# Semantic Data Management

##### Session 3.2 (SEMANTiCS)

#### Time: Thursday, September 19, 2024 - 10:30 to 12:00

#### Chair: Johannes Frey

## **Talks**

### Semantic Data Management and Smart Search at Sopra Steria [SP]

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| Peter Mika |

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### A Semantic Layer for Data Spaces: how interlinked vocabularies provide interoperability inside and between Data Spaces

Data Spaces have become a big movement in Europe and beyond. The idea of trusted and secure data sharing between organisations - by keeping full data sovereignty - supports the approach of establishing the European digital single market and the development of new business models and it fosters value generation by making more use of the available data. With more and more Data Spaces and data available, the question of semantic interoperability becomes crucial and needs action. So how can we ensure that inside a Data Space AND between different Data Spaces relevant data can (i) be easily identified and then (ii) be easily and cost-efficiently used and integrated. To solve this we suggest a “Semantic Layer for Data Spaces”: an ecosystem of trusted, referenceable and interlinked controlled vocabularies accompanied with a set of related services, that allow to: (i) analyse metadata and also data (as far as available/accessible) inside of a Data Space and afterwards (ii) semantically annotates such datasets, thereby enriching the metadata and data. In addition, the Semantic Layer services are of value to (iii) support automated metadata mapping during metadata ingestion, and (iv) provide a service for semantic harmonisation of data. Together, these envisioned services form an implementation for augmented data catalogs which supports automated and intelligent metadata management and semantic interoperability based on Semantic AI.

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| Robert David | Martin Kaltenböck SWC |

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### What do we Annotate when we Annotate? Towards a Multi-Level Approach to Semantic Annotations

To define a data model for representing digital annotations, we analysed applications which support annotation images through IIIF protocol, focusing on digital representations of palimpsests. We then extended the Web Annotation Data Model by introducing domain standards such as LRMer, CIDOC-CRM, and HiCo. We also validated the model through SPARQL queries corresponding to five competency questions to report on satisfiability. Finally, we developed a prototype annotation client as a plugin for Mirador to evaluate its performances in real-world scenarios.

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| Maria Francesca Bocchi | Carlo Teo Pedretti |
| Francesca Tomasi | Fabio Vitali |

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### Implementing a Data Fabric for the Water Authority of Limburg

The Dutch Water Organization Limburg (WL) has recognized the critical need to become more data-driven due to the increasing risks posed by climate change. The ability to make informed decisions based on high-quality, up-to-date information is essential. WL identified issues such as poor data quality, lack of asset status awareness, and underperforming IT resources during crises, which need to be addressed.

Our project, the 'Information Hub' or 'Informatieknooppunt' (IKP), integrates TopQuadrant's Enterprise Data Governance (EDG) and MongoDB within a Microsoft Azure infrastructure and Azure DevOps environment to form a comprehensive data fabric. This multimodal solution supports semantic knowledge graphs, which are vital for managing diverse data sources and providing a cohesive view of the operational landscape.

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| Elvin Dechesne |