RMM

The Relationship Management Methodology

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Intro

Hypermedia is different from software development:

- Hypermedia/Web development involve people with very different skills
- Hypermedia involves capturing and organizing the structure of a complex domain and making it clear and accessible to users
- Native features of hypermedia that are not part of typical software (linking, presentation)

Hypermedia design is more an art than a science
Types of Applications

- The applications for which RMM is best suited exhibit a regular structure:
  - Classes, relationships between classes, multiple instance objects for each class
- Volatile data that requires frequent updating
- RMM provides a framework for the design of such application
RMDM

- RMM defines a data model (RMDM)
- RMDM is the cornerstone of the methodology
- Primitives:
  - Domain primitives
  - Associative Relationships
<table>
<thead>
<tr>
<th><strong>E-R Domain Primitives</strong></th>
<th><strong>RMD Domain Primitives</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Entities</td>
<td>Slices</td>
</tr>
<tr>
<td>Attributes</td>
<td></td>
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<tr>
<td>One-One</td>
<td></td>
</tr>
<tr>
<td>One-Many</td>
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</tbody>
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<table>
<thead>
<tr>
<th><strong>Access Primitives</strong></th>
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</thead>
<tbody>
<tr>
<td>Uni-Directional Link</td>
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<td>Bi-Directional Link</td>
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<tr>
<td>Grouping</td>
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<tr>
<td>Conditional Index</td>
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<tr>
<td>Conditional Guided Tour</td>
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<tr>
<td>Conditional Indexed Guided tour</td>
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</tbody>
</table>

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Slices

- Entities might consist of a large number of attributes
- Slices show a subset
- They are meant to resemble pizza slices
Navigation

Supported by six access structures:

- Unidirectional Link
- Bidirectional Link
- Grouping
- Conditional Index
- Conditional Guided Tour
- Conditional Indexed Guided Tour
Example of a RMDM Diagram

Guided Tour of Associate Professors

Index of Associate Professors

Indexed Guided Tour of Associate Professors

Guided Tour Node

Faculty

Guided Tour of Associate Profs.

start

Nord

Jones

Dhar

Clifford

Index Node

Nord

Jones

Dhar

Clifford

Index Guided Tour Node

Nord

Jones

Dhar

Clifford

Nord

Jones

Dhar

Clifford

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RMM Design Methodology

Feasibility

Hardware selection

Information/Navigation requirements analysis

Conversion protocol design

User-Interface screen design

Run-time behavior design

Construction

Hypermedia Application

Testing and evaluation

Needs
Objectives
Market/user analysis
Information sources/permissions
Media used
Distribution channels
Cost-benefit analysis

Focus of RM Methodology

Hardware Choice

E-R Design

Entity Design

Navigation design

EE Diagram

ER+ Diagram

RM Diagram

Conversion rules

Screen designs

RM+ Diagram

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RMM: Step S1 E-R Design

• First step, to represent the information domain

• Using an Entity-Relationship diagram

• Study of the relevant entities and relationships of the application domain

• Sometimes this diagram might already be available

• Make links between objects explicit: relationships
Step S2: Slice Design

- Determines how the information in the chosen entities will be presented to the readers and how they might access it.
- In the worst case, all the attributes of an object are presented to the reader at the same time.
- For example: ‘faculty’ slices:
  - General information
  - Biography
  - Research area
Slices
Slice Design Phase

- Each entity is divided into slices
- There is always a default slice
- Links show the navigation between slices
- These links are called structural links
  - They connect information pieces within the same entity
  - Represented with continuous lines
- Other links are called associative relationships:
  - Connect different entities
  - Represented with Dashed lines
Slice Design Phase...

- The output of this phase is an enriched E-R+ diagram
  - E-R diagram +
  - Slice design diagram for each entity

- Four main considerations:
  - Dividing entities into slices
  - Choosing one slice as the head of the entity
  - Interconnecting slices
  - Labeling these links

- Remember: a slice represents a whole to the user
Slice Design Phase...

- Choosing the head of the slice requires analysis of the domain.
- The links reflect the need to connect more specialized slices to more general ones.
- Choosing the labels for the link is important (they become anchors).
S3: Navigational Design

- We design paths that enable hypertext navigation
- Each relation in the E-R diagram is analyzed:
  - If the relation is decided to be relevant then it is replaced by a one of the RMDM access structures
  - All navigational paths should be specified in generic terms i.e. properties of the entities and the relationships: conditional indices, conditional guided tours, conditional indexed guided tours.
Navigational Design ...

(a) Faculty

(b) Faculty Courses

Taught_by(C,F)

Teach(F,C)

Faculty

Courses

By name

By Rank

Faculty Submenu

Main Menu

Courses

Faculty

Courses

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High Level Access Structures

- Next in the design is to create high level access structures by grouping items of interest
- Access structures enter, by default, an entity via its head slice
- At the end of the navigational design, the E-R+ diagram has been transformed to a RMDM diagram
Step S4: Conversion Protocol Design

- Uses a set of conversion rules to transform each element of the RMDM diagram into an object in the target platform.
Last Steps

• S5 User Interface Design: Involves the creation of the screen layouts of the diagram created in S3

• S6 Run time behaviour design: are nodes static or dynamically generated?

• S7 Construction and testing