

# DOLCE in OWL: A tutorial with case studies in industrial engineering (abstract)

Emilio M. Sanfilippo<sup>1,2,\*</sup>, Walter Terkaj<sup>3</sup>

<sup>1</sup>CNR ISTC Laboratory for Applied Ontology, Trento & Catania, Italy

<sup>2</sup>CESR University of Tours, France

<sup>2</sup>CNR STIIMA, Milan, Italy

## Abstract

Foundational ontologies play a prominent role in ontology-based conceptual and data modeling by offering conceptually and logically well-founded top-level architectures that can be extended to meet specific application needs. Due to their complexity, it is common for both novices and experts in the field to seek theoretical knowledge about them and practical competencies regarding their use. The core objective of the tutorial is to balance these dimensions, introducing participants to various aspects of the theoretical background and practical use of foundational ontologies. In particular, the tutorial will focus on the foundational ontology DOLCE - Descriptive Ontology for Linguistic and Cognitive Engineering, and its recent release in the Web Ontology Language (OWL). Attendees will gain introductory knowledge about DOLCE, as well as hands-on experience with its OWL release consisting of two modules: DOLCEbasic<sub>OWL</sub> and DOLCE<sub>naryRel</sub><sub>OWL</sub>. The first module includes the taxonomy of classes along with OWL axioms to characterize the extension of the classes. The second module, built upon the basic module, incorporates the reification of n-ary relationships to maintain the ability to represent temporalized relations. This modular architecture aims to facilitate the OWL extension of DOLCE for specific research and application purposes. Throughout the tutorial, we will introduce modeling examples from the field of industrial engineering, ontology patterns to represent them, as well as tools for manipulating datasets formalized according to DOLCE in OWL using the SPARQL query/update language.<sup>1</sup>

## Keywords

Tutorial, Descriptive Ontology for Linguistic and Cognitive Engineering, OWL version, DOLCEbasic<sub>OWL</sub>, DOLCE<sub>naryRel</sub><sub>OWL</sub>, Industrial engineering

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<sup>1</sup>All materials for the tutorial are available at: <https://github.com/appliedontolab/DOLCE>.

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\*Corresponding author.

✉ [emilio.sanfilippo@cnr.it](mailto:emilio.sanfilippo@cnr.it) (E. M. Sanfilippo); [walter.terkaj@cnr.it](mailto:walter.terkaj@cnr.it) (W. Terkaj)



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