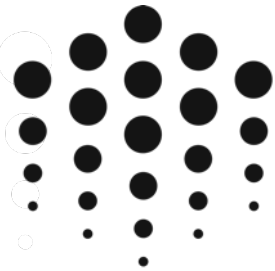


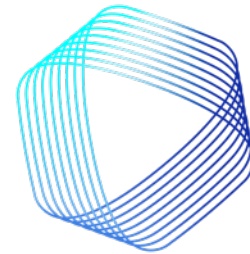


presentation

Minimal Viable Gaia-X



ocean



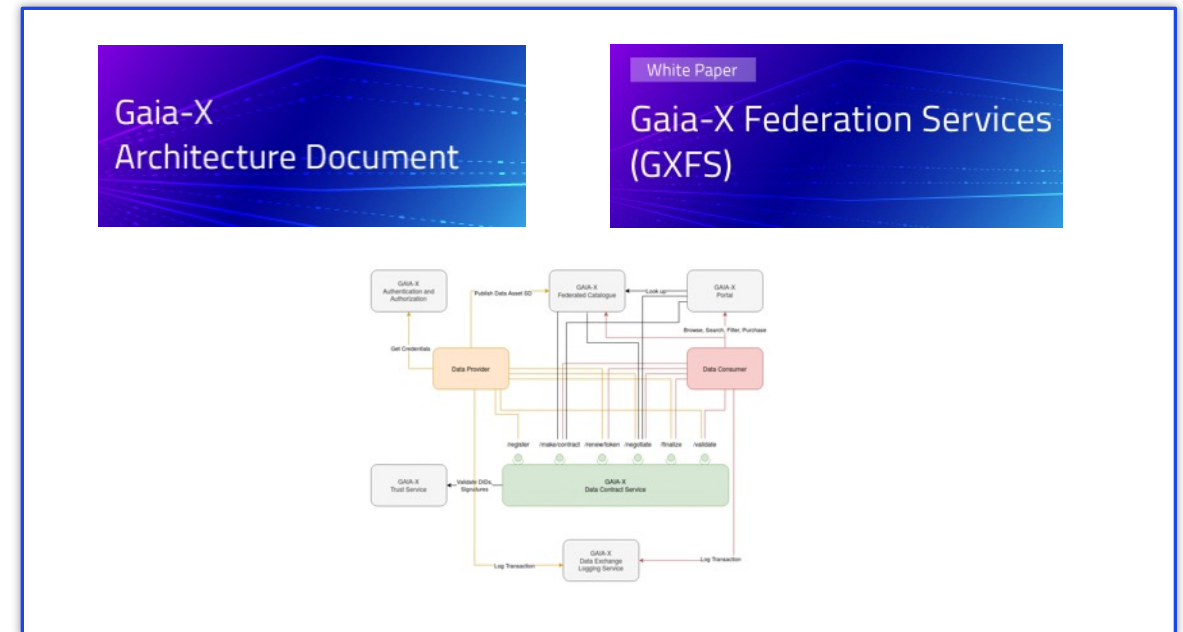
delta

our starting point

expectation vs. reality



© Federal Ministry for Economic Affairs and Climate Action



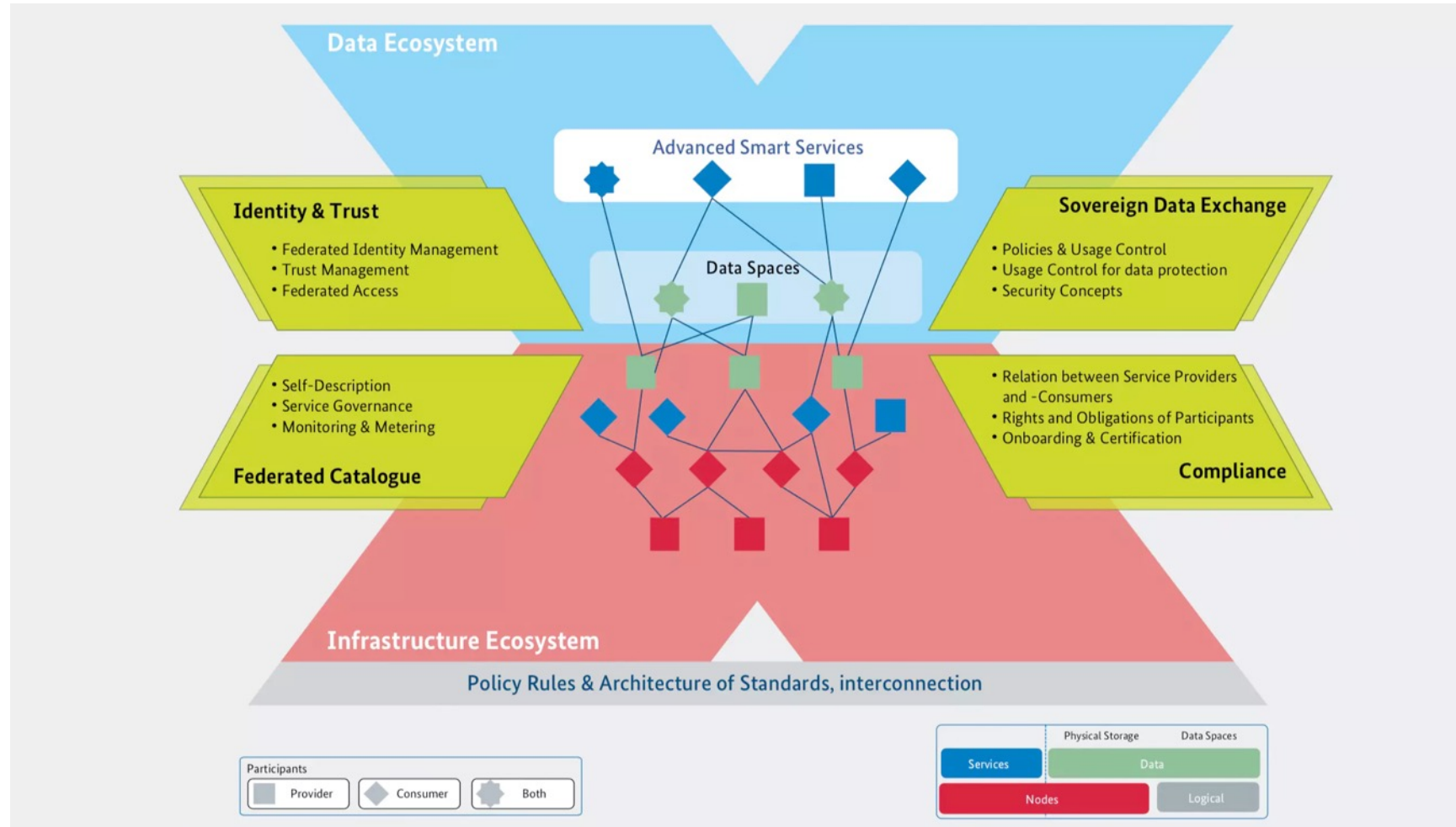
exceptional & necessary

why decentralized?

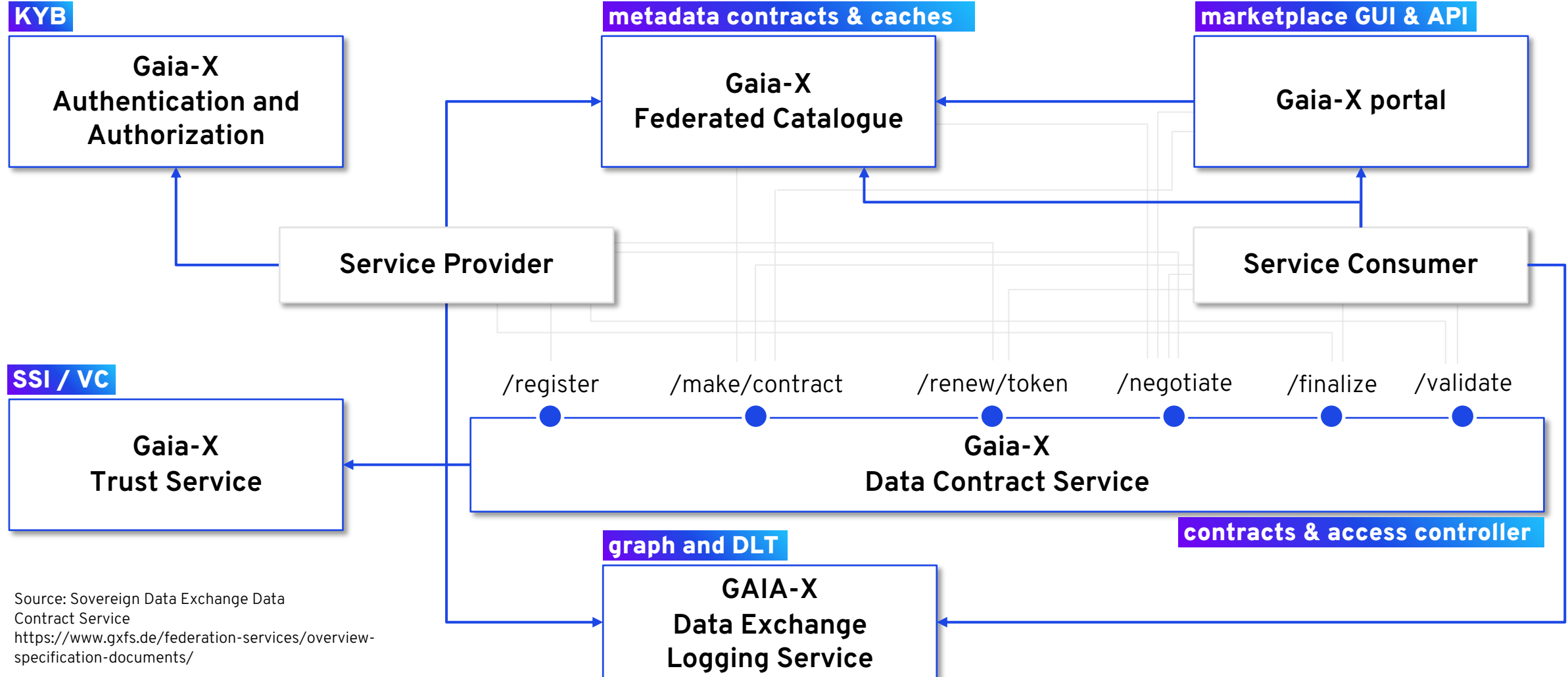


it is very hard to
decentralize later.

Gaia-X infrastructure and ecosystem

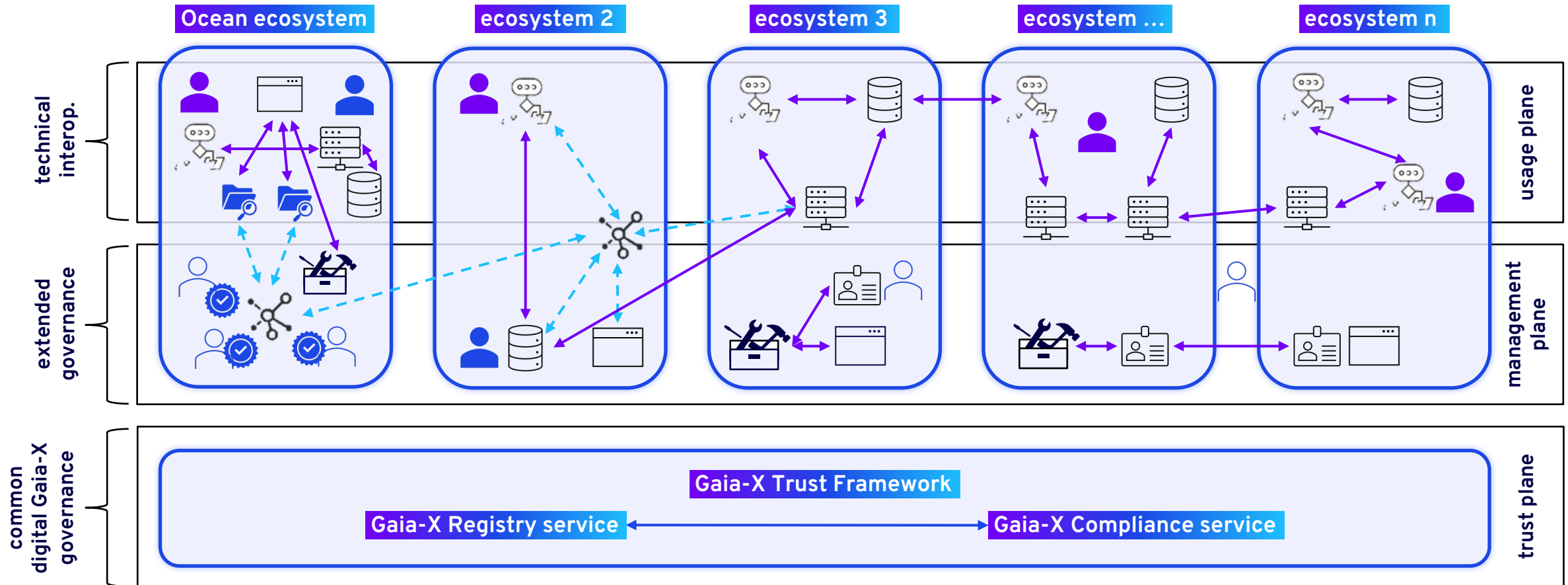


Gaia-X federation services & the Minimal Viable Gaia-X

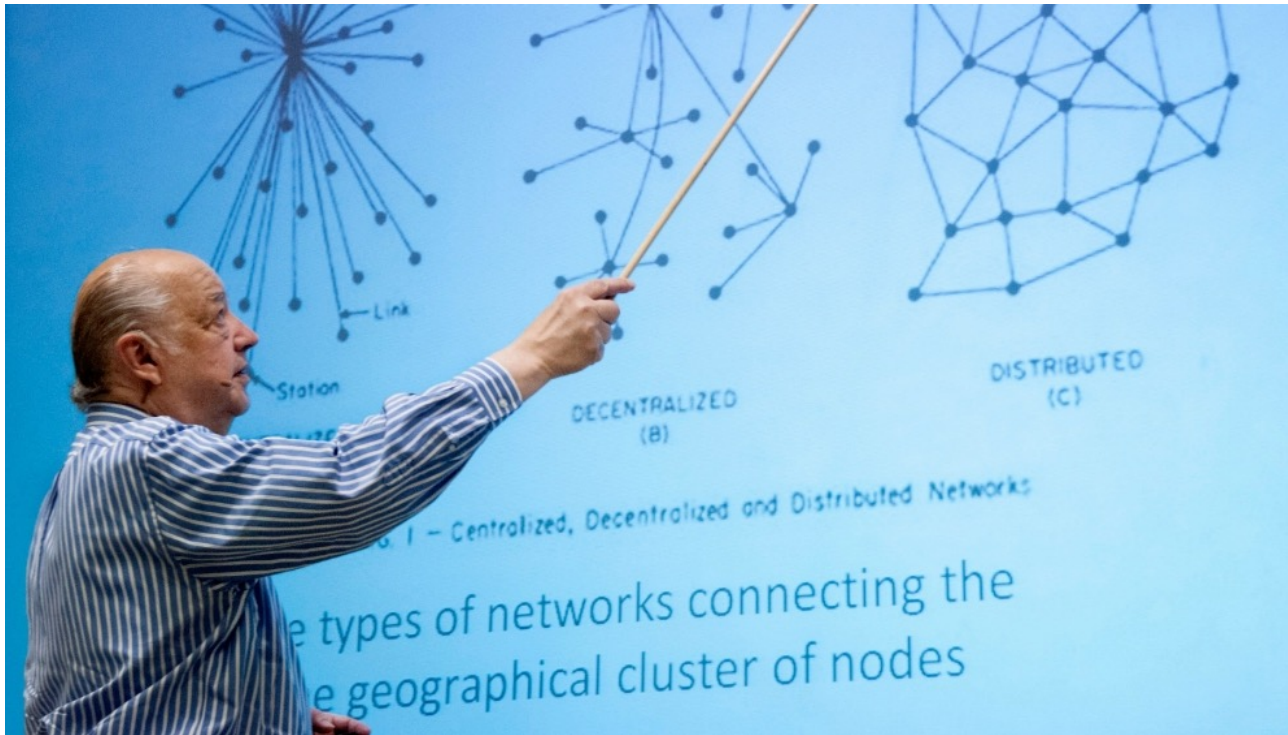


Source: Sovereign Data Exchange Data
Contract Service
<https://www.gxfs.de/federation-services/overview-specification-documents/>

there will be many ecosystems. how to start a decentralized one?



distribution leads to resilience and reduces dependencies



Paul Baran presents his work at a RAND Alumni Association event on July 25, 2009
Photo by Diane Baldwin/RAND Corporation

Paul Baran's seminal 1964 article "On Distributed Communications Networks"

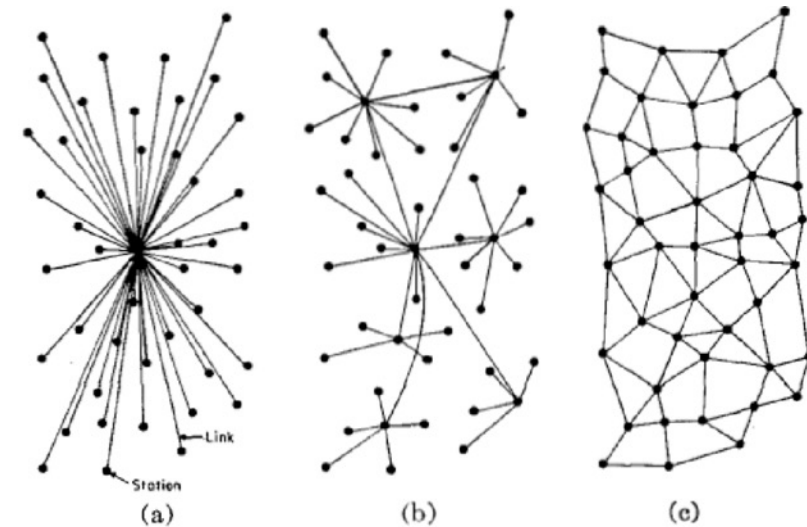
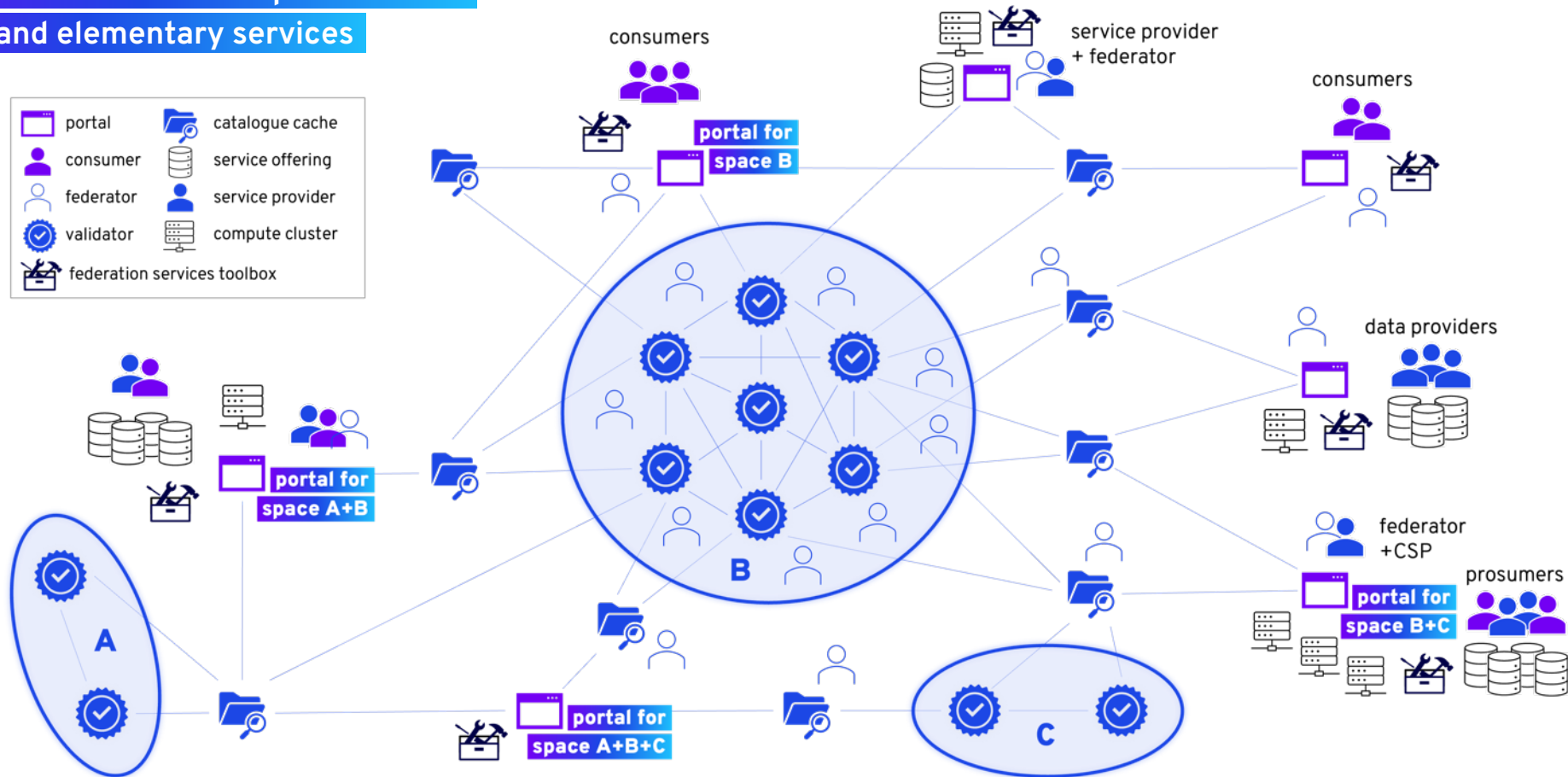


Fig. 1—(a) Centralized. (b) Decentralized. (c) Distributed networks.

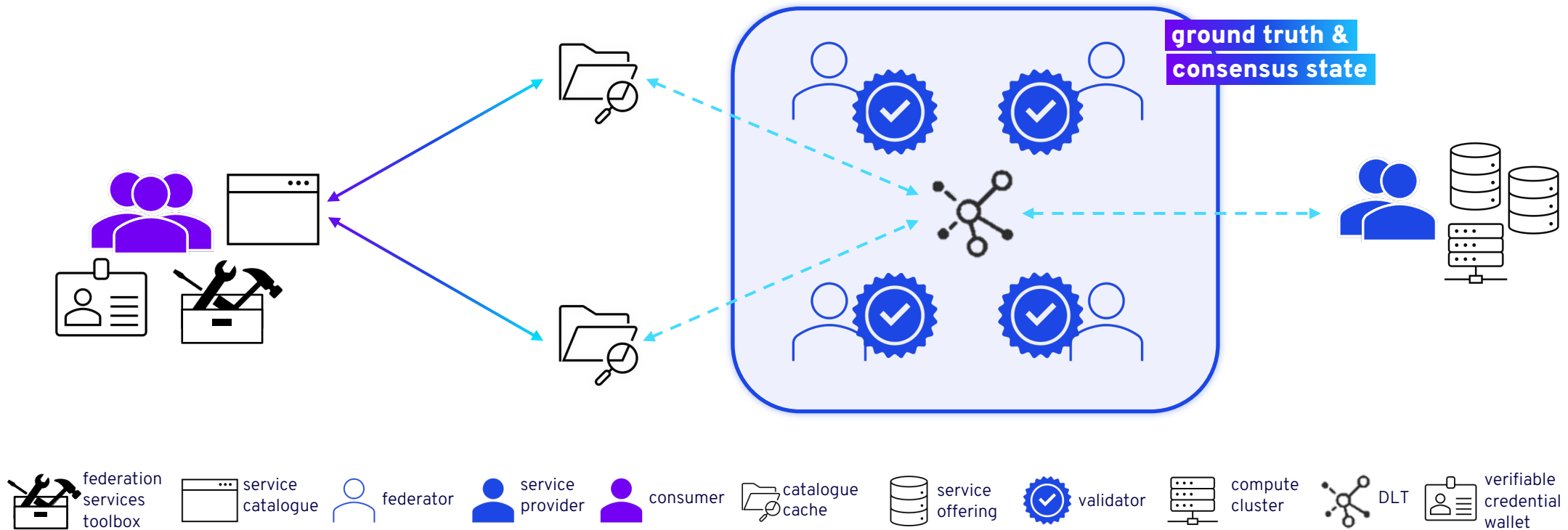
**centralization can be
an expensive liability.**

Composability of federated dataspaces (and ecosystems)

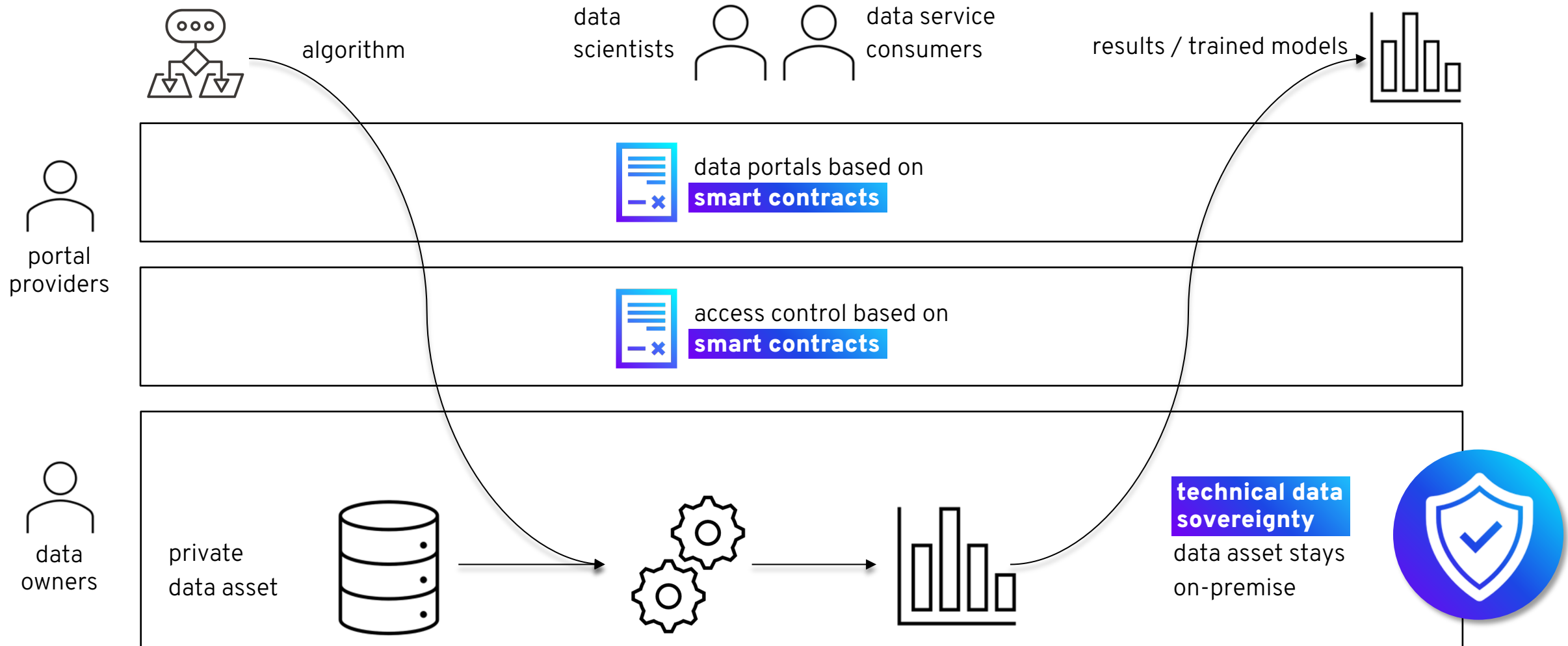
creation and connection of complex services
from atomic and elementary services



remove all single points of failure from the federation



compute-to-data enables true technical data sovereignty



vision Gaia-X & European data economy / data act

fairness
&
competitiveness

GDPR-compliance
&
data security

increase access,
lower barriers
& transaction costs

minimize lock-in
&
open-source software

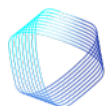
incentives to share
&
incentives to collaborate

enable investments,
foster innovation,
& fair returns

auditability,
provenance &
transparency

open private data
&
increase B2B use

reduce fragmentation
& EU-wide regulatory
framework



guiding principles

reuse existing software as much as possible

be transparent, use free open-source

enable technical data sovereignty

enable Gaia-X Trust Framework

sustainable business models for all participants

no lock-in, no central point of failure or control

made with love and 100% free open-source technology



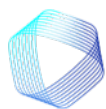
Minimal Viable

Gaia-X portal

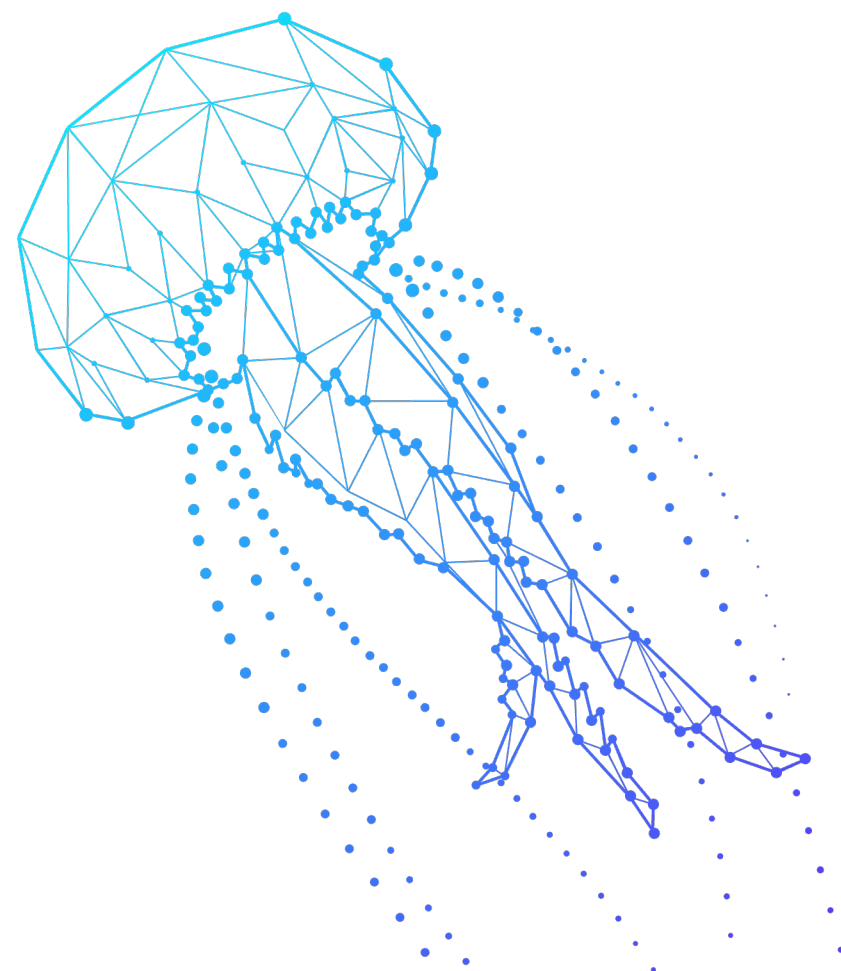


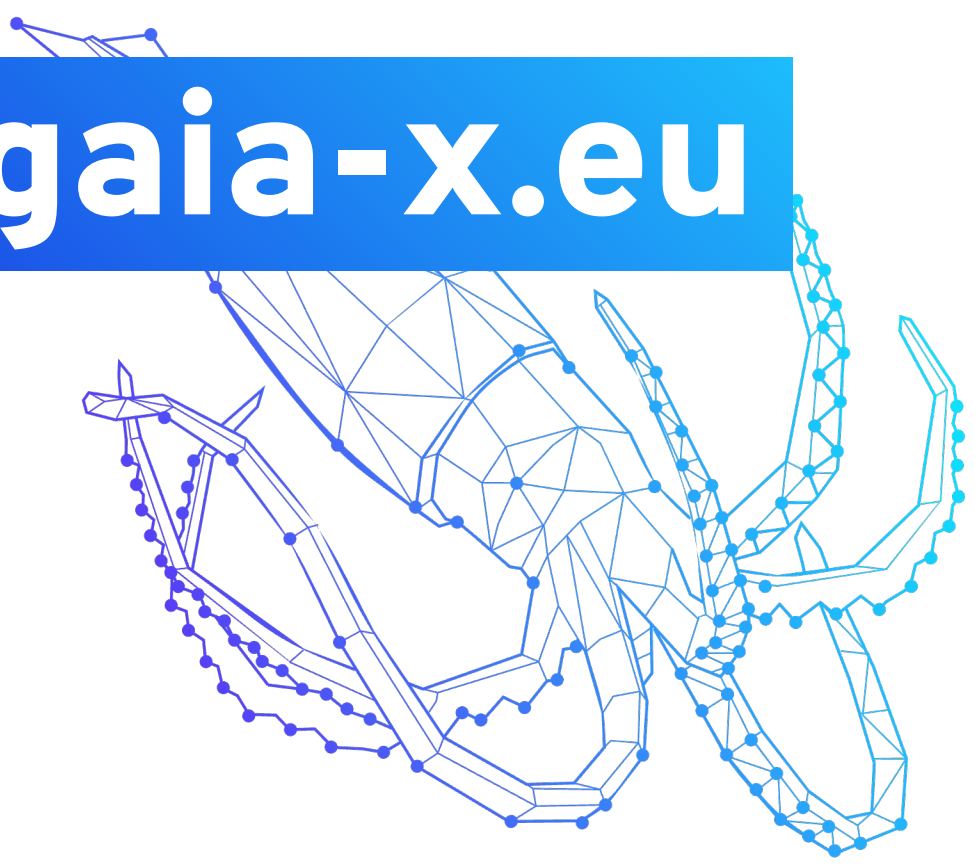
ocean

powered by
Ocean Protocol



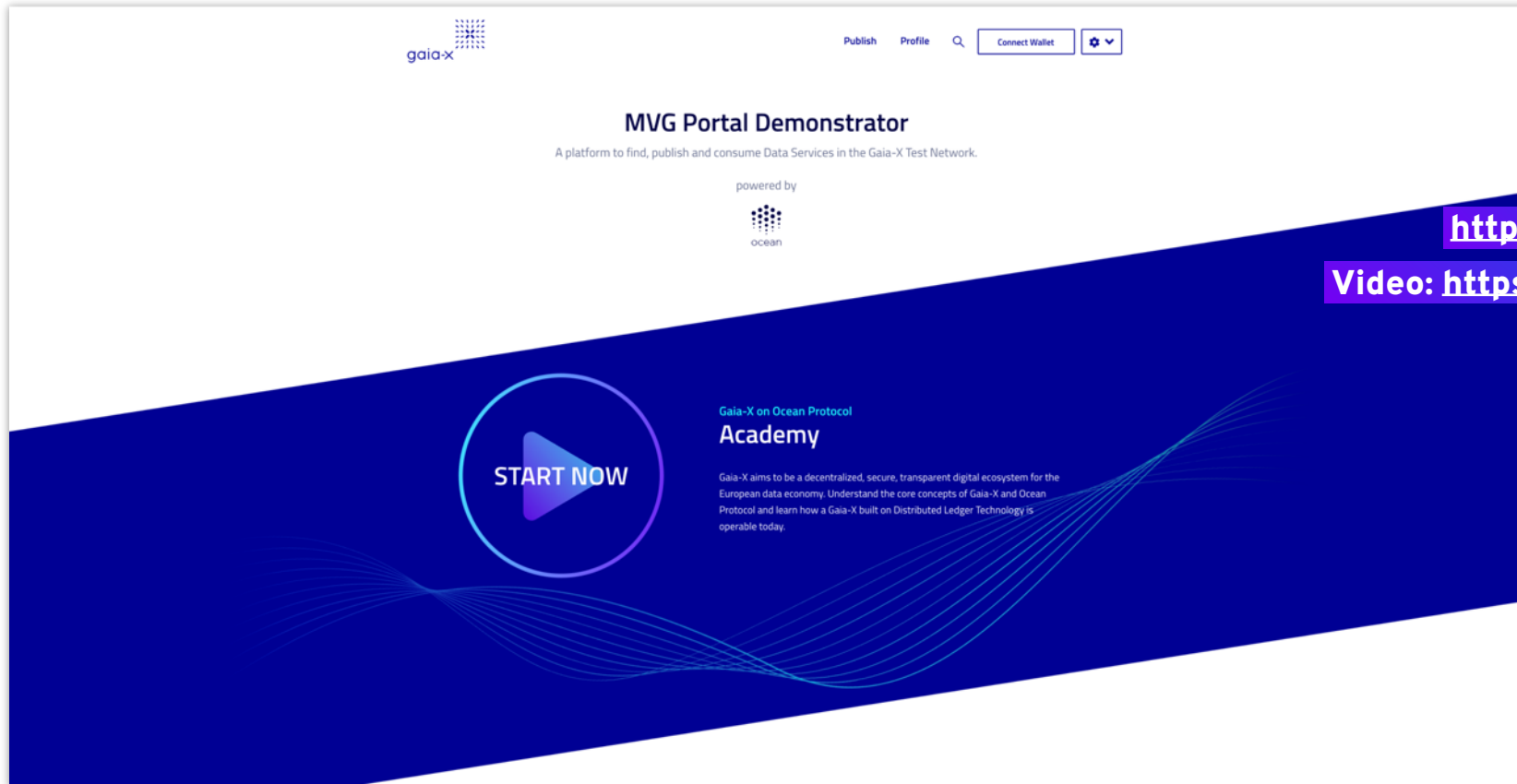
deltaDAO | data economy solutions – GDPR compliant | contact@delta-dao.com





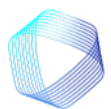
portal.minimal-gaia-x.eu

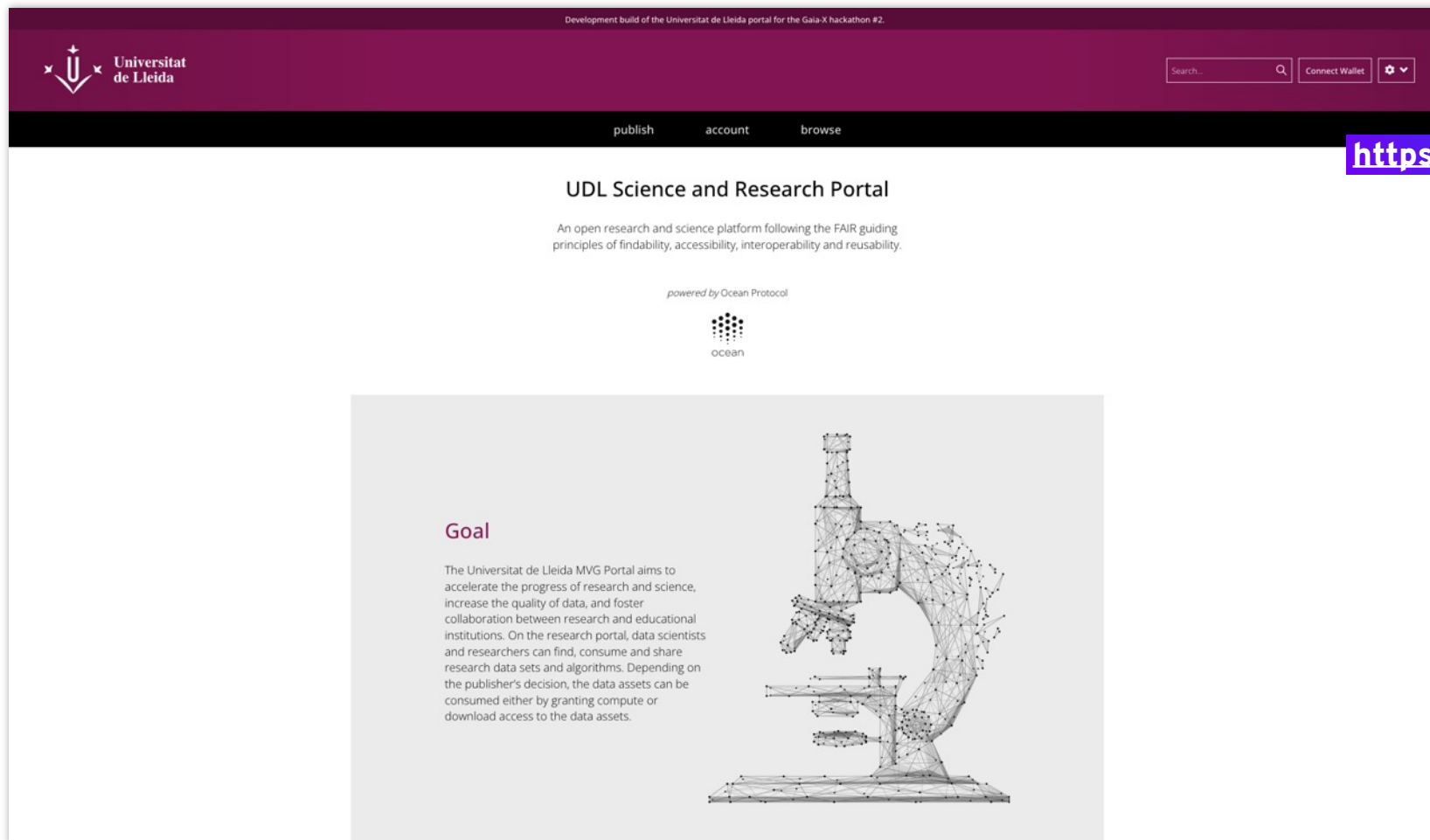
Hackathon #1 - First Minimal Viable Gaia-X Demonstrator



<https://portal.minimal-gaia-x.eu>

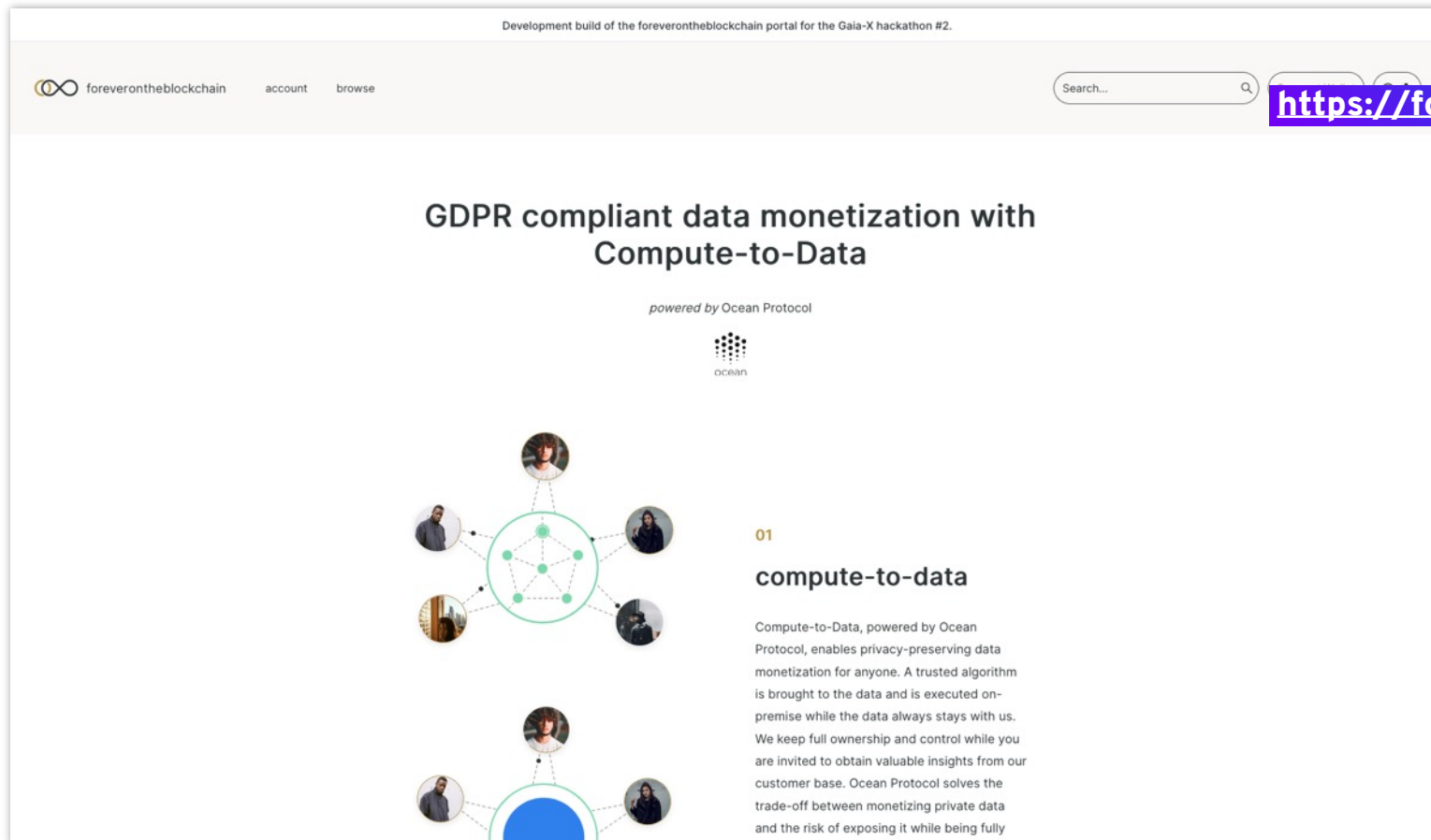
Video: <https://youtu.be/R49CXPTRamg>





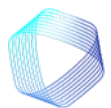
<https://udl.portal.minimal-gaia-x.eu>

for SMEs and GDPR-compliant data usage

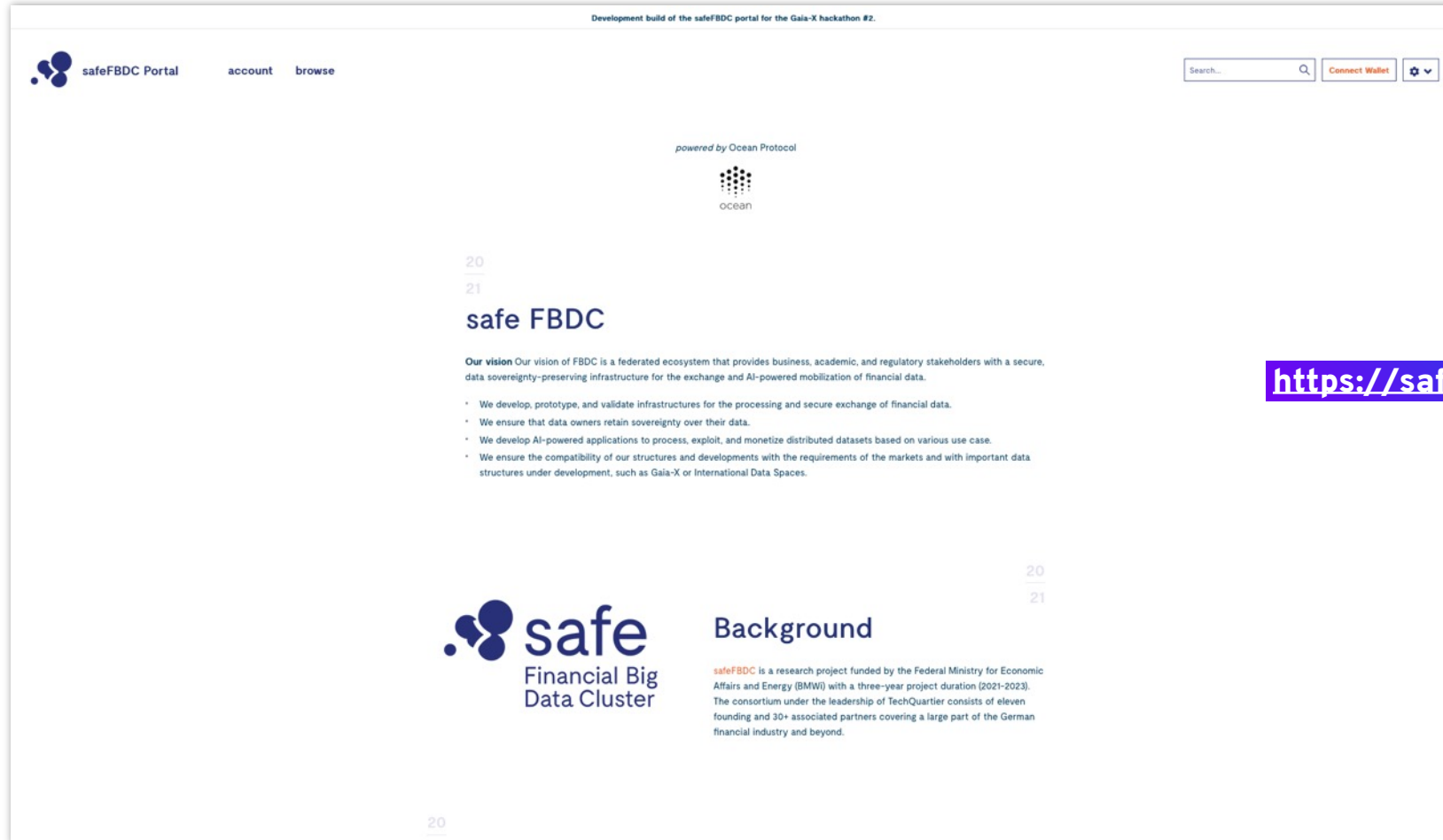


<https://forever.portal.minimal-gaia-x.eu>

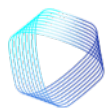
Medium [foreverontheblockchain Blogpost](#)



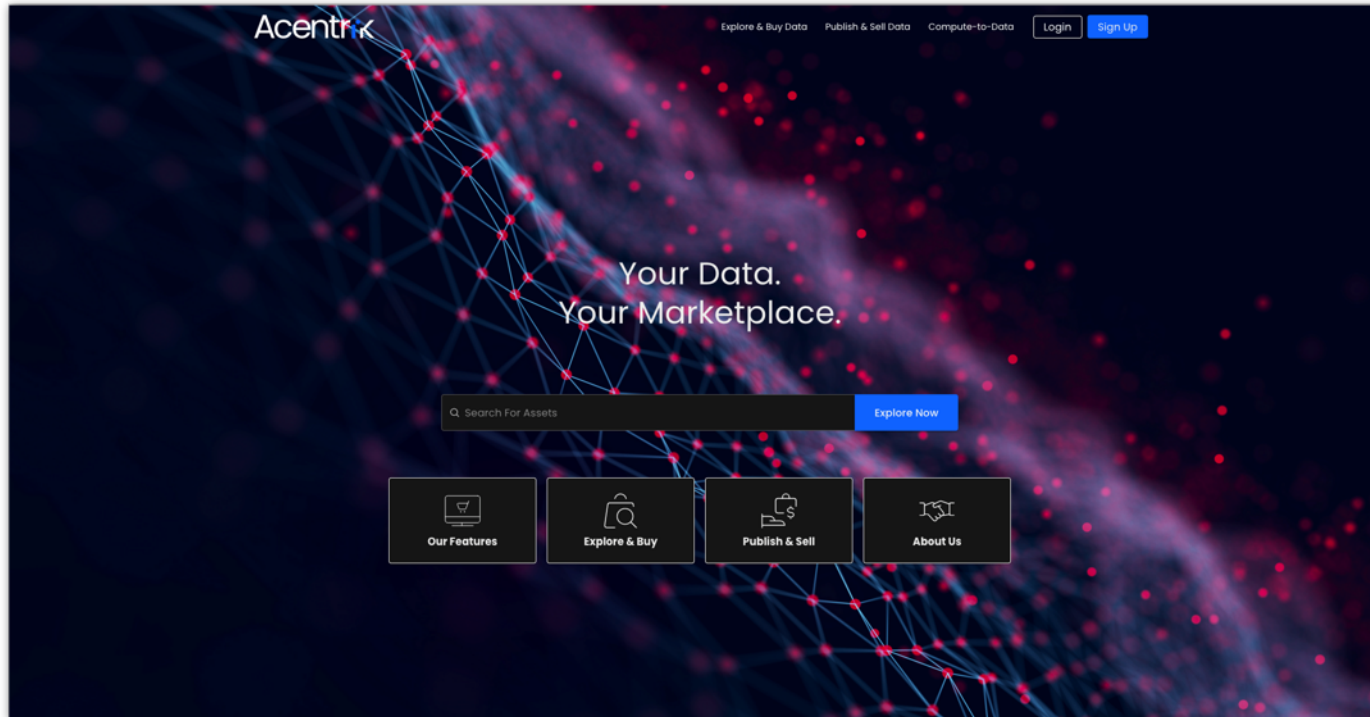
for regulators and the finance industry



<https://safefbdc.portal.minimal-gaia-x.eu>

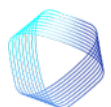
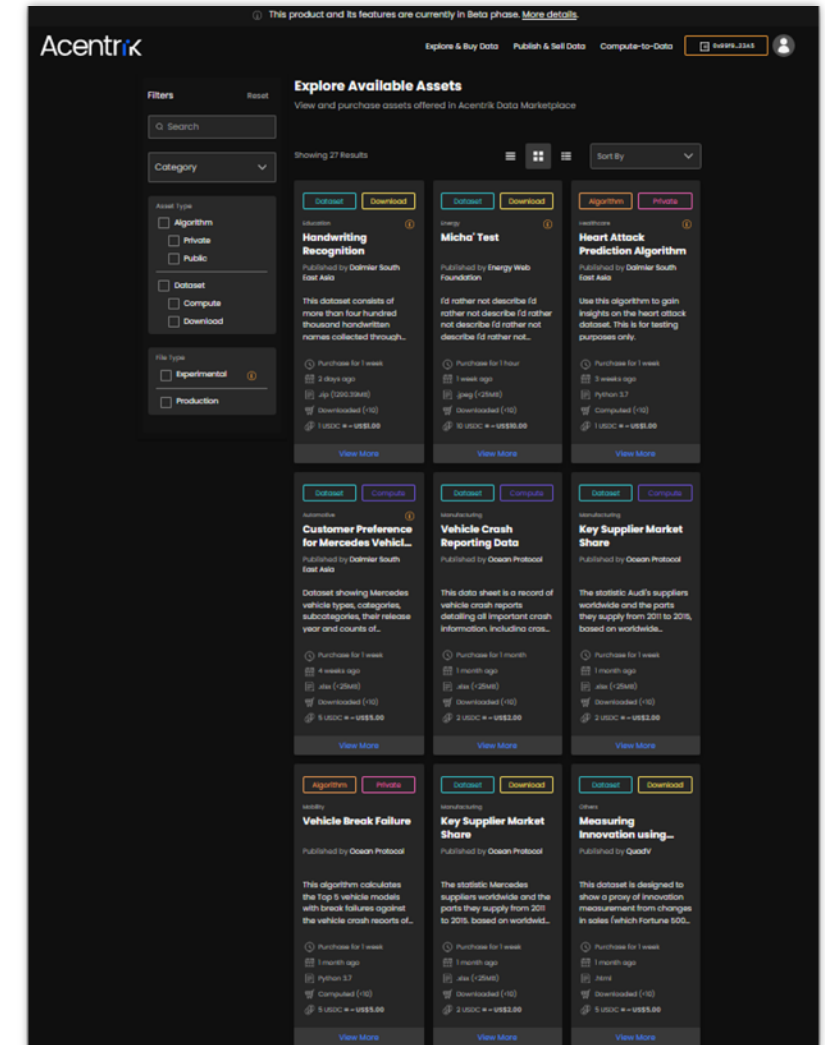


for enterprise marketplaces and cloud service providers



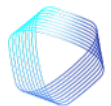
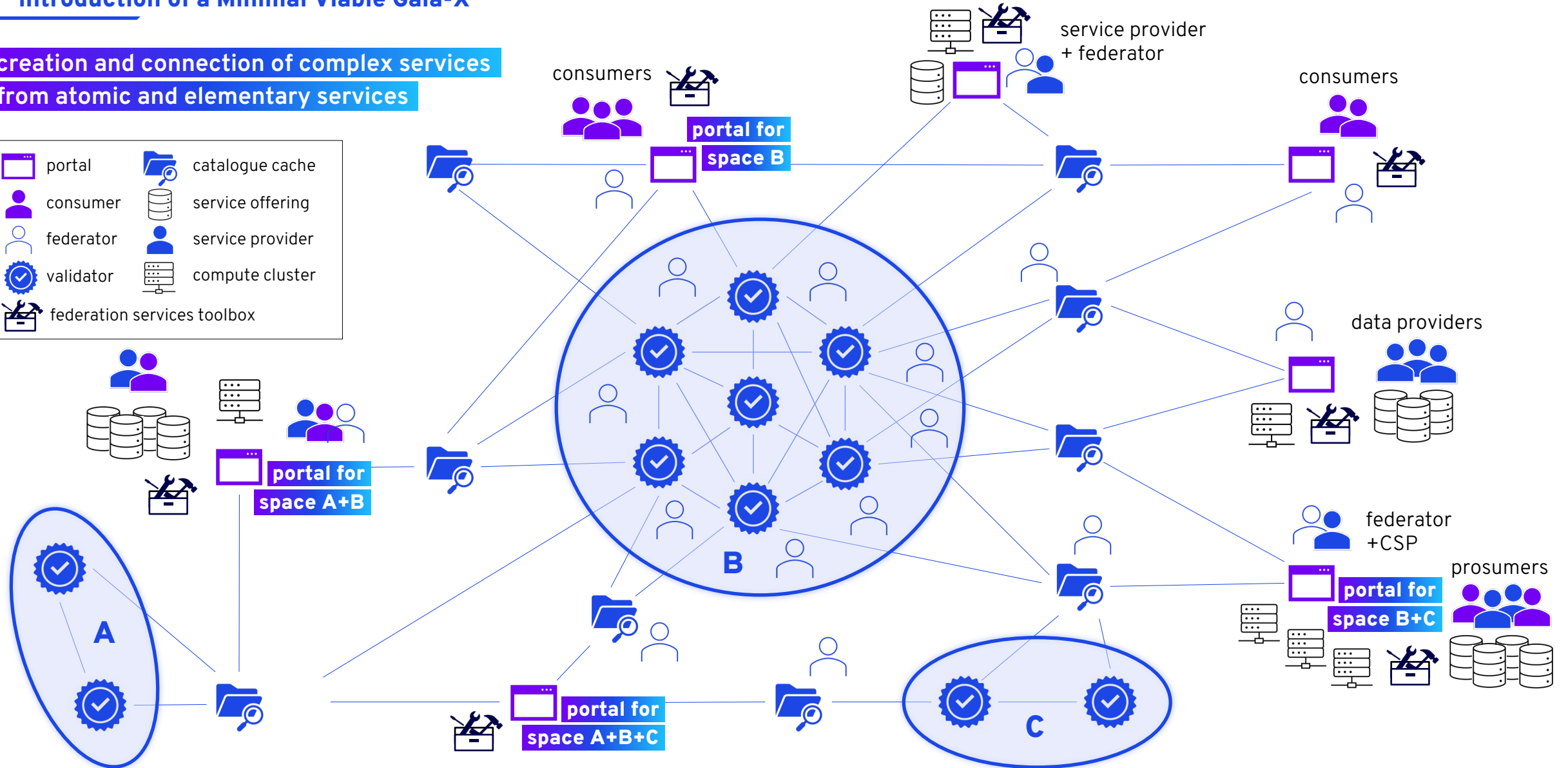
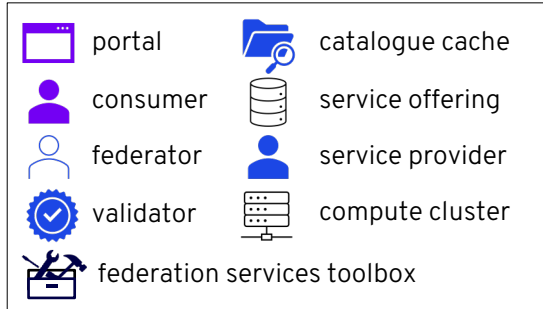
<https://sandbox.acentrik.io/>

Medium [Acentrik blogpost](#)



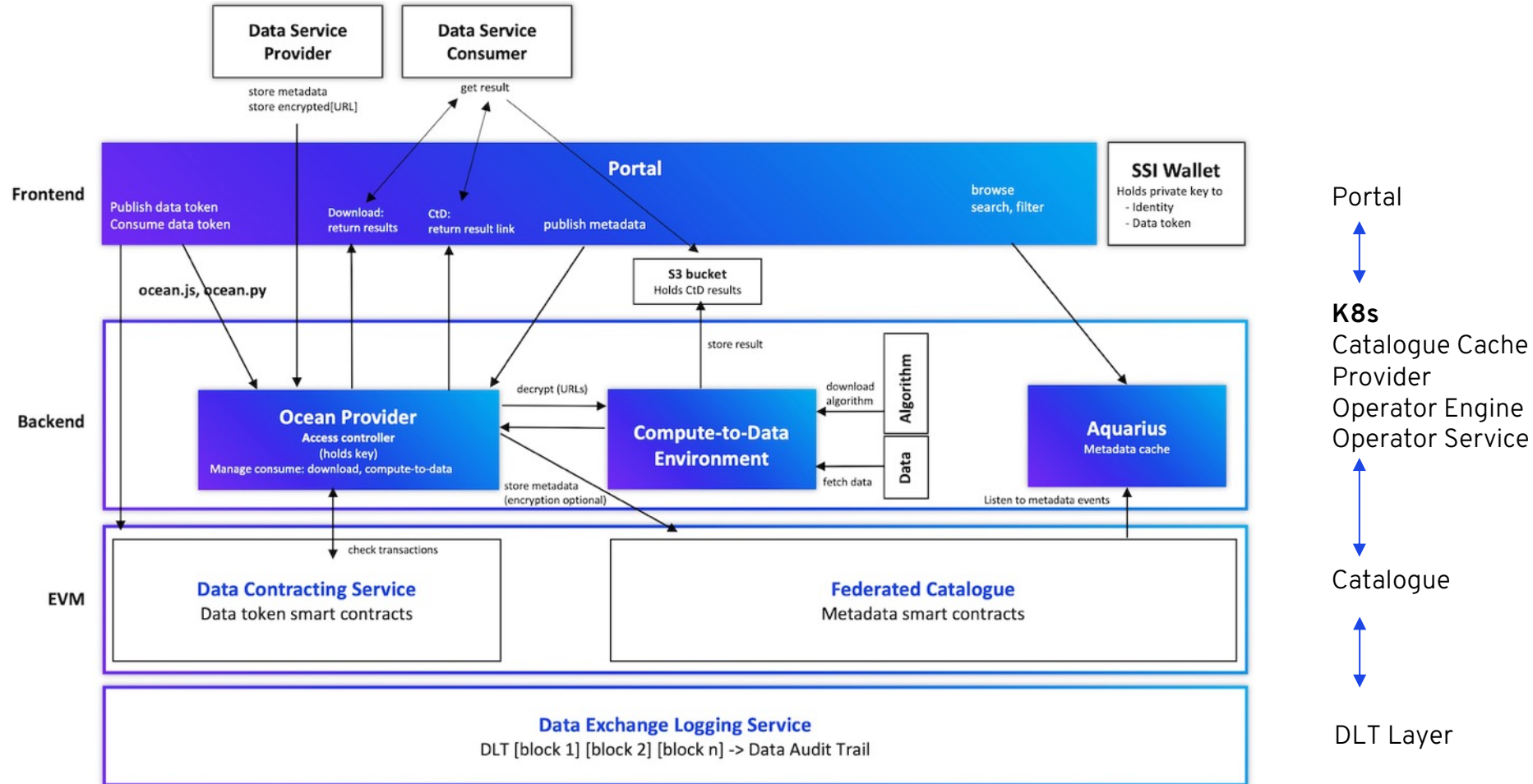
introduction of a Minimal Viable Gaia-X

creation and connection of complex services
from atomic and elementary services





deep dive #1



Gaia-X Lab 0.8.3

REGISTRATION

VERIFICATION

GITLAB

<https://onboarding-portal.lab.gaia-x.eu/>

Onboarding Portal

This web app demonstrates how SSI could be used to issue Gaia-X participation credentials in a way that is cryptographically secure, privacy-respecting, and machine-verifiable.

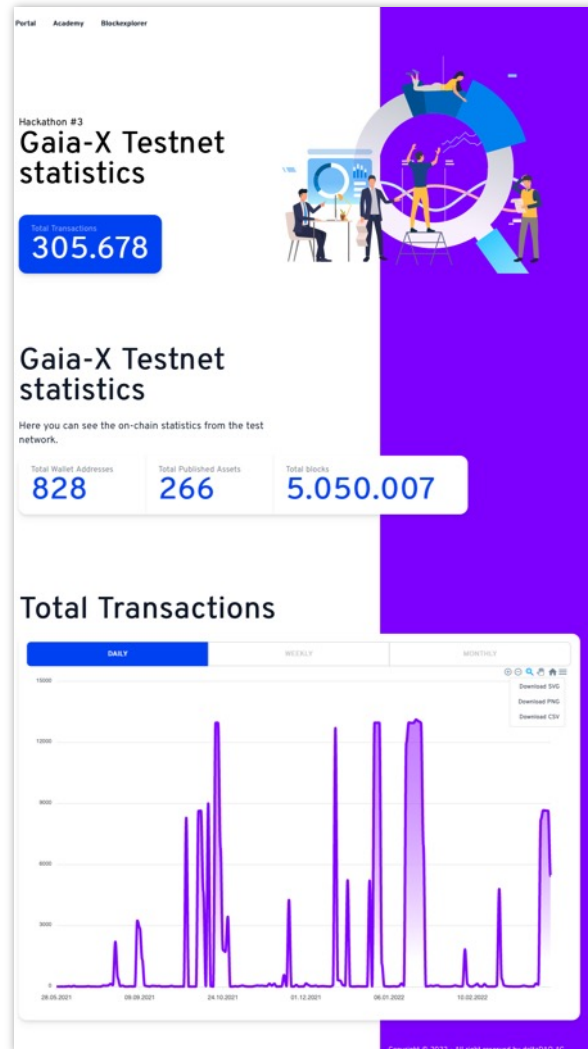
REGISTER CREDENTIAL

VERIFY CREDENTIAL



<https://registry.gaia-x.eu/api-docs/#/Trust%20Anchor/post> api trustAnchor

Name	Defined as
State	The Trust Service Providers (TSP) must be a state validated identity issuer. - For participant, if the legalAddress.country is in EEA, the TSP must be eIDAS compliant. - Until end of 2022 Q1, to ease the onboarding and adoption this framework DV SSL can also be used. - Gaia-X association is also a valid TSP for Gaia-X association members.
eIDAS	Issuers of Qualified Certificate for Electronic Signature as defined in eIDAS Regulation (EU) No 910/2014 (homepage: https://esignature.ec.europa.eu/efda/tl-browser/#/screen/home) (machine: https://ec.europa.eu/tools/lotl/eu-lotl.xml)
DV SSL	Domain Validated (DV) Secure Sockets Layer (SSL) certificate issuers are considered to be temporarily valid Trust Service Providers. (homepage: https://wiki.mozilla.org/CA/Included_Certificates) (machine: https://ccadb-public.secure.force.com/mozilla/IncludedCACertificateReportPEMCSV)
Gaia-X	<i>To be defined after 2022Q1.</i>
EDPB CoC	List of Code of Conduct approved by the EDPB (homepage: https://edpb.europa.eu/our-work-tools/documents/our-documents_fr?f%5B0%5D=all_publication_type%3A61&f%5B1%5D=all_topics%3A125)
gleif	List of registered LEI issuers. (homepage: https://www.gleif.org/en/about-lei/get-an-lei-find-lei-issuing-organizations) (machine: https://api.gleif.org/api/v1/registration-authorities)



May 2021 – March 2022

Total Transactions

314.087

Hackathon 3

> 4600 Transactions

> 100 Gaia-X Participant Credentials

Total Wallet Addresses

828

Total Published Assets

266

Total blocks

5.050.007

<https://stats.minimal-gaia-x.eu/>

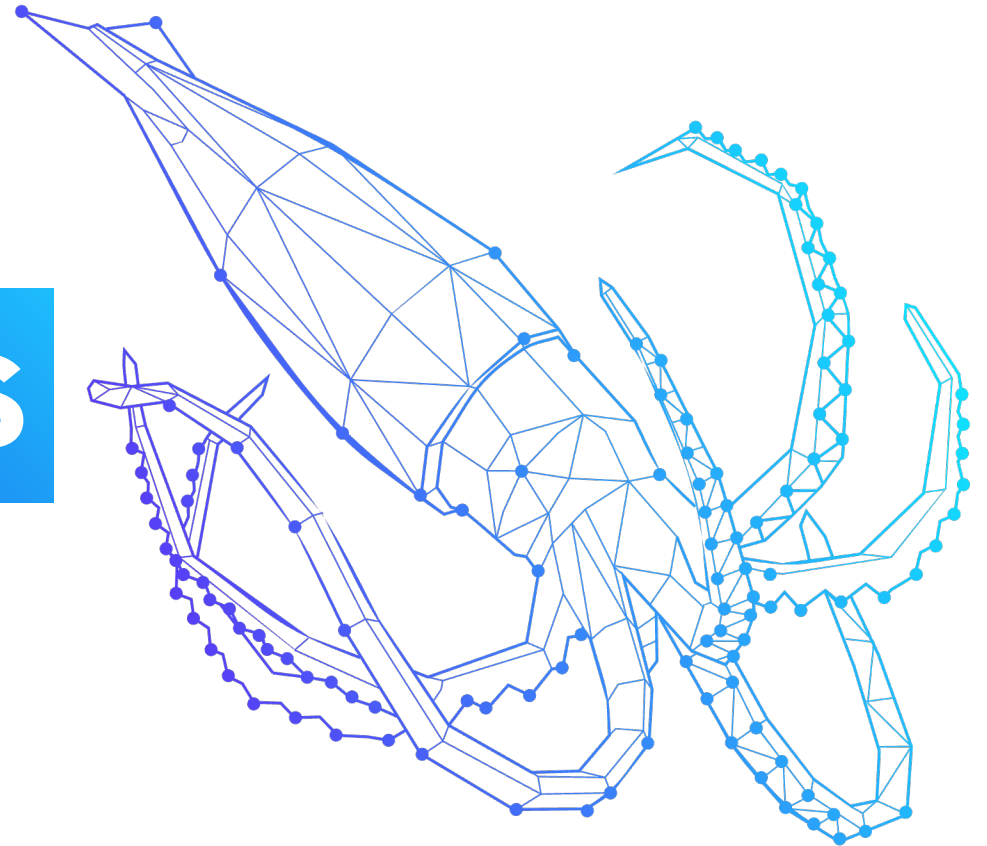
Repositories

<https://github.com/deltaDAO/gaia-x-testnet-statistics-api>

<https://github.com/deltaDAO/gaia-x-testnet-statistics>

<https://github.com/deltaDAO/gaia-x-snapshot>

Minimal Viable Gaia-X Features



decentralized catalogue, minutes to publish and consume

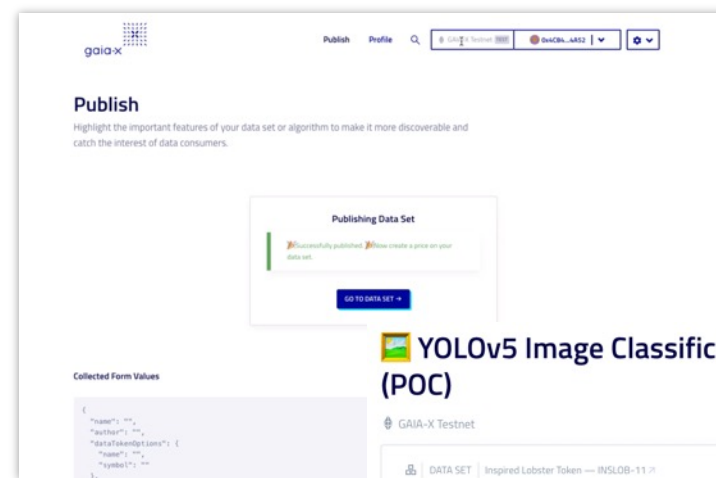
gaia-x

104 results

DATASETS ALGORITHMS CATEGORIES

SORT Published

FULL - Copernicus Sentinel Data Fusion with CNES Orfeo toolbox (Algorithm)	TENANE-58	ALGORITHM	1 OCEAN
QUICK - Copernicus Sentinel Data Fusion with CNES Orfeo toolbox (Algorithm)	STUIEL-8	ALGORITHM	1 OCEAN
Copernicus Sentinel Data Fusion with CNES Orfeo toolbox (Dataset)	INVDOL-81	DATA SET	1 OCEAN
Provider tests	PERWHA-66	ALGORITHM	1 OCEAN
Provider test	BILCOD-50	DATA SET	1 OCEAN
Bids test	VIBSEA-6	ALGORITHM	1 OCEAN
Test Dataset	GENSHA-68	DATA SET	1 OCEAN
Foreverontheblockchain Algorithm	JUDSTA-51	ALGORITHM	1 OCEAN
Foreverontheblockchain Dataset	QUICLA-8	DATA SET	1 OCEAN
Yolov5 Algorithm	CONWHA-61	ALGORITHM	1 OCEAN
Yolov5 Dataset examples	DOWLIN-26	DATA SET	1 OCEAN
QUICK - Copernicus Sentinel Data Fusion with CNES Orfeo toolbox	ADACUT-79	ALGORITHM	1 OCEAN
FULL - Copernicus Sentinel Data Fusion with CNES Orfeo toolbox	ADACUT-79	ALGORITHM	1 OCEAN
Data Fusion Dataset - Copernicus Sentinel-1 SLC IW and Sentinel 2 L2A	HUBHER-51	DATA SET	1 OCEAN



YOLOv5 Image Classification Sample Data (POC)

GAIA-X Testnet

DATA SET Inspired Lobster Token — INVLOB-11

Published By 0x68C2...246B
5 days ago — updated 5 days ago

Service Online / Available
Type Machine Learning
Domain Mobility

About this Data Service Offering

This data service offering consists of data for a real-time object detection algorithm, which identifies specific objects in a sample set of videos and images. The algorithm uses features learned by a deep convolutional neural network to detect an object.

The YOLOv5 algorithm is listed in the [Minimal Viable Gaia-X Portal here](#).

This data service can be translated to many other use cases, i.e. traffic detection, smart cities, agricultural use cases etc.

About the Use Case

This use case demonstrates how algorithm and data providers can train and monetize their machine learning scripts by making them available in Gaia-X. At the same time consumers in Gaia-X can use existing and well-trained models for classification, analysis and forecasting without the need to share their data and/or acquire personnel or

USE

5 OCEAN
≈ €2.51

Select an algorithm to start a compute job

Search by title, datatoken, or DID...

YOLOv5 Object Classification Algorithm (POC) 71
EXPLORE

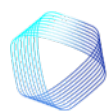
You will pay 5 OCEAN

BUY COMPUTE JOB

You do not have enough OCEAN in your wallet to purchase this asset.

<https://catalogue.minimal-gaia-x.eu>

Tutorial: <https://youtu.be/eAbnM5bfEMc>



deltaDAO

| data economy solutions – GDPR compliant | contact@delta-dao.com

licensed under [CC-BY-4.0](https://creativecommons.org/licenses/by/4.0/), deltaDAO AG

SSI integration & access control for technical sovereignty

Set allowed algorithms

Selected Algorithms

Search by title, datatoken, or DID...

☒ Demonstrator Algorithm European Data Economy in 2021	1
☐ QUICK - Copernicus Sentinel Data Fusion with CNES Orfeo toolbox (Algorithm)	1
☐ FULL - Copernicus Sentinel Data Fusion with CNES Orfeo toolbox (Algorithm)	1
☐ QUICK - Copernicus Sentinel Data Fusion with CNES Orfeo toolbox (Algorithm)	1
☐ Provider tests	1
☐ Bids test	1
☐ Foreveontheblockchain Algorithm	1
☐ YoloV5 Algorithm	1
☐ QUICK - Copernicus Sentinel Data Fusion with CNES Orfeo toolbox	1

Choose one or multiple algorithms you trust to allow them to run on this data set.

All Algorithms

☐ Allow any published algorithm

Allow any published algorithm to run on this data set.

SUBMIT CANCEL

Allow ETH Address

e.g. 0x12345678901234567890abcd **ADD**

Enter ETH address and click ADD button to append the list. Only ETH address in allow list can consume this asset. If the list is empty means anyone can download or compute this asset.

Deny ETH Address

e.g. 0x12345678901234567890abcd **ADD**

Enter ETH address and click ADD button to append the list. If ETH address is fall under deny list, download or compute of this asset is denied.

Disable Consumption

☐ Disable

Disable dataset being download or compute when dataset undergoing maintenance.

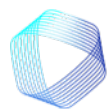
SUBMIT CANCEL

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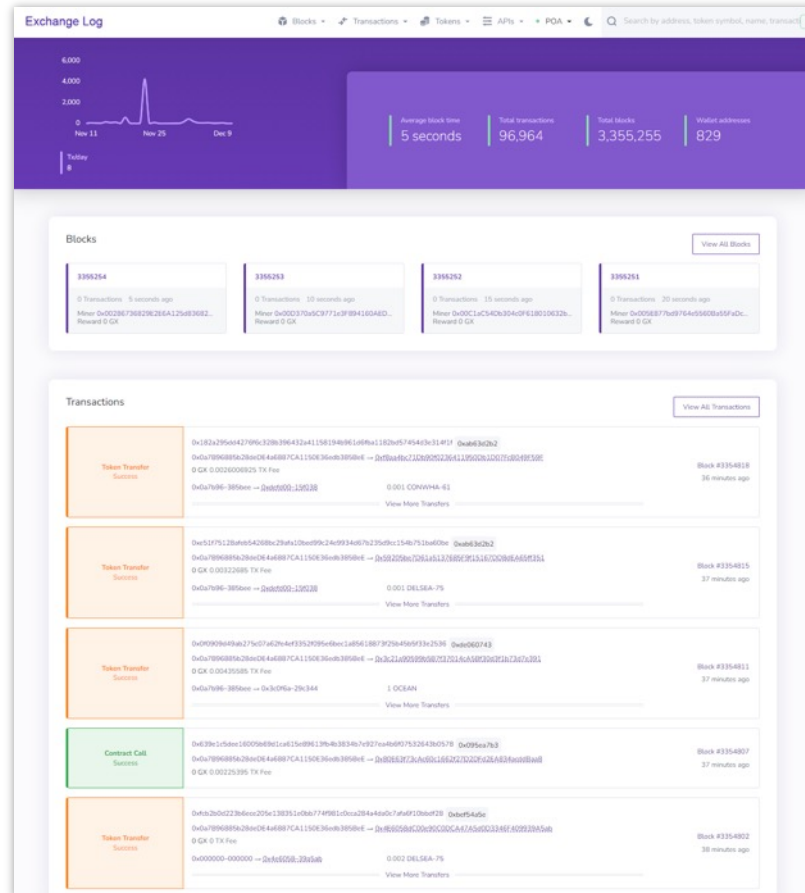
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15  "@type": "gax-participant:Provider",
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17  "gax-participant:hasLogo": {
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19  },
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Tutorial: https://youtu.be/vFfYo8LxbzM?list=PLIQKB1A_2lytB5Cf6P0uTTN4hRGbAxw7E



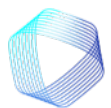
automatic audit trails & security & privacy by design



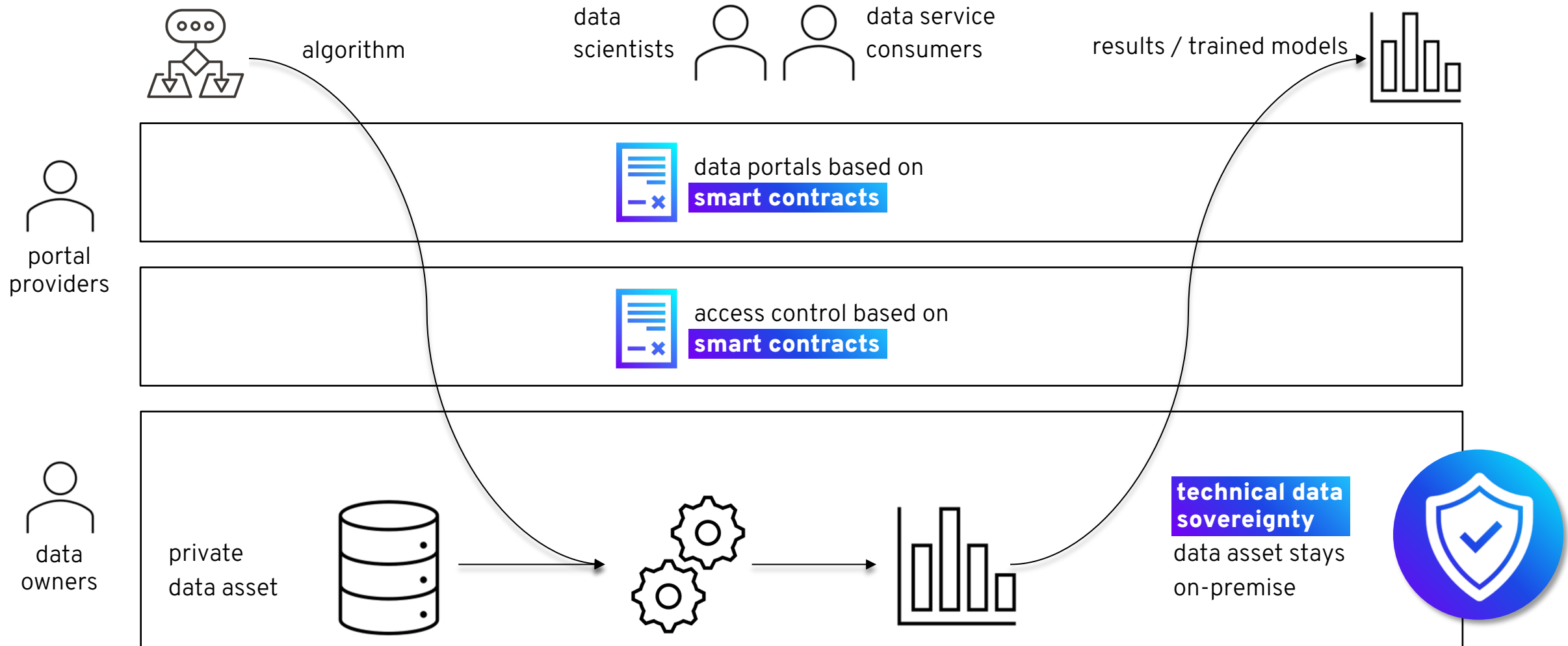
Transaction Details

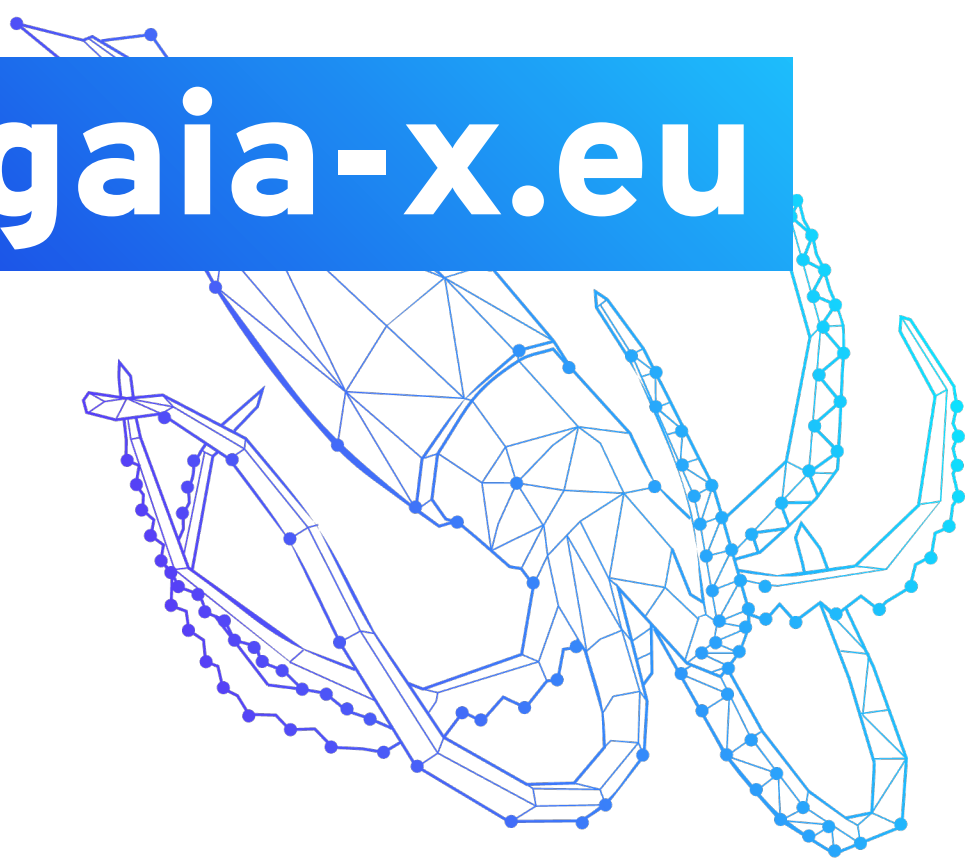
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Result	Success
Status	Confirmed Confirmed by 2,045
Block	3354818
Timestamp	3 hours ago December-12-2021 06:25:50 PM +1 UTC Confirmed within <= 5.0 seconds
From	0x0a7b96885b28dede4a6887ca1150e36edb385bee
Interacted With (To)	0xf8aa4bc71db90f0236411950db1d07fcb049f59f
Tokens Transferred	From 0x0a7b96885b28deDE4a6887CA1150E36edb385BeE To 0x3c0F6a52c84A79eBC52C56F8C029a30F929C344 For 0.998 CONWHA-61 From 0x0a7b96885b28deDE4a6887CA1150E36edb385BeE To 0x9984b2453eC7D99a73A5B3a46Da81f197B753C8d For 0.001 CONWHA-61 From 0x0a7b96885b28deDE4a6887CA1150E36edb385BeE To 0xDEFD0018969cd2d4E648209F876ADe184815f038 For 0.001 CONWHA-61
Value	0 GX
Transaction Fee	0.0022258425 GX
Gas Price	52.5 Gwei

<https://exchangelog.minimal-gaia-x.eu/>



compute-to-data enables true technical data sovereignty





portal.minimal-gaia-x.eu

Useful resources after demonstration



Minimal Viable Gaia-X

Portal: <https://portal.minimal-gaia-x.eu/>

safeFDBC: <https://safefdbc.portal.minimal-gaia-x.eu/>

Forever Portal: <https://forever.portal.minimal-gaia-x.eu/>

UDL: <https://udl.portal.minimal-gaia-x.eu/>

Acentrik: <https://acentrik.io/>

Catalogue: <https://catalogue.minimal-gaia-x.eu/>

Exchange Logging: <https://exchangelog.minimal-gaia-x.eu/>

Stats Page: <https://stats.minimal-gaia-x.eu/>

Repositories: <https://github.com/deltaDAO>

Gaia-X Trust Framework

Onboarding Portal: <https://onboarding-portal.lab.gaia-x.eu/>

Verifier API: <https://auditor.gaiax.delta-dao.com/v1/swagger#/Verification%20Policies/verifyVP>

Repositories: <https://gitlab.com/gaia-x/lab/compliance>

Gaia-X Architecture Document

<https://gaia-x.gitlab.io/technical-committee/architecture-document//>

Gaia-X Trust Framework

<https://gaia-x.gitlab.io/policy-rules-committee/trust-framework/>

deltaDAO Minimal Viable Gaia-X Video: <https://youtu.be/R49CXPTRamq>

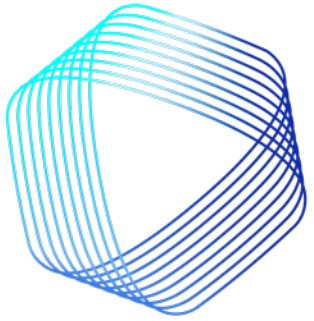
deltaDAO Medium: <https://deltadao.medium.com/>

Knowledge Base: <https://github.com/deltaDAO/Ocean-Protocol-Use-Cases>

Hackathon #3 Presentations:

Overview: <https://gitlab.com/gaia-x/gaia-x-community/gx-hackathon/gx-hackathon-3/-/wikis/GX-Hackathon-3>

SSI Onboarding Tutorial: https://gitlab.com/gaia-x/gaia-x-community/gx-hackathon/gx-hackathon-3/-/wikis/uploads/3d5f6539e21a7c7e476f27a64bfbbaa66/20220328_Gaia-X_Lab_Onboarding_Portal_and_Registry.pdf



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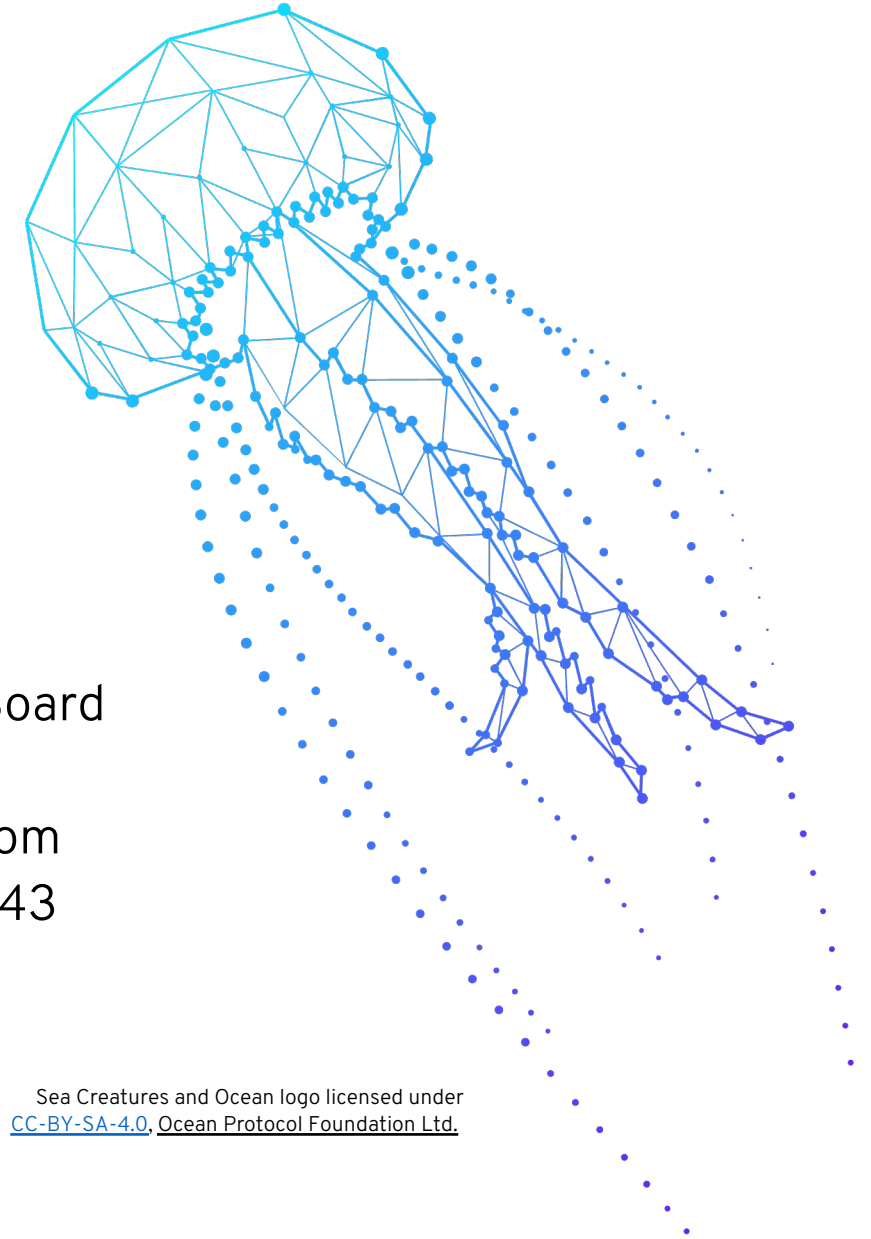
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