JOB OFFER

« Post-doctoral position offer in web semantics and linked data applied to urban simulations and assessments »

General information

- Duration: 18 months
- Period: To be started in September 2018
- Location: Nobatek/INEF4 [Talence (33) or Anglet (64)], France + regular stays in Le2i, University of Burgundy, Dijon, France)
- Gross salary: Between 2400 and 2600 € gross monthly salary (to be discussed with the applicant)

Research project and job description

NOBATEK/INEF4 is a French research and technological centre on sustainable buildings and districts. As part of its activities, we coordinate research, development and innovation projects in which companies and laboratories take part and support us.

The DATAVIEW project aims at elaborating a data model that shall 1) facilitate data integration from different public or private data sources and 2) facilitate interoperability between the different tools developed by NOBATEK/INEF4 and its partners (natural lighting simulation, environmental assessment, district heating optimisation...) at the district scale.

The setting up of a unique data model common to different scales (from building to territory) and to different expertise (environmental assessment, urban physics...) remains an open topic in the scientific community. Several standards have been developed (e.g. IFC, CityGML, gbXML), some of them using semantic web standards (e.g. ifcOWL, CityGMLOWL), but none of them answering the specific needs of NOBATEK/INEF4 and its partners.

In order to benefit from the above-mentioned existing works in the AEC (Architecture, Engineering and Construction) environment, a Linked Data approach has been selected. Part of the work consists in:

- Identifying pertaining ontologies and define alignments between them
- Defining a domain ontology bridging the necessary knowledge gap
- Performing request on the resulting model (and in particular try to discover implicit knowledge)

Once the data model is elaborated, it will be used to structure data from existing data sources which are already used by NOBATEK/INEF4 through the development of ETL tools (Extract/Transform/Load)

Finally, this common data model and associated ETLs will be implemented in an operational numerical tool and in particular a web-based platform for territorial data management.

Integrating all along the project the operational problems of NOBATEK/INEF4, the post-doc will be in charge of elaborating a state of the art of initiatives and approaches existing in the domain. Then, (s)he

will be in charge of defining and implementing the data model in an already existing web -based platform for territorial data management.

The work will be scientifically supervised by Pr. C.Nicolle and Dr. A.Roxin from the Le2i laboratory, who have developed an expertise in the application of web semantics technologies in the AEC industry.

Applicant's profile

The applicant shall have a PhD in computer science. In addition, a solid background in knowledge modelling, notably description logic-based languages such as OWL 2 DL, is wanted. Applicants should also have skills involving on Semantic Web technologies for defining and addressing queries (e.g. SPARQL) along with rule languages (e.g. SWRL, SPIN, SHACL).

Applicants should be curious and attracted by the different topics addressed in the DATAVIEW project: urbanism, lifecycle analysis, and associated simulations/assessments. Additional knowledge in civil engineering, architecture and/or construction are considered a plus.

Applicants shall be autonomous and must have a good level of French and English.

Applicants should be interested by research activities in general and be able to interact with different actors from different domains (industrials from the AEC domain, researchers from semantic web).

The post-doctoral contract is funded by the Institute for Energy Transition NOBATEK/INEF4.

Please send your application (CVs, application letter and research documents[1]) to Maxime Pousse: mpousse at nobatek dot inef4 dot com, mpousse@nobatek.inef4.com

[1] : PhD thesis report, PhD thesis evaluation reports and already published scientific papers