

Abstract

Title: Database Representation of Medical Information and Guidelines
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Abstract:

This thesis examines the possibilities of the OODBS O₂ to model and represent medical information. On bases of international projects, norms and physicians' needs, the requirements for an optimal electronic health record (EHR) are specified. The first results show the inability of the system O₂ to approximate these requirements. Hence the next research is focused on ORDBS Oracle 9i. Because of the key requirement - universality and dynamic modifiability of the collected information, a special database structure was designed, where the set of collected data types, so-called knowledge base, is strictly separated from the recorded values. By means of a graph structure the knowledge base describes hierarchical relations between semantic types. To enlarge the availability, the system uses a three-layer architecture consisting of a data layer, an application layer and user interface. By virtue of the defined communication interface based predominantly on HTTP and XML protocols, it is possible to implement clients for various purposes like medical data entering and their visualization, statistical data processing or mobile data accessing. An interface for dynamic linking of medical guideline libraries is defined by the application layer. These libraries support medical decisions by using information from the EHR. The developed pilot application implements the WHO/ISH hypertension guidelines using a cardiology knowledge base.

Keywords: electronic health record, medical guidelines,
Oracle 9i, O₂ object database system,
distributed architecture