# Knowledge Graphs

##### Session 4.2 (SEMANTiCS)

#### Time: Thursday, September 19, 2024 - 13:40 to 15:00

#### Chair: Blerina Spahiu

## **Talks**

### Semantic Manufacturing Chains - Leveraging Graph Technology for Efficiency and Waste Reduction [SP]

Stop me if this sounds familiar. You work for a company that manufactures things, could be cars, could be medicines, could be dinner plates. You really want to make use of the massive amounts of data that your company has, maybe to improve process monitoring or responsiveness to manufacturing problems, maybe even to build a digital twin. The problem is, all this data is in lots of disjointed silos and it seems impossible to bring it together in a useful way."

Sound familiar? Come and see my talk to see how we've solved this problem for our clients.

| Dan CollierSemantic Partners |
| --- |

### Knowledge Graph Matching for deriving Recommendations of Digital Agricultural Technologies to Farmers

Digital technologies as solutions within the agricultural sector are rising, but introducing the most suitable Digital Agricultural Technologies (DATs) to farmers remains difficult. Within the QuantiFarm project, we aim to match farmers with DATs from different sources and provide them with insights into the DATs. For this, we have developed the QuantiFarm Semantic Model (QCSM), an ontology including relevant agricultural concepts that allows for data standardization. We ingest data from three different sources into the QCSM based knowledge graph, hosted in a triple store according to the RDF standard. We then deploy a recommender tool to match farmers with relevant DATs. Through a personalized interface, a user of the QuantiFarm Search & Recommender Tool can search, filter and receive recommendations which are relevant to their Farmer Profile. The recommendations are based on mappings between the farmers’ and the DATs’ attributes in the QCSM knowledge graph.

| Daan Di Scala | David de Best | Jack Verhoosel |
| --- | --- | --- |

### Towards Efficient Exploitation of Large Knowledge Bases by Context Graphs

One problem related to the exploitation of knowledge graphs, in particular when processing with machine learning methods, is the scaling up problem. We propose here a method to significantly reduce the size of the used graphs to focus on a useful part in a given usage context. We define the notion of context graph as an extract from one or more general knowledge bases (such as DBpedia, Wikidata, Yago) that contains the set of information relevant to a specific domain while preserving the properties of the original graph. We validate the approach on a DBpedia excerpt for entities related to the Data\&Musée project and the KORE reference set according to two aspects: the coverage of the context graph and the preservation of the similarity between its entities. The results show that the use of context graphs makes the exploitation of large knowledge bases more manageable and efficient while preserving the properties of the initial graph.

| Nada Mimouni | Jean-Claude Moissinac |
| --- | --- |