



Data Spaces and InterConnect Semantic Interoperability Framework

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IoT Week

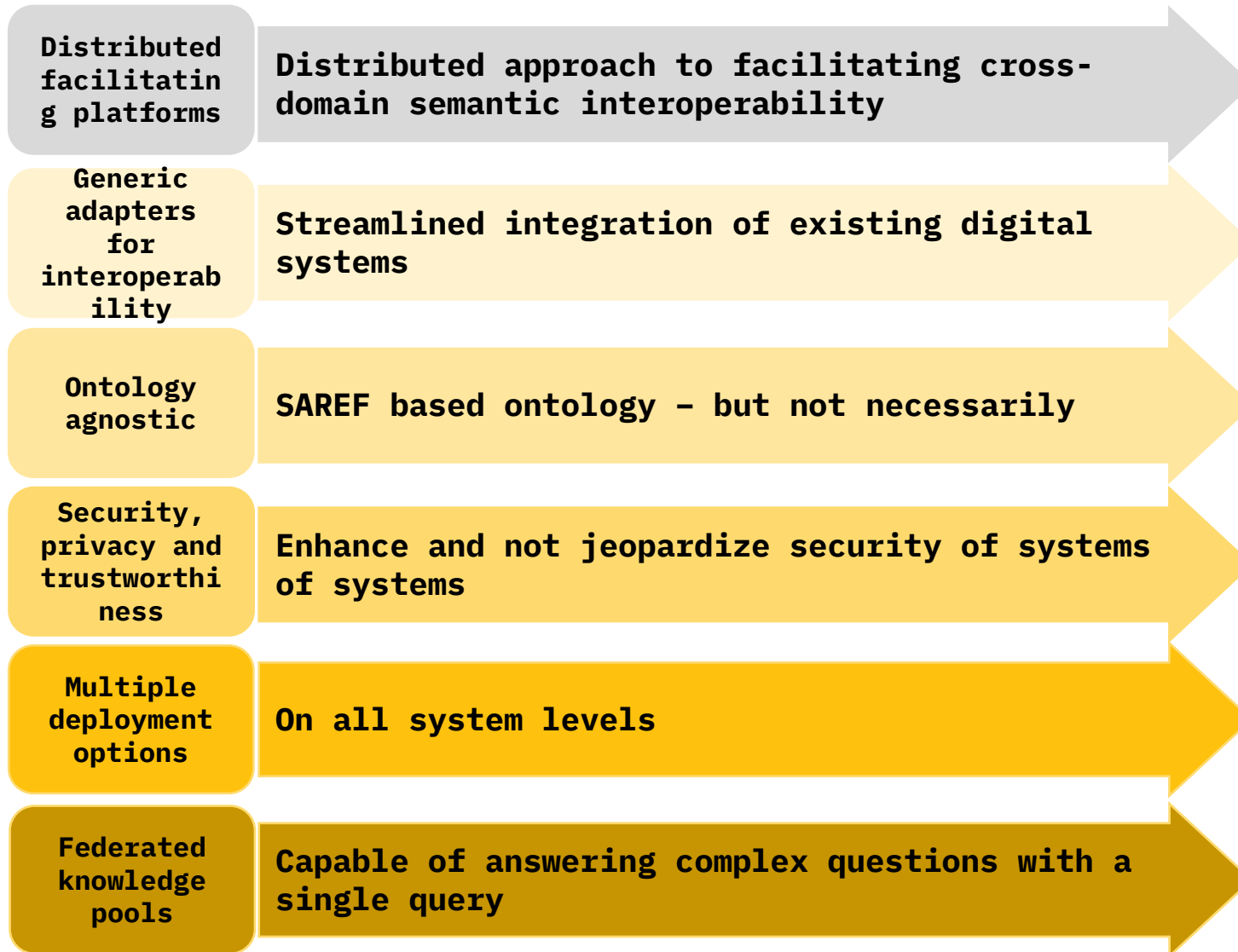
22.06.2022.

Data spaces require semantic interoperability



- Key requirements for data spaces:
 - **Interoperability**
 - Sovereignty and Trustworthiness
 - Distributed approach
- What are the challenges for semantic interoperability?
 - Steep technology learning/mastering curve.
 - Business alignment.
 - Most solution call for centralized interoperability facilitator. The issues are:
 - Dependability.
 - Data and privacy protection risks.
 - Performance bottlenecks.
 - Limited updates and extensibility.
 - Security – weakest link in a chain.

How InterConnect addresses the challenges?



Ecosystem Interoperable Services

ENERGY	NON-ENERGY
CROSS-DOMAIN	CROSS-PILOT

Interconnect Interoperability Framework

STANDARDS



IN LINE WITH

FIWARE	GAIA-X	IDSA
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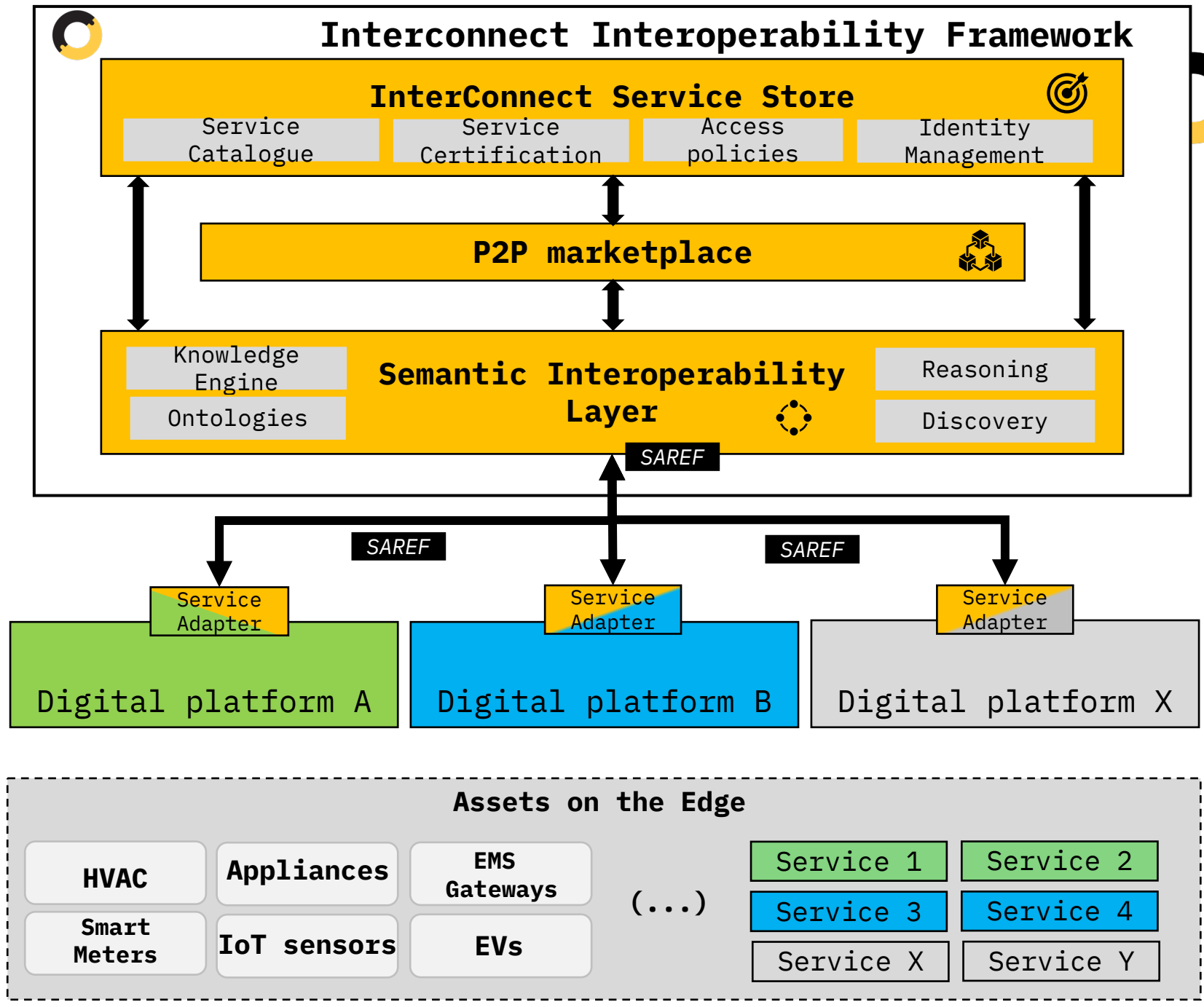
SEMANTIC INTEROPERABILITY BASED ON

ONTOLOGIES	GRAPH PATTERNS
KNOWLEDGE FEDERATION	

Interconnect Stakeholders

R&D
CONSULTANCY
MANUFACTURERS
ASSOCIATIONS
DSOs
RETAILERS
END USER

Security and privacy framework , Admin and Governance

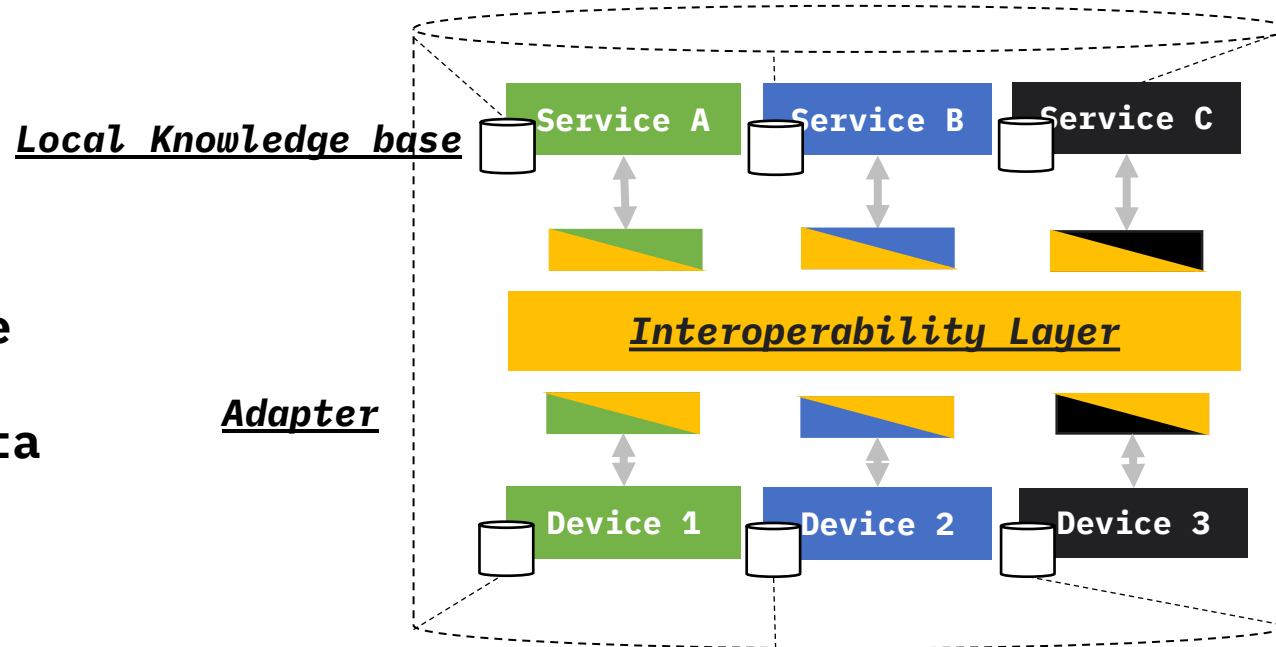


Use cases , Interoperable Services , Standardization

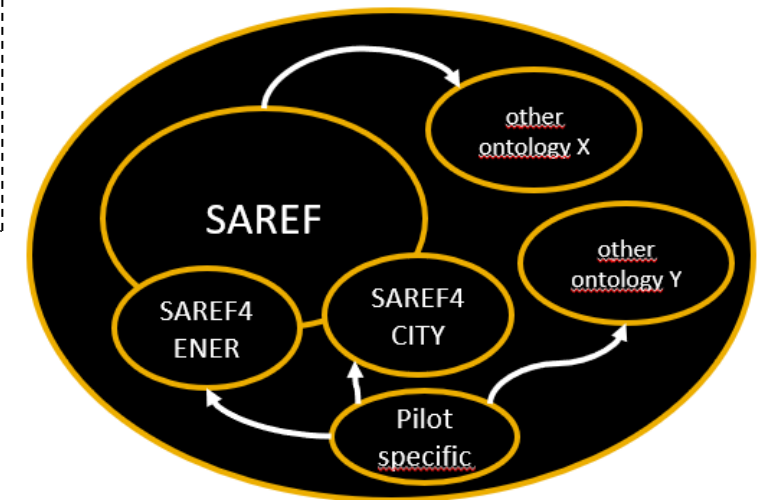
How is the Semantic Interoperability Layer used to build interoperable data space?



Semantically Interoperable Ecosystems establish Data Space



(distributed)
Data Space - Knowledge Federation



DataSpaces for the Digital and Green Transformation



- ❑ Action Plan on the Digitalisation of Energy (DoEAP) by the European Commission to be published in autumn 2022
 - ❑ Digitalisation prerequisite for efficient and effective operation of energy system and markets

- ❑ Data availability and timely sharing and use among relevant players is key for the energy transition
 - ❑ Including metering data, data from consumers such as home appliances, building automation, EV charging stations, or prosumers PV panel & inverters

- ❑ As a baseline for a data space, data and technology components must be built on formal or pre-normative standards, stakeholder driven, interoperable and open

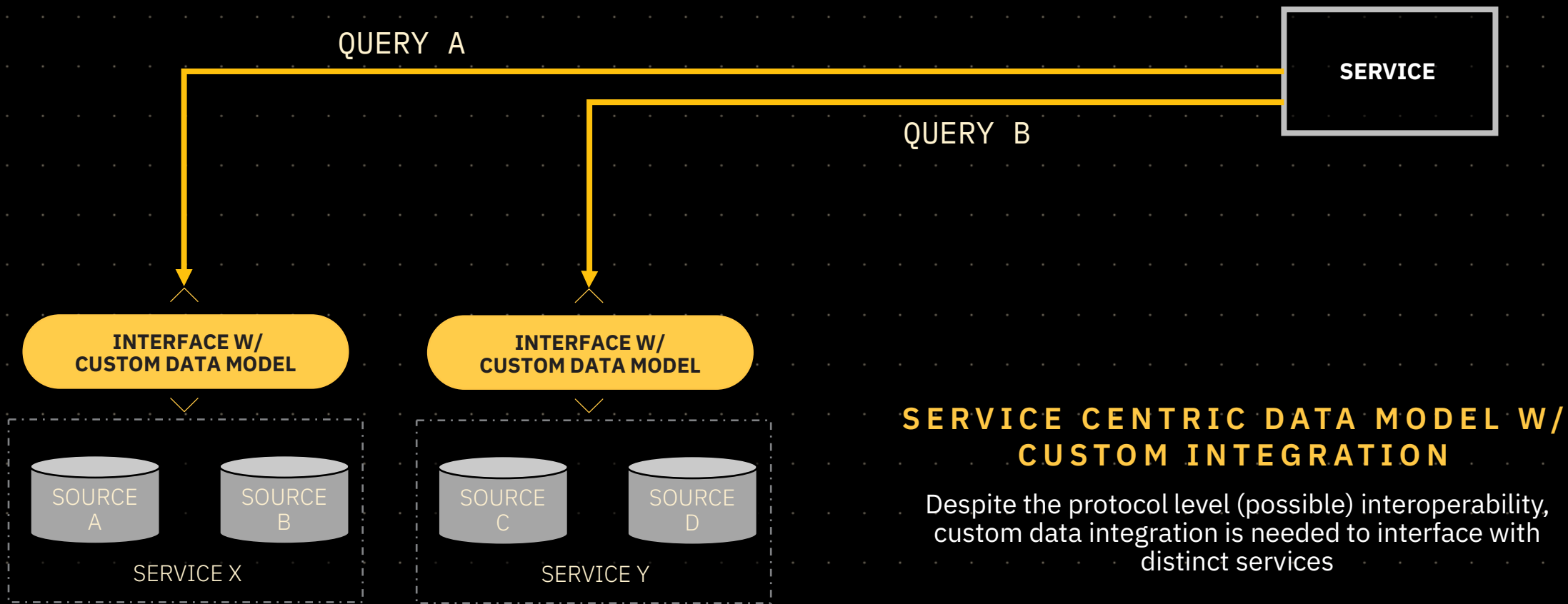
Text from [Data Spaces: Common data models for Energy, Home, Mobility workshop](#) at IoT Week 2022,

organized by Rolf Riemenschneider, European Commission, DG CONNECT and Alberto Dognini, E.ON Energy Research Center

DATASPACE



BOFORE
DATASPACES

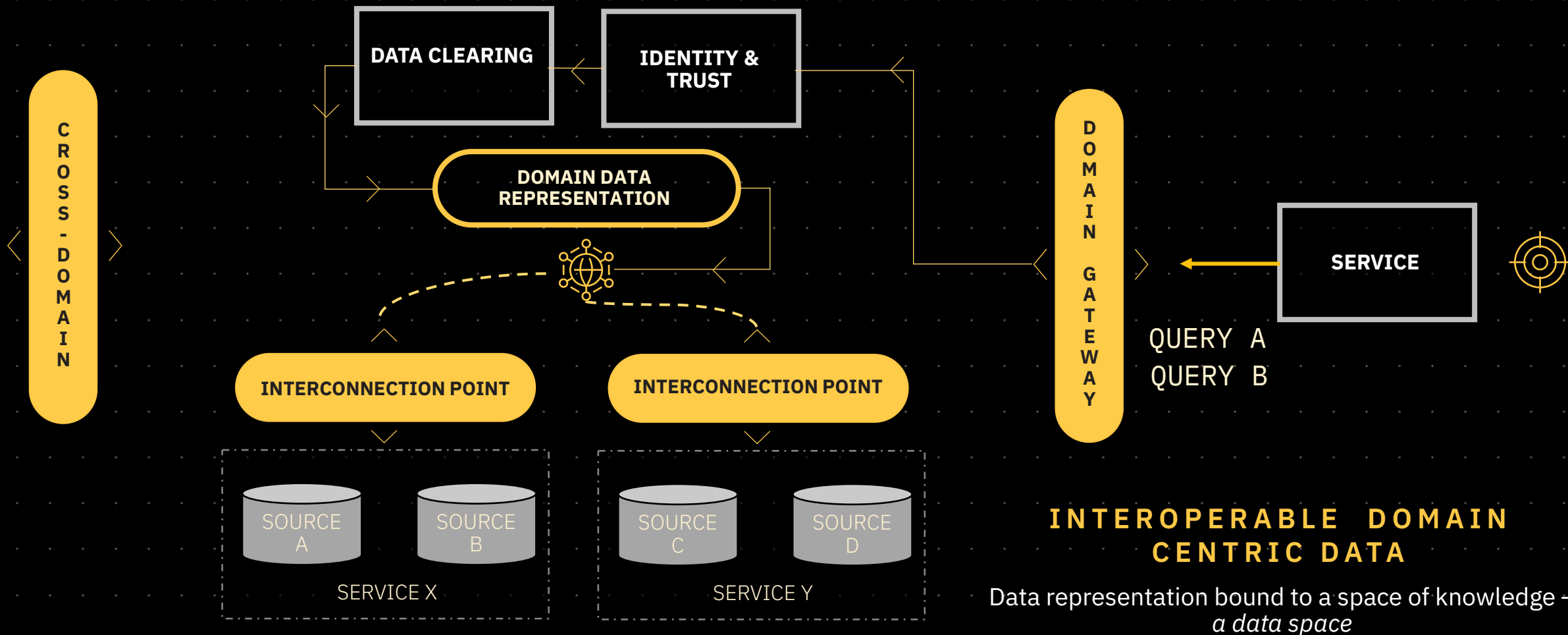


MULTIPLE MODELLING AND INTEGRATION IN THE SAME DOMAIN

DATASPACE

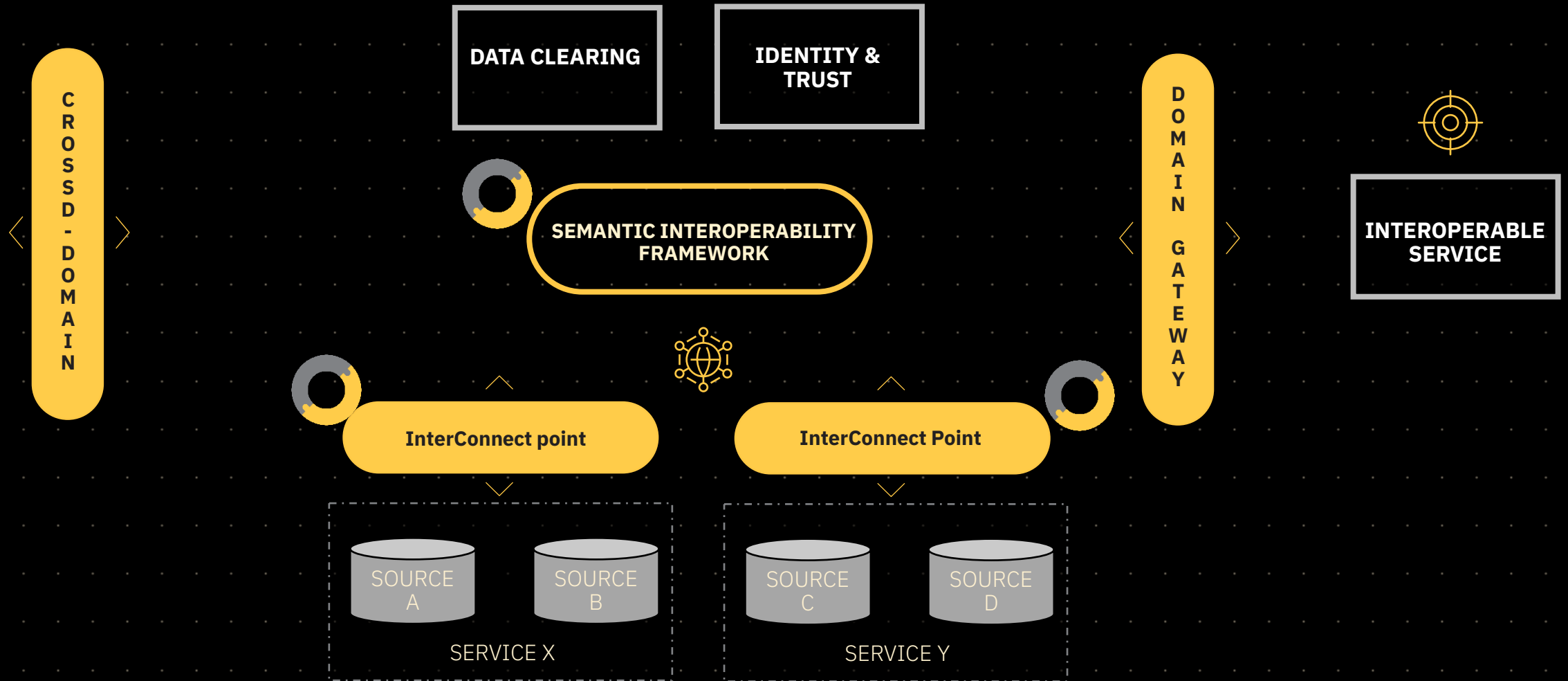


AFTER
DATASPACES



INTERCONNECT enabled

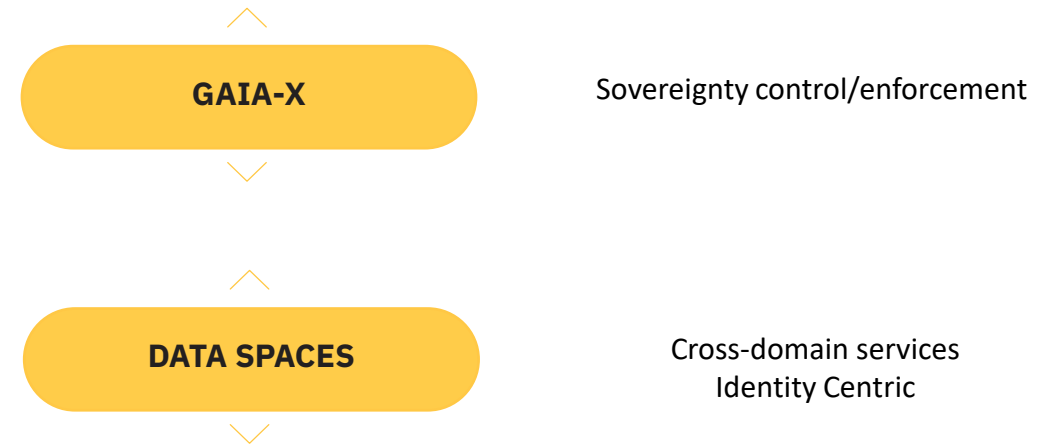
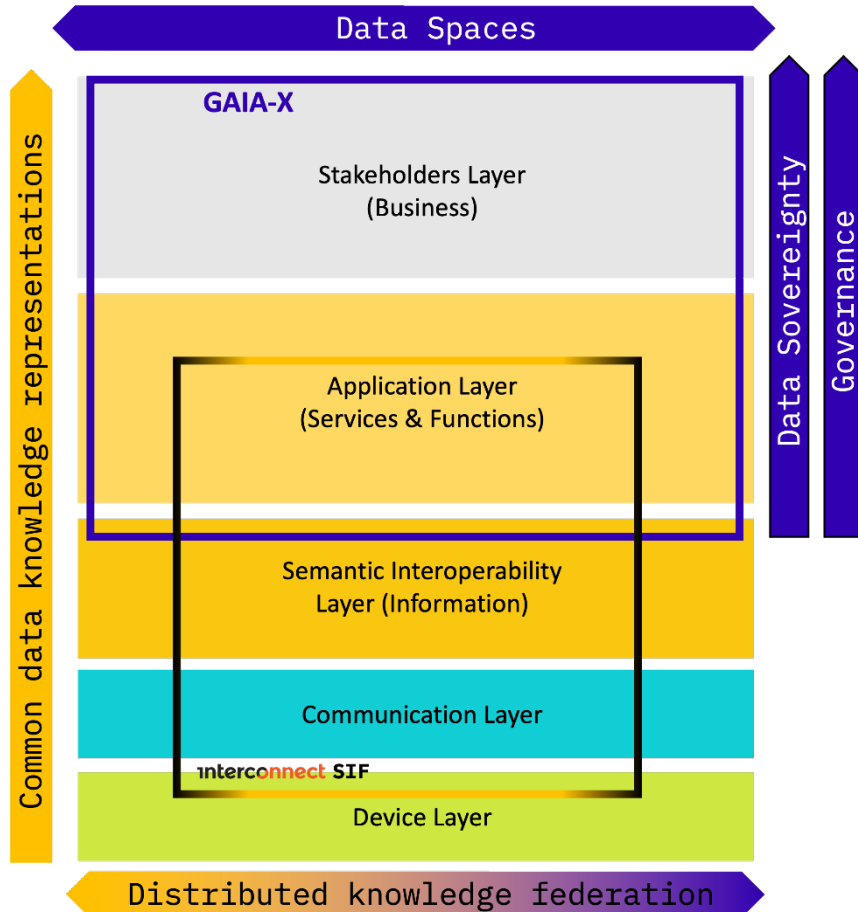
DATASPACE



INTERCONNECT PROVIDES SEMANTIC INTEROPERABILITY

From the IoT /Energy domain with domain agnostic data sharing technology

InterConnect and other initiatives



INTERCONNECT

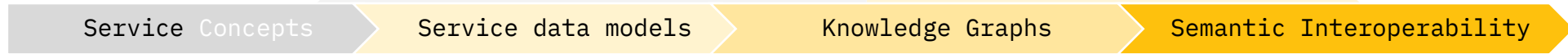
SEMANTIC
INTEROPERABILITY
FRAMEWORK

Enabling semantic data exchange with agnostic toolset
Domain bounded by an ontology (SAREF for Interconnect)
Federation of distributed knowledge

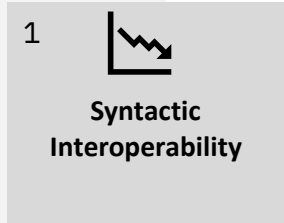
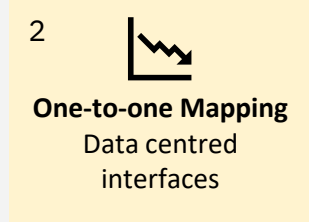
interconnect

Backup

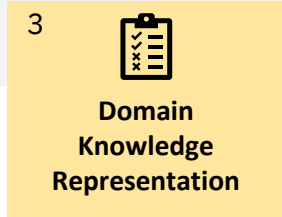
InterConnect Semantic Proposition



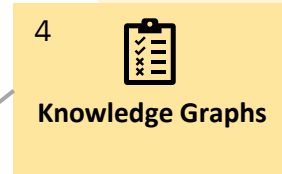
FROM Custom Interfaces and Specific Lifecycle Integration



FROM Specific Data Model and protocol agreement



THROUGH Agreement for Common Domain Representation



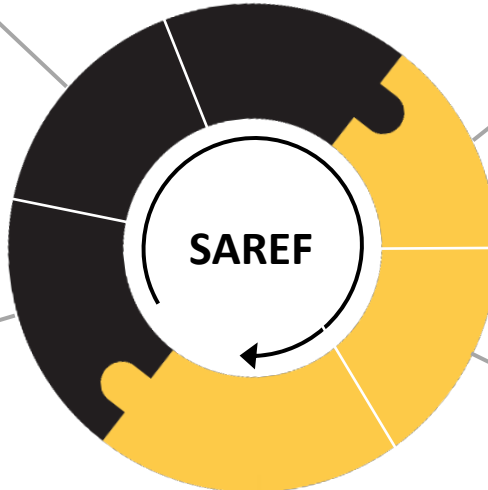
TO Knowledge modelling



TO Knowledge Dissemination Interface

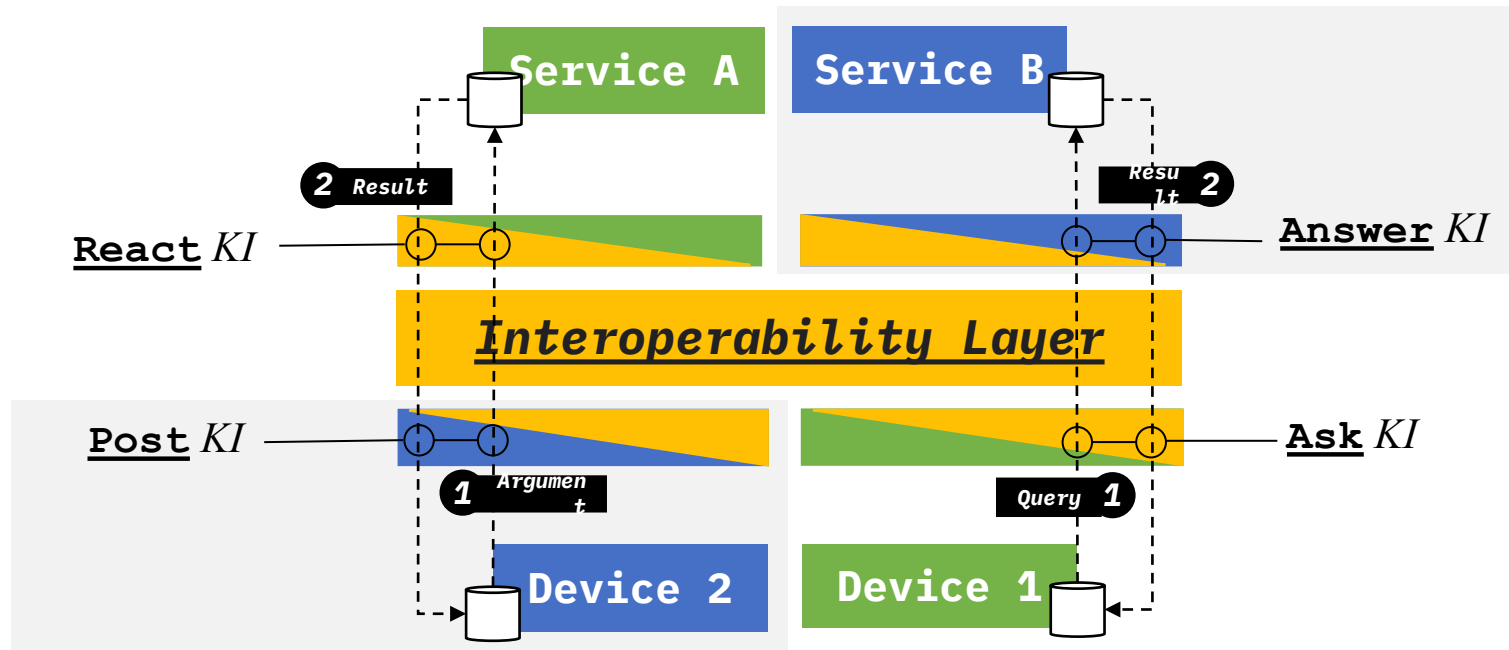


UNTIL Reasoning and Knowledge Discovery

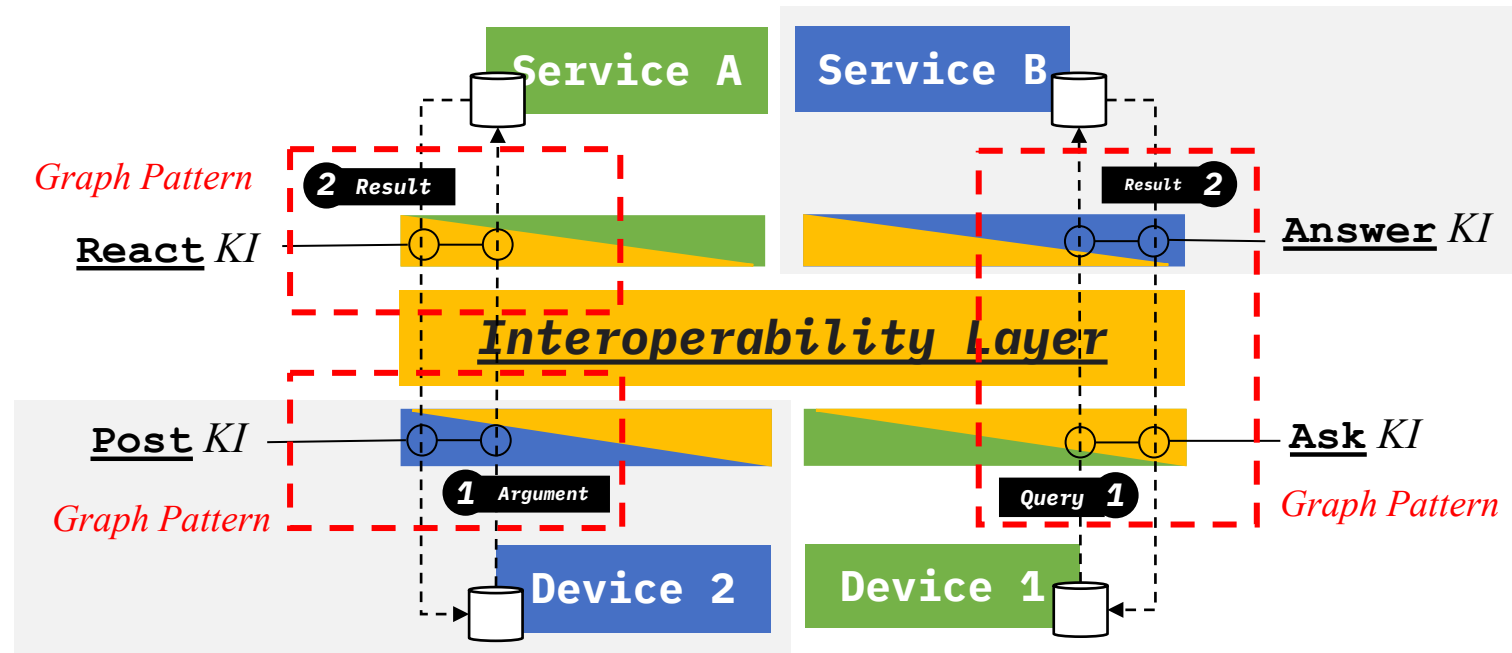




How does the Data Space relate to Knowledge Interactions (KIs)?



How do Knowledge Interactions (KIs) relate to Graph Patterns?



How do Graph Patterns relate to ontologies?

