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Data Interoperable (Lectures (2 days), & Workshops (5 Days))

Problem Description and Objective

The problem domain is the lack of understanding-based data interoperability across an enterprise, which is likely to have from hundreds to thousands of IT systems. Failed interoperability anywhere within the enterprise, from front line operations to supporting infrastructure, may result in lost sales, business opportunities, or in some organizations injury and death to employees. None of these are desirable outcomes. Personal injury or death puts a realistic edge on the problem to be solved.

Built, understanding-based interoperable data models enable managers and developers of IT systems to be able to know of each other, know whether different IT systems have shareable data, and if so, whether the potentially shared data really is both the definitive source for that data and if the data's semantics really means that it's the right data.

Approach

To build the understanding-based interoperable data model, this seminar employs a combination of methodology and supporting Whitemarsh metabase, which is a CASE/Repository system that enables IT Developers to inventory, cross reference, and posit shared IT system artifacts and shared data.

During the seminar, the methodology is presented and then, in the Workshops version, proven via a series of student driven workshops that involve the direct use of the metabase system in a multi-user networked shared environment. The Lectures version only provides a process overview of each workshop.

Students create, based on supplied resource materials, missions, organizations and functions. They intersect these so that there could be a clear picture of the required shared data functions that potentially exist within their organizations in support of assigned missions. Students then create expressions of the information needed to fulfill their shared-data functions.

Database schemas from database applications are then loaded into the metabase system and examined to determine their overlapping areas with respect to the shared data needs. During this

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analysis, business facts that are determined to be commonly used across different database table columns are cast into an ISO 11179 data element form and entered into the metabase database. This enables ISO 11179 data element cross-referencing across the operational database schemas.

Students then determine their shared data schemas and build them through the data modeling facilities contained in the metabase.

Once the shared database designs are created, an operational database design of this database is generated. Once generated, the data model artifacts of this database are imported into the Clarion for Windows software generation environment and the shared data access system was automatically created.

The seminar accomplished a full cycle from the positing of requirements for shared data, the discovery of the shared-database design, the creation of the shared database design and then finally building the software system that supports the storing and access to the shared data. This entire effort is completed by the students and requires only analysis and design skills. No programming skills are required.

Requirements

In the Workshops version, students work in groups of three with a Whitemarsh supplied laptop (Windows XP) and a Windows 2003 operating system server. Access to the sever is through a wireless, secure network.

Materials

All attendees receive a Lectures book. Workshop attendees additionally receive a workshops book. Workshop attendees also receive, at class end, with a CD that contains single-user version of the metabase system, a developer version of the SQL DBMS engine, a complete set of PDF-based lecture and workshop books, and the Metabase user guides. These materials enable the attendee to take the metabase system and the seminar materials back to the work site and used on work applications. Attendees are given the URL necessary to then download a backup version of the interoperable database actually built during class. Attendees are also provided a year-long membership to the Whitemarsh website from which they can download updates to all the materials including the metabase CASE/Repository system.



Outline

- 1.0 The Context
 - 1.1 Integrated Database
 - 1.2 The Traditional Approach
 - 1.3 Approach Comparison
 - 1.4 The Promise of Database
 - 1.5 Going Database Good “War Stories”
 - 1.6 Database Architecture Classes
- 2.0 Data Management Goals
- 3.0 Data Interoperability Architecture Components
- 4.0 Frameworks and Reference Models
 - 4.1 The Case for Multiple Frameworks
 - 4.2 Common Frameworks
 - 4.3 A Framework for the Knowledge Worker
 - 4.4 The Metadata Repository: the Framework Integrator
 - 4.5 Metadata Repository
 - 4.6 Repository Level-Pairs
 - 4.7 Bringing It all Together
 - 4.8 Intersecting Database Projects and Architecture Frameworks
- 5.0 Data Management
 - 5.1 Basic Definitions
 - 5.2 Data Management Plan Environment
 - 5.3 Data Management Operational Environment Support
 - 5.4 Data Management Development/Prototyping Environment Support
 - 5.5 Data Management Core Models
 - 5.6 Key Processes within the Environment
- 6.0 Community of Interests
- 7.0 Classes of Database Projects
 - 7.1 Forward Engineering
 - 7.2 Reverse Engineering



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- 8.0 Data Management Project Management

- 9.0 Information Systems Plans (ISP)

- 10.0 Data Management and Workshops
 - 10.1 Mission, Organization, Function, and Positions
 - 10.2 Database Domains
 - 10.3 Database Objects
 - 10.4 Information Needs
 - 10.5 Resource Life Cycle Analysis
 - 10.6 Data Elements Workshop
 - 10.7 Specified Data Model
 - 10.8 Implemented Data Model Workshop
 - 10.9 Operational Data Models
 - 10.10 View Data Models
 - 10.11 Data Modeling Summary
 - 10.12 Business Information Systems
 - 10.13 SQL Generation and Application Generation

- 11.0 Putting the Metadata Repository to Work
 - 11.1 Forward Engineering
 - 11.2 Reverse Engineering Workshop

- 12.0 Achieving Data Management Goals

- 13.0 Course Summary

