

Building the Interoperability Backbone for Sovereign European Data Spaces

Who are we?

InfrateX Consortium



InfrateX Consortium

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 NTT DATA

Partners of the Consortium that are already involved in a wide array of Data Spaces projects



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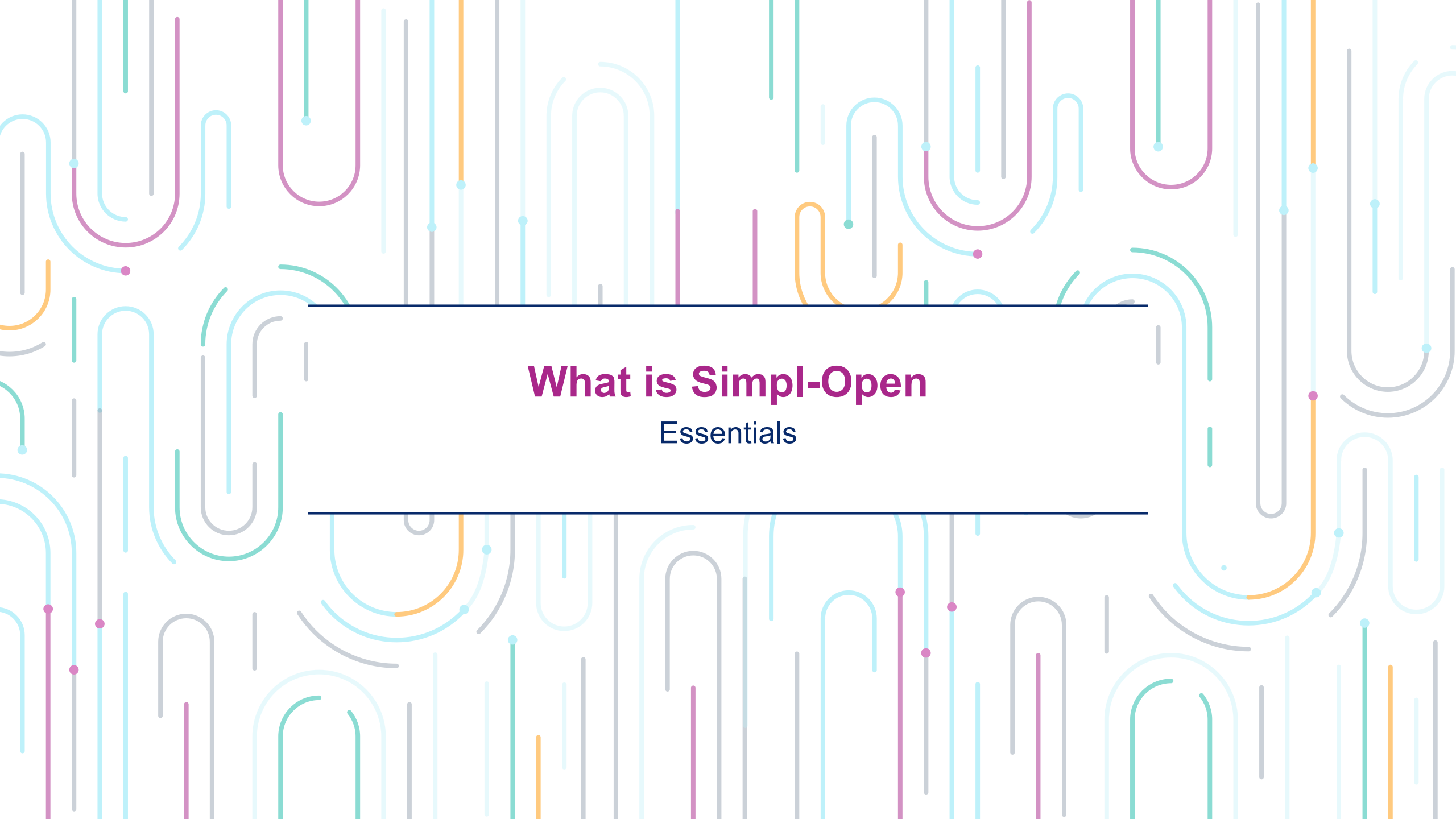
Building the Interoperability Backbone for Sovereign European Data Spaces

- What is Simpl-Open?
- Simpl-Open Functional Coverage
- Simpl-Open Architectural Building Blocks
- Simpl-Live & Eurocloud
- Simpl Annual Community Event



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What is Simpl-Open

Essentials

What is Simpl-Open?

Simpl-Open Essentials

open-source means built-in trust & security, flexibility to deploy, simplicity to customise

middleware are software suites that enable applications and databases to work seamlessly together and provide a flawless user experience

Simpl-Open is the **open-source** smart **middleware** that enables **cloud-to-edge federations** and **all major data initiatives** funded by the European Commission

cloud-to-edge federations put together resources across cloud and edge computing environments as a cohesive system, creating a seamless integrated infrastructure that combines the strength of both cloud and edge computing

all major data initiatives, in particular the development of **Common European Data Spaces** in a modular and interoperable way

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European Single Market

Simpl-Open Essentials

Data legislation

Data Act

Data Governance Act

Open data directive

GDPR

NIIS Directive

Common European Data Spaces



Health



Industrial
&
Manufact.



Agriculture



Finance



Mobility



Green
Deal



Energy



Public
Admin.



Skills



EOSC



Tourism



Cultural
heritage



Media



Language

*High
Value
Datasets
from
public
sector*

European Data Innovation Board

- Facilitate the sharing of best practices
- Prioritisation of cross-sectoral interoperability standards

Data Spaces Support Centre

- Development of blueprint, glossary, etc.
- Support of data space projects

Technical infrastructure

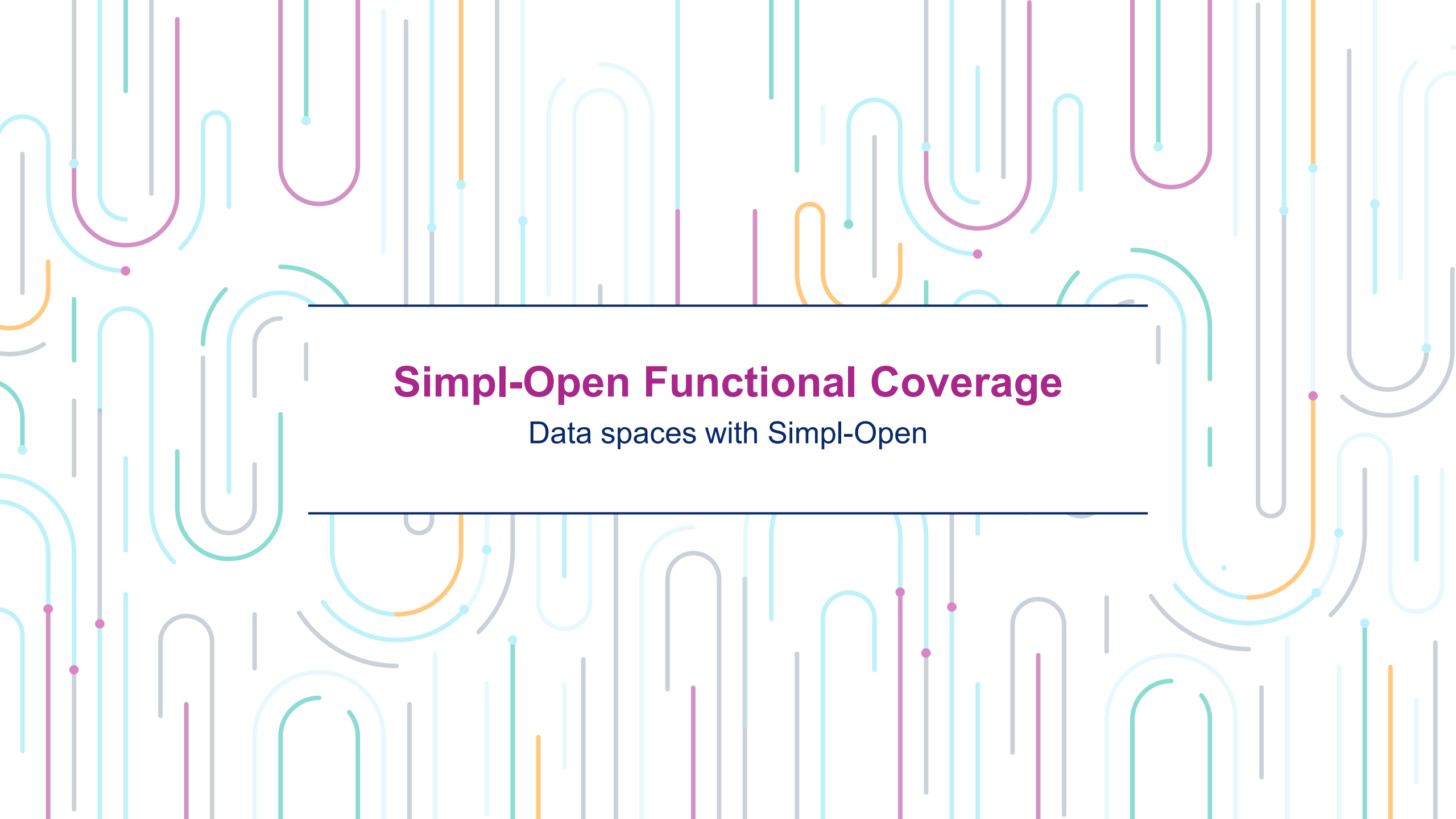
Standards

Digital Identity
(eIDAS)

**Smart Middleware
Solutions (Simpl-Open)**

High Performance
Computing

Testing &
Experimentation
Facilities

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Simpl-Open Functional Coverage

Data spaces with Simpl-Open

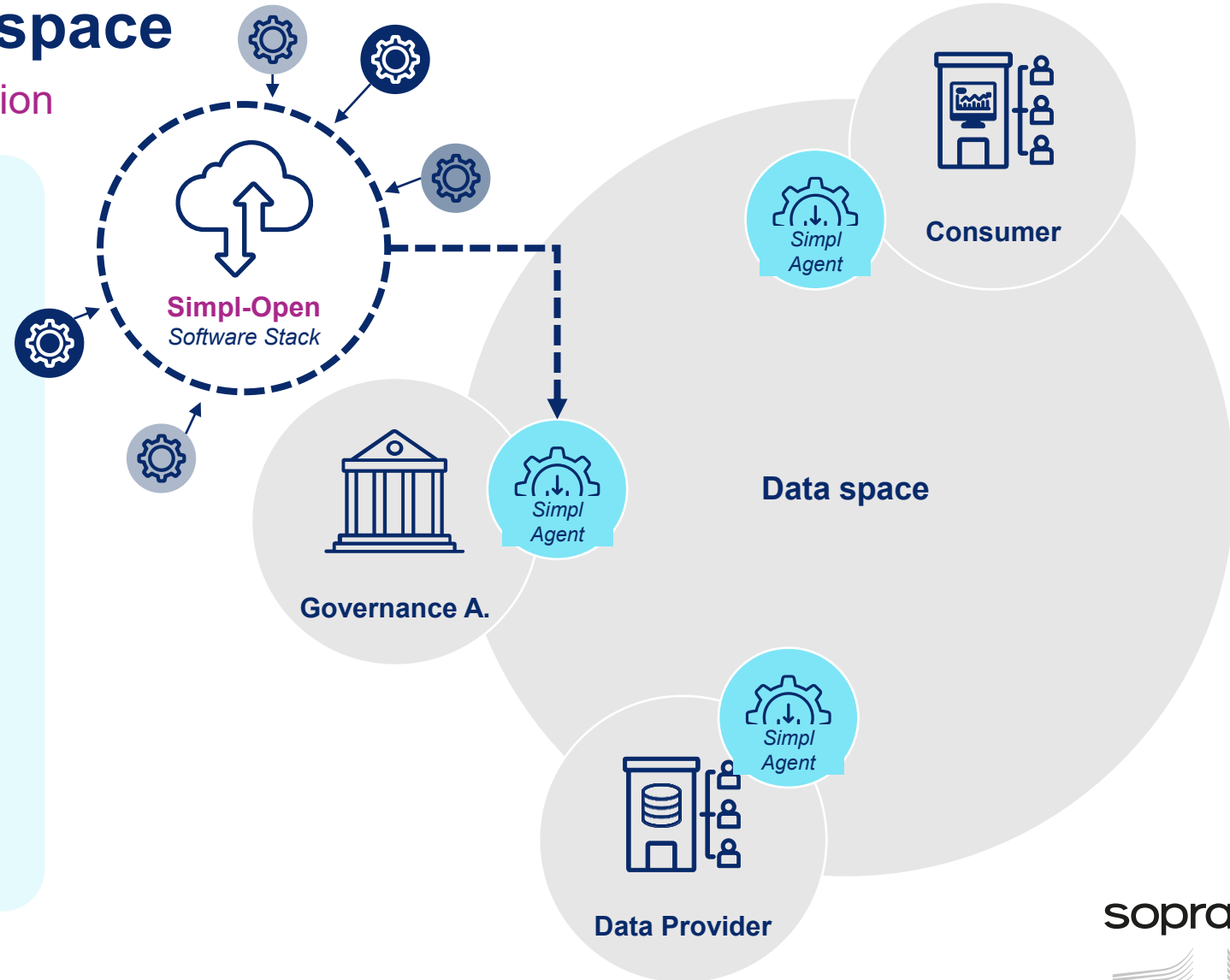
Simpl-Open covers the full landscape of a data space

Simpl-Open unique value proposition

Reuse, develop, integrate:

Simpl-Open:

- Identifies suitable existing components.
- Develops from scratch missing components.
- Integrates them to simplify the deployment and set up of a data space.



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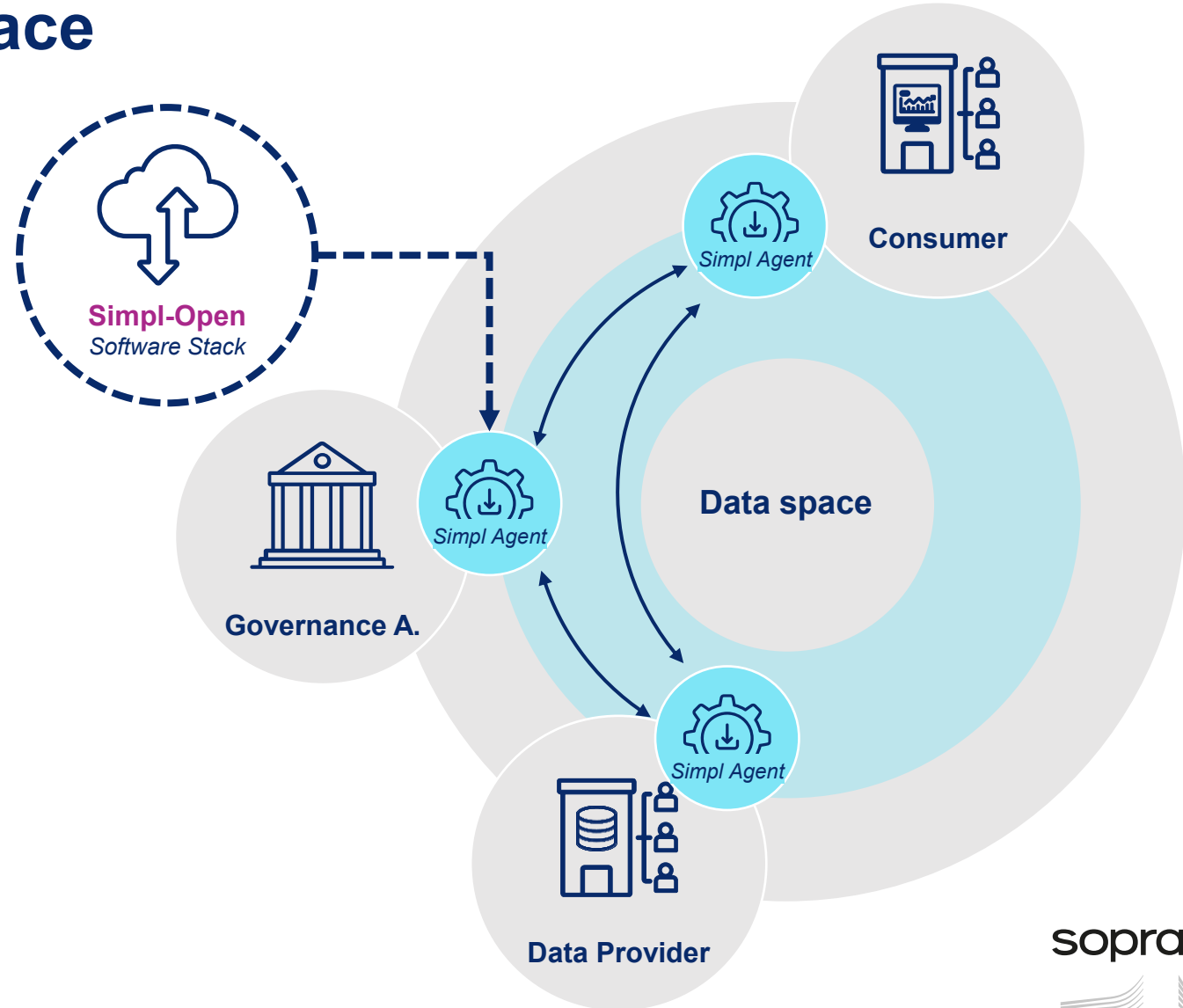
Simpl-Open covers the full landscape of a data space

Simpl-Open unique value proposition

Reuse, develop, integrate:

Engrained security:

The set-up of Simpl-Open secure communication is part of the onboarding of new participants.



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Simpl-Open covers the full landscape of a data space

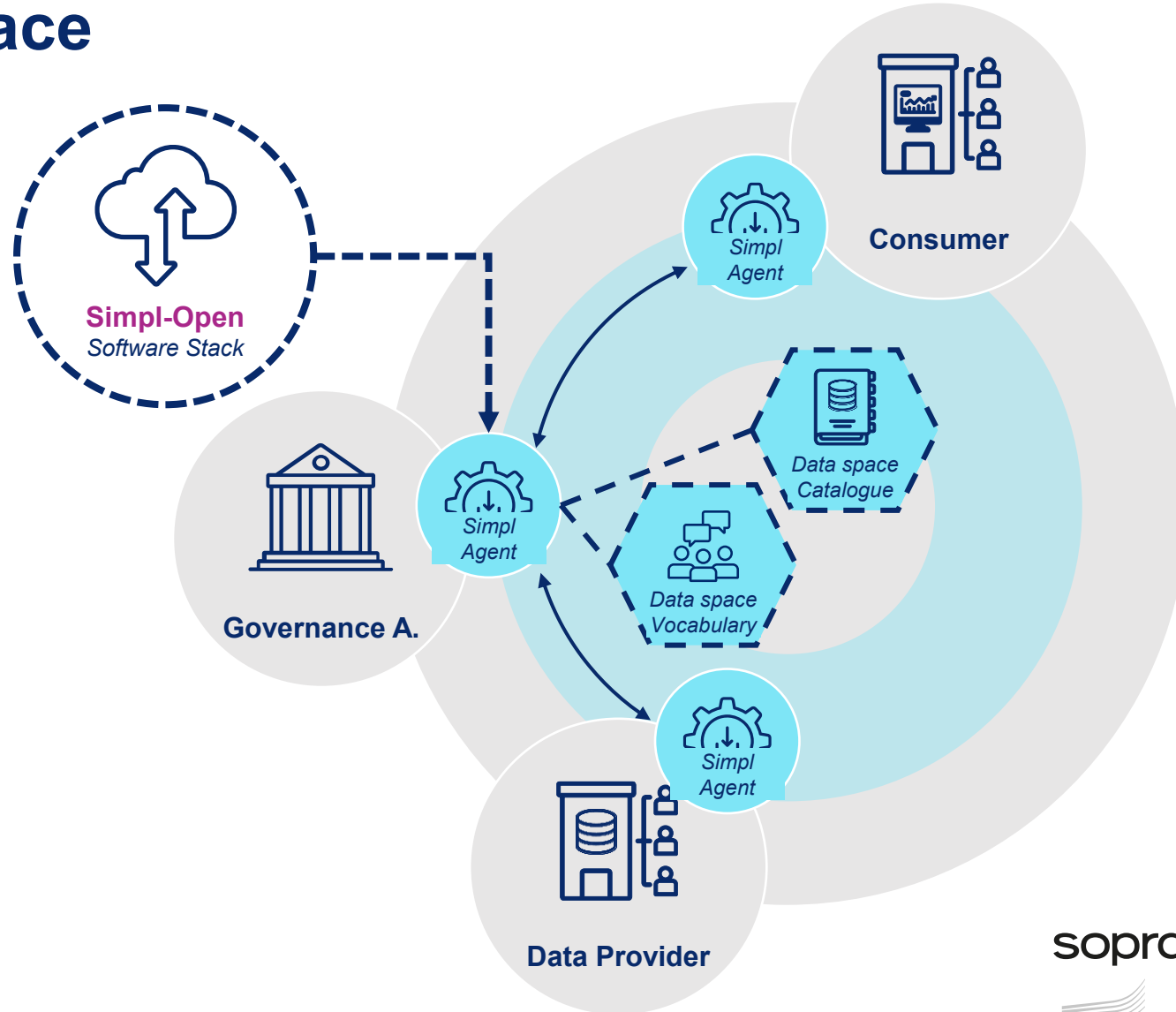
Simpl-Open unique value proposition

Reuse, develop, integrate:

Engrained security:

Flexibility through configuration:

Each data space can configure numerous elements, such as the rules for onboarding, the definition of identity attributes, the metadata required for publishing datasets/services, etc.



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Simpl-Open covers the full landscape of a data space

Simpl-Open unique value proposition

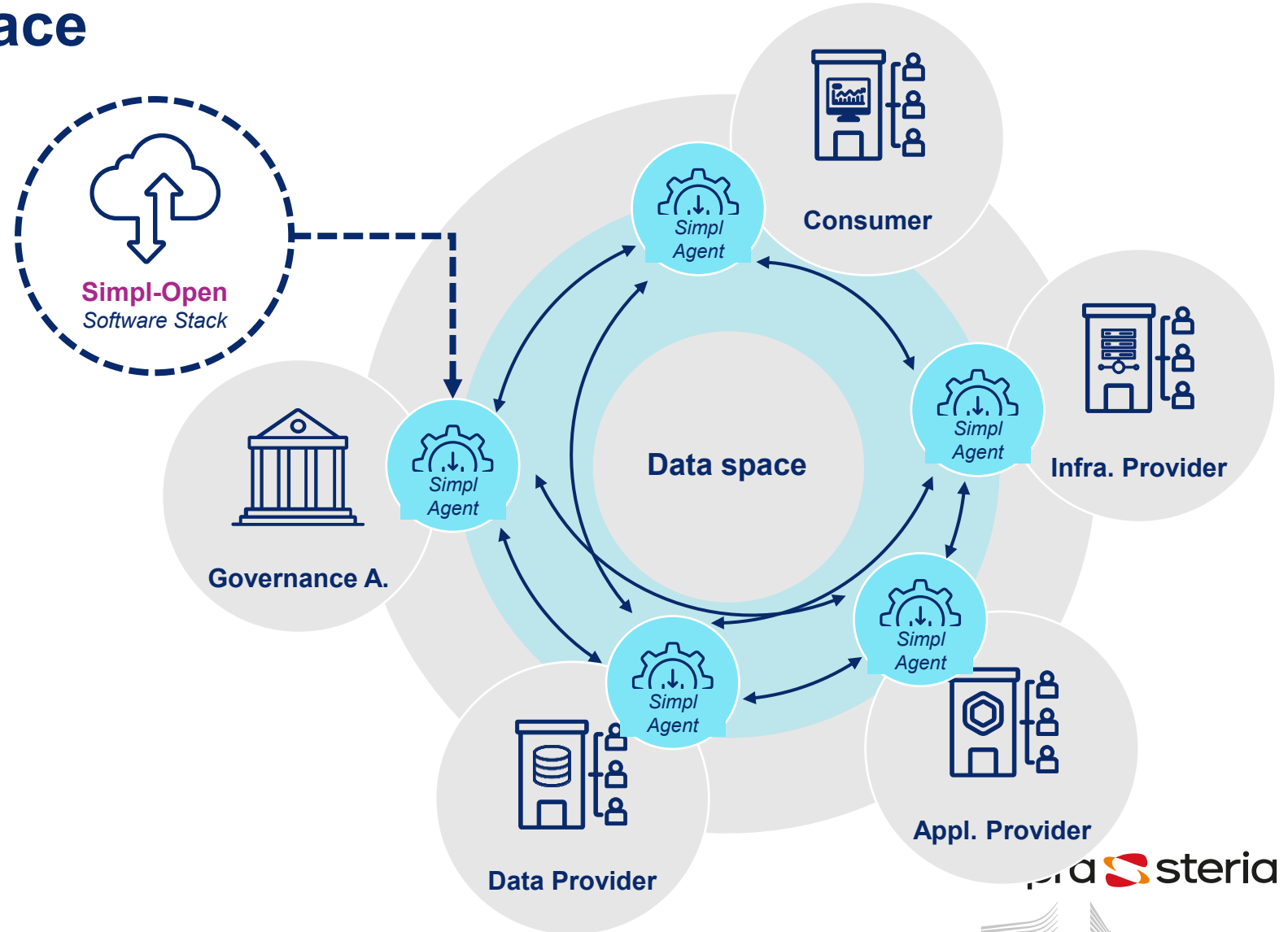
Reuse, develop, integrate:

Engrained security:

Flexibility through configuration:

Inclusion of new types of providers:

Simpl-Open also considers Infrastructure and Application providers, enabling providers to bundle infrastructure, application and datasets as they see the need.



Simpl-Open covers the full landscape of a data space

Simpl-Open unique value proposition

Reuse, develop, integrate:

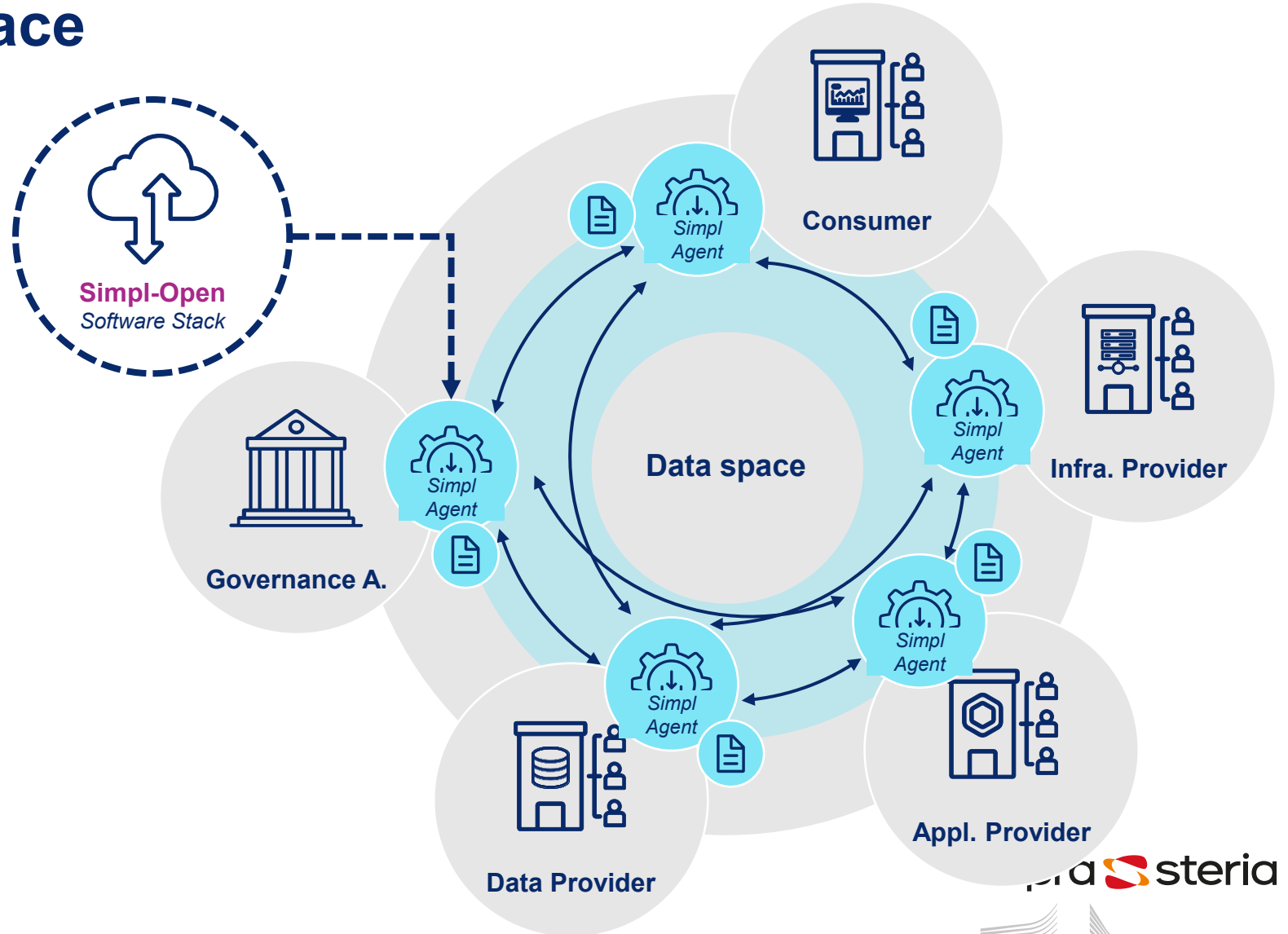
Engrained security:

Flexibility through configuration:

Inclusion of new types of providers:

Improved data sovereignty:

Simpl-Open provides the possibility to define access policies, usage policies and contracts.
Simpl-Open also enables custom data sharing alternatives.



Simpl-Open covers the full landscape of a data space

Simpl-Open unique value proposition

Reuse, develop, integrate:

Engrained security:

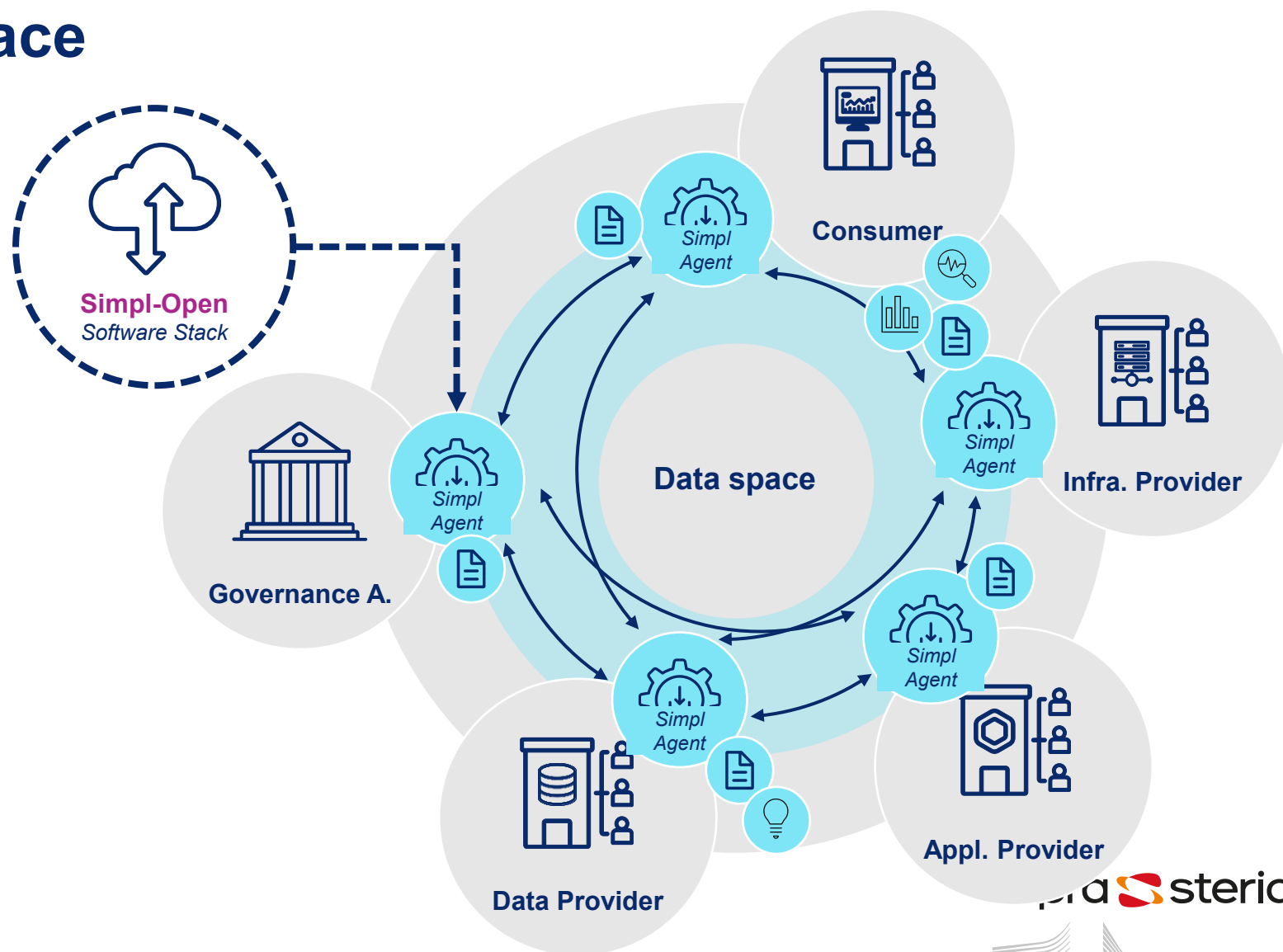
Flexibility through configuration:

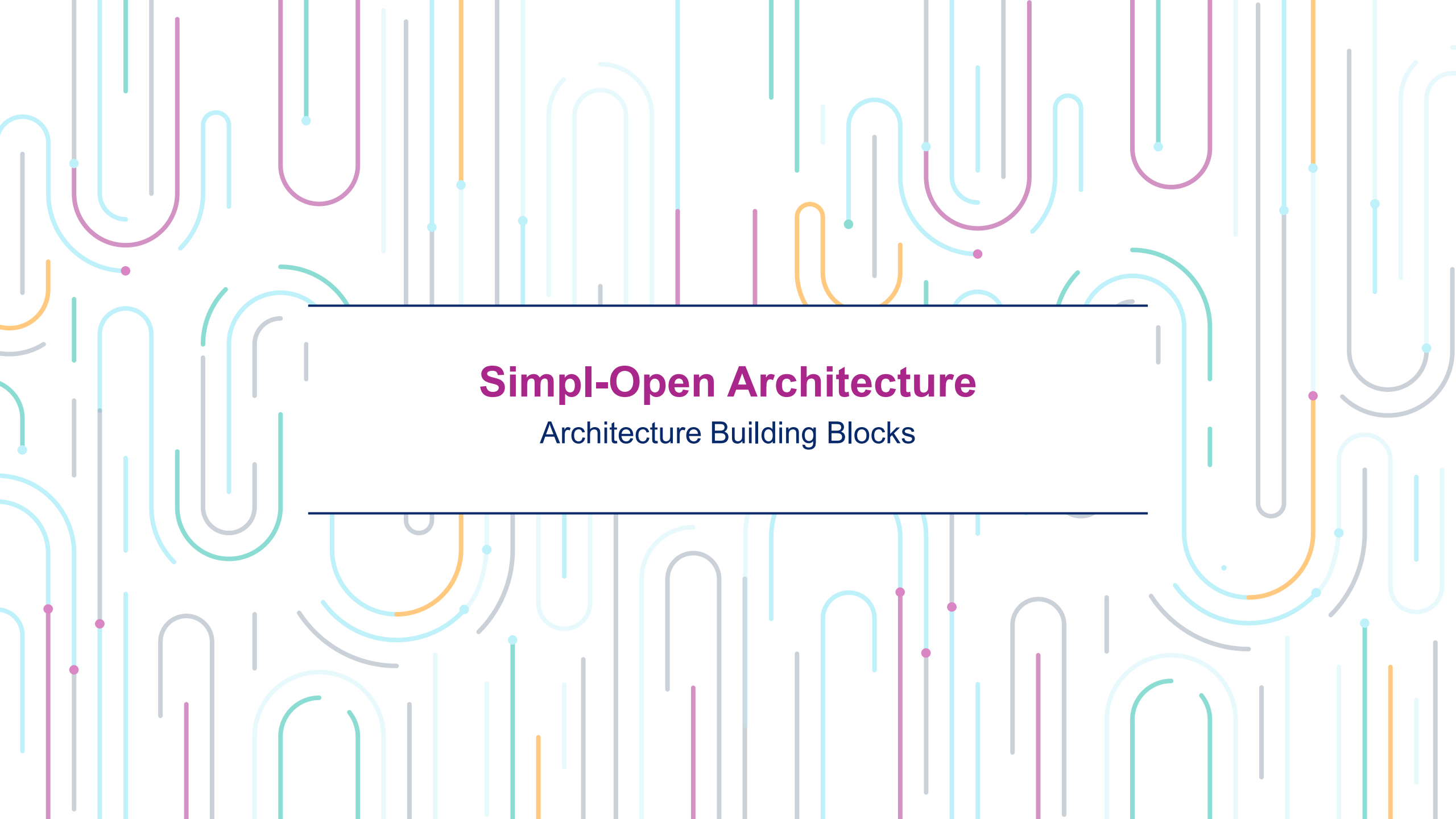
Inclusion of new types of providers:

Improved data sovereignty

Interact with Resources

Simpl-Open allows to process, analyse and interact with the data and applications by natively integrating data features and create high value data sets



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Simpl-Open Architecture

Architecture Building Blocks

Simpl-Open High-Level Architecture Components

Publish and Consume Resources

Modularity & Loose Coupling

Simpl-Open implements modular microservices, that are loosely coupled, to enable the integration of additional services.

Discoverability

All resources are discoverable via a catalogue, that follows semantic standards defined by the data space.

Composability & Extensibility

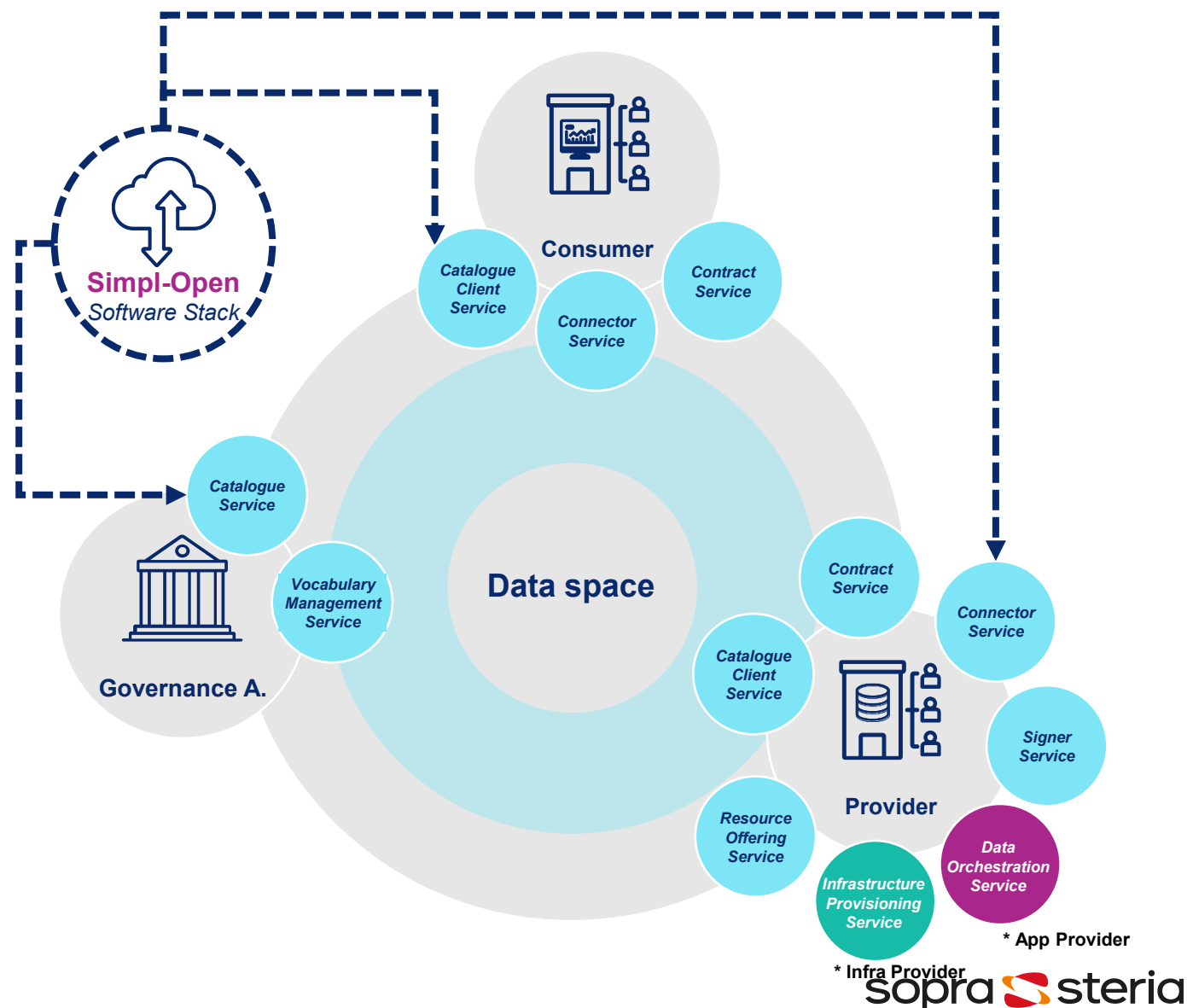
Microservices architecture and API standards allow for integration of additional services

Openness & Agnosticism

Simpl-Open re-uses Open-Source Technology wherever and adopts common standards, such as OpenID Connect, OpenApi etc.

Interoperability

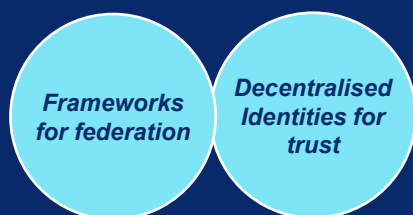
Semantic, Technical and organizational interoperability



The pillars of interoperability in Simpl-Open

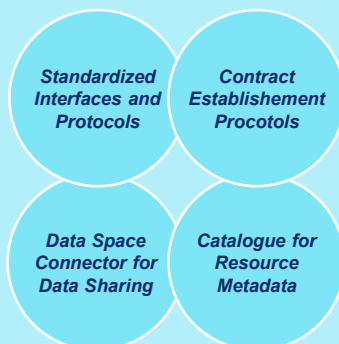
Organisational Interoperability

- Mechanisms to ensure trust: Make use of certificates and decentralised identities.
- Providing Frameworks for Federation of the Semantics (Vocabulary & Schemas) & Identity between Data Spaces



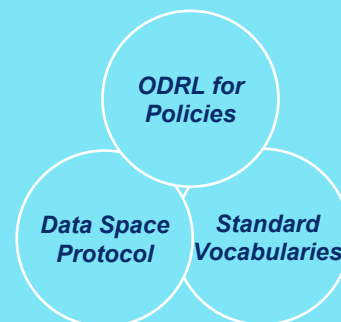
Semantic Interoperability

- Simpl-Open Supports standard vocabularies (DCAT, OWL, SKOS) for defining and validating resources.
- Data Space Protocol for Data Sharing & Contracting: Description of Simpl-Open
- Using standards - ODRL for Policy Definition



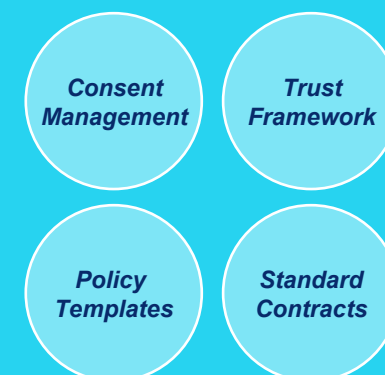
Technical Interoperability

- Standardised API's & Protocols
- Establishment of API guidelines following BELGIF
- Interoperability with distributed data spaces via IDSA Data Space Protocol
 - Publication and request of catalogue items
 - Data transfer process
 - Contract negotiation



Legal Interoperability

- Simpl-Open gives the means to data spaces to implement legal interoperability, by:
 - Standard contracts & clauses
 - Trust frameworks
 - Policy templates embedded into technical systems



Simpl-Open High-Level Architecture Components

Onboarding and IAA

Security, privacy & trust

Fine grained security and sovereignty of data

Federation

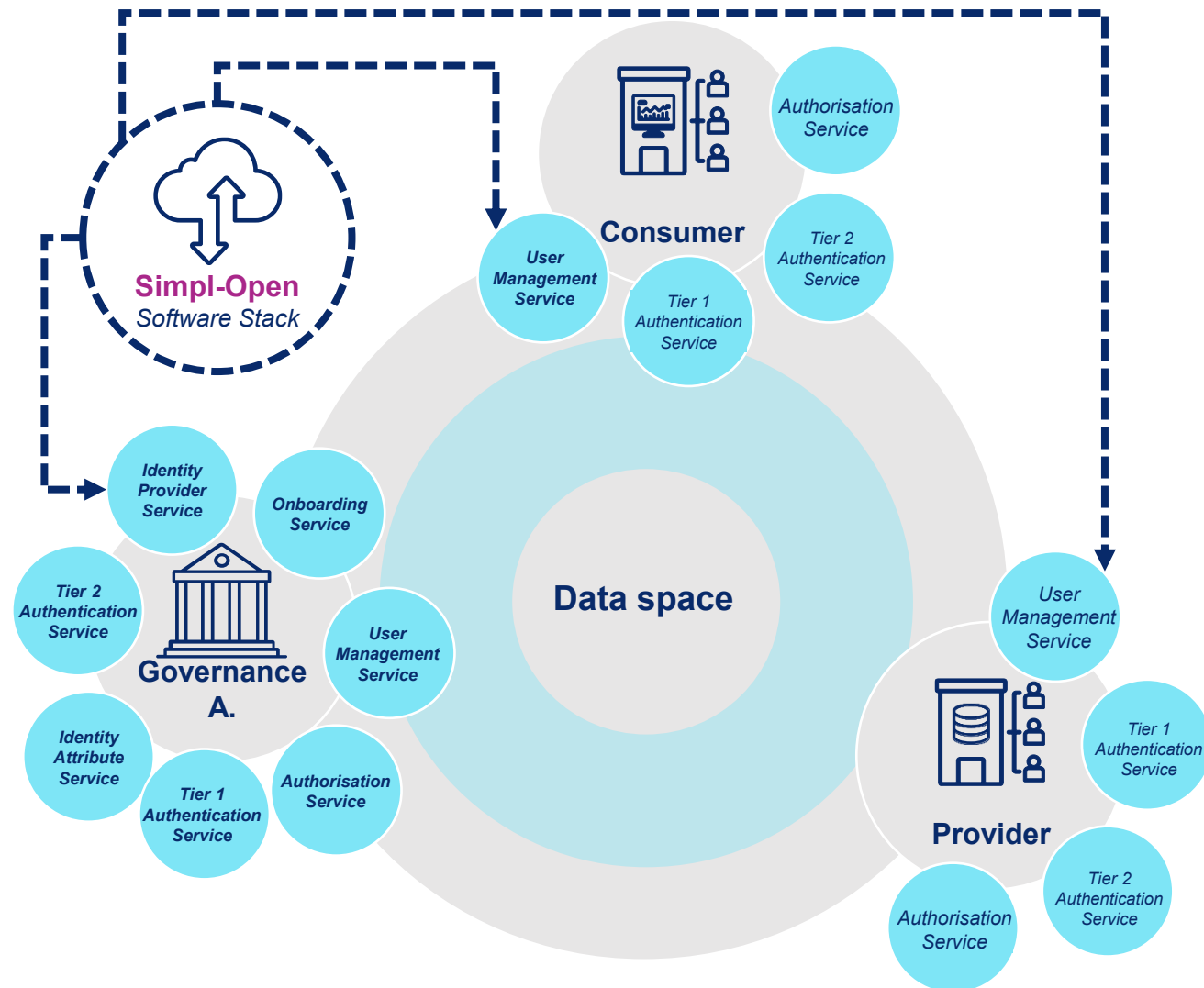
Federation of identities and semantics (vocabulary and schemas) allows Simpl-Open to inter-operate with other data spaces

Resilience

Independent microservices with minimal dependencies

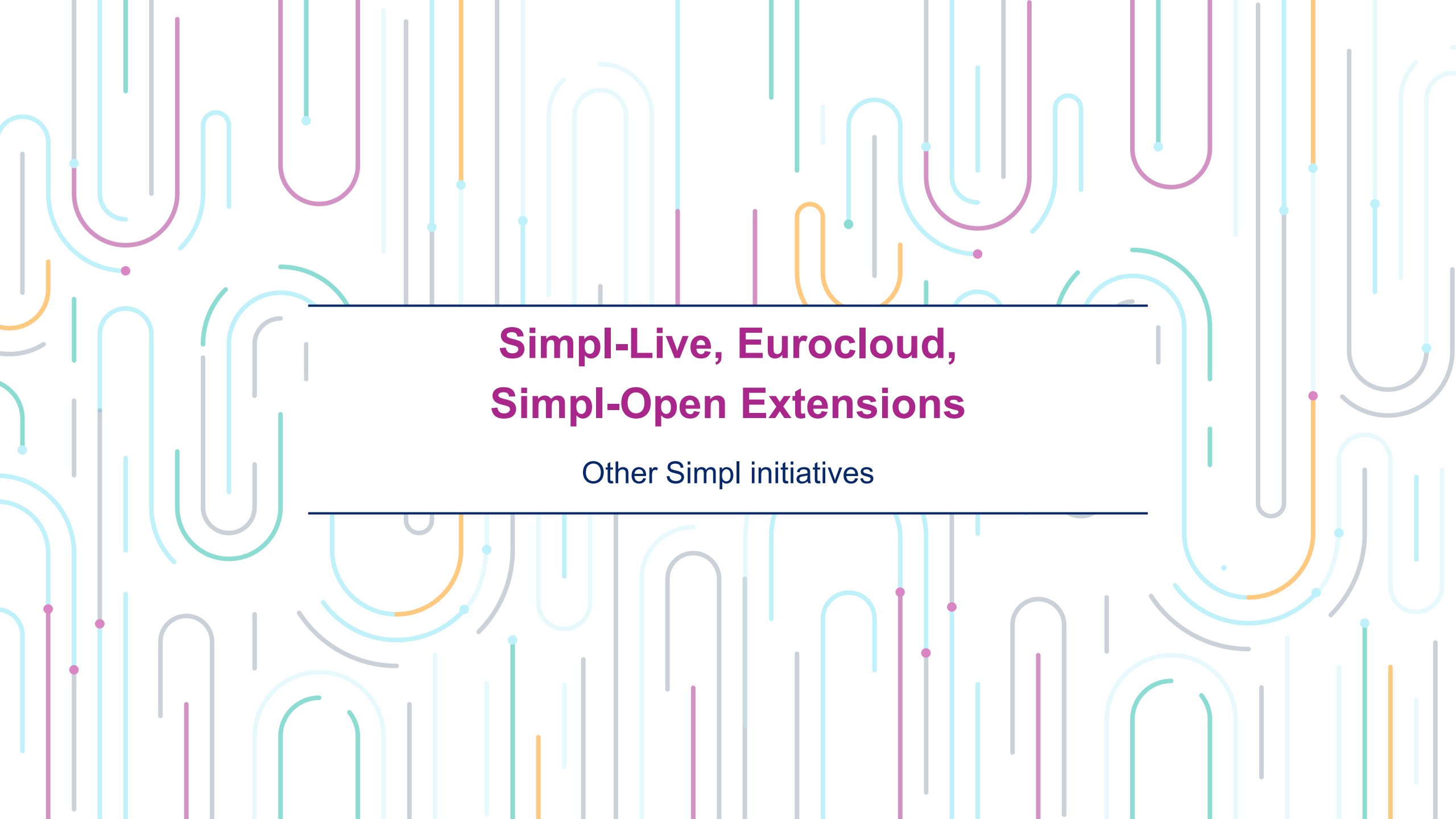
Scalability and elasticity

Automatic Horizontal Scaling allows for flexible load



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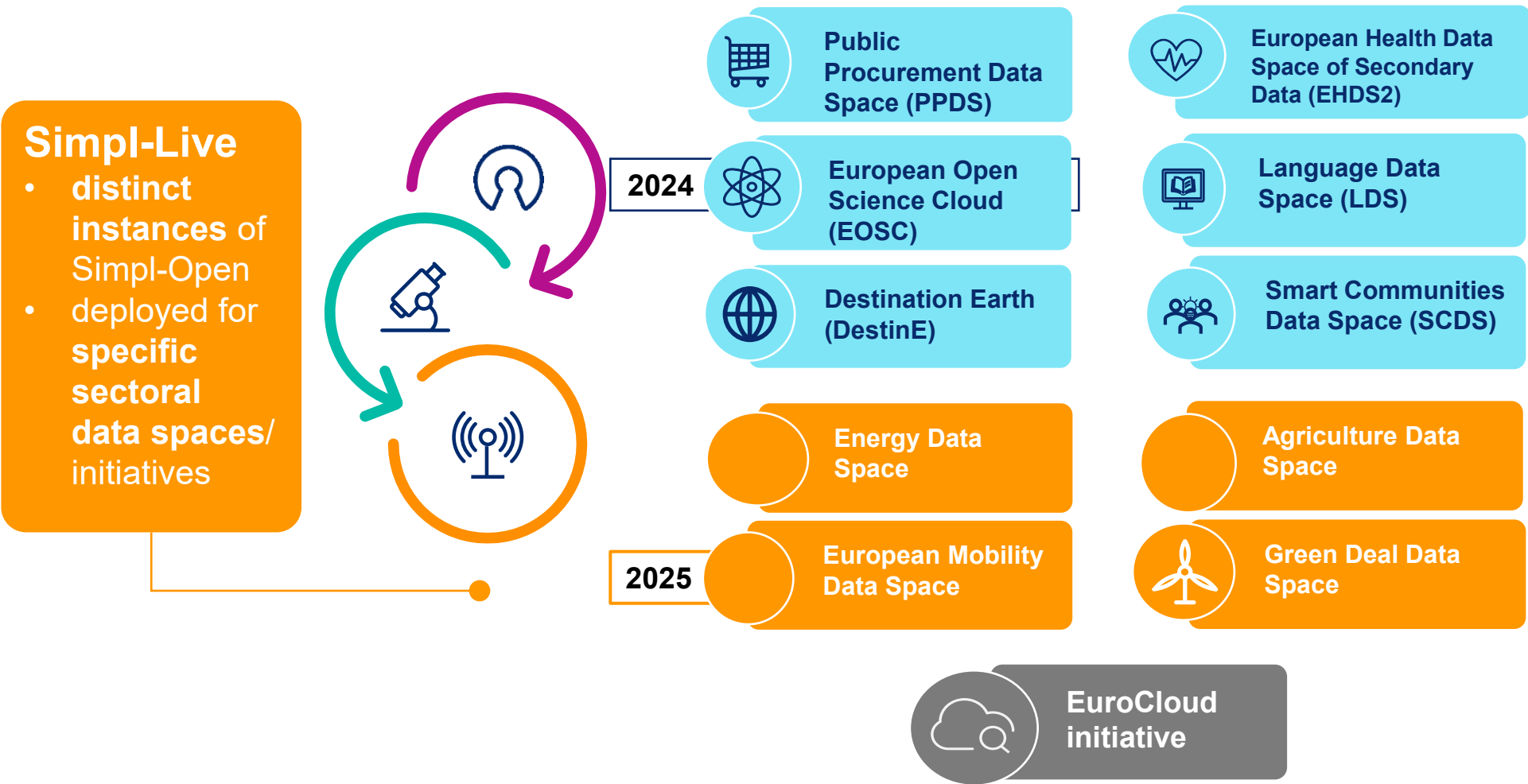
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Simpl-Live, Eurocloud, Simpl-Open Extensions

Other Simpl initiatives

Simpl-Live are instances of Simpl-Open deployed for specific data spaces

Common European Data Spaces with Simpl-Open

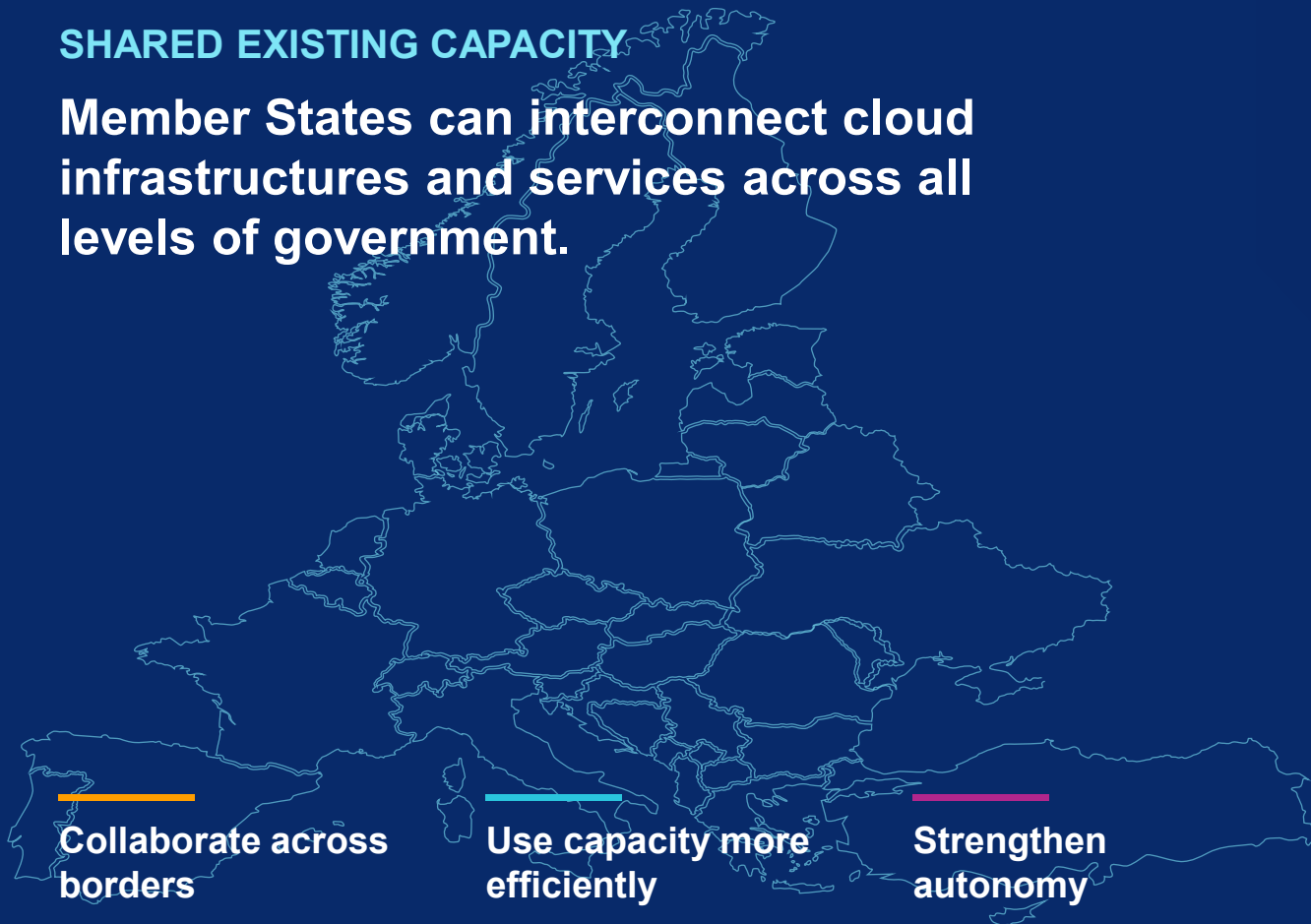


EuroCloud connects Europe's public-cloud capacity

Eight Member States are already testing three practical use cases.

SHARED EXISTING CAPACITY

Member States can interconnect cloud infrastructures and services across all levels of government.



8

MEMBER
STATES

3

PROOFS OF
CONCEPT

Testing technical feasibility

01

Containerised environment

02

Active/passive disaster recovery

03

Data-science workbench for AI & ML

PARTICIPATING MEMBER STATES

Latvia · Netherlands · Slovakia · Romania
Poland · Czechia · Greece · Italy

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European
Commission

Simpl-Open Extensions

Overview

New AI/ML capabilities and integration with EuroHPC Federation Platform

Introduction of pre-built AI services for Data Spaces



Coverage of key AI service categories, including:

Generative AI and Large Language Models

Computer vision

Data anomaly detection

Automated data extraction and analysis

Enable connection between Simpl-Open and EuroHPC Federation Platform



Federation Platform

ML pipelines and AI services executed on top of EuroHPC Federation Platform

Simpl-Open as an enabler for data spaces and other initiatives to access AI factories compute and data resources via the EuroHPC Federation Platform

EFP AI Factories



AI factories – HPC Capacity



AI factories – Data storage facilities

Enable the connection among Simpl and DOME Marketplace



New Simpl-Open AI services published in DOME catalogues



Availability of DOME products in Simpl-Open catalogues



DOME

(Distributed Open Marketplace for Europe)

Monetisation Simpl Governing Authority



Business models and strategies for Simpl-Open Governing Authority role

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European Commission

3rd Simpl Annual Community Event

10 December 2026
SQUARE, Brussels

Mark
the date



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Thank you!



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