

# Data Warehousing Fundamentals: A Comprehensive Guide for IT Professionals

Ponniah, Paulraj

ISBN-13: 9780470462072

## Table of Contents

Preface.

### **Part 1 OVERVIEW AND CONCEPTS.**

#### **1 The Compelling Need for Data Warehousing.**

Chapter Objectives.

Escalating Need for Strategic Information.

Failures of Past Decision Support Systems.

Operational Versus Decision-Support Systems.

Data Warehousing--The Only Viable Solution.

Data Warehouse Defined.

The Data Warehousing Movement.

Evolution of Business Intelligence.

Chapter Summary.

Review Questions.

Exercises.

#### **2 Data Warehouse: The Building Blocks.**

Chapter Objectives.

Defining Features.

Data Warehouses and Data Marts.

Architectural Types.

Overview of Components.

Metadata in the Data Warehouse.

Chapter Summary.

Review Questions.

Exercises.

#### **3 Trends in Data Warehousing.**

Chapter Objectives.

Continued Growth in Data Warehousing.

Vendor Solutions and Products.

Significant Trends.

Emergence of Standards.

Web-Enabled Data Warehouse.

Chapter Summary.

Review Questions.

Exercises.

## **Part 2 PLANNING AND REQUIREMENTS.**

### **4 Planning and Project Management.**

Chapter Objectives.

Planning Your Data Warehouse.

The Data Warehouse Project.

The Project Team.

Project Management Considerations.

Chapter Summary.

Review Questions.

Exercises.

### **5 Defining the Business Requirements.**

Chapter Objectives.

Dimensional Analysis.

Information Packages—A Useful Concept.

Requirements Gathering Methods.

Requirements Definition: Scope and Content.

Chapter Summary.

Review Questions.

Exercises.

### **6 Requirements as the Driving Force for Data Warehousing.**

Chapter Objectives.

Data Design.

The Architectural Plan.

Data Storage Specifications.

Information Delivery Strategy.

Chapter Summary.

Review Questions.

Exercises.

## **Part 3 ARCHITECTURE AND INFRASTRUCTURE.**

### **7 The Architectural Components.**

Chapter Objectives.

Understanding Data Warehouse Architecture.

Distinguishing Characteristics.

Architectural Framework.

Technical Architecture.

Architectural Types.

Chapter Summary.

Review Questions.

Exercises.

## **8 Infrastructure as the Foundation for Data Warehousing.**

Chapter Objectives.

Infrastructure Supporting Architecture.

Hardware and Operating Systems.

Database Software.

Collection of Tools.

Data Warehouse Appliances.

Chapter Summary.

Review Questions.

Exercises.

## **9 The Significant Role of Metadata.**

Chapter Objectives.

Why Metadata is Important.

Metadata Types by Functional Areas.

Business Metadata.

Technical Metadata.

How to Provide Metadata.

Chapter Summary.

Review Questions.

Exercises.

## **Part 4 DATA DESIGN AND DATA PREPARATION.**

### **10 Principles of Dimensional Modeling.**

Chapter Objectives.

From Requirements to Data Design.

The STAR Schema.

STAR Schema Keys.

Advantages of the STAR Schema.

STAR Schema: Examples.

Chapter Summary.

Review Questions.

Exercises.

### **11 Dimensional Modeling: Advanced Topics.**

Chapter Objectives.

Updates to the Dimension Tables.

Miscellaneous Dimensions.

The Snowflake Schema.

Aggregate Fact Tables.

Families of STARS.

Chapter Summary.

Review Questions.

Exercises.

## **12 Data Extraction, Transformation, and Loading.**

Chapter Objectives.

ETL Overview.

Data Extraction.

Data Transformation.

Data Loading.

ETL Summary.

Other Integration Approaches.

Chapter Summary.

Review Questions.

Exercises.

## **13 Data Quality: A Key to Success.**

Chapter Objectives.

Why is Data Quality Critical?.

Data Quality Challenges.

Data Quality Tools.

Data Quality Initiative.

Master Data Management (MDM).

Chapter Summary.

Review Questions.

Exercises.

## **Part 5 INFORMATION ACCESS AND DELIVERY.**

### **14 Matching Information to the Classes of Users.**

Chapter Objectives.

Information from the Data Warehouse.

Who Will Use the Information?

Information Delivery.

Information Delivery Tools.

Information Delivery: Special Topics.

Chapter Summary.

Review Questions.

Exercises.

### **15 OLAP in the Data Warehouse.**

Chapter Objectives.

Demand for Online Analytical Processing.

Major Features and Functions.

OLAP Models.

OLAP Implementation Considerations.

Chapter Summary.

Review Questions.

Exercises.

## **16 Data Warehousing and the Web.**

Chapter Objectives.

Web-Enabled Data Warehouse.

Web-Based Information Delivery.

OLAP and the Web.

Building a Web-Enabled Data Warehouse.

Chapter Summary.

Review Questions.

Exercises.

## **17 Data Mining Basics.**

Chapter Objectives.

What is Data Mining?.

Major Data Mining Techniques.

Data Mining Applications.

Chapter Summary.

Review Questions.

Exercises.

## **Part 6 IMPLEMENTATION AND MAINTENANCE.**

18 The Physical Design Process.

Chapter Objectives.

Physical Design Steps.

Physical Design Considerations.

Physical Storage.

Indexing the Data Warehouse.

Performance Enhancement Techniques.

Chapter Summary.

Review Questions.

Exercises.

## **19 Data Warehouse Deployment.**

Chapter Objectives.

Data Warehouse Testing.

Major Deployment Activities.

Considerations for a Pilot.

Security.

Backup and Recovery.

Chapter Summary.

Review Questions.

Exercises.

## **20 Growth and Maintenance.**

Chapter Objectives.

Monitoring the Data Warehouse.

User Training and Support.

Managing the Data Warehouse.

Chapter Summary.

Review Questions.

Exercises.

Answers to Selected Exercises.

Appendix A. Project Life Cycle Steps and Checklists.

Appendix B. Critical Factors for Success.

Appendix C. Guidelines for Evaluating Vendor Solutions.

Appendix D. Highlights of Vendors and Products.

Appendix E. Real-World Examples of Best Practices.

References.

Glossary.

Index.