OBJECT ORIENTED MODEL

## DATABASE MANAGEMENT SYSTEM

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OBJECT ORIENTED MODEL

- Based on object-oriented programming language paradigm
- Concepts like inheritance, object-identity, encapsulation are used in data modeling
- It can be seen as extending ER model with notions of encapsulation, methods & object identity
- An object database is a database management system in which information is represented in the form of objects as used in object-oriented programming.
- Object databases are different from relational databases which are table-oriented.
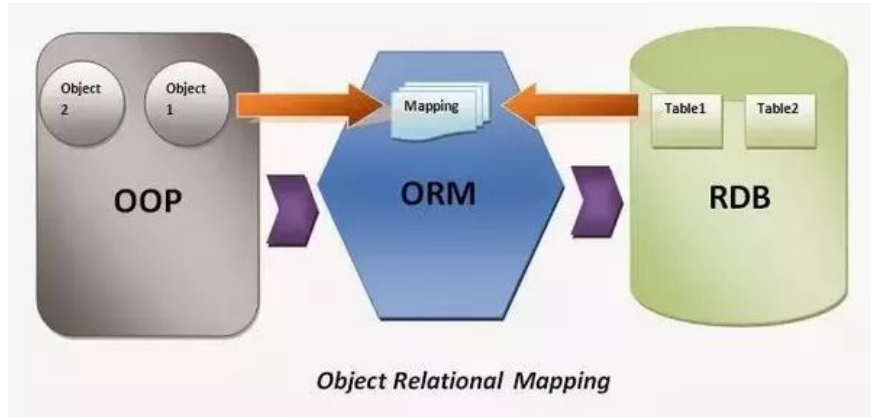- Example: db4o, Smalltalk and Cache
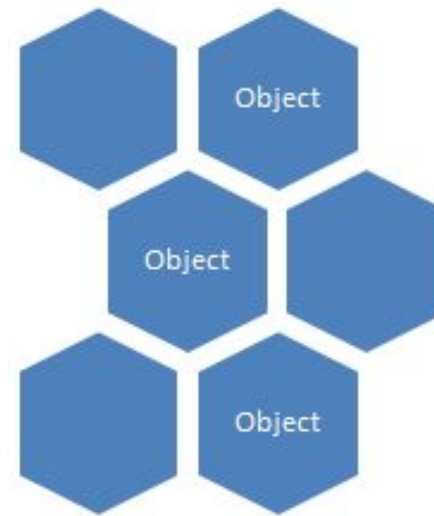
OBJECT ORIENTED MODEL
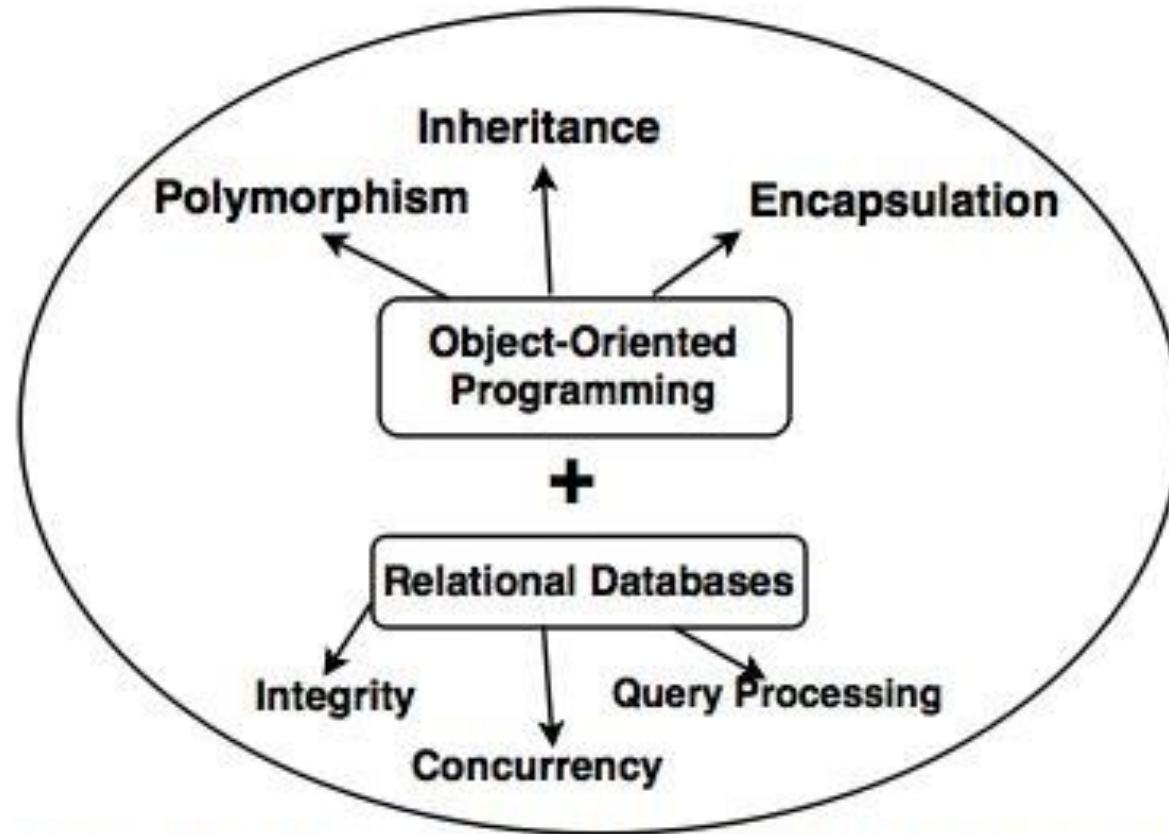
(Object-Oriented database is product of OOP and RDB)
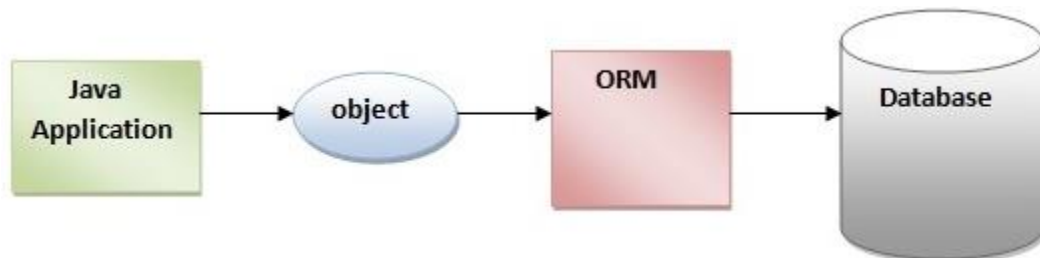
**Object-Oriented database**

OBJECT RELATIONAL MODEL / MAPPING

OBJECT RELATIONAL MODEL / MAPPING

- Uses a mapping layer to map between objects and tables.

- Mapping a data representation from an object model to a relational model with a SQL-based schema.

- Combines the advantages of Relational database and Object oriented programming.

- Extends the traditional relational model with a variety of features such as structured & collection types.

DISTRIBUTED DATABASES

- In distributed database system, the database is stored on several computers.
- Systems in Distributed Database System (DDS) communicate with one another via various communication media such as cable (TP, UTP, Fiber-Optical), wireless or telephone lines.
- DDS are typically geographically separated, administered & have a (slower) interconnection.
- Local transaction: that accesses data only from sites where the transaction was initiated.
- Global transaction: that either accesses data in a site different from one at which transaction was initiated or accesses data in several different sites.

DISTRIBUTED DATABASES
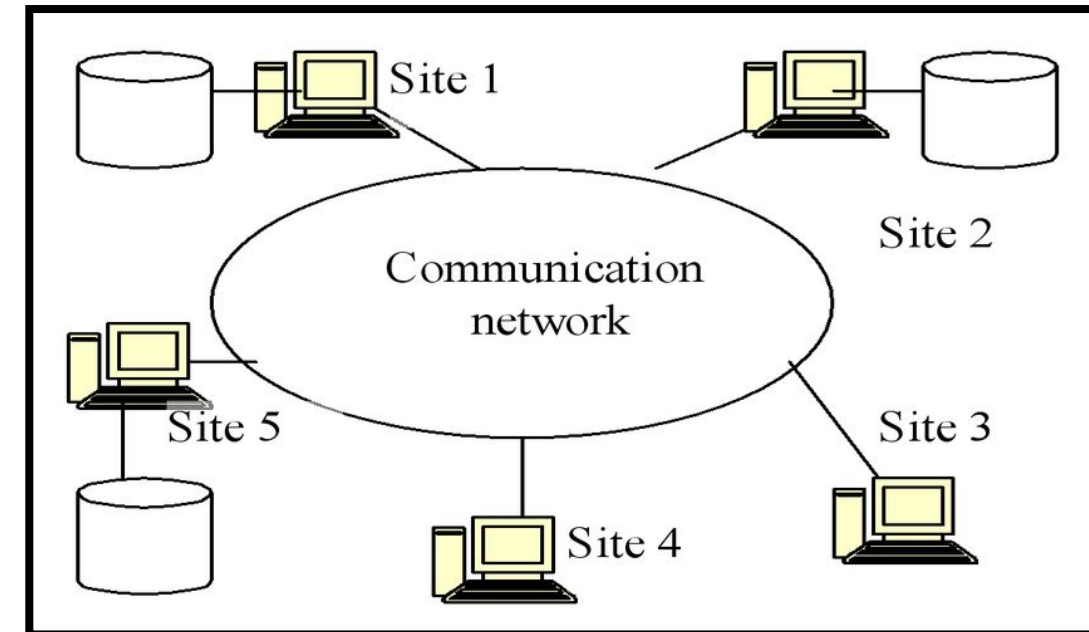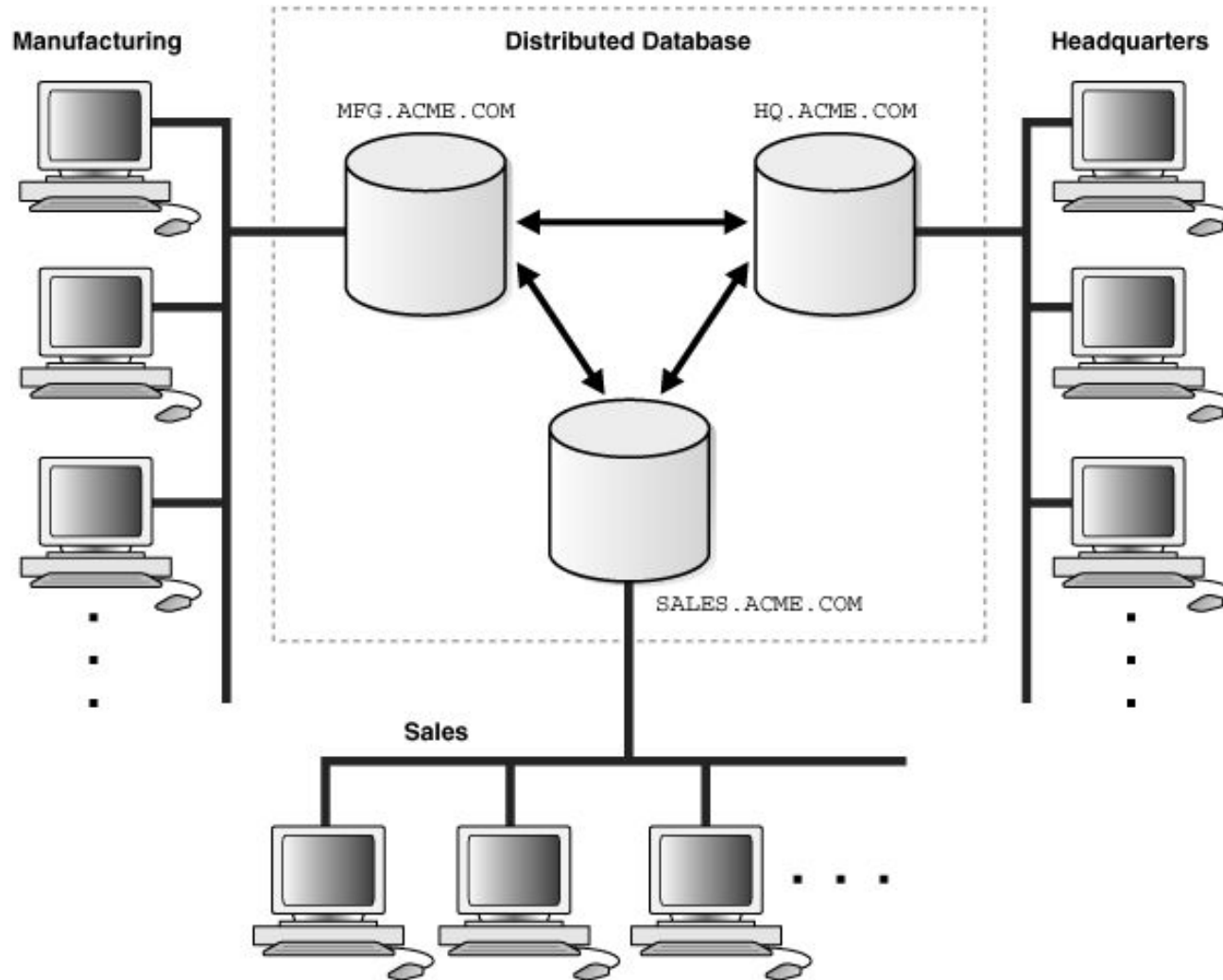
DISTRIBUTED DATABASES

Pros of a building a DDS:

- Sharing data between different sites

- Autonomy:
    - Control over data that are stored locally;
    - Responsibility is delegated (passed on) to local DBA for each site by global DBA.
    - Different degree of local autonomy

- Availability: Failure of one db doesn't hamper the entire system as other system are running. Data may reside in any system & will be useful in case of failure. System must detect failure of any site & appropriate action must be taken to continue smooth operation. When the failed site becomes active again, then system must have mechanism to integrate smoothly back to the system.
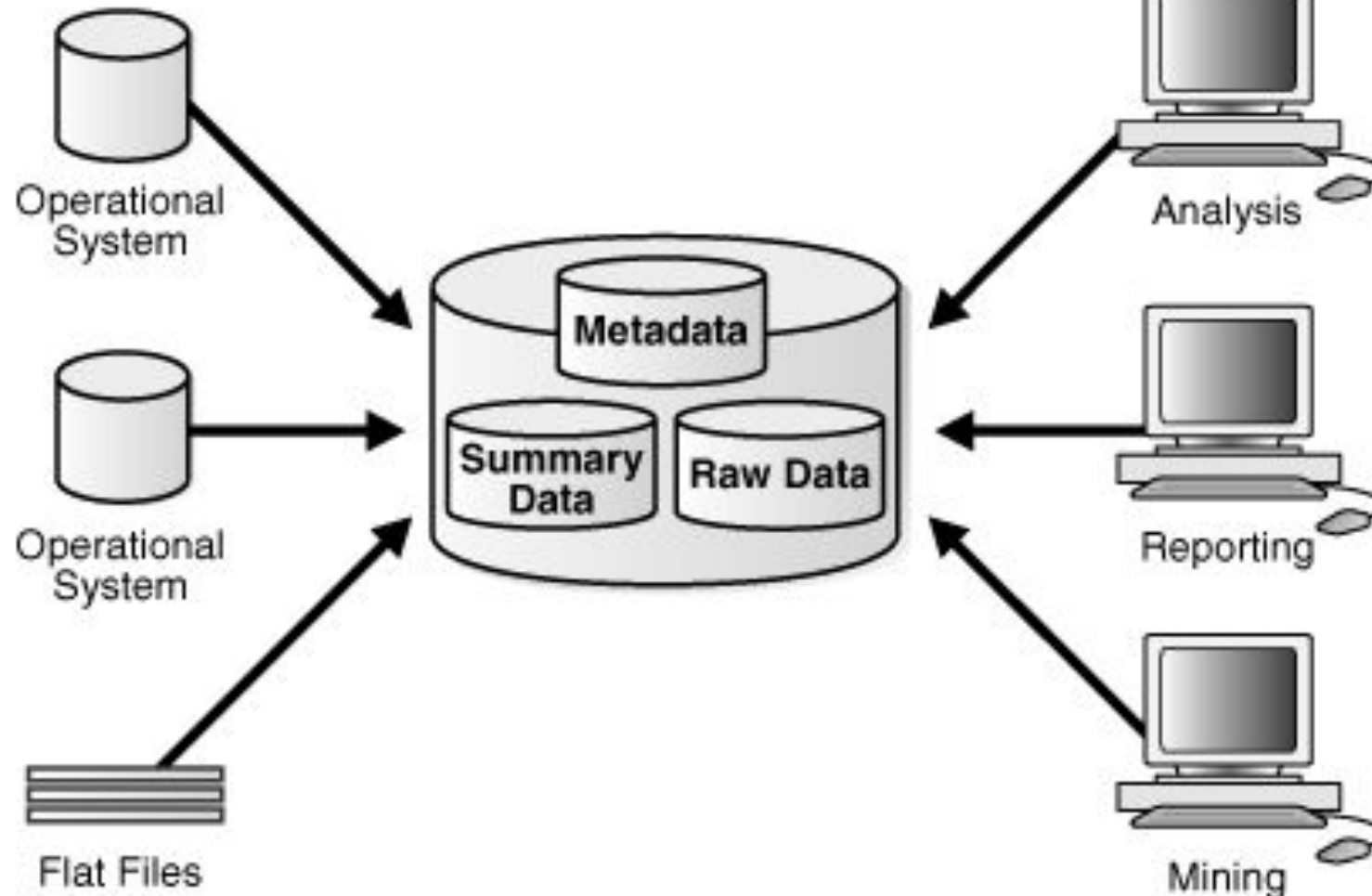
DATA WAREHOUSING

- Data Warehousing is a repository (archive) of information gathered from multiple sources, stored under a unified schema at a single site.

- Once gathered, data are stored for a long time, and can have permitted access to historical data.

- Thus, data warehousing provides the user a single consolidated interface to data, making decision support queries easier to write.

- Pros:
  - Improved end user access to a wide variety of users
  - Increased data consistency
  - Additional documentation of data
  - Potentially lower computing costs & increased productivity
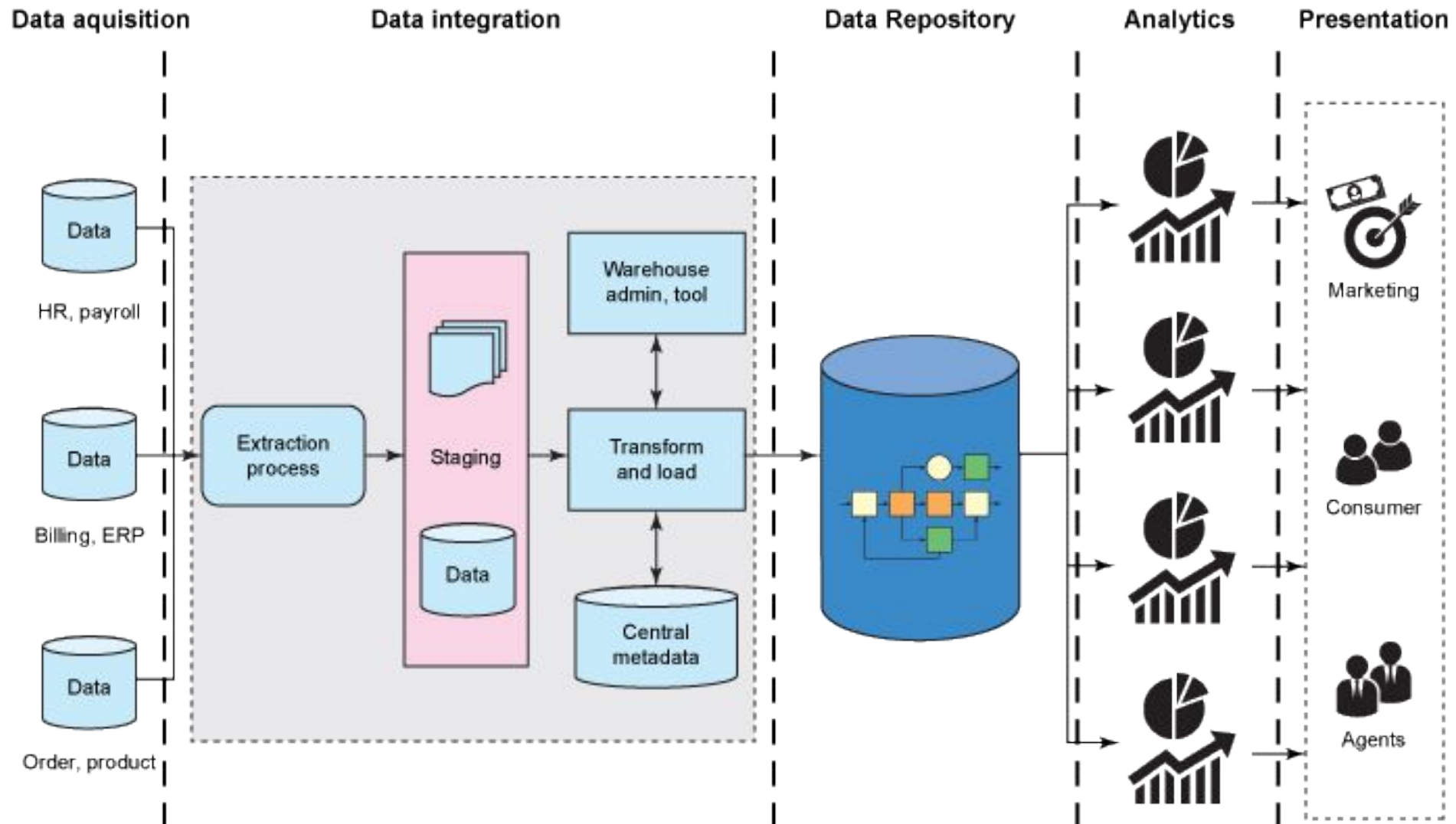 - Providing a place to combine related data from separate sources

DATA WAREHOUSING

DATA WAREHOUSING

Thank you

This marks the end of the syllabus.