Gaia-X MAGAZINE

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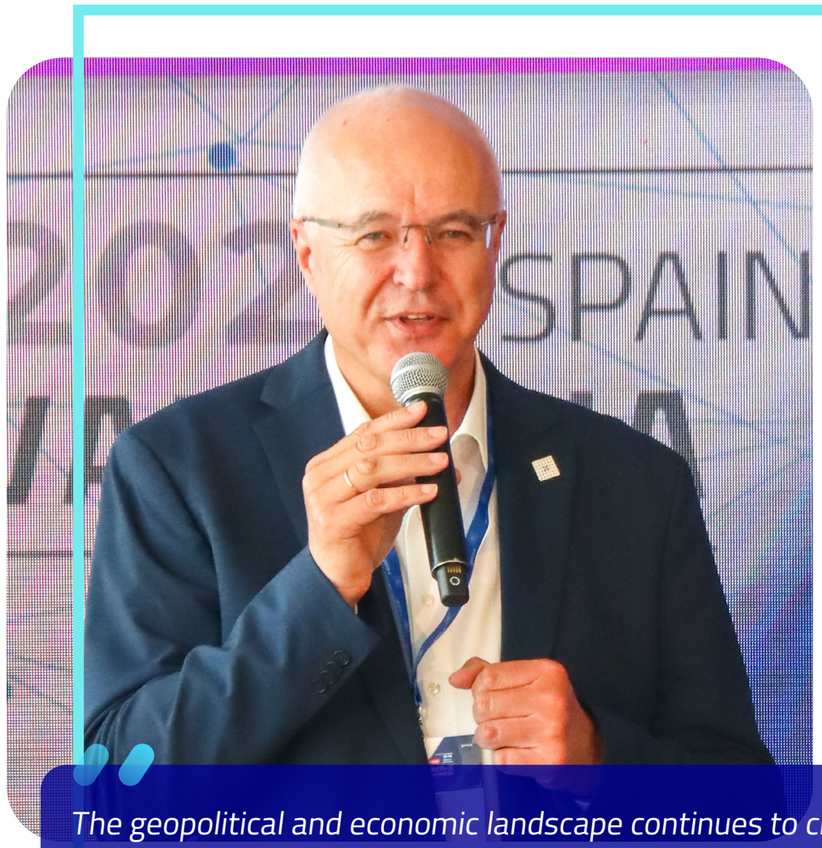


The geopolitical and economic landscape continues to challenge our digital autonomy, making Gaia-X more relevant than ever.

Ulrich Ahle

Dear readers,

Welcome to the sixth edition of the Gaia-X Magazine.

As Gaia-X enters a decisive phase in its evolution, this issue reflects the progress of a vision now becoming reality. Over the past months, we have moved from concept to concrete implementation—activating Trust Frameworks, operationalising our Labels at Levels 2 and 3, and extending our model to new geographies and industries.

From the successful deployment of Digital Clearing Houses to the cross-sectoral growth of Gaia-X-compliant data spaces, we are witnessing the emergence of a federated, interoperable infrastructure that serves the digital sovereignty needs of Europe and beyond.

This edition highlights stories of tangible value creation and introduces new technical milestones such as the Data Transfer Agent. These developments are not isolated. They are part of a growing ecosystem that includes hundreds of members, global hubs, and alliances with complementary EU initiatives.

We also look ahead. The geopolitical and economic landscape continues to challenge our digital autonomy, making Gaia-X more relevant than ever. Whether through our engagement in legislative dialogues or our investment in international trust frameworks (from Japan to Switzerland), we remain committed to building an open, secure, and trusted digital future.

I encourage you to dive into the stories, insights, and updates featured in this issue—and invite you to contribute your energy, creativity, and expertise to the Gaia-X community.

Let's build the future together—one trust-based connection at a time.

Warm regards,

Ulrich Ahle

02

MAIN STORY
HIGHLIGHTED

In every edition of our magazine, we are thrilled to present you with a highlighted story, offering a comprehensive and captivating exploration of a significant topic. Within this section, you can expect to find engaging interviews with key figures, expert analysis, and the latest updates.

02

2.1

Why Trust Matters

Dr. Christoph F. Strnadl, Chief Technology Officer at Gaia-X

The question why trust matters cannot be answered without being a little bit more precise about what the term exactly means: while, as humans, we have an intrinsic understanding of what trust means after at least 300,000 years of evolutionary history as Homo sapiens, this is not so clear in the digital realm. This is even more important in the context of the Gaia-X Trust Framework which sets out **to digitalise and automate trust** for arbitrary digital ecosystems (mind you: not just data spaces!).

Summarising a lot of individual studies, we have found the following to be a pragmatic and workable definition of this ramified and multi-faceted term:

> *Trust is the willingness of someone (= trustor) to engage in a risky behaviour [where the risk] stems from their (i.e., the trustor's) vulnerability to the behaviour of another (= trustee).*[1]

Note that the trustor has **to show trust through corresponding behaviour**: For example, I trust a bridge not in claiming that I do but in driving over it with my 40 tons truck. Service consumers trust a service provider simply by consuming their services, data providers trust other participants by sharing their data with them. This property that (some) people actually trust a bridge, or a service provider, or a prospective data consumer, is then called **trustworthiness**.

Contrary to the sequence of this introduction into the terminology, real-world situations happen in the reverse order: people first assess the trustworthiness of something or someone and only in the instance that the trustworthiness exceeds some (more or less explicit) threshold, they act accordingly.

That immediately leads to the next question: how do we establish trust (or, rather more correctly, trustworthiness)?

In the case of human societies, evolution has trained our brain to recognise trustworthiness in other human beings without any special training within seconds of encountering – even for the very first time – another individual. Psychological research has shown that this is, amongst others, based on universal facial structures and expressions which very strongly correlate with trustworthy behaviour.[2]

But how can this work in the business domain where two characteristics considerably complicate the assessment of trustworthiness:

(i) We have **organisations** as counterparts, not individuals (What could the "facial structure" of an enterprise be?)

(ii) Modern business **ecosystems are too large** to allow manual assessment of every individual actor and their interactions by humans

1 - Following Mayer et al. (1995): An Integrative Model of Organizational Trust.

2 - Constantin Rezlescu et al. (2012): Unfakeable Facial Configurations Affect Strategic Choices in Trust Games with or without Information about Past Behavior.

The enormous size of business ecosystems is easily demonstrated:

- Small construction sites (e.g. for a multi-apartment building) need up to **60** professional service firms during the construction phase.
- Planning, building, and commissioning a nuclear power plants requires around **2,500** different companies with a factor of 10 or more human workers (and accompanying individual security clearances).
- The supply network (there are no supply "chains" any longer) of a large aeroplane manufacturer includes in the order of **10,000** companies. They produce roughly **2 million** individual parts which are mounted to a single aeroplane during final assembly. The whole process from the production of the first screw until the plane is finally released takes some **2 years**.

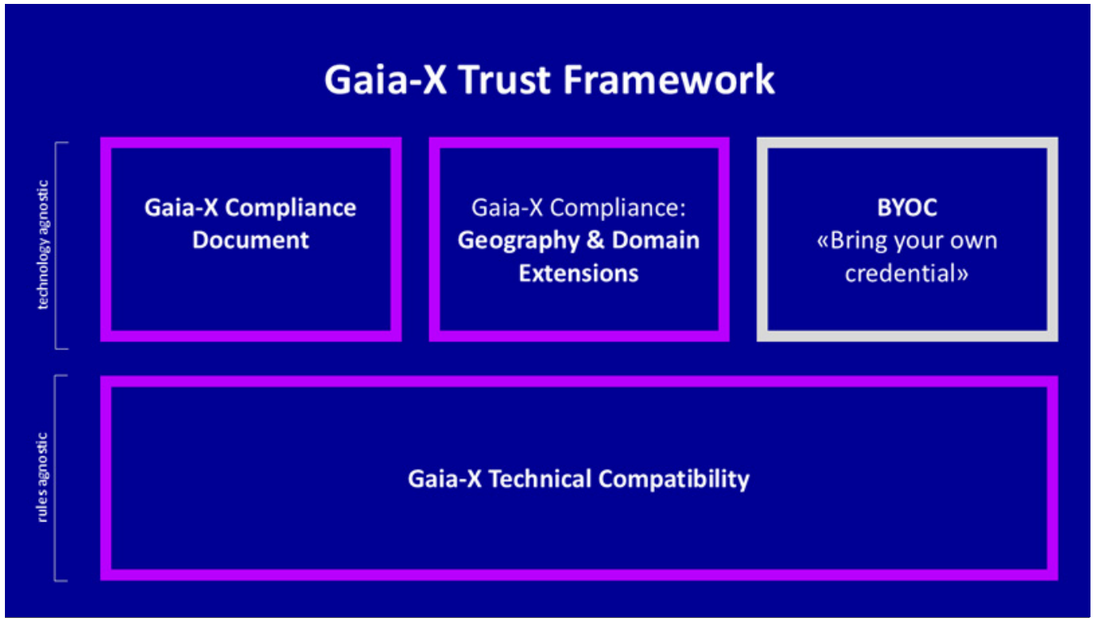
Against the backdrop of this business setting, it is plainly evident that it is impossible to establish any sensible form of trustworthiness by manual labour of human operators. It is even less possible to ensure the required level of trust during normal business operations involving myriads of individual service interactions and data sharing transactions with the thousands of partners in the ecosystem.

This challenge is exactly the sweet spot of the Gaia-X Trust Framework.

Similar to humans establishing trust based on a common language of physiological and behavioural signs, the Gaia-X Trust Framework distinguishes a kind of universal language of expressing trustworthiness within different digital ecosystems. This is indicated by the underlying universal **Gaia-X Technical Compatibility** layer. Because different ecosystems may need different levels of trust, this layer is **rule agnostic**, that is independent from the actual business rules or rulebooks that ecosystems use to define their prerequites for trust.

The actual criteria for defining the required levels of trust are then defined at a level above Gaia-X technical compatibility which one can call the **compliance layer**. The Gaia-X Association has, of course, identified its own set of compliance criteria for ICT services. Codified in the Gaia-X Compliance Document, these criteria allow the discrimination of the well-known four levels of Gaia-X compliance of services, namely, Gaia-X Standard Compliance, and Gaia-X Label Levels 1 to 3. This layer is typically **technically agnostic**; that is, it may be automated (in software) in different ways.

Because the automation of trust requires both layers, the Gaia-X Trust Framework comprises both layers.



Recognising that the Gaia-X Association – including its many members – will never be able to discuss and specify compliance rules for all ecosystems due to insurmountable limitations in expertise, skills, and, foremost, time, we have worked on allowing arbitrary extensions to our Gaia-X Compliance Document. We expect that various ecosystems will capitalise on the compliance criteria embodied in the Gaia-X Compliance Document and simply broaden it by geographically motivated or domain-relevant extensions. Examples include ecosystems beyond European jurisdiction (we have Gaia-X Hubs in Korea and Japan, for instance) or focusing on compliance in other industries like the energy or aerospace sector. We even allow ecosystems to define arbitrary compliance schemes which no longer include any reference to the original Gaia-X Compliance Document – unofficially called "BYOC: Bring Your Own Credential" in the diagram.[3]

The key observation here is that as long as any of the technology-agnostic compliance rules, criteria, or extensions are **implemented conforming to the Gaia-X Technical Compatibility** layer, ecosystems will be interoperable with regards to mutual trust on participant identities and services. Note that this does not mean that one ecosystem automatically trusts any other ecosystem. To the extent that two ecosystems agree on common criteria for establishing mutual trust, the use of the Gaia-X Technical Compatibility layer will automatically ensure that participants mutually trust each other also across the two ecosystems.

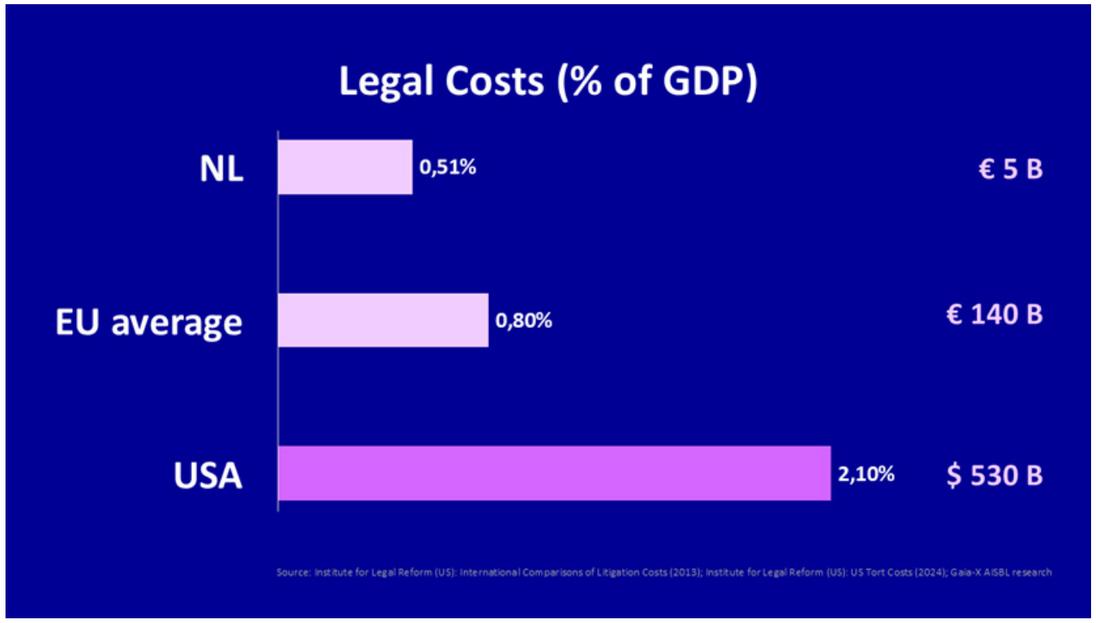
Having automated cross-ecosystem trust using the Gaia-X Trust Framework then leads to the final question: Why would we do this at all? **Why does this matter**?

As a matter of fact, this question has already been investigated and answered about 50 years ago by Nobel Laureate Kenneth J. Arrow:

*Trust is an important **lubricant** of a social system. It is **extremely efficient**; it **saves a lot of trouble** to have a fair degree of reliance on other peoples' word. […] Trust and similar values, loyalty or truth-telling […] are goods, commodities; they have real, practical economic value; **they increase the efficiency of the system**, enable you to produce more goods […]. But they are **not commodities for which trade on the open market is technically possible** or even meaningful.*[4]

Arguably, one cannot simply translate the percentages or numbers of these studies into the costs (or savings) of ensuring trust in digital ecosystems. Nevertheless, the relative size of the legal costs is an excellent proxy for the order of financial gains achievable by using the Gaia-X Trust Framework:

- EU legal costs are **62%** less than for the USA.
- The Netherland's legal costs are **76%** less than for the USA and **36%** less than for the EU average.



These ideas have been picked up by the New Institutional Economics which would give a more precise answer: "**Trust significantly reduces transaction costs**". Turning around the logic, there are recent studies showing the financial loss national economies incur through the lack of trust where the legal costs (litigation costs, tort costs) for enterprises have been estimated as a percentage of a nation's GDP.

These figures actually underestimate the economic gains as they do not take into account the level of automation the usage of the Gaia-X Trust Framework brings about.

So, eventually, the final answer to the question why trust and the Gaia-X Trust Framework matter simply boils down to an economic evaluation: It reduces ecosystem transaction costs by 60-70%.

3 - These scenarios are extensively described in our «Geographical and Domain Extension White Paper»

'4 - Kenneth J Arrow (1974): The Limits of Organization.

03

Gaia-X PROJECT DEVELOPMENTS

This dedicated section about project developments aims to bring you closer to the forefront of the progress made on the Gaia-X project. It discusses the latest advancements, initiatives, and achievements from an operational, technical, stratgic and communications perspective. Whether you are part of the Gaia-X community, an industry professional seeking information or simply an avid reader with a curiosity, this section is for you.

Operations

Technology

Strategy

Communications

03

3.1.1

Key Gaia-X priorities: operationalisation of Labels Levels 2 & 3 and extension of the Gaia-X framework

Przemek Halub, Program Manager at Gaia-X

Gaia-X is entering a new phase as it moves into the next implementation stage: the operationalisation of Labels Levels 2 and 3 and the extension of the Gaia-X framework are now key priorities.

Operationalisation of Labels Level 2 and Level 3

Gaia-X Labels Levels 2 and 3, expected by the market, will soon be ready for use. Following the implementation of standard compliance and Label Level 1, the next milestone is to ensure that Label Levels 2 and 3 are fully operational. These advanced labels are key to reinforcing data sovereignty, interoperability, and trust within the Gaia-X framework.

As trust is essential for data sharing across organisations, Labels Levels 2 and 3 will provide users with higher security and transparency while ensuring that participants adhere to strict security standards and best practices. Moreover, these levels guarantee that organisations retain control over their data (a core principle of data sovereignty) and that data is handled in line with the Gaia-X framework and relevant regulations, particularly within the European Union (EU) and European Economic Area (EEA), where data privacy and protection is paramount.

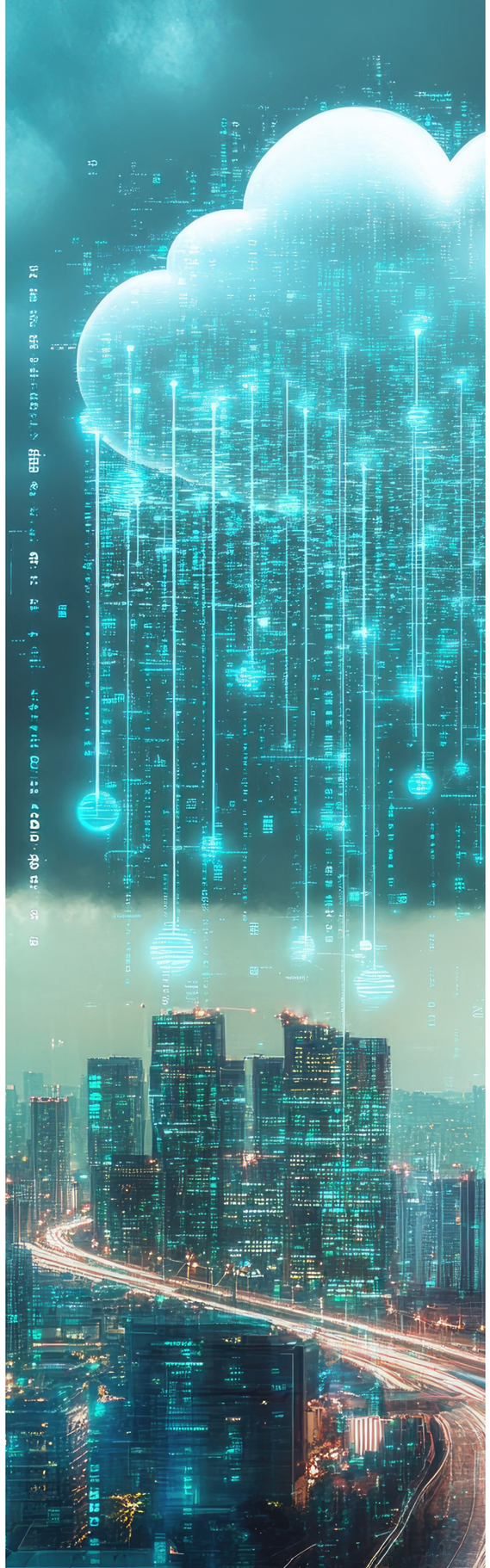
Currently, the Gaia-X Digital Clearing Houses (GXDCHs) play a key role, but the overall structure also relies on notary functions and the involvement of Conformity Assessment Bodies (CABs), including Gap CABs in cases where no assessment bodies are yet assigned or criteria remain uncovered. In the context of labels levels 2 and 3, new opportunities for cooperation are emerging, particularly through the participation of CABs. This is a key benefit for Gaia-X members who can assume these roles and serves as an incentive for other organisations to join the Gaia-X ecosystem and engage in the labelling process.

The final technical work to integrate compliance mechanisms is progressing alongside the formal steps. Notary functions, onboarding, and the ontology are central to the digitalisation and automation of trust required for implementing Label Levels 2 and 3. Our aim is to complete the implementation process in the second half of June this year.

Geographical and domain extension of the Gaia-X framework

The second milestone in Gaia-X's development is extending the framework across new geographical and domain contexts. This effort highlights the fully decentralised nature of the Gaia-X model, essential for building trusted, interoperable ecosystems. A key initiative in this effort is the *White Paper on Geographical and Domain Extensions of the Gaia-X Framework*, one of our most important developments in 2025.

Created collaboratively by Gaia-X members, the paper outlines possible governance scenarios of label extensions, showing how the Gaia-X Trust Framework can be applied across different industries, sectors and regions. It demonstrates the framework's adaptability to the regulatory environment of specific industries and countries, including those outside the European Union. By taking different regulations and requirements into account, Gaia-X aims to enable true interoperability across diverse contexts. Although many organisations may offer trust-based solutions, these often operate in silos, making interoperability with other market players a persistent challenge. Gaia-X addresses this by leveraging its decentralisation approach



as a core enabler, ensuring that trusted services can interconnect and function seamlessly across the market.

The Gaia-X labelling framework is designed to adapt to the regulatory context of different domains and regions worldwide. While the current Compliance Document focuses on European values and regulations, other geographies follow different value systems and rule sets. Given the global relevance of the Gaia-X initiative, the framework is intended to extend beyond European borders to support international adoption.

The current Compliance Document outlines generic criteria, primarily for cloud services, with a small extension for data exchange services. Still, we see strong potential to enhance its value through domain-specific extensions. To explore this, the White paper was developed as a collaborative tool to gather ideas and feedback to further develop this possibility. While not part of the official Gaia-X specification documents, it proposes four possible scenarios for extending the Gaia-X labelling framework. These scenarios were shaped over several weeks by the sprint group under the Gaia-X Policy Rules Committee (PRC), reflecting broad member input. The scenarios are described in full detail in the White Paper, including respective advantages, disadvantages, and the values they support. The paper also outlines additional design elements that need to be considered, independently of the proposed scenarios.

When designing the different scenarios, the working group considered three key elements: (1) who defines the labels and criteria; (2) who is responsible for maintaining and certifying them; and (3) what tooling is used to support their implementation.

The question of who defines labels and criteria is key to ensuring that the Gaia-X labelling framework reflects the values, priorities, and regulatory environments of its intended users. This choice affects both the framework's legitimacy and its adaptability to specific domain or regions. If the Gaia-X Association retains this responsibility, the main advantage is consistency and alignment with its core principles and governance. While this approach promotes coherence and trust across domains and geographies, it may reduce flexibility and responsiveness to local or sector-specific needs, especially in fast-evolving or highly regulated industries.

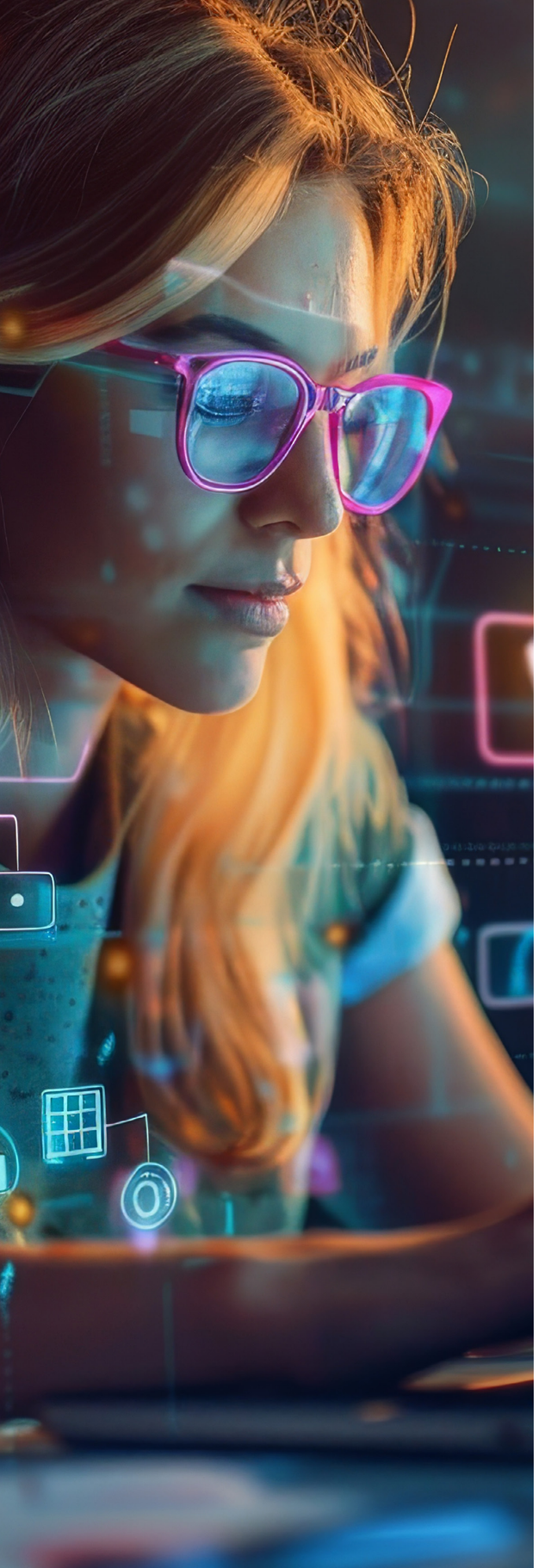
Delegating this role to a Custodian (such as a regional or domain-specific entity) can improve relevance and responsiveness to local contexts. In this case, Custodians may better incorporate domain-specific knowledge, legal requirements, and stakeholder input. The downside is a potential loss of standardisation and greater risk of fragmentation if different Custodians take divergent approaches. It also raises questions about accountability and alignment with some of Gaia-X's foundational principles.

The second key design element (who maintains and certifies the labels) directly affects the trust, credibility, and long-term sustainability of the labelling framework. Maintaining the labels involves updating criteria to reflect evolving regulations, technological developments, and sector-specific needs. If this responsibility lies with the Gaia-X Association, it ensures alignment with its core principles and consistency across domains. Yet, central maintenance may result in slower updates or reduced responsiveness to domain- or region-specific changes.

The element of certification is equally important, as it determines who is authorised to assess and validate whether services meet the defined criteria. If this process is handled by the association, it may carry more weight and uniformity, but it risks becoming a bottleneck, especially if demand grows across multiple domains and geographies. Designating this role to Custodians, on the other hand, can improve scalability and responsiveness but raises challenges around quality assurance, oversight, and mutual recognition of certifications.

Ultimately, the element of maintaining and certifying labels and criteria defines the governance model's balance between centralised control and distributed autonomy, and how trust is operationalised across the federated ecosystem.

The third key element (what tooling is used to support the implementation of labels and criteria) determines how the governance model is operationalised in practice. In the context of Gaia-X, this tooling refers specifically to the Digital Clearing House, which serves as the technical infrastructure for managing label issuance, certification, verification, and interoperability.



Across the proposed scenarios, the tooling can either be operated as the GXDCH or it can be a Custodian-driven solution, which may or may not be built using the open-source software (OSS) provided by Gaia-X. While maintaining a GXDCH offers strong consistency, simplified integration, and a shared point of trust, a custodian-led option can be tailored to domain- or regional-specific needs. However, custodian-led tooling also introduces variability in implementation, which may affect interoperability, quality control, and the level of conformity with Gaia-X core standards. In the end, the choice of tooling impacts not just technical interoperability, but also the governance, scalability, and trust of the labelling framework, and defines how transparent, efficient, and consistent the certification and compliance processes can be across different ecosystems.

Together, these key design elements form the core components of each governance scenario that will shape how the labelling framework can be applied across different contexts. The table below provides an overview of the proposed scenarios, each reflecting a different governance model based on these considerations.

So far, the sprint group presented these scenarios to the PRC with the recommendation that, at this stage, the Gaia-X community sees value in all four scenarios. Therefore, there may be demand for the adoption of more than one scenario, as members and the market will drive what is created and adopted.

The next step following the development of the White Paper is to align on a detailed roadmap and action plan for implementing the extension mechanisms. This will involve an in-depth analysis of the proposed scenarios, as well as the definition of clear business and technical requirements. A key focus will be the collection of concrete use cases and user stories, which will serve as the foundation for structuring these requirements. These real-world examples will inform the making of the implementation roadmap. Our aim is to provide five concrete use cases for domain extensions and three for geographical extensions, specifically targeting South Korea, Japan and Switzerland.

If you are a Gaia-X member and wish to contribute to the implementation of the geographical and domain extension mechanisms – by participating in the sprints, sharing your use cases, or submitting extension requirements – please contact the Gaia-X Operations Team to get involved.

1	2	3	4
CONTROLLED BY CUSTODIAN	**CONTROLLED BY GAIA-X**	**CUSTODIAN-PROPOSED, GAIA-X-VALIDATED, GXDCH CERTIFIED**	**CUSTODIAN-PROPOSED AND VALIDATED, GXDCH CERTIFIED**
▪ Anybody can create a label related to whatever digital artefact they want, for whatever purpose they want, with or without adoption of Gaia-X values. ▪ Whoever creates a label, becomes a label custodian. ▪ The tooling associated with the label is also designed, implemented, deployed and run by the custodian.	▪ Labels are designed, maintained and deployed by the Gaia-X PRC, based on requirements established by the Gaia-X Data & Services Business Committee (DSBC). ▪ Strict compliance rules in a single Compliance Document that the PRC reviews. ▪ Criteria are designed by Gaia-X Policy Rules Committee (PRC). If needed, the Gaia-X Ontology is extended by a Working Group under control of the Gaia-X Technical Committee (TC).	▪ Anybody can create a label related to whatever digital artefact they want, for whatever purpose they want, with or without adoption of Gaia-X values. ▪ If the proposed extension aligns with Gaia-X values and passes a technical check that the source code works as intended, the technical team can integrate it, merge it, and all Gaia-X Digital Clearing Houses (GXDCH) can also run these checks.	▪ Labels are designed by the custodian and endorsed by Gaia-X after a check has been performed on technical compatibility, but not for content or value of rules. ▪ If the source code works, the Gaia-X technical team can integrate it, merge it, and all the Gaia-X Digital Clearing Houses (GXDCH) can also run those checks.

Figure 1: Overview of the four proposed governance scenarios

3.2.1

The Data Transfer Agent - Bringing Data Spaces to a New Era

Benoit Tabutiaux, CTO at IMT Transfert - Teralab; **Frédéric Bellaiche**, VP Technology & Research at Dawex & **Christoph Strnadl**, CTO at Gaia-X

As Gaia-X specifications have matured and Gaia-X Digital Clearing Houses are operational, it's time to move on from specifications to reference implementations, by delivering practical, interoperable components that support trusted data exchange. One such enabler is the **Data Transfer Agent**.

The Data Transfer Agent is a **modular, open-source** component that enables compliant, verifiable, and seamless data transactions between participants. It supports the **Gaia-X architecture** by automating trust enforcement, usage control, and interoperability—ensuring data can flow securely and responsibly across organisational, sectoral, or geographic boundaries.

Laying the Foundation for trusted data transaction

Let's take a look at the context in which data exchange is made possible within the Gaia-X Trust Framework. At the core of this framework, a set of well-defined specifications have been created that establish the structural and policy backbone of Gaia-X. This includes the technology agnostic Gaia-X Compliance Document and, more importantly for our topic, the Gaia-X Architecture Document laying the foundation for Gaia-X technical compatibility.

Complementing the generic, rule agnostic technical foundation, the **Gaia-X Data Exchange Document** provides a conceptual model for data exchange encompassing Data Producers, Data Consumers, Data Products and Data Usage Agreements forming a trusted pipeline for data exchange.

This is also aligned with the principles set out in the **CEN/CENELEC Trusted Data Transaction standardisation** and in the European **Data Act** regulation.

Through Gaia-X principles and specifications, every interaction—from publishing data, to cataloguing, negotiating and consuming it—is formalised through agreements and anchored in transparency, trust, and governance. This ensures that data flows securely and responsibly across different domains, in a standardised approach, ensuring trust, traceability, and legal clarity across the full lifecycle of a data transaction.

Introducing the Data Transfer Agent

With these specifications in place, the question remains how to actually implement Gaia-X-based Data Exchange in the real world. This is where the **Data Transfer Agent** comes into play.

The **Data Transfer Agent** is a key software component that handles the transfer of data between two parties once these parties have agreed on a data transaction. Its primary role is to handle and secure the exchange of data between these parties: verifying the conformity and validity of the credentials, agreeing policies for example contract duration, usage restrictions, etc. Once the verifications are complete, the transaction is executed (file transfer, API, events, real-time stream, and more).

The **Data Transfer Agent is a collective effort**, with the initial contribution from IMT Transfert Teralab, Dawex and in close alignment with the Gaia-X CTO Office, to bring **efficient, secure, resilient, and scalable agents for decentralised data transfers** fully technically compatible with the Gaia-X architecture.

What makes the Data Transfer Agent especially powerful are its core design features:

- It's **lightweight**. This means it has an uncluttered, modular, and scalable architecture — which allows it to be easily integrated into different environments without heavy overhead or complexity.
- It's **containerised**. Deployment is simple and quick—essentially one-click deployment through container technologies like Docker or Kubernetes. This ensures ease of installation and portability across different infrastructures.
- It can be **deployed as a service**. That means the DTA can run alongside any existing component or software, integrating seamlessly into your current data architecture.

The **Data Transfer Agent** is built in accordance with the Gaia-X Architecture Document specifying Gaia-X technical compatibility. It leverages the **OID4VC** standard to ensure a decentralised and verifiable identity exchange. Additionally, the Data Transfer Agent is conceptually and functionally aligned with the CEN/CENELEC Trusted Data Transaction reference model. Note that using the DTA does not require a full-fledge data space to be in place: consent between Data Provider and Data Consumer is all that is needed.

Modularity is at the heart of the **Data Transfer Agent**, making it easy to integrate standardised protocols such as DSP **(Data Space Protocol)** for Data Space **interoperability**.

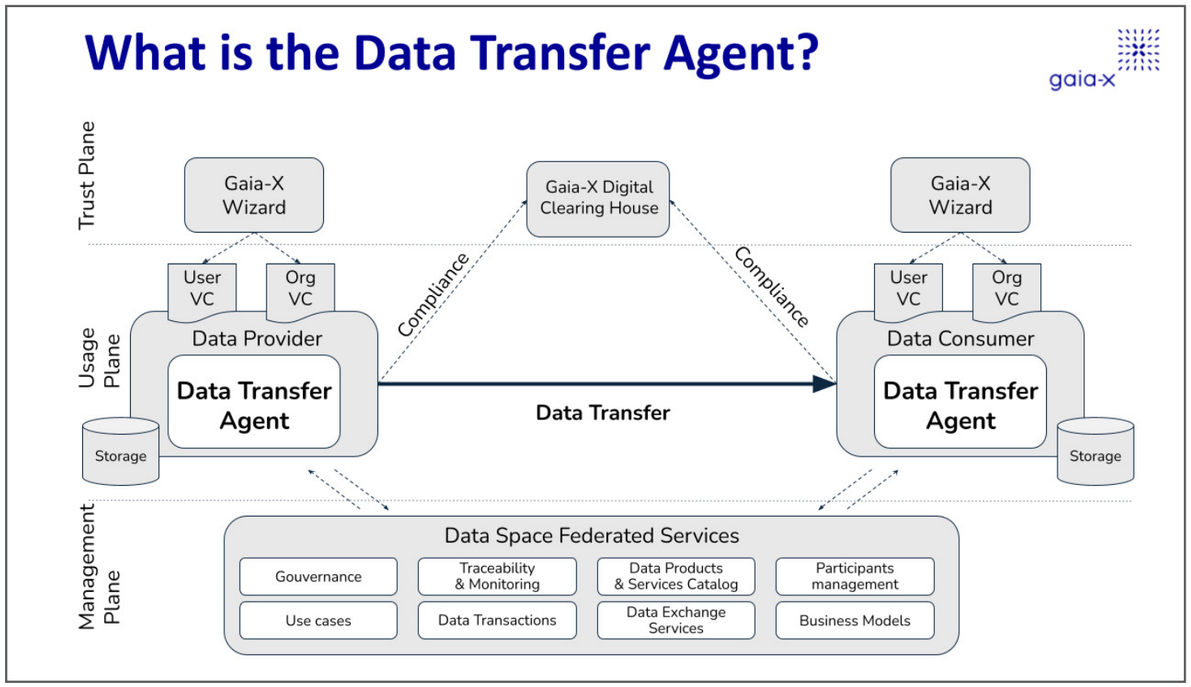
The Data Transfer Agent in Action: A layered approach

Data Transfer Agents are by design focused on the aspects of the Data Plane (e.g., performing the transaction), and the Control Plane such as verifying usage and access policies. It is a very important component, particularly for establishing trust, so it must be easy to use, by everyone, especially SMEs, and its code must be verified, validated and certified.

The Data Transfer Agent fits into the Gaia-X architecture across three layers:

1. **Trust Plane** – Receives and validates credentials from services like the Gaia-X Wizard and Clearing House. This ensures that only authorised, verified parties can participate in the data exchange.
2. **Usage Plane** – Facilitates the actual data transfer between provider and consumer. They interact with storage systems and handle the mechanics of the exchange.
3. **Management Plane** – Interacts with the Data Space Federated Services that provide essential governance and ecosystem functionality, including Governance and use case management, Traceability and data transaction monitoring, Service Catalogs and data exchange tools, and participant management with business model support.

Ultimately, the Data Transfer Agent is not a standalone piece, but rather an integrated component that operates across trust, usage, and management layers to enable secure, trusted, and modular data sharing.



Summary of the key characteristics of Data Transfer Agents:

- Implement OpenID4VC and OpenID4VP protocols, which are central to verifiable credential exchange.
- Interact directly with Gaia-X Digital Clearing Houses and wallets.
- Run as standalone components, giving more flexibility in architecture.
- Interact not just with similar components, but also with broader Gaia-X participants and delegations.
- Natively use the Gaia-X ontology to verify constraints across various domains like data products, service offerings, infrastructure, and labels.

What's next?

We're at an exciting moment. The Data Transfer Agent code is :

- Shaping up to be a seamless solution for decentralised data transfer, fully aligned with the Gaia-X de facto standard.
- Released as open source under Apache-2 license on Gaia-X GitLab, which means accessible, transparent, and open to contributions from the community.
- Designed to be run as a managed service delivered by cloud providers, easy to deploy even for a department within a group, a public institution, or a small or medium-sized enterprise (SME).

We invite you to **join the collective effort to bring Data Spaces into a new era**—one that's open, trustworthy, and interoperable.

Benoit Tabutiaux, CTO at IMT Transfert - Teralab

Frédéric Bellaiche, PhD, Vice President Technology & Research at Dawex

Christoph Strnadl CTO at Gaia-X

3.3.1

Service Providers: Powering the European AI Continent through Federated Data Ecosystems

Manuel Gutiérrez, Senior Digital Ecosystems Manager at Gaia-X

Europe is on a transformative journey to become the 'AI Continent'. This vision is not just about developing cutting-edge algorithms; it is fundamentally rooted in **harnessing the power of data and building a robust, sovereign digital infrastructure that enables data-driven innovation at scale**. At the heart of this endeavour are service providers, particularly those offering ICT services, whose role is not merely supportive but rather essential to realising Europe's digital future. Realising this digital ambition requires significant and sustained investment across infrastructure, access to high-quality data, advanced model development, as well ecosystem-building, for broad adoption across all sectors of the economy.

At its foundation, there lies a need for reliable and secure digital infrastructure. Europe currently faces a capacity gap in areas like data centers compared to regions like the US and China, even more so when considering the origin of the technologies inside said data centers, leading to a strong reliance on non-EU infrastructure that carries deep security and business continuity risks. Thus, addressing this gap and significantly increasing EU-based cloud and data center capacity is crucial for the competitiveness and sovereignty of the Union.

The Role of Service Providers

Hard infrastructure, including computing power and networks, is fundamental across the entire AI lifecycle, from training models on vast datasets, to testing, fine-tuning and then inference upon its deployment in real-world applications. Cloud Service Providers (CSPs) are the backbone of this infrastructure, offering the essential computing power, storage, and platform capabilities that developers and businesses need to build and deploy, among others, AI solutions.

Yet, beyond this foundational developmental role, service providers are also integral to enabling the operational data economy itself. They host, manage, and facilitate access to the data and services that fuel AI and data-driven innovation. The value generated by sharing data, either by increasing data volume or combining complementary data repositories, is significant for training sophisticated AI algorithms and creating innovative new services that were previously impossible. Examples like automotive companies sharing road condition data for autonomous driving, or the likes of the Airbus conglomerate combining production data with airline operational data for predictive maintenance, are demonstrations of the tangible benefits of data-sharing within ecosystems. Service providers offer the platforms and services necessary for this complex data exchange to occur securely and efficiently.

Moreover, service providers offering specialised capabilities like Edge Computing-, High Performance Computing-, or Quantum and Neuromorphic computing-as-a-Service are crucial for integrating these advanced technologies into something practical. This distributed infrastructure is the basis for developing 'advanced smart services' built around collaborative use-cases, like smart connected supply chains or mobility applications.

To foster European leadership, ensuring flexible and readily available access to resources is paramount. This requires not only secure and resilient value chains, but also a robust Single Market, and aligns with the European Commission's recent communication, emphasising the importance of deepening and completing the Single Market

to enhance its resilience and competitiveness, thereby **guaranteeing that businesses and citizens have the resources they need, when and how they need them**.

Gaia-X: The Framework for a Federated European Digital Ecosystem

Recognising the critical need for a trusted, interoperable, and sovereign digital infrastructure, the Gaia-X project brings together a broader community of users and providers, with the core mission of **creating the de facto standard to enable federated and trusted data and infrastructure ecosystems**.

Gaia-X's evolving ambition focuses on enabling data sovereignty through jointly approved policy rules on data service portability and interoperability. The project is fundamentally built on providing a regulatory and technical framework that empowers the interconnection of distributed services, thereby facilitating the creation of new markets based on interconnected resources. This dynamic ecosystem also naturally leads to increased adoption of cloud services and accelerated data-driven innovation as a valuable by-product, all while preventing the dominance of any single actor.

A key element of the Gaia-X framework is the joint creation of policy rules and functional and technical specifications by both digital infrastructure users and providers, both European and international. These rules cover critical areas for infrastructure, such as reversibility (portability of data and services), security of data (usage control), identity and access management (common identification), energy efficiency, transparency, GDPR-compliance as well as protection against non-European extra-territorial regulations, in its most stringent case.

This protection against unauthorised data access is precisely underpinning the sovereign data exchange paradigm currently en vogue. The Gaia-X Association thus also facilitates the creation of **Data Spaces**, such as those in the areas of aerospace, agriculture, energy, finance, health, tourism or manufacturing. These are a vehicle for data-value creation across trusted partners adhering to common standards and guidelines, operating mostly within a specific vertical but also capable of interconnecting. Unlike traditional data systems, data spaces aim to break siloes, so data can flow securely. This is why having a coherent governance is critical to the complexity of these interrelated data systems. And precisely why **Gaia-X's blueprint** can be used by different stakeholders to collaborate while maintaining control.

Thus, the value proposition of Gaia-X lies in its ability **to foster a trusted environment for interconnecting digital resources**, including those related to data-sharing. One of the most innovative aspects of Gaia-X is its programmatic nature, whereby an astute blend of various advanced technologies, the usage policies of these digital assets can be technically enforced. This is possible due to the flexibility with which Gaia-X was designed in mind. In particular, its minimal set of semantic and syntactic prescriptions provide a self-sovereign and distributed -yet coherent- operational model for trust, including the ability to define usage rules and policies in a programming language, allowing automatisation of checks.

The Symbiosis: Service Providers and the Gaia-X Ecosystem

Service providers are not just potential users of the Gaia-X framework; they are **active co-creators and catalysers**. As highlighted by the fact that many of Gaia-X's founding members are cloud users and providers, the latter are integral to defining the rules and specifications articulating the aforementioned trusted federated ecosystems. By way of interoperability and portability, enabled by common policy rules and specifications, also provides economies of scale for the many small- to medium-sized specialised service providers in Europe. By facilitating the creation of federated digital ecosystems, **Gaia-X opens up new market segments and collaborative opportunities** in various sectors. Concrete examples like the planned Aerospace data space led by Airbus (which aims to make critical parts of their data-sharing processes powered by Gaia-X by 2026, thereby having onboarded hundreds of suppliers) illustrate the scale of the opportunity for providers involved in building and supporting these data spaces.

As an example, CISPE is integrating the GXDCH into their ecosystem, in order to accelerate the adoption of Gaia-X labels. This further exemplifies the synergy between providers and the initiative, delivering enhanced transparency and trust in the European data infrastructure landscape. Many CISPE members are already showcasing compliant services in a Gaia-X-based catalogue and expect wider listings.

A Call to Action to Connect the AI Continent: Providers as Catalysts

The infrastructure and data ecosystems built through Gaia-X are direct enablers of Europe's *AI Continent* ambition. The European Commission's plan includes scaling-up public AI infrastructure through initiatives like the AI Factories and AI Gigafactories, integrating AI-optimised supercomputers, large data repositories, and other resources across this context.

Service providers are crucial partners in these large-scale projects, whether through public-private partnerships to implement the AI Gigafactories, or for the more general cloud and edge capacity across the full AI lifecycle. With this in mind, the proposed Cloud and AI Development Act aims to create conditions for the private sector to build out capacities, tackling existing gaps by incentivising investments to triple the current EU computing capacity within 5-7 years, removing regulatory obstacles, pursuing environmental sustainability, as well as connecting critical use-cases to cybersecure and sovereign EU-based technologies.

Furthermore, the expected Data Union Strategy (an update of the February 2020 European Strategy for Data) seeks to increase the availability of high-quality data for AI innovators by strengthening the data ecosystem, enhancing overall interoperability, and establishing **Data Labs** that link said AI (Giga)Factories and data spaces. In this data realm, service providers also play a key role in hosting, managing, and facilitating access to this data, as well as defining and implementing the governance and

compliance rules of both data and of data spaces (as an overarching environment). Likewise, the Apply AI Strategy targets the adoption of AI in key European sectors, often leveraging pre-existing entities like the European Digital Innovation Hubs. Providers that support these initiatives are meaningful enablers for businesses, particularly SMEs, to experiment with and ultimately deploy AI solutions, thus **contributing to the broad adoption necessary for the AI Continent**.

In essence, service providers implementing solutions within Gaia-X ecosystems — providing sovereign, secure, interoperable, and portable infrastructure and data services — are directly **contributing to the foundational pillars of the AI Continent: robust infrastructure, accessible data, and widespread AI adoption**, enhancing Europe's strategic autonomy. The opportunities are clear:

- Access to a growing market driven by increased cloud adoption and the demand for compliant, sovereign services.
- Significant business potential in building and supporting sector-specific Data Spaces.
- Participation in large-scale infrastructure projects like AI Factories and Gigafactories.
- Differentiation through verifiable compliance with trusted European standards.
- Economies of scale and new collaborative opportunities facilitated by a federated ecosystem.

The AI Continent ambition and the development of the European data economy presents an unprecedented opportunity for service providers to become essential partners in building an innovative and prosperous digital future for Europe, with increased levels of digital sovereignty. By engaging with Gaia-X (co-creating the standards, defining the policies, and building the federated infrastructure and data spaces that will enable the next wave of data-driven innovation and AI adoption), they can position themselves at the forefront of this transformation, securing their own growth while playing a vital role in ensuring Europe's digital sovereignty and leadership in the age of AI. **The time to act is now – to help build the federated cloud that powers the European AI revolution**.

Manuel Gutiérrez

Senior Digital Ecosystems Manager at Gaia-X

3.4.1

Meet our Evangelists!

Communications Team, Gaia-X

What is the Gaia-X Evangelist programme?

The Gaia-X Evangelist Programme is designed to empower passionate individuals who are eager to share their knowledge and enthusiasm about Gaia-X's mission and vision with the broader community. Evangelists are enthusiastic supporters who spread the word, build community, and help drive engagement and growth. Evangelists play a crucial role in expanding the reach of our message, fostering innovation, and driving the adoption of our solutions.

Discover our Evangelists!

Eight people have already joined the challenge alongside Gaia-X to promote and advocate its concepts:

Enrique Areizaga Sánchez, from Tecnalia, is a high-level researcher and was the CEO of GPON-Doctor Ltd, an SME specialising in fiber-to-the-home technologies. He has extensive experience in the telecommunications industry, with a particular focus on research and development (R&D) in broadband communications. He is highly involved in the Gaia-X Community, especially in Spain, collaborating with Lighthouse Projects, contributing to the organisation of Gaia-X Events, and and getting involved in extra projects that are connected to to Gaia-X such as DOME.

Kai Meinke is the Co-Founder and Business Lead at deltaDAO AG, a dataspace ecosystem operation, integration, and consulting company based in Hamburg, Germany. Kai is active in the Gaia-X open-source community across Europe, working on projects related to data sovereignty, data protection, and compliance. He emphasises the importance of Self-Sovereign Identity (SSI) and open identity ecosystems across domains, ensuring privacy and control over personal data and fair competition.

Tom Last is a tech entrepreneur, software developer and cofounder of tech startup elbtech. With an enthusiasm for innovative technologies and building meaningful solutions, he is dedicated to driving innovation in the tech community. Tom is currently working on the Health-X Lighthouse Project, where his team is developing a researcher portal and study catalog within the dataspace. Furthermore, he is an active participant in the Open Source Software community meetings and is a member of Gaia-X Hub Germany.

Thomas Komenda is a Business Developer & Product Owner at deltaDAO AG. His industrial engineering background shapes his understanding of data and the critical role of AI in manufacturing, mobility and other key sectors. Highly involved in the Gaia-X community, Thomas has contributed to several Gaia-X Lighthouse Projects including Pontus-X, ACCURATE, EuProGigant, Gaia-X4FutureMobility and COOPERANTS.

Christian Linder is a professional associated with the German Aerospace Center (DLR), contributing to innovative research and projects in the field of transportation systems and infrastructure. He has played a leadership role in initiatives like the Gaia-X Location Ecosystem, and is highly involved in the Gaia-X world, is part of the Gaia-X German Hub, the Gaia-X Lighthouse Project "Gaia-X 4 Future Mobility", and also involved with his teams in the Gaia-X working groups, helping to shape tomorrow's solutions.

Stefan Dumss, from Posedio, is a dedicated engineer, with a background in aeronautics, in both mechanical and industrial engineering who has been focusing on mechanical engineering informatics during his work at Technische Universität Wien. He is currently Senior Researcher at Posedio GmbH, a company specialised in cloud-native software development and digital transformation, where he continues the research towards data spaces which started for him with the Gaia-X Lighthouse Project EuProGigant.

Catherine Simonnin, from Orange, has been working in the IT architecture domain for the last 19 years in different domains and entities of Orange. She has always been looking for new technology challenges and innovative solutions even in the management domain. Catherine is nowadays a Tech lead Trust & Innovation Governance at Orange. Highly involved in Gaia-X, she plays a key role in the Gaia-X Policy Rules Committee where she leads the Conformity and Label Operationalisation sprint, helping to shape the future of Gaia-X, but also participating in Gaia-X Events as speaker.

Mario Drobics, from AIT Austrian Institute of Technology, is a leading expert in digital transformation and cooperative digital technologies. As the Head of the Competence Unit for Cooperative Digital Technologies at the AIT Austrian Institute of Technology, he focuses on advancing secure and intelligent systems in areas such as IoT, data analytics, and cybersecurity. He plays a key leadership role in the Gaia-X initiative in Austria. He is a member of the management board of Gaia-X Hub Austria, and also actively contributes to the Gaia-X Roadshow or to the Digital Product Passports project, as well as spreading the word about Gaia-X through University lectures, publications or the organisation of events in Austria.

What about you?

Are you interested in becoming the voice of a global community dedicated to creating interoperable solutions and shaping the future of the data-driven economy?

The call for Gaia-X Evangelists is still open, and the process is very easy!

You only have to send us an email to info@gaia-x.eu with information about your background, experience, and why you're interested in the programme.

All the requirements are also stated on the dedicated page of our website: https://gaia-x.eu/community/evangelist-programme/

3.4.2

The Gaia-X Academy starts its revolution!

Communications Team, Gaia-X

The Gaia-X Academy is evolving to better fit your expectations and ease your learning paths! And this revolution is based on two new concepts: streams and temporary access.

Gaia-X Streams

The Gaia-X Academy is introducing the concept of a **stream**, a **set of courses** (training along with tutorials) designed to **target one goal**: equipping you with all the necessary knowledge to be able to achieve a mission.

A **Gaia-X Certificate**, recognised and sharable on LinkedIn, will be issued for each stream if you reach the required score.

Four streams are already available on the platform:

- Gaia-X Functional Expert: be able to interact with Gaia-X partners and participate in working groups
- Gaia-X Functional Advisor: understand what Gaia-X Trust and Compliance mean to advise partners or customers
- Gaia-X Technical Advisor: technically guide your partners or customers on how to get Gaia-X Compliance
- Gaia-X Discovery: understand what Gaia-X is from a functional point of view (open to everyone - no certificate delivered)

A new course called "Welcome to the Gaia-X Academy" is also available to guide you through the Gaia-X Academy pages, helping you better understand how to use it.

Gaia-X Academy Temporary Access

The Gaia-X Academy is part of **Gaia-X members benefits**. Thus, Gaia-X members staff have access to **all the streams** published on the platform whereas other individuals can only browse some courses giving basic information and explanations about the association and its deliverables.

Nevertheless, this restriction can be frustrating because, as a Gaia-X member:

- Your **partners or suppliers** are not familiar with the Gaia-X Compliance you are requesting?
  - » Slowing down the integration or outsourcing of some applications
- You are part of a corporate group, and other **branches** cannot access Gaia-X members only content?
  - » Impeding the requirement to implement Gaia-X Compliance across all branches
- You cannot share Gaia-X courses within **your own member base**?
  - » Limiting your ability, as an association or Gaia-X Hub, to educate your member base
- **Your consortium partners** are not aware of what Gaia-X is?
  - » Disrupting your growth and onboarding plans for your project, ecosystem or data space

Or even, as **an individual**, you may want to gain valuable experience to share or to be recognised as a **knowledgeable professional** in terms of Gaia-X concepts.

We now provide a solution: a non-member Gaia-X Academy user can be granted **temporary access** to **one stream** for **one month**!

There are two options to do this:

1. **A Gaia-X member grants the access – already possible**

Based on their membership level, all Gaia-X members will automatically receive a certain number of free tokens each year on their membership anniversaries. A token can then be assigned to a non-member Gaia-X Academy user giving them access to the selected stream for the duration of one month.

2. **The temporary access is perchased - available soon**

Temporary access can also be perchased from one of our Resellers. Once done, the selected stream is also accessible.

If you want to know more about temporary access, feel free to contact the Gaia-X membership team: aisbl-membership@gaia-x.eu.

04

COMMUNITY

The Gaia-X Community plays an instrumental role in shaping our organisation. This section celebrates and highlights the invaluable contributions made by Gaia-X Hubs, Lighthouses and Members and showcases their stories, expertise, and the remarkable impact they have had on our journey. We will explore their innovative solutions, industry insights, and the collaborative projects that have propelled us forward. As we embark on this exciting journey of showcasing our community, we extend our heartfelt appreciation to every one of them. Their dedication, expertise, and unwavering belief in our shared goals have been instrumental in propelling us towards greater heights.

Members Stories
Hub Highlights
Lighthouse Updates
Ecosystems Insights

04

4.1.1 EIT Manufacturing

EIT Manufacturing

Johannes Hunschofsky, Managing Director; **Dr. Wolfgang Kniejski**, Senior Project Manager & **Lukas Schwab**, Project & Communication Associate at EIT Manufacturing East

EIT Manufacturing is a private-public partnership which was established in 2019 to enhance the competitiveness of the European manufacturing industry. As part of its digital transformation services, EIT Manufacturing is involved in multiple Gaia-X compliant data spaces projects.

Data sharing is particularly important for all manufacturing stakeholders, especially for SMEs, as it unlocks the potential for synergies and shared benefits in data cooperation ecosystems. These ecosystems bring together a range of stakeholders wishing to exchange data and complementary services. It is of utmost importance to understand what interests and benefits companies can derive from their participation in the ecosystem and how they can contribute to and benefit from trustworthy and secure data exchange. Therefore, in our data space projects we have already developed manufacturing-specific use cases, illustrating how the various participants extract values, especially in data-driven business models.

Now is the time for businesses to align with Gaia-X's vision of a secure and interoperable digital economy. Therefore, EIT Manufacturing did not only successfully contribute to the development of a Gaia-X compliant technical architecture, moreover, we developed the concept for establishing a so-called EuProGigant federator to orchestrate data cooperation. This entity shall be created in 2026, offering access to the trusted data exchange and, in addition to data sharing capabilities, also allowing the offering of data-based services. It will enable, for instance, CO2eq footprint estimation as well as templates for sharing data without leaking sensitive IP. Consequently, smart and sovereign use of data will positively impact the manufacturing sector.

Figure 1: Data sharing creates values for its stakeholders; Source: EIT Manufacturing East GmbH©

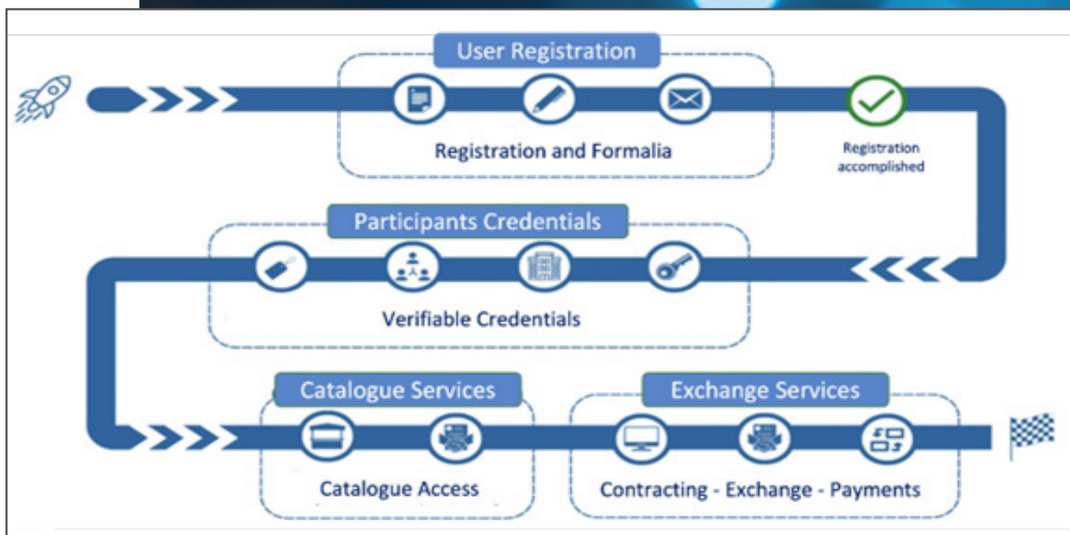


Figure 2: Data sharing processes; Source: Wolfgang Kniejski©

Johannes Hunschofsky:
Managing Director at EIT Manufacturing East

Wolfgang Kniejski:
Senior Project Manager at EIT Manufacturing East

Lukas Schwab:
Project & Communication Associate at EIT Manufacturing East

4.1.2 TU Wien

TU Wien

Roman Gehrer, Research Associate at TU Wien; **Dr. Claudia Schickling**, Head of TU Wien Pilotfabrik 4.0 & **Lukas Schwab**, Project and Communication Associate at EIT Manufacturing

TU Wien (Technische Universität Wien), established in 1815 is one of the largest and most prestigious technical universities in Europe, particularly known for its cutting-edge research, innovation and academic programmes with impressive international graduates. It is involved in many initiatives to enhance digitalisation.

TU Wien is in a key position for moving data-sharing initiatives in Austria forward. Amongst its current initiatives is the AMIDS (Austrian Manufacturing Innovation Data Space) project which drives collaboration between three established pilot factories: TU Wien Pilotfabrik Industrie 4.0, LIT Factory JKU Linz and smartfactory@tugraz.

Recently, AMIDS has strengthened its ties with the Gaia-X community by participating in multiple events such as the Gaia-X summit in Helsinki and in the Tech-X and Market-X conference in València. Focusing on the Tech-X and Market-X event, our colleagues shared developments of digital product passports aligned with Gaia-X compliance. The current project progress allows users to leverage the product passport technology for sustainable product lifecycle management. The use cases range from energy consumption in production to carbon footprints of products and recycling purposes. This is especially important as the manufacturing industry is facing stricter sustainability requirements. Furthermore, the technology can be used to assess the functionality and quality of a final product which reduces reworking efforts or compensation payments. Further highlights include the successes of the ecosystem surrounding EuProGigant in the hackathon competition as well as winning the light-hearted Gaiamon competition.

Moving forward AMIDS will keep sharing its developments with the Gaia-X community. TU Wien will further proceed with its digitalisation and innovation efforts by continuing its successful track record of data sharing projects.

Successes at the Market-X and Tech-X conference by Gaia-X AISBL

AMIDS Austrian Manufacturing Innovation Data Space

TU WIEN TECHNISCHE UNIVERSITÄT WIEN

4.1.3 Dawex

AI-Powered Semantic Hubs: Automating the Assessment and Compliance of Data Conformity with Standards

Frédéric Bellaiche, PhD, Vice President Technology & Research at Dawex

In an increasingly interconnected world, the ability to exchange and understand data across diverse systems and sectors has become essential. While technical solutions have made it possible to transmit data seamlessly, ensuring that this data retains its intended meaning—known as semantic interoperability—remains a significant challenge.

AI technologies now offer promising solutions to automate and enhance semantic interoperability, enabling more effective data collaboration and compliance with evolving standards. This article explores the role of AI-powered Semantic Hubs in transforming data spaces, highlighting their potential to bridge semantic gaps and drive smarter, more reliable data ecosystems across Europe and beyond.

Semantic Interoperability: Ensuring Meaningful Data Integration Across Domains

Semantic interoperability enables systems, organisations, and domains to exchange data with a shared understanding of its meaning. Unlike technical interoperability, which ensures data can be transmitted between systems, semantic interoperability maintains the integrity of that data's meaning across different contexts. This is especially critical in fields such as healthcare, energy, transportation, construction, and industry, where the same terms can be interpreted differently. Without semantic interoperability, integrating data from diverse sources risks misinterpretation, flawed insights, and operational mistakes.

In today's data-driven world, semantic interoperability is essential for enabling effective collaboration, innovation, and automation. By ensuring a common understanding of concepts, relationships, and data structures, it lays the groundwork for scalable AI applications, cross-domain analytics, and smarter digital services.

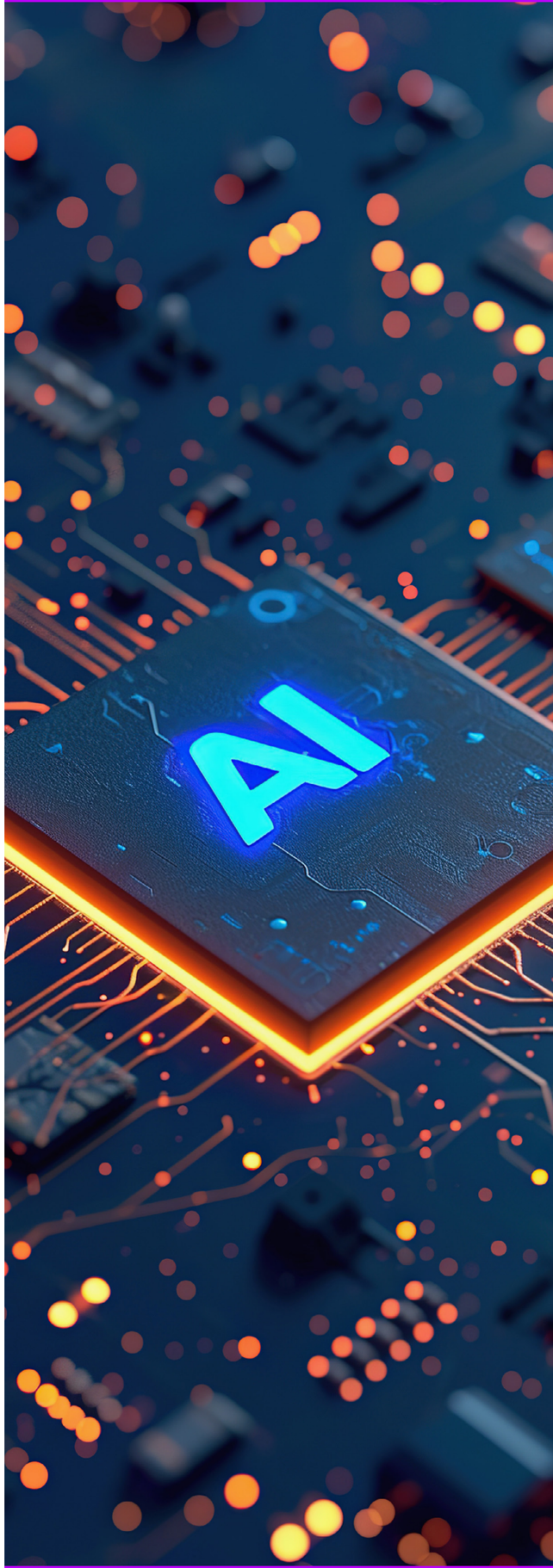
AI: A Catalyst for Semantic Interoperability in European Data Spaces

Artificial Intelligence is becoming a key enabler of semantic interoperability, helping unlock the full potential of data reuse across European Data Spaces. Although legal, organisational, and technical interoperability have advanced significantly, semantic interoperability remains the essential layer that ensures data retains its meaning when exchanged between systems and organisations.

In the EU, **legal interoperability** has already been established through frameworks like the Data Governance Act (DGA, 2023) and the Data Act (DA, 2025). These regulations ensure that organisations operating under different legal systems can collaborate, thanks to aligned policies and legislation that facilitate cross-border and cross-sector data sharing.

Organisational interoperability has advanced through the work of the Data Space Support Center (DSSC), who introduced the role of Data Space Governance Authority (DSGA) to orchestrate Data Space in this perspective. This dimension ensures that identities and claims are properly verified between entities, and that there are clearly defined agreements, responsibilities, and coordination mechanisms in place.

Technical interoperability has been reinforced by initiatives like Gaia-X, Trusted Data Transaction, and the Data Space Protocol (DSP), which provide robust standards for seamless communication between IT systems. These include protocols,



APIs, data formats, and security measures, ensuring that systems can reliably exchange data through agreed-upon standards.

However, **semantic interoperability** — the most complex layer — is essential for truly interoperable data spaces. It involves ensuring that data exchanged retains its original meaning, requiring standardised vocabularies, metadata, and ontologies. AI technologies can bridge gaps between data models, support semantic enrichment, and facilitate meaningful, machine-readable cross-domain collaboration.

Towards AI-Powered Semantic Hubs for Data Spaces

To ensure that data within European Data Spaces is not only exchanged but also meaningfully interpreted and compliant with relevant standards, AI-powered automation is increasingly important. Therefore, there is a need for a solution such as an AI-Powered Semantic Hub for Data Spaces, designed to automate the evaluation and enforcement of data conformity through advanced AI models and intelligent control mechanisms.

At the heart of the system is a Semantic Hub that harmonises data from diverse, interconnected data spaces with established cross-sector standards. By integrating advanced technologies—including Generative AI, Large Language Models (LLMs), and semantic tools such as OWL, RDF, and SPARQL—the hub is able to interpret, align, and transform data according to standardised semantic frameworks.

From training models to live deployment, the AI-Powered Semantic Hub serves as a link between raw, often heterogeneous data and structured, interoperable information. It provides a suite of automated compliance features, including:

- Conformity checks to validate data complies with established semantic rules.
- Structural modification to standardise data formats and relationships.
- Data transformation to unify diverse datasets into harmonised structures.
- Verification and gap analysis to detect inconsistencies and identify areas for enhancement.

The AI-Powered Semantic Hub aligns with the European Commission's overarching ambitions by offering practical value and actionable benefits tailored for Data Space orchestrators, such as:

1. **Creating a common language** within your data space.
2. **Removing frictions** for seamless data exchange.
3. **Facilitating interoperability** with other data ecosystems.

The AI-Powered Semantic Hub approach not only streamlines data integration across domains but also ensures reliability, scalability, and semantic integrity in dynamic, cross-sectoral environments.

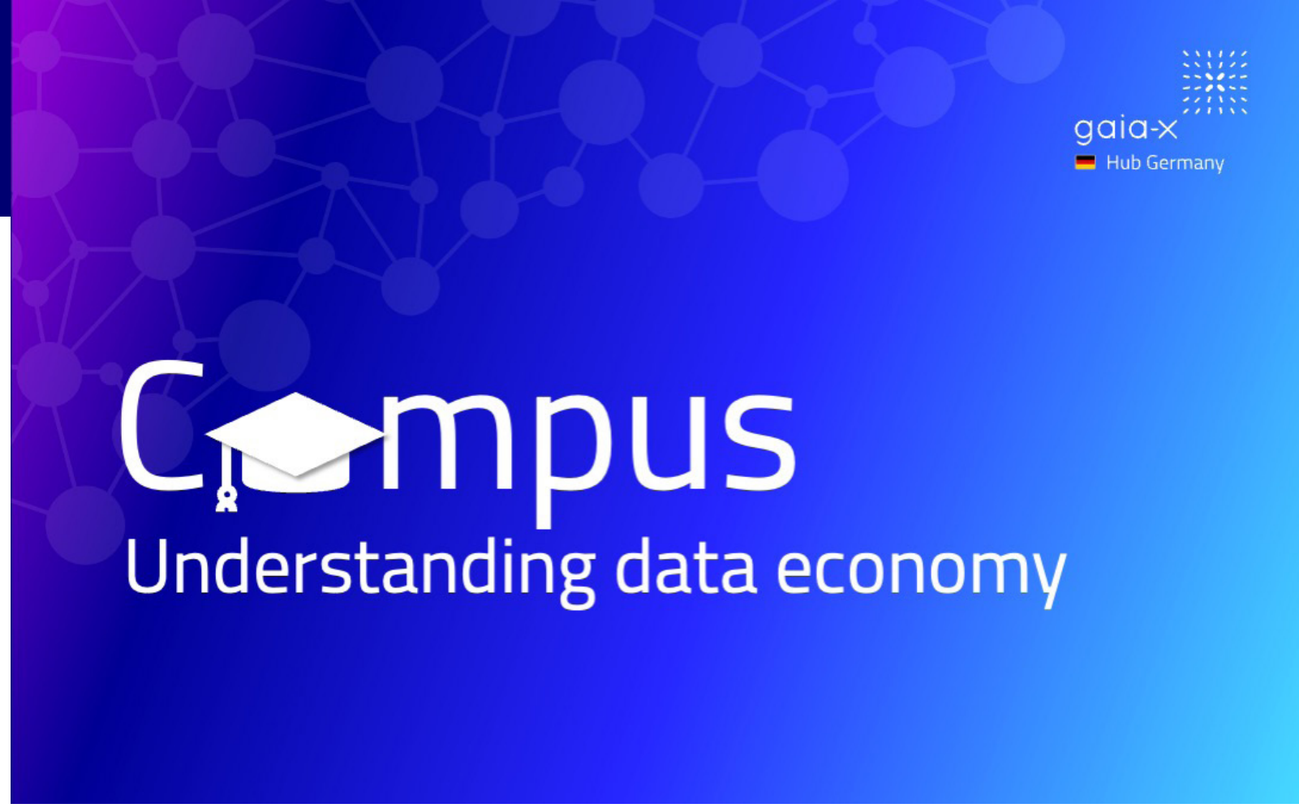
The Gaia-X initiative fosters trust in the digital ecosystem by ensuring that systems not only connect but truly understand each other, speaking a shared language that builds confidence through clarity and mutual comprehension.

4.2.1 Hub Germany

Focus on data spaces and data ecosystems: Gaia-X Hub Germany launches online learning offer

Thomas Sprenger, Press Speaker and Strategic Communications Officer at Gaia-X Hub Germany

Press Release Gaia-X Hub Germany



Munich, March 31, 2025 - The Gaia-X Hub Germany has launched a free online campus on the data economy. Interested parties can learn the basics of the data economy as well as the concepts of data spaces and data ecosystems. The online courses are available free of charge and without registration at https://gaia-x-hub.de/en/campus-en/ in English and German. The campus is aimed at interested parties from politics, administration, science, and business who want to familiarise themselves with the topic without in-depth IT knowledge.

"Our readers' time is short. That's why the Campus offers a quick, easy-to-understand and well-founded overview of the data economy," explains Jan Fischer, Project Manager of the Gaia-X Hub Germany. "We have deliberately avoided complicated technical terms and instead rely on clear language and illustrative examples," says Fischer.

Easy-to-understand introduction to creating value from data

Unlike comparable offerings, the Campus does not rely on video courses with quiz questions, but on multimedia-enriched texts. "Our experience shows that texts are an effective way for a specialist audience to quickly familiarise themselves with a complex topic," says Fischer. "Users can read our lessons directly on our website, follow them on LinkedIn or download them as a PDF."

The campus starts with three lessons as an introduction to the data economy.

1. Lesson 1 explains the European data dilemma and Europe's digital backwardness.
2. Lesson 2 presents data spaces as Europe's answer to the data age and shows how companies can use them to exchange data confidently and securely.
3. Readers can find out why a European network of interoperable data spaces is needed in Lesson 3.

Content cooperations

The German Gaia-X Hub is cooperating with other organisations in the data community on this educational offer. "Our colleagues from the newly founded Swiss hub want to translate the campus courses into their national languages," explains Fischer. Other cooperation partners for the launch are the Gaia-X umbrella organisation in Brussels, the Gaia-X funding project MERLOT and the Institute for Applied Systems Technology (AST) at Fraunhofer IOSB.

Data economy as the key to Europe's future

The campus comes at a crucial time. Current studies show that 80 percent of industrial data in Europe remains unused. At the same time, the USA, and China alone account for 90 percent of market capitalisation in digital platforms and 94 percent of investor capital for AI start-ups. The path to a sovereign European data economy lies in the secure exchange and shared use of data.

"Progress and growth are increasingly dependent on our ability to exchange and share data," emphasises Fischer. "The answers that

organisations find to this challenge will have a significant impact on their success in the coming years."

About the Gaia-X Hub Germany

Since its foundation in 2020, Gaia-X Hub Germany has been the central point of contact for anyone interested in exchanging data in open data ecosystems. Its aim is to support the development of an international data economy that is in line with European values and economic structures. The Gaia-X Hub promotes the development and use of Gaia-X in Germany. As a networking platform, the Hub brings together representatives from science, business, politics and society to exchange experiences, gain insights and jointly put them into practice. In addition to the German Gaia-X Hub, there are currently fourteen other national hubs within the EU and three outside Europe.

For further information please contact:

Gaia-X Hub Germany

c/o acatech - German Academy of Science and Engineering

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80333 Munich

Thomas Sprenger

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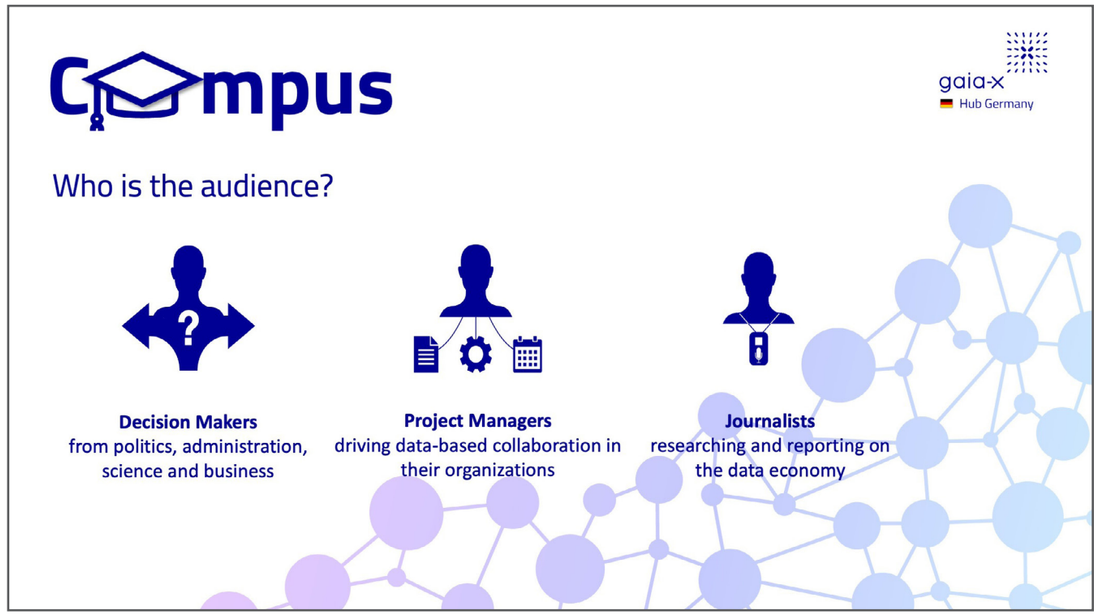
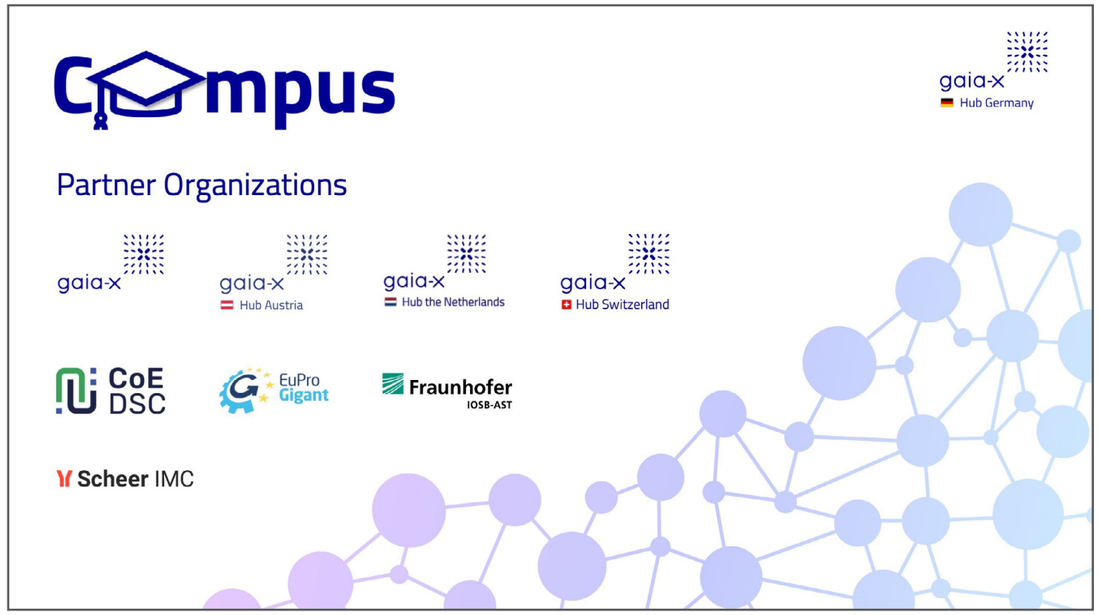




4.2.2 Hub Germany

Cheat sheet for successful Data Space projects

Proven methods for planning a DataSpace project

Felix Kappert, Community and project manager & **Michael Ziegelmeir**, Scientific Policy Advisor at Gaia-X Hub Germany

Source: https://unsplash.com/es/fotos/una-pila-de-bloques-de-colores-sentados-encima-de-una-mesa-6-hyukEpsyI

Planning a Data Space project requires clear answers to fundamental questions right from the beginning. Project managers and stakeholders should know early on which tasks need to be finished in advance, which external foundations are available and what aspects are not part of the project. They should also look at the 'deal-breakers' that could put the success of the project at risk if they are not given enough thought. So, you can make sure you are on track for a successful Data Space project. This 'cheat sheet' depicts what to focus on when planning a data space. It is based on the Data Space Building Blocks (DSBBs) of the Data Space Support Centre (DSSC). The standardised vocabulary and co-creation method of the DSSC make it easy to keep the project going.

1. Industry knowledge and stakeholders

When planning a Data Space, there are a few things to think about first. So, what is the big picture here? What are the main themes and what are we aiming to achieve? And what are the growth and profit goals? In order to provide answers to these questions, it is essential to possess in-depth knowledge of the industry and the people within it. The 'Use Case Development' and 'Business Model Development' building blocks help to develop key use cases. Usually, it is best to make concrete use cases the main focus of your planning, as they are basically the heart of the project.

A 'coalition of the willing' - motivated stakeholders who want to use data and services together - is essential. All participants need to understand the purpose of the Data Space, clarify their motivations and define common principles. A consortium agreement with clear objectives and division of labour will facilitate collaboration.

The development of one or more use cases should also be part of these initial considerations. A stakeholder analysis is essential. It will identify the needs and interests of the stakeholders. You can either focus on one use case that benefits everyone, or develop several, each of which involves the majority of stakeholders and can be implemented in practice.

2. Operators and governance

The way the Data Space is organised and how it is governed needs to be thought through from the beginning. The 'Organisational Form and Governance Authority' building block looks at the federators – the actors who provide essential services for the operation of the Data Space.

Separating an operator into a legal entity creates reliability and ensures basic functionality. There are two questions at the heart of this:

- What legal form should the operator organisation have?
- How will the governance of the Data Space be organised?

Legal, regulatory and funding issues play a crucial role. The answers to these questions will have a big impact on how sustainable the Data Space is, how legally and commercially sound it is, how profitable it is, and how involved members are in its management and operations. These considerations should be included as milestones in the project planning.

Other relevant building blocks are 'Participation Management' and 'Contractual Framework'. They regulate the management of participants and the arrangements for data exchange. However, these issues are not deal-breakers and should therefore not be considered in the initial project planning.

3. Business models and use cases

The building blocks 'Business Model Development' and 'Use Case Development' are closely linked, as the business model of the Data Space forms the basis for the development of use cases. Depending on the business model, different use cases can be realised within a Data Space. This dependency has to be taken into account, which is why a further application strategy should be considered already in the project planning phase.

There's a general distinction that needs to be made here: the business model of Data Spaces has the value proposition of enabling data exchange and the resulting added value for the stakeholders involved. Use cases are specific applications of a Data Space where value is created through the shared use of data.

There are two ways to develop use cases. The best use case is one that adds value for everyone on the project. Alternatively, multiple use cases can be developed that are unique to the industry and ensure long-term participation. A consortium agreement defines the objectives and framework of the collaboration.

Use case development raises the question of What is the data product and who has access to it? These issues are addressed in the Data Product Development and Data Space Intermediary building blocks, but do not need to be resolved immediately.

4. Interoperability and data models

A key element of Data Spaces is interoperability. Semantic standards and standardised data models enable data to be exchanged and processed across systems. The Data Models and Data Exchange building blocks address these key technical aspects.

From the beginning, we need to agree on what the data and services are called and choose an open format for exchanging them. The fact that they are used in so many different ways and by so many different industries makes it impossible to have one standard. So, each project has to come up with its own solutions. It is crucial to really know your industry and have a clear idea of what you are trying to achieve.

Having a shared vocabulary makes it easier for experts to talk to each other and avoid any misunderstandings.

5. Legal framework

In addition to the organisational preparations, the legal framework of a Data Space project requires special attention. It is essential to consider national, European and industry-specific regulations from the start, to avoid problems later on. The following goals should therefore be set for the preparation of the 'Regulatory Compliance' and 'Contractual Framework' building blocks:

An initial screening of current and upcoming laws should be carried out within the first six months. This involves regulations that could influence the Data Space and data exchange.

The next step is to analyse cross-sector and European regulations. Finally, sector-specific features – such as the handling of sensitive data – must be integrated into the architecture and business model. European regulations, such as the Data Act, which makes the provision of data mandatory for users and third parties, must be emphasised. It is clear that, in addition to this obligation, new functions and services can be developed through access to data.

6. Technical preparations

The technical building blocks are the core of a Data Space. The planning must be structured and clear, even if the technical implementation usually begins later.

Open source software is a central part of this. There are lots of free Data Space options out there. The use of open source should therefore be familiar. Forums and networks offer valuable support.

The DSSC's Data Spaces Blueprint and Toolbox provide clear orientation. The goal is a first functioning version of the Data Space architecture ('Architecture V1.0'). This includes the Technical Building Blocks of the DSSC Blueprint from the three areas of 'Data Interoperability', 'Data Sovereignty & Trust' and 'Data Value Creation Enablers'. These address the exchange of data, digital identities and access management, among other things.

7. Conclusion

A structured approach is key to the successful planning of a Data Space project. Every aspect must be clearly defined, from industry knowledge and stakeholder analysis to organisational structure and governance to technical and legal framework conditions. The Data Space Building Blocks (DSBBs) of the Data Space Support Centre (DSSC) provide invaluable guidance.

Concrete use cases and a 'coalition of the willing' are essential. Interoperability and standardised data models must be taken into account from the outset. The legal framework, including national and European regulations, must be analysed at an early stage. With clear planning and the DSSC's co-creation method, you can set the course for a successful project.

Read the Data Space Project Checklist.

4.2.3 Hub Germany

The EU Data Act – Challenge and Opportunity for the European Data Economy

Marco Mitrovic, scientific advisor Gaia-X funding project; **Dr. Abel Reiberg**, project lead and coordinator & **Dr. Karl Wienand**, scientific advisor Gaia-X funding project at Gaia-X Hub Germany

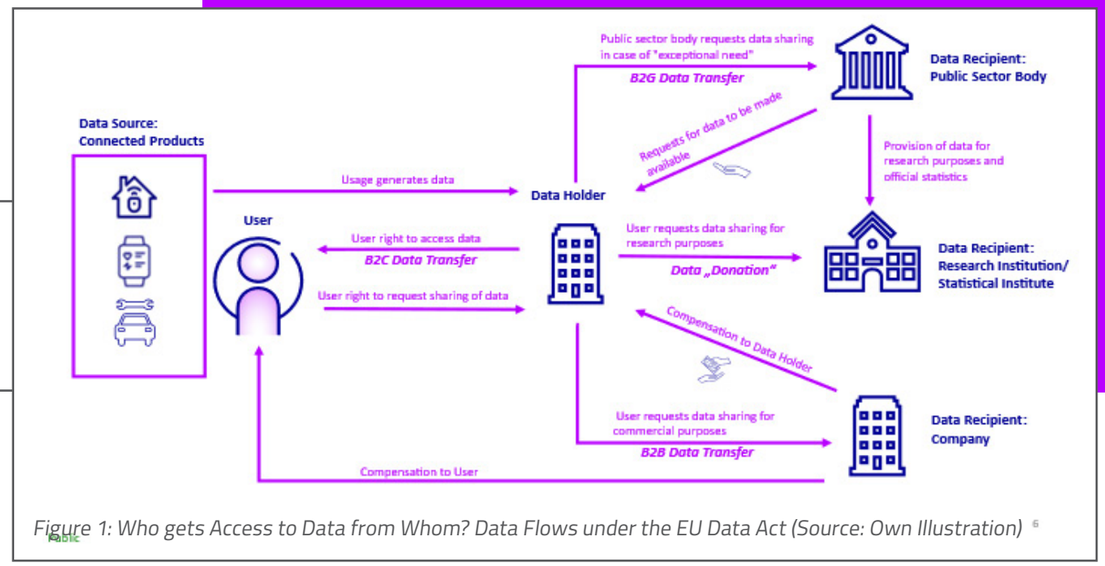


Figure 1: Who gets Access to Data from Whom? Data Flows under the EU Data Act (Source: Own Illustration) [6]

From September 2025, the EU Data Act will become fully applicable. This new regulation marks a turning point for Europe's digital economy. With the Data Act many companies will be legally required to provide access to user-generated data, not only to users themselves but also to third parties and public authorities under specific conditions. While the Act introduces new obligations, it also opens the door to innovation, collaboration, and greater data sovereignty.

This article offers a brief overview of selected topics covered in a recent four-part blog series by the Gaia-X Hub Germany. In response to numerous questions from the community, the series explored different aspects of the Data Act, ranging from B2C and B2B data access rights to public-sector data requests and interoperability rules. The blog posts have since been expanded and compiled into a comprehensive paper: "The EU Data Act and its impact on data spaces."

Unlocking the Value of Data

Across industries, connected devices, from smart thermostats to industrial machinery, generate vast amounts of data. Yet today, up to 80% of this data remains unused. The EU Data Act aims to change that. By mandating access to usage data, it seeks to unlock untapped value and foster new services, business models, and research opportunities. Manufacturers and service providers must design their products and platforms to ensure direct access to data by default ("data accessibility by design") or be prepared to provide it upon request.

Empowering Users and Encouraging Competition

The Data Act places users at the centre of data sharing. They will have the right to access the data generated by the devices they use, and to share that data with third parties of their choice. This creates opportunities for innovative data-based services, from personalised fitness apps to aggregated energy insights. Importantly, dominant digital platforms defined as "gatekeepers" under the Digital Markets Act are excluded from receiving such third-party access to avoid further concentration of data power.

Public Interest and Crisis Response

In times of crisis, such as natural disasters or pandemics, public authorities often rely on data held by private companies. The Data Act introduces clear rules for such business-to-government (B2G) data sharing: in cases of "exceptional need," authorities can request access to relevant data. This could include anonymised location data for monitoring public health or infrastructure data during floods. Companies must respond promptly or justify refusal, ensuring that public interests can be served more efficiently and effectively.

Data Spaces: A Practical Implementation Path

To meet the new legal requirements, organisations can turn to data spaces, federated, interoperable data ecosystems that ensure secure, transparent, and sovereign data exchange. Data spaces, as promoted by the Gaia-X initiative and numerous EU-funded projects, offer standardised interfaces, catalogues for data discoverability, and built-in governance frameworks. They reduce compliance costs, support interoperability, and facilitate data access without sacrificing control.

In B2G contexts, data spaces can streamline emergency data requests by pre-defining access rules and integrating trusted intermediaries such as data trustees. For cloud service providers, the Data Act also introduces strong rights for customers to switch providers easily and cost-effectively, further reinforced by interoperability obligations and transparency requirements.

Conclusion

The EU Data Act represents a bold step towards a fair, open, and innovation-driven data economy. It introduces challenges, particularly in terms of technical implementation and compliance. But it also offers clear incentives: new markets, improved crisis response, greater user empowerment, and less dependency on dominant players. For those prepared to engage with the emerging data infrastructure, particularly through data spaces, the Data Act is not just a regulatory hurdle, but a strategic opportunity.

Read the full paper: "The EU Data Act and its impact on data spaces" by the Gaia-X Hub Germany to explore the implications in detail.

4.3.1 COOPERANTS

COOPERANTS – The Gaia-X Lighthouse Data Space for the Aeronautics and Space Industry

Caroline Lange, Project Manager Digitalisation at DLR Insitute of Space Systems &
Julian Hofhans, Project Manager at Aviaspace Bremen e.V.

For three years now, COOPERANTS has been on a mission to revolutionise digital collaboration in the aeronautics and space industry. As a fully Gaia-X-compliant ecosystem, it unites industry leaders, SMEs, and research institutes to break down data silos and create a seamless, interoperable future.

The challenge

The industry is still stuck in outdated workflows - PDFs, manual data transfers, countless in-person meetings. The lack of trusted and structured data exchange turns collaboration into a real challenge. Add to that the complexity of export control regulations, IT security requirements, and the need for AI-driven automation, and it's clear: the status quo is slowing innovation down.

The COOPERANTS solution

COOPERANTS has changed the game. The consortium has built a fully federated, open-source data space where every participant retains full control over their data. This means: No more wasted effort on redundant tasks, no more interoperability headaches, and no more barriers to entry for smart digital services. With a shared governance framework and a marketplace for innovative solutions, COOPERANTS enables partners to connect, collaborate, and create value.

The Concept

COOPERANTS began in 2020/2021 as part of the Gaia-X use case "Digital Aeronautics and Space Collaboration Labs" (DASCLab) in the Federal State of Bremen. What started as a project aimed at tackling digital collaboration challenges within DASCLab has since grown into a lighthouse initiative under Gaia-X, putting COOPERANTS on the map as a game-changing solution in the aerospace sector.

Over the years, we've been all over the globe, showing off COOPERANTS at major industry events like the International Astronautical Congress (IAC), the German Aerospace Congress (DLRK), Space Tech Expo, and Hannover Messe, just to name a few. COOPERANTS has established a global audience, built relationships with experts and partners, and attracted fresh collaborators from around the world.

In mid-2024, we hit a major milestone with the Go-Live of the COOPERANTS data space Demonstrator, which can be found under federator.cooperants.info. By the end of 2024 and into early 2025 we showcased the successful purchase of COOPERANTS Smart Services on our marketplace and demonstrated how they're executed and used by a variety of stakeholders.

Following its recognition as a Gaia-X Lighthouse Project in 2024, COOPERANTS has now also been officially acknowledged as a Gaia-X Lighthouse Data Space.

Building a Community of Innovation

Over time, COOPERANTS has become the home of a vibrant community made up of engineers, researchers, IT professionals and industry experts, that's actively involved in shaping the project's future. This community keeps pushing

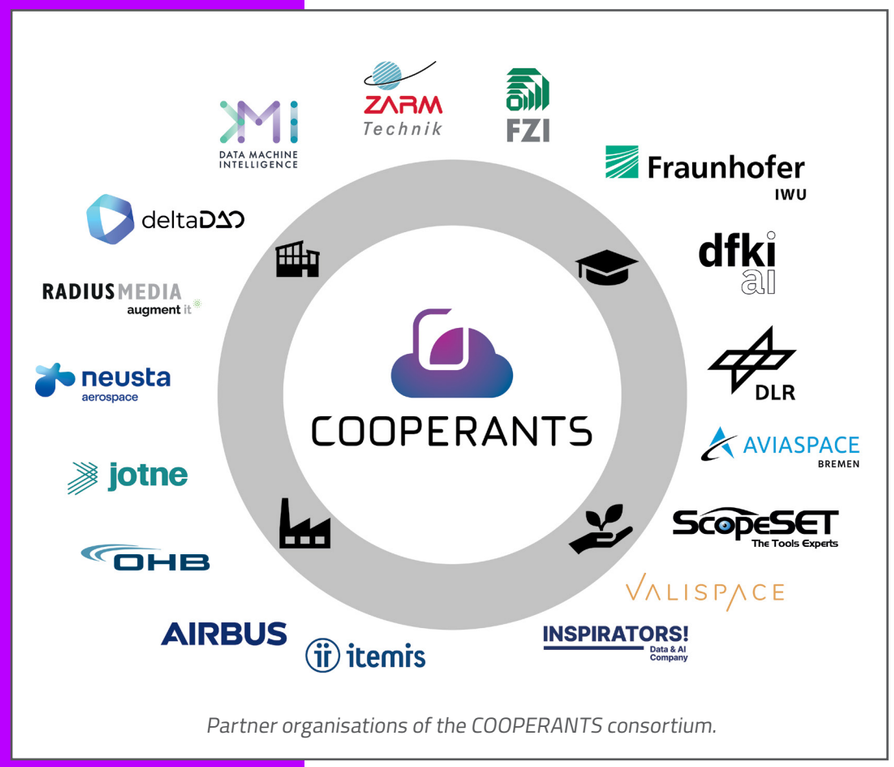
Group photo:participants of the COOPERANTS Perspektivforum 2025 at Airbus Bremen site.© AVIASPACE BREMEN e.V.

innovation forward, sharing valuable insights, through regular roundtable discussions and joint activities. Together, we're driving digital transformation, sparking new business models, and setting fresh standards for the aerospace industry.

Future Perspectives: Shaping the Digital Revolution Together

With the foundation firmly in place, the focus is on scaling up: expanding the data space, onboarding new partners, and driving even more real-world applications. The aerospace industry is evolving fast, and COOPERANTS is here to make sure it doesn't get stuck in the past. Ready to join the digital revolution? Let's make the future of aerospace collaboration happen—together.

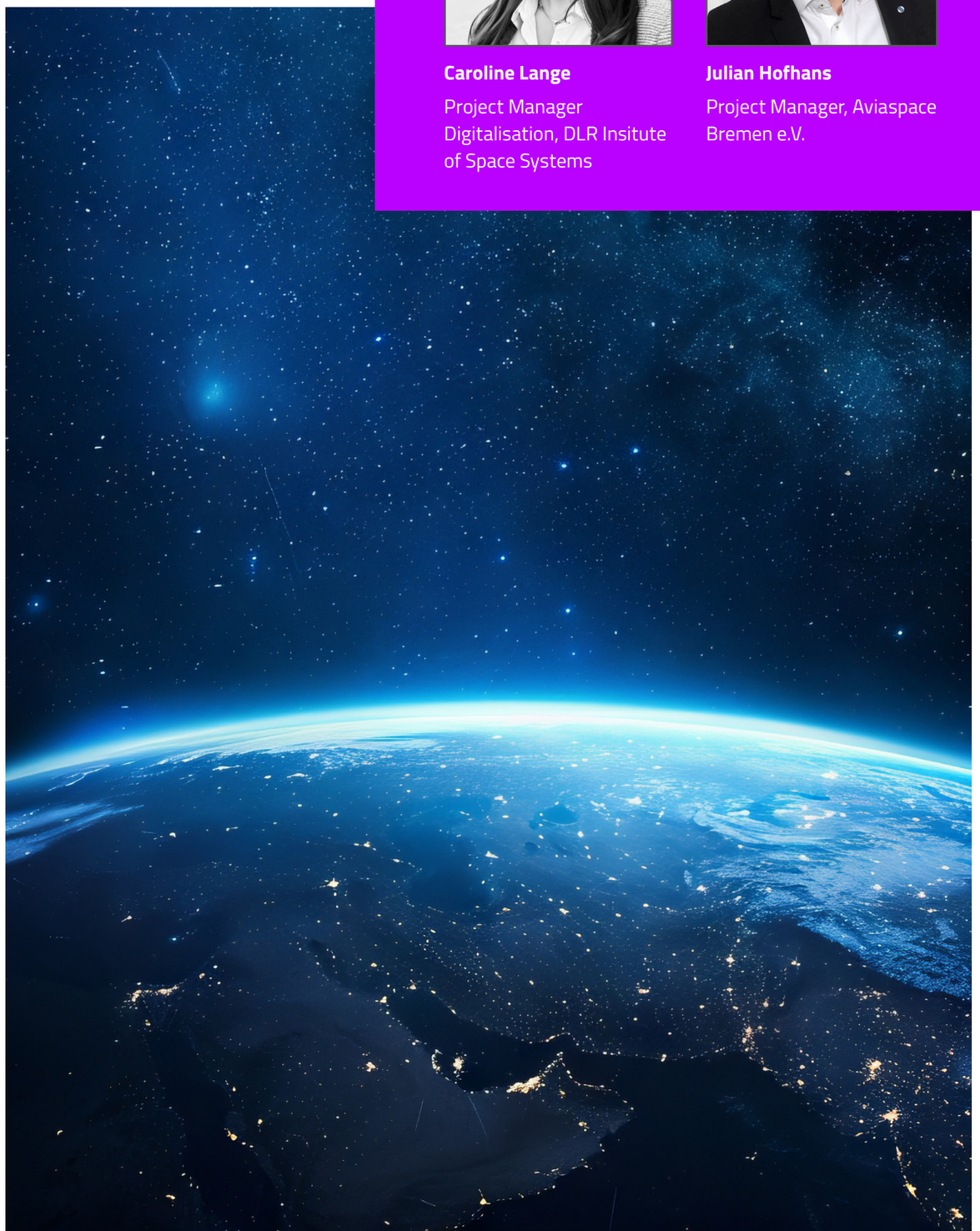
Interested? Contact us!



Partner organisations of the COOPERANTS consortium.

Caroline Lange
Project Manager Digitalisation, DLR Insitute of Space Systems

Julian Hofhans
Project Manager, Aviaspace Bremen e.V.



Flex4Res – Boosting supply chain resilience

Emmanouil Bakopoulos, Research Engineer at Laboratory for Manufacturing Systems & Automation (LMS) at University of Patras, Greece; **Kosmas Alexopoulos**, Research Engineer at LMS & Department of Digital Industry Technologies, National and Kapodistrian University of Athens, Greece & **Katharina Lange**, Communication Manager at EIT Manufacturing Central gGmbH, Germany

Today's supply chains are complex and global. This makes them vulnerable to disruptions from pandemics, natural disasters, cybersecurity attacks or economic crises. However, companies need to consistently deliver high-quality products while also minimising non-value-adding activities. Increasing production flexibility and supply chain resilience helps them stay competitive.

One reason for limited flexibility is a lack of efficient, trustworthy means for data exchange along the supply chain. There is a need to understand when changes lead to chaotic behaviour with far-reaching consequences. This is where the project Flex4Res comes into play. Flex4Res aims to enhance the reconfigurability of production services, thus strengthening the flexibility and the resilience of the European manufacturing industry.

Open platform

The project offers an open platform for secure and sovereign exchange of data and services along the supply chain, enabling the reconfiguration of production networks to support resilient manufacturing value chains [1]. Two toolboxes, one for resilience assessment and one for reconfiguration strategy, enable stakeholders along the supply chain to respond to different types of disruptions by quickly reconfiguring supply chains and production systems.

Based on standards

The data spaces developed in the project enable secure, sovereign exchange of data and services across the manufacturing ecosystem. Companies can publish or consume data and services in Pontus-X, which is based on the latest Gaia-X framework. This ensures interoperability and trust [2]. Additionally, they can download and execute services locally in their compute-to-data (C2D) environment. Within this setup, services can access and process data from local sources, such as machines and internal databases modelled as standardised Asset Administration Shells (AAS), as well as remote data made available through IDS or Pontus-X data spaces. This hybrid approach supports resilience through collaboration and control.

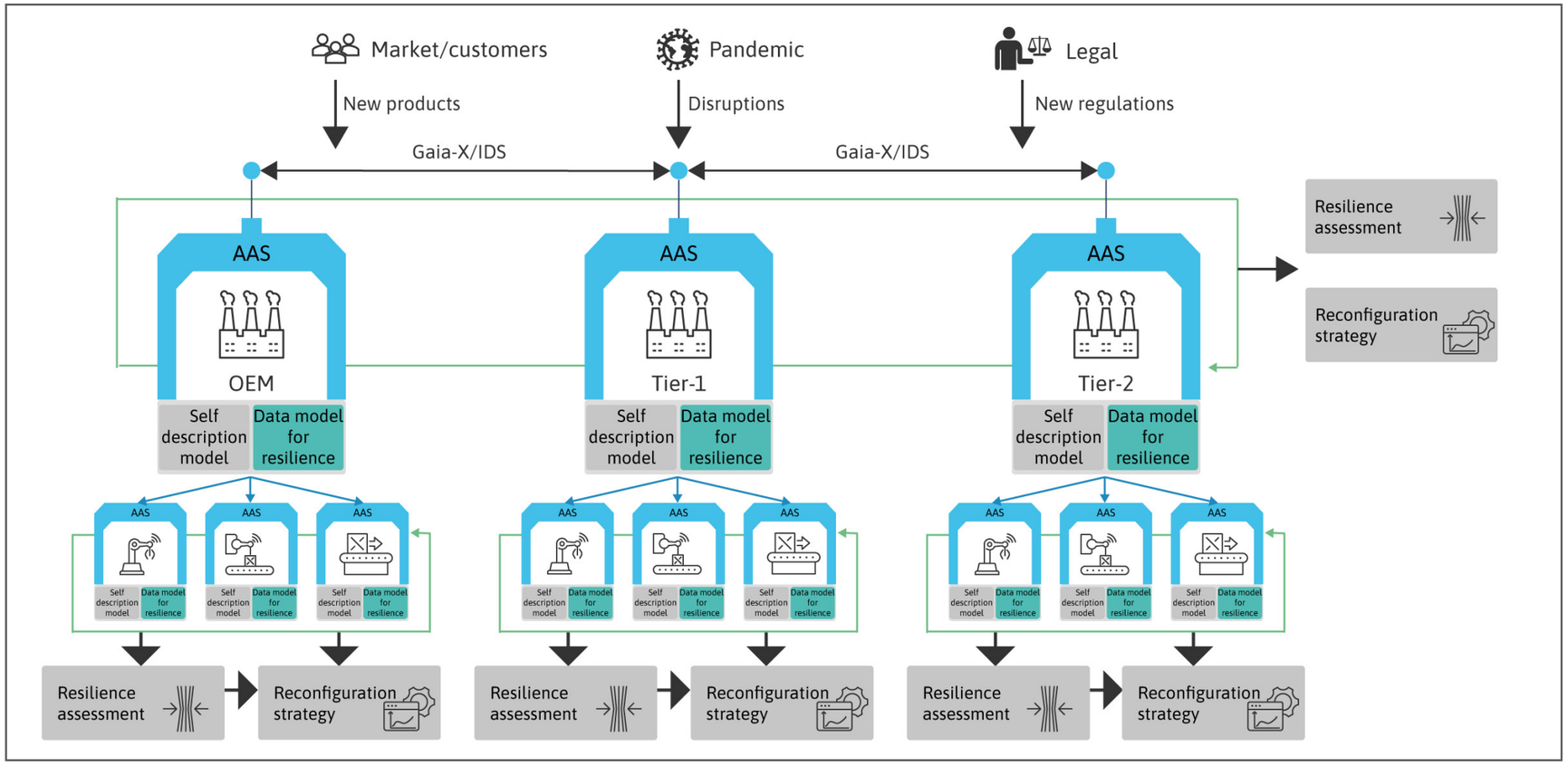


Figure 1: The Flex4Res concept

Resilient scheduling

One use case of the project is with Sidenor Group, a steel manufacturer producing a diverse portfolio of steel products. Their facilities include enterprise operations, warehouses and manufacturing plants, all integral components of their steel production infrastructure.

A production planner in one of Sidenor's plants faces the challenge of updating schedules due to

unexpected events, such as a machinery failure or a high-priority customer order. To respond quickly, the planner downloads a production scheduling service from the Pontus-X data space. The service runs locally in the company's C2D environment, ensuring that sensitive data remains on-site. Within this environment, it accesses local data through standardised AASs (such as machine status, material stocks and shift plans) [3] and integrated external data from IDS or Pontus-X nodes (such as logistics delays or supplier forecasts). The service generates and compares alternative production schedules, using a resilience assessment module that computes KPIs like Penalty of Change. It then recommends the most resilient plan that mitigates disruptions while maintaining operational efficiency. This scenario illustrates how data spaces and local execution support robust decision-making, combining external intelligence with secure, private data usage to strengthen operational resilience.

Funding and disclaimer

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Flex4Res

Co-funded by the European Union

EuProGigant – Lighthouse Story

Lukas Nagel, Head of Research Group ETA at PTW TU Darmstadt; **Paul Weißenbach**, Head of Research at Posedio GmbH & **Lukas Schwab**, Project & Communication Associate at EIT Manufacturing East

The EuProGigant project is approaching its maturation in May 2025. It started in 2021 as a Gaia-X initiative in the European manufacturing industry and advanced to a Gaia-X Lighthouse Project in 2022. In 2023 it further expanded to the EuProGigant ecosystem including five Gaia-X-related research projects. EuProGigant´s core themes are driving digitalisation, collaboration and sustainability in manufacturing. In the following sections, we highlight selected insights gained over four years of project work.

CO² footprint prediction to drive Europe´s sustainability

One key insight from the EuProGigant ecosystem is that predicting and reducing CO2 emissions in manufacturing is only possible through interoperable, trusted data exchange. Without shared standards and secure frameworks, sustainability remains isolated within organisational boundaries.

The CO2 footprint prediction use case has evolved from a conceptual approach to a functional demonstrator within the past project year. In a multi-stakeholder setting focused on injection moulding, partners along the supply chain – including material suppliers, machine and tool manufacturers – collaborated within a secured data space according to Gaia-X principles. This enabled the decentralised prediction of CO2 emissions without centralising sensitive production data.

A central component of the demonstrator is a web-based service that orchestrates the secure exchange of relevant production and material data across organisations. Participating companies retain full sovereignty over their data while making selected information available to a central prediction service via standardised interfaces. This enables the aggregation of key parameters, such as energy consumption, material composition, and individual CO2 footprints, which are then used in combination with domain-specific models to compute emission forecasts.

This makes it possible to predict the carbon footprint during early phases of the product life cycle, long before physical production begins. As a result, companies across the supply chain gain unprecedented opportunities to reduce emissions proactively rather than retroactively.

Nevertheless, the demonstration use case also revealed persistent challenges. Cross-company data exchange is often constrained by lack of shared semantics, trusted data interfaces, and enforceable data usage policies. To address these interoperability challenges, the demonstrator was integrated with the Pontus-X ecosystem.

Interoperability is key

Over the past few years, we have also taken a deep dive into the technologies that enable Gaia-X data ecosystems. We still actively employ Pontus-X, have deployed all tools from the XFSC toolbox (formerly GXFS), and explored key components like the policy layer from the EDC (Tractus-X) and the FiWare stack. We also developed connectors to integrate functionality towards different ecosystems seamlessly.

Through this work, we gained a solid technical understanding of where the data ecosystem stands and this enables us to guide partners on real-world use cases, such as CO_2 footprint prediction, and identify where interoperability works - and where it still falls short.

We focus heavily on data usage and access control: understanding what can happen to your data and ensuring it is enforced automatically. This is especially important in the competitive manufacturing sector, where companies are cautious about sharing their data. In the CO^2 use case, for example, the data concerns future products and could tell competitors a lot about product strategy. We developed concepts and systems for policy automation within data ecosystems, leveraging the Gaia-X information model.

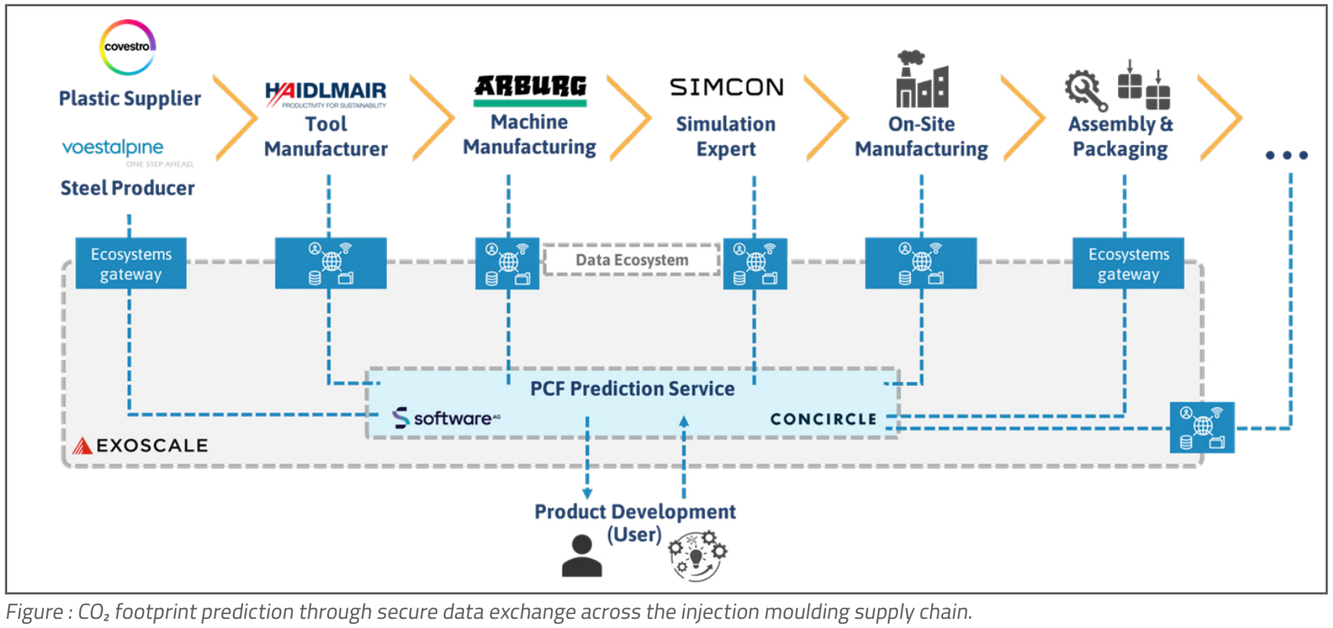

Figure : CO_2 footprint prediction through secure data exchange across the injection moulding supply chain.

We believe the future will be connector-less and the services auto-compliant. Policies will be enforced at the authorisation layer (e.g.: API gateways or service meshes), requiring no special software. Services will be able to describe themselves and deliver their Gaia-X compliance credentials automatically to their users (humans or other services) - no manual steps needed.

Overall, EuProGigant taught important lessons for the manufacturing industry and showcased how this successful German-Austrian collaboration created a dedicated international community of likeminded individuals. While the project comes to an end, the learnings will benefit the industry and allow a deeper exploration of topics such as component matching, CO2 emission prediction or interoperability. Moreover, there are current developments for commercialising an `EuProGigant federator´ to orchestrate secure data exchanges and service offerings. Stay tuned for more updates!

Figure 1: Project ecosystem surrounding EuProGigant including AMIDS, Dione-X, ESCOM, EuProGigant and Flex4Res

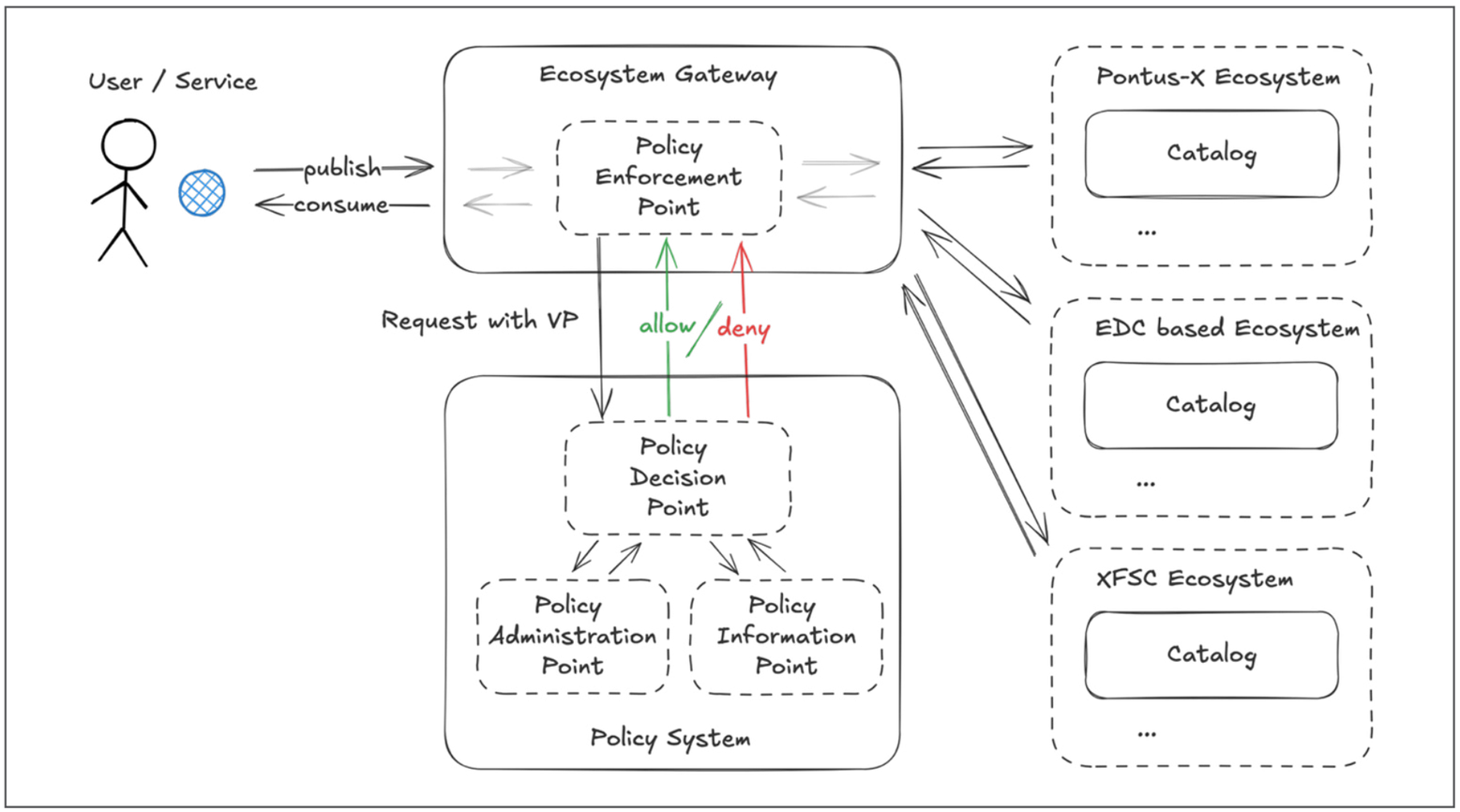

Figure 2: Ecosystem gateway with policy system integration

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4.4.1 Aerospace

The Gaia-X Hub Germany Aerospace domain

Marco Mitrovic, Acatech - National Academy of Science and Engineering &
Elsa Winterhalter, Acatech - National Academy of Science and Engineering, Domain lead Aerospace

The Gaia-X Hub Germany domain Aerospace, together with the Gaia-X European Association for Data and Cloud AISBL and the Gaia-X Aerospace Ecosystem, have released a position paper highlighting the crucial role of data spaces in the aerospace sector. Written by leading organisations and experts - including the Gaia-X Lighthouse Data Space COOPERANTS - this paper addresses the sector's challenges and opportunities in digitalisation and the data economy. It emphasises the need for secure, interoperable, and sovereign data spaces, with Gaia-X providing the strategic framework for compliance, innovation, and collaboration. The paper offers actionable recommendations to foster data-driven innovation, build strong communities, and strengthen Europe's competitiveness in aerospace.

The Aerospace domain members have outlined the following recommendations for the development of a common Aerospace data space:

Gaia-X as a key to promoting data-driven innovation

The aerospace industry should use Gaia-X as a strategic platform to create interoperable and secure data spaces. These enable data exchange, promote data-driven innovation and ensure the highest standards of data protection, security and interoperability. In this way, the industry increases its competitiveness and drives digital transformation.

Using Gaia-X as a guarantee for data protection and legal compliance

The Gaia-X Trust Framework can be used to enforce compliance to requirements and legal specifications, especially those related to export control which are prevalent in the Aerospace industry. It promotes the use of open and transparent standards to build interoperable services and data spaces leading to increased market transparency and efficiency. As data spaces interconnect decentralised infrastructures rather than pool data centrally, such transparent standards are essential. In this way, Gaia-X drives the development of European data spaces.

Building an active community

The domain should specifically build an active user community, promote partnerships and establish a shared information platform. In this way, it facilitates the exchange of knowledge and data and strengthens the common understanding of the use of Gaia-X, which is critical in generating critical mass and thus making this interoperability-by-design a differential value.

Partnerships and strategic alliances

The aerospace domain should actively utilise partnerships and alliances such as the Data Spaces Business Alliance (DSBA)[1] . In this way, it promotes collaboration with other data infrastructures, creates interoperable data spaces and strengthens the digital transformation through a secure and sovereign exchange of data.

1 - For more information on the DSBA see: https://data-spaces-business-alliance.eu/

International cooperation

Strategic alliances and long-term partnerships between companies, research institutes, and governments ensure the continued existence and promote the further development of the aerospace industry as a driver of the global economy. It is important to think European and to intensify cooperation beyond Europe.

Increase accessibility

In order to improve the user-friendliness and accessibility of data spaces, simple onboarding processes and intuitive service provisioning should be developed. Resilience and flexibility can best be fostered through commercial solutions based on opensource software, as they combine transparency with reliable support and long-term sustainability.

Guarantee of the highest safety standards

In the aerospace industry, it is crucial to guarantee data protection and sovereignty. In the further development of technologies, the focus should be on data sovereignty, the implementation of automated and enforceable data usage agreements and the strict accreditation and identity verification of participants, as enabled by the Gaia-X Trust Framework.

Development of operator models

To ensure the long-term success of data spaces, it is crucial to develop operator and business models with a clear governance structure. This structure regulates the responsibilities and interactions between the players and includes a comprehensive set of rules with technical specifications and internal guidelines.

Identification, refinement and implementation of use cases

The domain should actively develop and integrate specific use cases. This includes a structured process: from identification to refinement and implementation. It should promote cross-industry cooperation in order to maximise the economic, technological, and social benefits of data spaces and strengthen the industry's competitiveness.

We warmly invite all stakeholders across the aerospace sector and beyond to join the *Gaia-X Aerospace Domain* and the broader European Gaia-X ecosystem. By becoming part of this vibrant community, you can actively contribute to shaping the future of secure, interoperable, and sovereign data spaces in aerospace. For more information or to join our community, please contact Victor de Vries (victor.devries@gaia-x.eu), Community Manager, Gaia-X AISBL.

Marco Mitrovic,
Acatech - National Academy of Science and Engineering

Elsa Winterhalter,
Acatech - National Academy of Science and Engineering, Domain lead Aerospace

05

EVENTS

In this era of rapid digital transformation, Gaia-X has emerged as a driving force, aiming to shape the future of data infrastructure and cloud services in Europe and beyond. With our focus on data sovereignty, interoperability, and trustworthiness, Gaia-X has garnered attention from industry leaders, policymakers, and technology enthusiasts alike. Through this dedicated section, we aim to provide you with comprehensive insights into Gaia-X events, keeping you informed about the latest developments, key announcements, and upcoming events.

PAST EVENTS

Data Sharing Festival EXTERNAL

4-5 February
The Hague

Gaia-X was proud to partner with the Data Sharing Festival (DSF) on 4–5 February 2025 at the Postillion Hotel & Convention Centre in The Hague. This year's theme, "Next Level Dataspaces: Adopt, Scale, and Roll-out," focused on driving the adoption and scaling of data spaces. The event featured two half-days of plenary sessions, along with workshops and breakouts aimed at fostering interactive discussions.

Data Spaces Symposium (DSS) EXTERNAL

11–12 March 2025
Warsaw, Poland

Europe's top leaders and innovators gathered at the Data Spaces Symposium 2025, hosted by the Data Spaces Support Centre (DSSC) and the Data Spaces Business Alliance (Gaia-X, IDSA, FIWARE, BDVA). Attendees discovered real-world use cases, gained exclusive insights into the latest Data Spaces Blueprint, Radar, and Toolbox, and explored the business value of data sharing.

European Parliament Reception INTERNAL

18 March 2025
Brussels, Belgium

Hosted by MEP Tomislav Sokol and co-hosted by MEP Brando Benifei and featuring Manuel Mateo Goyet, Acting Head of Unit Cloud and Software, DG CNECT, European Commission, the event reaffirmed Europe's commitment to building a secure, interoperable, and sovereign cloud and data ecosystem, aligned with European values and regulations. Key discussions revolved around the importance of trust, interoperability, and secure European infrastructure, particularly in the context of the newly announced European Health Data Space Regulation (EHDS) and the role of Gaia-X in securing Europe's AI and cloud future.

Hannover Messe EXTERNAL

31 March – 04 April 2025
Hannover, Germany

Gaia-X, in collaboration with Gaia-X Hub Germany, NTT (NTT Communications and NTT DATA), Fujitsu, T-Systems, deltaDAO, COOPERANTS and Dataspace4Health, showcased groundbreaking cross-border data collaboration initiatives at Hannover Messe 2025, Hamburg, Germany, 31 March – 4 April 2025. This initiative highlighted how Japanese and European companies worked together to establish trusted data exchange frameworks that enhanced interoperability and drove digital transformation.

Tech-X and Market-X INTERNAL

13–14 May 2025 - Valencia, Spain

Gaia-X successfully concluded Market-X & Expo and Tech-X & Hackathon #8, which took place on 13–14 May 2025 in Valencia, Spain, in partnership with Gaia-X Hub Spain. The two-day event brought together business leaders, technology experts, and community partners to explore the latest advances in open-source implementation of a universal Trust Framework for digital ecosystems and data spaces, reinforcing Gaia-X's commitment to building trust between ecosystem participants, their services or data-sharing interactions, and with other ecosystems.

Participants had the opportunity to engage in live technology showcases, marketplace discussions, and hackathon challenges designed to advance the Gaia-X ecosystem. From business matchmaking to hands-on technical implementation, the event strengthened the bridge between market needs and technological capabilities.

UPCOMING EVENTS

Gitex Berlin *EXTERNAL*

21- 23 May 2025
Messe Berlin, Germany

Gaia-X was a Community Partner at GITEX EUROPE 2025, held from 21–23 May in Berlin, where over 40,000 tech professionals gathered to explore key innovations in AI, Cloud, Cybersecurity, Quantum, and Green Tech. Gaia-X hosted a panel discussion titled “Sovereignty in Action: How Can Europe Lead the New Cloud Market?”, where industry leaders explored how European initiatives and regulations are shaping an independent and trusted cloud ecosystem.

Additionally, Gaia-X led an interactive workshop, “What Can Gaia-X Do for You?”, focused on helping organisations understand how to scale data sharing with trust, compliance, and interoperability. The event highlighted Gaia-X’s central role in enabling secure, federated digital ecosystems across Europe.

VivaTech *EXTERNAL*

11 - 14 June 2025
Paris, France

Gaia-X participated in Viva Technology 2025 from 11 to 14 June, joining forces with Gaia-X Hub France. Pierre Gronlier, Gaia-X’s Chief Innovation Officer, was on-site to connect with partners and visitors at the French-German Tech Lab. During VivaTech, Cloud Data Engine (CDE) joined Gaia-X and unveiled the first compliance suite for Gaia-X labelled cloud services, showcasing trust, transparency, and decentralised governance at scale.

TechRiders *EXTERNAL*

3-4 July 2025
Köln, Germany

Gaia-X will participate in the TechRiders Summit on 3–4 July 2025 in Köln, Germany, with a small booth presence, contributing to discussions on digital sovereignty and future-ready technologies. Ulrich Ahle, CEO of Gaia-X, will be a speaker at the event, which will bring together IT decision-makers and thought leaders to explore strategic challenges in AI, cybersecurity, and digital innovation.

CEATEC *EXTERNAL*

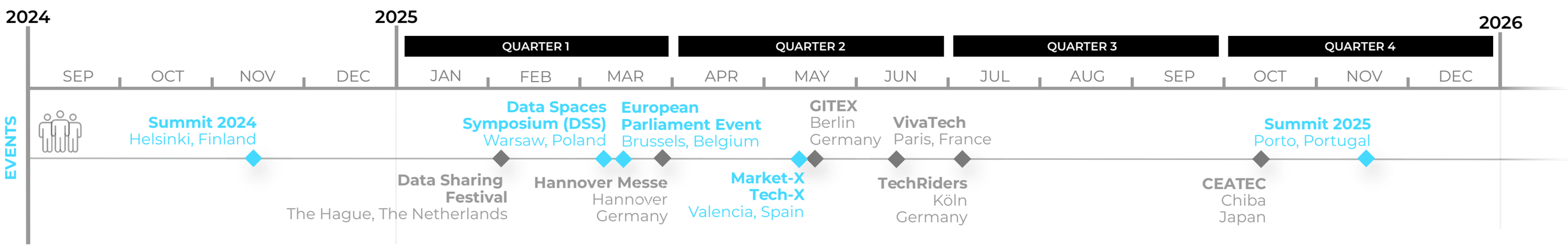
14-17 October 2025
Chiba, Japan

The theme of CEATEC 2025, “Innovation for All”, expresses the philosophy of CEATEC, which is to bring about innovations that benefit all people, regardless of specific industries, fields, countries and areas.

Gaia-X Summit 2025 *INTERNAL*

20 - 21 November 2025
Porto, Portugal

Get ready for the 6th edition of the Gaia-X Summit, taking place from 20 to 21 November 2025 in Porto, Portugal, in partnership with Gaia-X Hub Portugal and Porto Digital. Under the tagline “Digital Ecosystems in Action,” the summit will focus on AI, data spaces, and the growing demand for secure, interoperable data sharing. Stay tuned for exciting updates and announcements!



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FEDERATED AND SECURE DATA INFRASTRUCTURE

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