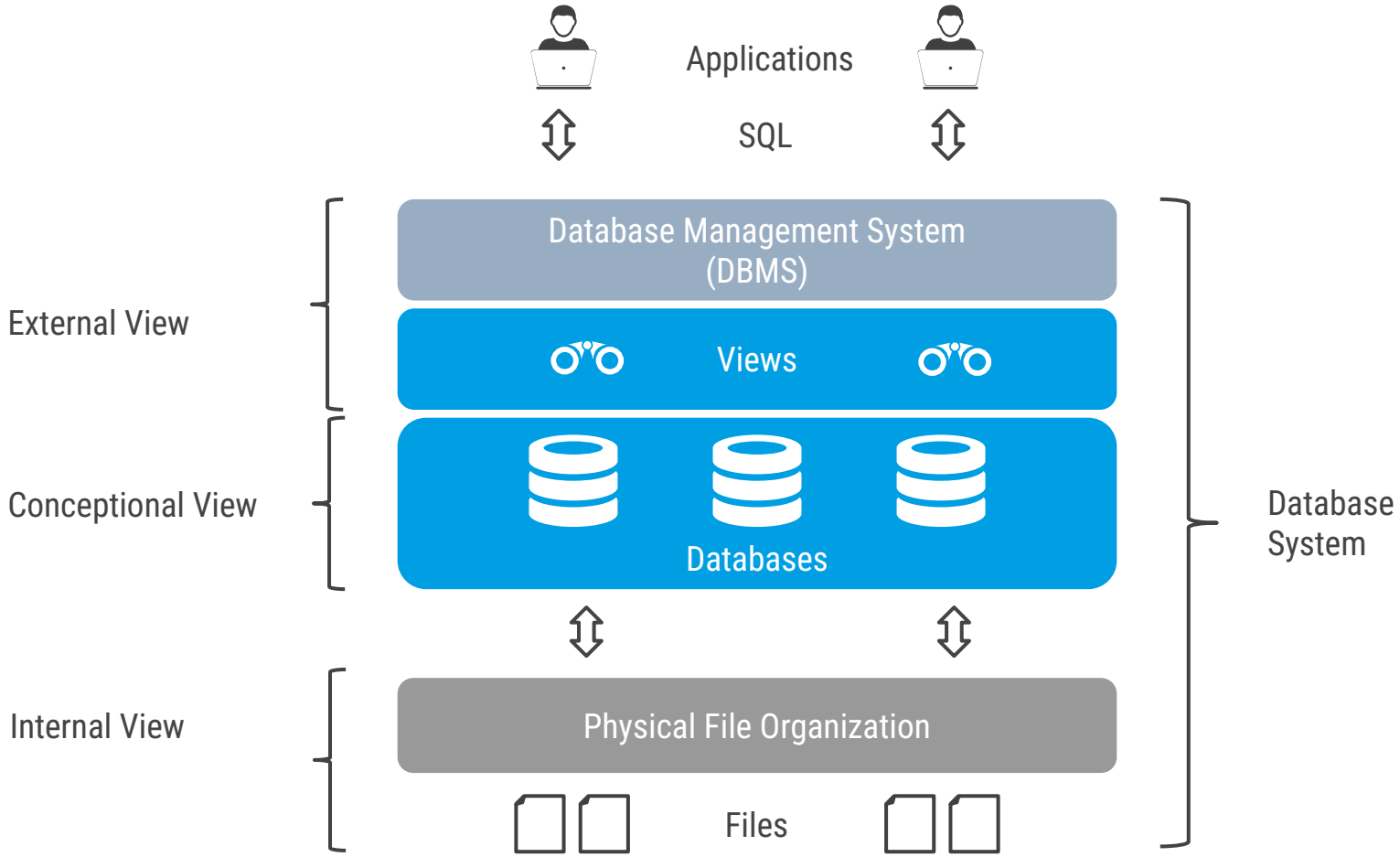
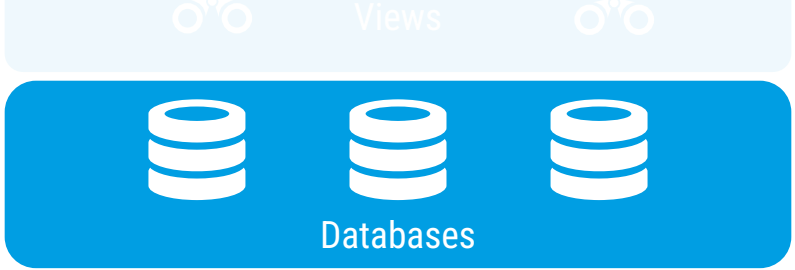
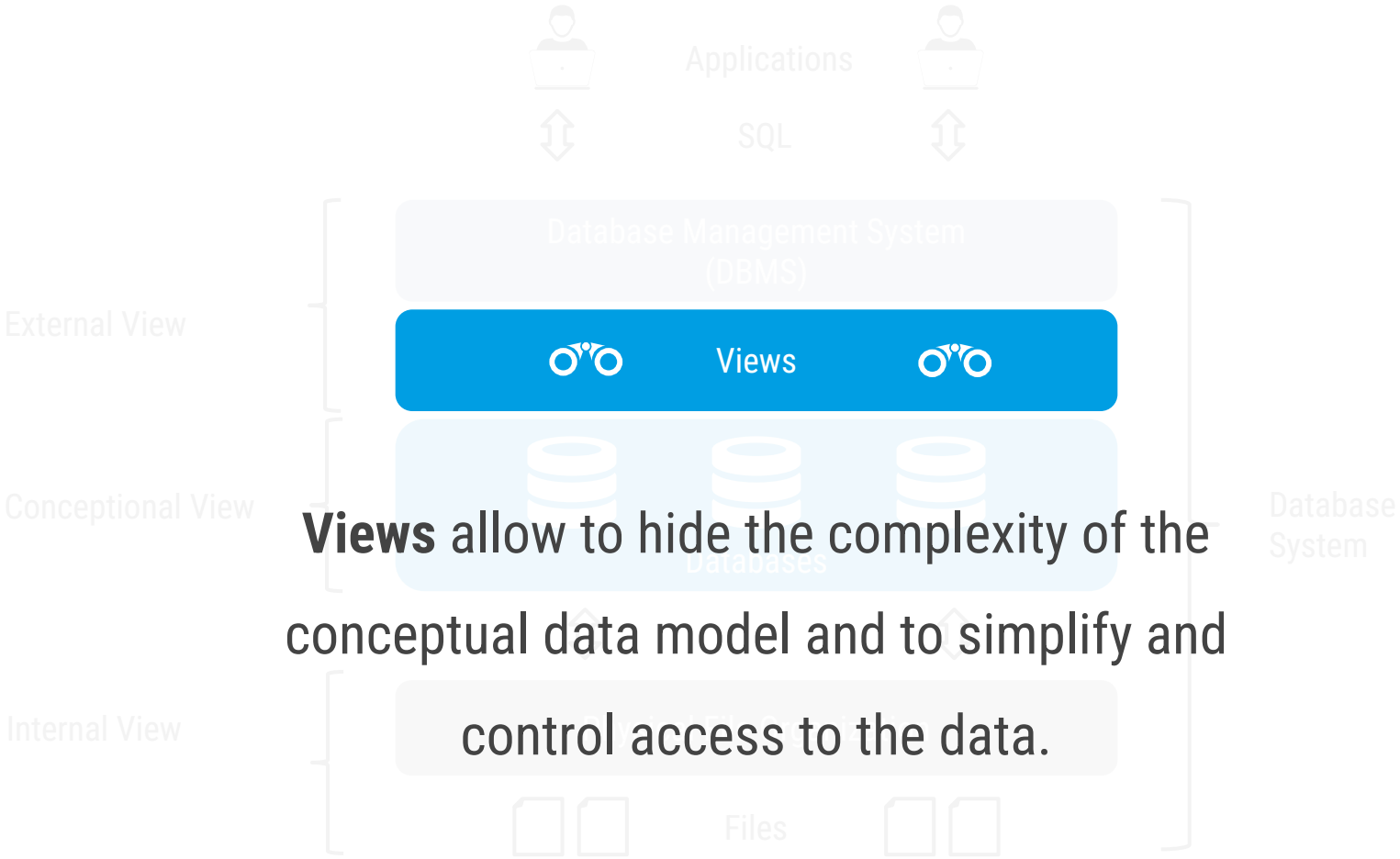
INFORMATION MANAGEMENT

WHAT IS A DATABASE?

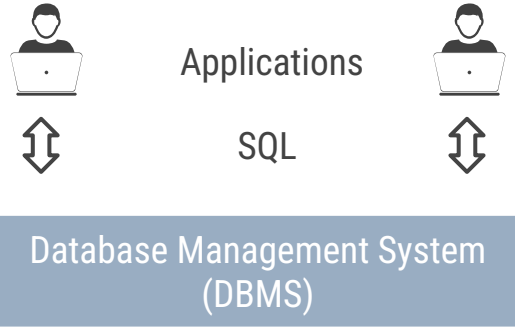

Applications
SQL
Database Management System
(DBMS)
External View
Views
Conceptional View
Databases
Database
System
Internal View
Physical File Organization
Files

A **database** is a centrally managed data pool, which is made accessible via application independent mechanisms





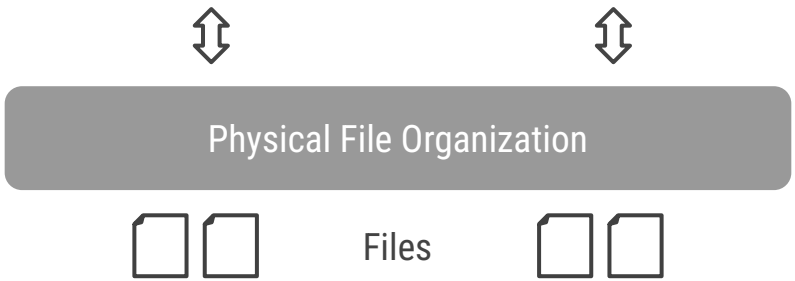
Views allow to hide the complexity of the conceptual data model and to simplify and control access to the data.



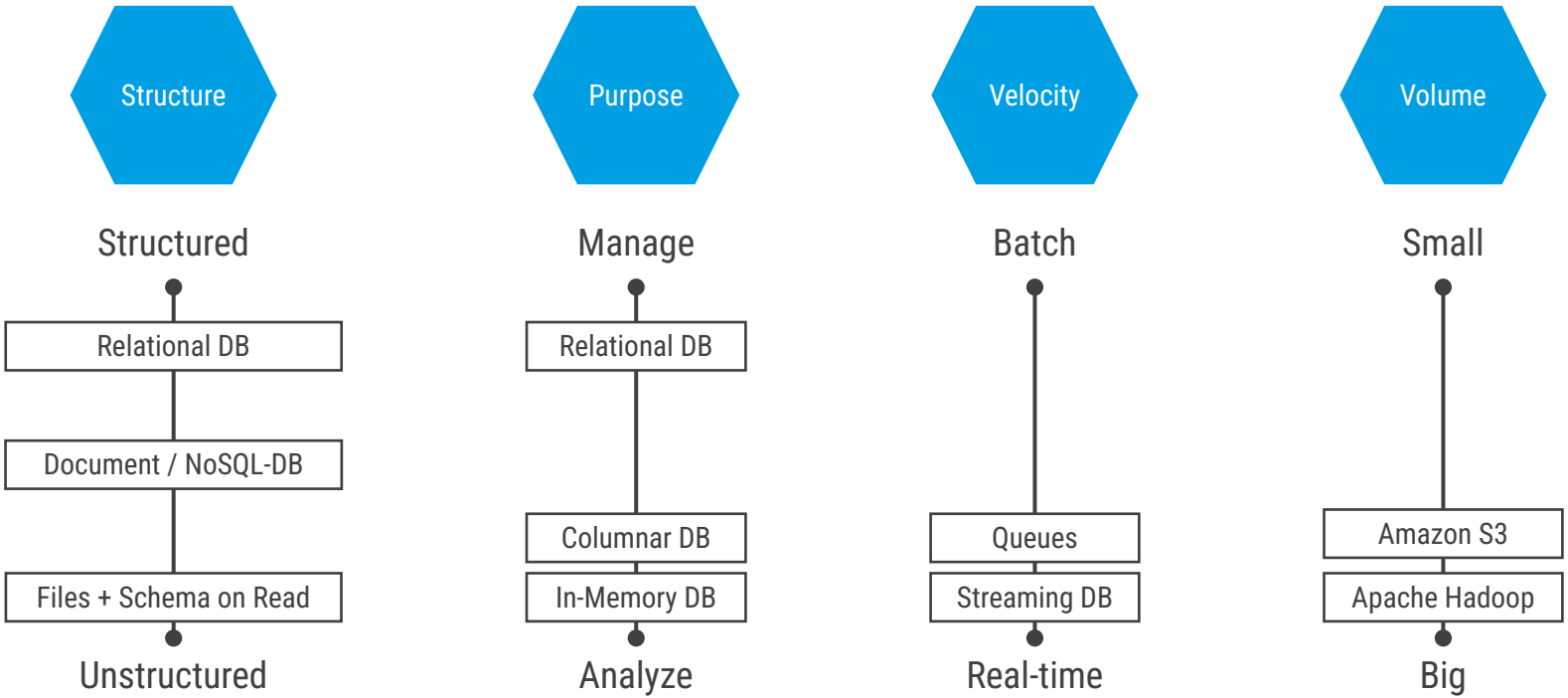
A **database management system (DBMS)** manages the data pool and enables simultaneous access by multiple applications and users.

The DBMS **manages** the data in the databases.

Databases eventually store their data on the computer's **files system**. Every database has its internal file organization. Luckily, the user need not deal with files, as this level is encapsulated and hidden.



A database system has many goals:

QUERY DATA	Select, Aggregate, Calculate, Filter	→	**SQL**
MANAGE DATA	Create, Read, Update, Delete (CRUD)	→	**SQL**
DATA INTEGRITY	Consistency, Non-Redundancy, Completeness	→	**Relational Model**
ENCAPSULATION	Hide Complexity, Simplify Access	→	**Views**
MULTI USER / APP	Read and write the same data simultaneously	→	**Transactions Server-Based**
PROTECT DATA	Let only authorized clients access data	→	**User, Rights, and Roles**

There are different types of databases: