Business School
UNIVERSITY OF COLORADO DENVER

Information Systems Program

Module 3
Data Warehouse Design Practices and Methodologies

Lesson 4: Summarizability Patterns for Dimension-Fact Relationships

Lesson Objectives

- Recognize data patterns with dimension-fact summarizability problems
- Recognize cardinalities in schema designs for dimension-fact summarizability problems
- Explain ways to resolve dimension-fact summarizability problems

Incomplete Dimension-Fact Relationship

Customer-Month Sales

Customer	Month	Sales
Cust-1	Jan-2017	10
Cust-2	Jan-2017	5
Cust-3	Feb-2017	15
Total		30

Rollup

Month Sales

Month	Sales
Jan-2017	25
Feb-2017	15
Total	40

Non Strict Dimension-Fact Relationship

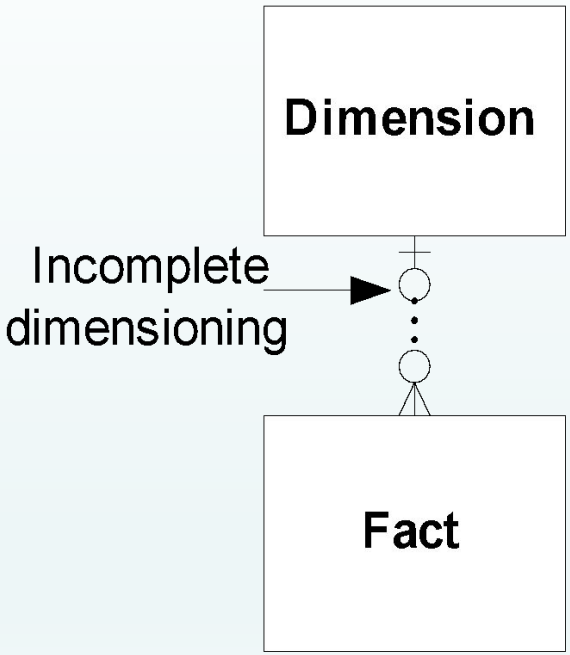
(a) Unit sales by salesperson

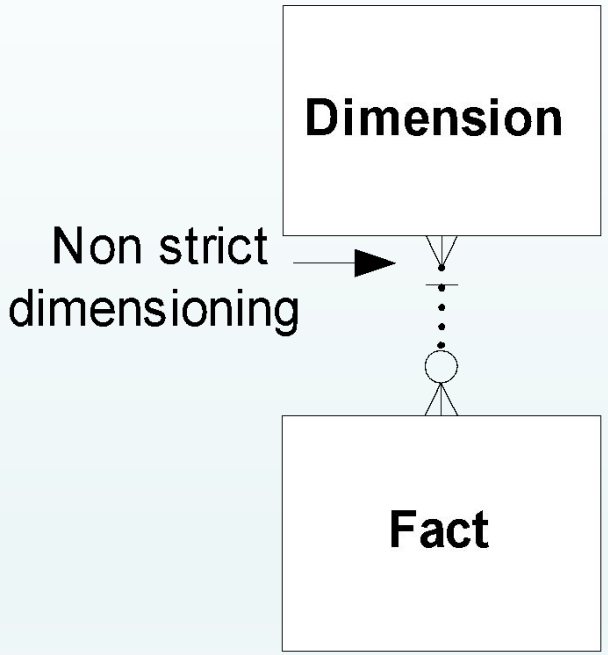
Salesperson	Date	UnitSales
SP1	10-Feb-2017	10
SP2	10-Feb-2017	10
SP3	11-Feb-2017	15
SP4	12-Feb-2017	20
Total		55

(b) Shared unit sales by salesperson

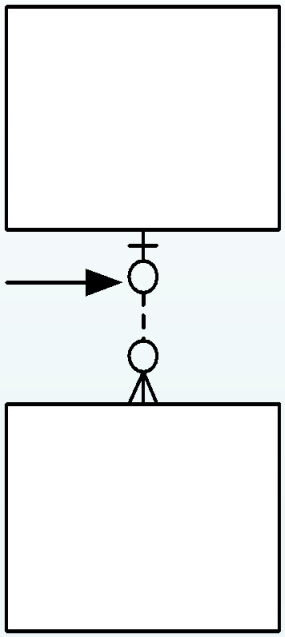
Salesperson	Date	UnitSales
SP1, SP2	10-Feb-2017	10
SP3	11-Feb-2017	15
SP4	12-Feb-2017	20
Total		45

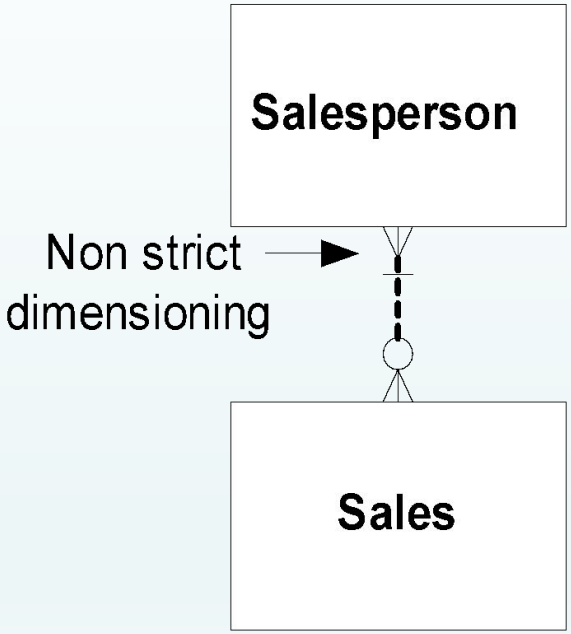
Non Summarizability Schema Patterns





Examples of Non Summarizability Schema Patterns





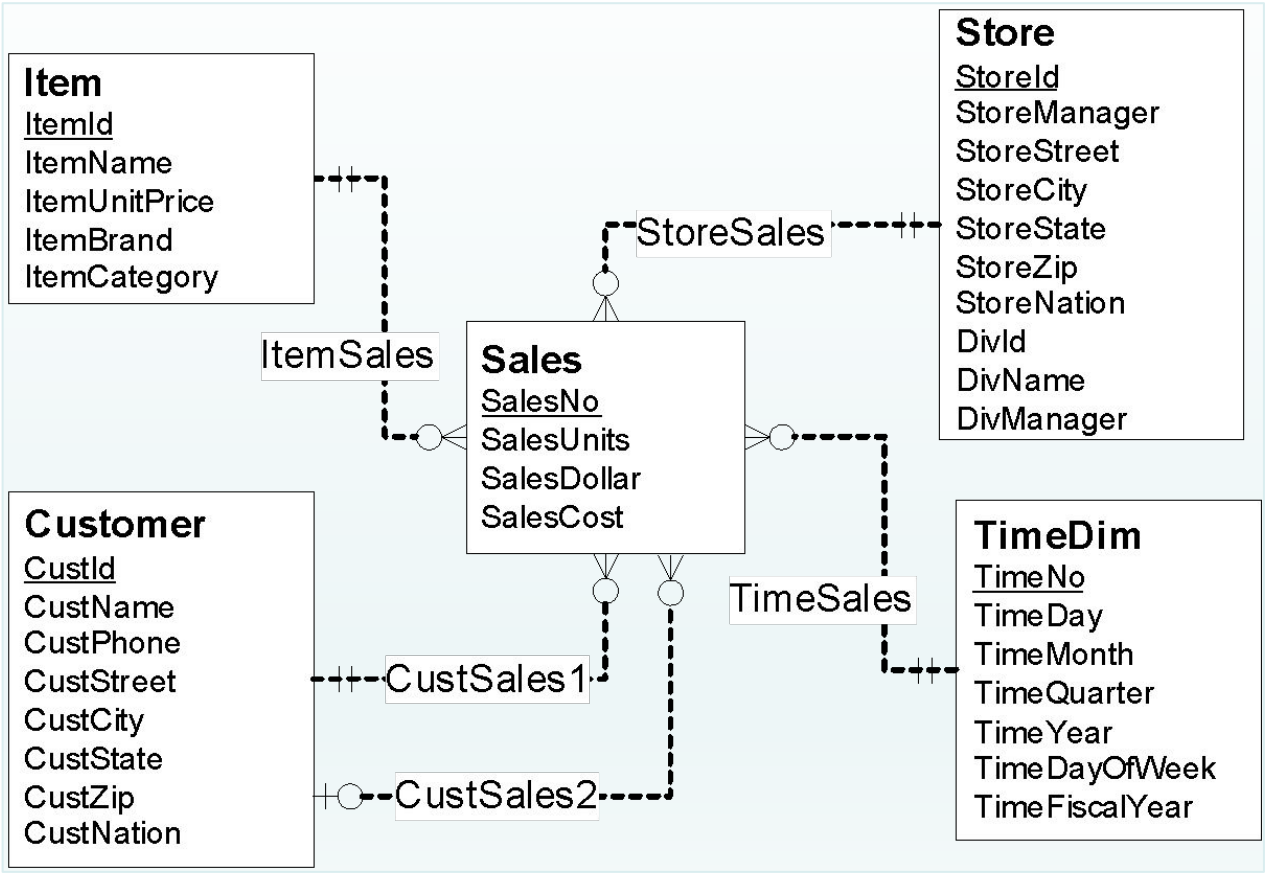
Resolving Incomplete Dimension-Fact Relationships

- Conceptually simple
- Data integration process changes
- Use default dimension entities

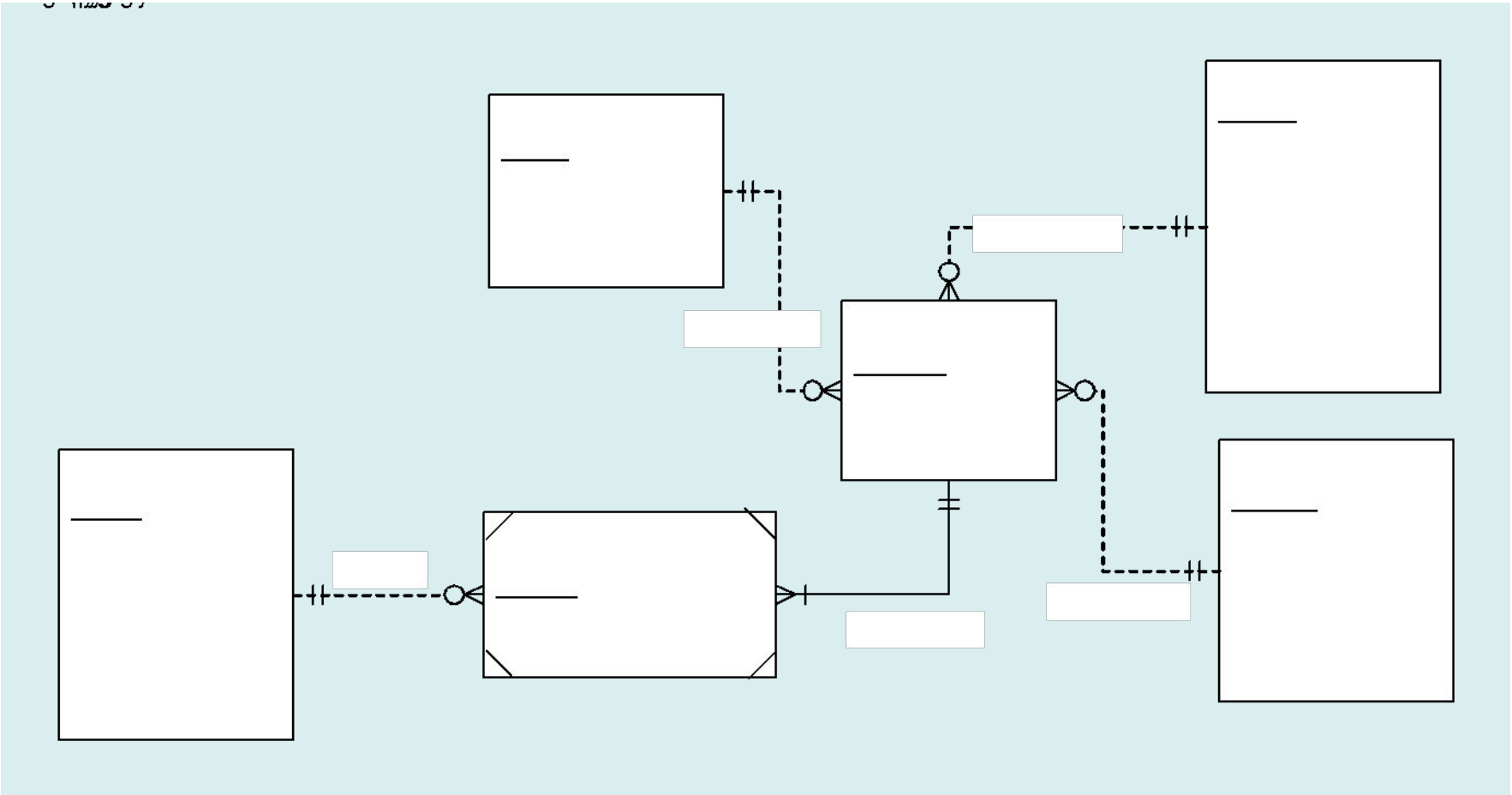
Resolving Non Strict Dimension-Fact Relationships

- Source data may have M-N relationships, not 1-M relationships
- Adjust fact or dimension tables for a fixed number of exceptions
- More complex solutions to support M-N relationships with a variable number of connections

Resolution with Limited Related Entities



Resolution with Unlimited Related Entities



Summary

- Importance of understanding summarizability problems
- Incomplete relationships with optional participation
- M-N relationships typically simplified