



AI 4 Interoperability

Semantic interoperability and artificial intelligence as part of the SEMIC action

Emilien Caudron, SEMIC

AI 4 interoperability under SEMIC

Empower interoperability through AI-driven solutions. Leverage advanced AI models to bridge data silos, foster collaboration, and drive innovation.



Knowledge Extraction

Example of how AI can complement and automate knowledge extraction



Domain Adaptation

Research about the impact of retraining LLM on domain specific data for clustering



Data Modelling Chatbot

Example of how GenAI can support the data modelling process with RAG



Semantic tagging

Exploration of how AI can automate the semantic tagging process



Data modelling Chatbot

To support the work of data modellers, SEMIC has developed a prototype of chatbot that can **suggest classes, relations, and properties** to be added to a data model based on **existing concepts**.

Suggest a possible name for a class (CPSV-AP):

"a requirement fulfill a ____" => autocomplete with "Rule"

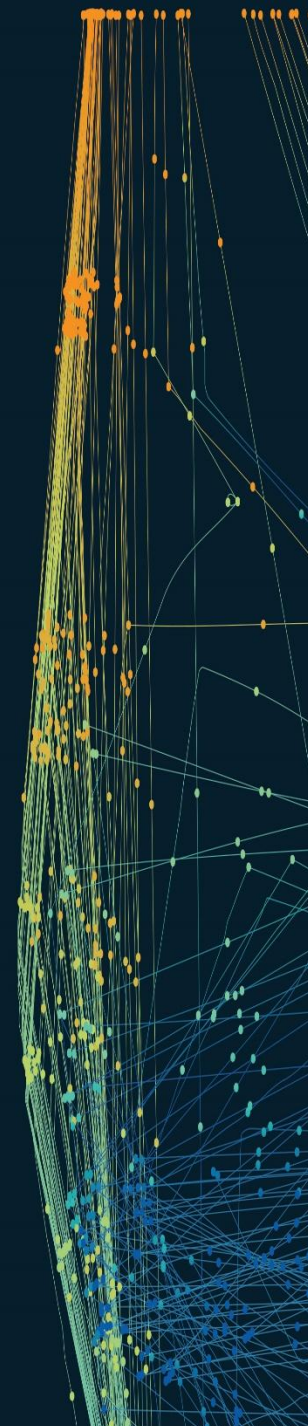
Suggest a relation (Core Person):

"a person is _____ at this address" = (living, domiciliated, etc.)

Suggest properties (Core Business):

"by what a legal entity can be uniquely identified?"

Examples of what the prototype could do



Building a knowledge base

- **Five relevant sources** for CPSV-AP were identified, scraped, and chunked by the team.
- **Two existing RDF files** were identified as interesting sources.

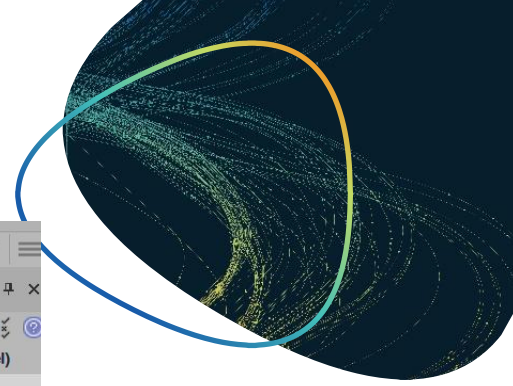
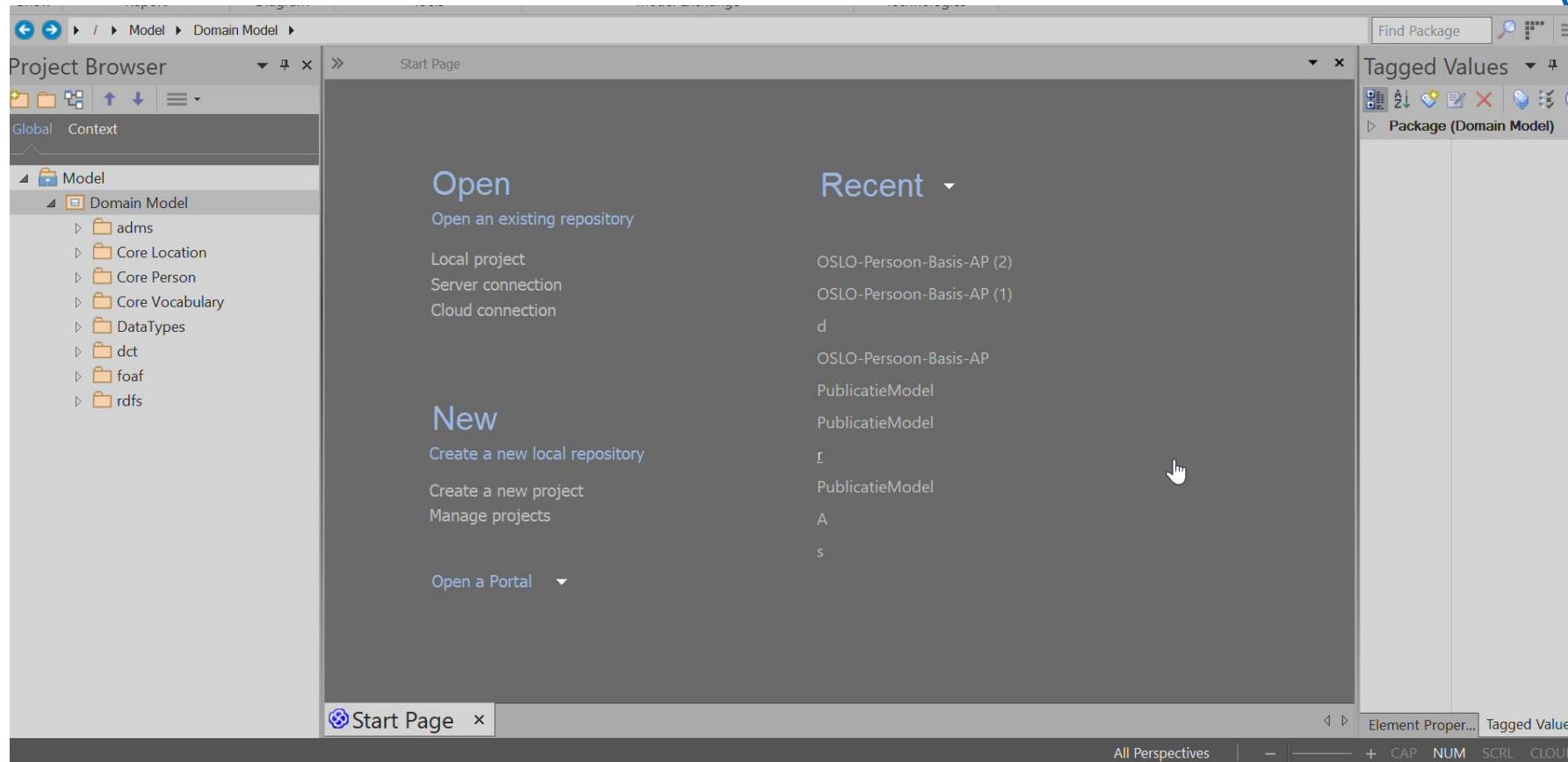
Status	Data source
✓	CPSV-AP
✓	CPOV
✓	CCCEV
✓	Open Data directive
✓	SDG regulation
<hr/>	
✓	LOV
✓	Schema.org

HTML pages containing relevant textual information about CPSV-AP (specification pages and regulations)

RDF files containing existing data models and concepts that could be reused by the chatbot



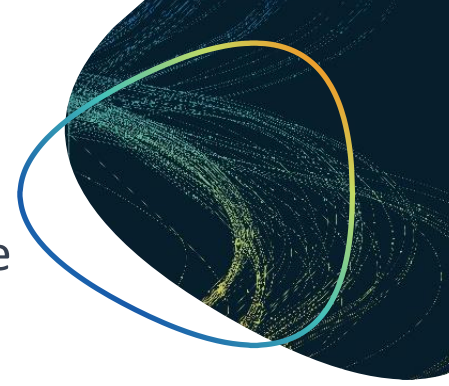
Demonstration: Data Modelling Chatbot



- Demonstration video of the [chatbot](#)

And more to come ...

AI represents a great opportunity to improve interoperability in all its layers. Beyond the use cases already explored, SEMIC is interested in continuing its exploration around topics as:



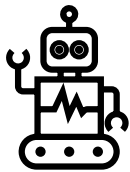
**Prediction of semantic alignments
between two datasets / data models**



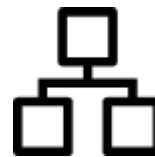
**Generation of visual representations of a
data model (ex: UML)**



**Exploration of knowledge graphs for the
improvement of AI solutions**



AI agents for interoperability



**Generation of a taxonomy or ontology
based on documentation**



**Generation of a semantic
(conceptual) model based on
documentation**



interoperable europe

innovation ∞ govtech ∞ community

Stay in touch



[Interoperable Europe | LinkedIn](#)



[Interoperable Europe | YouTube](#)



[\(@InteroperableEU\) | X](#)



DIGIT-SEMIC-TEAM@ec.europa.eu



[Interoperable Europe Portal](#)

Subscribe to the SEMIC mailing list: <https://ec.europa.eu/eusurvey/runner/SEMICmailinglist>