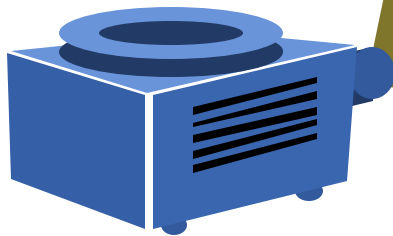


Data Warehouse

Concepts & Architecture



Data Warehouse Concepts

Topics To Be Discussed:

- Why Do We Need A Data Warehouse ?
- The Goal Of A Data Warehouse ?
- What Exactly Is A Data Warehouse ?
- Comparison Of A Data Warehouse And An Operational Data Store.
- Data Warehouse Trends.

Data Warehouse Concepts

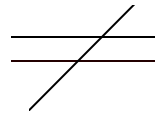
Why Do We Need A Data Warehouse ?



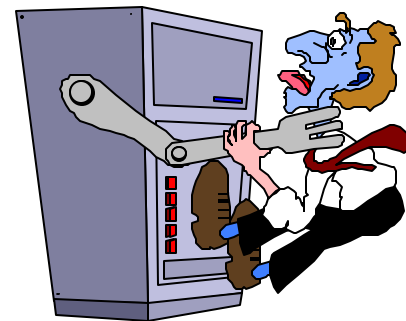
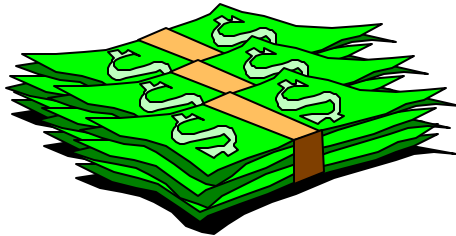
Data Warehouse Concepts

Why Do We Need A Data Warehouse ?

**BETTER !
FASTER !
CHEAPER !**



FUNCTIONALLY COMPLETE !



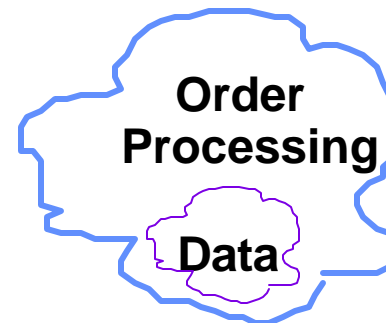
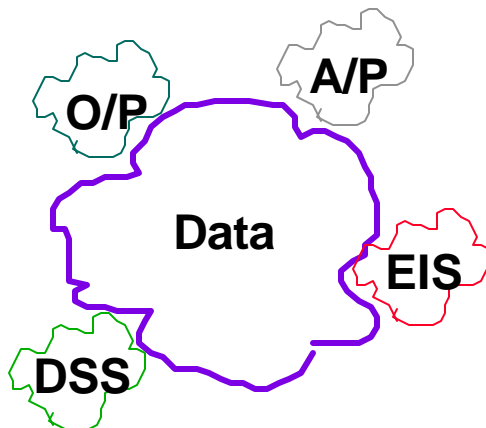
Data Warehouse Concepts

Data Warehouse Development Perspective

Data Driven

Vs.

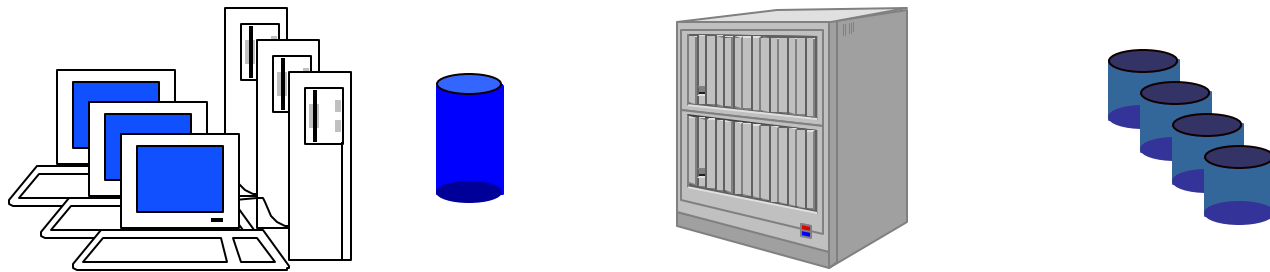
Function Driven



Data Warehouse Concepts

What Do We Need To Do ?

**Use Operational Legacy Systems' Data:
To Build Operational Data Store,
That Integrate Into Corporate Data Warehouse,
That Spin-off Data Marts.**



Some May Tell You To Develop These In Reverse!

Data Warehouse Concepts

Our Goal for A Data Warehouse ?

- **Collect Data-Scrub, Integrate & Make It Accessible**
- **Provide Information - For Our Businesses**
- **Start Managing Knowledge**
- **So Our Business Partners Will Gain Wisdom !**

Data Warehouse Concepts

Data Warehouse Definition

A Data Warehouse Is A Structured Repository of Historic Data.

It Is Developed in an Evolutionary Process By Integrating Data From Non-integrated Legacy Systems.

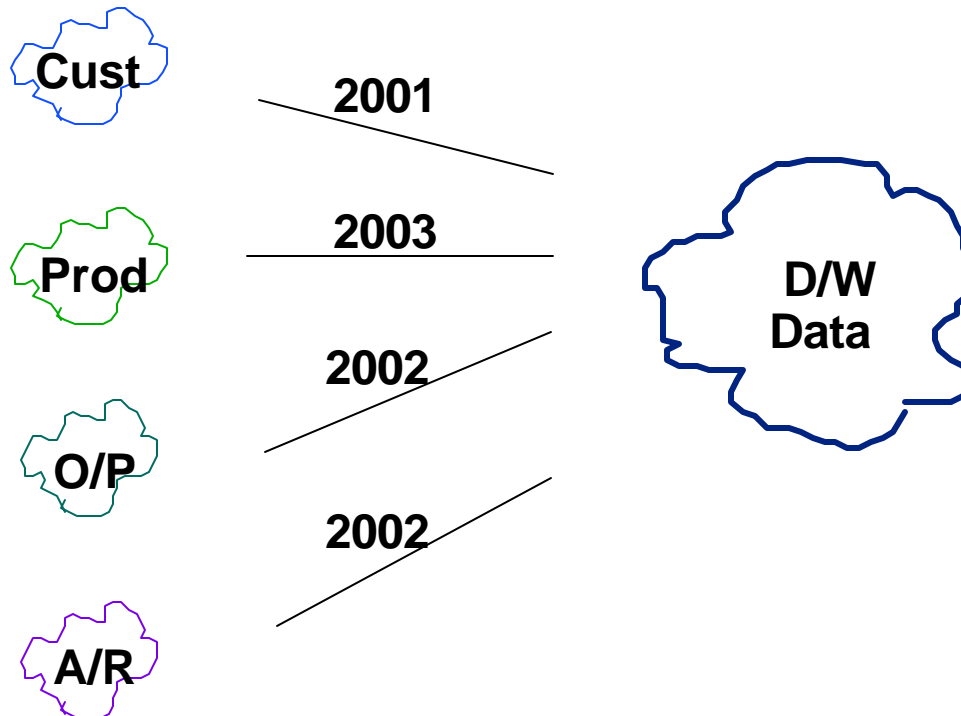
It Is Usually:

- **Subject Oriented**
- **Integrated**
- **Time Variant**
- **Non-volatile**

Data Warehouse Concepts

Subject Oriented

Data is Integrated and Loaded by Subject



Data Warehouse Concepts

Time Variant

Operational System

- **View of The Business Today**
- **Operational Time Frame**
- **Key Need Not Have Date**

Data Warehouse

- **Designated Time Frame (3 - 10 Years)**
- **One Snapshot Per Cycle**
- **Key Includes Date**

Data Warehouse Concepts

Integrated

Operational Systems

Order Processing **Order ID = 10**

Accounts Receivable **Order ID = 12**

Product Management **Order ID = 8**

HR System **Sex = M/F**

Payroll **Sex = 1/2**

Product Management **Sex = 0/1**

D/W

Order ID = 16

D/W

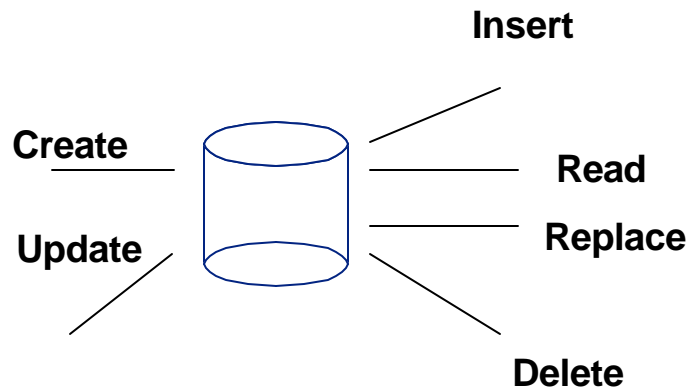
Sex = M/F

Data Warehouse Concepts

Non-Volatile

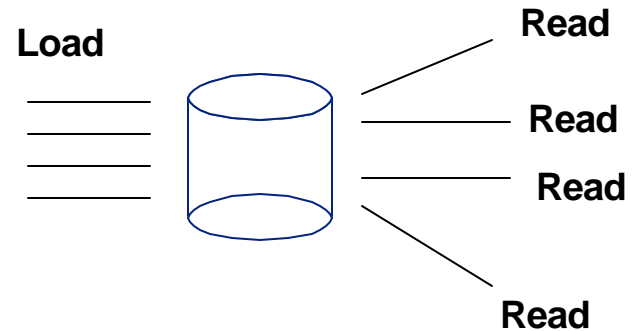
Operational System

- “CRUD” Actions



Data Warehouse

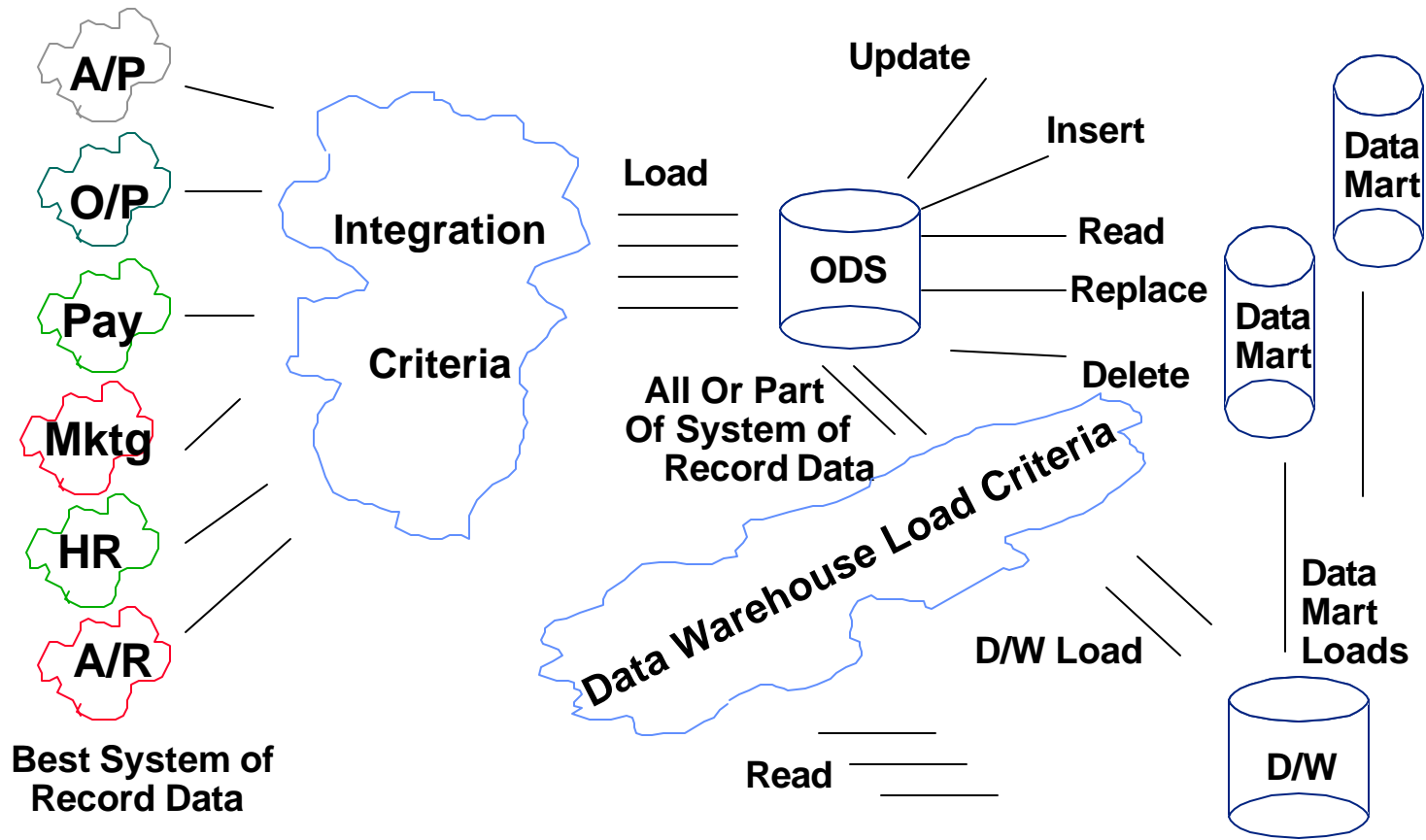
- No Data Update



Data Warehouse Concepts

Data Warehouse Environment Architecture

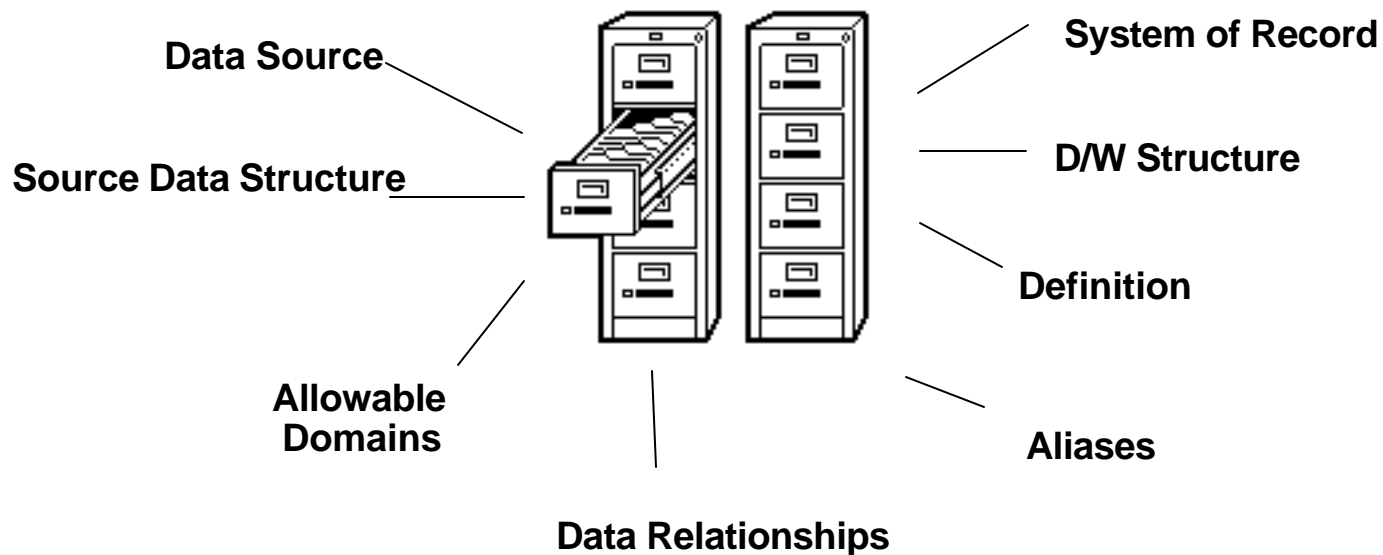
Contains Integrated Data From Multiple Legacy Applications



Data Warehouse Concepts

Meta Data - Map of Integration

The Data That Provides the “Card Catalogue” Of References For All Data Within The Data Warehouse



Data Warehouse Concepts

ODS Vs. Data Warehouse

| | Operational Data Store | Data Warehouse |
|---------------------------|---|--|
| Characteristics: | Data Focused Integration From Transaction Processing Focused Systems | Subject Oriented Integrated Non-Volatile Time Variant |
| Age Of The Data: | Current, Near Term (Today, Last Week's) | Historic (Last Mnth, Qtrly, Five Years) |
| Primary Use: | Day-To-Day Decisions Tactical Reporting Current Operational Results | Long-Term Decisions Strategic Reporting Trend Detection |
| Frequency Of Load: | Twice Daily , Daily, Weekly | Weekly, Monthly, Quarterly |

Data Warehouse Concepts

Building The Data Warehouse

Tasks

- **Define Project Scope**
- **Define Business Reqmts**
- **Define System of Record Data**
- **Define Operational Data Store Reqmts**
- **Map SOR to ODS**
- **Acquire / Develop Extract Tools**
- **Extract Data & Load ODS**

Deliverables

- **Scope Definition**
- **Logical Data Model**
- **Physical Database Data Model**
- **Operational Data Store Model**
- **ODS Map**
- **Extract Tools and Software**
- **Populated ODS**

Data Warehouse Concepts

Building The Data Warehouse

(Continued)

Tasks

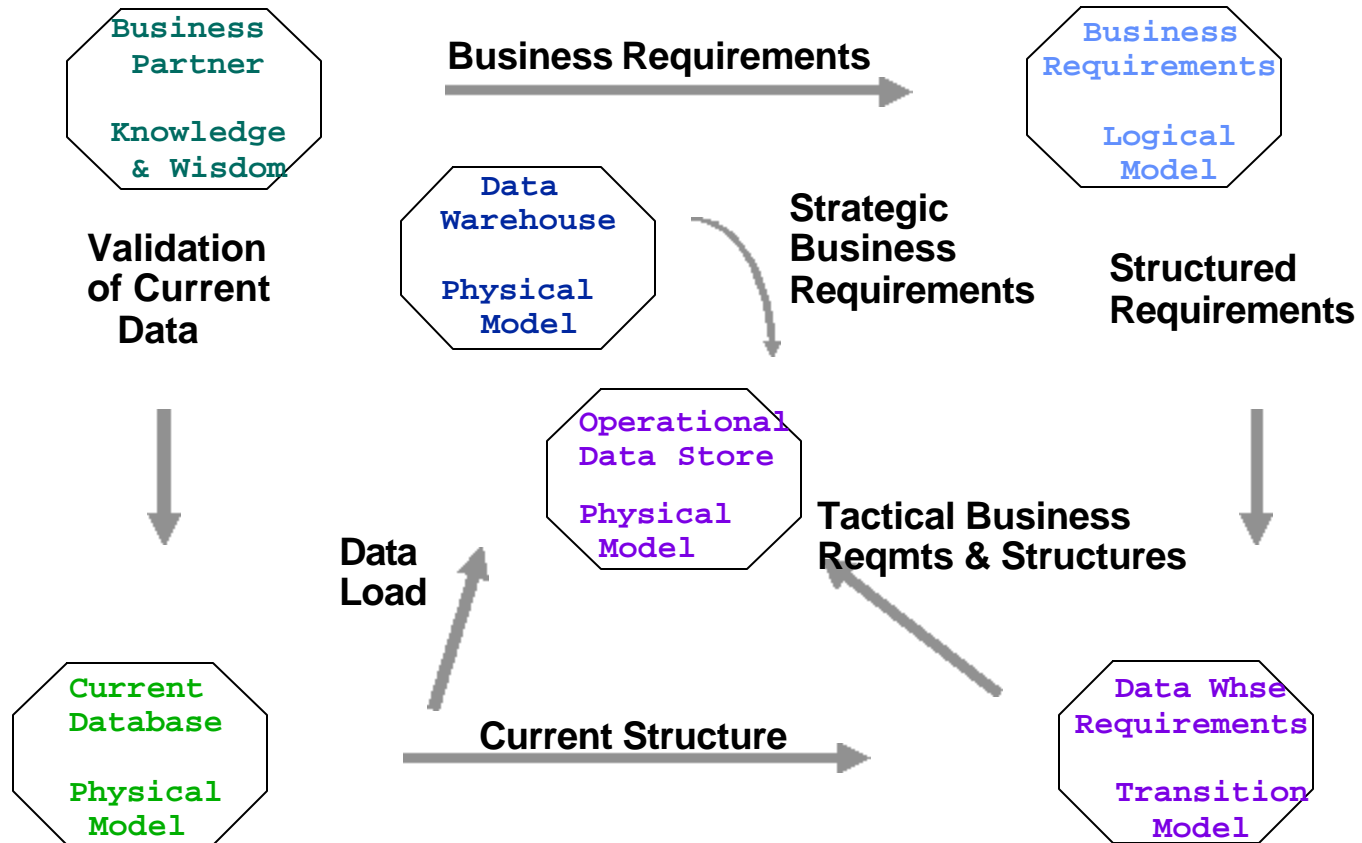
- Define D/W Data Reqmts
- Map ODS to D/W
- Document Missing Data
- Develop D/W DB Design
- Extract and Integrate D/W Data
- Load Data Warehouse
- Maintain Data Warehouse

Deliverables

- Transition Data Model
- D/W Data Integration Map
- To Do Project List
- D/W Database Design
- Integrated D/W Data Extracts
- Initial Data Load
- On-going Data Access and Subsequent Loads

Data Warehouse Concepts

Relationship Among Data Warehouse Data Models

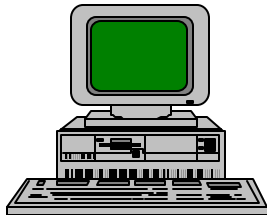


Data Warehouse Concepts

Sources of Data Warehouse Data



Archives
(Historic Data)



**Current Systems
of Record**
(Recent History)



**Operational
Transactions**
(Future Data Source)

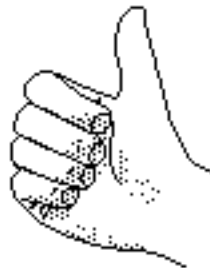


**Enterprise
Data Warehouse**

Data Warehouse Concepts

Appropriate Uses of Data Warehouse Data

- **Produce Reports For Long Term Trend Analysis**
- **Produce Reports Aggregating Enterprise Data**
- **Produce Reports of Multiple Dimensions
(Earned revenue by month by product by branch)**



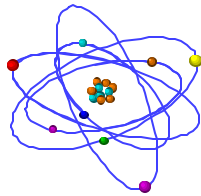
Data Warehouse Concepts

Inappropriate Uses of Data Warehouse Data

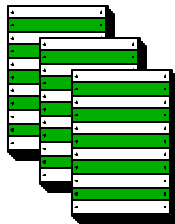
- **Replace Operational Systems**
- **Replace Operational Systems' Reports**
- **Analyze Current Operational Results**

Data Warehouse Concepts

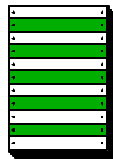
Levels of Granularity of Data Warehouse Data



• **Atomic (Transaction)**



• **Lightly Summarized**

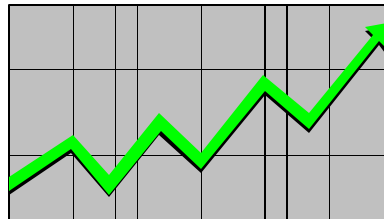
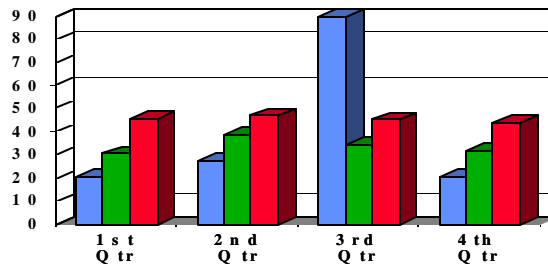


• **Highly Summarized**

Data Warehouse Concepts

Options for Viewing Data

- **Text**



Data Warehouse Concepts

Next Steps In Data Warehouse Evolution

- **Use It - Analyze Data Warehouse Data**
- **Determine Additional Data Requirements**
- **Define Sources For Additional Data**
- **Add New Data (Subject Areas) to Data Warehouse**

Data Warehouse Concepts

Future Trends In Data Warehouse

- **Increased Data Mining**
Exploration
Prove Hypothesis
- **Increase Competitive Advantage**
(i.e., Identify Cross-selling Opportunities)
- **Integration into Supply Chain & e-Business**

Data Warehouse Concepts

Summary

A Data Warehouse Is A Structured Repository of Historic Data.

It Is:

- **Subject Oriented**
- **Integrated**
- **Time Variant**
- **Non-volatile**

It Contains:

- **Business Specified Data,**
To Answer Business Questions

Data Warehouse Concepts

Questions and Answers

