



Data Warehouse Models

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OLTP

Complex data structures
(3NF databases)

Few

Many

Normalized
DBMS

Rare

Indexes

Joins

**Duplicated
Data**

**Derived Data
and Aggregates**

Data Warehouse

Multidimensional
data structures

Many

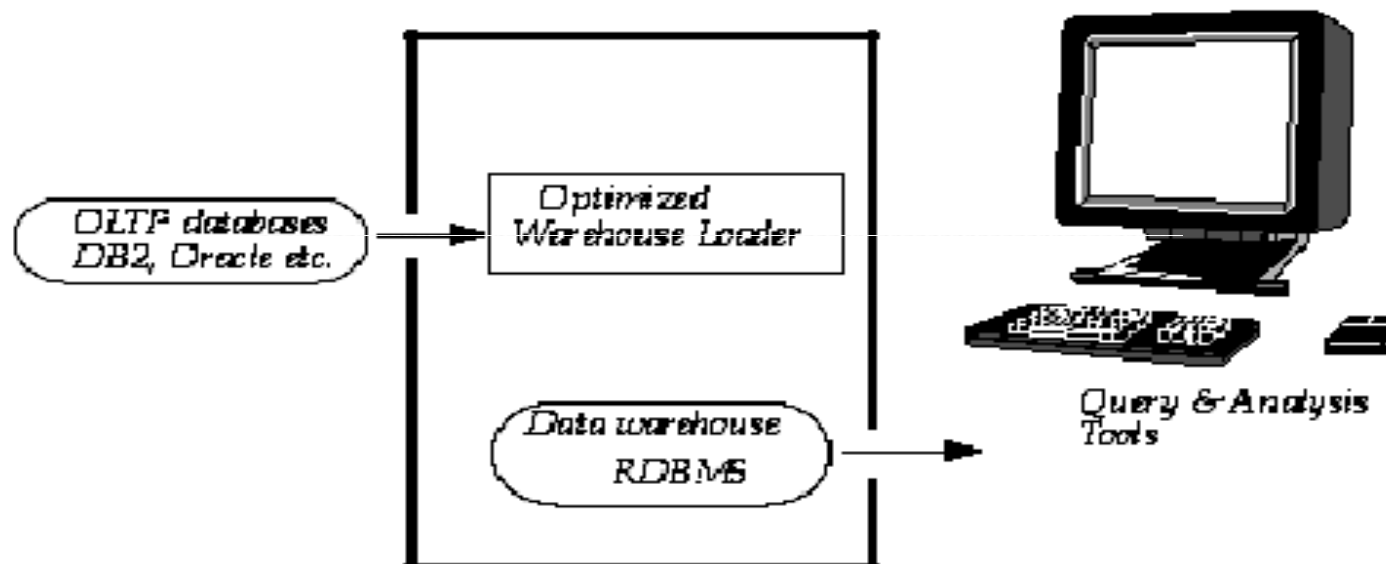
Some

Denormalized
DBMS

Common

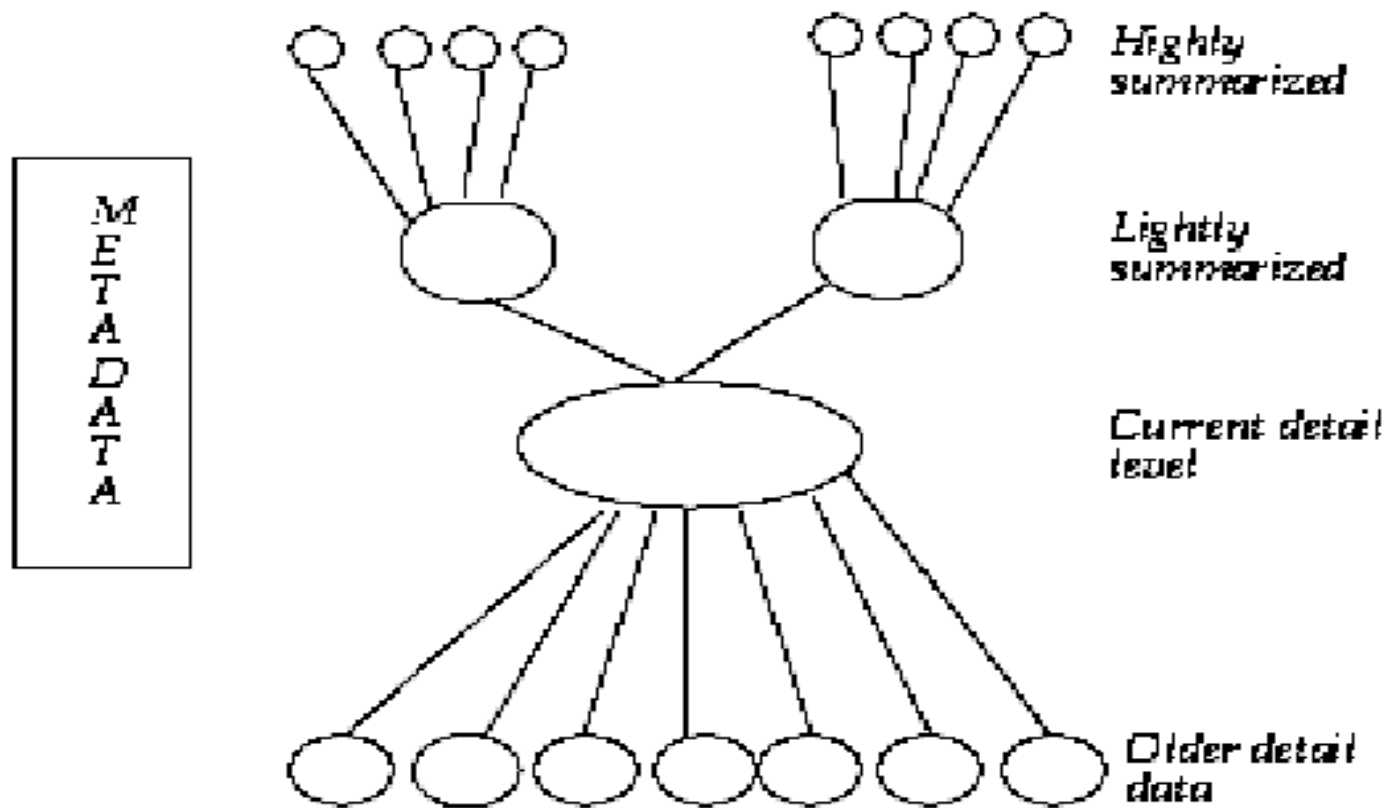


A Data Warehouse Model





The Structure of data inside the data warehouse





The Structure of data inside the data warehouse

- The current detail data is central in importance as it:
 - Reflects the most recent happenings, which are usually the most interesting;
 - It is voluminous as it is stored at the lowest level of granularity;
 - It is always (almost) stored on disk storage which is fast to access but expensive and complex to manage.



The Structure of data inside the data warehouse

- Older detail data is
 - It is stored on some form of mass storage,
 - it is infrequently accessed and stored at a level detail consistent with current detailed data.
- Lightly summarized data is
 - The data is distilled from the low level of detail found at the current detailed level and generally is stored on disk storage.

Note: When building the data warehouse have to consider what unit of time is summarization done over and also the contents or what attributes the summarized data will contain.



The Structure of data inside the data warehouse

- Highly summarized data is compact and easily accessible and can even be found outside the warehouse.
- Metadata is the final component of the data warehouse and is really of a different dimension in that it is not the same as data drawn from the operational environment but is used as:



The Structure of data inside the data warehouse

- a directory to help the DSS analyst locate the contents of the data warehouse,
 - a guide to the mapping of data as the data is transformed from the operational environment to the data warehouse environment,
 - a guide to the algorithms used for summarization between the current detailed data and the lightly summarized data and the lightly summarized data and the highly summarized data, etc



Data Modeling

- The three levels of data modeling:
 - ❑ conceptual data model,
 - ❑ logical data model,
 - ❑ and physical data model

Feature	Conceptual	Logical	Physical
Entity Names	✓	✓	
Entity Relationships	✓	✓	
Attributes		✓	
Primary Keys		✓	✓
Foreign Keys		✓	✓
Table Names			✓
Column Names			✓
Column Data Types			✓



Thank you