Information Policy

Data Warehouse

D07. Structure of DW

- Code: 164323-03
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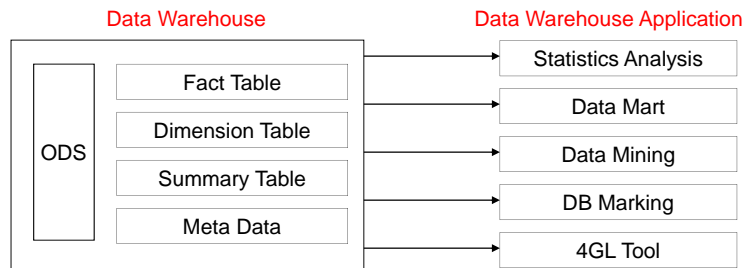- Professor: Sync Sangwon Lee, Ph. D

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01. Basic Structure of DW

- Basic Structure of DW

<div style="text-align:center">

Data Warehouse   Data Warehouse Application

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ODS	Fact Table	→	Statistics Analysis
	Dimension Table	→	Data Mart
	Summary Table	→	Data Mining
	Meta Data	→	DB Marking
		→	4GL Tool

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02. Data Mart

- Data Mart
  - A system with small data by small users on a restricted subject
  - Goal
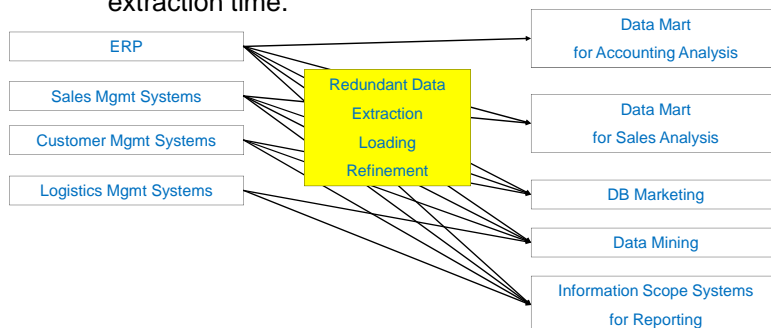   - Various analysis and forecasting for each department

OLTP Systems → Data Extraction → Data Mart → Users of Each Department

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02. Data Mart

- Data Mart
  - Merits
    - Low expense
    - Speedy implementation
  - Demerits
    - Direct extraction from operation systems
    - Automation is compulsory.
    - As more the number of data marts is, the more the burden of IS team is.
    - Concrete contents, depth, scope, and presentation of data marts are small-user-oriented.
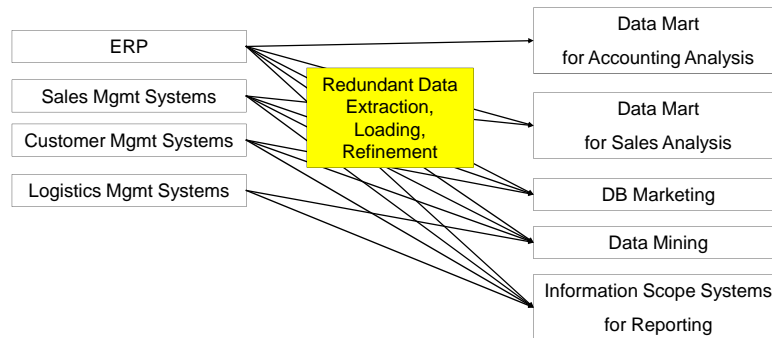   - ➔ Short lived

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02. Data Mart

- Danger of Independently Existing Data Marts
  - It's dangerous for data marts to be implemented according to the development of the situation without enterprise vision.
  - Redundant extraction/loading of data from several OLAP systems
    - ➔ It's possible to damage the consistency of data according to extraction time.

ERP	Redundant Data Extraction Loading Refinement	Data Mart for Accounting Analysis
Sales Mgmt Systems		Data Mart for Sales Analysis
Customer Mgmt Systems		DB Marketing
Logistics Mgmt Systems		Data Mining
		Information Scope Systems for Reporting

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02. Data Mart

- Data Mart Coexisting with ODS(Operational Data Store)
  - Problems of single-existing data mart
    - ➔ ODS should be implemented in the middle phase.
    - ➔ It is desirable to implement data marts after implementing ODS.
    - ➔ It is desirable for data mart to extract data from ODS and analyze them by use of SQL.

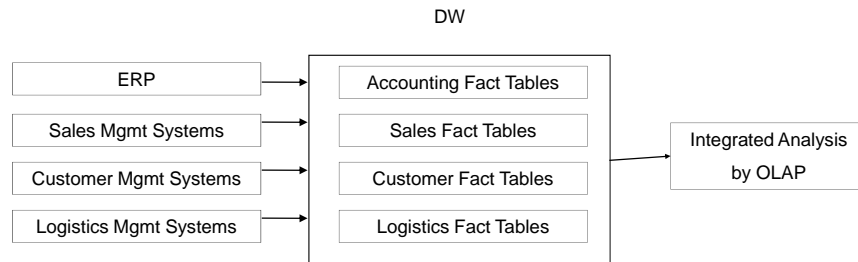| ERP		Data Mart for Accounting Analysis
Sales Mgmt Systems	Redundant Data Extraction, Loading, Refinement	Data Mart for Sales Analysis
Customer Mgmt Systems		DB Marketing
Logistics Mgmt Systems		Data Mining
		Information Scope Systems for Reporting

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03. DW vs. ODS

- DW without ODS
  - Extracting data from each operation system by programs
    - ➔ Direct loading on fact tables at DW
    - ➔ Operation systems play a role of data extraction.
  - Merits
    - DW server has no burdens for extraction.
    - Absence of ODS ➔ Decreasing disk volume ➔ Low cost
  - Demerits
    - Implementing fact tables ➔ Burdens on operation systems
    - Many programs for extraction are needed.

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03. DW vs. ODS

- DW without ODS
  - Ex.

DW

ERP	→	Accounting Fact Tables
Sales Mgmt Systems	→	Sales Fact Tables
Customer Mgmt Systems	→	Customer Fact Tables
Logistics Mgmt Systems	→	Logistics Fact Tables

→ Integrated Analysis by OLAP
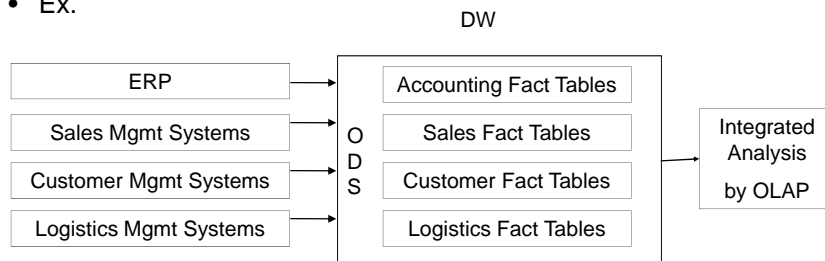
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03. DW vs. ODS

- DW with ODS
  - Extracting data from host as SAM files
    - ➔ Loading on ODS
    - ➔ Integrating/Refining data
  - Generally accepted because of small burdens on host
  - Merits
    - Easy to implement enterprise DW
      - ➔ Easy to expand data stored at ODS
    - DW do not effect on operation systems except extraction.
    - It is possible to implement and maintain DW independently of operation systems.
  - Demerits
    - Huge ODS
    - Burdens on refinement and integration
      - ➔ Huge volume of hardware is need.

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03. DW vs. ODS

- DW with ODS
  - Ex.

DW

ERP	→		Accounting Fact Tables		Integrated Analysis by OLAP
Sales Mgmt Systems	→	O D S	Sales Fact Tables	→	
Customer Mgmt Systems	→		Customer Fact Tables		
Logistics Mgmt Systems	→		Logistics Fact Tables		

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04. Top Down / Bottom Up

- Top Down / Bottom Up
  - MOLAP: Bottom-up
    - Suitable for data marts
  - ROLAP: Top-down
    - Suitable for DW
  - It's difficult to implement DW after implementing Data Mart.
    - There are many redundant data in Data Mart.
    - Each promotion subject of each Data Mart is different.
  - It's desirable to implement DW as long-planned.
  - If it's inevitable to implement Data Mart before implementing DW, implement ODS together.

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05. Enterprise-wide DW

- Reasons to Implement DW
    - Global competition
    - Fast decision making
    - Needs for integrated data
    - Needs for scientific management methods
    - Needs for correct number-based management
    - Customer's needs for products and services

Nowadays, most of enterprises implement DW.

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05. Enterprise-wide DW

- Enterprise-wide DW
    - It exists for information infrastructure
        - Cf. General DW exists for multi-dimensional analysis of data.
    - Functions
        - Storing data for various data analysis
        - Integrating data of sporadic operation systems strategically
        - Setting up strategic planning to extract data from operation systems
        - Maintaining huge meta data for operation systems
        - Supporting data mining
        - Having flexible structure

The kernel of enterprise-wide DW is the integration of IS.

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