

Data Warehouse Architectures

Overview of the Corporate Information
Factory and Dimensional Modeling



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Introduction

Rosendo Abellera

- ▶ **President, BIS3**
 - Nearly 2 decades software and system development
 - 12 years in DW and BI space
 - 25+ years of data and intelligence/analytics
- ▶ **Accenture**
- ▶ **Toshiba**
- ▶ **National Security Agency (NSA)**
- ▶ **US Air Force**

Data Warehouse Architect:

- | | |
|----------------------------------|------------------------|
| ❖ Comcast | ❖ Mercury |
| ❖ John Hancock Financials | ❖ Lawson |
| ❖ Manulife | ❖ Global Signal |
| ❖ Engelhard (BASF) | ❖ Diamond.com |
| | ❖ NationsRent |

Other Notable Data Projects:

- | | |
|-------------------------|--------------------------|
| ❖ LexisNexis | ❖ US Steel |
| ❖ ESPN | ❖ British Telecom |
| ❖ AAA | ❖ Pfizer |
| ❖ Staples | ❖ Toyota |
| ❖ Boston College | ❖ Partech |



What is a Data Warehouse?

A data warehouse is a repository of an organization's electronically stored data designed to facilitate reporting and analysis.

- ❖ Subject-oriented
 - ❖ Non-volatile
 - ❖ Integrated
 - ❖ Time-variant

Reference: Wikipedia

Prevalent Data Warehousing Terms

Enterprise Data Warehouse **BILL INMON**

Corporate Information Factory

Data Mart Operational Data Store

Snowflake **3rd Normal Form**

Dimensional Modeling **Star Schema**

RALPH KIMBALL **Slowly Changing Dimensions**

Which Approach Is Each DW Term Most Associated With?

Corporate
Information
Factory



- 3rd Normal Form
- Bill Inmon
- Data Mart
- Enterprise Data Warehouse
- Hub and Spoke
- Operational Data Store
- Ralph Kimball
- Slowly Changing Dimensions
- Snowflake
- Star Schema



Dimensional
Modeling

Overview of Two DW Approaches

▶ Corporate Information Factory

1. Top down
2. Data normalized to 3rd Normal Form
3. Enterprise data warehouse spawns data marts

▶ Dimensional Modeling

1. Bottom up
2. Data denormalized to form star schema
3. Data marts conform to develop the enterprise data warehouse

Corporate Information Factory

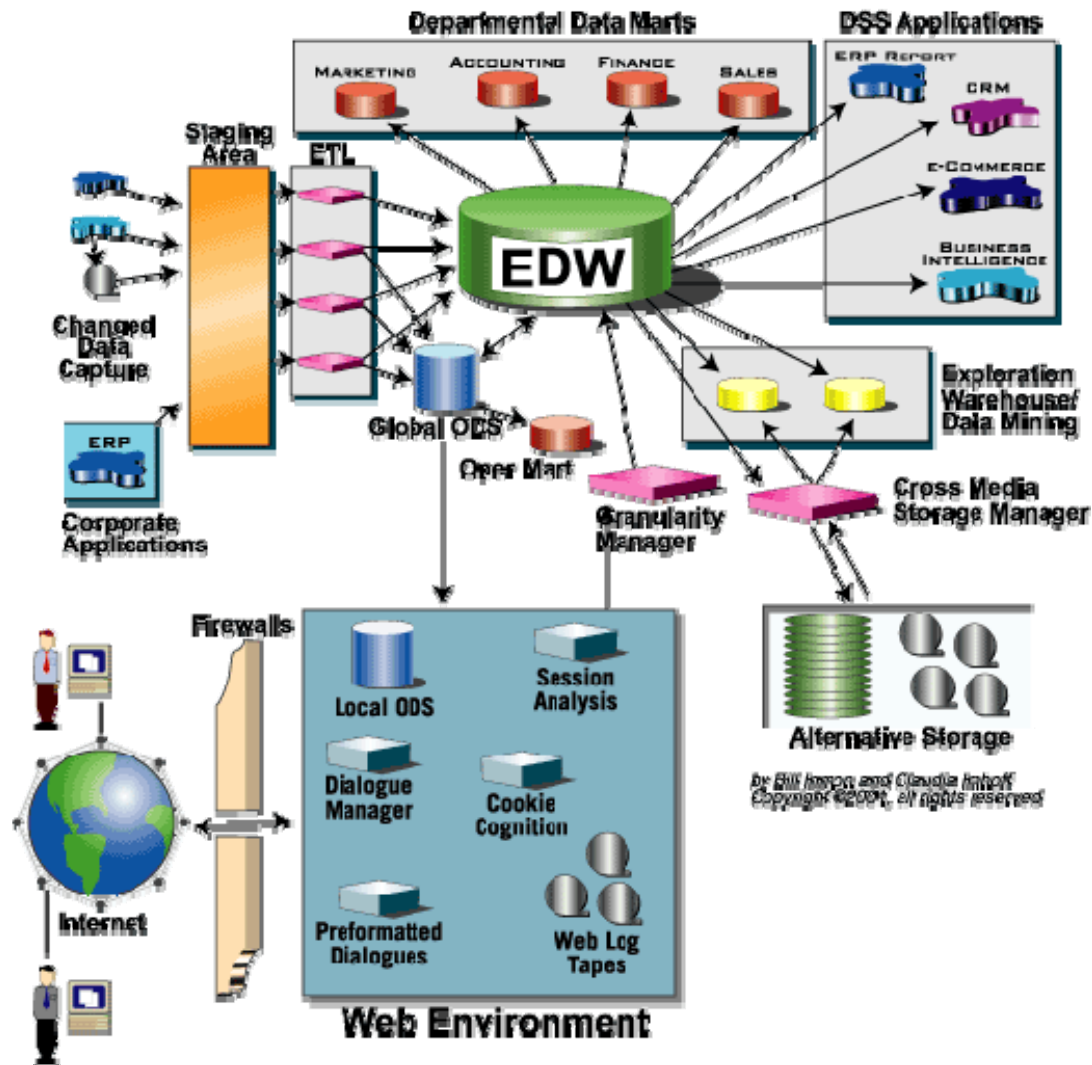
▶ Focus

- Single repository of enterprise data
- Framework for Decision Support Systems (DSS)

▶ Specifics

- Create specific structures for distinct purpose
- Model data in 3rd Normal Form
- As a Hub and Spoke Approach, create data marts as subsets of data warehouse as needed

The Corporate Information Factory and the Web Environment



Dimensional Modeling

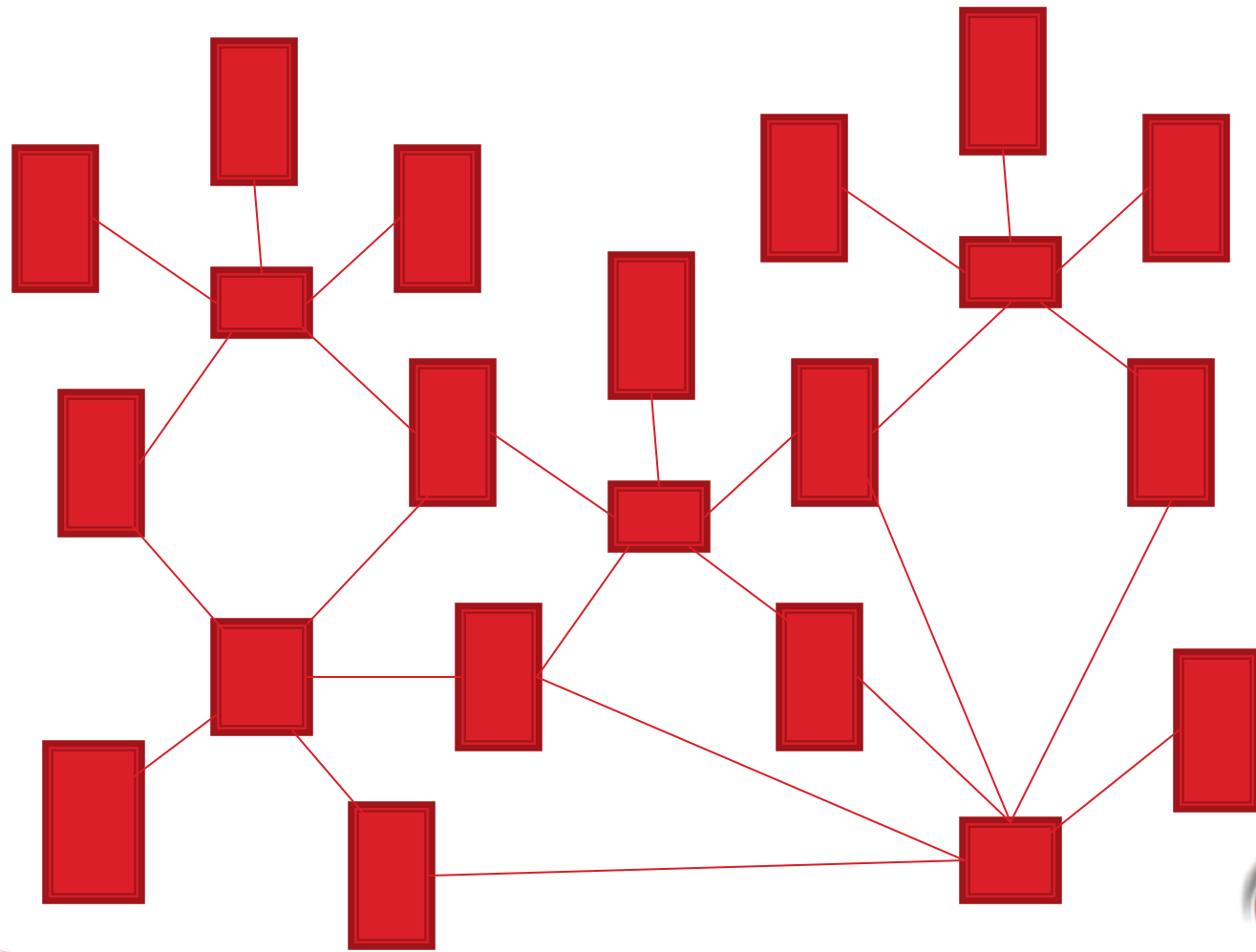
▶ Focus

- Business Process Oriented
- User Understandability
- Performance

▶ Specifics

- Declare the level of granularity
- Develop conformed dimensions
- Identify metrics and measurements
- Data Bus Matrix

Kimball's Data Warehouse



Today's DW Landscape

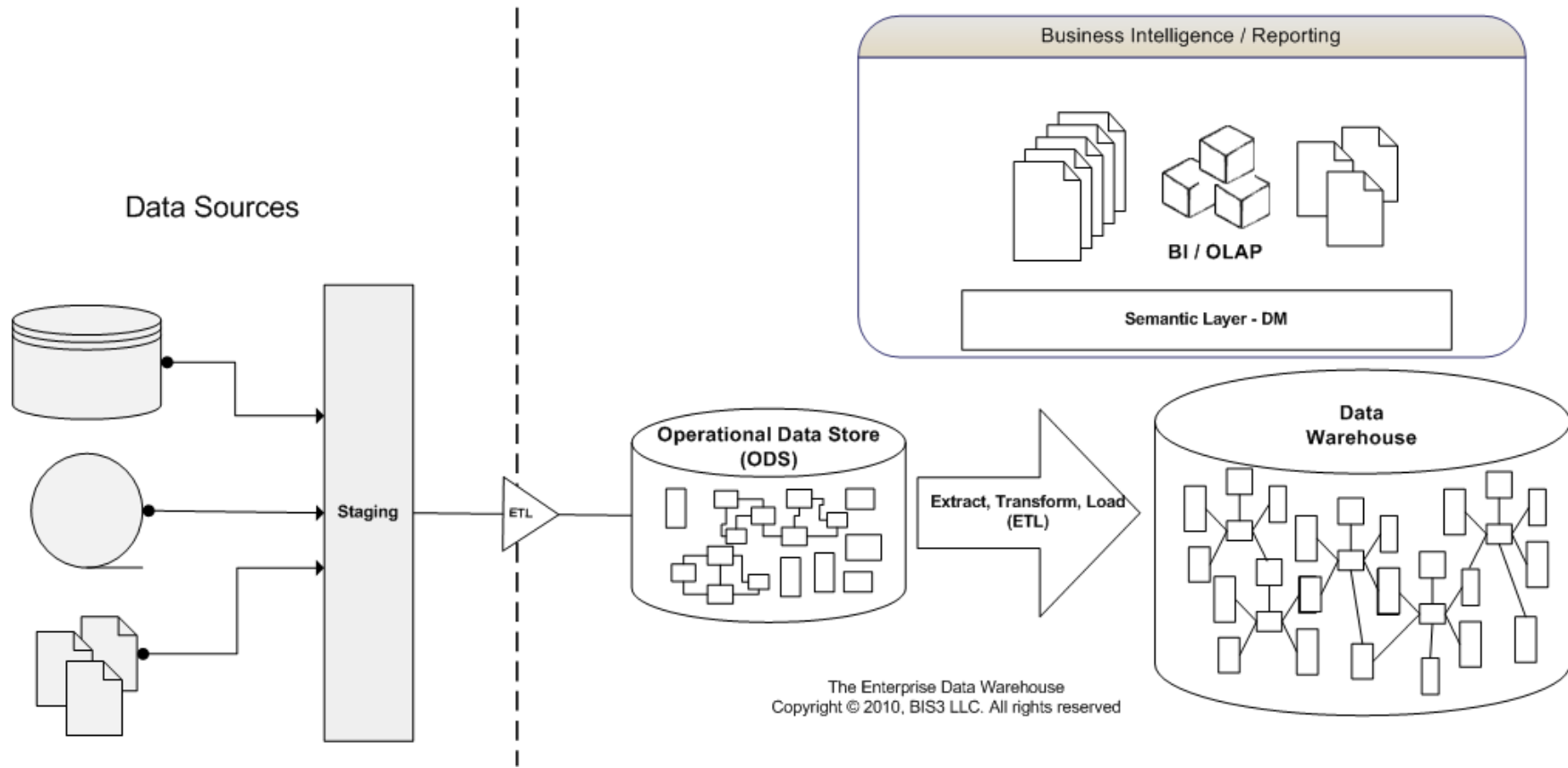
- ▶ Popularity of Dimensional Modeling
 - Adopted by ETL companies (e.g., Informatica)
 - Evident in the strategies of mainstream BI tools such as Cognos, Microsoft's Analysis Services, OBIEE, etc.

- ▶ Shift in focus to Enterprise Architecture
 - SOA and Master Data Management rethinking
 - Consideration for Other Structures
 - Combination of Inmon and Kimball Approaches

Kimball & Inmon Combined

- ▶ Holistic Approach to Enterprise Data
- ▶ Data Integrity and Cleansing
- ▶ DM in Semantic Layer of BI Tools
- ▶ ODS can be used as a great data source for the Data Warehouse

KIM-MON Approach?



The Enterprise Data Warehouse
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Dimensional
Modeling

A Data Warehouse By Any Other Name...

▶ Corporate Info Factory

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▶ Dimensional Modeling

- Data Mart
- Ralph Kimball
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- Enterprise Data Warehouse



Thank you!

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