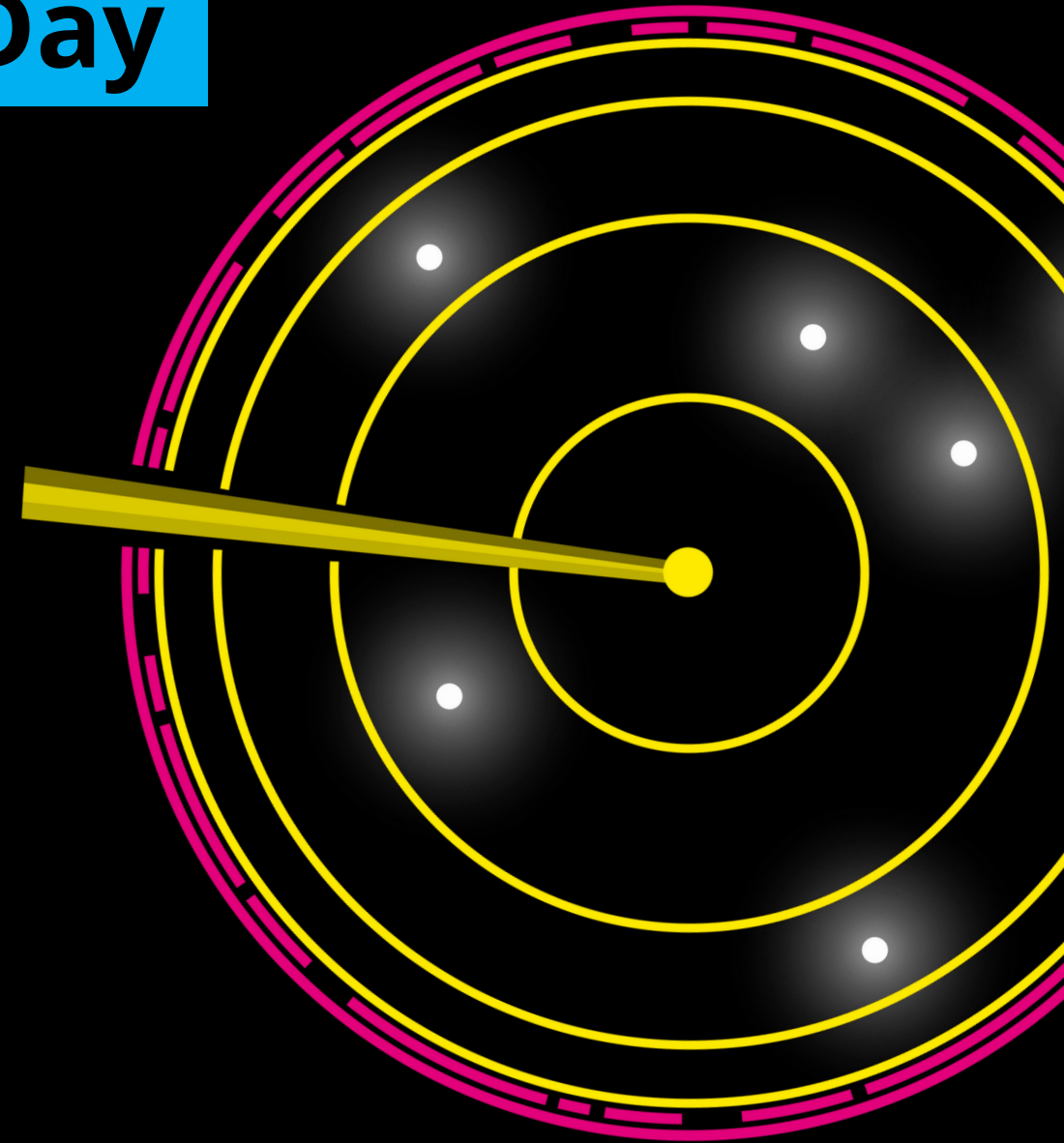


# Data Spaces Discovery Day

October 19, 2023 | Vienna

Standard for Data Spaces  
IDS Architecture & Dataspace  
Protocol

Sebastian Steinbuss  
IDSA



# The IDS Reference Architecture

*Your guide to data spaces*

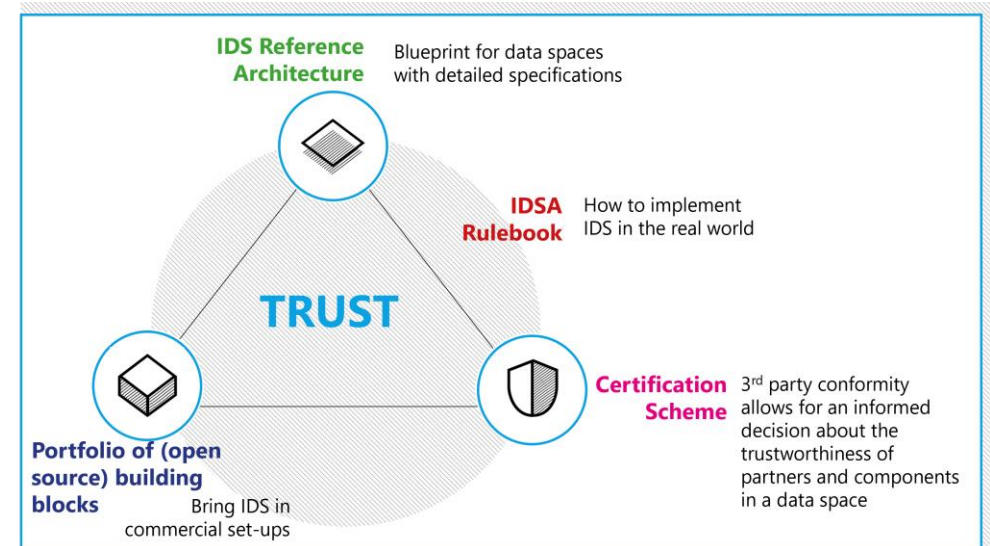
The IDS Reference Architecture Model (IDS-RAM) is a practitioner-oriented guide to designing and implementing architectures for data spaces.

The RAM is both, an introduction to software architecture and a handbook of well-established best practices.

# The IDS-RAM in the magic triangle



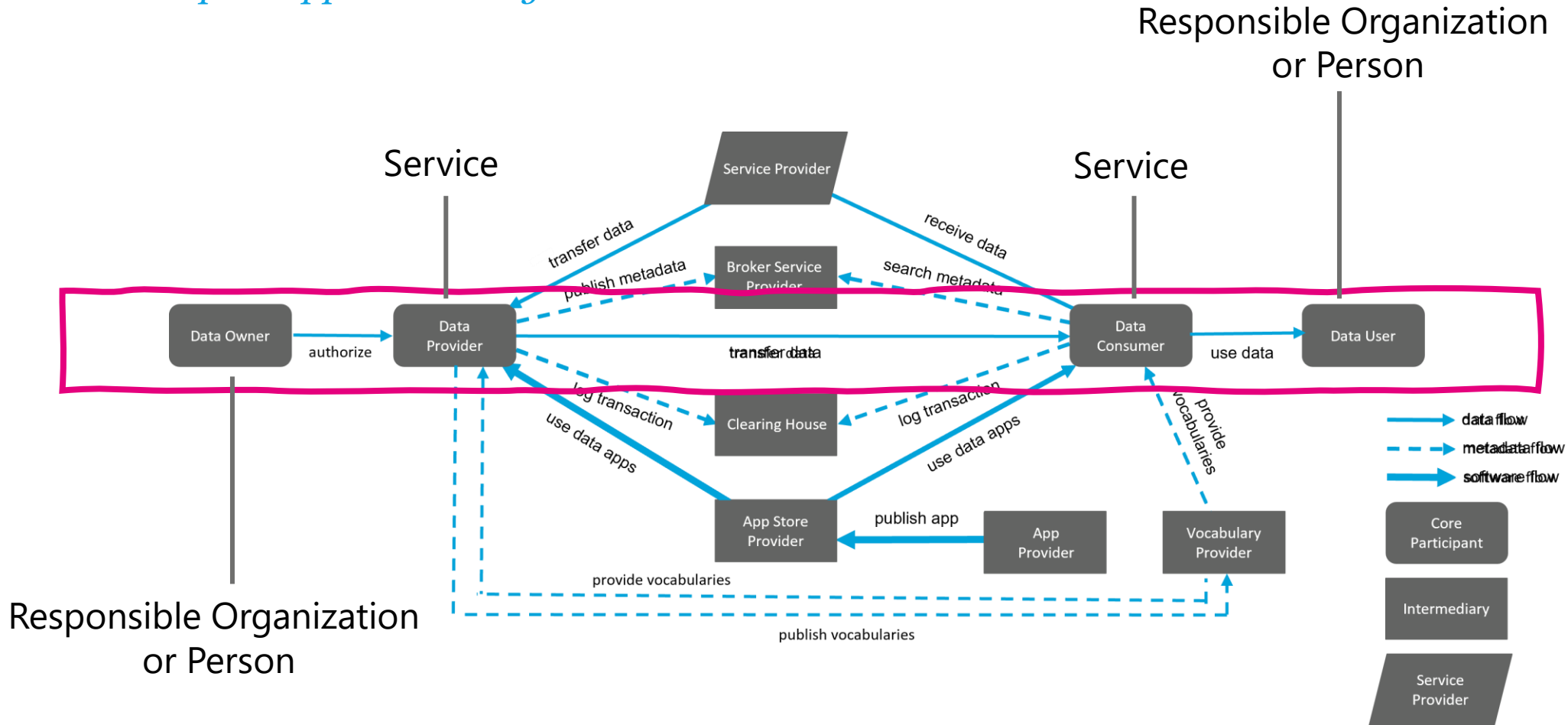
- IDSA members work in a consent-based way on the **Reference Architecture Model** and the subsequent specifications
- The **IDS Certification Scheme** follows the IDS-RAM and provides means to validate the compliance to it.
- Compliant **building blocks** are the foundation for commercial setups
- The **IDSA Rulebook** provides additional information to establish Data Spaces (BLOFT thinking)



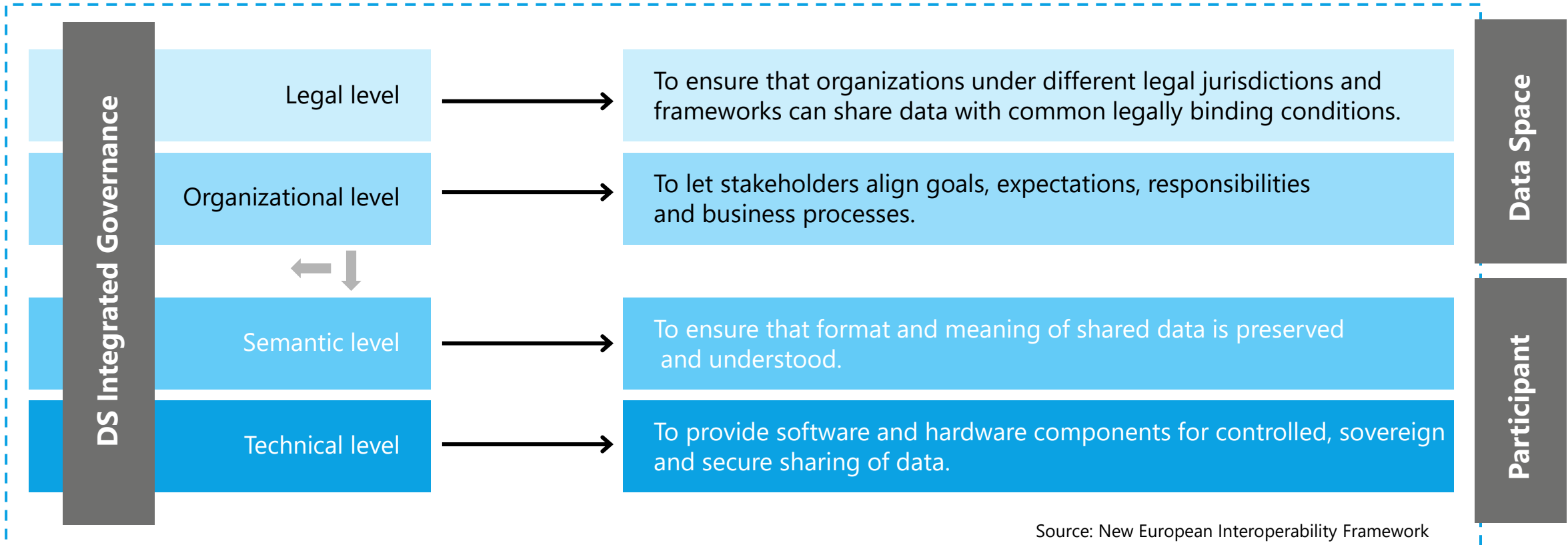
**IDSA ensures consistency of the magic triangle**

# Business Layer – fundamental understanding

*Peer to peer approach and general services*



# Layered model for interoperability

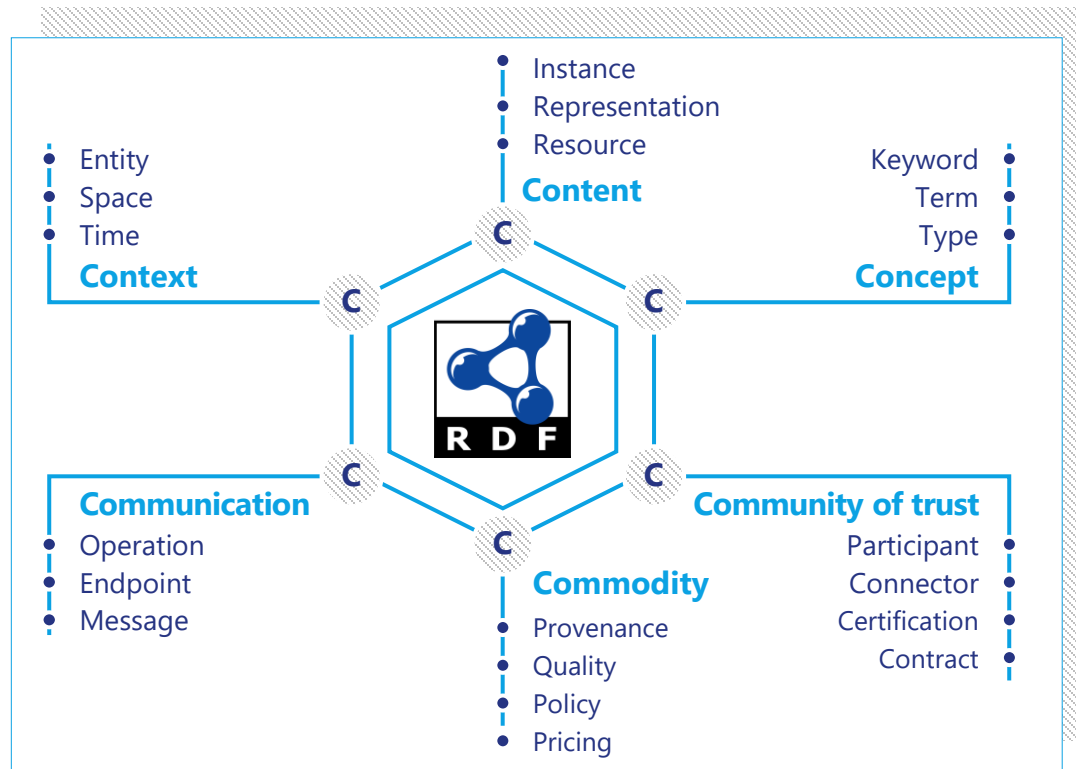


Source: New European Interoperability Framework

- **Intra data space interoperability**, between the data space authority, processing, and data sharing building blocks within a single data space instance
- **Inter data space interoperability**, between multiple data space instances at each of the functional levels

# IDS Information Model

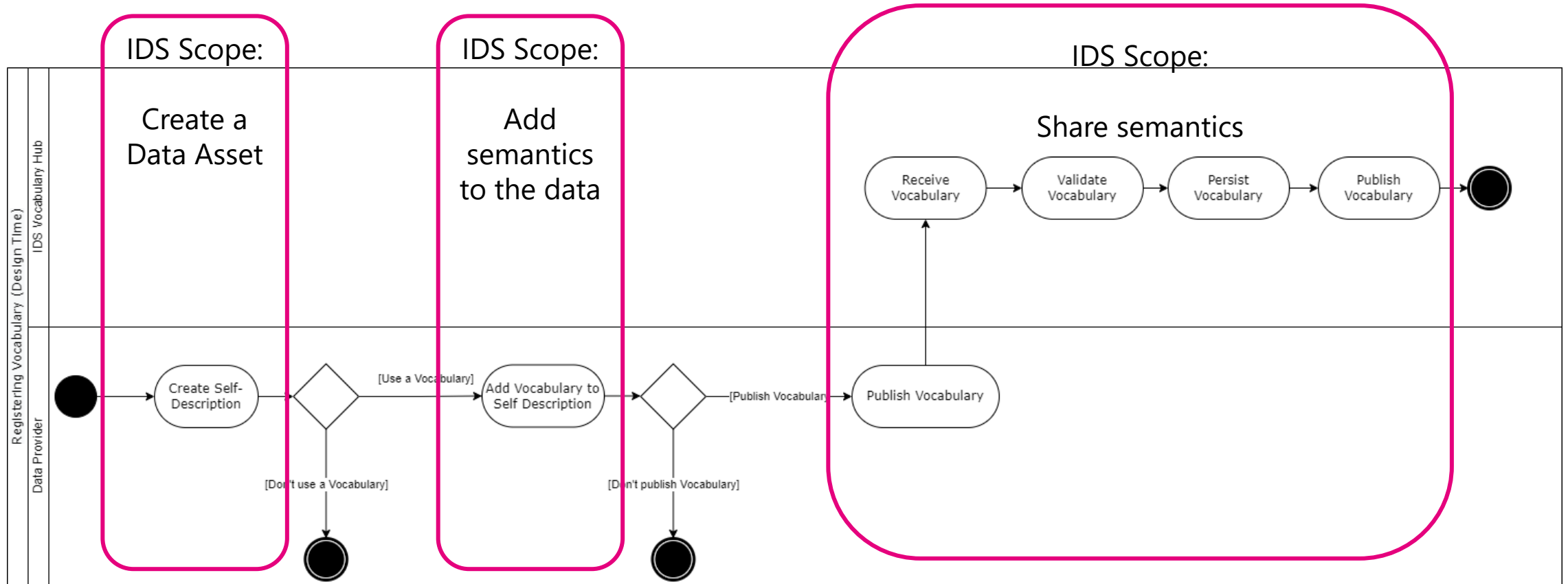
*Describing data assets*



- The essential agreement shared by the participants and components of data ecosystems, facilitating compatibility and interoperability
- Three formal levels of digital representation of the information model
  - » Conceptual (generic description in UML)
  - » Declarative (formal, machine interpretable specification of IDS concept, semantic description)
  - » Programmatic (IDS Information model library in java)

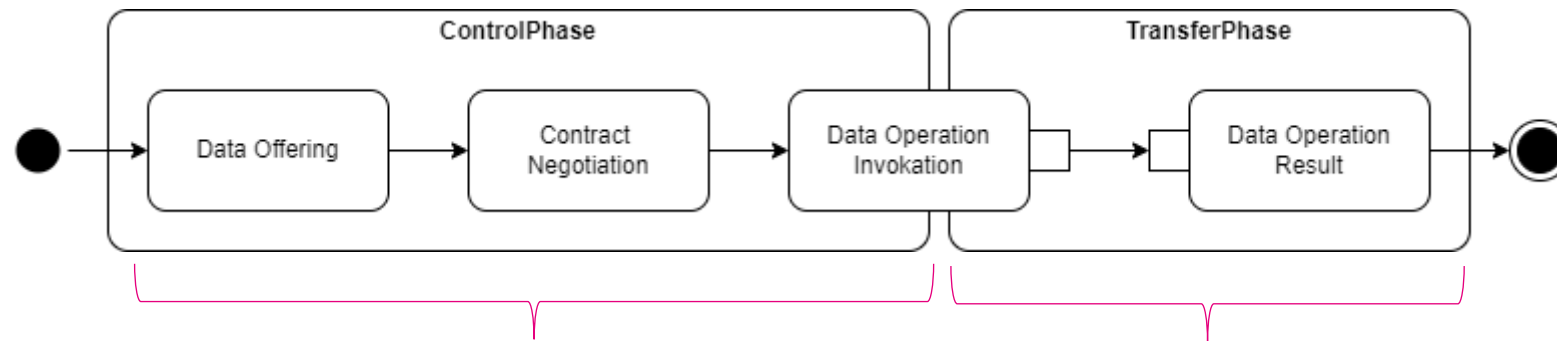
# Process layer

## Creating a data offering



# Process layer

*Ok, but can we now transfer data?*



This is part of the **Dataspace Protocol**

The connector controls the Data exchange

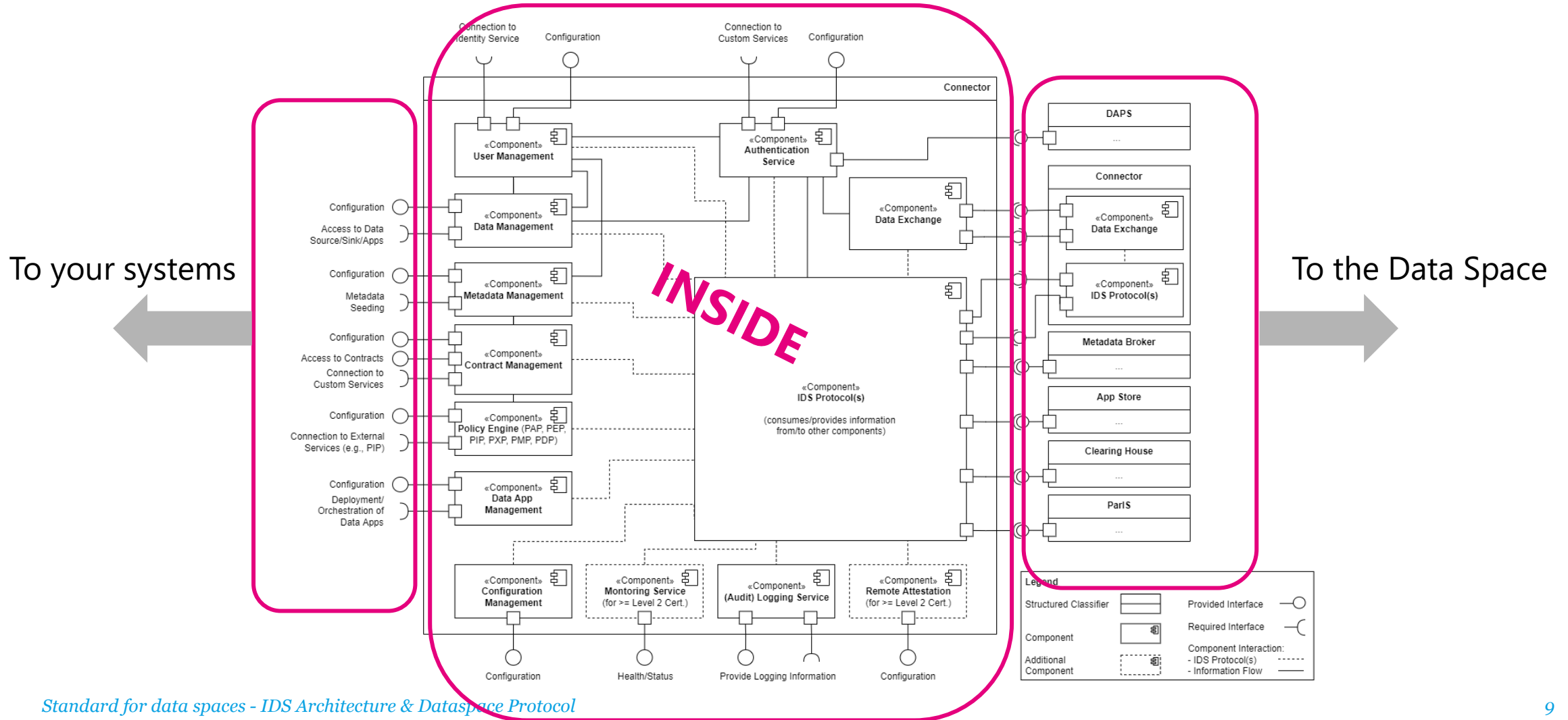
The Data Exchange itself may:

- Use other protocols
- And can be conducted in-band or out-of-band
- As long as you can cope with the Usage Policies



# System layer

The connector – functional components



# Technical Interoperability

## *The Dataspace Protocol - DSPACE*



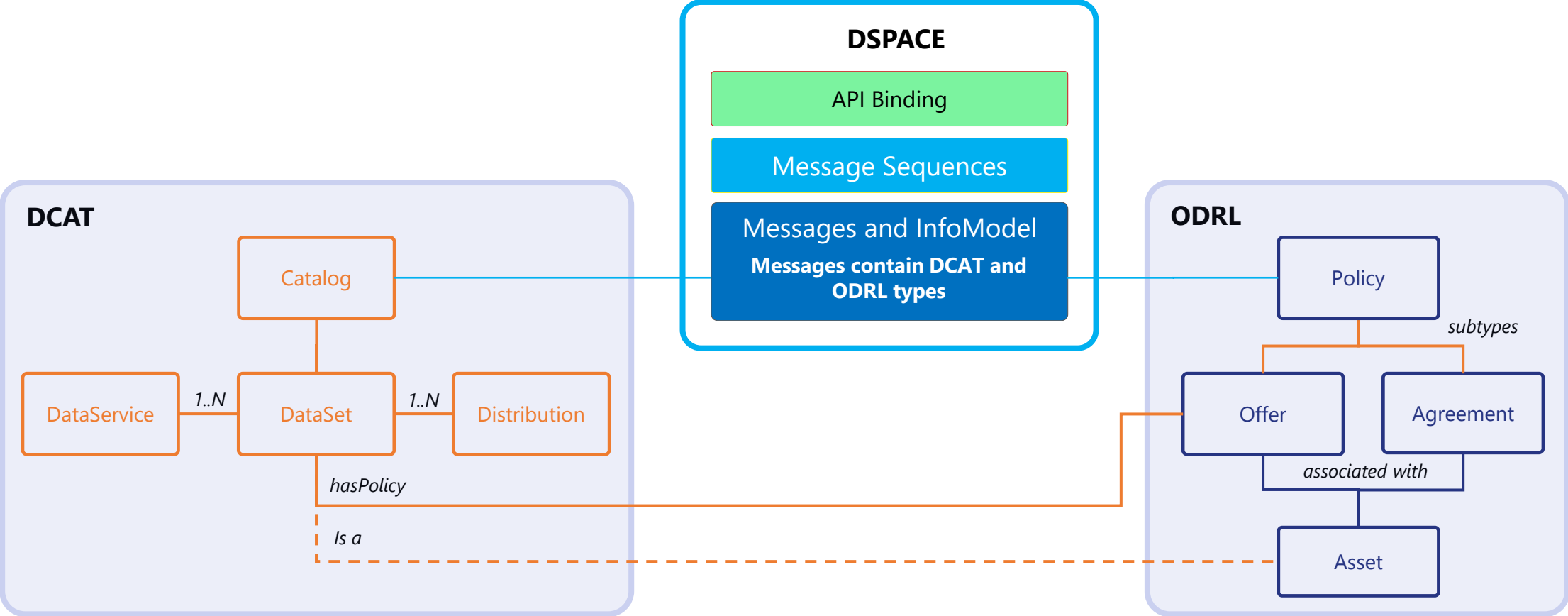
The ability for independent Dataspace Protocol implementations to interact in a dataspace together.

- Many dataspace cannot mandate technology stacks to their members
- Need to mix-and-match dataspace components

Basis of interoperability must be a set of well-described standards (documents) that lay out normative conformance requirements in a programming language-independent manner

# Dataspace Protocol Specification

Based on W3C Standards

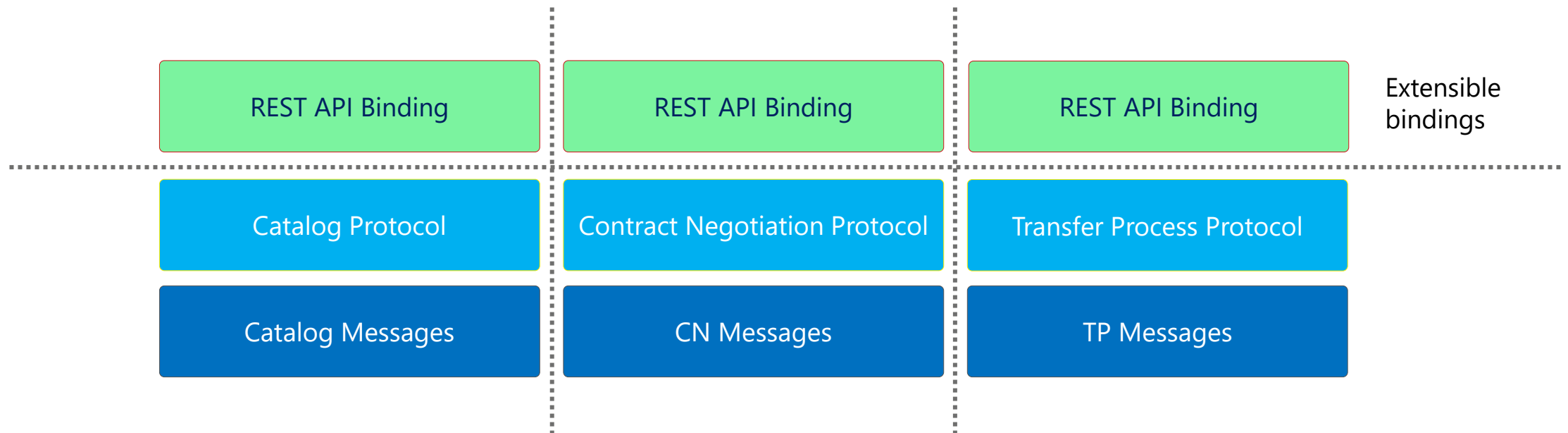


# Dataspace Protocol Specification

## Modularity



Independent Implementations

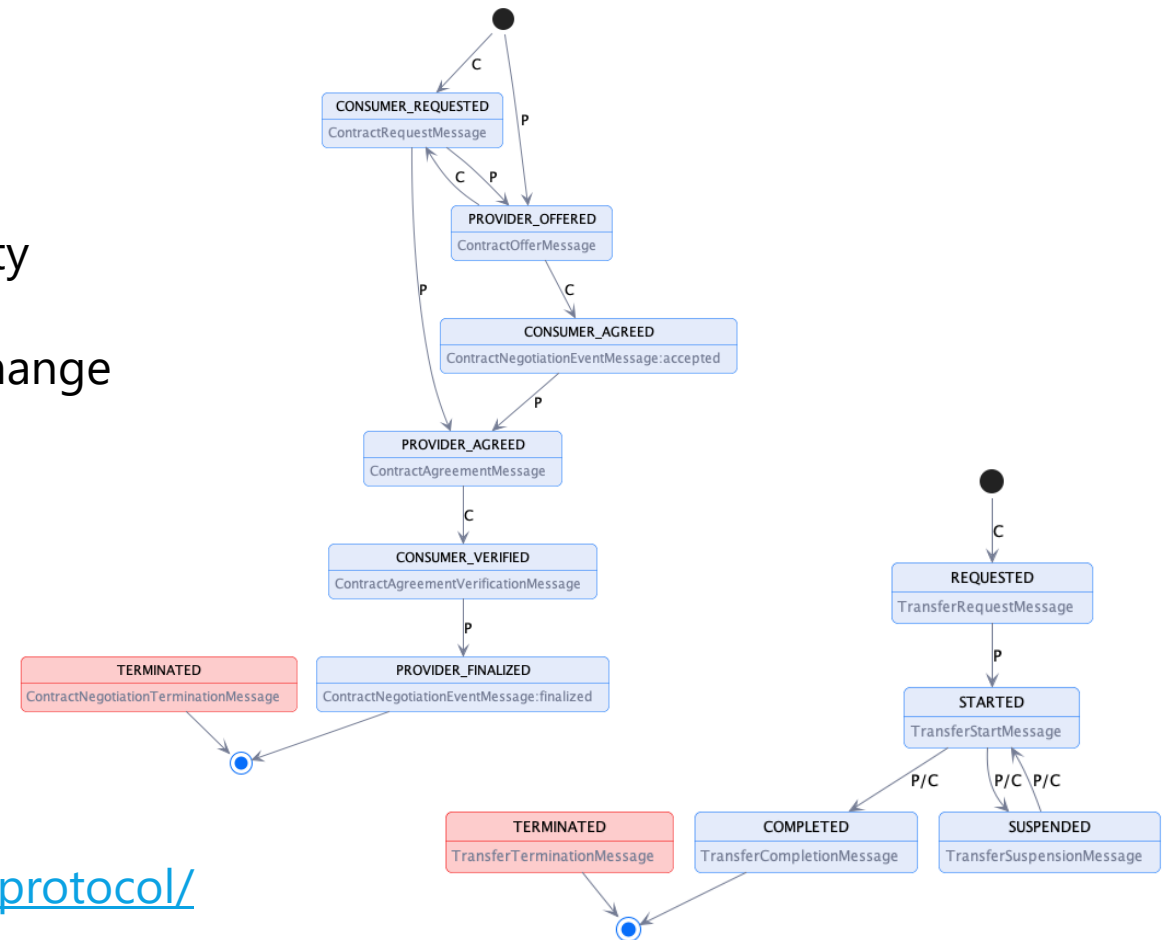


# A clear specification for interoperability



The Dataspace Protocol provides:

- a clear specification for Data Space Interoperability
- independent of implementation details
- foundational functionality for sovereign data exchange
- as an international standard



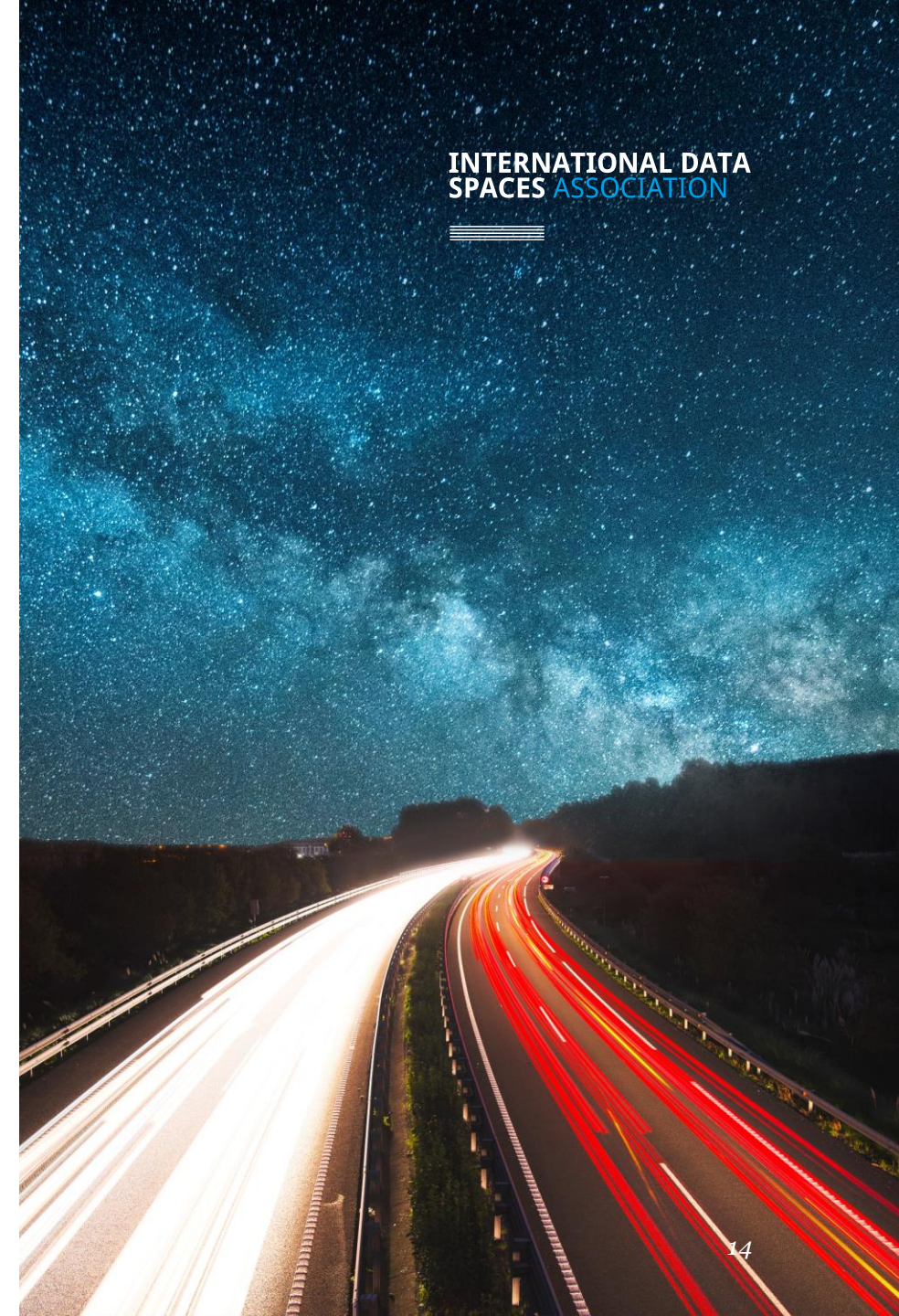
Current working draft

<https://docs.internationaldataspaces.org/dataspace-protocol/>

# What's next

## *Quo vadis Data Spaces*

- Dataspace Protocol will be finalized during this year
- RAM 4 is the current stable version
- RAM 5 will be more modular and include new concepts from the IDSA Rulebook
- International Standards are under development, based on the IDSA Rulebook, RAM and DSPACE





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