

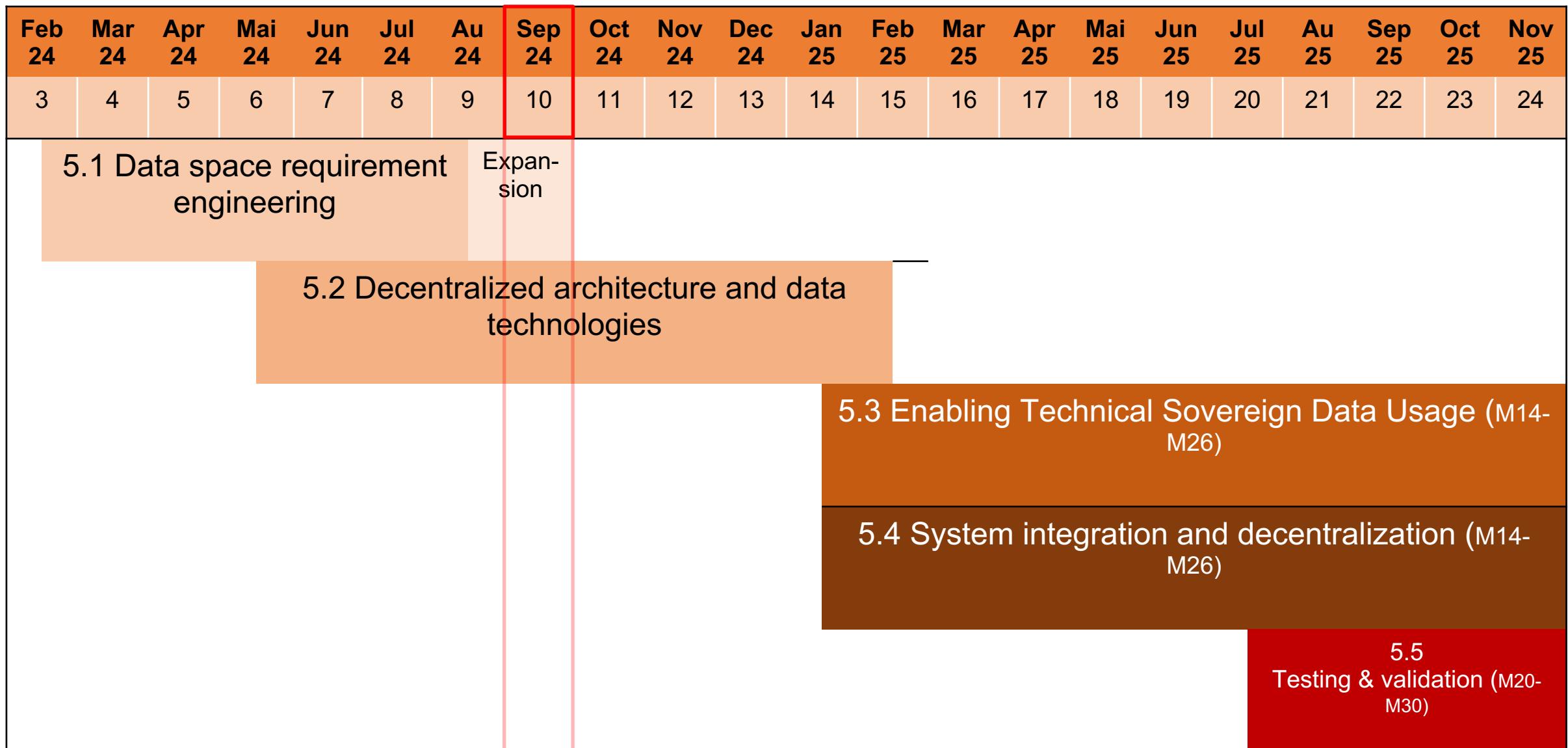


WP 5 data spaces design and implementation

Status update
September 2024
Bucharest

WP 5: Data Space Design and Implementation

Timeline WP 5



T5.1 Data Space Requirements Engineering

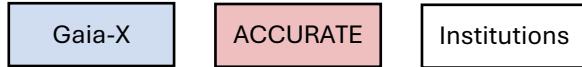
- Version 0.5 is [here](#).
- Contributions from AU, IMT, IAO, ES and DAO
- Version to be finalized till end of September.

T5.2 Decentralized Architecture and data technologies

- Deliverable 5.1 is being finalized after reviews from IMT and HWR was handed in.
 - For the full report, also to understand the concept and its goals, see [here](#).
- Data Space Architecture is designed and updated and ready for review and comments
 - Architecture slides and system boundary overview can be found [here](#).
- Data Space network, middleware and application layer components are deployed and up and running
- ACCURATE marketplace is up and running.
 - All consortium members have been onboarded and can try out the data space components.

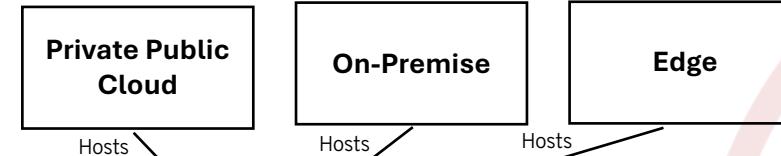
Please familiarize yourself with the ACCURATE marketplace and provide feedback!

High-Level Architecture and Components



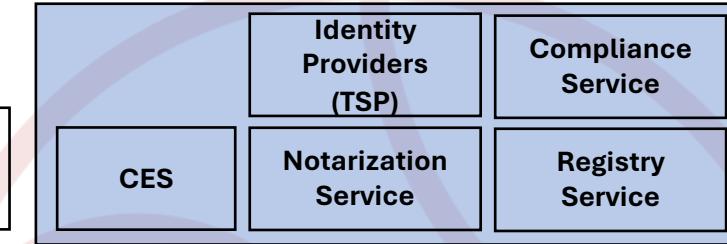
Cloud, Edge Infrastructure

Infrastructure agnostic setup. Hosting of Digital Services outside of the data space.



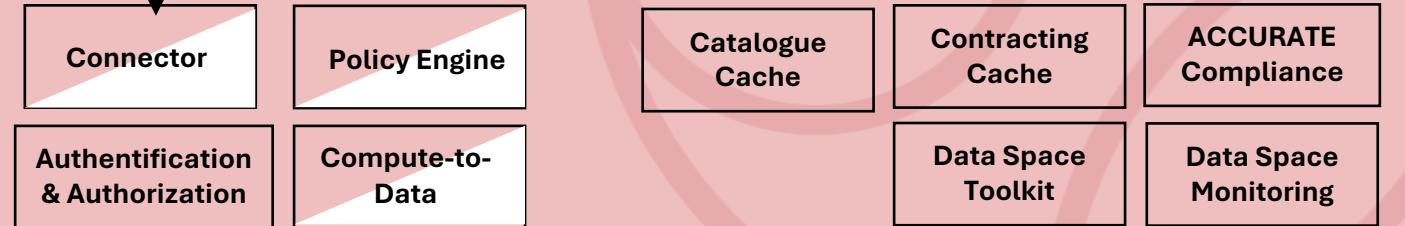
Applications and Services

Business Applications offered by service providers in the ecosystem + interfaces and tools for interaction with the data space.



Middleware

Service Providers and Operating Companies provide essential services for data management, access control, and system interoperability .



Network / Protocol Layer

Service Providers and Operating Companies provide the shared and federated base services on protocol level.



The ACCURATE marketplace is live

UI to interact with the data space components

1

Share, monetize and consume data sets and algorithms.

2

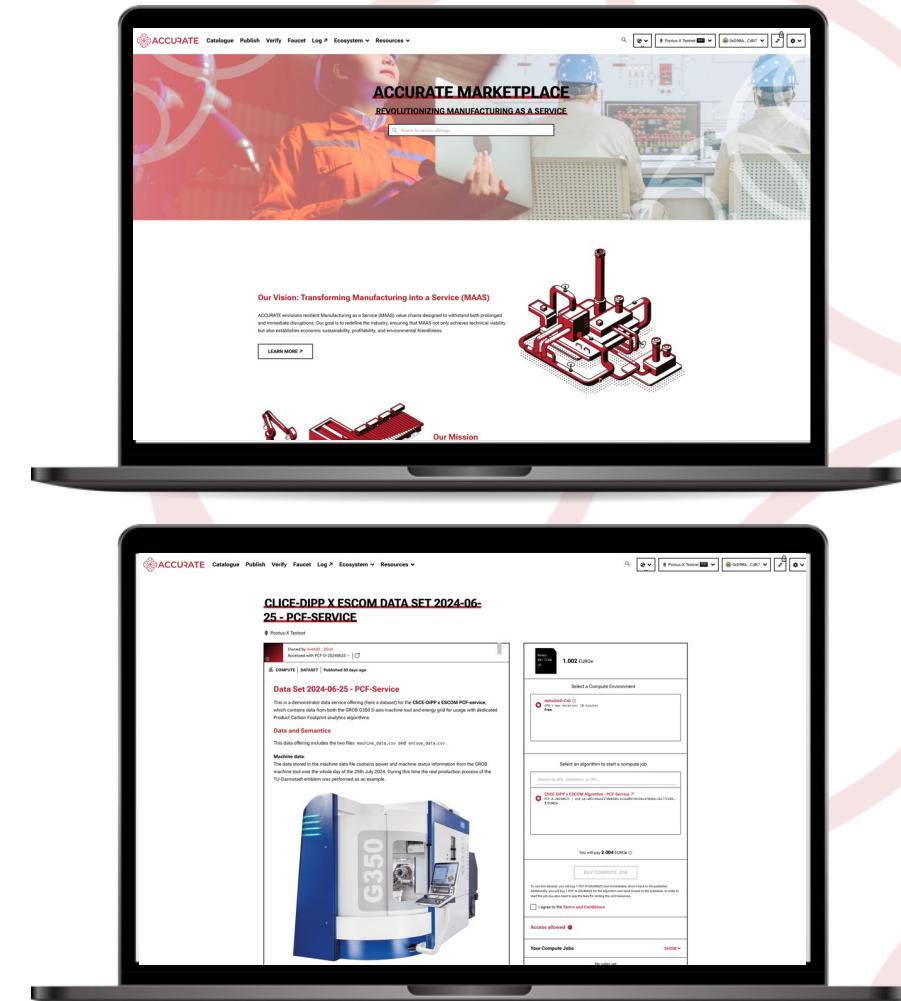
Integrate your **existing infrastructure** for easy connection.

3

IAM, automated **access control**, transaction logging, **payment services**, **Gaia-X Compliance**.

4

Collaborate with various stakeholders **and build use cases together**.



<https://pontus-x.eu/>

Current State



ACCURATE marketplace is live

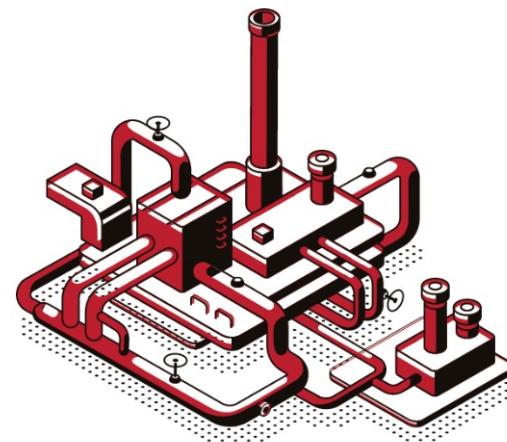
A screenshot of the ACCURATE Marketplace homepage. At the top, there is a navigation bar with the ACCURATE logo, menu items like Catalogue, Publish, Verify, Faucet, Log, Ecosystem, and Resources, and a search bar. Below the navigation is a large banner featuring two workers in a factory setting. One worker is in the foreground, wearing an orange high-visibility jacket and a hard hat, looking at a tablet. Another worker is visible in the background at a control panel with multiple screens. The banner has the text "ACCURATE MARKETPLACE" and "REVOLUTIONIZING MANUFACTURING AS A SERVICE". A search bar below the banner contains the placeholder "Search for service offerings".

20 min Demo

Our Vision: Transforming Manufacturing into a Service (MAAS)

ACCURATE envisions resilient Manufacturing as a Service (MAAS) value chains designed to withstand both prolonged and immediate disruptions. Our goal is to redefine the industry, ensuring that MAAS not only achieves technical viability but also establishes economic sustainability, profitability, and environmental friendliness.

[LEARN MORE ▾](#)



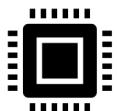
Design Principles and Features



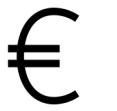
Requires only one connector on service provider side. Base services decentralized.
Higher scalability, low operating cost and reduction of entry barriers. No external SPOF.



Data transfer not necessary through Compute-to-Data. Software and SaaS supported. Preserves IP, privacy and the right of economic exploitation.



IoT / Edge Integration enabled
Compute-to-Edge brings privacy-preserving computation to the edge.



Real-time monetization natively enabled
Efficient pay-per-use principle for economic sustainability and fair use.



Leverage data directly from any database or API incl. Compute-to-Data orchestration with GraphQL / Rest APIs



Access to any digital or infrastructure service (machines, AI, SaaS) through the contracting service and subscription verifier.



ACCURATE Architecture

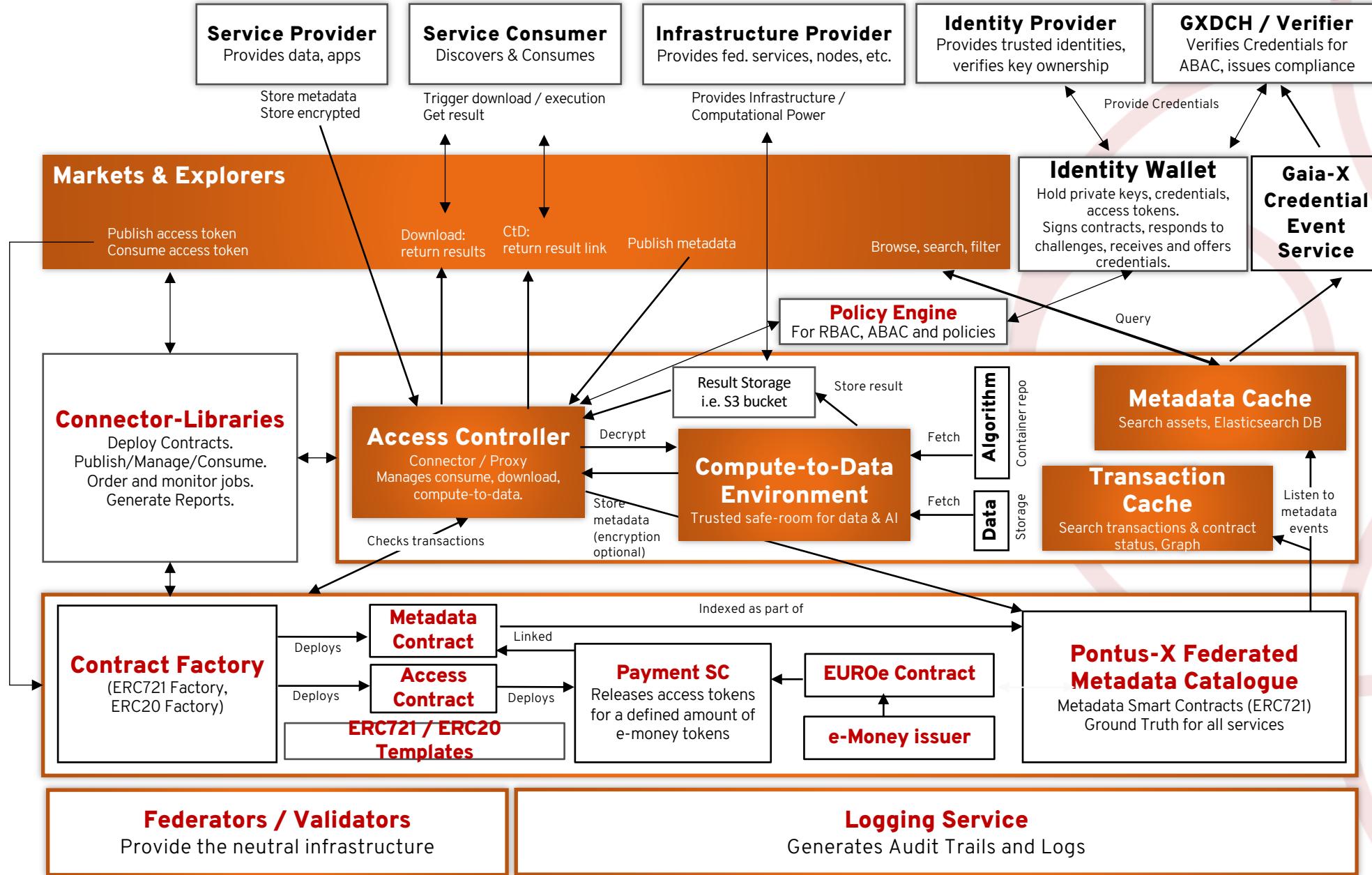


Frontend

Middleware

EVM / Smart Contracts

DLT



Portals / APIs

Libraries & K8s

Catalogue Cache
ES Database
Access Controller
Compute-Cluster

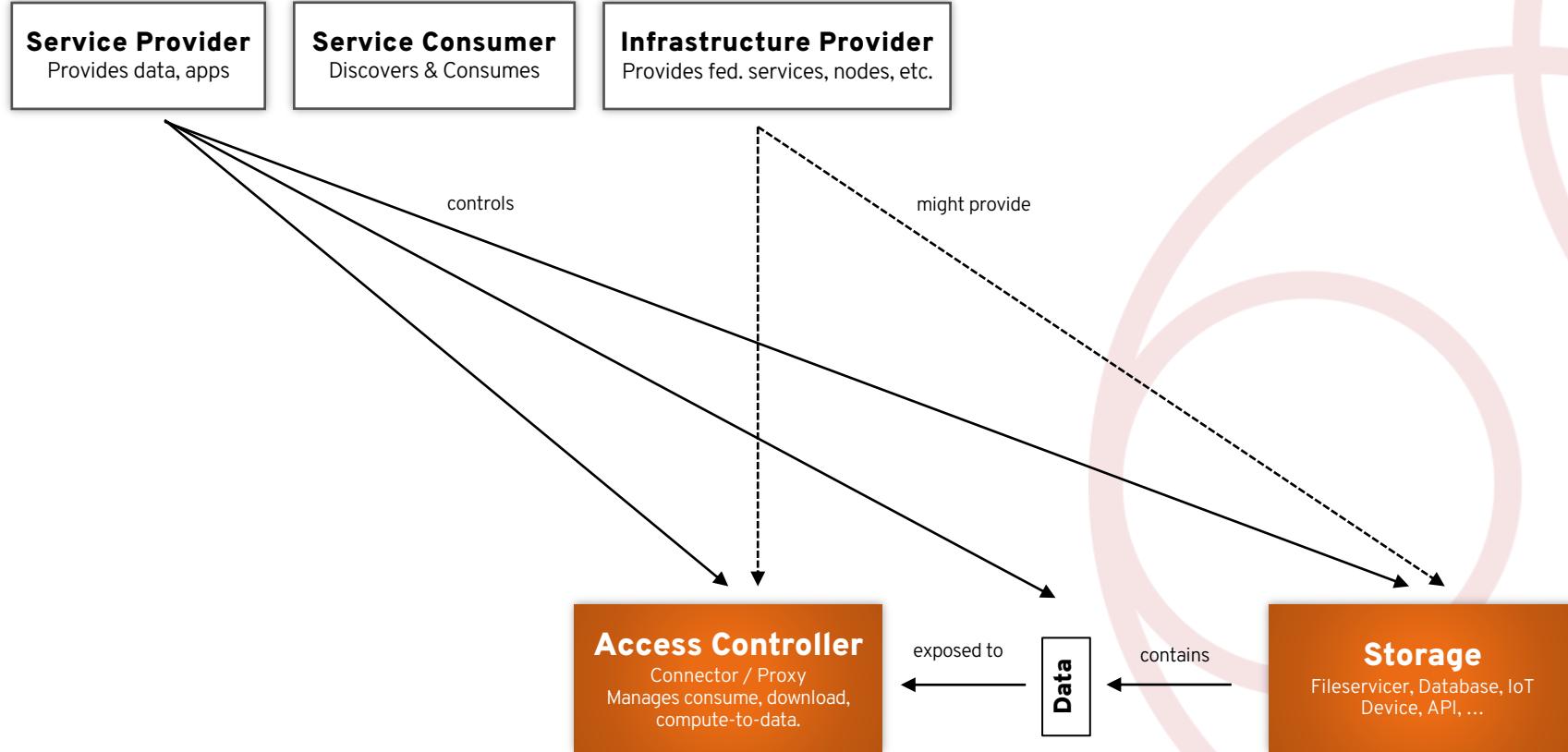
Smart Contract & DLT Layer

Catalogue,
Contracting &
Payment,
Exchange Log,
Federation

ACCURATE Architecture



Frontend
Middleware
EVM / Smart Contracts
DLT



ACCURATE Architecture

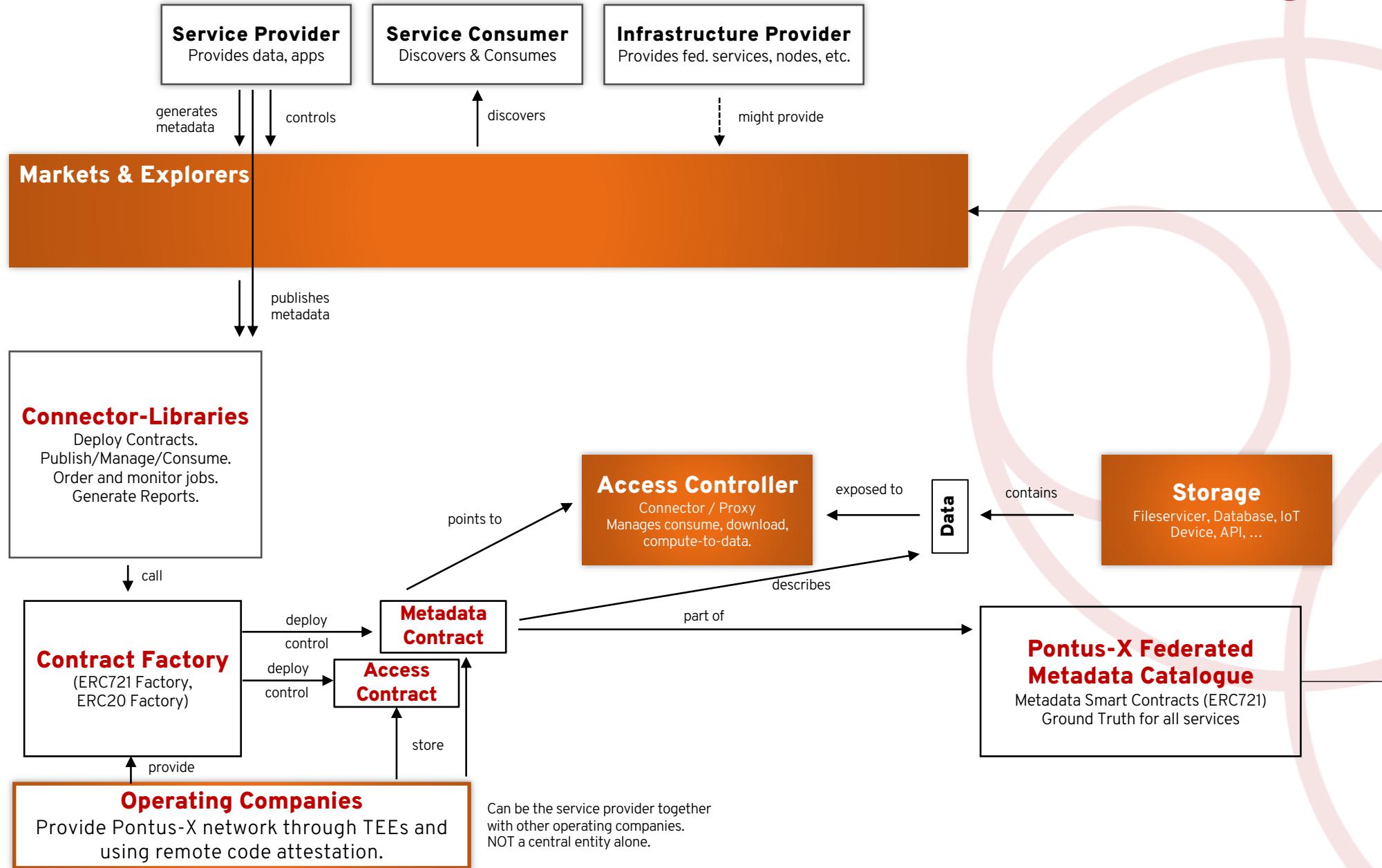


Frontend

Middleware

EVM / Smart Contracts

DLT



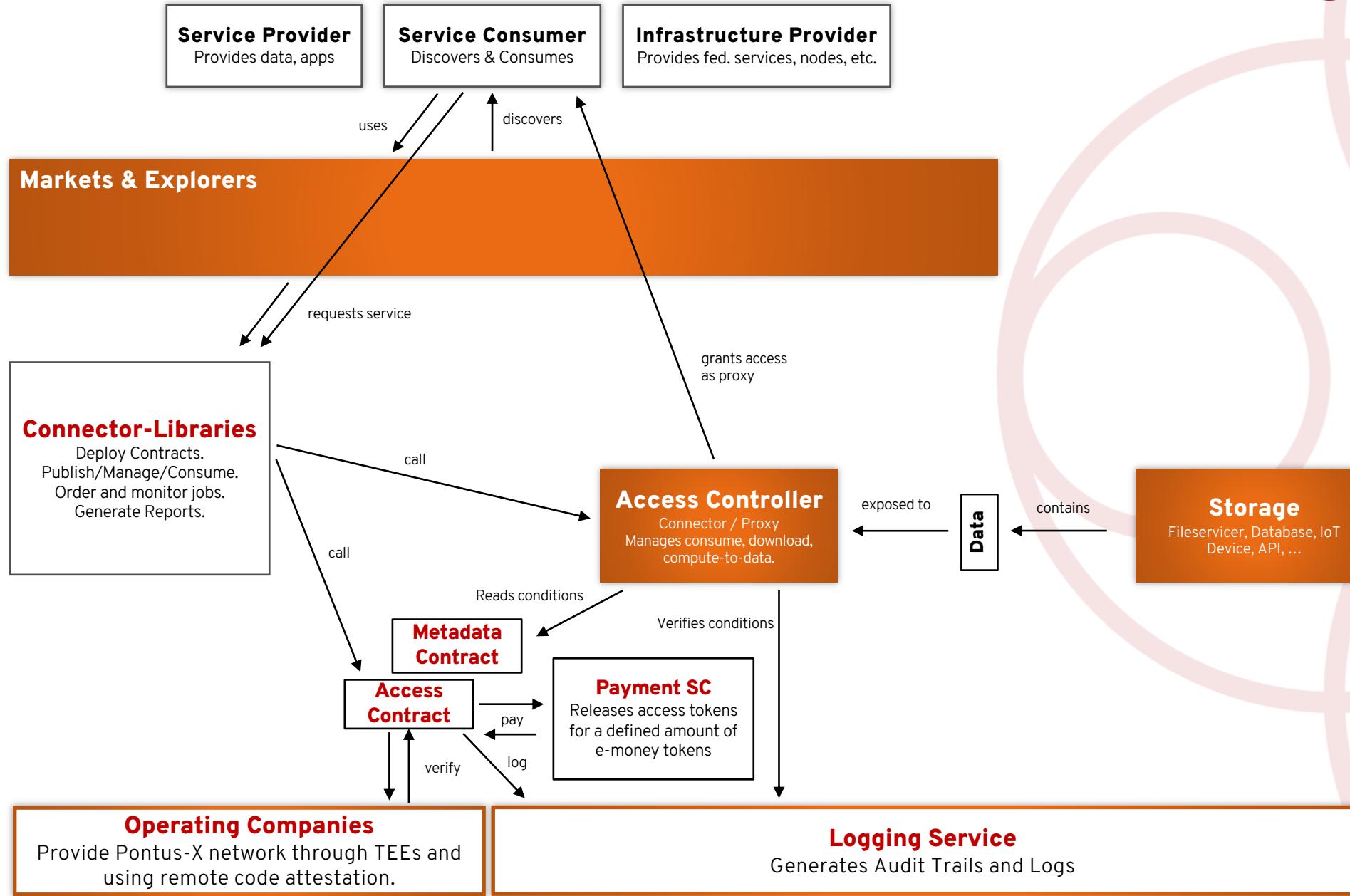
ACCURATE Architecture

Frontend

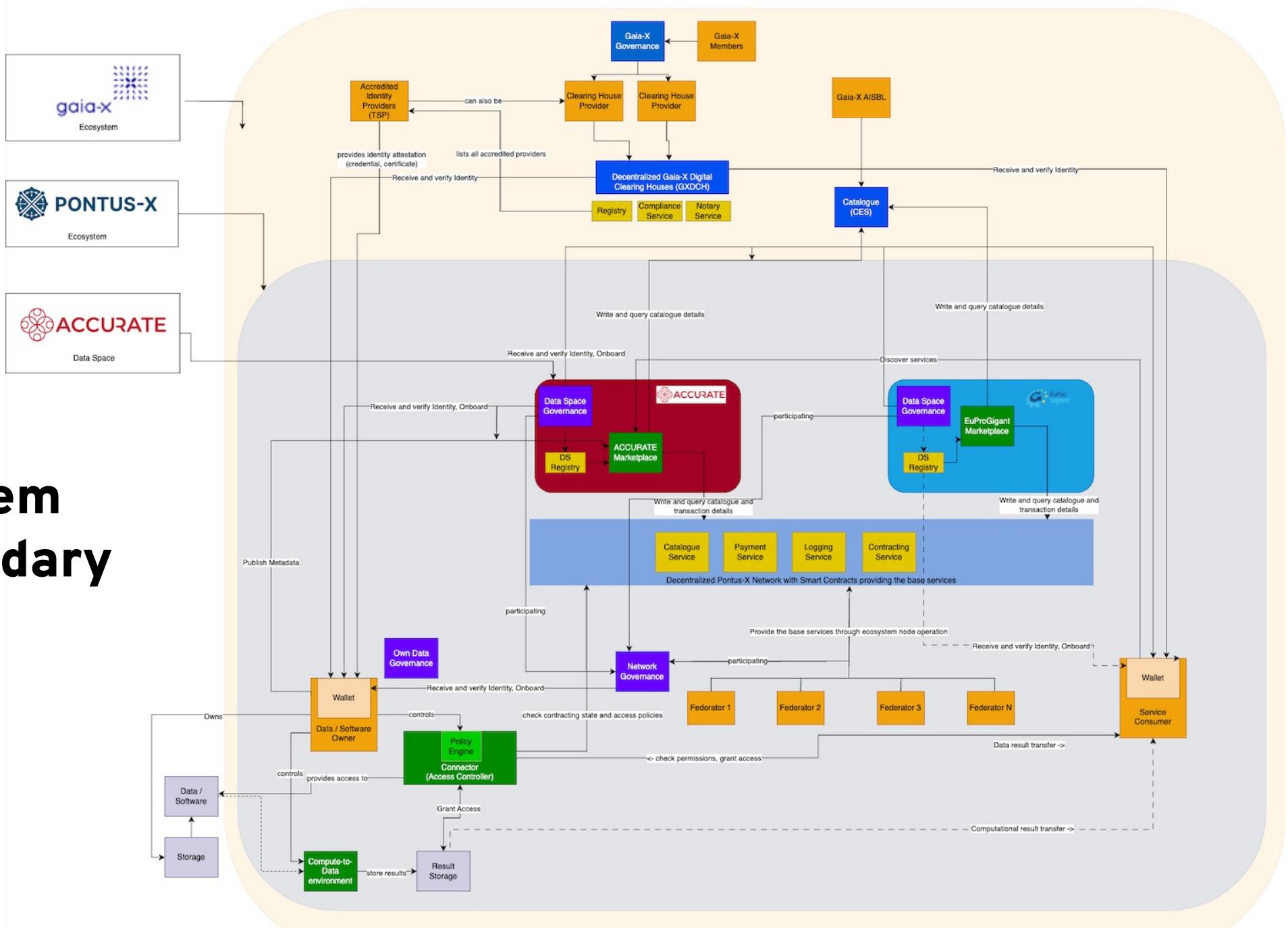
Middleware

EVM / Smart Contracts

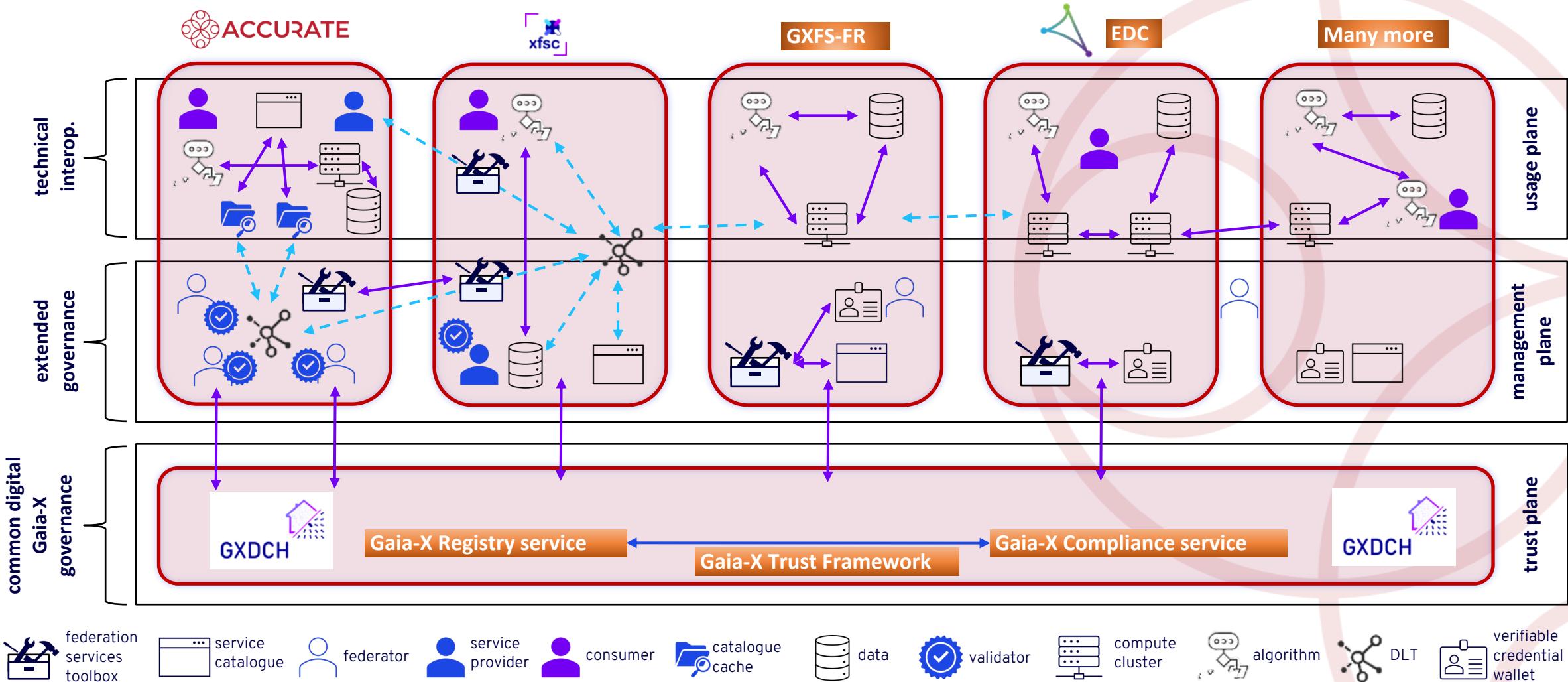
DLT



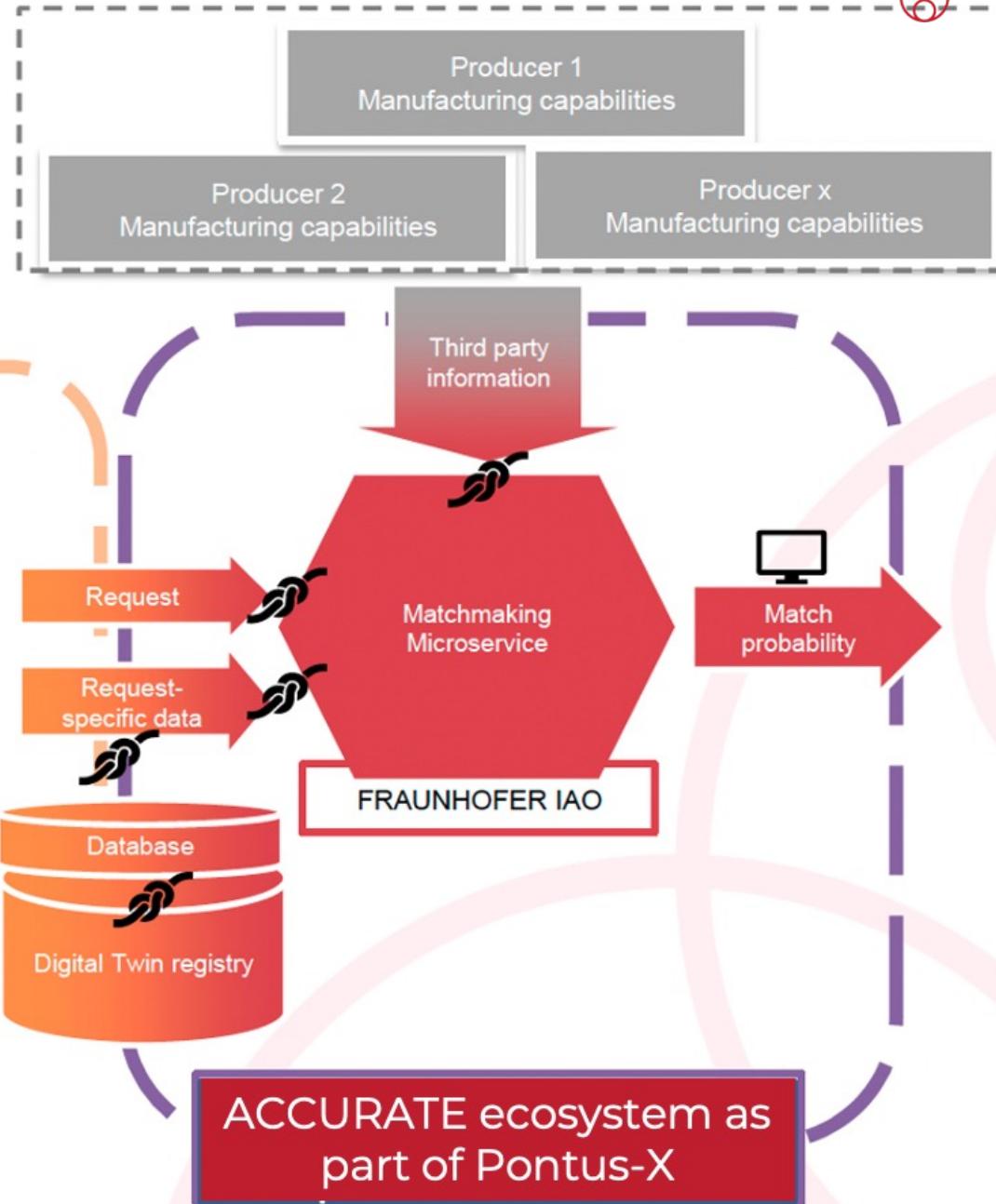
System boundary



Gaia-X ecosystems overview



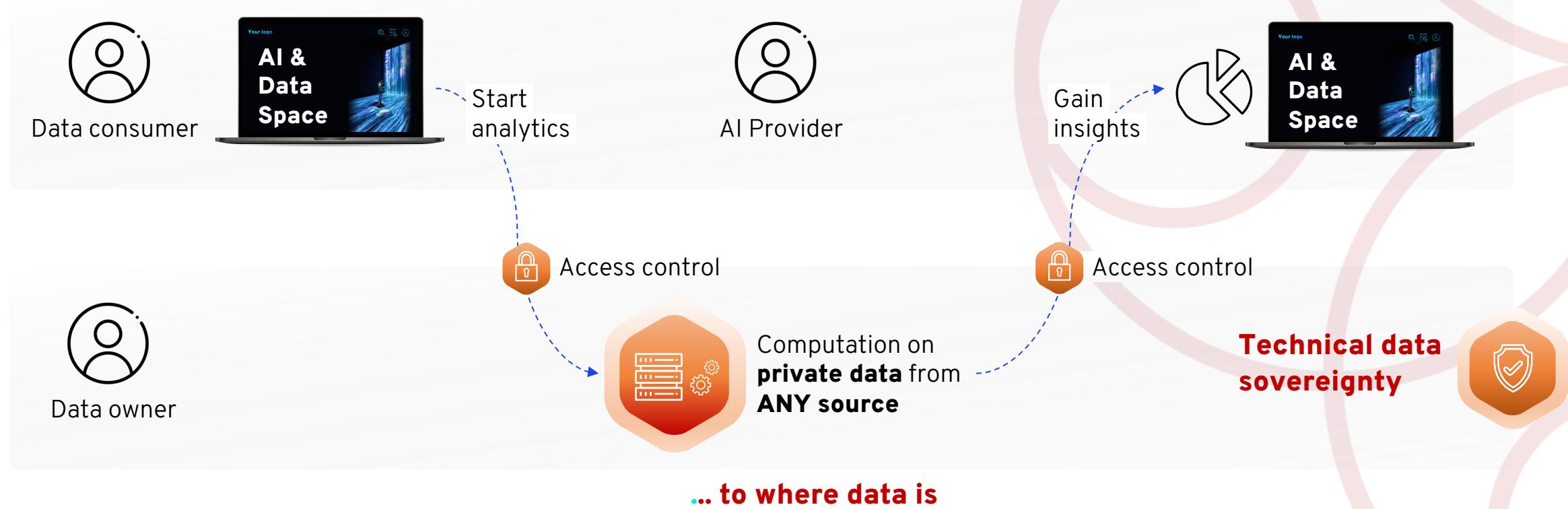
Applied to MAAS



A safe and compliant environment for your AI & data with CtD

Compute-to-Data is a technology that allows computations to be performed directly on data **without moving or exposing the raw data itself**, thereby preserving privacy and data sovereignty. **Only trusted applications are allowed** to perform computation on trust infrastructure.

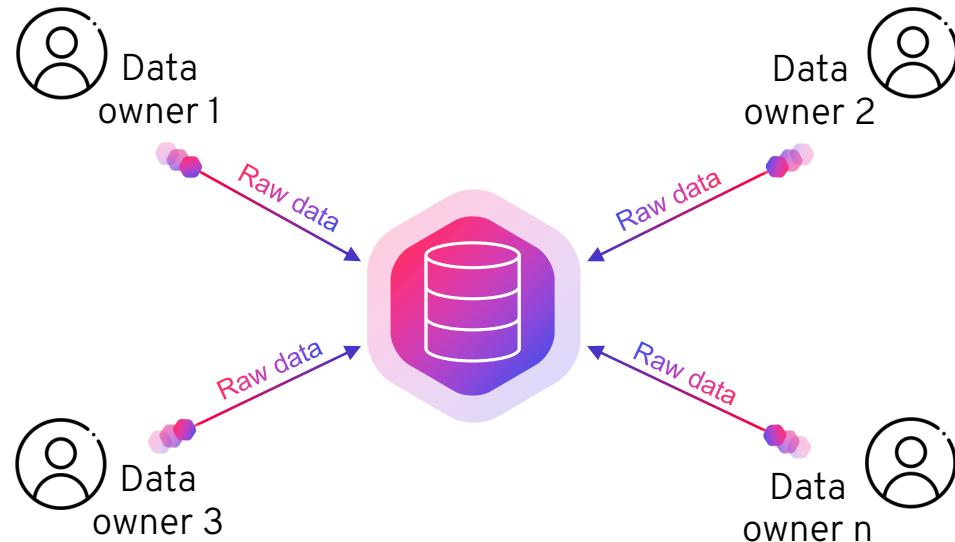
Bring compute...



Federated Analytics & Learning integrated

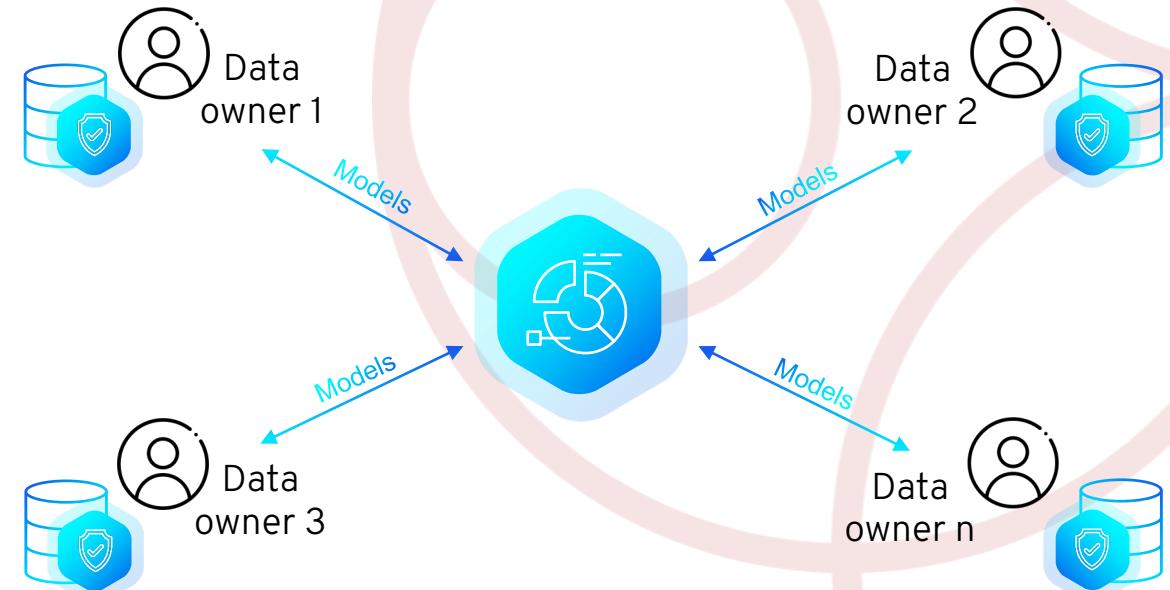
Traditional analytics & learning

Centralized computation. Transfer of raw data.



Federated Analytics and Learning

Decentralized computation. No transfer of raw data. Full control.



Enabling business solutions that scale

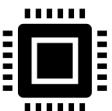
Use existing infrastructure and any service



Automated data transfer with access controls



Compute-to-Data



Edge-Computing



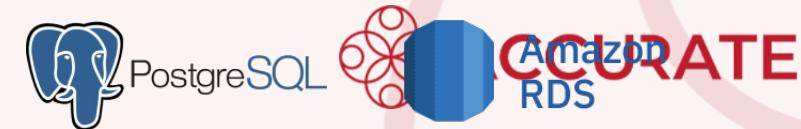
Federated Analytics and Training across a IoT devices



Database and API connections incl. SAP, OPC UA, Rest API, AAS



Connect an external digital service with IAM, contracting and monetization in Pontus-X



Next!





PONTUS-X

powered by
gaia-x



Identity Provider

T Systems



Operators



Universitat
de Lleida

exaion
GROUPE edf



IONOS



deltaDAO



EUROe

Powered by



Spaces



gaia-x future mobility moveID



ACCURATE

Flex4Res

Co-funded by the European Union

Dione-X



AIRBUS



Universitat
de Lleida



Future Mobility
Data Marketplace

Staatsbibliothek
zu Berlin
Preußischer Kulturbesitz



EnergySHR

Acentrik

AIRBUS

software AG

moveID



EXOSCALE



arsys

AIRBUS



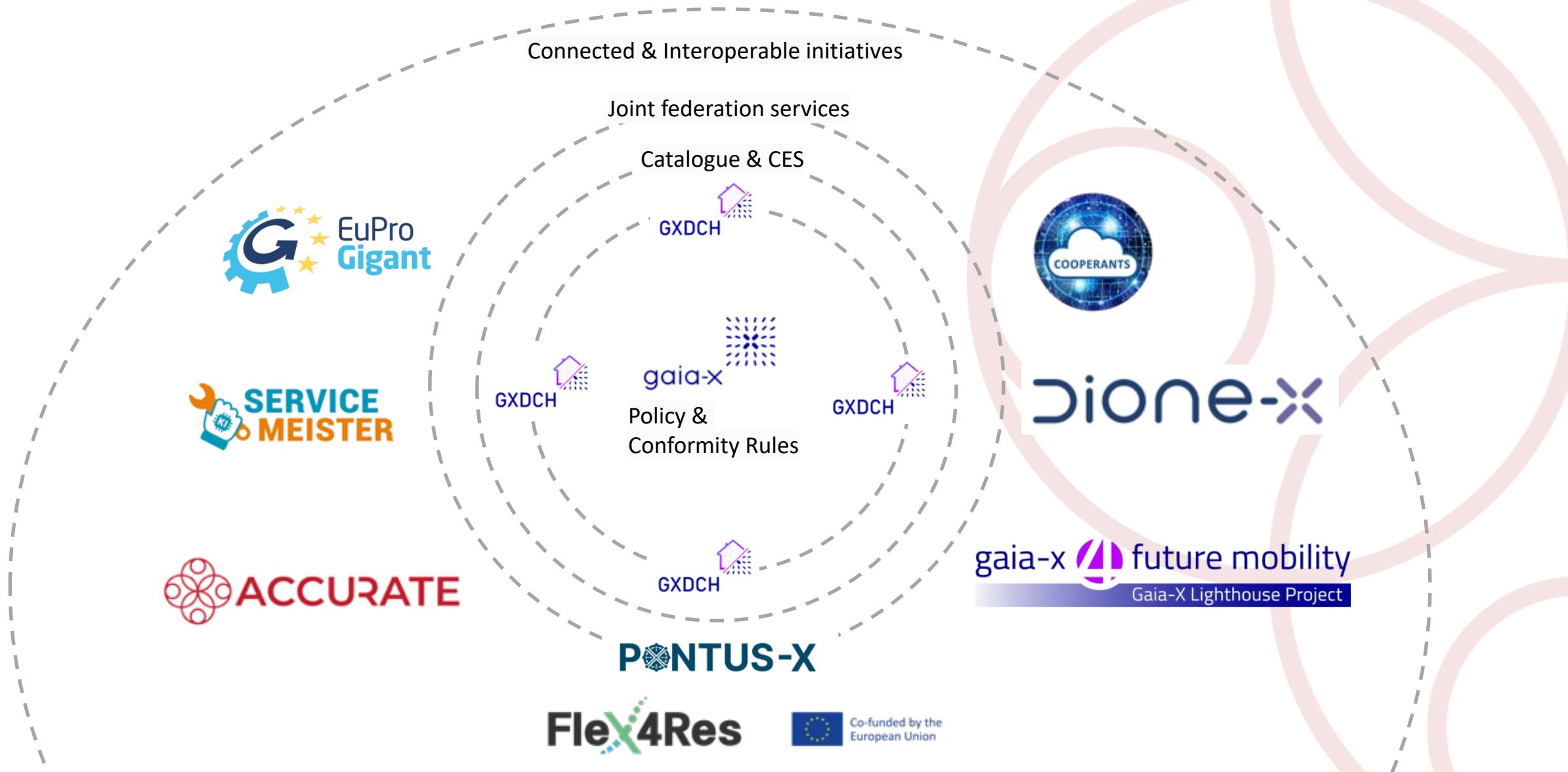
AIRBUS

software AG

EnergySHR

Acentrik

Building an European Manufacturing Ecosystem





data economy solutions – GDPR compliant

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