



KIMBALL
UNIVERSITY

Kimball University: Course Descriptions

Dimensional Modeling in Depth

Excellence in dimensional modeling remains the keystone of a well designed data warehouse. This course gives you that excellence from the industry's dimensional modeling leaders, [Ralph Kimball](#) and [Margy Ross](#).

What you'll learn

In this course you will learn classic dimensional modeling from beginning to advanced issues. Following the tradition of the *Data Warehouse Toolkit*, all the techniques in this class will be motivated by specific industry situations. During the class you will briefly "work" in retail, procurement, inventory, order management, accounting, human resources, customer relationship management, financial services, telecommunications, transportation, education, health care, electronic commerce and insurance! You will stand back from all these industries and learn how to develop the data warehouse "bus architecture" which is the basis for building distributed data warehouse systems. You will learn to discern what is myth and what is real in dimensional modeling.

Who should attend

This course is designed for data warehouse architects, data modelers, DBAs, application developers, and system designers. It is appropriate for anyone interested in an A to Z coverage of dimensional modeling. Every attendee in this class will receive Ralph Kimball and Margy Ross' book, *The Data Warehouse Toolkit, 2nd Edition*.

COURSE OUTLINE

Dimensional Modeling Primer

- Eight simultaneous data warehouse design challenges
- Profound separation of data warehouse systems

- Dimensional modeling as the driver for all query services
- Fundamental roles of dimension tables and fact tables
- Key structures of dimension tables and fact tables
- Application profiles of dimension tables and fact tables
- Starting and finishing dimensional data warehouse designs
- Core vocabulary that will be used during the remainder of the class
- Myths and misconceptions about dimensional modeling
- Role of normalized models

Retail Sales

- Core dimensional modeling concepts
- The four-step process for designing your dimensional models
- Retail sales ticket class design exercise
- Time dimensions accurate to the second
- Shopper dimensions with millions of members
- Causal dimensions describing promotions
- Snowflaked dimensions and when they may be permissible
- Detailed design for the date dimension
- Degenerate dimensions
- Surrogate keys and the surrogate key pipeline
- Market basket analysis

Inventory

- Data warehouse bus architecture
- Conformed dimensions and facts
- Distributed data warehouses
- Data warehouses spanning incompatible technologies
- Semi additive facts
- Defining and contrasting the three fundamental types of fact tables
- Transaction fact tables
- Periodic snapshot fact tables
- Accumulating snapshot fact tables

Procurement

- Modeling a value chain
- The data warehouse Bus matrix
- Partially overlapping conformed dimensions
- Drilling across remote fact tables
- Dimension authorities

- Fact table providers
- Synchronous replication of dimensions
- Blended vs. separate transaction table designs
- Slowly changing dimensions, types 1, 2, and 3
- Hybrid type 2/3 dimensions
- Multiple alternate realities
- Rapidly changing monster dimensions

Order Management

- Dimensional role playing
- Header/line-item designs
- Multiple currencies and units of measure
- Junk dimensions with miscellaneous transaction indicators
- Deciding when to combine or split dimensions
- Invoices in multiple currencies
- Allocating shipping charges to the line item
- Real time data warehousing approaches

Customer Relationship Management

- The customer dimension
- Customer demographics
- Variable amounts of customer information in a huge dimension
- Customer behavior tracking techniques
- Analysis of evolving customer cluster labels
- Hierarchical customer dimensions, especially commercial organizations
- Address standardization
- Managing extremely large, wide customer dimensions
- Unpredictable customer hierarchies
- Consolidating customer data from multiple sources
- Avoiding the granularity trap

Accounting

- Modeling a general ledger
- Year-to-date facts
- Multiple fiscal calendars
- The Budget – Commitment – Expenditure value chain
- Consolidated dimensional models combining data from multiple business processes

Human Resources Management

- Employee dimension table behaving like a fact table
- Precision time stamping of a type 2 slowly changing dimension
- Audit dimensions
- Keyword dimensions
- Survey questionnaire data

Financial Services

- Heterogeneous products in retail banking and investment banking
- Modeling the complex relationships among accounts, customers, and households
- Administering the Account-to-Customer bridge table
- Correctly weighted reports vs. impact reports
- Value banding reports

Telecommunications and Utilities

- Putting daily call tracking fact tables on a diet
- Geographic location dimensions
- Leveraging geographic information systems

Transportation

- Voyage schemas and their relationship to networks
- Related fact tables at different levels of granularity
- High dimensionality container shipping schema
- Country-specific calendars
- Synchronization across multiple time zones

Education

- The student application pipeline
- Three techniques for modeling “what didn’t happen”

Health Care

- Many valued dimensions: multiple diagnoses associated with a patient treatment
- Advanced event tracking with multiple many valued dimensions
- Assigning allocation factors in a many valued dimension
- Designs with several many valued dimensions
- Medical lab data: sparse data with many possible measures
- Late arriving fact records and late arriving dimension records

Electronic Commerce

- The clickstream data source
- Cookies, global Ids, and proxies
- Describing web pages
- Diagnosing web visits
- Three levels of clickstream fact tables

Insurance

- Viewing insurance as the combination of many of the preceding examples
- Building the Data Warehouse
- High-level overview of data warehouse lifecycle activities
- Rating the dimensional compliance of your own environment
- Present Imperatives and Future Outlook
- A preview of what we anticipate data warehousing will look like in the future