Abstract

In this talk, I present the SomeWhere approach and infrastructure for building semantic peer-to-peer data management systems based on simple personalized ontologies but which are distributed at a large scale. In this view, no user imposes to others his own ontology. Logical mappings between ontologies make possible the creation of a web of people in which personalized semantic marking up of data cohabits nicely with a collaborative exchange of data. SomeWhere is based on a simple class-based data model in which the data is a set of resource identifiers (e.g., URIs), the schemas are (simple) definitions of classes possibly constrained by inclusion, disjunction or equivalence statements, and mappings are inclusion, disjunction or equivalence statements between classes of different peer schemas. That data model is in accordance with the W3C recommendations since it is captured by the propositional fragment of the OWL ontology language. It is actually a very simple distributed Description Logics. In this setting, query answering over peers can be done by distributed query rewriting, which can be equivalently reduced to distributed consequence finding in propositional logic. I present the message-passing distributed algorithm that we have implemented for consequence finding of a clause w.r.t a set of distributed propositional theories. I summarize its main properties (soundness, completeness and termination), and I report experiments showing that it already scales up to a thousand of peers. Finally, I mention ongoing work on extending the current data model to RDF(S) and on handling possible inconsistencies between the ontologies of different peers.