Business School
UNIVERSITY OF COLORADO **DENVER**

Information Systems Program

Module 1
Data Warehouse Concepts and Architectures

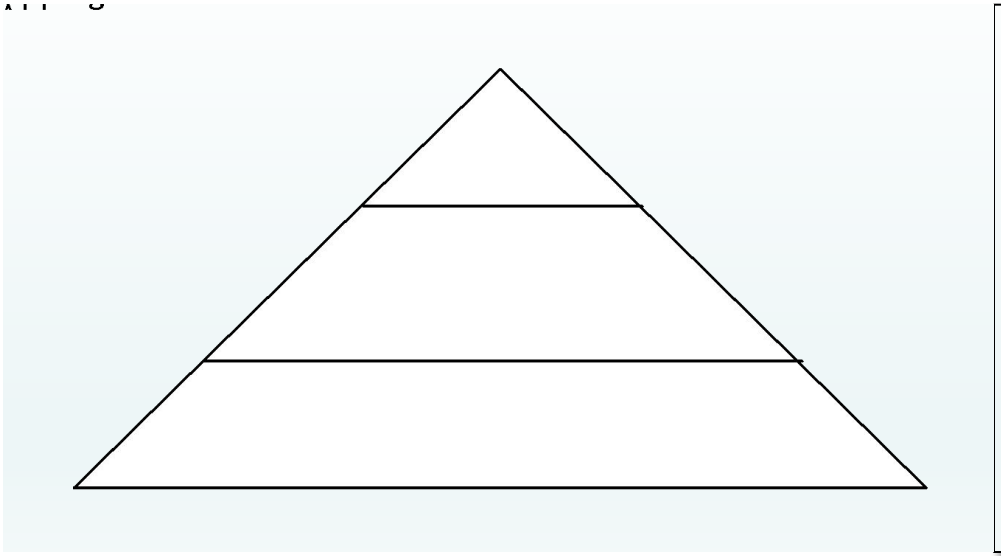
Lesson 3: Motivation and characteristics

Lesson Objectives

- Discuss historical factors
- Explain data warehouse characteristics
- Compare/contrast characteristics for operational databases versus a data warehouses

Decision Making Hierarchy

Decision making hierarchy



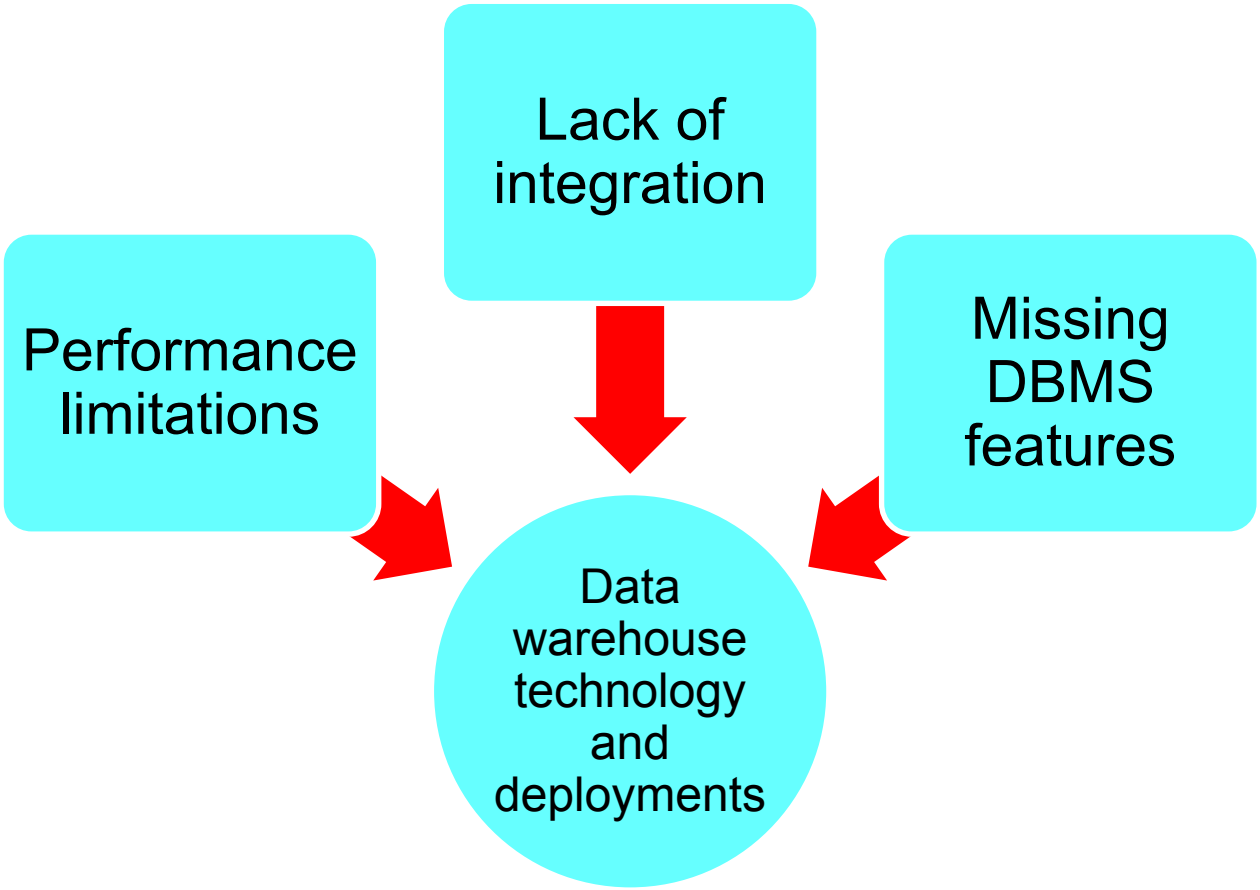
Typical decisions

Identify new markets, choose store locations

Choose suppliers, forecast sales

Resolve order delays, schedule employees

Technology and Deployment Limitations



Data Warehouse Characteristics

- Essential part of infrastructure for business intelligence
- Logically centralized repository for decision making
  - Populated from operational databases and external data sources
  - Integrated and transformed data
  - Optimized for reporting and periodic integration

Comparison of Processing Environments

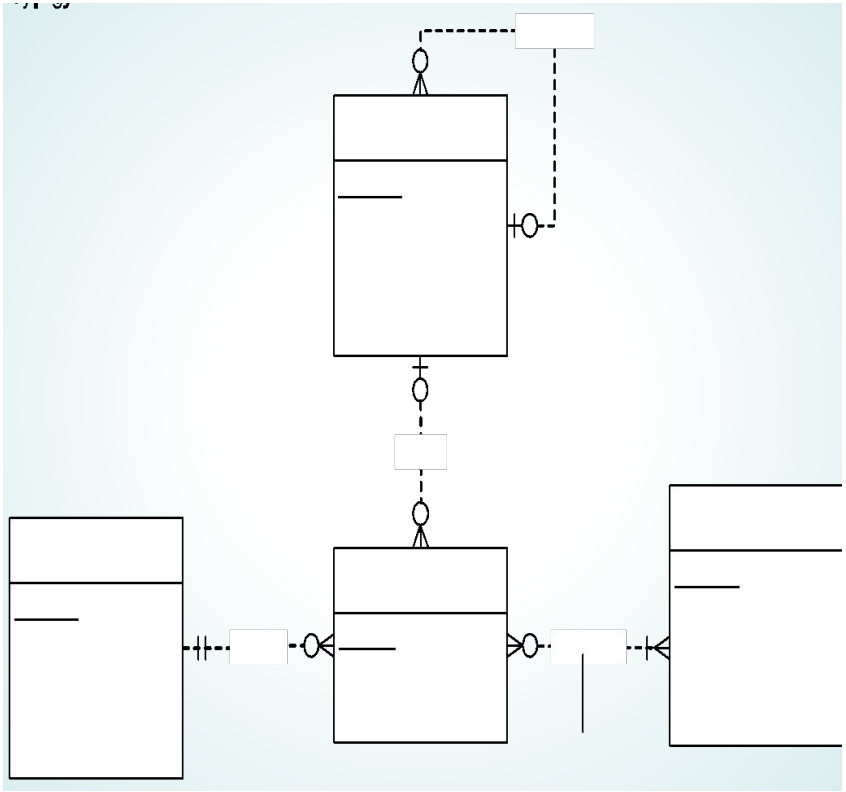
- Transaction processing
  - Primary data from transactions
  - Daily operations and short term decisions
- Business intelligence processing
  - Transformed secondary data
  - Medium and long-term decisions

Data Comparison

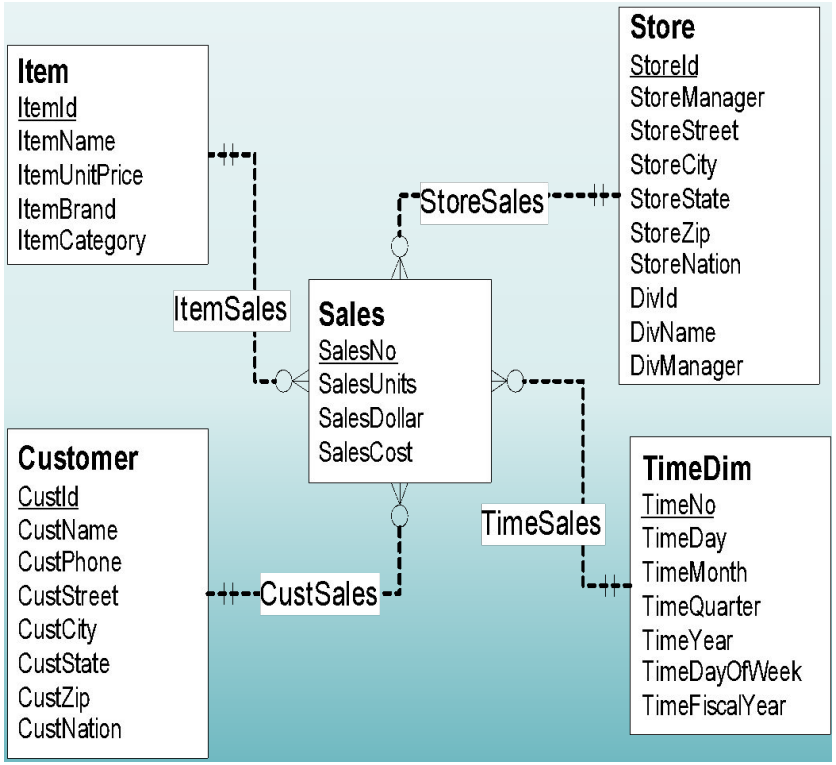
Characteristic	Operational Database	Data Warehouse
Currency	Current	Historical
Details level	Individual	Individual and summary
Orientation	Process	Subject
Records per request	Few	Thousands
Normalization level	Mostly normalized	Normalization relaxed
Update level	Highly volatile	Mostly refreshed (non volatile)
Data model	Relational	Relational (star schemas) and multidimensional (data cubes)

Schema Comparison

Operational database



Data warehouse



Summary

- Historical reasons for data warehouse development
- Key characteristics of data warehouses
- Differences between operational databases and data warehouses