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

Advancement of 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
- Participant
  - assumes role
- Provider
  - provides
  - aggregates
  - wants to consume
  - realized as
  - Service Offering
  - actually consumes
  - provides to
  - Service Instance
  - End user

within data space

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)

**Optional**
- Self-signing using an Identity coming from a Trust Anchors: Ex. eIDAS, ...

**Participant**

**Notarization Officer**

**Digitalisation**

**Source:** Gaia-X Architecture Document
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