Enables agile manufacturing practices and transforms manufacturing sector towards smarter, more connected and efficient production systems. - Innovation hub - Collaborative ecosystem - Connected, intelligent and data-driven future for manufacturing industries

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★★★★	Website
Data Space Governance	★	GitHub/Eclipse Link: N/A
Data Space Demonstration	★★★	Document Library Link
Data Space Adoption	★★	Info Link
Connected Initiatives	Catena-X / Gaia-X / DSSC / Mobility Data Space / …	

Additional Information	
Contact (Name/E-mail)	Mail: manufacturing-X@plattform-i40.de Contact Form: Platform Industrie 4.0 contact form

What is Manufacturing-X?

X stands for "Exchange" (exchange of data and collaboration across different industries)**.**

Supported by governments, large associations, research institutions and leading companies, the Manufacturing-X is an international initiative aims to create a single market that allows free data flow within the EU, opening new possibilities for cross-industry data exchange and cooperation and achieving a resilient, sustainable, and fully interconnected industry.

- Federal data spaces = platform for efficient, secure, and high-quality data exchange[1]
- Interoperability
- Companies will autonomously and jointly be able to use data across the entire production and supply chain.

Mission & Objectives[2]

Enable efficient and effective value creation for a resilient, sustainable, and competitive industry. The platform will enable creating new business models for a sustainable economy; create a more resilient answer to disruptions and value networks and securing and expanding the competitive strength of the German industry.

Manufacturing-X has the power to significantly change manufacturing and the steps involved in creating, producing, and delivering goods. For industrial businesses prepared to embark on a new course towards an agile, networked, customer-centric production landscape, it offers a unique challenge as well as an opportunity. It will enable industrial companies and system operators to reduce production costs while improving product quality, accelerating time-to-market, and increasing the efficiency of their manufacturing processes.

How does the International Manufacturing-X Council work?

By establishing the International **Manufacturing-X Council**[3]**,** a joint effort of partners from science, politics, and business to advance on the establishment of IMX.

Countries are represented by council members, selected by their respective industry initiatives. They will discuss policies, trust, and legal frameworks.

Initiatives involved in the IMX Council include Industrie 4.0 Osterreich (Austria), Smart Industry Programme (Netherlands), CESMII (US' Smart Manufacturing Institute) (US), KOSMO (South Korea), RRI (Robot Revolution Initiative) (Japan) … and more!

Use cases

Manufacturing-X offers use cases focused on the implementation of practical added value. We find decarbonisation, Product Passport Management, efficient and fast traceability of delivered parts, supply chain, among others.

Interesting links/ documents

- Manufacturing-X Data Space study
- Digital Genial - ProALPHA Manufacturing-X (Spotify) (German)
- Manufacturing-X FAQ
- Manufacturing -X: A data room for Industrie 4.0 (Fischer)

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[1] (proALPHA) The Digital Transformation of the Mid-Market: Opportunities Offered by Manufacturing-X
[2] Resilience. Sustainability and competitive strength – platform-i40.de
[3] Currently under development

23 - Mobility Data Space (MDS)

Nature of the Initiative	National Project | Data Space
Mission	To connect those who offer data with those who need it to develop new business models.
Sector(s) addressed	Mobility
Leading organisation	Supported by Datenraum Mobilität GmbH, a non-profit company funded by the Federal Ministry for Digital and Transport (BMDV).
Members (approx.)	+200 in addition to key shareholders
Founded (Year)	2019
Web (URL)	https://mobility-dataspace.eu/
Social Media Presence	LinkedIn | Twitter - X | YouTube
Relevance for Industry 4.0	Key role in Smart mobility solutions development, aligned with the principles and technologies of Industry 4.0.

Key Information	Levels	Important Links
Data Space Functional & Technical Specifications	★★	GitHub
Data Space Governance	★★★	Document Library & press and media
Data Space Demonstration	★★★★	Events and fairs
Data Space Adoption	★★★★	Use cases | Data Catalogue (Data Offering, EDC Connector, CaaS)
Connected Data Space 4.0 Initiatives	Eona-X / Catena-X / GAIA -X	

Additional Information	
Contact (Name/E-mail)	Contact form Julius Meyer, Customer Relationship, community@mobility-dataspace.eu Catrin Schlattmann, Marketing, Communications, Fairs & Public Relations, press@mobility-dataspace.eu
Report	

What is the Mobility Data Space (MDS)?

The Mobility Data Space (MDS) initiative is aimed to creating an open ecosystem for exchanging mobility-related data in Europe. The community brings together experts from start-ups, SMEs, public transport, and others, offering them a wide range of data and direct contact with numerous groups, networking, and events.

Based on equal rights and data sovereignty, the Mobility Data Space is a **data marketplace ecosystem** supporting user-friendly, creative, and ecologically friendly mobility concepts. The platform is defined by transparency, European data protection requirements and privacy regulations, and member autonomy.

Founded by the Germany Federal Ministry for Digital and Transport back in **2019**, in 2021 the MDS (DRM Datenraum Mobilität GmbH) holding company was founded, with the main task to develop and manage the technical and commercial aspects of the Mobility Data Space.

What kind of data does it offer?

- Traffic Information → accidents, hazardous braking, traffic flow data, danger spots, …
- Parking Information → parking search time, standstill data (SSD), bundled parking data Baden-Württemberg, …
- Weather Information → slippery roads, rainfall radar, air quality, …
- Fuel Price and Electromobility → charging point, power consumption and charging demand, EV Vehicles profiles data (EVP), …
- Others

In the MDS website we can find other information related to the data catalogue

Need of the Mobility Data Space

The MDS addresses key needs and offers benefits in the urban mobility and transportation fields. High quality data is key for data integration, innovation, interoperability, sustainability, and efficient transportation planning. Innovations and solutions are also provided through this data space.

Benefits of the Mobility Data Space

The MDS is a trusted space to exchange **secure and transparent data**. Its decentralised structure allows members to always enjoy accurate data and sovereignty, deciding for themselves with whom they are sharing it with. The ecosystem acts as a marketplace to benefit from the data sharing community – providing networking and business opportunities – and since it is so diverse, members benefit from each other's experiences and resources.

Other benefits that the Mobility Data Space brings are: enhancing user experience, better decision-making and/or sustainability and environmental impact.

Data providers have full sovereignty over their data and are permitted to refuse specific actors access their data.

Participants

The MDS is opened to all organisations working on mobility solutions (road, oil, rain, water sectors) like public transport, navigation software or bikeshare providers.

There are more than 200 stakeholders, from science, industry, and public administration. We find DHL Group, Volkswagen, Caruso Dataplace and Here Technologies, among others.

- Members
- Use cases

Relationship with GAIA-X

The MDS is one of the seven Lighthouse Projects, part of the Gaia-X family, i.e., interoperable data spaces.

The Mobility Data Space (MDS) functions as a marketplace facilitating the exchange of mobility & logistics data, catering to both business-to-business (B2B) and business-to-government (B2G) interactions. Furthermore, the MDS also develops sector overarching use cases, interlinking, e.g., the mobility sector with energy, weather, and/or urban planning. The German National Academy of Science and Engineering (acatech) is the founder and majority shareholder of the DRM Datenraum Mobilität GmbH – the operating company of the Mobility Data Space.

Image 1 *Gaia-X Lighthouses*

Interesting links

- [Mobility Data Space](#) (Fraunhofer IVI – 2022)
- [Q&A](#)

24 - Piano Nazionale Industria 4.0

Nature of the Initiative	National Project & Initiatives
Mission	To strengthen basic and applied research, foster technology transfer, promote digital transformation of production processes and investment in intangible assets.
Sector(s) addressed	Manufacturing, Industry 4.0
Leading organisation	MADE S.c.a.r.l (Cooperative Enterprise, nonprofit)
Members (approx.)	47 partners of which 42 private enterprises
Founded (Year)	2018
Social Media Presence	LinkedIn | X | YouTube
Relevance for Industry 4.0	The MADE Competence Center offers its testing facilities for both "Test Before Invest" and "Teaching Factories" services, providing the consortium with an Industry 4.0 large demo center of over 2000 m². It provides an I4.0-based pilot production facility for pioneering tests, demonstrations, and development, divided into six different technological areas: • Virtual Design and product development • Digital twin & virtual commissioning, Lean production 4.0, Logistics 4.0 • Collaborative robotics and Smart worker assistance systems • Quality 4.0, product traceability and additive manufacturing • Smart monitoring and control of industrial processes, Smart energy monitoring and control, Smart Maintenance • Industrial Cyber-Security and Big Data Analytics

Key Information	Levels	Important Links
Data Space Technical Specifications	★	N/A
Data Space Governance	★	N/A
Data Space Demonstration	★★★	N/A
Data Space Adoption	★	Events
Connected Data Space 4.0 Initiatives	Smart Industry, Plattform Industry 4.0	

Additional Information	
Contact (Name/E-mail)	Email: Carlo Ongini, carlo.ongini@made-cc.eu
Report	

What is Piano Nazionale Industria 4.0?

This investment is an evolution of the previous Industria 4.0 program, compared to which it provides; an expansion of the scope of potentially beneficiary companies with the replacement of the hyper-amortization; the recognition of credit on investments made in the two-year period 2021-2022; the extension of the eligible intangible investments, the increase of the credit percentages and the maximum amount of the incentivized investments.

Inside the Piano Nazionale, 8 National Competence Centres have been created in 2018. The competence centres are public-private partnerships aiming to carry out orientation and training activities for companies on Industry 4.0 issues as well as support in the implementation of innovation, industrial research and experimental development projects aimed at the realization, by user companies, in particular SMEs, of new products, processes or services (or their improvement) through advanced technologies in the industry 4.0 context.

The MADE Competence Center in Milano is a Competence Center for Industry 4.0 that simulates a digital factory, created to carry out orientation, training, and finalization of technology transfer projects with Italian companies, particularly SMEs, on Industry 4.0 issues. A technical interlocutor that companies can contact to be supported during the digital transition towards a smart factory, with the aim of keeping their profile high, competitive, and sustainable.

In this perspective, Data for Manufacturing is an essential domain which MADE is addressing in its BEST services (Business support, Ecosystem building, Skills development, Test before Invest). In order to make this emphasis clearer, MADE compiled the DIH4 INDUSTRY D BEST service portfolio where the Data dimension is made explicit. In this perspective, MADE is participating in several EC funded initiatives for the exploitation and impact of Data in Manufacturing: in the domain of Edge-to-Cloud continuum we can mention HEP aerOS and INCODE; in the domain of data processing and quality for AI advanced applications we can mention HEP AI REDGIO5.0 and CIRC-UITS.

Mission

The Piano Nazionale Industria 4.0 aimed to strengthen basic and applied research, foster technology transfer, promote digital transformation of production processes and investment in intangible assets. This investment is an evolution of the previous Industria 4.0 program, compared to which it provides; an expansion of the scope of potentially beneficiary companies with the replacement of the hyper-amortization; the recognition of credit on investments made in the two-year period 2021-2022; the extension of the eligible intangible investments, the increase of the credit percentages and the maximum amount of the incentivized investments.

Solutions & Key Assets

- MADE Competence Center Activities

The MADE Competence Center is dedicated to guiding companies through their digital and sustainable transformation journeys. Its mission is to lead a comprehensive industry migration towards digital transformation through a phased approach: informing and demonstrating Industry 4.0 technologies, providing specific training activities, and transferring and implementing technological solutions via projects. MADE 4.0 supports Italian manufacturing companies through:

- Education & Training

MADE 4.0 demonstrates the potential of enabling technologies for Industry 4.0 to businesses, particularly SMEs. By utilizing demonstrators within the MADE 4.0 areas, companies can experience the enabling technologies of the smart factory firsthand, facilitating knowledge and understanding.

Through the School of Competencies 4.0, MADE 4.0 organizes courses, paths, and training experiences on Industry 4.0 topics. This practical and operational teaching leverages the technologies available at MADE 4.0.

- Industrial Projects

MADE 4.0 supports companies in <u>executing digital transformation projects</u> aimed at innovating products and related production processes. This support is made possible by the technical resources, human capital, and network of collaborating companies.

- <u>Funded Projects</u>

Digital transformation in manufacturing, aligned with Industry 4.0 principles, involves a sequence of activities that companies must undertake to adapt to new competitive scenarios. MADE 4.0 empowers academic and industrial partners to participate in funded projects, leveraging installed assets and solutions and promoting the "Teaching and Learning Factory" concept. This initiative offers partners access to European networks, fostering the development of international expertise by leveraging consortium partners' know-how.

- <u>Test Before Invest (TBI) Detailed Activities</u>

MADE's TBI services support the implementation and adoption of digital technologies through:
- ✓ Education and assessment activities
- ✓ Access to technology infrastructure
- ✓ Idea generation and management
- ✓ Development of industrial R&I projects (PoC, TestBed, prototypes)
- ✓ Demonstration activities

- <u>Competencies and Training</u>

MADE focuses on developing and producing skills for Industry 4.0 through:
- ✓ Training courses
- ✓ Teaching factory initiatives
- ✓ Skills assessment

- <u>Ecosystem and Network Innovation</u>

MADE aims to develop and expand the R&I Network, including universities, enterprises, and R&D entities, to promote technology transfer projects. Activities include:
- ✓ Tech scouting and trend watching
- ✓ Coordination of the ecosystem (e.g., company visits, B2B)
- ✓ Direction of the ecosystem

Events

MADE organizes <u>webinars and events</u> as part of its Competence Center activities. These events focus on in-depth studies of enabling technologies and methods that characterize the 4.0 manufacturing process. Organized in collaboration with partners, these webinars provide clear and accessible explanations of key concepts. A significant emphasis is placed on data competencies, including data sharing and data spaces, which are crucial for companies to effectively harness the power of data in their digital transformation efforts. This focus on data ensures that companies can optimize their operations and make informed decisions based on accurate and comprehensive data analysis.

25 - Plattform Industry 4.0

Nature of the Initiative	Platform | National Project | European Project |International Project
Mission	To secure and expand Germany's leading international position in the manufacturing industry
Sector(s) addressed	Manufacturing | Public Administrations | Media | EOSC (Research)
Leading organisation	Led by the German Federal Ministry for Economic Affairs and Climate Action as well as the Federal Ministry of Education and Research, and high-ranking representatives from industry, science and the trade unions.
Members (approx.)	6,000 member companies
Founded (Year)	2015
Social Media Presence	LinkedIn |Twitter - X
Relevance for Industry 4.0	Platform Industrie 4.0 promotes the development of Industrie 4.0 in Germany by: • developing pre-competitive concepts and solutions and putting them into practices (to be found in the online library) • supporting companies with recommendations for action, information and use cases for practical application (for example, in the Industrie 4.0 map with more than 350 use cases and participation in the SME Transfer Network) • feeding their ideas into the international Industrie 4.0 discourse and participating in international standardization processes (through more than ten international cooperations)

Key Information	Levels	Important Links
Data Space Technical Specifications	★	Website
Data Space Governance	★★	GitHub/Eclipse Link: N/A
Data Space Demonstration	★	Online Library
Data Space Adoption	★★★★	Industry 4.0 map, Publications, Results of Plattform Industry 4.0
Connected Data Space 4.0 Initiatives	Smart Industry, Industria Conectada 4.0,	

Additional Information	
Contact (Name/E-mail)	You can contact them through this link

What is Plattform Industrie 4.0?

It refers to the intelligent networking of machines and processes for industry with the help of information and communication technology. There are many ways for companies to use intelligent networking. These are some of the possibilities:

- **Flexible production**: In manufacturing a product, many companies are involved in a step-by-step process to develop a product. In being digitally networked, these steps can be better coordinated and the machine load better planned.
- **Convertible factory**: Future production lines can be built in modules and be quickly assembled for tasks. Productivity and efficiency would be improved; individualized products can be produced in small quantities at affordable prices.
- **Customer-oriented solutions**: Consumers and producers will move closer together. The customers themselves could design products according to their wishes—for example, sneakers designed and tailored to the customer's unique foot shape. At the same time, smart products that are already being delivered and in use can send data to the manufacturer. With this usage data, the manufacturer can improve his or her products and offer the customer novel services.
- **Optimised logistics**: Algorithms can calculate ideal delivery routes; machines independently report when they need new material—smart networking enables an optimal flow of goods.
- **Use of data**: Data on the production process and the condition of a product will be combined and analysed. Data analysis provides guidance on how to make a product more efficiently. More importantly, it's the foundation for completely new business models and services. For example, lift manufacturers can offer their customers "predictive maintenance": elevators equipped with sensors that continuously send data about their condition. Product wear would be detected and corrected before it leads to an elevator system failure.
- **Resource-efficient circular economy**: The entire life cycle of a product can be considered with the support of data. The design phase would already be able to determine which materials can be recycled.

Mission & Vision

- 2030 Vision for Industrie 4.0: Shaping Digital Ecosystems Globally

In this 2030 Vision, the stakeholders of Plattform Industrie 4.0 present a holistic approach to the shaping of digital ecosystems. Working from the specific situation and established strengths of Germany's industrial base, their aim is to create a framework for a future data economy in line with the requirements of a social market economy: emphasising open ecosystems, diversity and plurality and supporting competition between all the stakeholders on the market. The Vision is primarily addressed to industry and commerce in Germany, but explicitly highlights the importance of openness and a willingness to work together with partners in Europe and around the world.

Three closely interlinked strategic fields of action are crucial for a successful implementation of Industrie 4.0: **autonomy, interoperability and sustainability**. The stakeholders on Plattform Industrie 4.0 commit jointly to these fields of action as guiding principles for the coming decade of the incipient scaling-up of Industrie 4.0 in Germany, Europe and globally. In a dialogue with all the stakeholders in the industrial society, the aim is to establish a framework for action so that – building on the current outstanding position of German industry in global terms, the digital transformation of German industry can take place in a sustainable manner, and Industrie 4.0 can be successfully established throughout a flourishing German Mittelstand.

The goal of the Plattform Industrie 4.0 is to secure and expand Germany's leading international position in the manufacturing industry. For this, the participants of the platform discuss appropriate and reliable framework conditions. As an initiator, moderator of various interests and messages, the Plattform Industrie 4.0 ensures a space for pre-competitive exchange between relevant stakeholders from politics, business, academia, trade unions and associations. The platform is one of the world's leading Industrie 4.0 networks. The Plattform Industrie 4.0:

- develops core concepts in working groups on how to tackle challenges on the pathway to Industrie 4.0.
- provides concrete recommendations for academics, companies and politicians.
- drives national and international exchanges through numerous bilateral and multilateral cooperation – particularly in the areas of IT security and standardisation.

Events

- Hannover Messe 2024

Plattform Industrie 4.0 addressed industrial data ecosystems at Hannover Messe. Together with the Gaia-X community they organised a joint 500m2 stand. It could be seen how IPCEI-CIS is setting up the next generation of cloud infrastructures and services in Europe and how digital sovereignty is being achieved based on Gaia-X principles. Moreover, the Leaders' Dialogue was well attended. Under the motto "Scaling. Together. International.", more than 350 guests attended and saw a high-calibre panel, including Dr Robert Habeck, State Secretary Prof. Dr Sabine Döring (Federal Ministry of Education and Research) and Leonore Gewessler (Federal Minister for Climate Protection, Environment, Energy, Mobility, Innovation and Technology, Austria). The main topics discussed in the event were internationalisation and Manufacturing-X.

The following link contains more information about event: **https://www.plattform-i40.de/IP/Redaktion/DE/Kurzmeldungen/2024/04_HannoverMesse24-R%C3%BCckblick-LD.html**

26 - Quantum Flagship

Nature of the Initiative	European Project | International Project
Mission	To consolidate and expand European scientific leadership and excellence in this research area, to kick-start a competitive European industry in Quantum Technologies and to make Europe a dynamic and attractive region for innovative research, business and investments in this field.
Sector(s) addressed	EOSC (Research)
Leading organisation	European Commission
Members (approx.)	5,000+
Founded (Year)	2018
Social Media Presence	LinkedIn | Twitter - X |YouTube
Relevance for Industry 4.0	It acts as a central hub for the various initiatives, ensuring efficient linkage and complementarity of activities. These include education – from school level all the way up to professional (re)training – and Europe's flourishing quantum tech industry.

Key Information	Levels	Important Links
Data Space Technical Specifications	★	Website
Data Space Governance	★★★★	Document Library
Data Space Demonstration	★★★★	Events, Mobile World Congress 2024, EQTC – European Quantum Technologies Conference
Data Space Adoption	★★★★	Quantum Technology Ecosystem
Connected Initiatives	6GSNS, ETP 4 HPC, Chips JU (formerly known as KDT JU)	

Additional Information	
Contact (Name/E-mail)	Quantum Flagship I info@qt.eu

Report

What is Quantum Technology Flagship?

The Quantum Technologies Flagship is a long-term research and innovation initiative that aims to support the work of hundreds of quantum researchers over 10 years, with an expected budget of €1 billion from the EU.

Following the Quantum Manifesto in 2016, the Flagship was launched in 2018, bringing together research institutions, and industry and public funders, consolidating and expanding European scientific leadership and excellence in quantum technologies.

Mission & Objectives

Its mission is to support the transformation of European research into commercial applications that make full use of the disruptive potential of quantum. It is funding projects in four core application areas: quantum computing, quantum simulation, quantum communication, and quantum sensing and metrology.

Structure & Governance

The Quantum Flagship Governance structure consists of different bodies, interacting with each other:

1. Boost and drive EU Quantum industry
2. Expand EU scientific leadership
3. Make EU an attractive region for innovative business and investments
4. Benefit from QT in other areas, such as energy, health, security and environment
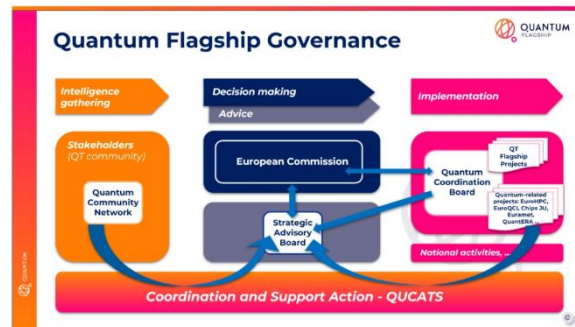
Bodies of the Quantum Flagship

- Coordination and Support Action (CSA) – QUCATS: The coordination and support action (CSA) "QUCATS" provides the Quantum Flagship Secretariat and assists the other governance bodies in the tasks and organize the participation of the quantum stakeholders.
- Strategic Advisory Board (SAB): The Strategic Advisory Board (SAB) is a group of high-level and renown independent quantum experts to monitor the progress of the QFS and provide input to the Strategic Research Agenda (SRA). They advise the decision-making bodies on any subject of relevance. The SAB consists of 40% industry, 40% academy and 20% RTO.
- Quantum Coordination Board (QCB): The Quantum Coordination Board (QCB) coordinates and aligns European Commission funding initiatives in Quantum Technologies (QT). QCB's responsibilities include coordinating and aligning Quantum Flagship Research and Innovation project activities, identifying cross-cutting topics and proposing common solutions, and it exists for the duration of the Quantum Flagship initiative.
- Quantum Community Network (QCN): The Quantum Community Network (QCN) represents the QT communities of EU member state and associated state in the Quantum Flagship. It consists of 1 member and 1 deputy member per member state and associated state. The QCN member mandate lasts 4 years. All members are high-profile experts with a large network in the national quantum community. The core objective is the coordination of the Flagship with national programs to identify, engage and involve relevant national stakeholders and to be the go-to-persons for all Quantum Flagship related questions in their countries.

Quantum Technology Ecosystem (Link)

The European Quantum Technologies ecosystem goes far beyond R&I projects and far beyond the Quantum Flagship itself. Nonetheless, the Quantum Flagship acts a central hub for the various initiatives, ensuring efficient linkage and complementarity of activities. These include education – from school level all the way up to professional (re)training – and Europe's flourishing quantum tech industry. There are also infrastructure deployment initiatives in quantum computing and communication. It's not all about Europe though – international cooperation is an important part of Europe's quantum strategy too.

Events

- Mobile World Congress 2024: The European Quantum Zone, organised by the European Quantum Flagship, showcases the innovation and development in Quantum Technologies that the European Union is driving forward. The space shows some of the latest advancements in this field, especially in quantum communication, sensing and computing. Several companies and initiatives will be present in the space.
- European Quantum Technologies Conference (EQTC): The next edition of EQTC, the European Quantum Technologies Conference, will take place on 18-20 November 2024, in Lisbon, Portugal, organised by PQI – Portuguese Quantum Institute. EQTC is a Quantum Flagship event aiming at showcasing the latest developments of research and innovation in Quantum Information Science and Technology, and discussing the corresponding scientific and technological challenges ahead. The conference features invited talks, panel discussions, poster sessions, and an exhibition.

27 - SCSN

Nature of the Initiative	Foundation
Mission	To simplify data sharing and digitalization of manufacturing companies and their IT-suppliers with high-tech manufacturing supply chain.
Sector(s) addressed	Manufacturing
Leading organisation	TNO
Members (approx.)	400 manufacturing companies | 10 service providers |3 sector organizations | 2 knowledge institutes
Founded (Year)	2014
Web (URL)	https://smart-connected.nl/en
Social Media Presence	LinkedIn
Relevance for Industry 4.0	SCSN focuses specifically on supply chains in the manufacturing industry.

Key Information	Levels	Important Links
Data Space Technical Specifications	★ ★ ★ ★ ★	GitHub
Data Space Governance	★	https://smart-connected-supplier-network.gitbook.io/processmanual/deployment/openapi-data-app-usage
Data Space Demonstration	★	GITbook
Data Space Adoption	★ ★ ★ ★ ★	
Connected Initiatives	https://www.edi4steel.eu/	

Additional Information	
Contact (Name/E-mail)	General Contact: https://smart-connected.nl/en/contact Management: Mike De Roode, mike.deroode@smart-connected.eu
Report	

What is SCSN?

The addressed Challenge by The Smart Connected Supplier Network (SCSN) is to connect of manufacturing companies and their suppliers. It facilitates cross-factory communication and ensures interoperability in an open data ecosystem.

The success of these chains stands or falls on the sharing of large amounts of data. In respect to SMEs in particular, which play a central role in this chain, the receipt and transfer of data is not automated. This means that the data they receive from their customers must be read, interpreted and usually manually entered into their own ERP systems. This is often time consuming and prone to error.

Mission

The success of SCSN is to facilitate a data standard that makes information exchange in the supply chain more efficient, allowing companies to share data more easily, quickly and reliably. It has the next technical components:

- IDS Identity Provider (Certificate Authority, DAPS, ParIS)
- IDS Metadata Broker
- IDS Clearing House
- IDS Connectors
- Data Apps

Solutions & Key Assets

- SCSN solution: SSCSN simplifies data sharing within the chain because SCSN messages can be automatically processed in the ERP system of a connected company. There are also strict agreements in place on the semantics of the messages, so they can only be interpreted in one way.
- A company only needs to be registered once with an SCSN service provider, then share data with all other connected companies.

Benefits

- Fast, secure and interoperable data sharing within the high-tech supply chain between companies.
- Increased supplier chain productivity.
- Seamless scalable integrations for manufacturing companies for exchanging purchase-to-pay information across supply chains based on off-the-shelf integrations.
- Reduction in administrative burden, faster time-to-market, lower IT integration costs instantaneous access to a large group of suppliers.
- IT service providers only need a single integration, no custom connections anymore! IT service providers can build their own proposition around SCSN.

Roles & Members

The foundation has a directory for manufacturing companies joined to the network: SCSN Directory and a directory for the service providers: Service Providers and also for connectors. The SCSN Foundation consists of 2 bodies, the board and the supervisory board.

1. The Board
The board of the foundation consists of at least one member. The number of board members is determined by the supervisory board. The board members are appointed by the supervisory board. The board elects a chairman, a secretary and a treasurer from among its members. The various functions can also be fulfilled by one person. The board is in charge of managing the foundation and is responsible for defining its long-term ambitions, drawing up and implementing its annual plan and budget, approving important changes in the standard, coordinating and implementing daily activities, directing the support organisation, and forming and chairing working groups.

2. Supervisory Board
The foundation has a supervisory board consisting of at least four members who are elected biennially by stakeholders. The stakeholders are divided into 4 groups: Manufacturing companies; Service providers and software suppliers; Industry organisations; and Knowledge institutions. The aim is to appoint two members from each category of primary stakeholders, supplemented by a chairman from the board. The supervisory board is primarily responsible for approving long-term ambitions, the annual plan and annual budget, and supervising the management of the foundation.

3. Working Groups

Alongside these formal bodies, the SCSN Foundation works with a support organisation and working groups. The support organisation is used for the technical support of, among other things, semantic standards and the infrastructure.

Working groups are formed on a project basis, e.g. to implement extensions or improvements. Working groups are the main medium by which member companies can contribute to developments and shape the future of the SCSN

Foundation. Working groups are formed on a project basis in order to carry out, for example, expansions or improvements. Working groups are the main medium by which member companies can contribute to developments and shape the future of the SCSN Foundation. The most important objectives and working methods of the working groups are further explained in the internal regulations:

- ✓ A working group has a clearly defined subject and goal;
- ✓ A working group aims to formulate one or more proposals for change, which are then presented to the board for assessment;
- ✓ Working group meetings are announced in good time to all relevant people;
- ✓ All manufacturing companies, service providers & sector organisations involved can participate in a working group;
- ✓ A working group is disbanded when it has achieved its objective or by decision of the board.

The following working groups are currently active:

- Order: material treatments and additional services: The order form is amended to include the possibility of requesting additional services on standard items, for example: sawing of tubes, galvanising of metal sheets and requesting material certificates. This working group will expand the range of services supported within SCSN.
- Resilience: COVID-19 has made us realise that digitalisation is of enormous importance to the manufacturing industry: the loss of people and partners in supply chains due to quarantines and lock-downs has demonstrated how vulnerable collaborations are and has highlighted the need to be able to respond to changing supply and demand quickly. As a result, this working group was established to look at the resilience of supply chains.
- Communication & Marketing: SCSN is a fast-growing initiative, which in a few years has grown from a small group of companies to a large ecosystem of hundreds of parties. Communication and marketing are essential to support this rapid growth. Within this group, we are working on a communication plan, improving the website and involving social media channels, among other things.

How to join & participate in a working group

All member companies and service providers can submit proposals for additions or changes to the SCSN standard. Submitted proposals are evaluated and prioritised by the board. Proposed working groups are published via the internal newsletter, after which interested parties can apply to join the working group. After deciding to start a working group, the board decides on the group's final composition and appoints a chairman. Further communication to interested parties takes place via the internal newsletter.

After a working group has been disbanded, the results have normally become part of the SCSN standard and can be found at the usual place (i.e. GitBook/Semantic Treehouse).

28 - Smart Industry

Nature of the Initiative	National Project |International Project |European Project
Mission	Their mission is to develop the best and most flexible digitally connected production network in Europe and using less energy and materials for a sustainable and compatible economy.
Sector(s) addressed	Green Deal (including Smart Communities) | Mobility |Manufacturing |Media
Leading organisation	FME, TNO, Kamer van Koophandel, Ministerie van Economische Zaken en Klimaat, VNONCW, Dutch Digital Delta, Holland High Tech, Brabantse Ontwikkelings Maatschappij (BOM), LIOF, NOM, Innovation Quarter, OOST NL
Members (approx.)	800+ companies | 25,000+ participants | 50+ Field Labs
Founded (Year)	2014
Web (URL)	https://smartindustry.nl/
Social Media Presence	LinkedIn | Twitter - X | YouTube
Relevance for Industry 4.0	Accelerate productivity growth in all regions in the Netherlands in each (industrial) region.

Key Information	Levels	Key Links
Data Space Technical Specifications	★	No GitHub Links available
Data Space Governance	★★★★	Document Library Link
Data Space Demonstration	★★★	Events
Data Space Adoption	★	N/A
Connected Data Space 4.0 Initiatives	Industria Conectada 4.0, Plattform Industrie 4.0, Piano Nazionale Industria 4.0	

Additional Information	
Contact (Name/E-mail)	Tel: +31 (0) 79 353 14 05 Email: info@smartindustry.nl
Report	

What is Smart Industry?

The world is in anticipation of a fourth industrial revolution. As a consequence, revolution is driven by giant leaps in ICT innovation and promises to radically alter the face of industry in the coming decades.

In November 2014, they formalised an Action Agenda, which was renewed in 2018 with the Implementation Agenda.

Mission & Objectives

The **main objective** of the agenda in 2021 was to develop the best and most flexible digitally connected production network in Europe and using less energy and materials for a sustainable and compatible economy. The Action Agenda includes **3 action lines**

- Action Line 1: Capitalising on existing knowledge
- Action Line 2: Accelerating in field labs
- Action Line 3: Strengthening the foundation

Solutions & Key Assets

- **Acceleration Projects:** They have created 9 acceleration projects to drive the process forward:

1. Smart Industry Assessment Programme: Helping businesses get started in the area of Smart Industry.

2. Smart Industry Expertise Centre One-stop shop for businesses: Focus on speeding up developments

across the wider industrial SME sector and supporting implementation in achievable steps.

3. Smart Industry Hubs Creation of a network of regional Smart Industry Hubs.

4. National Smart Industry Roadmap: The combined NWA/HTSM/ICT Smart Industry Roadmap describes the intended development of Smart Industry knowledge.

5. Linking SkillsLabs to Fieldlabs: Helping every Fieldlab also become a SkillsLab.

6. Human-oriented Technology Programme: This programme is developing best practices in this area as a source of inspiration and a guide for developers and users of human-oriented technology.

7. Cybersecurity Programme: Making manufacturing firms digitally resilient by setting up a Smart Industry Digital Trust Centre.

8. Data-sharing Programme Establishment of a Data Value Centre and Data-sharing Coalition.

9. International business with Smart Industry Organization of concrete collaborative projects between businesses and knowledge institutions in the Netherlands, Germany and Belgium.

- **Smart Industry Fields labs: I**ndustrial environment where Smart Industry solutions are developed, tested, implemented as well as where people can learn to apply them. **Criteria for a Smart Industry field lab:**
  - ❖ Innovation eco-system
  - ❖ Regional focus
  - ❖ Radical innovations
  - ❖ Interconnect higher & vocational education
  - ❖ Training Human Capital
  - ❖ Identification and application of new rules & standards
  - ❖ Location with a program manager
  - ❖ Program with 3+ year plan and multiple projects on innovation and education

29 - STRUCTURA-X

Nature of the Initiative	Lighthouse project
Mission	To create an ecosystem of independent CSPs, orchestrated by a shared layer of federation certification and labelling services based on Distributed Ledger Technology (DLT).
Sector(s) addressed	Cloud Services
Leading organisation	GAIA-X
Members (approx.)	28 members | 10 countries
Founded (Year)	2022
Web (URL)	https://gaia-x.eu/news-press/structura-x-lighthouse-project-for-european-cloud-infrastructure-is-launched-concrete-implementation-and-alignment-with-the-gaia-x-roadmap-of-compatible-services/
Social Media Presence	LinkedIn
Relevance for Industry 4.0	The industrial implementation of the Gaia-X standards by cloud and infrastructure providers is essential for functioning data sovereignty in Europe.

Key Information	Levels	Important Links
Data Space Technical Specifications	★ ★	GitHub/Eclipse Link: NA
Data Space Governance	★ ★ ★	https://gaia-x.eu/wp-content/uploads/files/2021-10/Gaia-X%20Membership.pdf
Data Space Demonstration	★ ★	https://gaia-x.eu/wp-content/uploads/2024/05/Lighthouse-V14_08.05.2024.pdf
Data Space Adoption	★ ★ ★	NA
Connected Data Space 4.0 Initiatives	Other Gaia-X Lighthouse Projects	

Additional Information	
Contact (Name/E-mail)	Company Name: Gaia-X European Association for Data & Cloud AISBL Contact Person: Dr. Vassilia Orfanou, CMO Phone: +306974825327 | Email: vassilia.orfanou@gaia-x.eu

What is STRUCTURA-X?

Around 28 European **cloud and infrastructure** providers have launched a **new initiative** to build joint Gaia-X-compliant infrastructure services.

Mission

The **common goal** is to form an ecosystem for European data sovereignty based on their existing infrastructure, generating an overarching **European cloud infrastructure will be created**, while also enabling **users to test and roll out services and data spaces** in a Gaia-X-compliant infrastructure.

Roles & Members

The **roles** involved in the flagship initiative include: Gaia-X AISBL, STRUCTURA-X, members and users.

1. **Gaia-X AISBL, among other things,**
- **stipulates the technical framework** for data sovereignty,
- **defines the technical framework** for data sovereignty,
- **collaborates with the lighthouse partners** and coordinators through their common project teams through their lab in a joint Program scaling.
2. **Structura-X as a group will**
- **create the necessary reach and scale** for new cross-industry and cross-border collaboration in the cloud, thus counteracting fragmentation of the European cloud market.
- **adapt the Gaia-X framework**, including technical specifications, labels, and open-source software implementation to support the ongoing scaling of the lighthouse projects that share the common theme of creating a resilient, data-driven, and sustainable ecosystem.
3. The **members as individual organisations**
- **bring infrastructure services** to the table,
- equally **agree to utilise (open-source) technology** to make the cloud federation services viable, including interoperability respecting security and privacy-enabling by design.
4. **Users** can interact with STRUCTURA-X results and open-source software as well as members-provided infrastructure services.

Current members include: AssoSoftware, City Network, Cloud&Heat Technologies, CS Group, CSI, EBRC, Elmec, Fabasoft, International Dataspaces, IONOS SE, KPN, Luxinnovation, Mainstream, next layer, OpenNebula Systems, OSISM, ThreeFold Tech, Tietoevry, United Group, Vivacom.

Structura-X is open for more cloud service providers (CSP) to join!