POSITION DESCRIPTION
PhD Scholarship

Domain: computational semantics; computational semiotics
Topic: Developing a semantic framework for integrated infrastructure analytics
Supervisor: Prof Pascal Perez
Faculty/Division: SMART Infrastructure Facility & Faculty of Informatics
Deadline: 17/10/2011

Topic

Better accessibility to and discoverability of infrastructure data is a cornerstone allowing more comprehensive analysis of complex infrastructure research problems. Online dashboards and, more recently, data mash-ups are becoming increasingly sophisticated ways to visualise heterogeneous and distributed information in order to create new knowledge. The use of this type of tools in infrastructure research has been limited so far by the sectoral nature and commercial value of existing data.

The SMART Infrastructure Facility is currently developing a 'multi-utility dashboard' that offers infrastructure analytics based on data provided by public agencies and private operators. On completion, the online dashboard will allow analysts to develop new insights into spatial, technical, social and economic associated with regional and urban development. Bringing together and making sense with data provided by various operators dealing with different utilities isn't a trivial task. From a data management perspective, there is a need for metadata semantics to be consistent across the different domains. Likewise, data queries need to be interpreted in a coherent manner in order to return semantically structured knowledge to users.

Although the current version of the multi-utility dashboard uses pre-defined interfaces based on selected user’s profiles, the SMART Infrastructure Facility intends to adapt concepts borrowed from the Semantic Web to offer a more flexible and versatile access to data. This long-term project will rely upon the creation of an evolving ontology fed with available international metadata standards and case-based contributions through the use of computational semiotics. Computational semiotics is an interdisciplinary field that applies, conducts, and draws on research in logic, mathematics, the theory and practice of computation, formal and natural language studies, the cognitive sciences generally, and semiotics proper.

PhD Position

The SMART PhD position is a three-year, full time, position ($22,860 per year, non-taxable). The successful candidate will be supervised by Prof Pascal Perez and will develop an initial ontology for infrastructure analytics that will be implemented in the multi-utility dashboard. A successful candidate will hold a Master of Science (or equivalent) in Information Technology or Semiotics and will demonstrate a good understanding of the Semantic Web, metadata management and data mash-ups.

The PhD student will work in a trans-disciplinary team and will have regular contacts with data providers and data users in order to design, calibrate and validate the incremental ontology. Thus, a successful candidate will display good communication skills and the ability to collaborate in a diverse environment.

For more information: http://smart.uow.edu.au/scholarships/index.html