

## Dimensional Modeling: Kimball Fundamentals

### Why Attend

Excellence in dimensional modeling remains the cornerstone of a well-designed data warehouse/business intelligence (DW/BI) system.

*The Data Warehouse Toolkit* (Kimball/Ross) established an extensive portfolio of dimensional techniques and vocabulary, including conformed dimensions, slowly changing dimensions, periodic and accumulating snapshot fact tables, and the list goes on.

In this course, you will learn practical dimensional modeling techniques covering fundamental patterns and best practices. Concepts are illustrated through real-world industry scenarios, conveyed through a combination of lectures, class exercises, small group workshops, and individual problem solving. While this course doesn't cover every dimensional modeling pattern, those most commonly observed across industries are thoroughly discussed. In addition, students will be introduced to the Kimball Lifecycle approach for designing and building DW/BI systems.

Bringing DecisionWorks onsite enables everyone on the team to get on the same page with a common vocabulary and understanding of core techniques. The result is more effective and efficient education with lower travel cost and lost productivity, plus less downstream "tire spinning" within the team.

### Who Should Attend

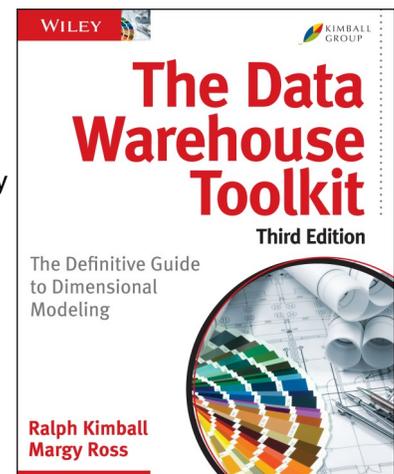
This course is appropriate for anyone interested in dimensional modeling, whether project managers, data warehouse architects, data modelers, database administrators, business analysts, and ETL or BI application developers and designers.

### Instructor

Margy Ross, co-author of *The Data Warehouse Toolkit* and several other *Toolkit* books with Ralph Kimball. She's focused on dimensional modeling for over three decades and previously co-instructed with Ralph for Kimball University. Margy's taught dimensional modeling concepts to nearly 15,000 students worldwide.

### Course Overview

- Day 1
  - Introductions
  - Dimensional Modeling Fundamentals
  - "Basics" Case Study
  - "Beyond the 1st Business Process" Case Study
  - Slowly Changing Dimensions
  - Design Workshop
- Day 2
  - Design Review Exercise
  - Kimball Lifecycle Approach Overview
  - "Design Enhancement" Case Study
  - Design Workshop
  - "Pulling it all Together" Case Study
  - Client-Specific Workshop



# Dimensional Modeling: Kimball Fundamentals

## DAY 1

### Introductions

- Course agenda and assumptions

### Dimensional Modeling Fundamentals

- Role of dimensional modeling in various DW/BI architectures
- Fact and dimension table characteristics
- Benefits of dimensional modeling

### Retail Sales “Basics” Case Study

- 4-step process for designing dimensional models
- Fact table granularity
- Transaction fact tables
- Degenerate dimensions
- Date dimension considerations
- Denormalized dimension table hierarchies
- Dealing with nulls
- Surrogate keys for dimensions
- Centipede fact tables with too many dimensions
- Star versus snowflake schemas
- Factless fact tables

### Inventory “Beyond the 1st Business Process” Case Study

- Implications of business processes on data architecture
- Periodic snapshot fact tables
- Semi-additive facts
- Conformed dimensions - identical and shrunken roll-ups
- Enterprise Data Warehouse Bus Architecture and matrix for master data/integration
- Exercise: Translate business requirements into DW bus matrix
- Opportunity/stakeholder matrix

### Slowly Changing Dimensions

- Type 0
- Basic Type 1, 2 and 3 techniques
- Type 4 mini-dimensions
- Advanced techniques to deliver current and point-in-time values (Types 5, 6 and 7)

### Order Management Design Workshop

- Drilling across fact tables
- Consolidated cross-process fact tables
- Dimension table role-playing
- Allocated facts at different levels of grain
- Simultaneous facts and dimensions
- Complications with operational header/line data and patterns to avoid
- Multiple currencies
- Junk dimensions for miscellaneous transaction indicators
- Accumulating snapshot fact tables
- Comparison of three fundamental fact table grains

## DAY 2

### Billing “Design Review” Exercise

- Common design flaws and mistakes to avoid
- Checklist for conducting design reviews

### Kimball Lifecycle Approach for DW/BI Development

- Best practices from project scoping, requirements and prioritization
- Common challenges and pitfalls
- Dimensional modeling process flow, tasks and deliverables

### Transportation “Design Enhancement” Case Study

- Schema enhancements to embellish design for changing requirements
- Multiple time zones
- Design trade-offs

### Credit Card Design Workshop

- Complementary transaction and periodic snapshot schemas
- Modeling multivalued dimension attributes with bridge tables
- Generic abstract dimensions
- Freeform text comments

### Insurance “Pulling it all Together” Case Study

- Review of design patterns and techniques
- Development of bus matrix from extended case study
- Detailed implementation bus matrix

### Client Specific Workshop

- Development of client-centric preliminary data warehouse bus matrix