

## Collaborative discussion 2 – Summary post

In my post, I established ontologies as formal specifications of shared conceptualizations, following Gruber's (1993) definition and Nasim's (2022) thesis. I identified the tripartite structure of ontologies (classes, properties, and individuals) and argued that OWL2 is the most suitable language for expressing ontologies for WWW software agents. My analysis compared OWL2 with alternatives like KIF, RDF, and OWL-lite, highlighting OWL2's expressiveness, reasoning capabilities, and flexibility through profiles that balance expressivity with computational efficiency (Grau et al., 2008).

Fabian reinforced my choice of OWL2, adding depth through Davis et al.'s (1993) perspective on knowledge representation as a "surrogate" for reasoning about the world. He emphasized that OWL2's formal semantics derived from Description Logics enable reliable and unambiguous reasoning. Fabian further elaborated on the importance of OWL2's profiles as a pragmatic solution to the challenge of balancing expressive power with computational tractability (Horrocks et al., 2003), allowing developers to make conscious trade-offs for efficient reasoning in large-scale web applications.

In sum, our discussion established OWL2 as the optimal language for expressing ontologies for software agents on the WWW, highlighting its technical capabilities and practical advantages. The exchange demonstrated how OWL2's formal structure provides the necessary foundation for advanced techniques like machine learning-based ontology alignment (Nasim, 2022). The key insight from this discussion is the recognition that effective ontology languages must balance theoretical expressivity with practical implementation concerns, particularly in distributed web environments where interoperability, reasoning capabilities, and computational efficiency are paramount. As semantic web technologies continue to evolve, OWL2's flexible approach through profiles offers a sustainable path forward for ontology-based systems.

## References

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