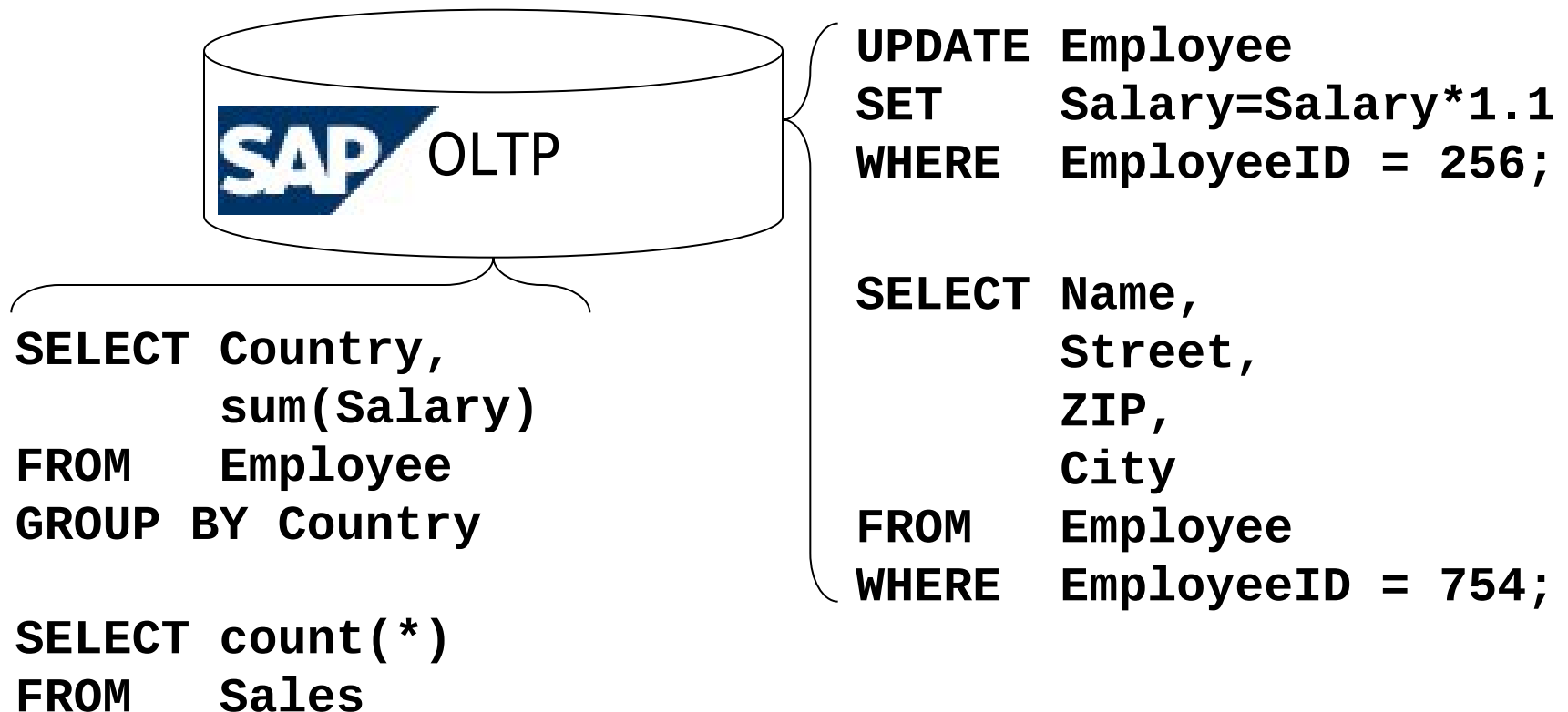


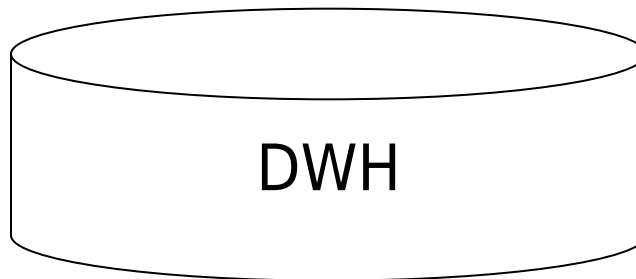
Star Model

Mag. Thomas Griesmayer

- An OLTP (Online Transactional Processing) system is designed to handle SELECT, INSERT, UPDATE and DELETE statements that affect a single row.



- During day only SELECT statements are submitted to the DWH (data warehouse) system .



```
SELECT Country,  
        sum(Salary)  
FROM Employee  
GROUP BY Country
```

```
SELECT Year,  
        Month,  
        City,  
        count(*)  
FROM Sales  
GROUP BY ...
```

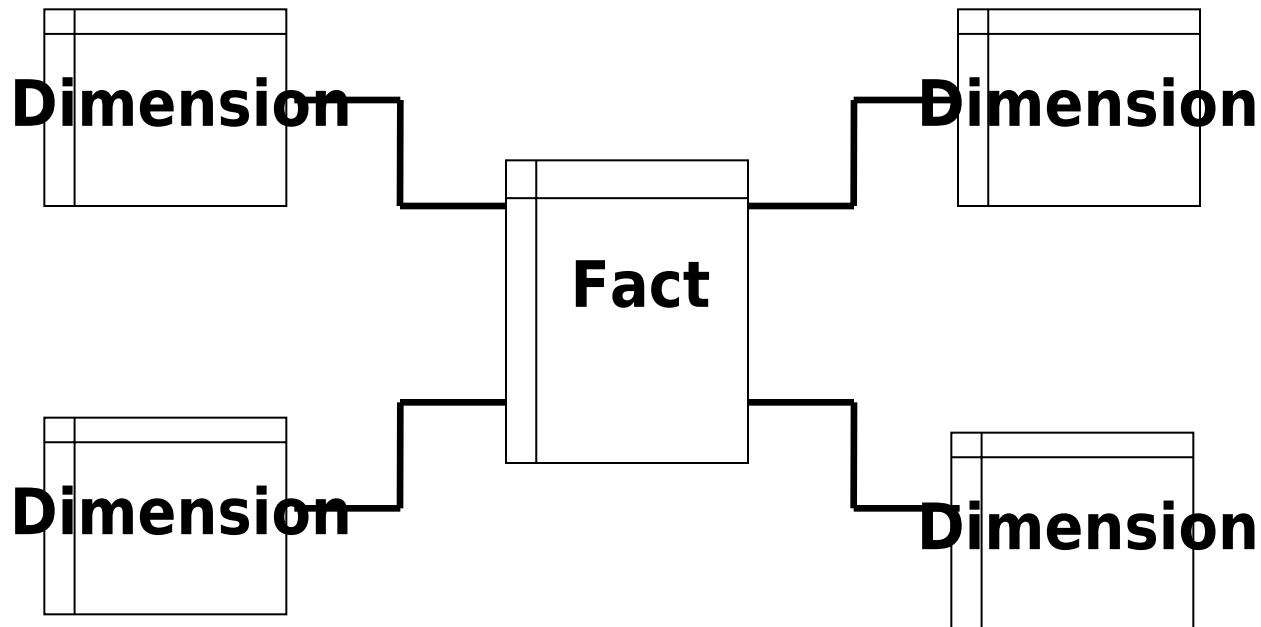
```
SELECT Year,  
        Month,  
        count(*)  
FROM Sales  
GROUP BY ...
```

Star Schema

- Many adhoc queries SELECT the same tables (Sales), dimensions (City) and measures (number of sales).
- A Star Schema represents multidimensional data.
- It is easy (especially OLAP Cubes) for the end users to handle data and to create their own reports.
- OLAP queries outperform relational database queries.
- A Star Schema contains:
 - dimension tables
 - fact tables

Tables

- One large central fact table is connected to multiple dimension tables.
- The arrangement of dimension tables and the fact table resembles a star.



Fact table

- The fact table contains the following columns:
 - multiple dimension ids
 - multiple measures
- The dimension id is a foreign key for joining with the corresponding dimension table.
- The foreign key ensures referential integrity.
!!! NO LEFT OUTER JOIN !!!
- The unique primary key of the fact table is a composite key of all dimension ids.

Fact table

Sales1	
	SalesDate
	ProductID
	ChannelID
	Returned
	Customer_CityID
	Duration
	Clicks
	Pieces
	Transactions

Dimension table

- Every dimension table consists of the following columns:
 - dimension id
 - description
 - hierarchy
- The dimension id is the unique primary key.

Dimension table

Product

	ProductID
	BookTitle
	BookAuthor
	NuberOfPages
	BookPublisher
	PublishDate
	ListPrice
	Price
	Department
	Category
	Subject
	BookReader

City

	CityID
	CityName
	ZIP
	SizeHA
	Buildings
	Residents2001
	Residents2005
	DistrictId

Dimension table

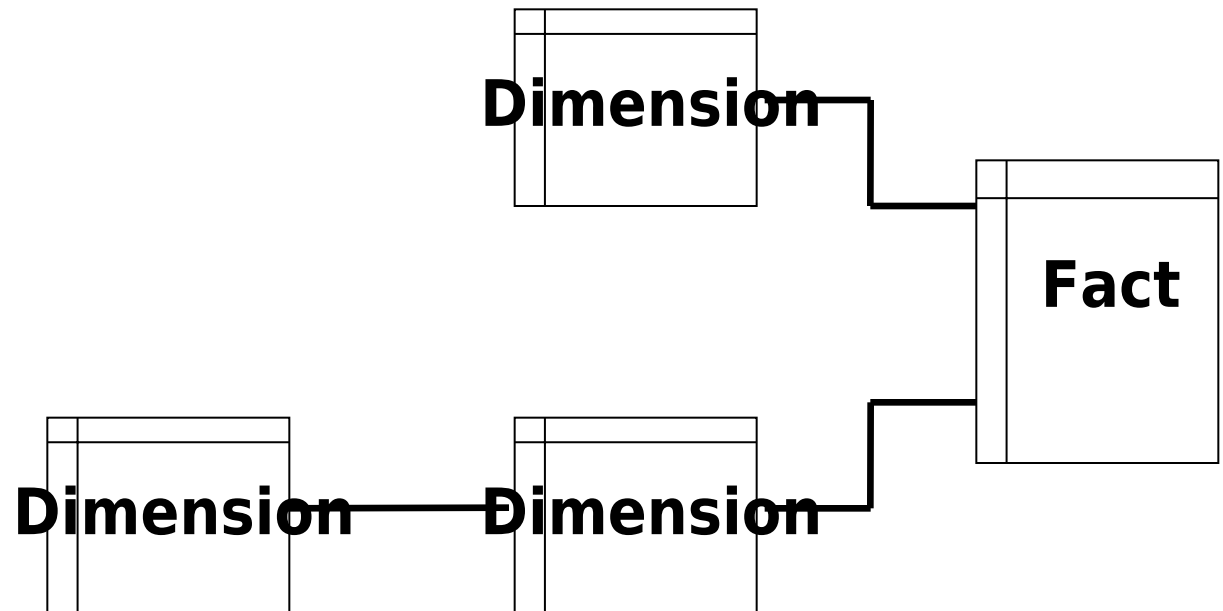
- A hierarchy is a logical structure that allows the aggregation of structured data based on different levels of detail.

Date	2007 - 03 - 12
Week	11
Month	March
Quarter	Q1
Year	2007

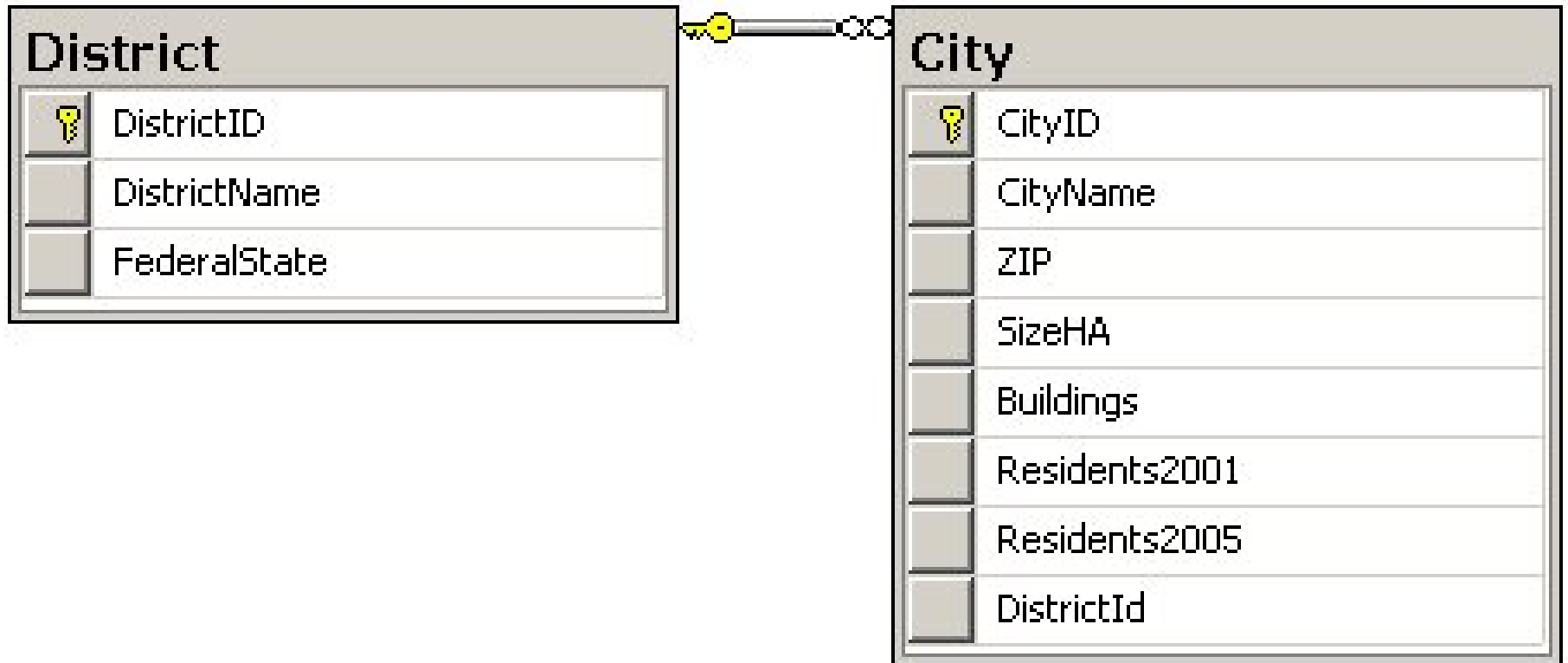
EmployeeID	163
Group	west
Department	key account
Division	sales
Companies	1062

Snowflake Schema

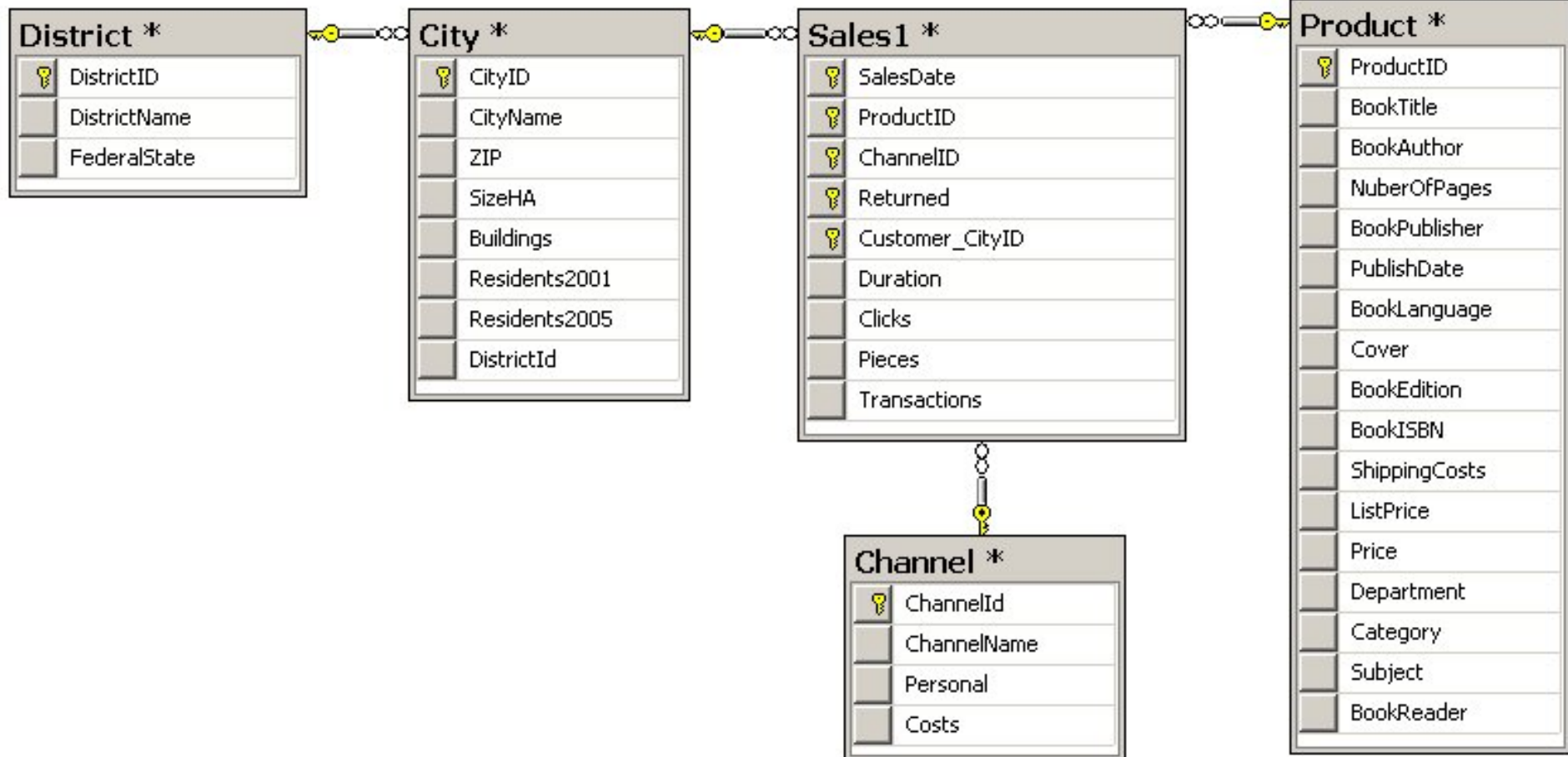
- In the Snowflake Schema several tables are joined to form a dimension.
- Sample: City District



Dimension table



Sample



Star Schema

- Instead of using a single fact table it can be better to split the large table into a couple of smaller fact tables to handle the diverse requirements of different departments.

Sales1	
	SalesDate
	ProductID
	Duration
	Pieces
	Transactions

Sales2	
	SalesDate
	Customer_CityID
	Duration
	Clicks
	Pieces
	Transactions