

Dimensional modeling

Kristo Raun

Data Engineering 2023



UNIVERSITY OF TARTU

What is dimensional modeling?

- ◆ Dimensional modeling is widely accepted as the preferred technique for presenting analytic data because it addresses two simultaneous requirements:

What is dimensional modeling?

- ◆ Dimensional modeling is widely accepted as the preferred technique for presenting analytic data because it addresses two simultaneous requirements:
 - ◆ Deliver data that's understandable to the business users.

What is dimensional modeling?

- ◆ Dimensional modeling is widely accepted as the preferred technique for presenting analytic data because it addresses two simultaneous requirements:
 - ◆ Deliver data that's understandable to the business users.
 - ◆ Deliver fast query performance.

What is dimensional modeling?

- ◆ Dimensional modeling is widely accepted as the preferred technique for presenting analytic data because it addresses two simultaneous requirements:
 - ◆ Deliver data that's understandable to the business users.
 - ◆ Deliver fast query performance.
- ◆ Dimensional modeling is a longstanding technique for making databases simple.

Main flow of dimensional modeling

- ◇ Start from business requirements
 - ◇ What needs to be done? Why?

Main flow of dimensional modeling

- ◇ Start from business requirements
 - ◇ What needs to be done? Why?
- ◇ Design facts and dimensions

Facts and dimensions

- ◆ Fact tables are for measurements

Retail Sales Facts
Date Key (FK)
Product Key (FK)
Store Key (FK)
Promotion Key (FK)
Customer Key (FK)
Clerk Key (FK)
Transaction #
Sales Dollars
Sales Units

Facts and dimensions

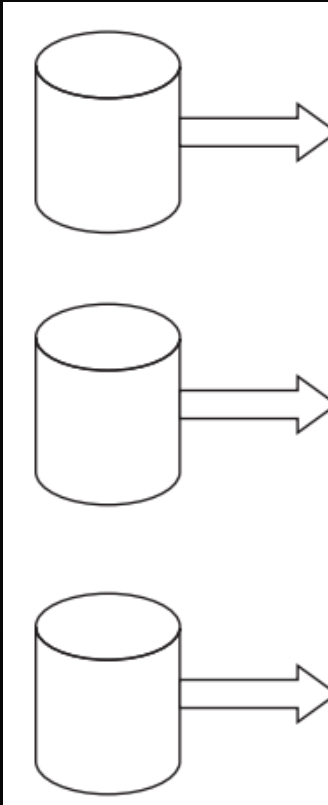
- ◆ Fact tables are for measurements
- ◆ Dimension tables are for descriptive context

Retail Sales Facts
Date Key (FK)
Product Key (FK)
Store Key (FK)
Promotion Key (FK)
Customer Key (FK)
Clerk Key (FK)
Transaction #
Sales Dollars
Sales Units

Product Dimension
Product Key (PK)
SKU Number (Natural Key)
Product Description
Brand Name
Category Name
Department Name
Package Type
Package Size
Abrasive Indicator
Weight
Weight Unit of Measure
Storage Type
Shelf Life Type
Shelf Width
Shelf Height
Shelf Depth
...

General architecture

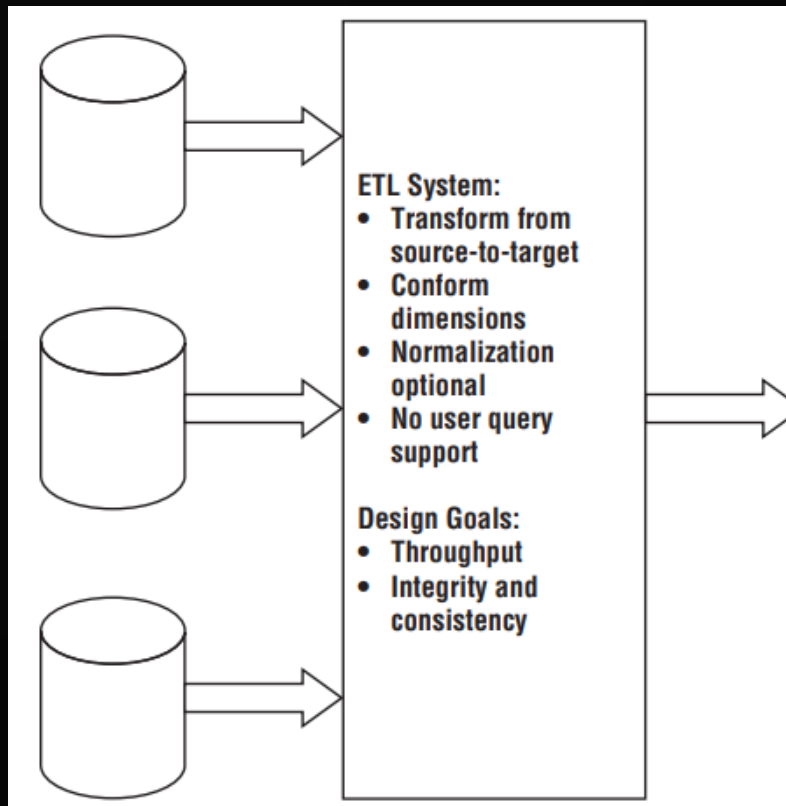
Sources



General architecture

Sources

Staging area

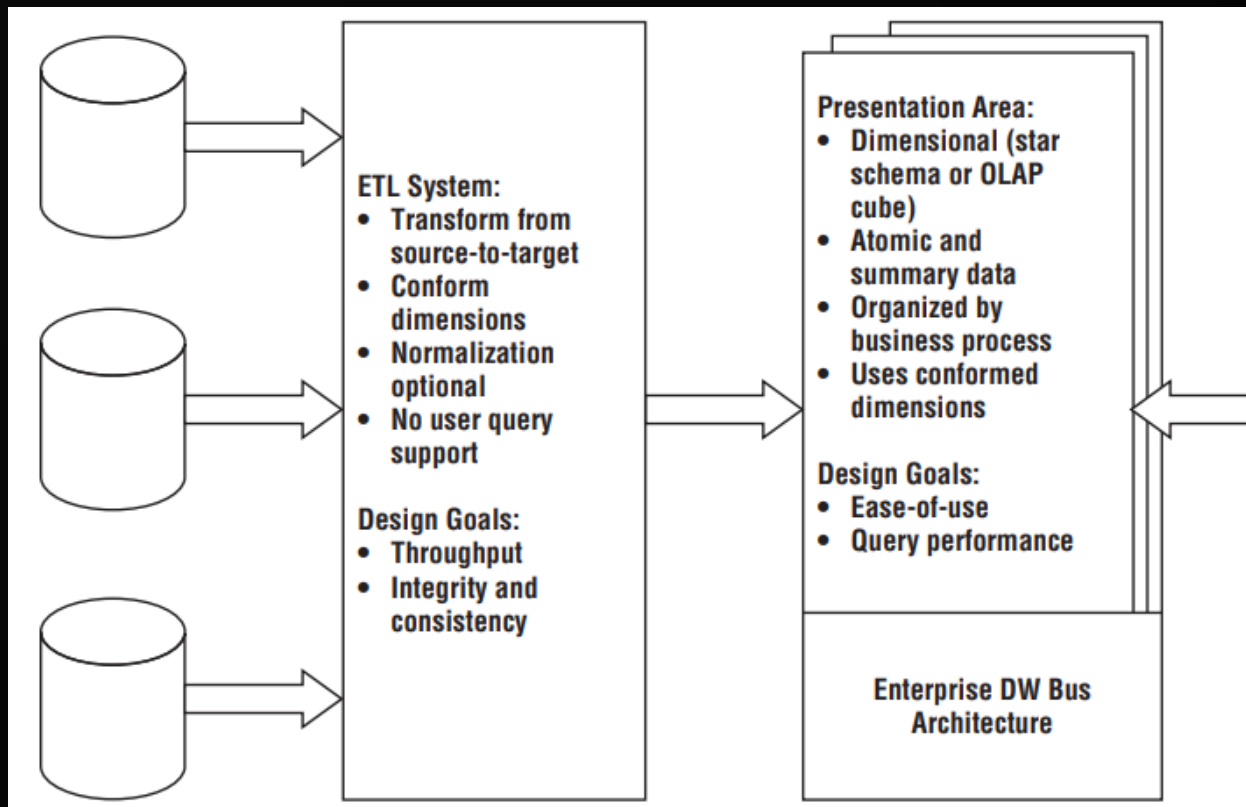


General architecture

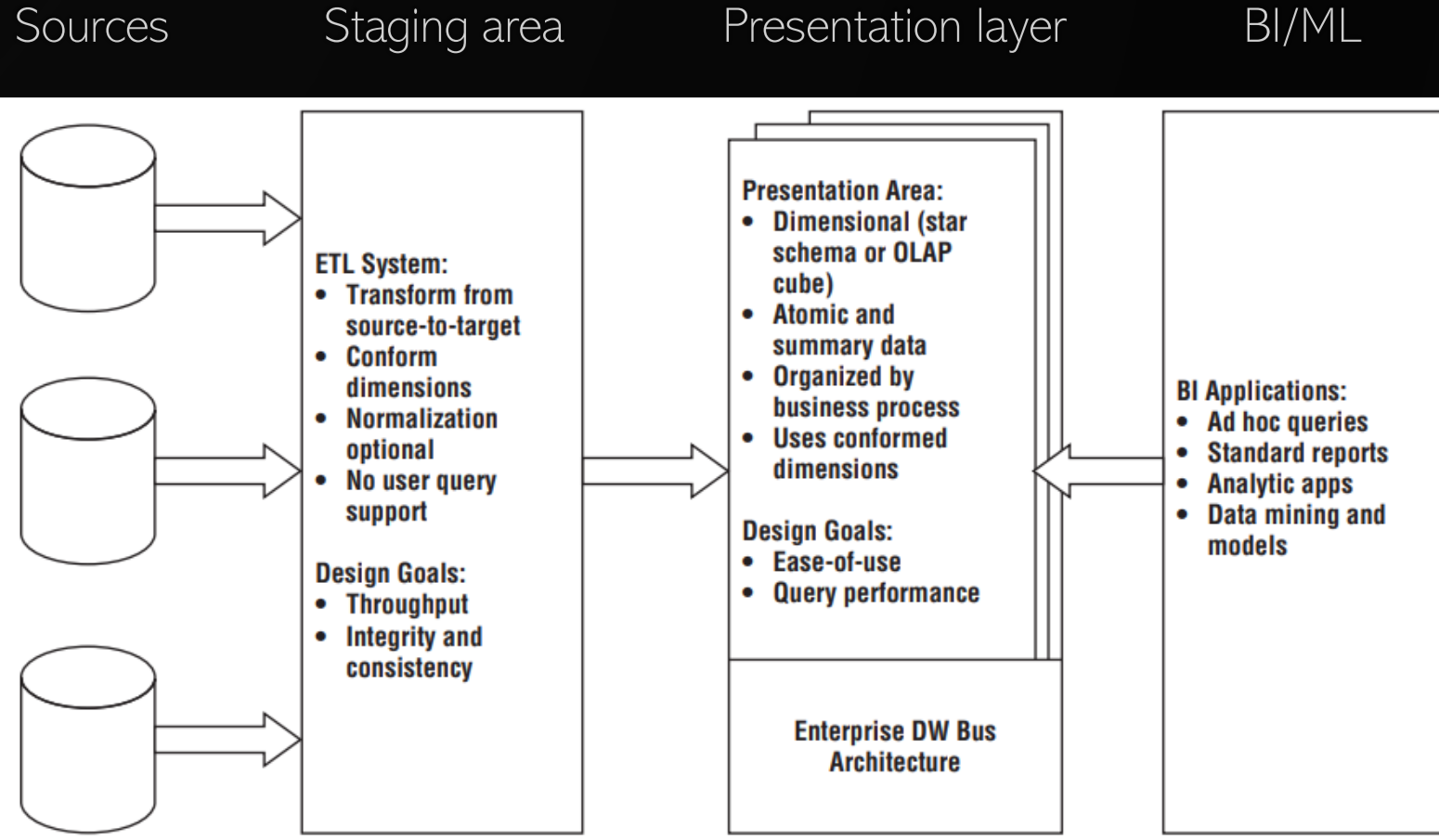
Sources

Staging area

Presentation layer



General architecture



Final words...

Final words...

- ◆ Dimensional modeling is fast and efficient way of modeling your analytical data.

Final words...

- ◆ Dimensional modeling is fast and efficient way of modeling your analytical data.
- ◆ But there are many more methods. And technology keeps on advancing.

Final words...

- ◆ Dimensional modeling is fast and efficient way of modeling your analytical data.
- ◆ But there are many more methods. And technology keeps on advancing.
 - ◆ DWH design
 - ◆ CIF/EDW (Bill Inmon)
 - ◆ Data Vault

Final words...

- ◆ Dimensional modeling is fast and efficient way of modeling your analytical data.
- ◆ But there are many more methods. And technology keeps on advancing.
 - ◆ DWH design
 - ◆ CIF/EDW (Bill Inmon)
 - ◆ Data Vault
 - ◆ DWH vs
 - ◆ Data Lake
 - ◆ Data Lakehouse