
BERDI: A Practical Toolkit for Schema Design, Analysis and Integration

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Abstract

We have developed a software prototype toolkit called Bellcore Schema Design and Integration (BERDI). Its goal is to support a pragmatic, flexible, faster, and accurate process of designing new schemas (including data model integrity constraints and extensive dictionary information) as well as managing multiple schemas. Emphasis of BERDI so far has been on the analysis, interdependency specification, and integration issues related to managing multiple schemas. In this paper, we discuss BERDI, including some aspects of the methodology and techniques it uses with emphasis on the pragmatic aspects and the industrial practice.

BERDI's supports multiple schema management (including schema integration) activities can be characterized in four phases. The preintegration phase supports development of schemas that are complete and consistent with respect to a data model (including its integrity constraints) and the dictionary information (i.e., meta-data). The second phases of schema analysis supports a unique graphical query facility on schemas (including the dictionary information) to help identify related objects, and the ability to define relationships at the attribute level and interdependencies at the entity level. The third phase of schema integration involves using the result of schema analysis to identify candidate objects in different source schemas for integration, creating new objects by merging objects in source schemas, and automatically creating the mappings from the new (integrated) objects to the source objects. The fourth phase supports schema restructuring, further analysis and documentation. An integrator has the flexibility to achieve different levels of integration and some of the activities are optional. Furthermore, the toolkit is extensible in several ways.

Keywords: schema/view/database integration, schema design, schema analysis, interdependency, graphical query interface, schema query, merging, toolkit

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