SemanticMiner: Smarter Knowledge Retrieval

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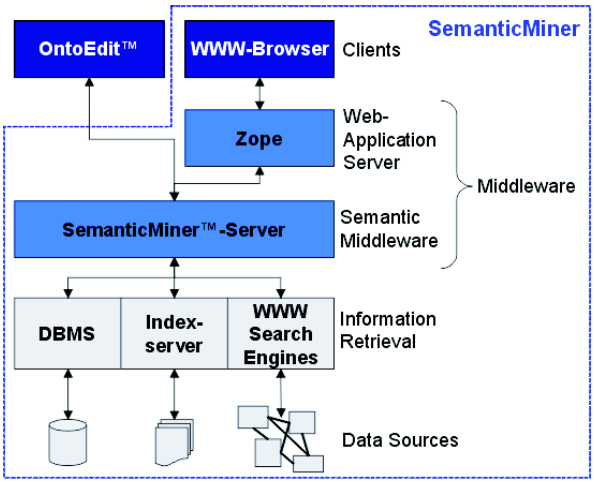

Figure 1: Architecture of SemanticMiner™

Introduction. The SemanticMiner™ is a Knowledge Retrieval platform that combines semantic technologies with conventional retrieval approaches. The *improved navigation* enables the user to easily define semantic queries to all kinds of information sources – especially unstructured documents. *Semantic information integration* allows for *different views* and deep analysis of hidden knowledge by the *externalization of implicit knowledge*.

Architecture. SemanticMiner™ is designed in a client-server architecture (cf. Fig. 1). It provides information retrieval in various data sources (e.g. files indexed with an index-server, hypertext-pages reached with a WWW search-engine, and data stored in a database via a DBMS). The SemanticMiner™-Server (SMS), which is a specialized OntoBroker™-system [F+00], provides the interface to the data sources as well as the inference engine to retrieve and present implicit knowledge. Zope serves as web server to provide the client-side web-interface and as application server to query the SMS. This flexible middleware architecture allows the SemanticMiner™ to become easily administrative and configurable through one central interface.

OntoEdit™[S+02] provides collaborative design, adaptation and import of ontologies as knowledge models to feed the SMS.

Improved Navigation. The use of ontologies provides a simplified navigation. On the one hand the user gets easy access to relevant information by browsing through the modeled concepts and their relations. On the other hand the use of synonym lists and thematically classification guides the user automatically to relevant search items.

Different Views. The use of multiple ontologies allows the SemanticMiner™ to provide different views on the same content respectively information.

Semantic Information Integration. Through the combination of a search request as textual information with structured information (e.g. lists, databases, meta data) and logical rule cohesion the performance of the SemanticMiner™ approach is further increased. The overall goal is to provide essential knowledge contents instead of links to documents containing the content.

An example is the combination of a search request with a list of employees, which could be taken from an arbitrarily source (e.g. a human-resources-system). As a result to the request for an expert the user receives not only a list of documents but a ranked selection of experts for the specified topic. This is achieved through either the use of meta data or the formation of collocations. Another search request would be the combination of subject areas with projects.

Externalize Knowledge. Additional benefit originates in the appraisal of the logical rule cohesions with the inference engine to retrieve and present implicit knowledge.

Conclusion. As shown above, SemanticMiner™ provides quicker, better, and smarter knowledge retrieval.

References

[F+00] D. Fensel et al. Lessons learned from applying AI to the web. *International Journal of Cooperative Information Systems*, 9(4):361–382, 2000.

[S+02] Y. Sure et al. OntoEdit: Collaborative ontology development for the semantic web. In *Proceedings of the ISWC 2002, June 9-12 2002, Sardinia, Italia.*, 2002.