Fraunhofer FIT

Fraunhofer Institute for Applied Information Technology FIT

Workshop “Data Spaces & Semantic Interoperability”, 2022-06-03

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Concepts and Technology for Building Data Spaces: IDS and Gaia-X

Motivation: Infrastructure for the Digital Economy

Decentralised processing locations

Lack of transparency and sovereignty over stored and processed data and infrastructure

Sector-specific data spaces and lack of ontology

Multiple technology stacks

Insufficient clarity about the applicable jurisdiction

Absence of widely accessible application programming interfaces (APIs)

Multiple stakeholders and difficult accessibility of existing data and infrastructure services

Source: Gaia-X

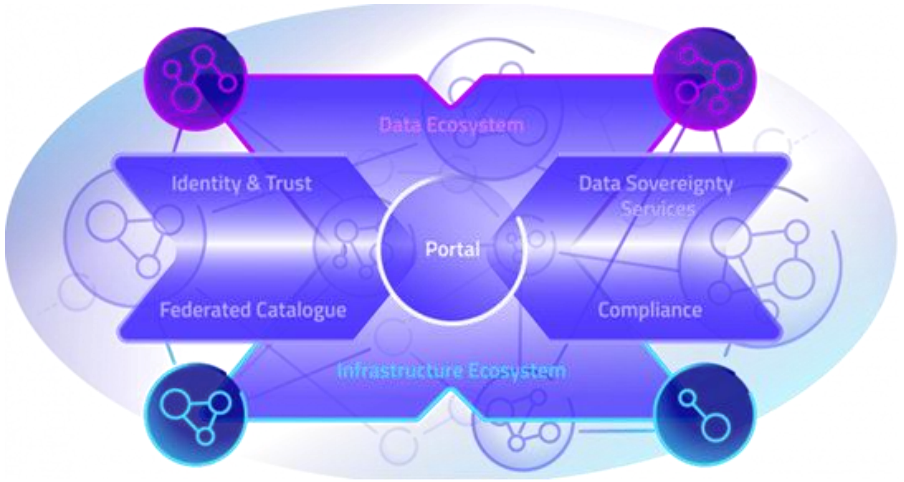
Gaia-X: a Trusted, Sovereign Digital Infrastructure for Europe

Creation of digital infrastructures and an ecosystem for innovation

Trusted environment between partners and interoperable links between smart service applications and infrastructure services.

Increasing transparency and attractiveness of digital services

Reduce barriers to compliant service usage; enable the development of new services and products.



Data sovereignty

Strengthen the digital sovereignty of business, science, government and society.

Reduction of dependencies

Reduce private and business consumers' dependency of single providers; control over location and regulatory environment of stored data; reduce sector-specific dependencies.

Source: Gaia-X

The Gaia-X ecosystem of services and data

… and the role of IDS

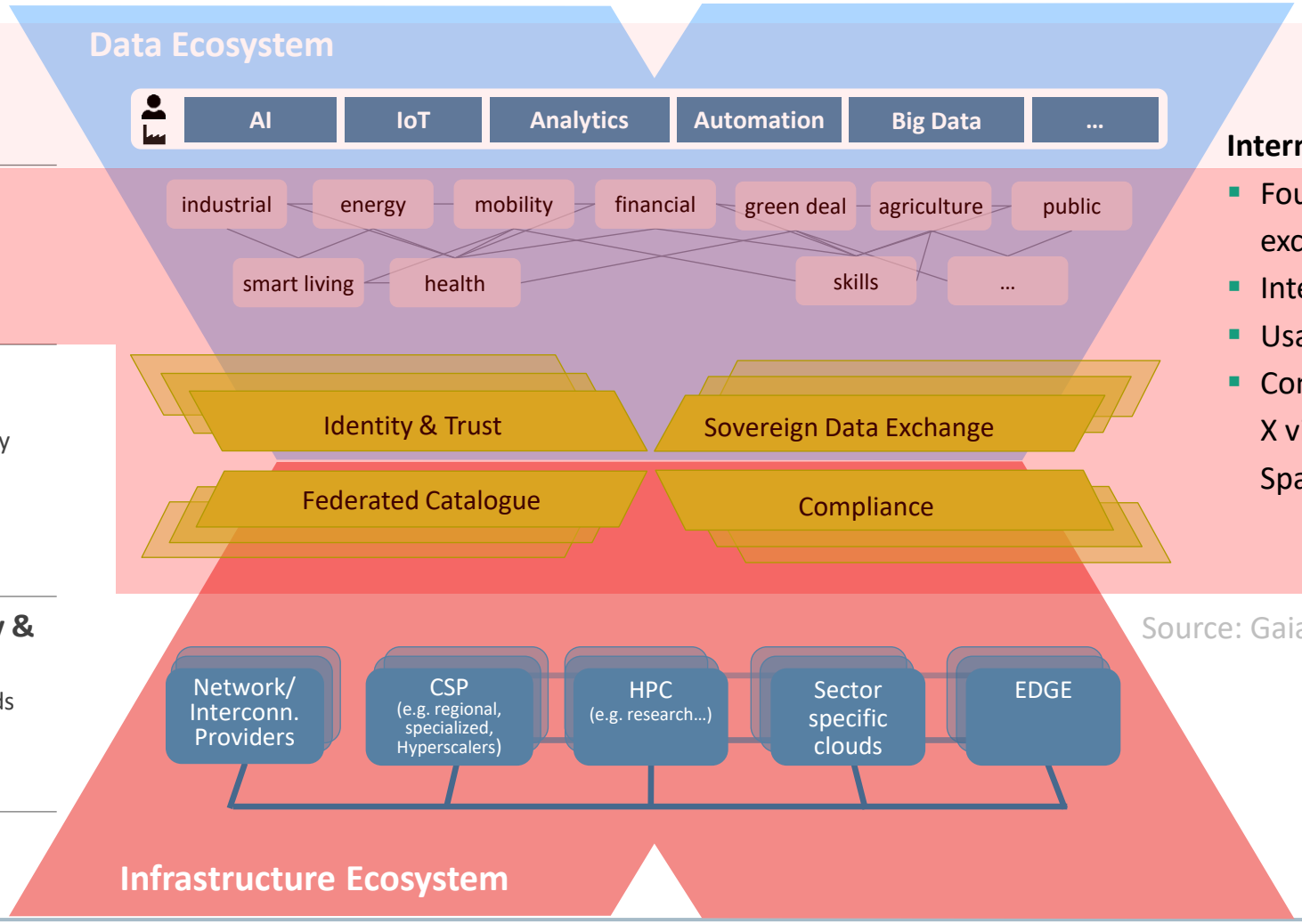
Advanced Smart Services
(Cross-) Sector Innovations /
Market places / Applications

Data Spaces
Interoperable & portable (Cross-)
Sector data-sets and services

Gaia-X Federation Services
Federated & distributed for
interoperability Trust & Sovereignty
services

Portability, Interoperability & Interconnectivity
Technical: Architecture of Standards
Commercial: Policies

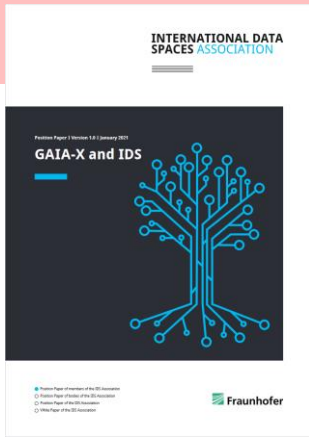
Compliance
Legal: Regulation & Policies



International Data Spaces:

- Foundation of sovereign data exchange in Gaia-X
- Interoperability
- Usage Control
- Continuous alignment with Gaia-X via working groups and Data Space Business Alliance

Source: Gaia-X

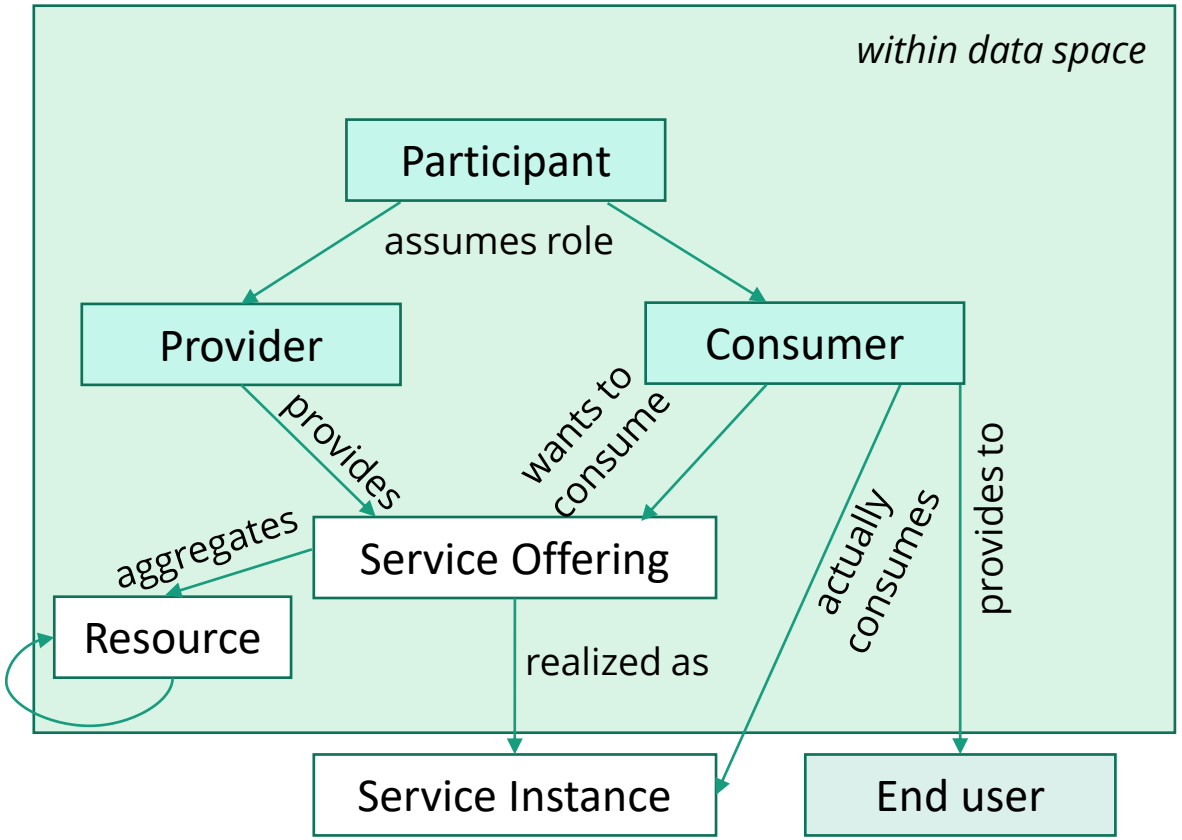


Conceptual Models of Gaia-X vs. IDS

Domain-agnostic • based on W3C standard • offering extension points

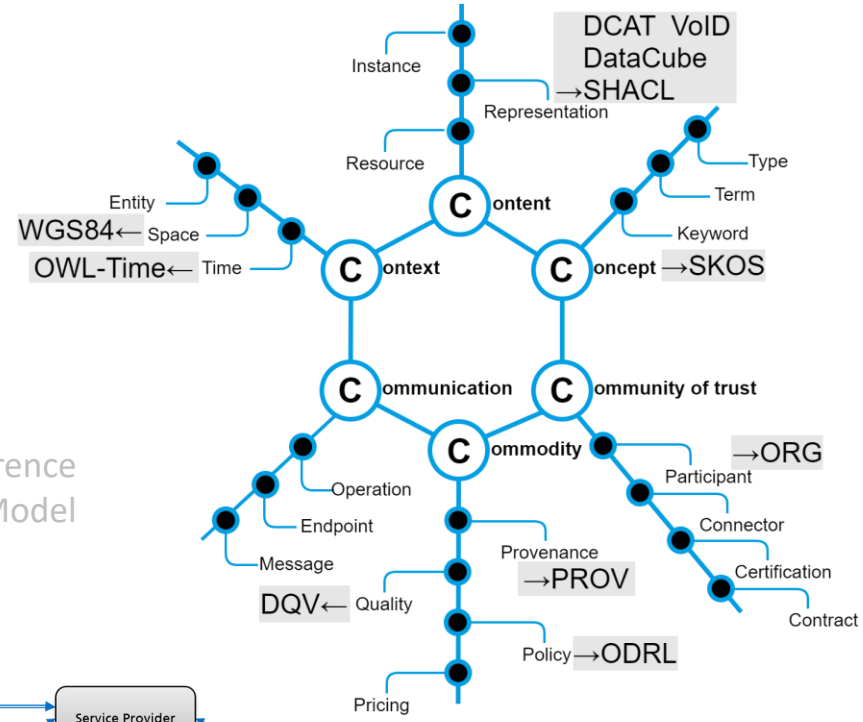
Gaia-X: focus on Services

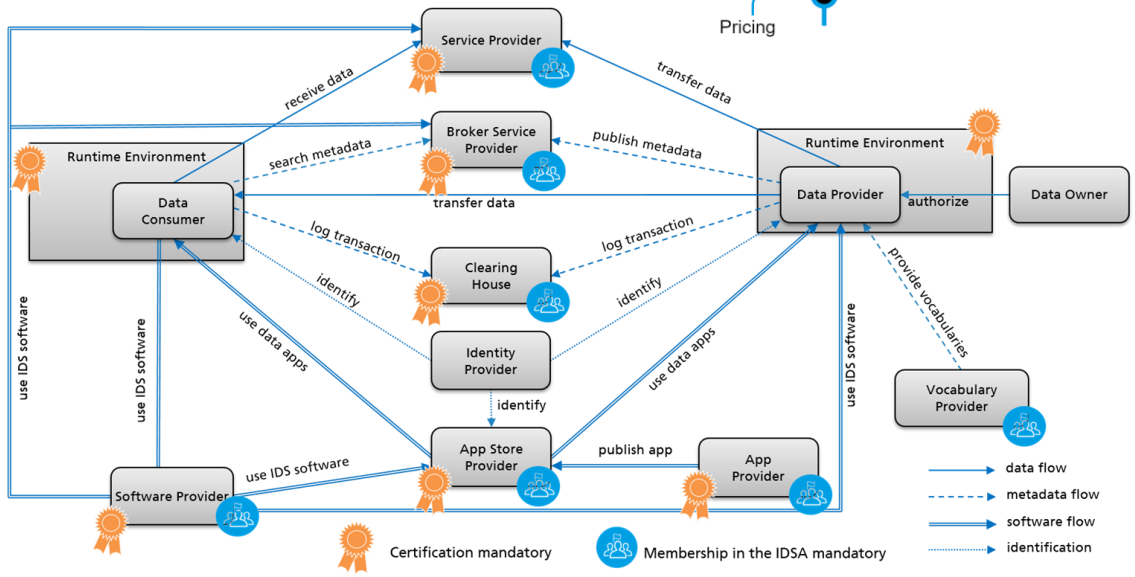
Own drawing; simplified from Gaia-X Architecture Document



IDS: focus on Data

Source: IDS Reference Architecture Model





Gaia-X Self-Descriptions: Trust in Claims

Structure

Claims

- “My service is green"
- “My service is hosted in Frankfurt"
- “I am an ISO certified provider"

Verifiable Credentials

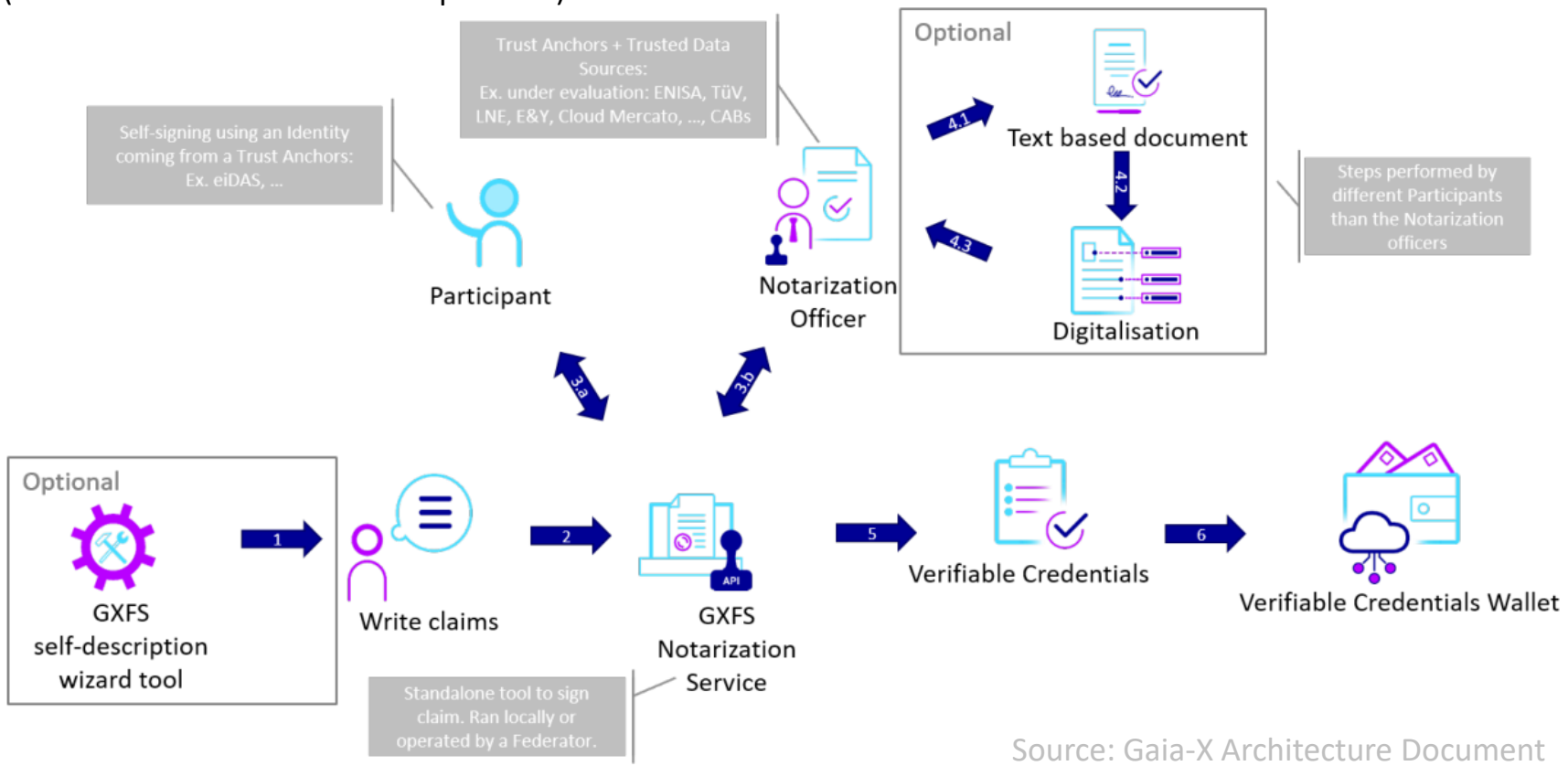
- “My service is green"
- “My service is hosted in Frankfurt"
- “I am an ISO certified provider"

Verifiable Presentation

- “My service is green"
- “My service is hosted in Frankfurt"
- “I am an ISO certified provider"

Process of Creation

(to be defined: communication protocol)



Source: Gaia-X Architecture Document

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