Mediating the Semantic Web

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Résumé. Cet article développe une extension d'une architecture de médiation pour intégrer le Web sémantique. Plus précisément, XLive est un médiateur tout XML développé à PRiSM. Il permet d'exécuter des XQuery sur des sources de données hétérogènes. Après une rapide présentation de XLive et du Web sémantique, une architecture à trois niveaux d'ontologies et de schémas est introduite pour connecter des adaptateurs pour le Web sémantique. Cette architecture vise à intégrer des sources de type Web service d'information conformément à une ontologie globale de référence. Elle conduit à étendre XLive avec le support de vues, un outil de conception de vues et de mappings, et des adaptateurs pour les Web services.

1. Introduction

Typical information integration systems have adopted a wrapper-mediator architecture [Wiederhold, 1992]. In this architecture, mediators provide a uniform user interface to query integrated views of heterogeneous information sources. Wrappers provide local views of data sources in a global data model. The local views can be queried in a limited way according to wrapper capabilities. While in the 90's most studies were based on using the object model as data integration model, the focus has come to XML as global model at the beginning of the new century. Mediator architects are used to distinguish the local as view (LAV) approach versus the global as views (GAV) approach, in which the integrated views are designed in terms of the local views of sources. To meet a given ontology in a given domain, the LAV approach seems more appropriate, but the GAV approach makes easier to take into account existing data sources schemas. Thus, mixed approaches are possible supported by schema design tools [Haas, 1999]. Well-known research projects and prototypes in mediation include Garlic [Haas, 1999], Tsimmis [Garcia-Molina, 1997], Tukwila [Ives, 1999].], Artemis [Castano, 2000], Enosys EXIP[Papakonstantinou, 2003], and XLive [Dang-Ngoc, 2003], a descendant of e-XML mediator [Gardarin, 2002].

Tim Berners-Lee, the inventor of the WWW, thought up the Semantic Web. The goal is to give well-defined meaning to Web information, better enabling intelligent Web applications requiring searching or reasoning, make them exchange meaning rather than information. There are a lot of (sometimes confusing) activities at W3C along this line. The most prominent results are RDF, RDF Schema (RDFS), and OWL (Web Ontology Language). RDF provides a semantic data model based on triple <resource, property, value>