Keynote

## **Christine Golbreich, Ph.D:** Formal ontologies for the Semantic Web ?

Ontologies are widely considered as a foundational technique of the Semantic Web, in which meanings of terms are defined by formal ontologies and semantic annotations facilitate the access to Web content. This view has led to the standardization of the Web Ontology Language OWL 2. In this talk, we will reflect on the usefulness of OWL 2 ontologies for Life Sciences. We will do this by presenting a number of advantages of OWL 2 ontologies: interoperability, semantics, reasoning services. But we will also notice that it is often the case that applications only ever use terms, e.g., the classical utilization of SNOMED-CT is to use its catalogue and codes to index medical records. We will discuss a new approach reconciling ontologies and terminologies. We propose to use an OWL 2 ontology for clear semantics and reasoning, and to derive from it a lightweight terminology (or perhaps something like an OWL 2 QL ontology) for applications such as resources indexing and search. For large vocabularies, the underlying rich ontology is essential to ensure that the lightweight derived terminology is quality-controlled. Reliability is particularly important for Health Care and Life Sciences applications where safety is critical. I will illustrate this by examples, including the semantic annotation of brain MRI images (IEEE Transactions on Medical Imaging 2009), the Foundational Model of Anatomy in OWL 2 and its use for a European Portal of Health terminologies dedicated to resources indexing (AIIM 2012 under press).

*Christine Golbreich is a Professor in Computer Science at the University of Versailles Saint-Quentin. She was pioneer in France in promoting the Semantic Web for life sciences and formal ontologies in biomedicine – initiating in 2003 the first workshops in France and at the Medical Informatics Europe Conference. She managed several projects on representing large biomedical ontologies in OWL, such as the MeSH in OWL (KR-MED 2004), the Foundational Model of Anatomy in OWL (Journal of Web Semantics 2006), OBO and OWL (ISWC 2007). She was responsible of a number of projects on semantic integration, for example for a system integrating transplantation and dialysis data from different medical centers in France. Her recent works were devoted to the semantic annotation of brain MRI images (IEEE Transactions on Medical Imaging 2009), and to the Foundational Model of Anatomy in OWL 2 and its use for a European Portal of health terminologies dedicated to resources indexing (AIIM 2012).She was a member of the W3C OWL Working Group and editor of the OWL 2 Web Ontology Language: New Features and Rationale document (W3C Recommendation, 2009). She advocated the needs to extend OWL by a rule formal language at RuleML 2004 (LNCS 3323), presented a number of use cases for the RIF, which is now a W3C recommendation, and achieved the first Protégé plugin, SWRLJessTab, to reason with ontology and rules.Christine Golbreich has a pluri-disciplinary expertise: she is Engineer of Ecole Nationale Supérieure des Mines de Paris, has a PhD and Habilitation in Computer Sciences from University Paris 11, a research master in Logics, in Biomathematics, and a professional master in Clinical Psychology.*