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Structured Design and Construction of Hypermedia Applications

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1. MOTIVATION

The need for a structured approach has been accepted in the areas of programming and design, as evidenced by the proliferation of structured programming languages, and of structured design methodologies. Similar arguments apply to hypermedia application design and construction.

2. THE RELATIONSHIP MANAGEMENT METHODOLOGY (RMM)

2.1 Methodological Steps

The Relationship Management Methodology (RMM) (Isakowitz, Stohr and Balasubramanian 1995) presents a structured approach to the design and construction of hypermedia applications. RMM consists of the following seven steps, some of which can be conducted in parallel: (1) Entity-Relationship design: models the information domain and its relationships, (2) Slice design: how information units are sub-divided for display, (3) Navigational design: how users will access information, (4) User-Interface design: how information will be presented, (5) Protocol Conversion design: how abstract constructs are to be transformed into physical-level constructs, (6) Run-time behavior: how to populate the application with data, and (7) Construction and testing.

2.2 The RMDM Data Model

The Relationship Management Data Model (RMDM) is the cornerstone of the RMM methodology. RMDM includes elements for representing information domain concepts (such as entities and relationships) and navigation mechanisms (such as links). An application’s design is described via an RMDM diagram (see Figure 1). The RMDM model is based on the Entity-Relationship model (Elmari and Navathe 1990) and on HDM (Garzotto, Paolini and Schwabe 1993).

RMDM’s most significant access structures are indices, guided tours, indexed guided tours and groupings. An index acts as a table of contents. A guided tour implements a linear path through a collection of items allowing the user to move forward or backward on the path. Indexed guided tours combine the functionality of indices and guided tours. Logical conditions qualify these access structures. The grouping mechanism serves as a major access gateway to other parts of the system, as often found on many applications’ home pages or initial screens.

2.3 A Sample Allocation

The ISWEB application [http://is-2.stern.nyu.edu/] is a WWW site for the Information Systems Department at the Stern School of Business. The application contains information about faculty, courses, research and other academic activities. Figure 1 shows an RMD diagram for the ISWEB application, as well as its rendition in Netscape Navigator. In contrast to an entity-relationship diagram that represents the design of a database, an RMDM diagram describes how users will navigate a hypermedia application.
Figure 1. The RMD Diagram of the ISWEB Application

3. RM-CASE

Although first presented as a linear methodology, RMM was conceived to be flexible by supporting rapid feedback loops. Currently under development, RM-CASE (Díaz et al. 1995) is a CASE tool that supports RMM. RM-CASE works on the principle of “work contexts,” which correspond roughly to RMM’s methodological steps.
4. REFERENCES


