

As XML has become a standard for data representation, it is inevitable to propose and implement techniques for efficient managing of

XML documents. A natural alternative is to exploit features and functions of (object-)relational database management systems, i.e. to rely on their long theoretical and practical history. The main concern of such techniques is the choice of an appropriate XML-to-relational mapping strategy. In this thesis we focus on further enhancing of current most efficient XML-to-relational storage strategies { so-called adaptive methods. Firstly, we perform a detailed analysis of existing works and especially remaining open issues. Secondly, we propose their enhancing which can be characterized as a hybrid user-driven adaptive mapping strategy, i.e. a combination of so-called user-driven and adaptive methods. In the enhancing we focus especially on deeper exploitation of user-given information, i.e. schema annotations, and we propose an approach which enables to identify new annotation candidates and thus to help users to find a more appropriate mapping strategy. For this purpose we propose a similarity measure which focuses

mainly on structural similarity of the given data and an algorithm which enables reasonable tuning of its parameters on the basis of results of statistical analysis of real-world XML data. Using various experiments we show the behavior and efficiency of both the similarity measure and the hybrid mapping strategy on real XML data. Finally, we analyze the correctness and structure of the resulting mapping strategy and related query evaluation. We focus especially on the problem of correction of the set of annotation

candidates, evaluation of parts of a single XML query using various storage strategies, and exploitation of redundancy. We conclude with a discussion of further possible improvements of the approach, as well as XML processing using (object-)relational databases in general.