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KNOW Center

DATASPACE

A data space for frost damage mitigation

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Bundesministerium Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie
Bundesministerium Arbeit und Wirtschaft
FFG Forschung wirkt.
SFG NEUES DENKEN. NEUES FÖRDERN.
Das Land Steiermark Wirtschaft, Tourismus, Wissenschaft und Forschung
Stadt Wien
wirtschaftsagentur wien
Für die Stadt Wien
Tirol

Problem:
Climate change increases occurring frost damages in farming

Solution:
Combination of AI and numerical weather prediction models plus IoT

Benefit and value:
help farmers minimize their frost damage by 90%

Industries:
Agriculture/farming

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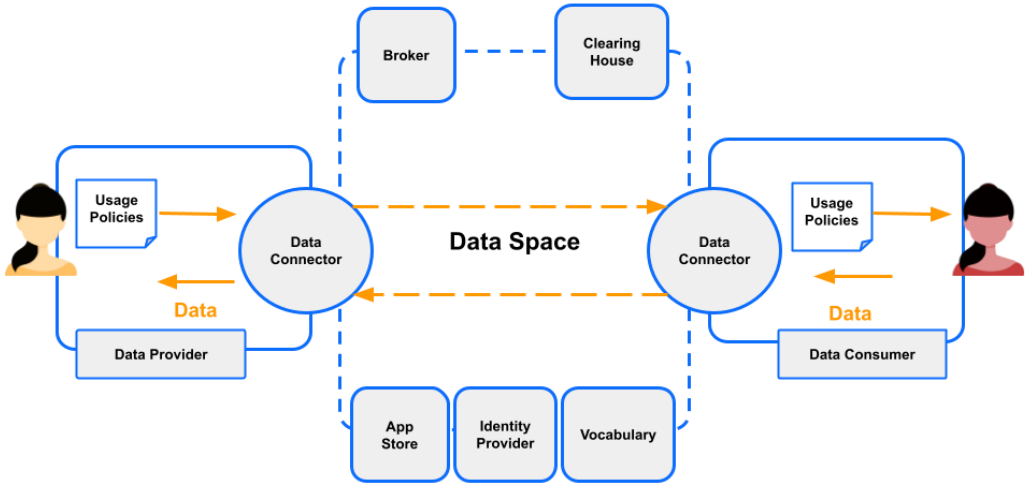

What is a data space?

Minimum Viable Data Space (MVDS) [*]

Is a combination of components that enable the creation of a data space with just enough features to be usable for secure and sovereign data exchange.

Main Components

Two connectors.

An identity provider.

Optional and additional components:

Metadata broker

App store

Clearing house

Vocabulary provider

[*] Definition by the International Data Spaces Association. https://docs.internationaldataspaces.org/ids-knowledgebase/v/ids-reference-testbed/minimum-viable-data-space/mvds

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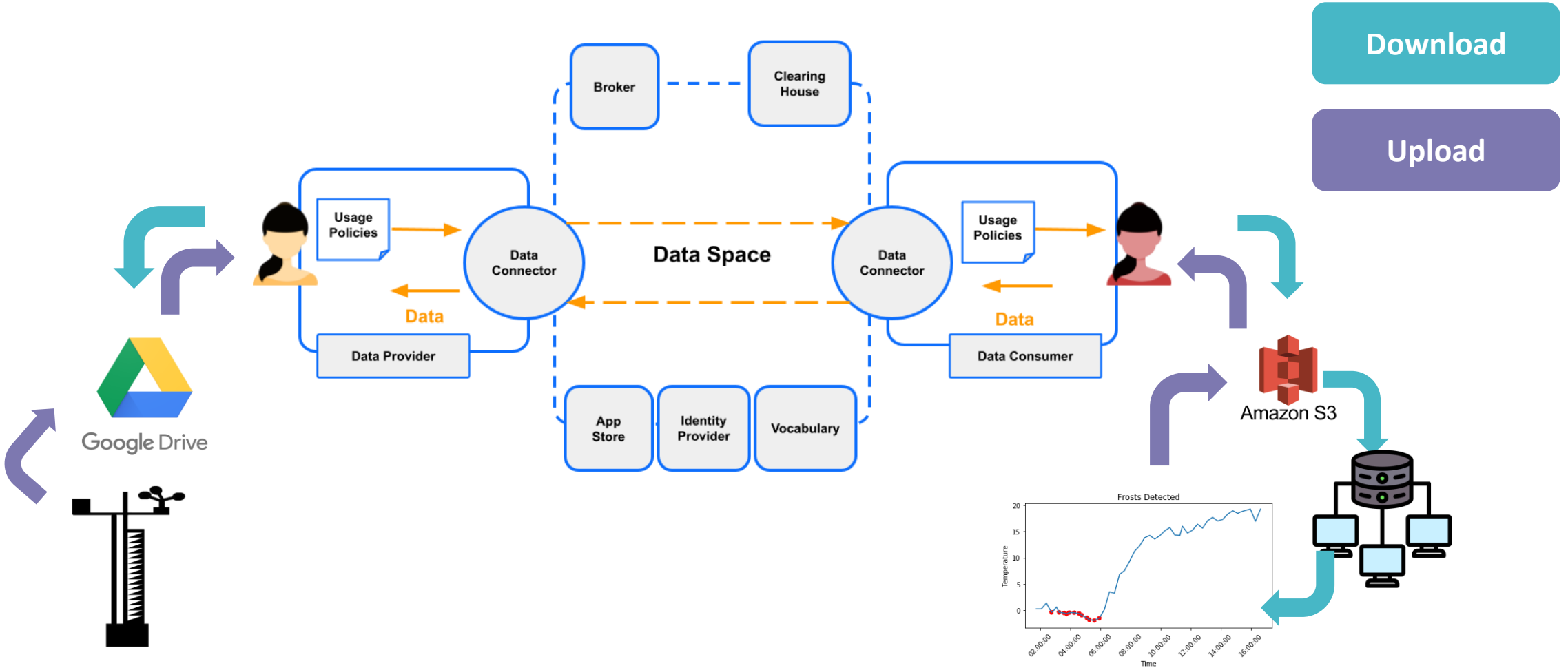
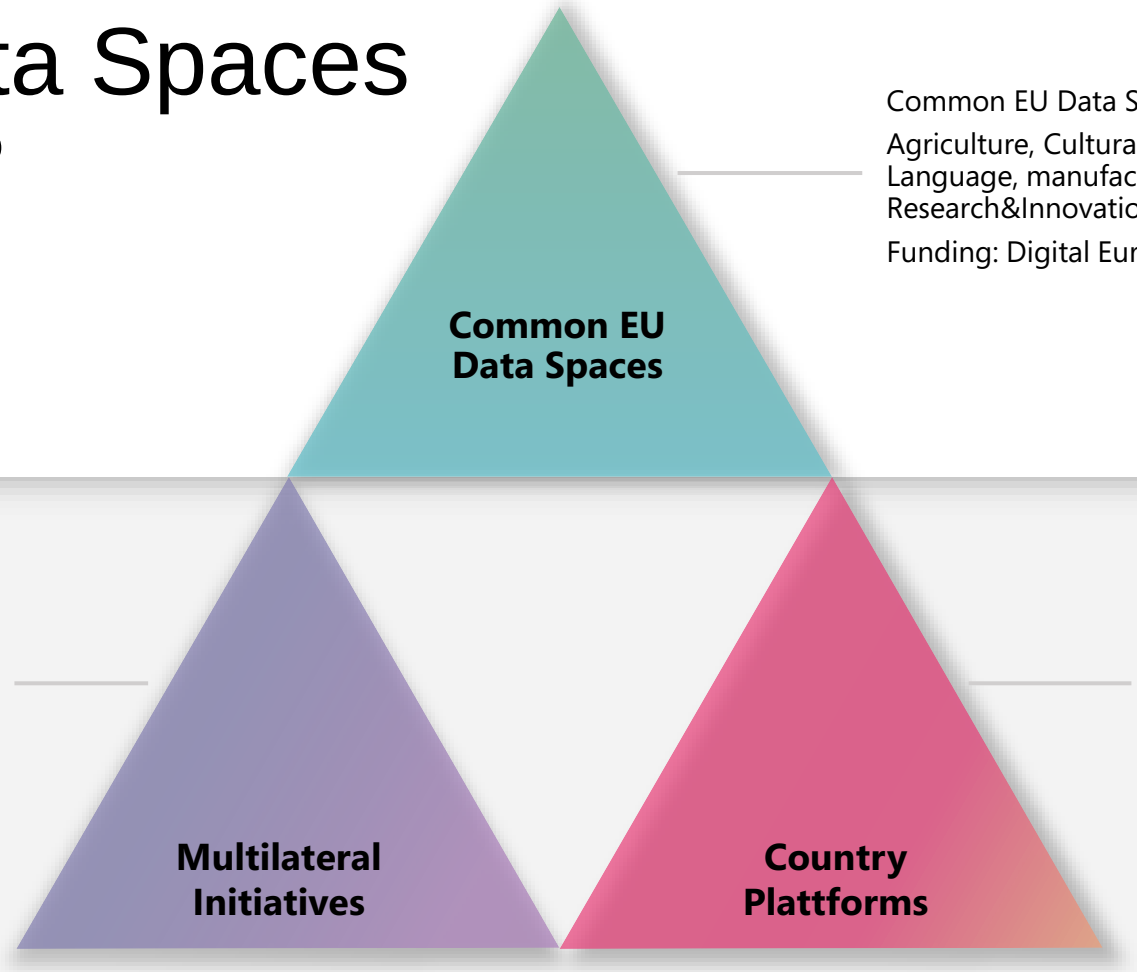
How does it work?



Which Data Spaces are there?



Common EU Data Spaces (14):

Agriculture, Cultural Heritage, Energy, Finance, Green Deal, Health, Language, manufacturing, Media, Mobility, Public Administration, Research&Innovation, Skills, Tourism

Funding: Digital Europe / Horizon Europe programmes

Domain specific data space initiatives for industries across EU-countries like Gaia-X:Catena-X, Manufacturing-X, energy dat-X, etc.
Funding: EU & national funding

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National & regional data space initiatives that can be federated across Europe; i.e.: Tourism Data Spaces in Spain and Italy, datahub.tirol, etc.

Quelle: eigene Darstellung, basierend auf https://digital-strategy.ec.europa.eu/en/library/staff-working-document-data-spaces und https://gaia-x.eu

Our Usercase

In 2016, frost damage to fruit trees and vines was reported by Styrian farmers at around 200 million euros. This is just one example of the many crop failures caused by frost.

At the Know Center, we develop technological solutions that can help farmers minimize their frost damage by 90%.

Our focus is on:

AI & Numerical weather prediction models

IoT

Data Spaces

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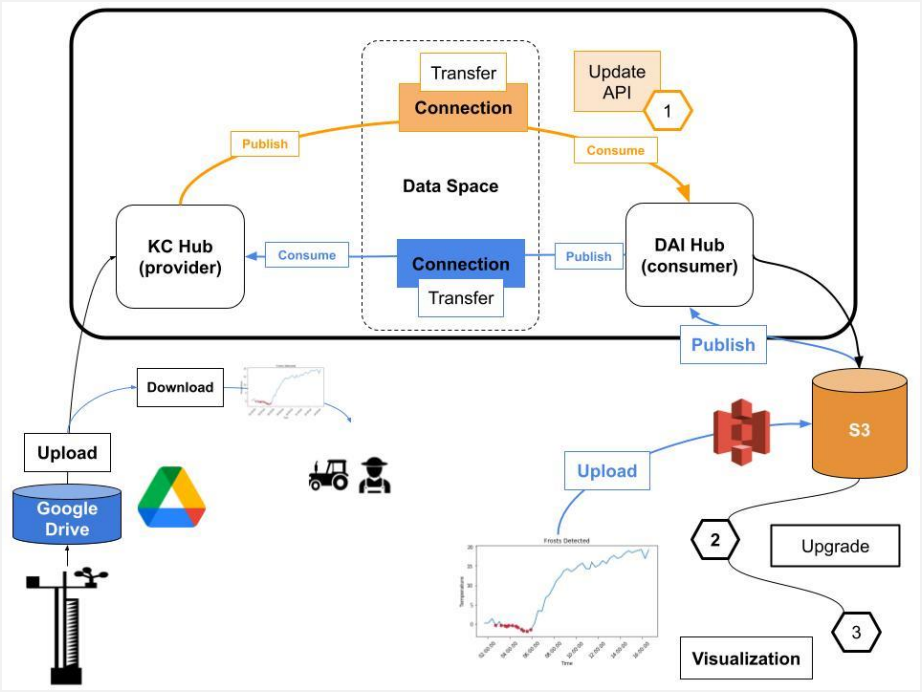

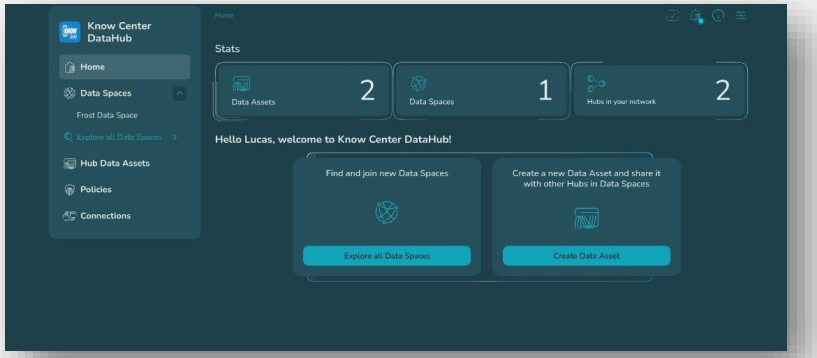

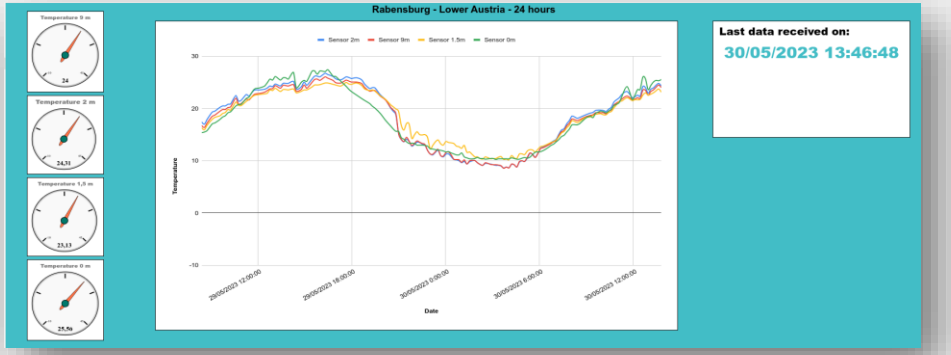

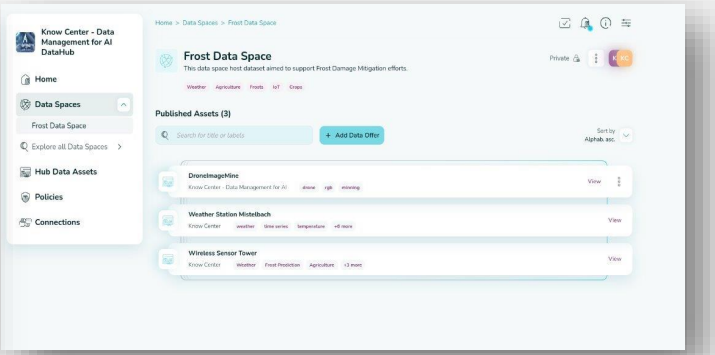

[Click here to access live data!!]

Access Data Space (live):
[Data Provider]
[Data Consumer]

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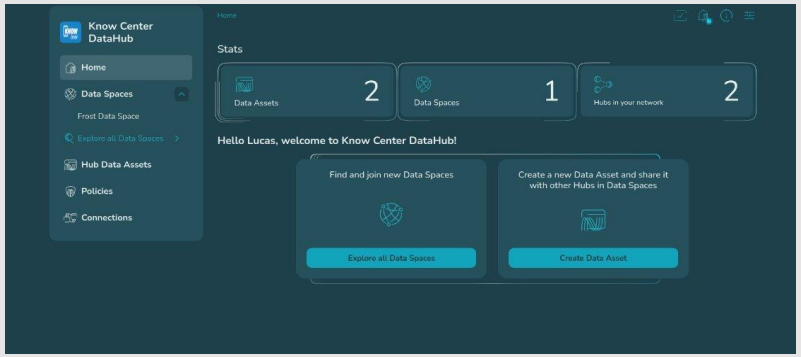
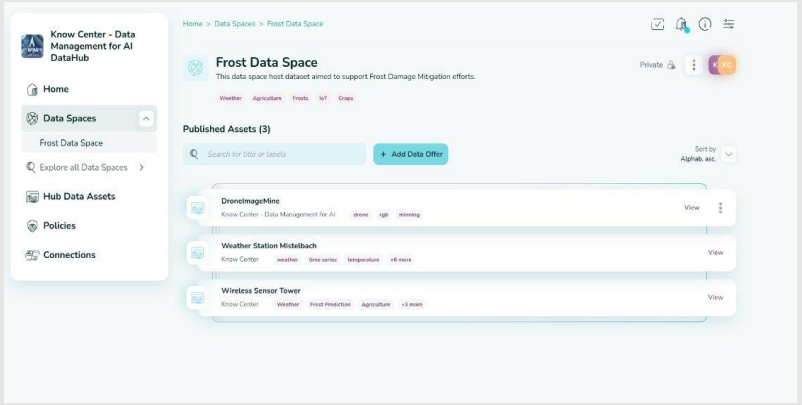
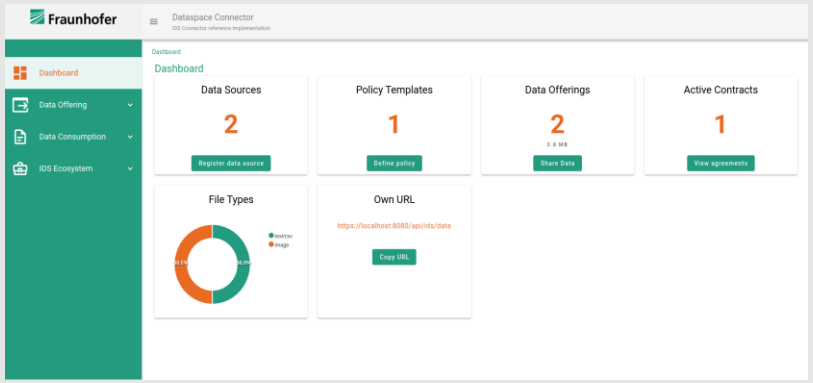
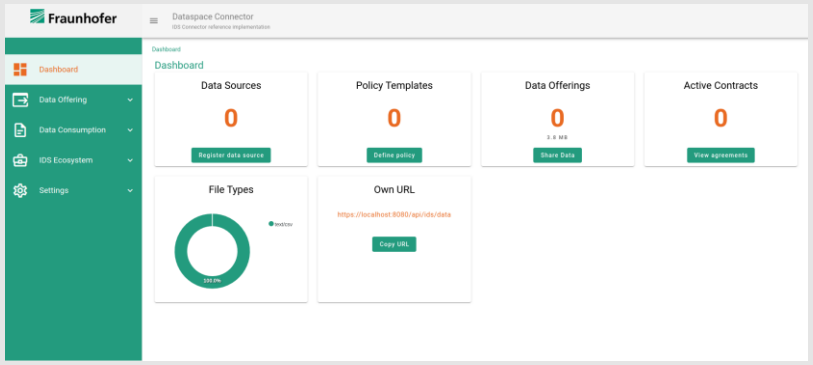




nexyo

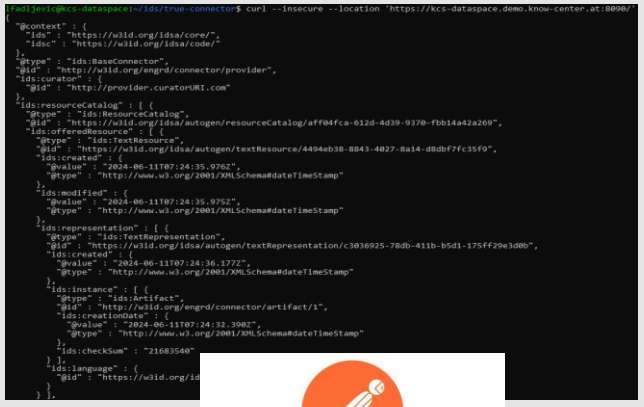
Demonstrator available





Fraunhofer

Demonstrator available



POSTMAN

TRUEConnector

Demonstrator under construction (basic version implemented)

MVDS - **Usecase implemented on 3 different tech stacks**

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Feature	Nexyo	Fraunhofer	True
IDSA Certfication	NA	Yes	Yes
Connector Core	EDC	EDC	TRUE
Licence	NA	Open source (Apache 2.0)	Open source (AGPL version 3) 1
GUI	Yes (Nexyo Data Hub)	Yes (EDC Dashboard)	No
Hardware requirements	Cloud-based	Dockers	CPU: 4 core (8 threads) Memory: at least 2GB Docker Containers
Software Requirements	Cloud-based	Java 17 + Docker	Linux + Docker
Data Sources / Sinks	Amazon S3, MS Sharepoint, Google Drive	Data bases	NA
Policies	Pre-defined and ad-hoc templates	Ad-hoc templates	NA
Maintained	Yes	No	Yes
API	Yes (WEB)	Yes	Yes (REST)
Identity Management	Basic auth (Basic access authorization, providing username and password)	Centralized/DAPS, IDS certificates (X.509v3)	Centralized (X.509)
Communication Protocol	IDS Multipart, IDS Communication protocol (IDSCP)	IDS Multipart, IDS Communication protocol (IDSCP)	IDS Multipart, IDS protocol (IDSCP)

How we can support you

Usecase Development: Data Driven Business Modelling (Data-driven Business Canvas & Data Service Cards)

Conceptualisation of Data Spaces

Exploration and benchmark of data spaces technologies.

Prototyping and Setup of MVDS for multi-firm projects.

Integration of Data sources from different public clouds to data spaces.

Incorporation of data management and AI-assisted solutions to data spaces.

Conceptualization of tools and AI-services for data spaces.

Data Spaces Value Stream

Goals:

To gain **technical knowledge** in data space connector technologies.

To fulfill **research gaps** in data connector technologies and to link dataspaces and ai-assisted analytics.

To generate **new services for data spaces** according to potential new business cases and experiences gained on data connectors exploration.

Activities:

Definition of Use Case for Dataspaces [✓]

Review of available data connectors for use case implementation [✓]

Deployment of data connectors candidates [✓]

Adaptation of use case pipeline for the different scenarios [ ]

Basic functions testing [ ]

Metric definitions [ ]

Code adaptation for metrics extraction [ ]

Experiments execution [ ]

Data analysis [ ]

Paper writing [ ]

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Aus Daten Werte schaffen.
Vielen Dank!

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