

Gaia-X as an Enabler to Shape Interconnected Logistics in Europe

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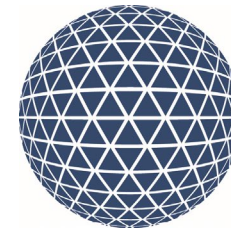
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Savannah, 30th May 2024

Agenda

1. Introduction
2. Background
3. Requirements of a Cross-Company Physical Internet
4. PI Requirements alignment to Gaia-X Principles
5. Conclusion & Outlook

About the Institute



InfAI[®]
Institute for Applied Informatics

- Founded in 2006
 - Affiliated with Leipzig University since 2008
 - 180 employees
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- Science and transfer projects
 - Focus on third-party funding



Foto: Öffentlichkeitsarbeit Universität Leipzig / Nils Mammen

AGEDA



- German research project of 16 funded and 5 associated partners
- Requirements and applications of Gaia-X in the edge device automobile
- Goal: vehicle software architecture and middleware that implements the concepts of Gaia-X
- **Physical Internet** as showcase for applications that become possible with AGEDA



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on the basis of a decision
by the German Bundestag

Background

What is Gaia-X?

- Originally introduced in 2019 by French and German government
- Goal: 'create the next generation of data infrastructure for Europe'
- Open, federated, interoperable data spaces
- Transparency and legal compliance
- Set of specifications, prototypically implemented
- **Not:** A new hyperscaler or cloud storage

Background

Adoption of Gaia-X in the PI

- Previous research has mainly investigated the IDS
- Focus mainly on the trust aspect
- Gaia-X has only been briefly mentioned before

→ A more detailed analysis is required to assess the suitability of Gaia-X for the PI

Requirements of a Cross-Company Physical Internet

Basic requirements:

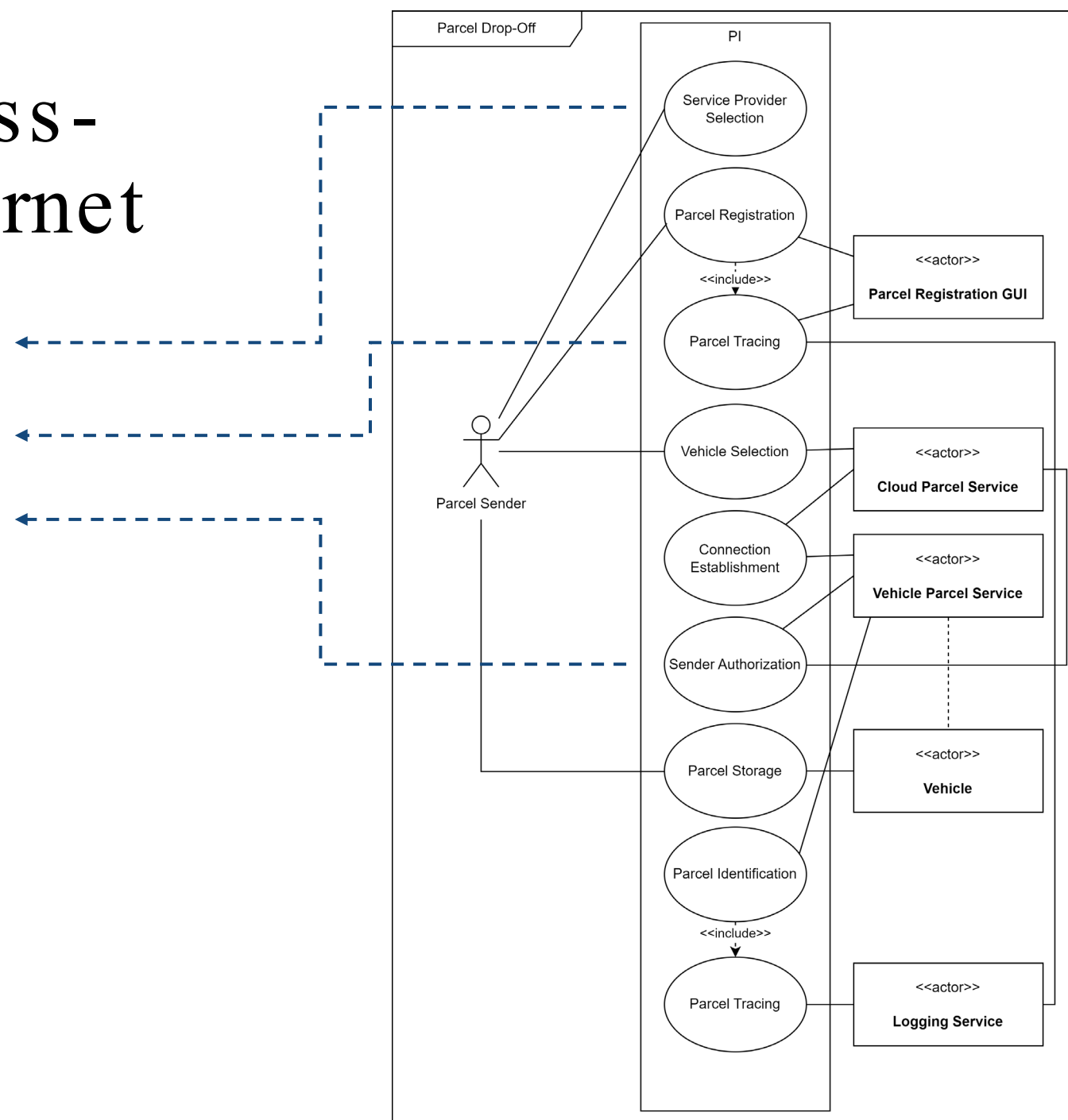
- I. Trust
- II. Identification & Authentication
- III. Federation of Decentralized Services
- IV. Openness
- V. Enforced Policies

Requirements of a Cross-Company Physical Internet

VI. Service Discovery

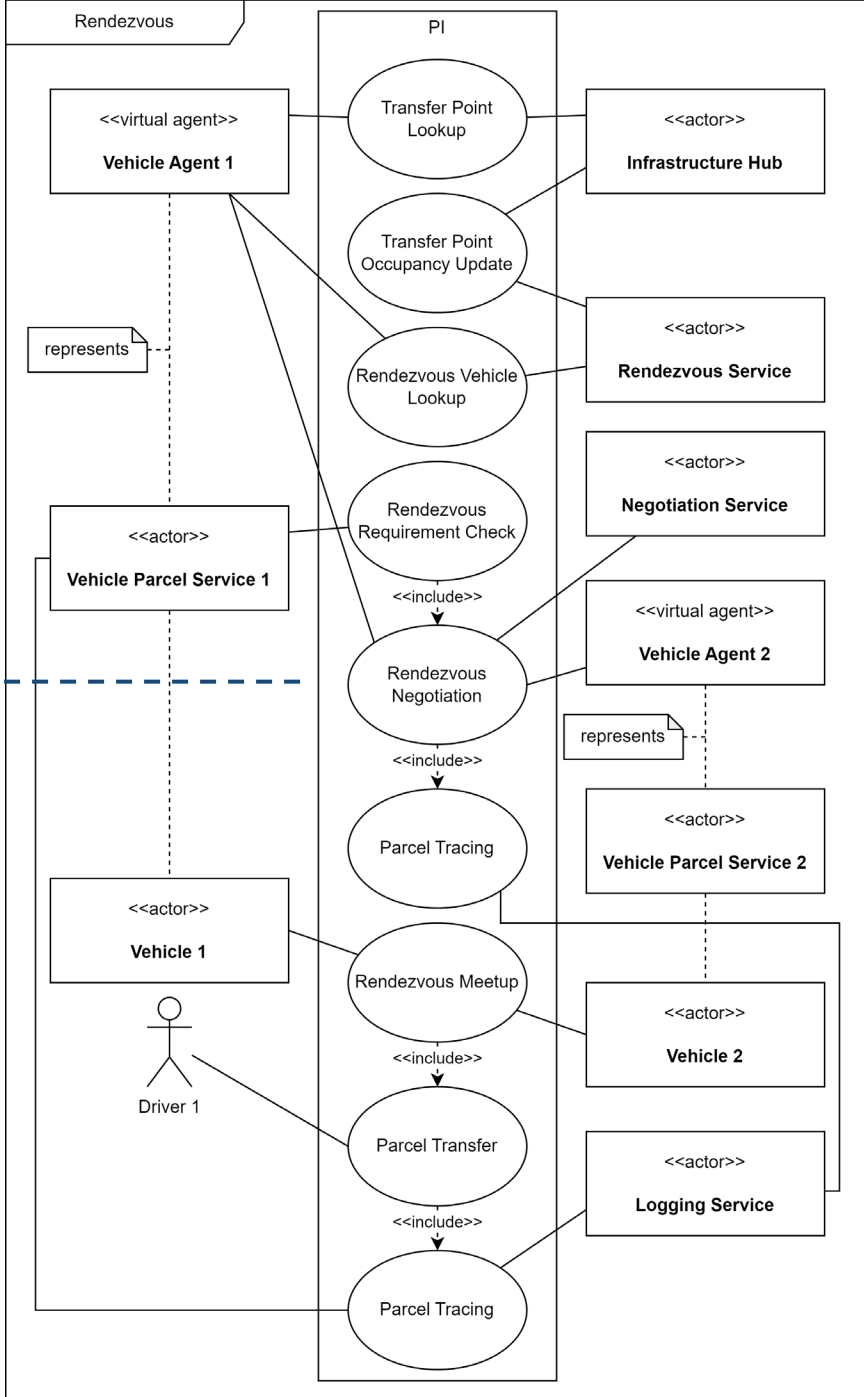
VII. Immutable Logging

VIII. Conditional Authorization

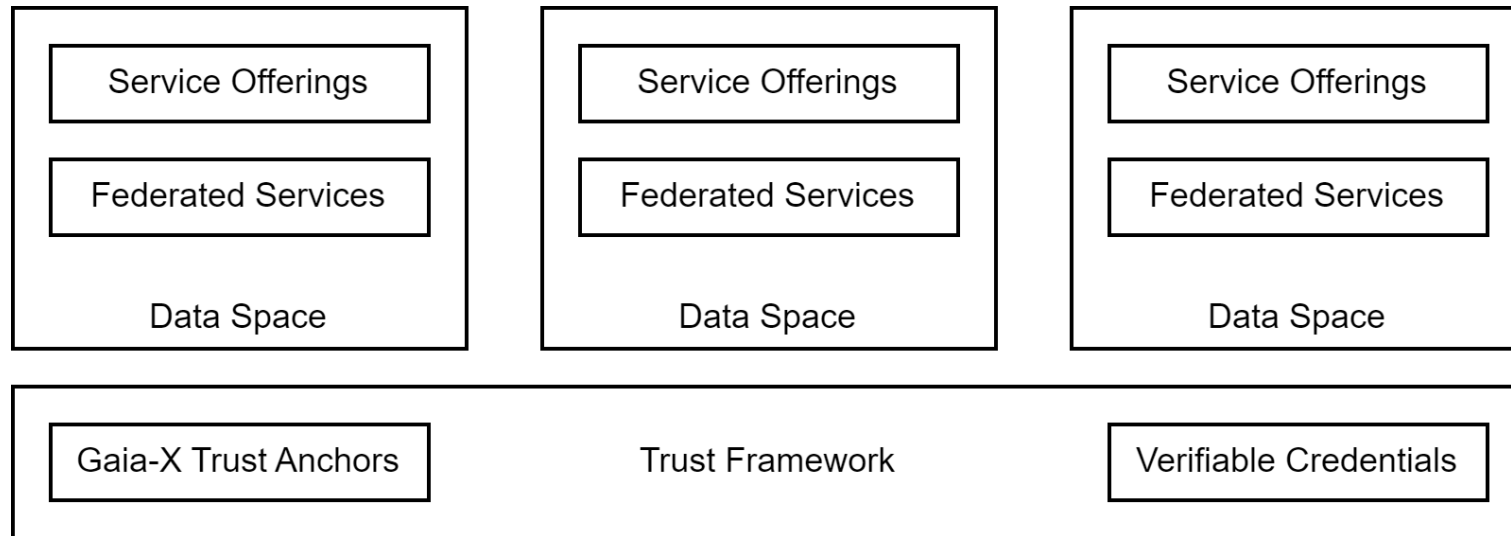


Requirements of a Cross-Company Physical Internet

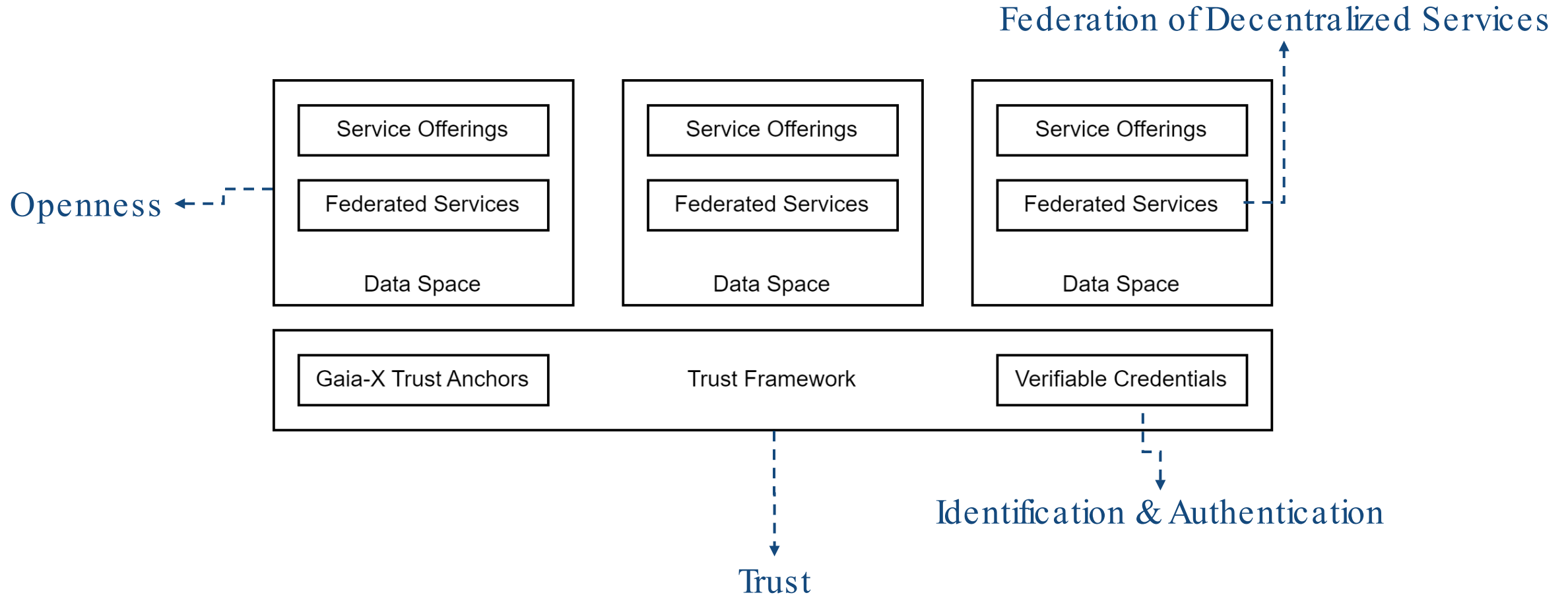
IX. Contracting Mechanism



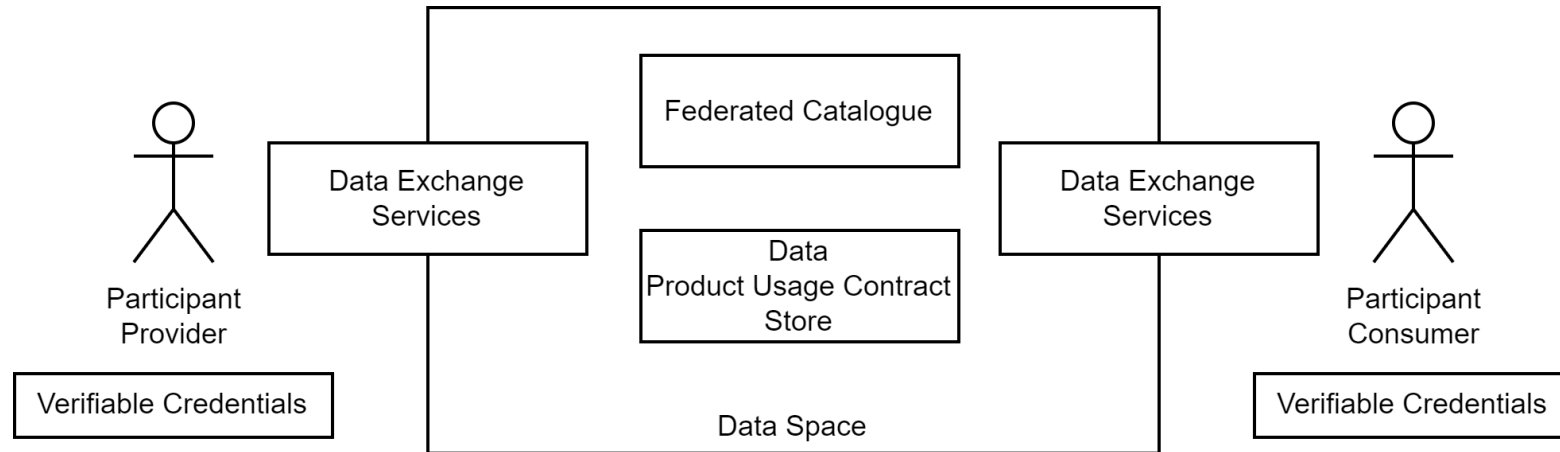
PI Requirements alignment to Gaia-X Principles



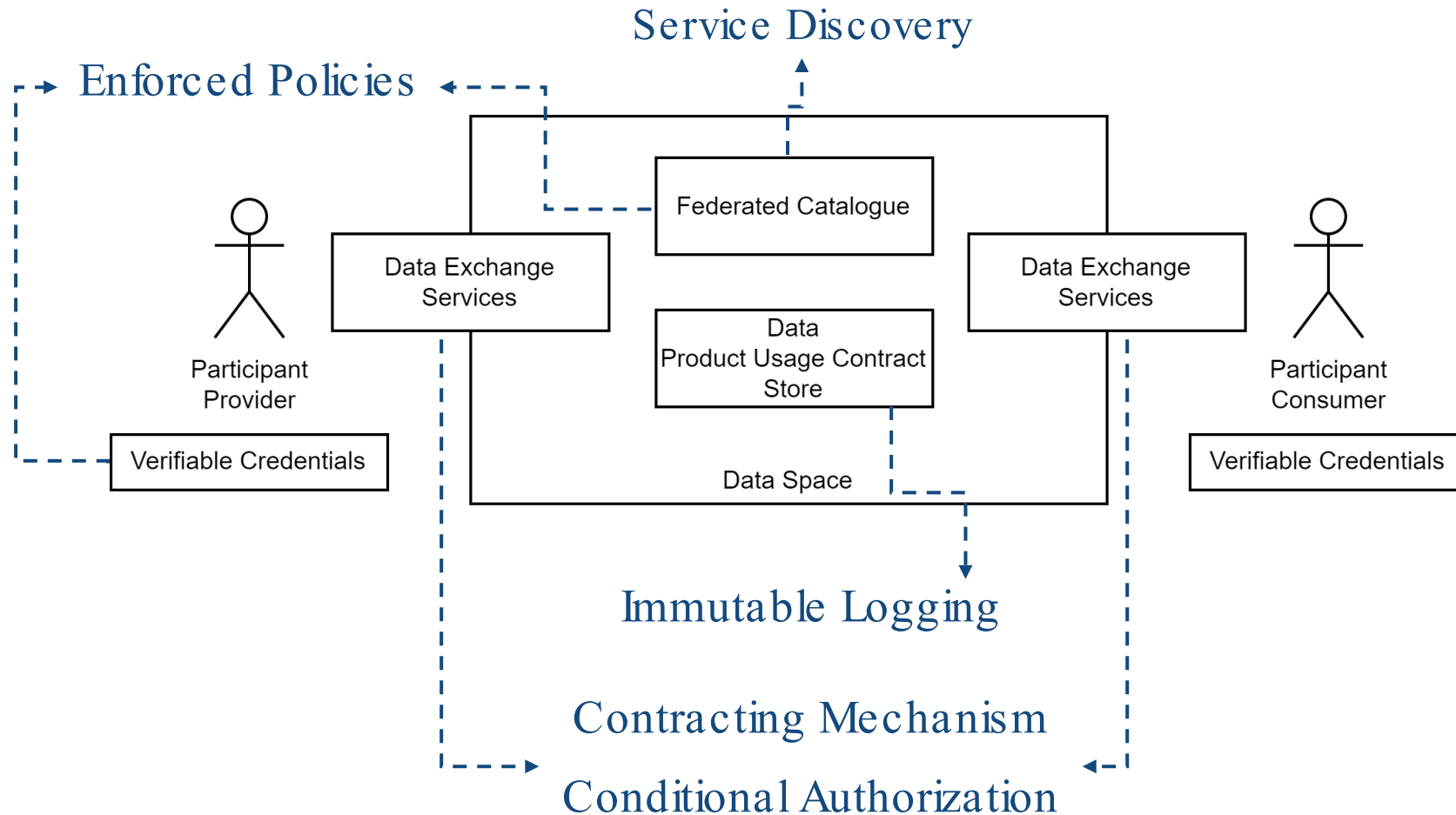
PI Requirements alignment to Gaia-X Principles



PI Requirements alignment to Gaia-X Principles

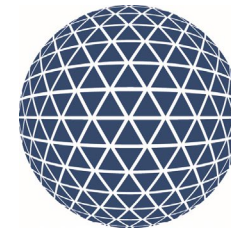


PI Requirements alignment to Gaia-X Principles



Conclusion & Outlook

- Gaia-X seems suitable for the implementation of the PI applications
- Decentralized data economies affect business model design
- Implement prototype, expand capabilities e. g. using vehicle-to-vehicle communication
- Elaborate on the border between Gaia-X and application-level components
- Gaia-X itself: further detailing the specification, provide examples for getting started



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Any questions?

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