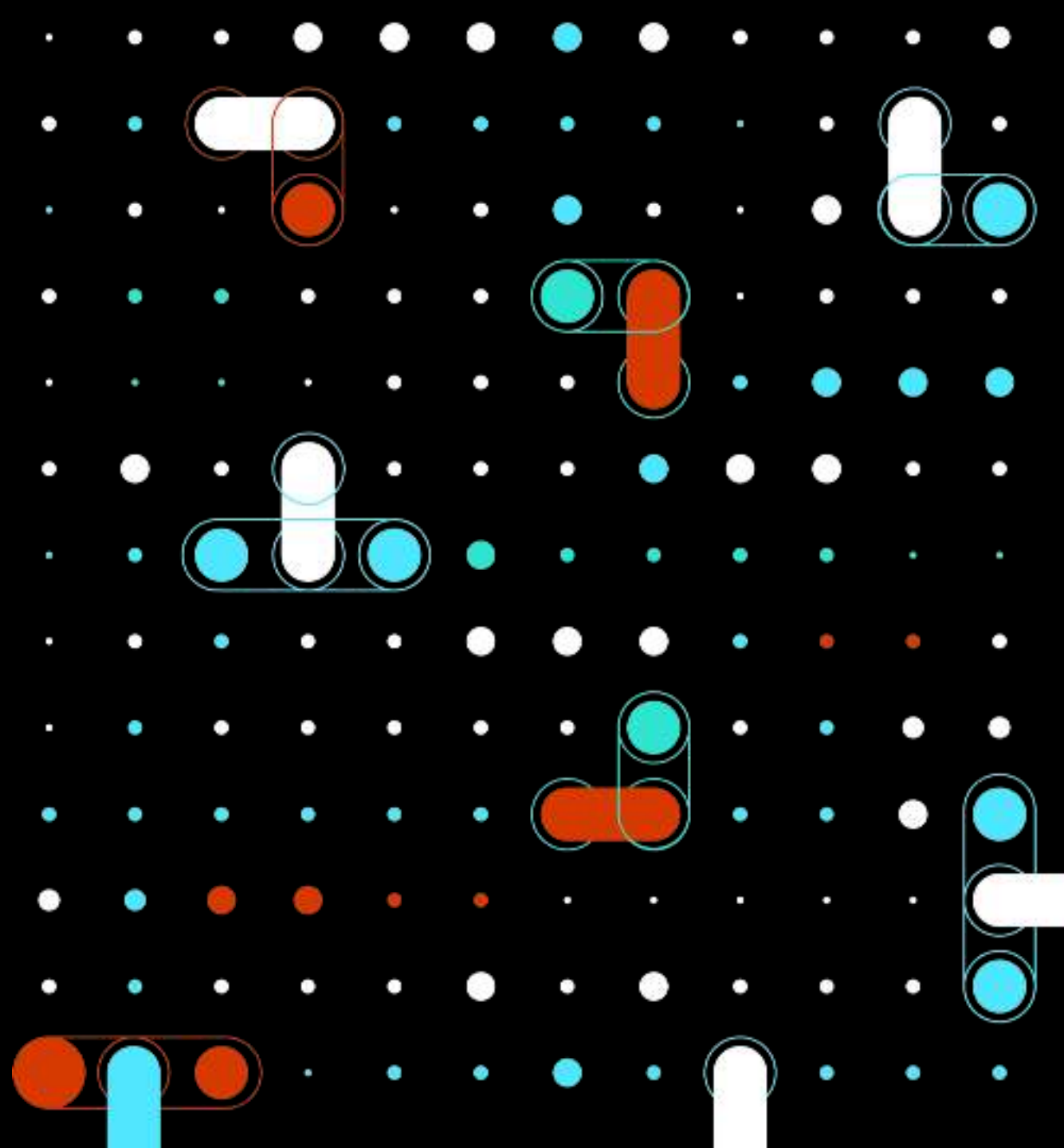


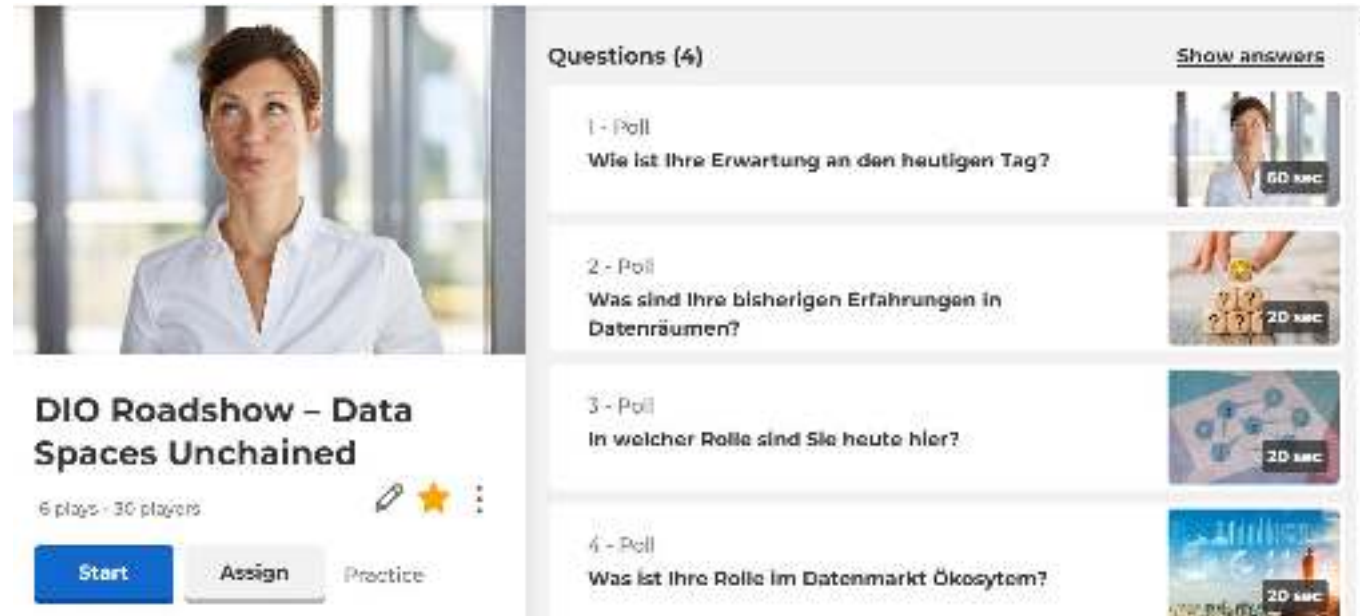
DIO Roadshow
Data Spaces Unchained
Block 2

Technischer Hintergründe
Matthias Buchhorn-Roth
Data Space Architect
Microsoft

28. Februar 2023



Wir möchten mehr
über unser
Publikum erfahren.

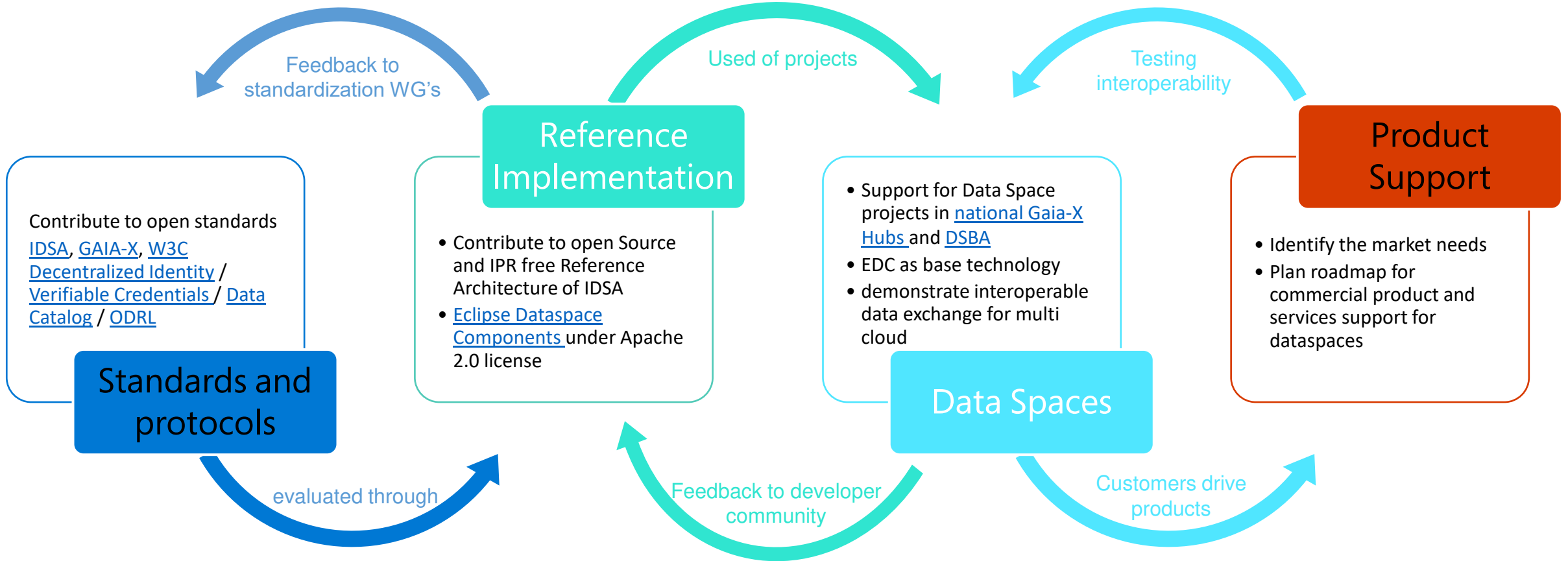


The image shows a Kahoot! quiz interface. On the left, there is a profile picture of a woman and the quiz title "DIO Roadshow - Data Spaces Unchained". Below the title, it says "6 plays - 30 players" and has icons for editing, favoriting, and sharing. There are three buttons: "Start" (blue), "Assign" (grey), and "Practice" (grey). On the right, a list of four poll questions is shown, each with a thumbnail image and a timer. The questions are:

- 1 - Poll: Wie ist Ihre Erwartung an den heutigen Tag? (60 sec)
- 2 - Poll: Was sind Ihre bisherigen Erfahrungen in Datenräumen? (20 sec)
- 3 - Poll: In welcher Rolle sind Sie heute hier? (20 sec)
- 4 - Poll: Was ist Ihre Rolle im Datenmarkt Ökosystem? (20 sec)

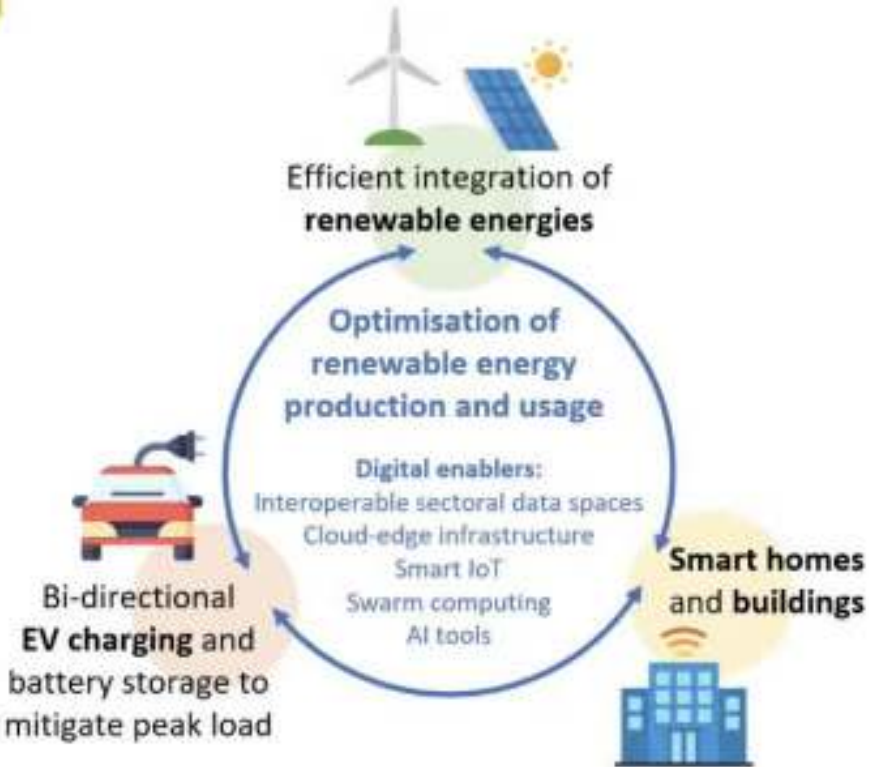
At the top right of the question list, there is a link that says "Show answers".

Data Spaces journey and feedback loops



European Commission view

Key use case for sector coupling: energy and mobility



Key need:

A system of systems approach:
Open operational platforms
for infrastructure integration



Technischer Hintergrund

Standards, Interoperabilität,
Implementierungen, Best Practises

projects.eclipse.org/projects/technology.edc
eclipse-edc.github.io/docs.

Eclipse Dataspace Components

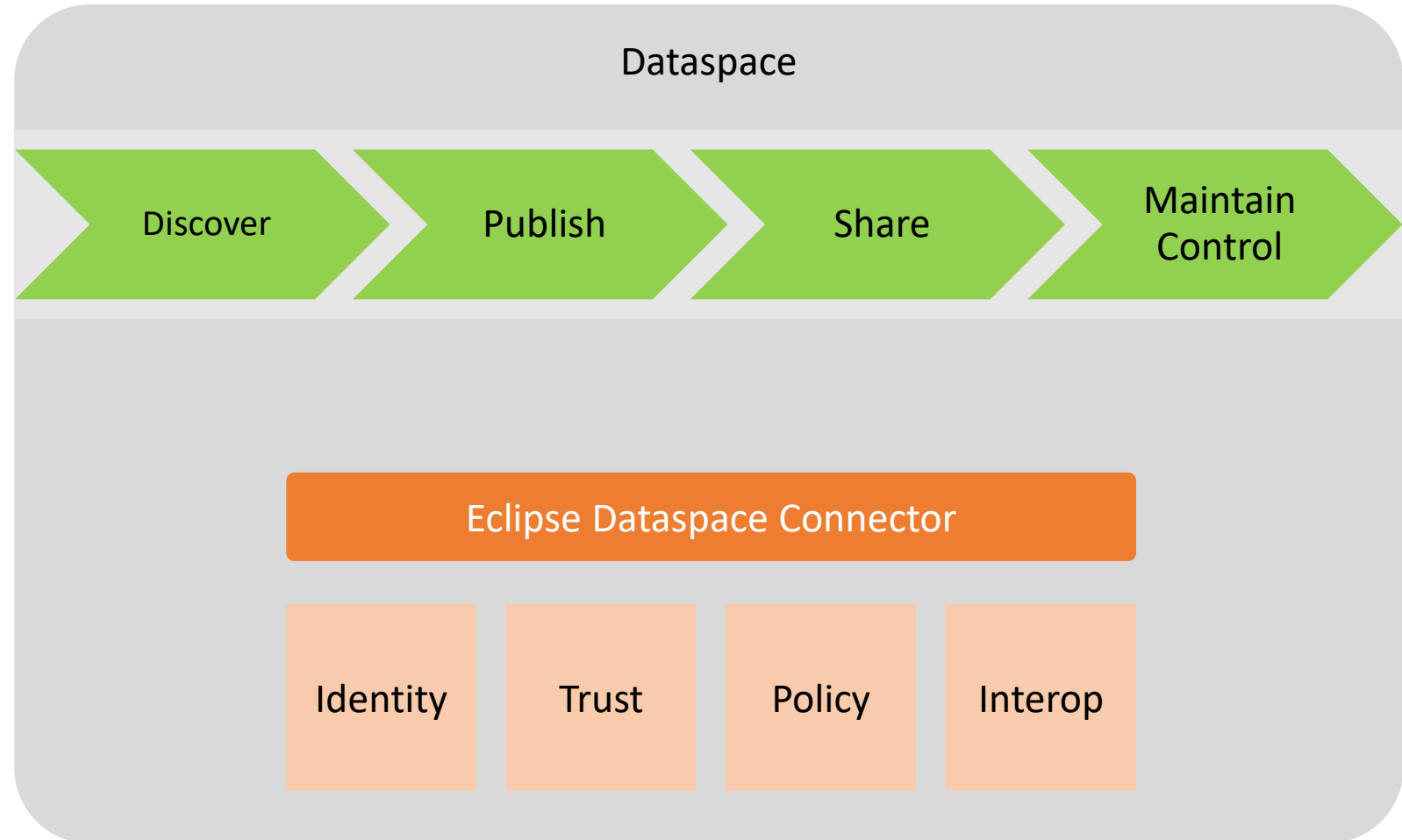
- A reference implementation for IDSA RAM 4.0, aligned with GAIA-X
- Community driven Open Source project under Eclipse foundation on GitHub
- Free of intellectual property rights under Apache 2.0 license for commercial usage
- Used by many GAIA-X projects
- Modular / Extendable Based on Java and RESTful interfaces

The screenshot shows the Eclipse Dataspace Connector project page. At the top, the Eclipse Foundation logo is visible. The page title is "Eclipse Dataspace Connector". Below the title, there are navigation tabs: Overview, Downloads, Whitepapers, Guidelines, Releases, Resources, and Community. The main content area features a "Contribution Activity" bar chart showing activity from 2016 to 2018. Below this is a "Individual Contribution Activity" pie chart showing contributions from various Eclipse projects like CDK4, Eclipse IDE, and Eclipse IDE for RCP. The "Organization Contribution Activity" section includes another pie chart showing contributions from organizations like Fraunhofer, SAP, and Microsoft. At the bottom, the "Active Member Companies" section lists logos for Amadeus, Fraunhofer, Microsoft, SAP, and ZTE Group. On the right side, there are sections for "PROJECT LINKS" (Documentation), "RELATED PROJECTS" (Eclipse Technology, Eclipse Dataspace Connector), and "TAGS" (Eclipse Technology, Java, Apache, Open Source, etc.).

The characteristics of a federated dataspace

Main Functionalities of a Dataspace

- Catalogue (Discoverability)
- Sovereign Data Exchange
- Identity & Trust
- Compliance



Main Principles of an EDC powered DS:

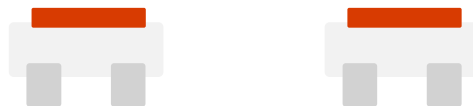
- Each participant remains in control of their identity
- Each participant decides who to trust
- Each participant decides under what policies their data is shared
- Each participant remains in control of their infrastructure

EDC Core Dataspace Services

Registry

Registration and discovery

Core Module System



Catalog Services

Publish and search

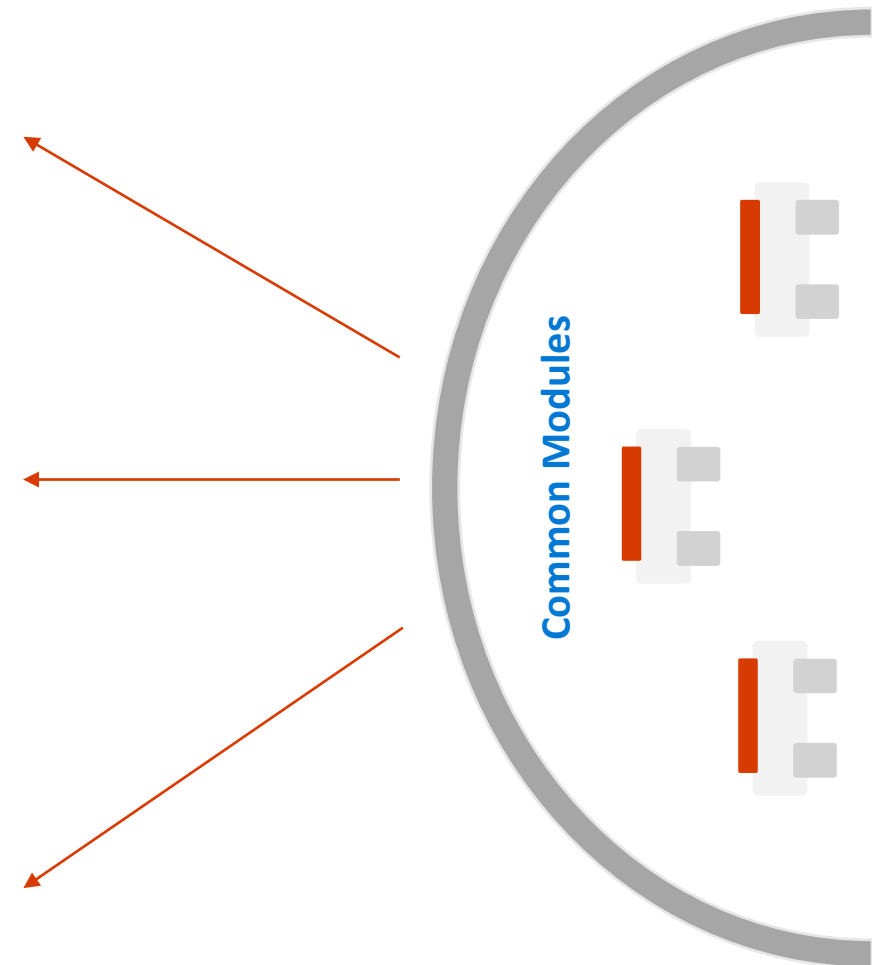
Core Module System



Connector

Contract negotiation and data sharing

Core Module System



Principals & Functions

- Connections in a dataspace are always peer-to-peer
- Multiple participants can cooperate, but data is always exchanged 1:1
- Participants can have multiple roles
 - Data Owner, Data Holder, Data Processor, Data Recipient, Algorithm Provider,...
- Patterns
 - **Aggregator** – combining data from multiple sources for computation at one partner (Specialization: Data Trustee)
 - **Supply Chain** – data moves through multiple participants adding value along the way with potential aggregation, anonymization,...
 - **Code to data** – code packages can be transferred by EDC to where data resides, execution controlled through policies and custom extensions

Alignment with Gaia-X

- **Fulfillment of the mandatory and further criteria**
 - Support for Gaia-X Trust Framework
 - Support Gaia-X compliant Self-Description
 - Gaia-X Registry Extension and support for VC
 - Currently planning for alignment with Gaia-X Federation Services v2, pending finalization of specification
- **Possible Integration with GXFS-DE implementation project**
 - Evaluated existing specifications
 - Waiting for tangible code to evaluate integration
- **Alignment with lighthouse projects to meet their requirements for building economically viable dataspaces and using Gaia-X**

Alignment with International Data Spaces Association



Already supporting IDS-based messages and policy definitions



Support development of IDSA Reference Architecture Model 4.0



Part of IDS Open Source Landscape



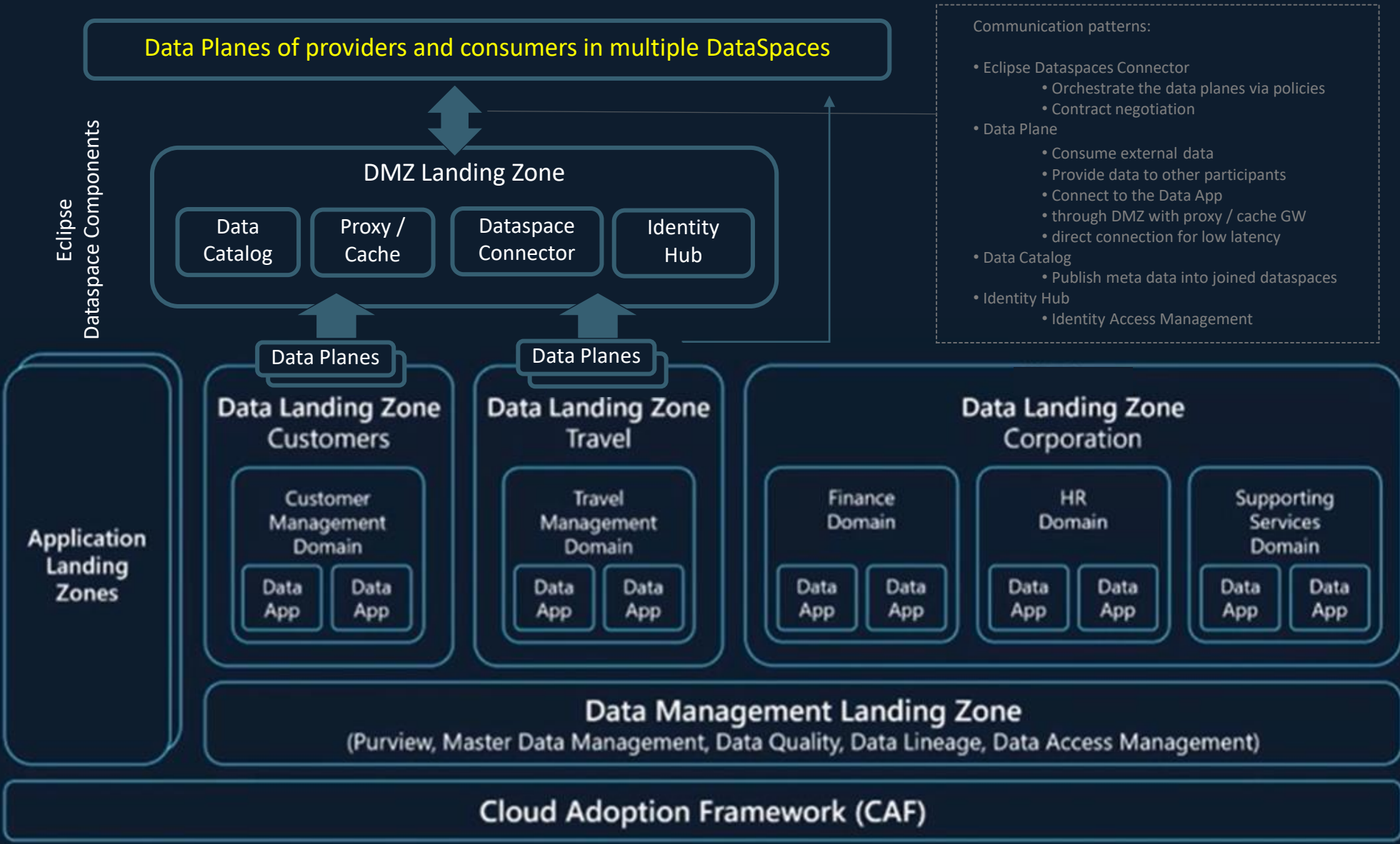
Participating in IDSA committees and working groups

Architecture WG
Rule Book WG

1. Data Management Landing Zone

Setup an secure and scaleable data architecture in your company

Implement data landing zones with Data Mesh and Data Spaces



2. Define the Use Case

Start the user journey into Dataspaces
- Example CATENA-X

The Catena-X Data Ecosystem



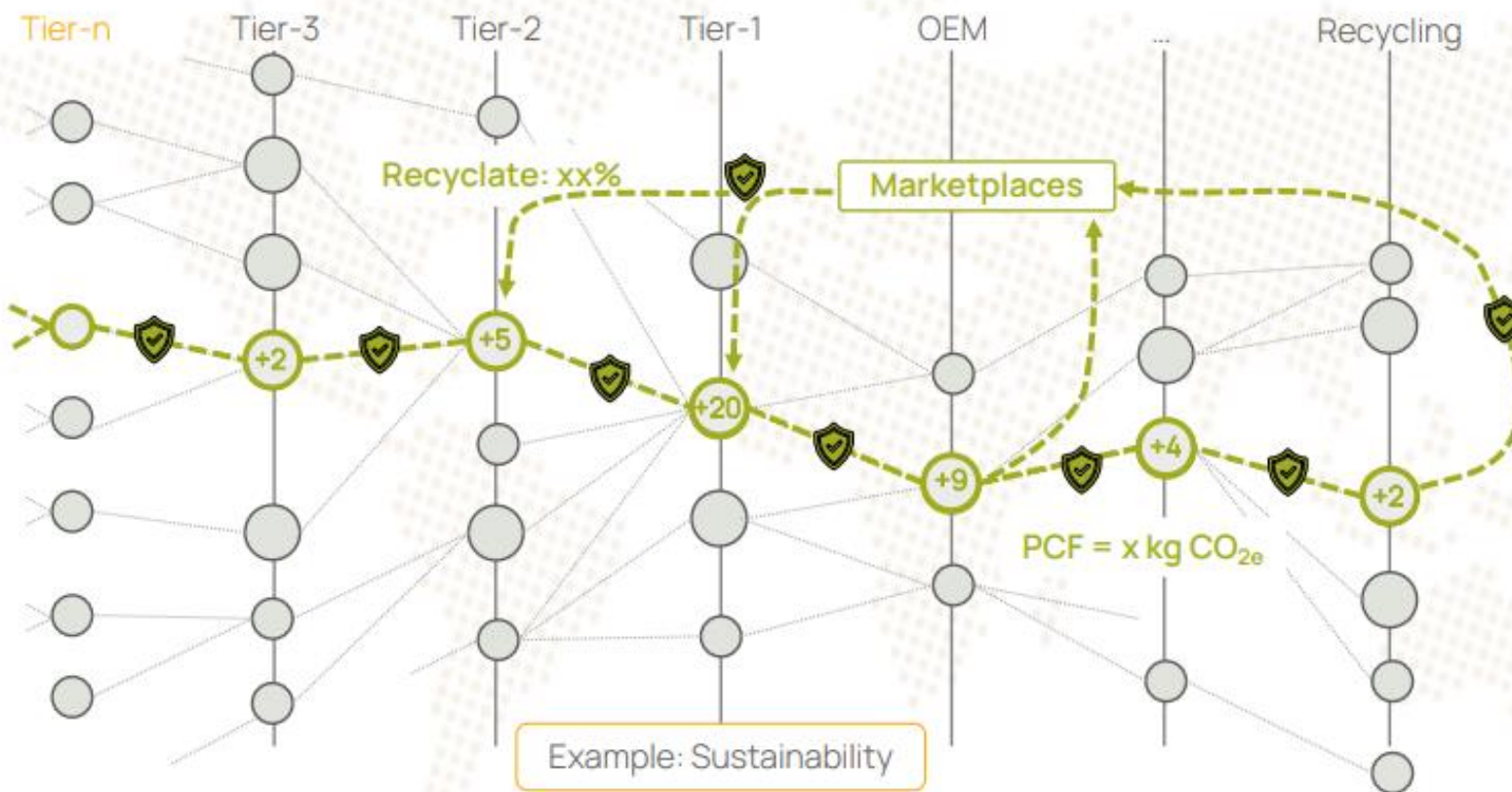
Catena-X
Automotive Network

Build a **global data space** that can host our industry

Create the first **data driven value chain**; incorporating all participants via **interoperable** and trusted solutions

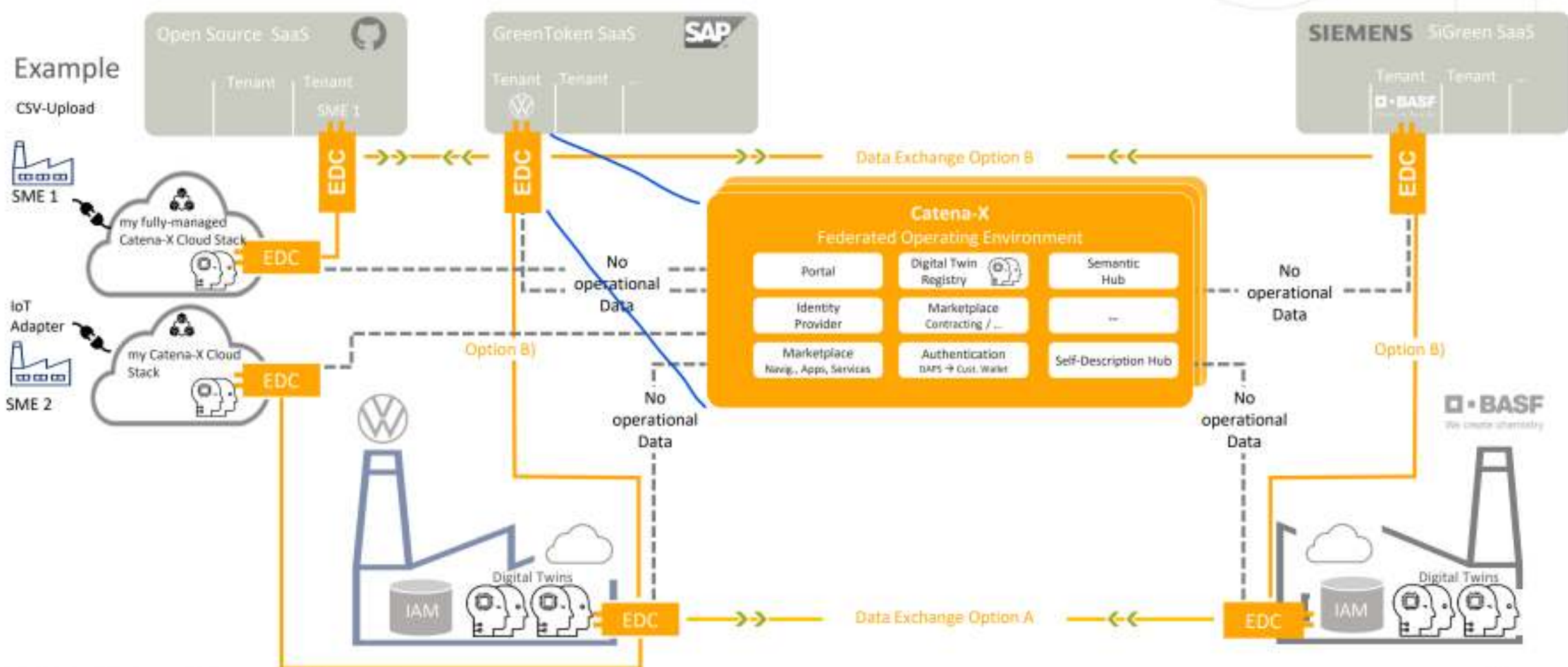
Optional adjacent industries

- 275.000+ legal entities
- # locations globally
- # digital twins machines, products
- # apps business processes
- # users business responsibility

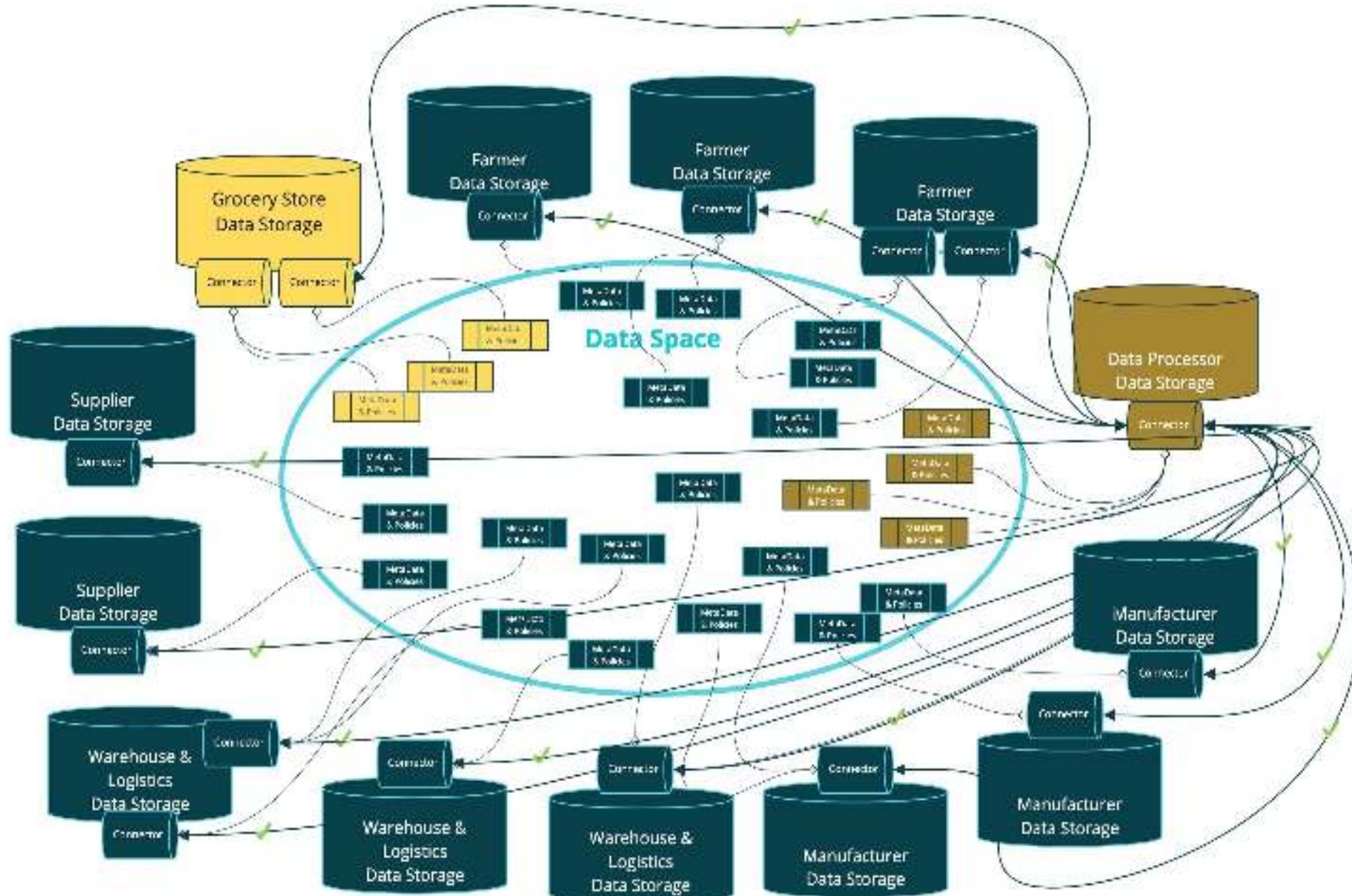




How Catena-X Works – GAIA-X Ready Architecture



Wo ist mein Platz im Datenökosystem?



3. Business discussion

Use the Dataspace Management
Vision Demonstrator

- 3. Start Page
- 1. Manage My Dataspaces
- 2. Manage Data Shared by Others
- 3. Negotiate a Data Contract
- 4. Create a new Policy
- 5. Create a new Data Asset
- 6. Create Data Contract
- 7. Review existing Data Contract and ...

- DATA CONTRACTS
- Data Shared by Others
- Data Offered by Me
- DATA MANAGEMENT
- Policy Store
- Asset Index
- Identity Hub
- VERIFIABLE CREDENTIALS
- Manage My Dataspaces
- Energy Dataspace
- Education and Skills Dataspace
- Finance and Insurance Dataspace
- Health Dataspace
- Industry 4.0 Dataspace
- Mobility Dataspace
- Space Dataspace

- Energy Dataspace
- Education and Skills Dataspace
- Finance and Insurance Dataspace
- Health Dataspace
- Industry 4.0 Dataspace
- Mobility Dataspace
- Space Dataspace

Dataspaces Management Vision Demonstrator

Home > Manage My Dataspaces

Here you can see all the dataspaces, where you are participating. This list is being populated based on Verifiable Credentials of membership which are saved in your Identity Hub. If you are missing a dataspace, where you are already a member, please check your Verifiable Credentials in the Identity Hub. If you want to join a new dataspace - you are welcomed to do that here!

All Dataspaces (7) Joined (7) Pending (0) Saved (0) + Join Dataspace + Create Dataspace


Search: Filter by any field:

Showing 0 to 7 out of 7 records Group by: No grouping Sort by: State

Participating	Participating	Participating	Participating
<p>Energy Dataspace</p> <p>This trusted dataspace is supporting energy service providers and fostering collaboration between all stakeholders. It is a cornerstone of the decarbonization of the energy sector.</p> <p>210 Data Shared by Others 0 Data Shared by Me</p>	<p>Education and Skills Dataspace</p> <p>The Education and Skills Dataspace (ESDS) will create a trusted space for the benefit of the educational community.</p> <p>14 Data Shared by Others 2 Data Shared by Me</p>	<p>Finance and Insurance Dataspace</p> <p>The Finance and Insurance dataspace was founded by the German, German banks, European cloud service providers. Other countries are equally welcomed to join.</p> <p>17 Data Shared by Others 0 Data Shared by Me</p>	<p>Health Dataspace</p> <p>The Health Data Space is working to build a consortium of public bodies and private companies to promote the use of digital technologies and cloud solutions that will...</p> <p>102 Data Shared by Others 1 Data Shared by Me</p>
<p>Industry 4.0 Dataspace</p> <p>More than 250 participants have joined the Industry 4.0 dataspace, which is steadily growing.</p> <p>51 Data Shared by Others 0 Data Shared by Me</p>	<p>Mobility Dataspace</p> <p>The Mobility Dataspace will reduce congestion, CO2 emissions and pursue positive climate action goals while creating new business opportunities for its members.</p> <p>85 Data Shared by Others 0 Data Shared by Me</p>	<p>Space Dataspace</p> <p>A dataspace focusing on Space Data. Many lives depend on space data, it is crucial that this data can be handled securely and efficiently, ensuring European data sovereignty.</p> <p>3 Data Shared by Others 5 Data Shared by Me</p>	



4. Make or Buy

Minimum Viable Dataspace as starting point for developers

 Getting Started Catalog Browser Contracts Transfer History Contract Definitions Policies Assets

EDC Demo

Getting Started

 Getting Started Catalog Browser Contracts Transfer History Contract Definitions Policies Assets

EDC Demo

Getting Started

 Getting Started Catalog Browser Contracts Transfer History Contract Definitions Policies Assets

Eclipse Dataspace Connector

The Eclipse Dataspace Connector provides a framework for sovereign, inter-organizational data exchange. It implements the International Data Spaces standard (IDS) as well as relevant protocols associated with GAIA-X. The connector is designed in an extensible way in order to support alternative protocols and integrate in various ecosystems.

[GitHub](#)[Getting Started](#)[Onboarding Guide](#)

EDC Data Dashboard (this application)

This EDC Data Dashboard is a developer UI for the EDC Data Management API. This application is not intended for production usage and can be used to showcase EDC from a technical perspective, as the UI is designed as a 1-1 mapping of the Data Management API.

[Data Management API](#)

Example use cases, that you can try out with this application, are:

- ✓ View the asset catalog available to you in your Dataspace using the [Catalog Browser](#)
- ✓ Negotiate a contract for data sharing in your Dataspace using the [Catalog Browser](#)
- ✓ View your existing contracts in the [Contracts](#) page
- ✓ Transfer an asset in your Dataspace using the [Contracts](#) page
- ✓ View which assets have been transferred in your Dataspace in the [Transfer History](#) page
- ✓ View and create assets using the [Assets](#) page
- ✓ View and create policies and apply these to assets in your Dataspace using the [Policies](#) page
- ✓ Publish a new asset into your Dataspace using the [Contract Definitions](#) page



MinimalViableDataspace

Deployment scripts and CI/CD build pipelines

