Decision Works

Dimensional Modeling: The Kimball Method

Why Attend

Excellence in dimensional modeling remains the keystone of a well-designed data warehouse/business intelligence system, regardless of your architecture. This course provides the opportunity to learn directly from the industry's dimensional modeling thought leader.

The Data Warehouse Toolkit established an extensive portfolio of dimensional techniques and vocabulary, including conformed dimensions, slowly changing dimensions, junk dimensions, bridge tables, periodic and accumulating snapshot fact tables, and the list goes on.

You will learn practical dimensional modeling techniques covering basic to advanced patterns and best practices. Concepts are conveyed via real-world industry scenarios, taught through a combination of lectures, class exercises, small group workshops, and individual problems. Students will gain an in-depth understanding of dimensional modeling to confidently apply the techniques in their workplace following the training.

Who Should Attend

This course is designed for data warehouse architects, data modelers, database administrators, business analysts, and ETL or BI application developers and designers. It's appropriate for anyone interested in A-to-Z coverage of dimensional modeling.
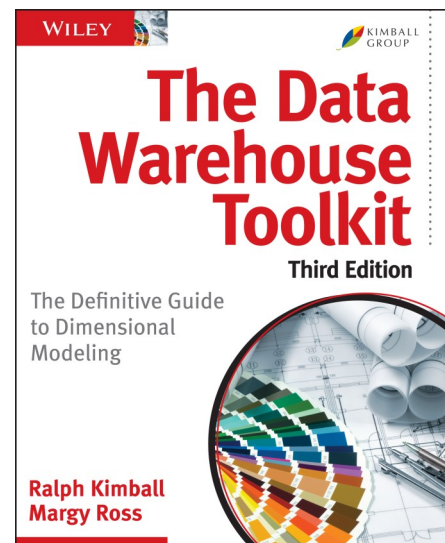
Instructors

Margy Ross, co-author of *The Data Warehouse Toolkit, 3rd Edition.* She co-taught Kimball University's dimensional modeling course with Ralph Kimball for over 10 years.

Course Overview

Day 1
- Dimensional Modeling Fundamentals
- Retail Sales Case Study
- Invoicing Design Workshop

Day 2
- Inventory Case Study
- Higher Education Design Review Exercise
- Slowly Changing Dimensions
- Credit Card Design Workshop
- Insurance Case Study

Day 3
- Kimball Lifecycle Overview, Requirements, and Dimensional Modeling Process
- Financial Case Study
- Multivalued Dimension Exercise
- Customer Case Study

WILEY

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The Data Warehouse Toolkit

Third Edition

The Definitive Guide to Dimensional Modeling

**Ralph Kimball
Margy Ross**

DAY 1

Dimensional Modeling Fundamentals
• DW/BI system objectives
• Role of dimensional modeling in the independent mart, Kimball, Corporate Information Factory, and hybrid architectures
• Dimension table characteristics
• Fact table characteristics and granularity
• Benefits of dimensional modeling
• 4-step design process
• Inputs: business requirements and data realities

Retail Sales Case Study
• Transaction fact tables
• Denormalized dimension table hierarchies
• Dealing with nulls
• Degenerate dimensions
• Surrogate keys for dimensions
• Date and time-of-day considerations
• Dimension role playing
• Centipede fact tables and snowflake schemas with normalized dimensions
• Factless fact tables

Invoicing Design Workshop
• Complications with operational header/line data
• Allocated facts at different levels of detail
• Simultaneous facts and dimensions
• Abstract, generic dimensions
• Freeform text comments
• Junk dimensions for miscellaneous indicators
• Multiple currencies and units of measure

DAY 2

Inventory Case Study
• Implications of business processes on data architecture
• Semi-additive facts
• Periodic and accumulating snapshot fact tables
• Conformed dimensions – identical and shrunken roll-ups
• Enterprise Data Warehouse Bus Architecture and matrix
• Drilling across fact tables
• Consolidated cross-process fact tables
• Individual exercise: Translate business requirements into DW bus matrix

Higher Education Design Review Exercise
• Common design flaws and mistakes to avoid
• Bridge tables and primary designation for multivalued dimension attributes
• Checklist for conducting design reviews

Slowly Changing Dimensions
• Type 0: retain original
• Type 1: overwrite
• Type 2: add new row
• Type 3: add new attribute, plus multiple type 3 attributes
• Type 4: add mini-dimension, plus type 4 challenges
• Advanced techniques for both current and point in time values
• Type 5: add mini-dimension and type 1 attributes/ outrigger
• Type 6: dual type 1 and type 2 attributes in same dimension
• Type 7: dual type 1 and type 2 dimension tables

DAY 2 CONTINUED

Credit Card Design Workshop
• Complementary transaction and periodic snapshot schemas
• Design considerations for one dimension versus two dimensions
• Bridge tables for multivalued dimension attributes
• Fact table normalization with measurement type dimension
• Tagging rows after the fact

Insurance Case Study
• Review of design patterns and techniques
• Development of bus matrix from extended case study
• Comparison of fact table grains
• Accumulating snapshot fact tables for complex workflows
• Calculating policy loss triangles
• Detailed implementation bus matrix

DAY 3

Kimball Lifecycle Overview, Requirements, and Dimensional Modeling Process
• Kimball Lifecycle method overview
• Readiness factors and scoping
• Requirements gathering best practices and prioritization
• Dimensional modeling participants and process flow

Financial Case Study
• General ledger schemas
• Fact table surrogate keys
• Audit dimensions
• Fact value banding
• Timespan transaction, periodic and accumulating snapshot fact tables
• Forcing slightly ragged hierarchies into fixed depth
• Bridge tables for ragged variable depth hierarchies, plus pathstring option
• More on multiple currencies
• Multiple time zones
• Supertypes and subtypes

Human Resources Multivalued Dimension Exercise
• Column versus row trade-offs
• "Many-to-many" dimension examples and design alternatives, including brides
• Reports-to challenges

Customer Case Study
• Aggregated facts as dimension attributes
• Time series of dimension tags
• Outriggers
• Cohorts
• Big data and predictive analytics
• Complimentary conventional DW and analytic sandboxes

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