

An Alternative CIM Modeling Approach using JSON-LD

The goal of this research was to analyze the application of the latest Semantic Web achievements (OWL2 and JSON-LD) in the field of the Smart Grid. The research was conducted during the last two years, and it resulted in several published papers. Starting from the CIM profiles defined in the RDFS format, the authors propose their conversion into OWL2, resulting with a better cohesion of CIM profiles, and keeping their relation with the original CIM ontology at the same time. The most important OWL2 concepts applied in this conversion were `owl:equivalentClass` and `owl:equivalentProperty`, including the use of standard XML Schema datatypes. To achieve this, an application was developed named `CIMRDFS2OWL2Converter`. The application was tested against CIM profiles used for ENTSO-E IOP testing in 2016, and the results will be shown in the presentation. Additionally, CIMXML files were adapted and then converted to JSON-LD format using `RDFTranslator`. The conversion steps will be explained in the presentation, as well as the resulting JSON-LD. Examples used for this conversion were taken from ENTSO-E IOP testing model `NodeBreaker/MiniGridTestConfiguration_BaseCase_Complete` in 2016. The proposed JSON-LD CIM modeling approach is a 5-star Linked Data model.