Information Translation, Mediation, and Mosaic-Based Browsing in the TSIMMIS System*

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The TSIMMIS project [1] provides an architecture and tools for accessing multiple heterogeneous information sources by translating source information into a common self-describing object model, called the *Object Exchange Model* (OEM) [2]. TSIMMIS provides integrated access to heterogeneous sources through a layer of source specific translators as well as "intelligent" modules, called mediators. Translators (wrappers) convert queries over information in the common model (OEM) into requests the source can execute. The data returned by the source is converted back into the common model. Mediators are programs that collect information from one or more sources, process and combine it, and export the resulting information to the end user or an application program. Users or applications can choose to interact either directly with the translators or indirectly via one or more mediators.

End users can access information either by writing applications that request OEM objects, or by using one of the generic browsing tools we have developed: a graphical user interface based on DOS and Microsoft Windows, a UNIX-based textual interface, and a graphical interface based on the HTTP protocol called MOBIE (MOsaic-Based Information Explorer)[1]. Our demo uses MOBIE since it is the most interesting of the three. MOBIE is a platform-independent tool for displaying and exploring OEM objects that are returned as a result of queries. MOBIE provides a mechanism for navigating through objects, zooming in on their nested substructures as necessary. It is not required to know in advance the structure or "schema" of the data being explored. MOBIE uses HTML commands to format the portion of the object space being displayed, using indentation and links to represent the data structure and relationships. An important advantage of using WWW browsers as the basis for our user interface is its widespread use and popularity.[2] Ultimately anyone on the internet will be able to use TSIMMIS and MOBIE to explore any information source on the net, provided there is an appropriate OEM translator available for it.

We have implemented a complete version of TSIMMIS, consisting of three information sources, containing bibliographic data in heterogeneous formats, translators for the three sources, several simple mediators for integrating bibliographic data, and three clients. Based on this functionality we are able to access and browse heterogeneous objects from different sources in a uniform way. Although there is considerable substructure, the SIGMOD demo primarily illustrates the graphical interface and its browsing capabilities.

References

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[2] Y. Papakonstantinou, H. Garcia-Molina, and J. Widom. Object exchange across heterogeneous information sources. In *Proceedings of the Data Engineering Conference*. Computer Society of the IEEE, Taipei, Taiwan, March 1995.

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[1] The name MOBIE is misleading since our interface works with any Web browser that uses HTTP and can translate HTML version 2 and higher.

[2] Web browsers such as Mosaic and Netscape currently operates on Unix workstations, on Macintosh computers, and on many PC's.