



Proiect: "Sistem de suport al deciziilor bazat pe monitorizarea în timp aproape real al particulelor periculoase din atmosferă", având codul PN-IV-P2-2.1-TE-2023-1587, nr. contract 128TE/01.08.2025

Topic: Semantic technologies and conceptual modelling

Knowledge representation in RDF graph databases:

- Syntactic construction of RDF graphs;
- Querying graphs with SPARQL;
- Schemas and ontologies for RDF graph databases;
- Inference & reasoning in RDF graphs.

Enterprise conceptual modelling:

- Conceptual modelling standards: BPMN, UML, Petri Nets, Archimate;
- Agile Modelling Method Engineering methodology;
- Metamodeling platforms: ADOxx;
- Process automatization platforms: UiPath;
- Domain-specific conceptualization and modelling platforms: OMILAB.

Bibliography:

- Buchmann, R. A., Ghiran, A. M., Tehnologii semantice, Presa Universitară Clujeană, 2018. URL: <https://editura.ubbcluj.ro/index.php/puc/catalog/book/2000>
- Karagiannis, D., Buchmann, R. A., Utz, W., The OMiLAB Digital Innovation environment: Agile conceptual models to bridge business value with Digital and Physical Twins for Product-Service Systems development, Computers in Industry 138, 103631, 2022. DOI: [10.1016/j.compind.2022.103631](https://doi.org/10.1016/j.compind.2022.103631)
- Buchmann, R. A., Karagiannis, D., Enriching Linked Data with Semantics from Domain-Specific Diagrammatic Models, Business & Information Systems Engineering 58: 341-353, 2016. DOI: [10.1007/s12599-016-0445-1](https://doi.org/10.1007/s12599-016-0445-1)
- Relevant standards: BPMN (<https://www.bpmn.org>), Archimate (<https://www.opengroup.org/archimate-forum/archimate-overview>), UML (<https://www.omg.org/uml/>), Petri Nets (<https://petrinets.com>), RDF (<https://www.w3.org/RDF/>), SPARQL (<https://www.w3.org/TR/sparql11-query/>), OWL (<https://www.w3.org/OWL/>)
- Relevant tools: Ontotext GraphDB (<https://www.ontotext.com/products/graphdb/>), Bee-Up (<https://bee-up.omilab.org/activities/bee-up/>), ADOxx (<https://adoxx.org>), Signavio (<https://www.signavio.com>), UiPath (<https://www.uipath.com>).