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Semantic interoperability: What is it? Why is it needed ?

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One DPP system, two ways to access

DPP-enabled product

Product UID	https://example.org/UID	did:method:UID
Finding the resolver	DNS or ISO 15459	DID method (e.g. EBSI, web method)
Finding the data	Resolver	DID document
Accessing the data	Decentralized DPP data repositories →**Semantic Interoperability layer**	

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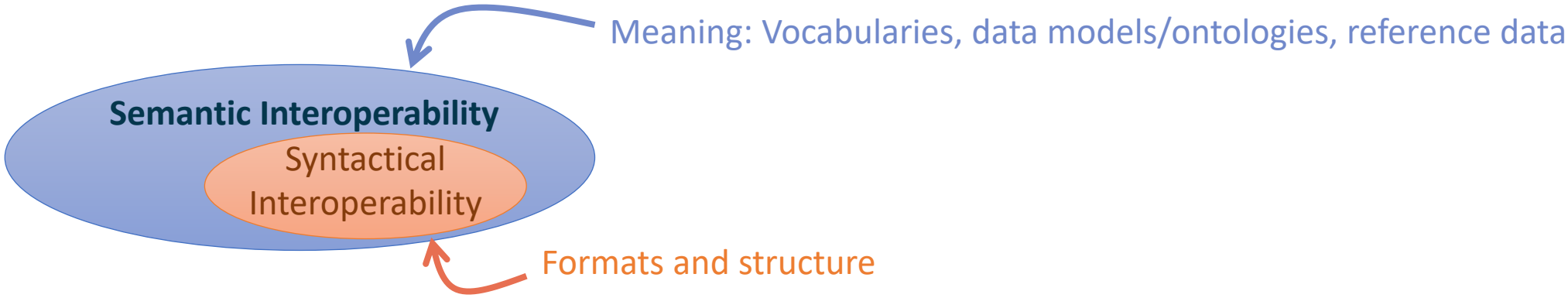
Syntactical & Semantic Interoperability

- Semantic Interoperability is the **preservation of precise meaning.**
- Semantic interoperability is achieved when social agreements are reached on:
  - vocabularies (common specifications for naming things) and
  - structural meta data (data models/ontologies and reference data).



European Commission, Semantic Interoperability Courses, Module 1 – Introduction and overview of existing initiatives, ISA Programme, Action 1.1
https://joinup.ec.europa.eu/sites/default/files/document/2014-06/Semantic%20interoperability%20courses%20-%20Training%20Module%201%20-%20Introductory%20overview_v0.19.pdf

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Semantic interoperability vs. Unification

Semantic Interoperability			vs.	Unification
"oui"	→ Maps to →	"yes"		"yes"
"non"	→ Maps to →	"no"		"no"
"rouge"	→ Maps to →	"red"		"red"

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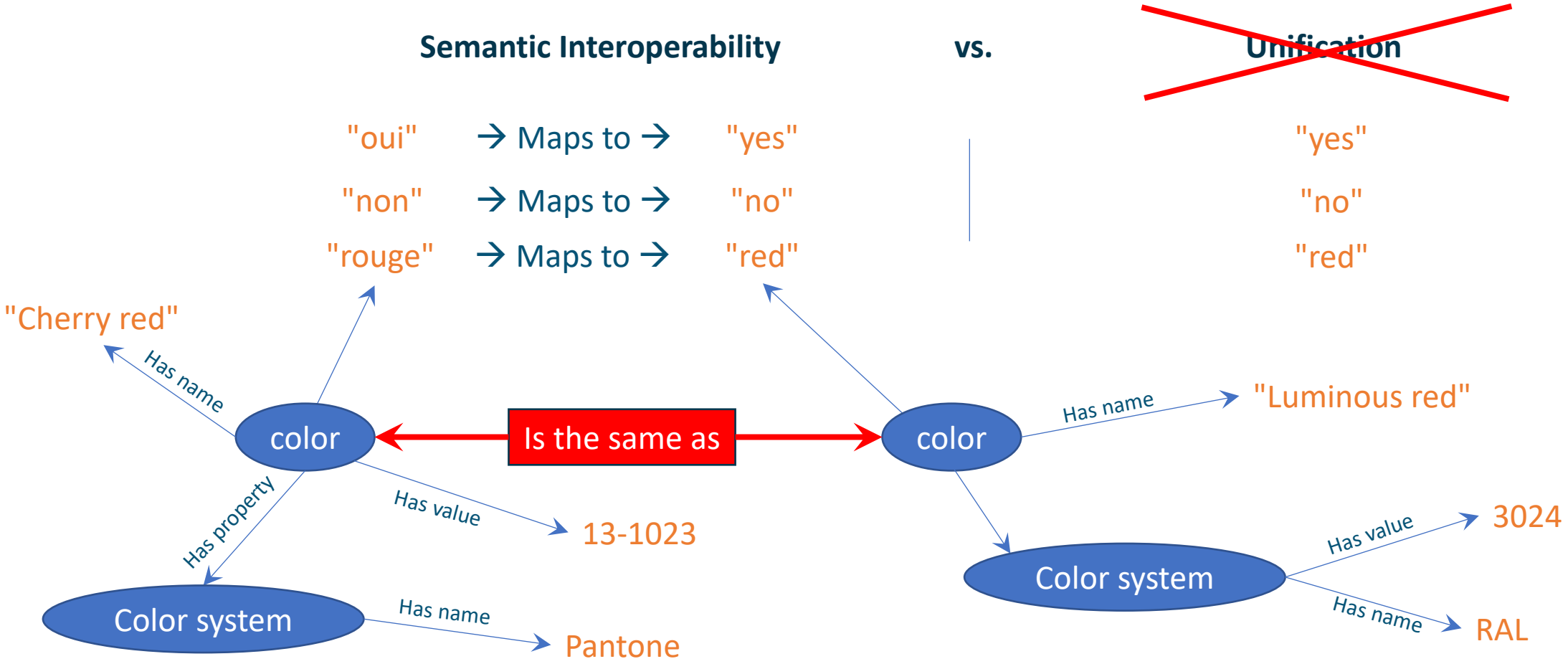
Semantic interoperability vs. Unification



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From data models to ontologies

- A data model is a collection of entities, their properties and the relationships among them, which aims at representing a domain, a concept or a real-world thing.
  - An data model contains:
    - **Classes:** the distinct types of things that exist in our data.
    - **Relationships:** properties that connect two classes.
    - **Attributes:** properties that describe an individual class.
  - Data models are typically designed for a specific application.

- Ontologies are formal data models designed for greater generality and expressivity. Expresses high-level relationships and entities.
- Ontologies can also be defined as data models with a standardized technical representation

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Why is semantic interoperability needed for the DPP system ?

Answer: REUSE

	Effort (time)
Developing a data model	+ +
Developing a domain ontology (concepts, relations)	+ + +
Developing dictionaries, classification systems	+ + +
Developing standards for information points (product carbon footprint, durability, …)	+ + + +
Converting the above into machine readable formats	+
Making machine readable data semantically interoperable	+

X “maps to” Y
X “is the same as” Y

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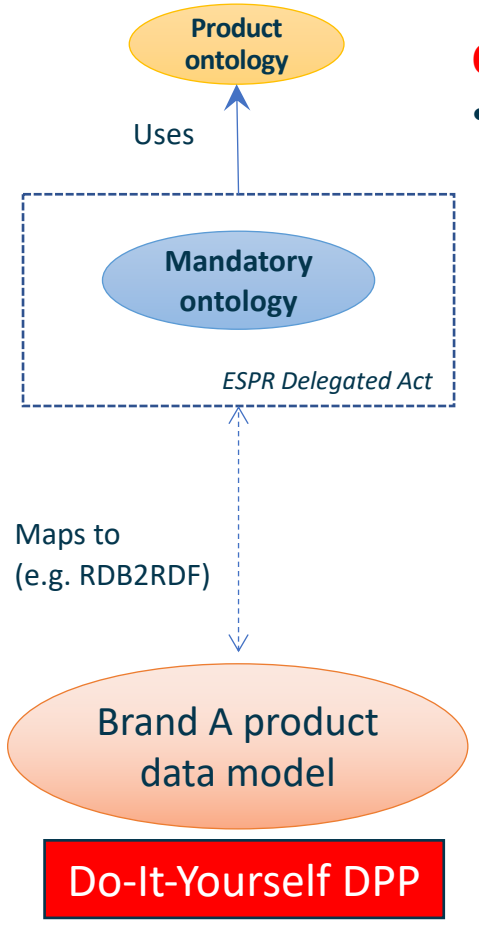
Ontologies & Data models for the DPP

Most Generic

Most Specific



Cross-sectoral DPP system ontology

- **Small. Generic. Provides a common structure.**

Sector-specific regulatory ontology

- **Conversion of regulatory texts into ontology format(s)**

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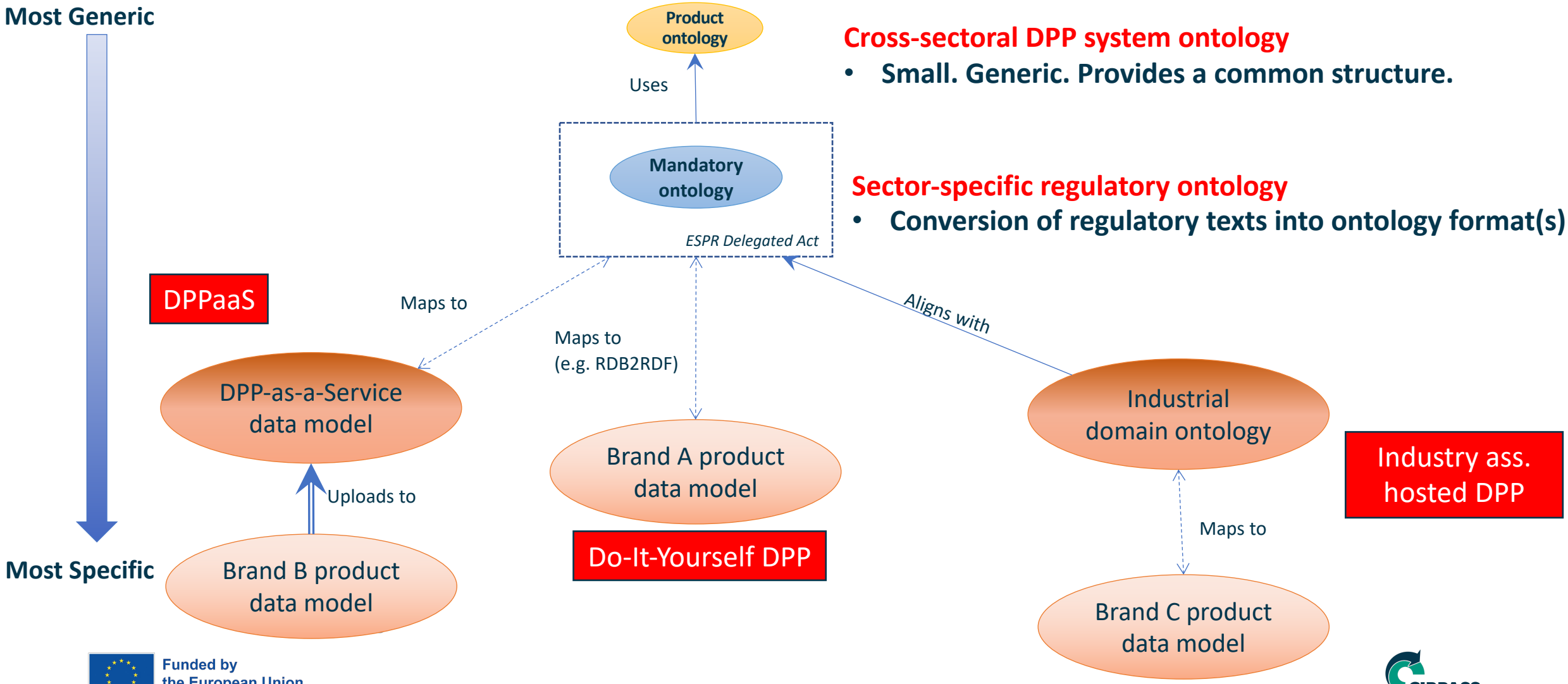
Ontologies & Data models for the DPP



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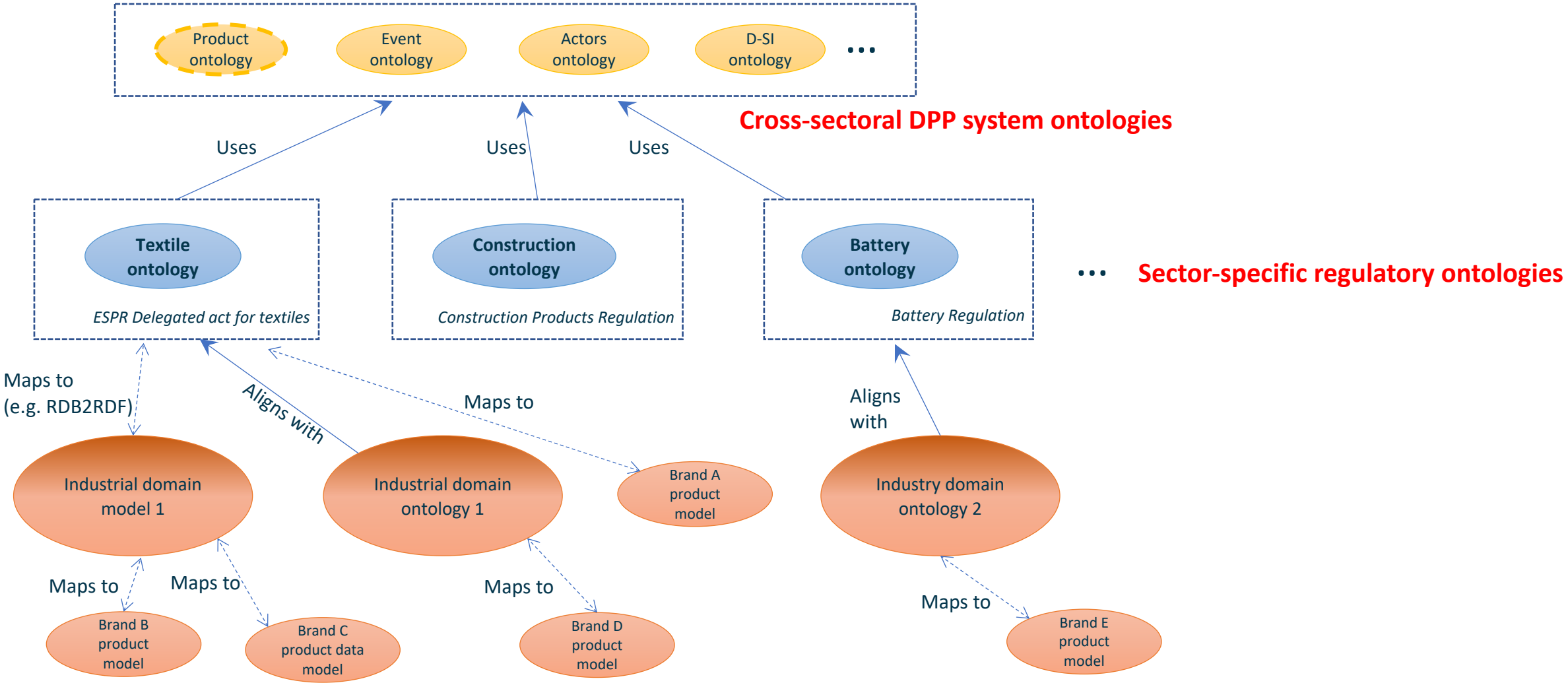
Deploying the DPP across sectors



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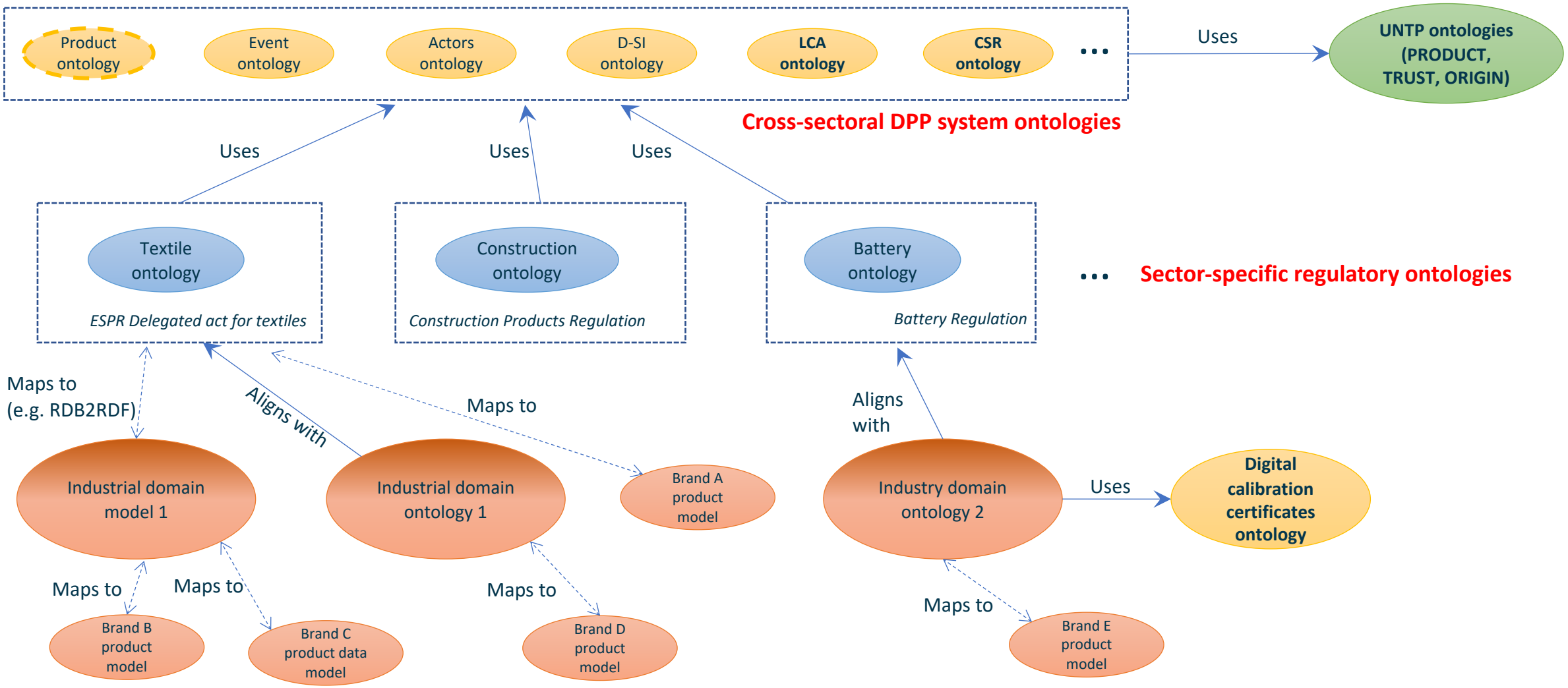
DPP system – Looking into the future



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Datapipe video

- Semantic interoperability in action !

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Thank you!

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