

Fall Conference 2010
Hosted by Oracle November 11, 2010



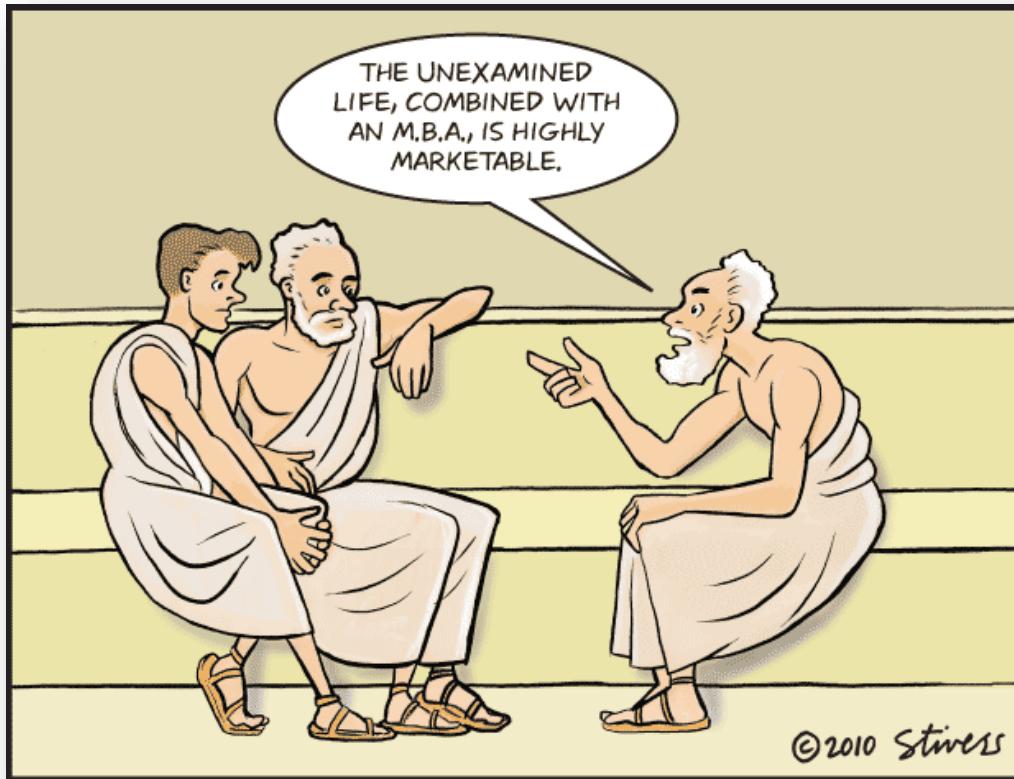
Oracle Data Warehousing With Erwin

Donald Soulsby

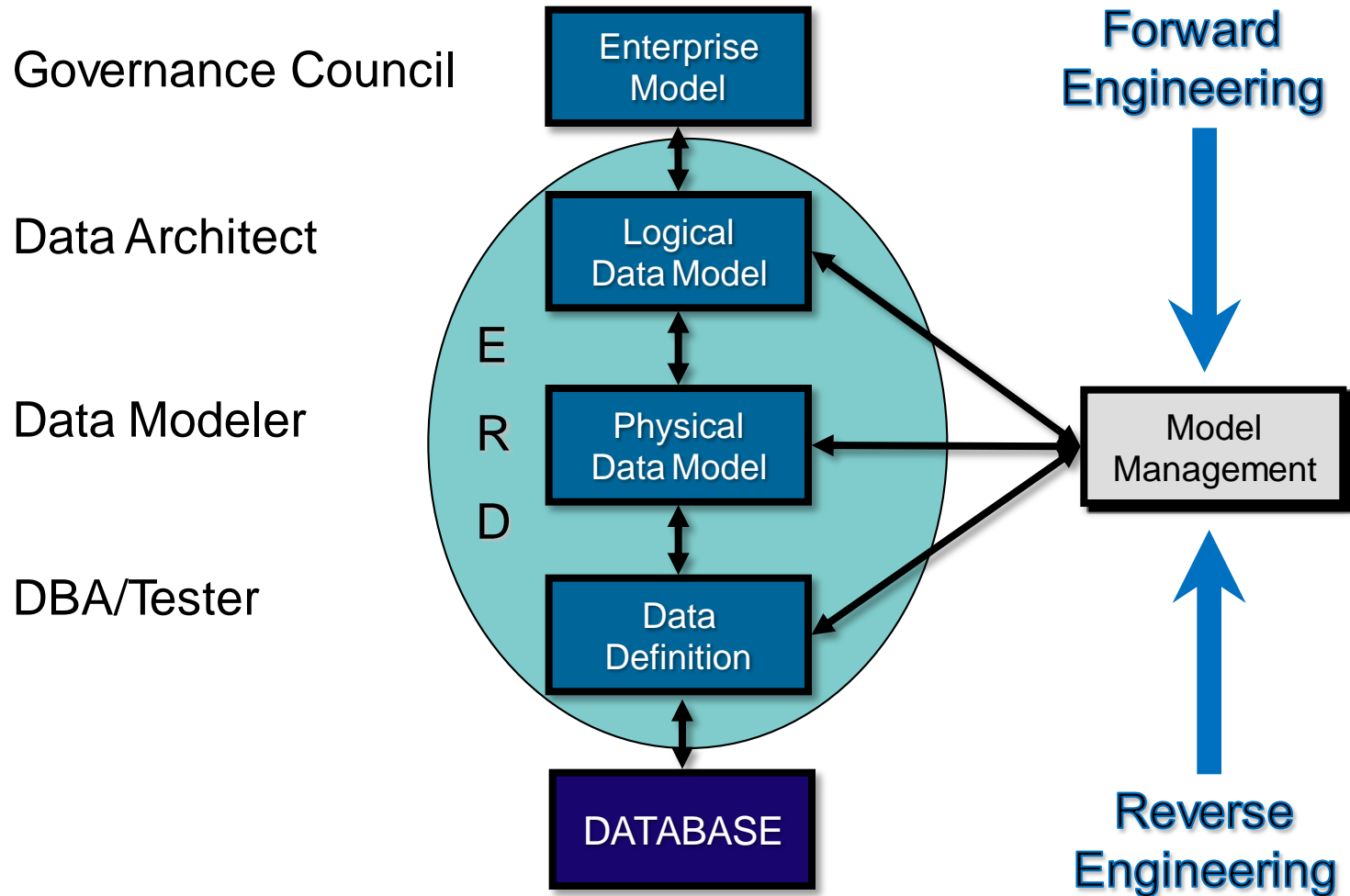
Agenda

- Dimensional Modeling:
 - Fundamentals
 - Characteristics
 - Modeling functions within CA ERwin Data Modeler
- Erwin model metadata extensions
 - Oracle Warehouse Builder

An unexamined life is not worth living." -
-- Socrates



Design Layers



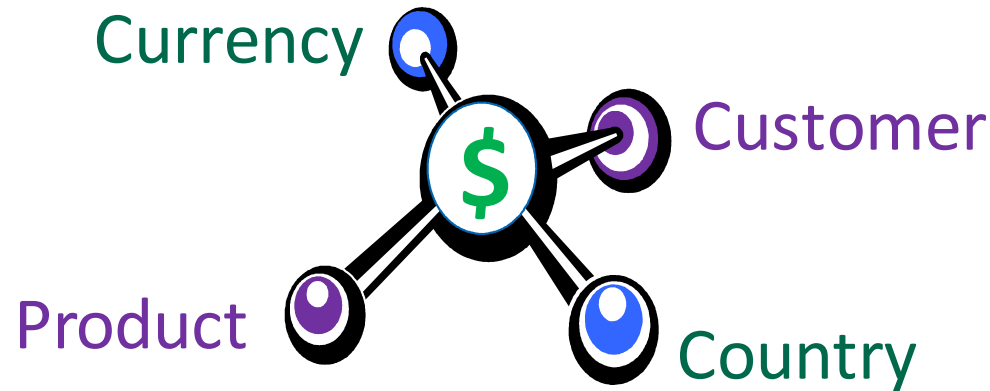
Why data model?

Data modeling enables you to:

- provide graphical/lexical documentation of the business area under examination
- follow principles of object reuse (inclusion) by making structures as applicable across enterprise
- permits analysis of data structures in isolation of business processes
- identify areas of agreement and contention between business and technical parties
- evolve an enterprise data foundation/architecture and provide support for model-driven development

Transaction System

Point In Time



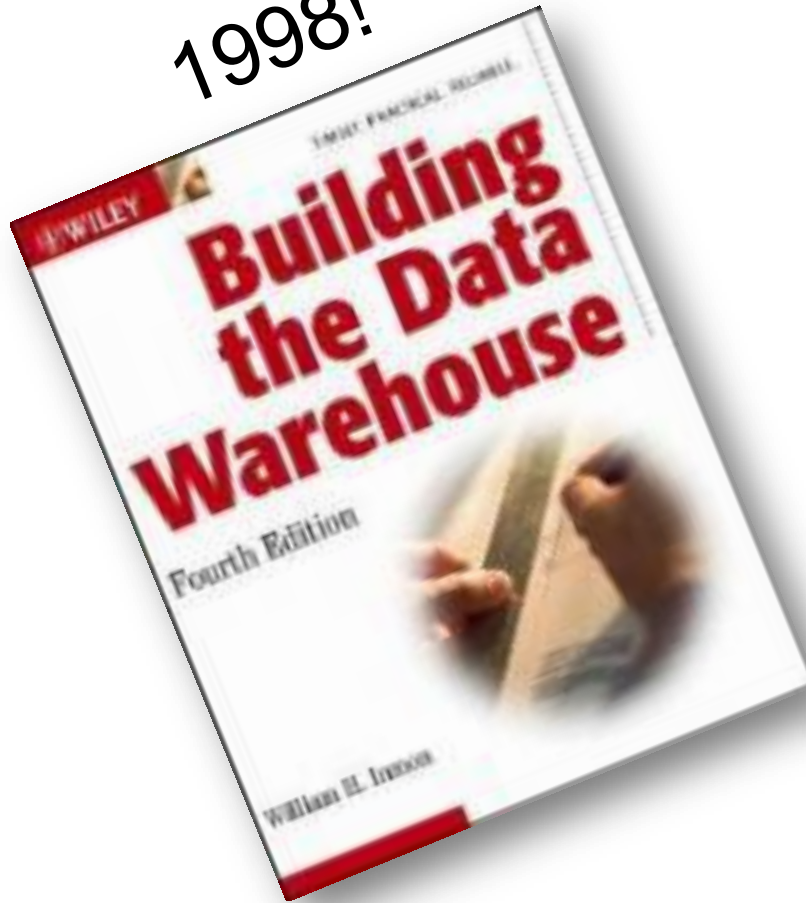
Transaction

A Transaction is relationship of

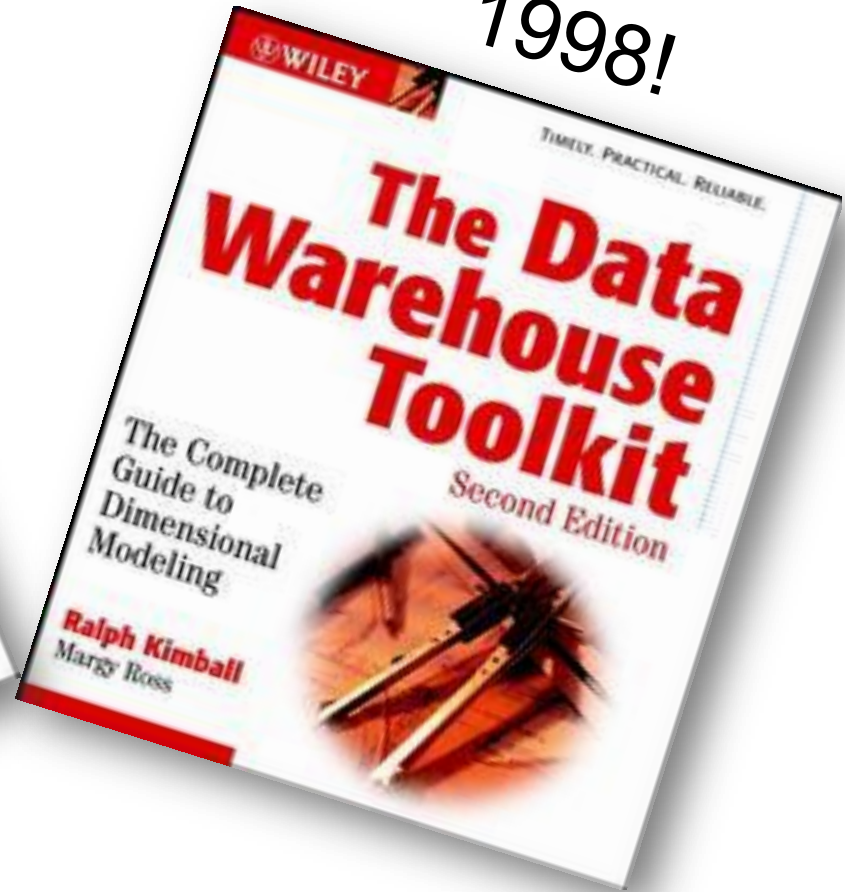
Master Data + **Reference Files**

+ time stamp + volumes + secondary descriptors

1998!



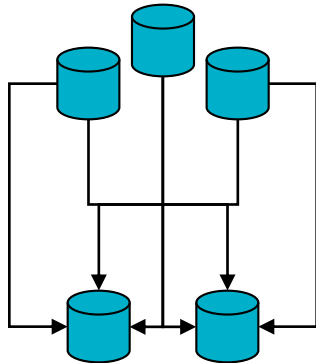
1998!



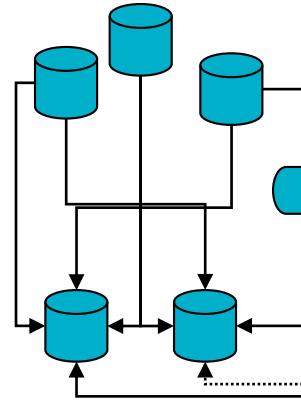
SANDHILL

Architecture choices

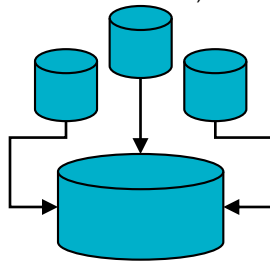
Independent Data Mart



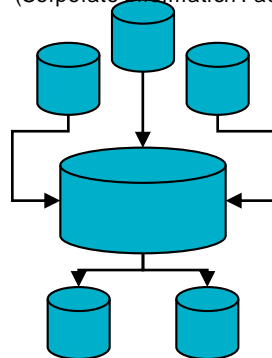
Data Mart Bus Architecture



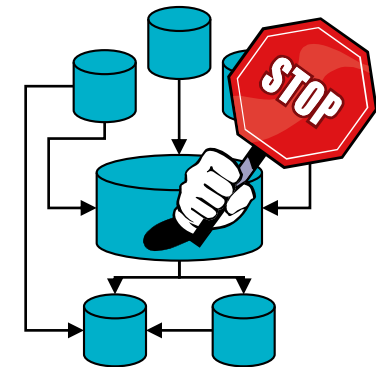
Centralized Data Warehouse
(Enterprise Data Warehouse)



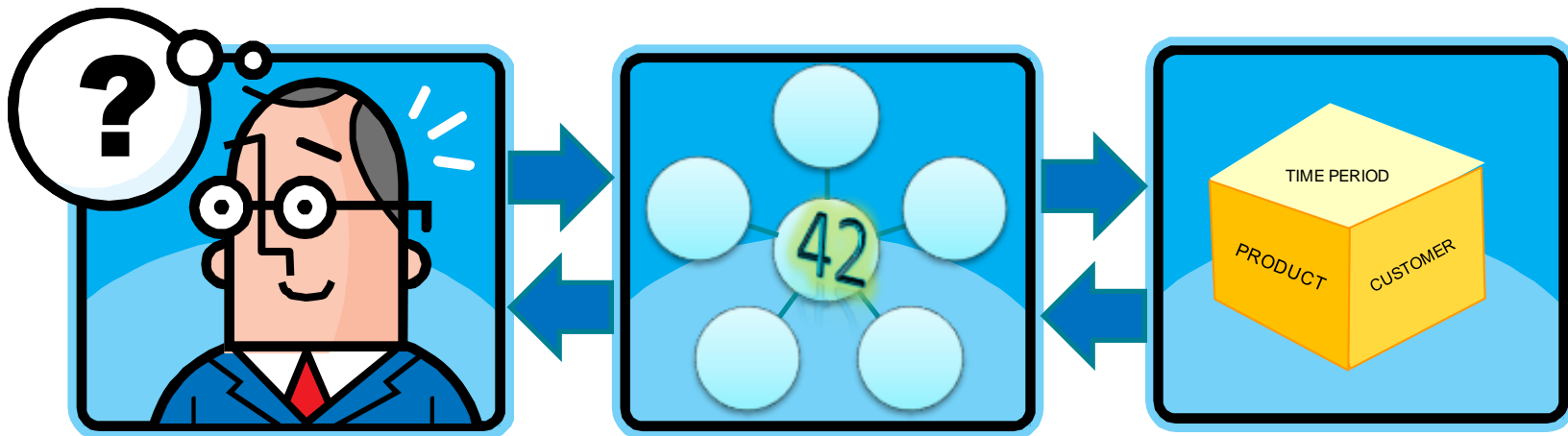
Hub & Spoke Architecture
(Corporate Information Factory)



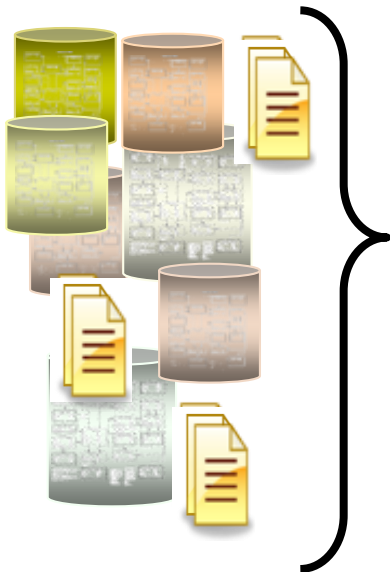
Federated Data Stores



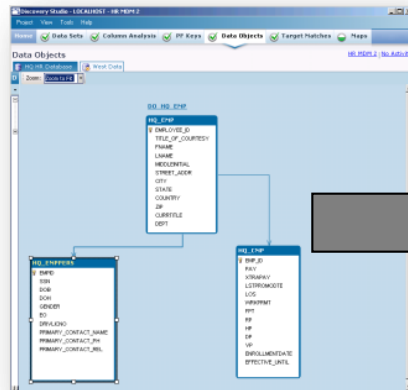
Continuous Insight – Business Intelligence



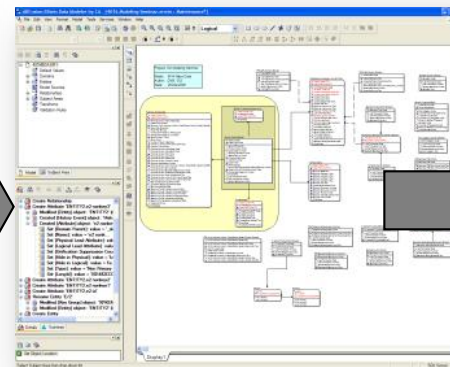
Data Profiling



ERwin Data Profiler

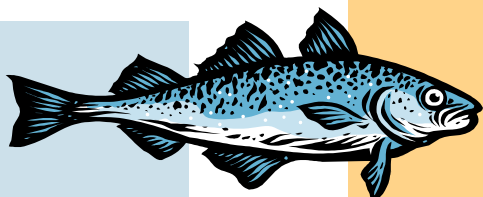


ERwin Data Modeler



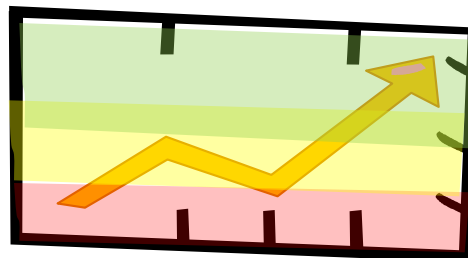
- Profile data
- Discover primary-foreign keys
- Identify orphan rows
- Find overlapping columns

Data Quality



Snapshot

DQ
%



Time



Data Quality Scorecard

	C	A	T	S
ERP	%	%	%	%
CRM	%	%	%	%



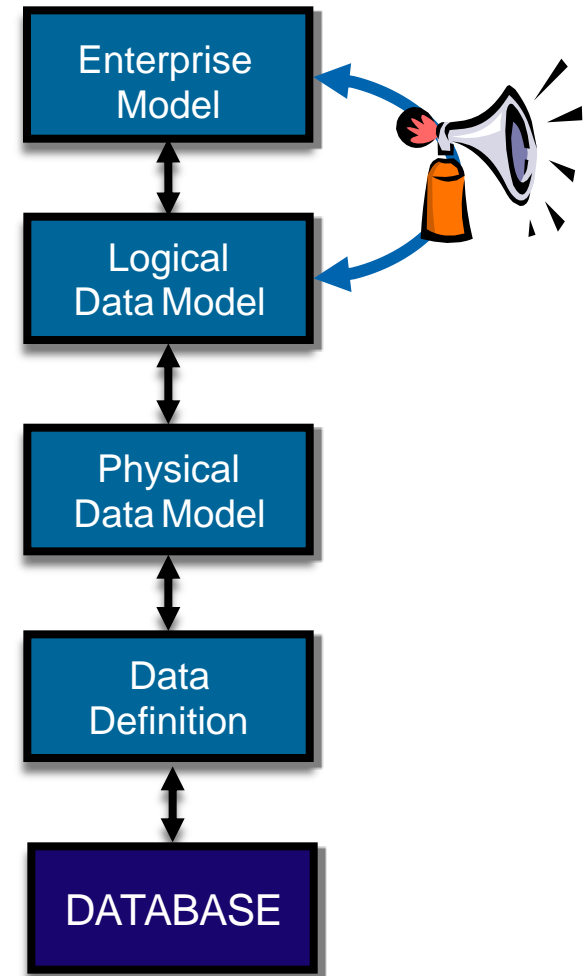
Data warehouse modeling enablement

- Conduct a disciplined review of the existing system by the warehouse business and technical experts
- Partition the analysis by subject area to validate scope and objectives (agreement and contention)
- Deliver standards-based documentation of the business and technical warehouse data
- Expose and document the business and technical metadata
- Evolve the enterprise data foundation

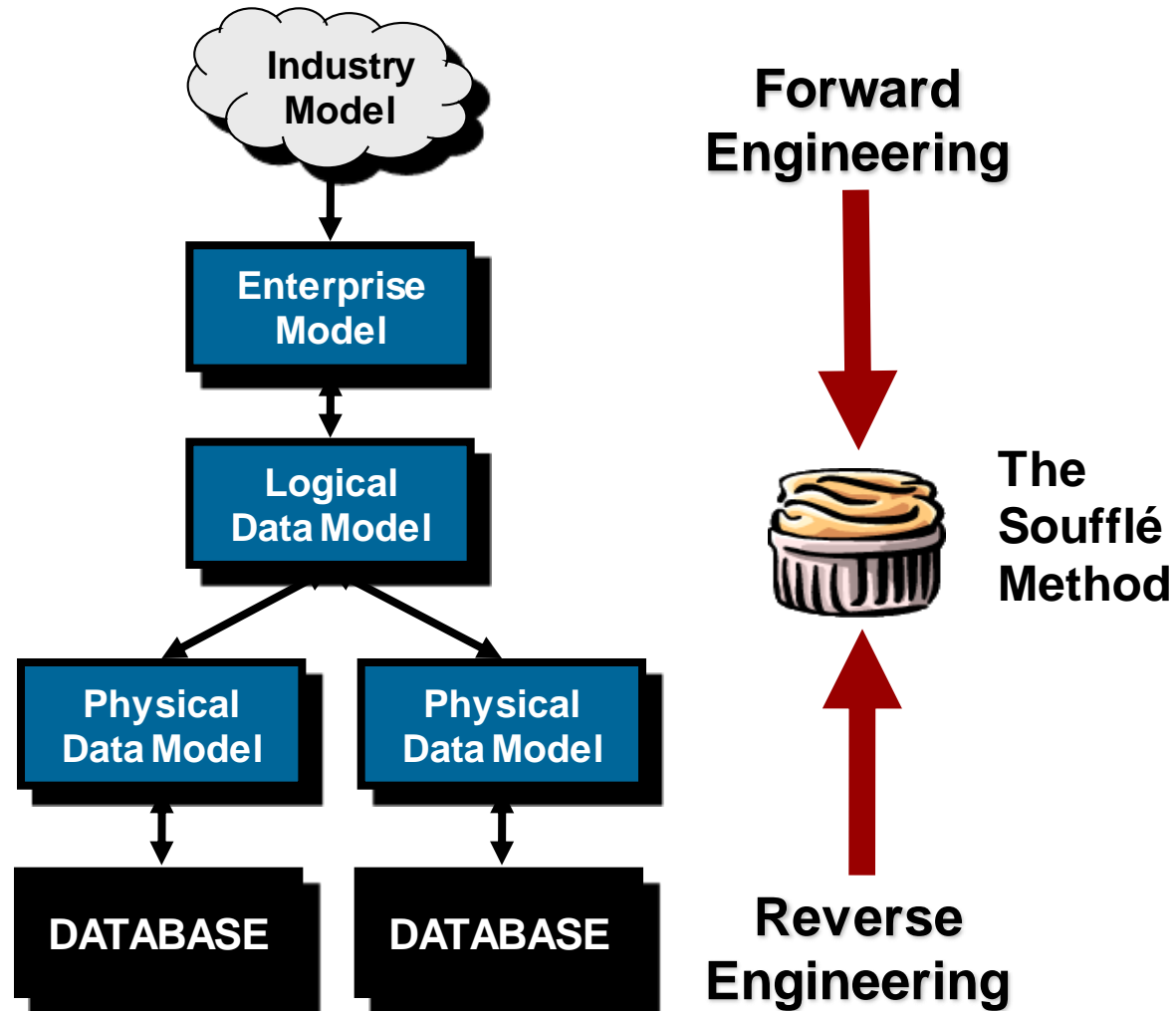
Transformation NOT Translation



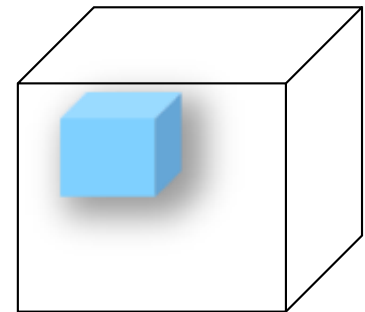
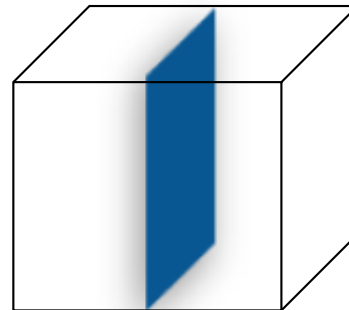
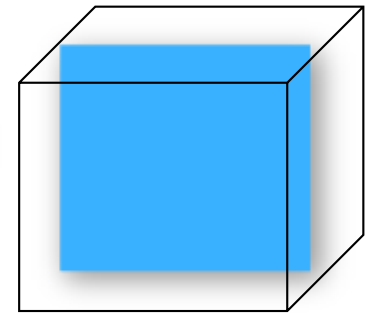
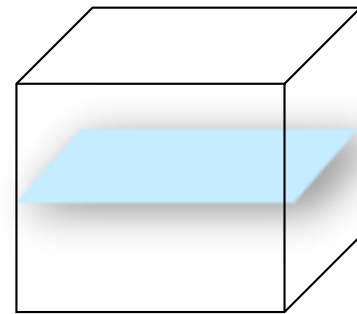
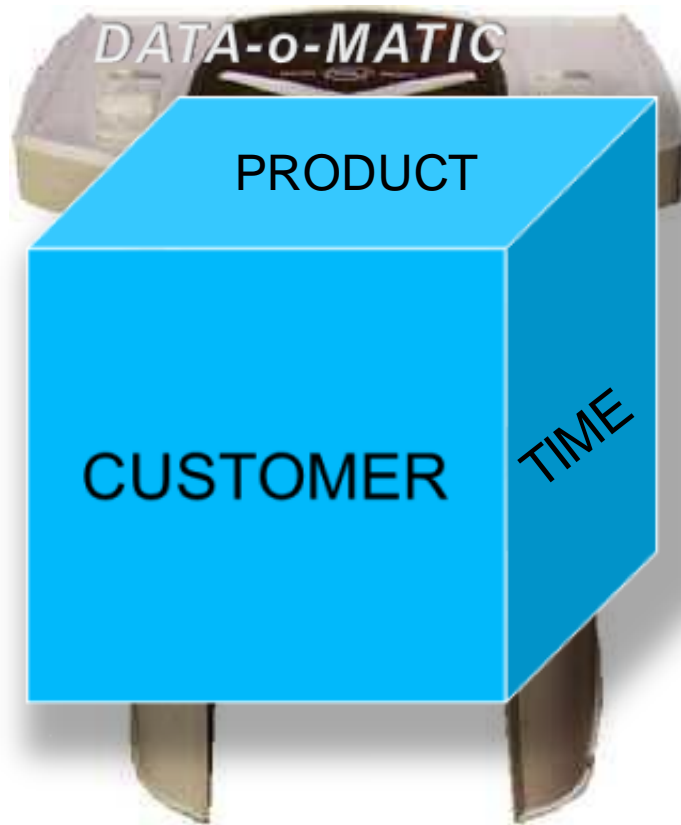
Unambiguous Business Terminology



Reference / Master Data Harmonization

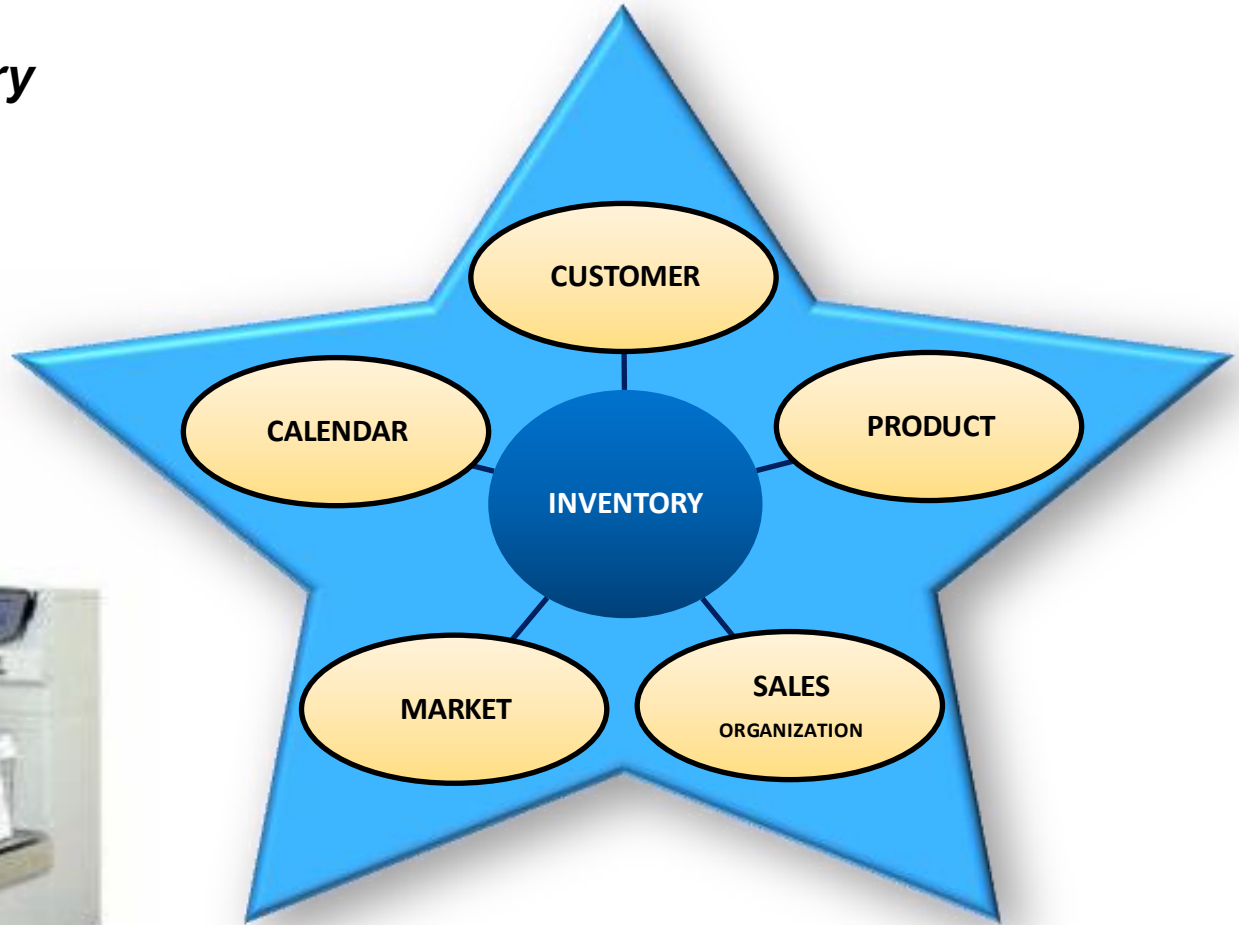


The Cube..... It slices, it dices

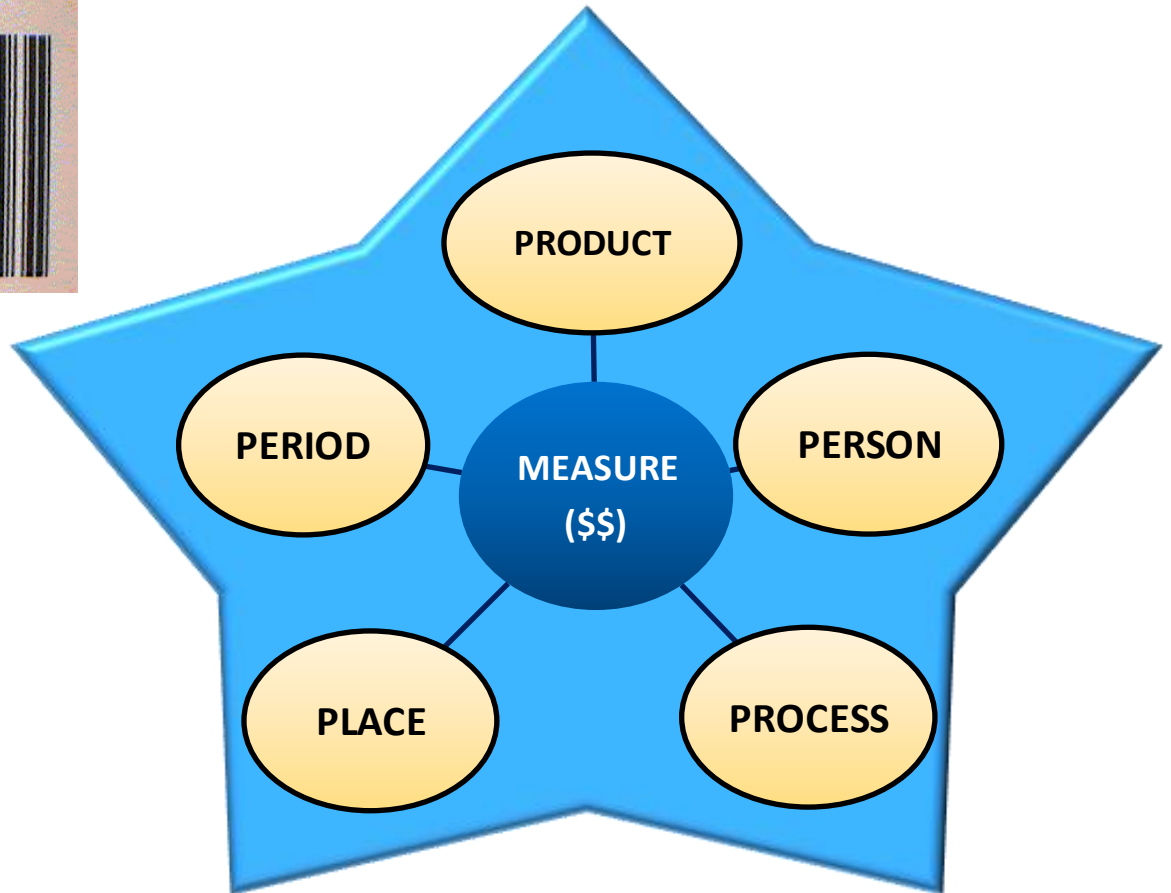


Self-Serve Business Information

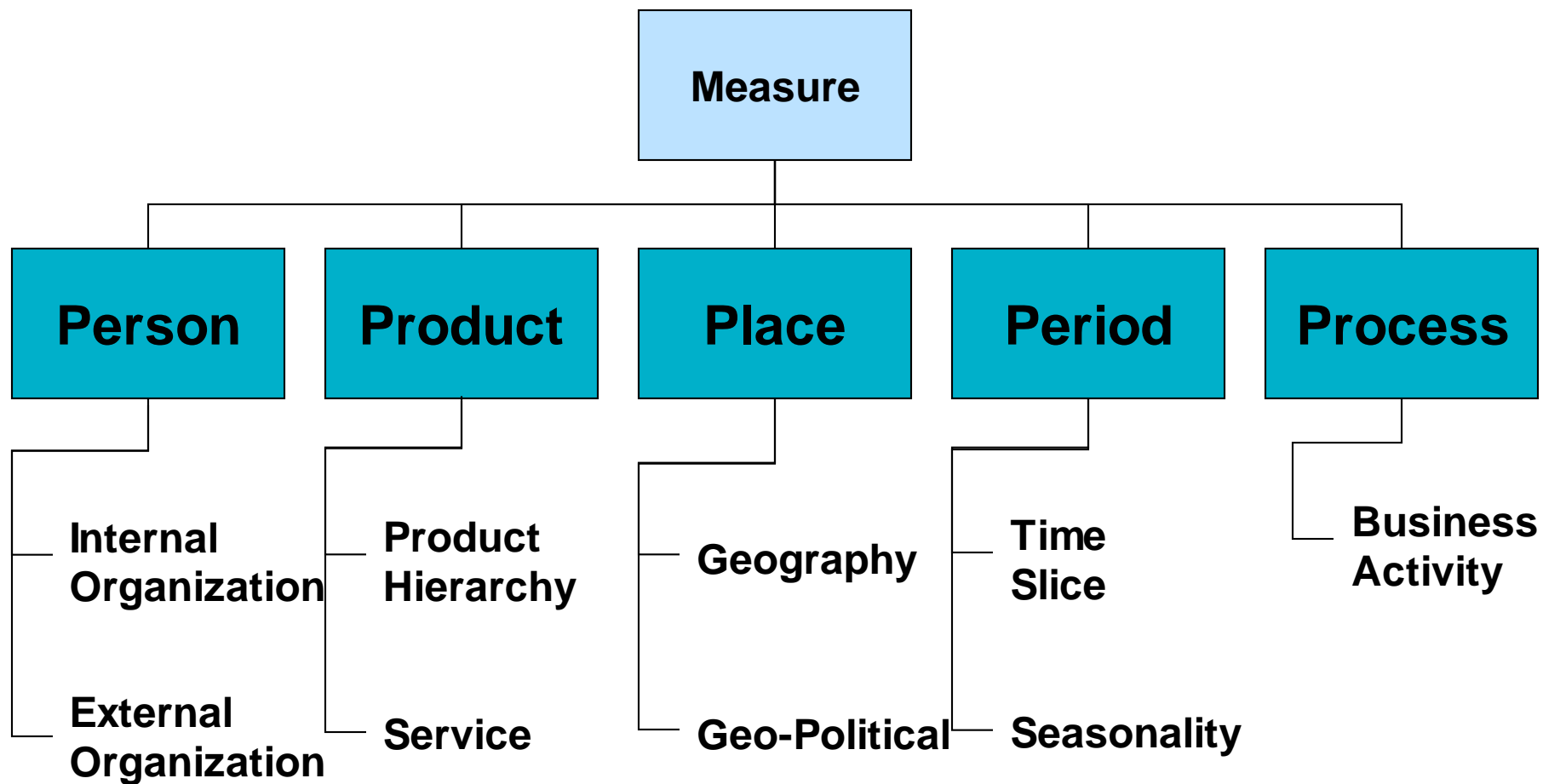
*I want to see Inventory
by Customer
by Product
by Day*



Universal "P" Codes



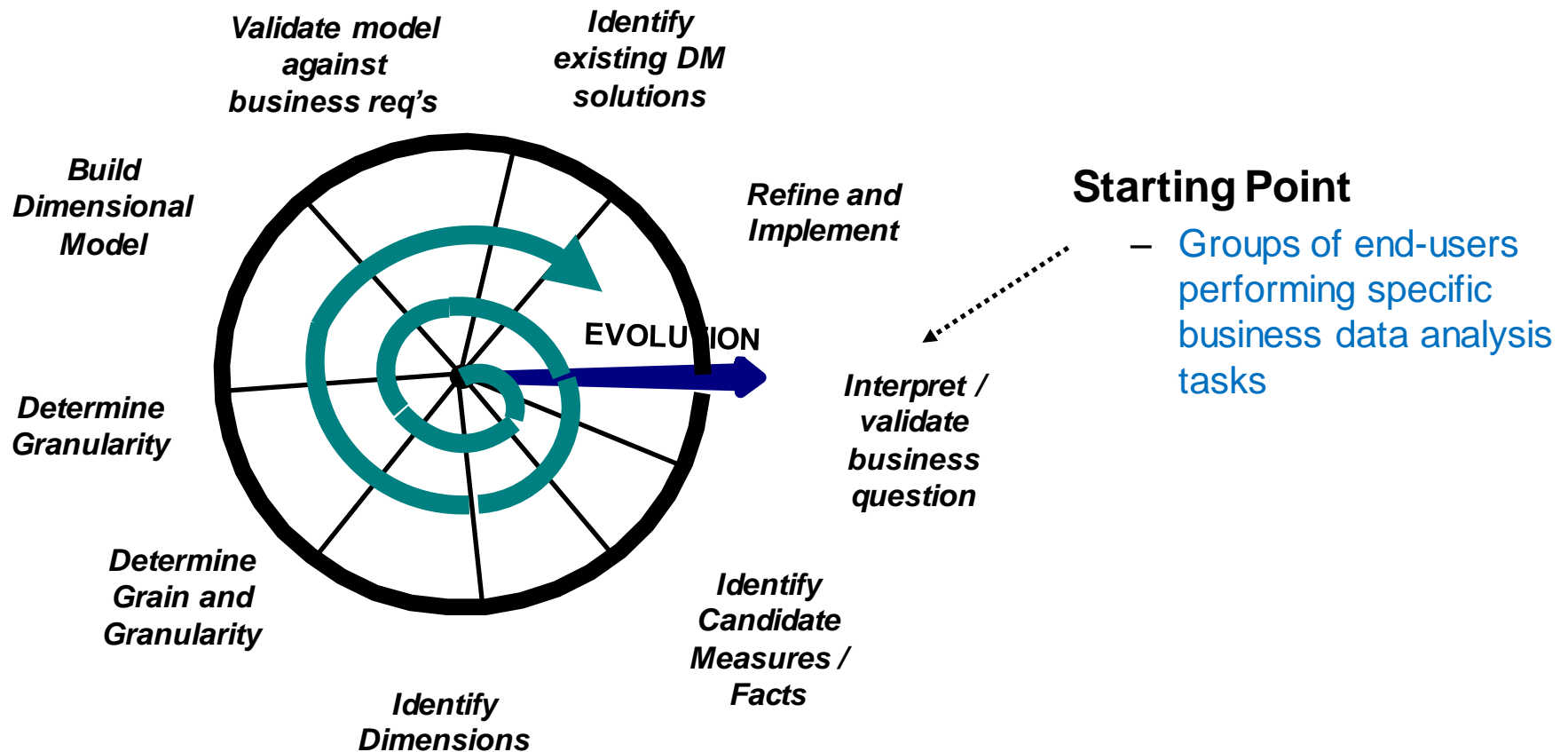
Generalized Model



Dimensional model application

- Usage of data within the dimensional model and supporting data mart (or data warehouse)
 - Confirm assumptions and by simple querying
 - Analyze behavior of different players in the business process
 - Answer to non-trivial questions
 - Perform statistical analysis of cross-departmental data
 - Analyze business results in a historical context
 - Use data to discover trends and relationships
 - Use data to help with new decisions in strategic or commercial areas
 - Help to identify functional relationships, in addition to analyzing the broader business processes, such as customer purchase behaviors.

Dimensional Modeling Process

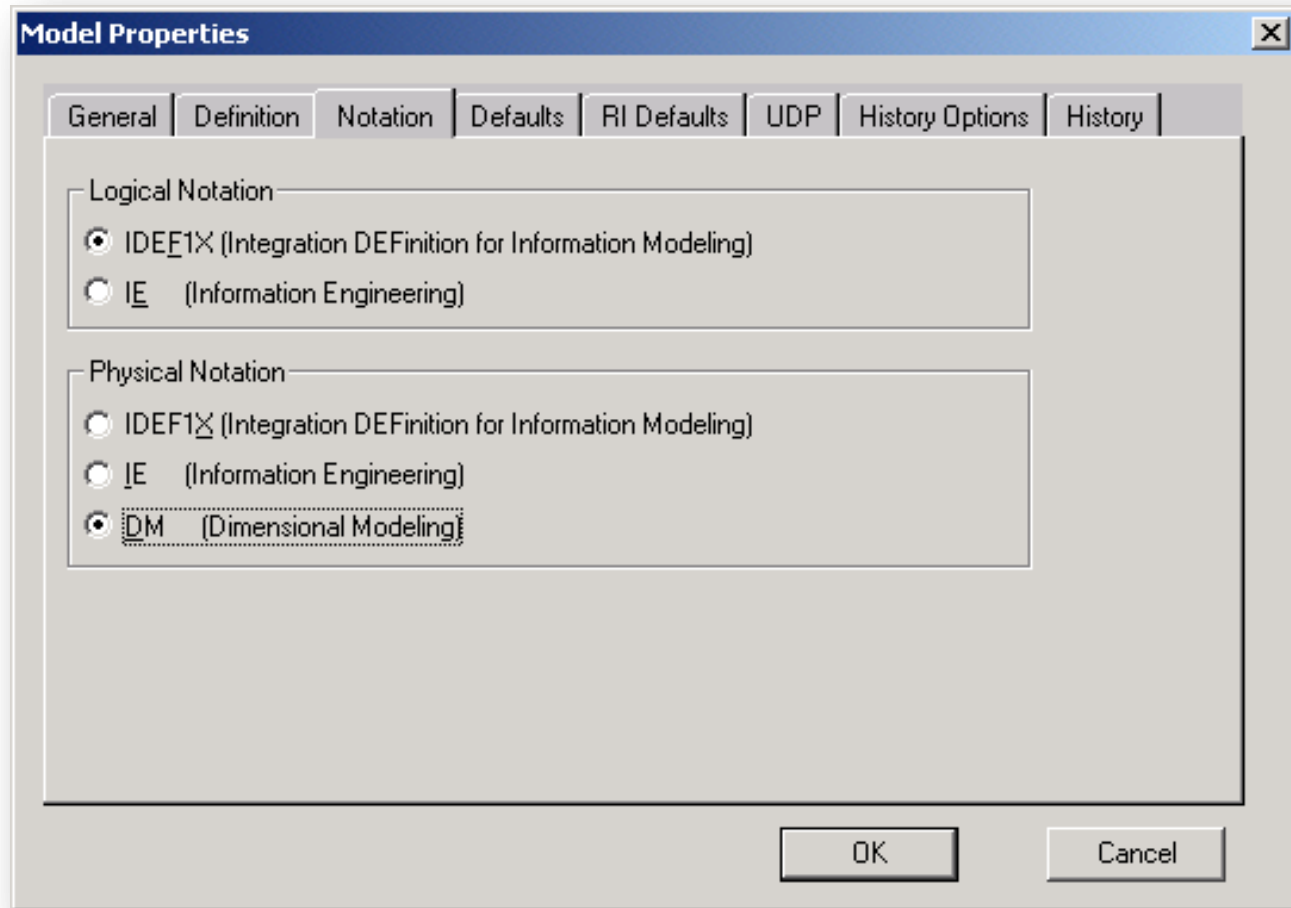


Fundamental activities

- Identify and interpret the business question
- Identify candidate measures and dimensions
- Identify grains and granularities of the Dimensional Model model
- Identify dimension hierarchies and aggregation levels
- Build the initial normalized Dimensional Model model

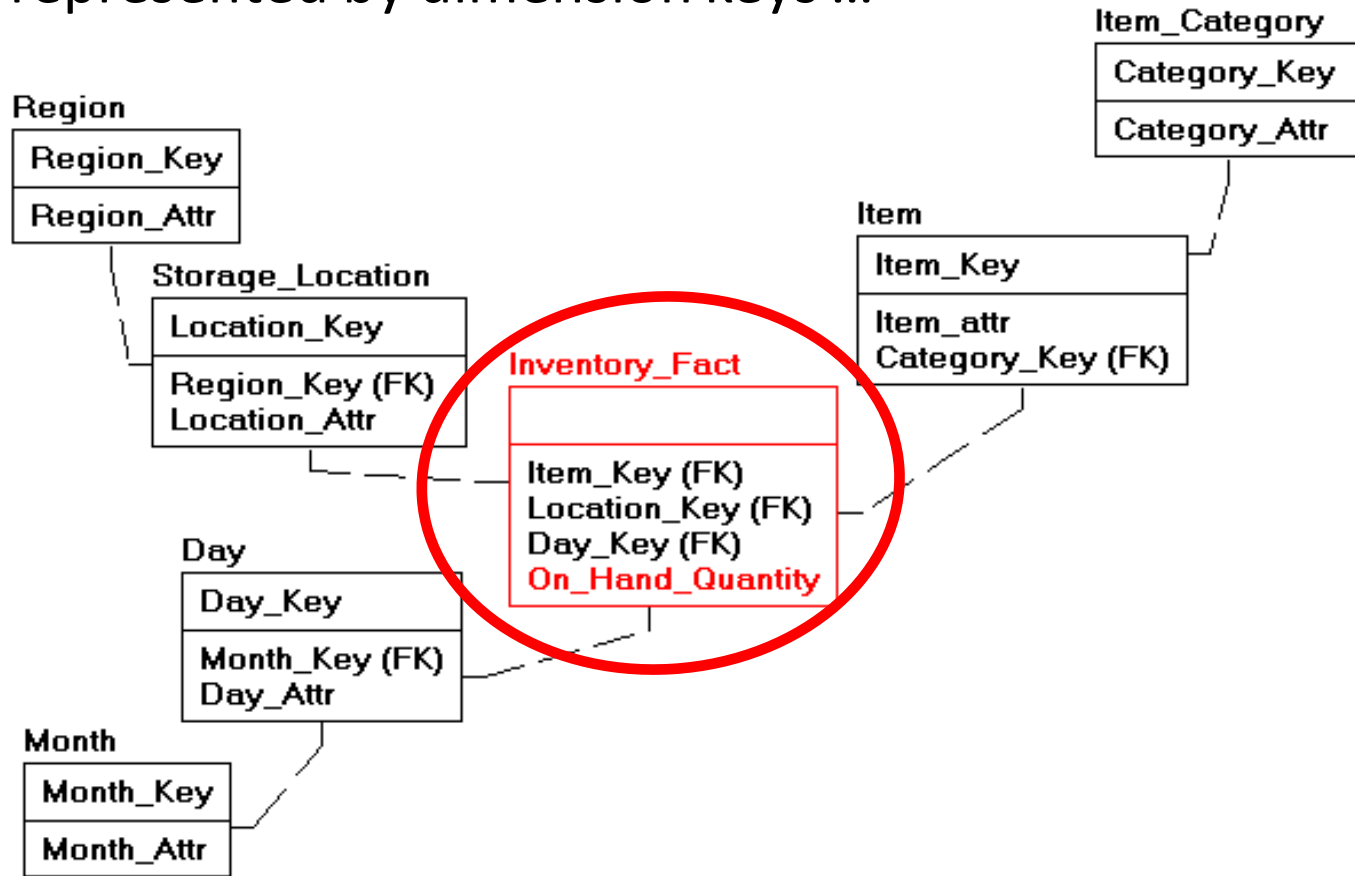
ERwin - activating dimensional features

Classic
model - note
physical
options



Fact

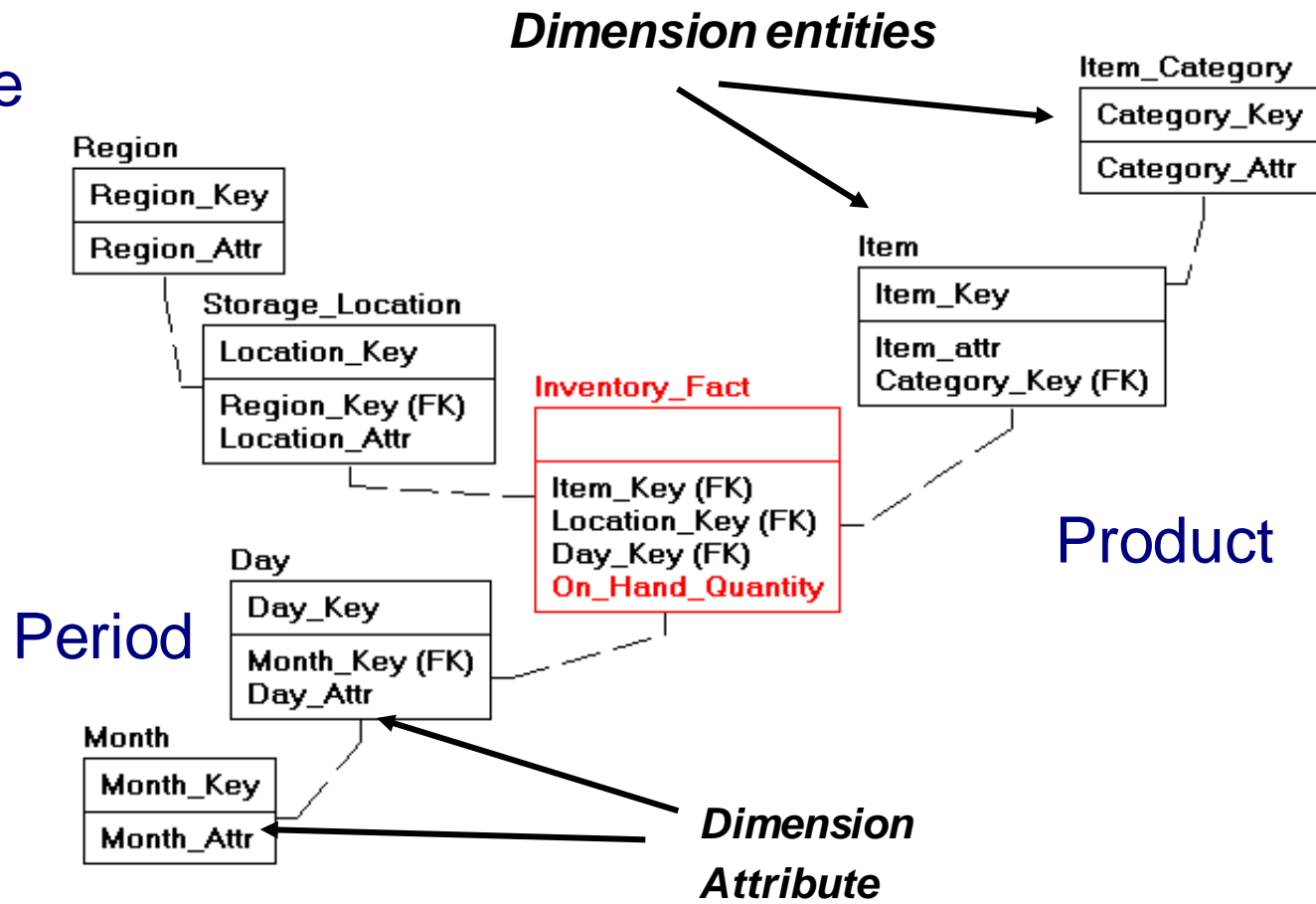
A Fact is a collection of related measures plus their associated dimensions, represented by dimension keys ...



Dimension

A dimension provides a certain business context to each measure

Place

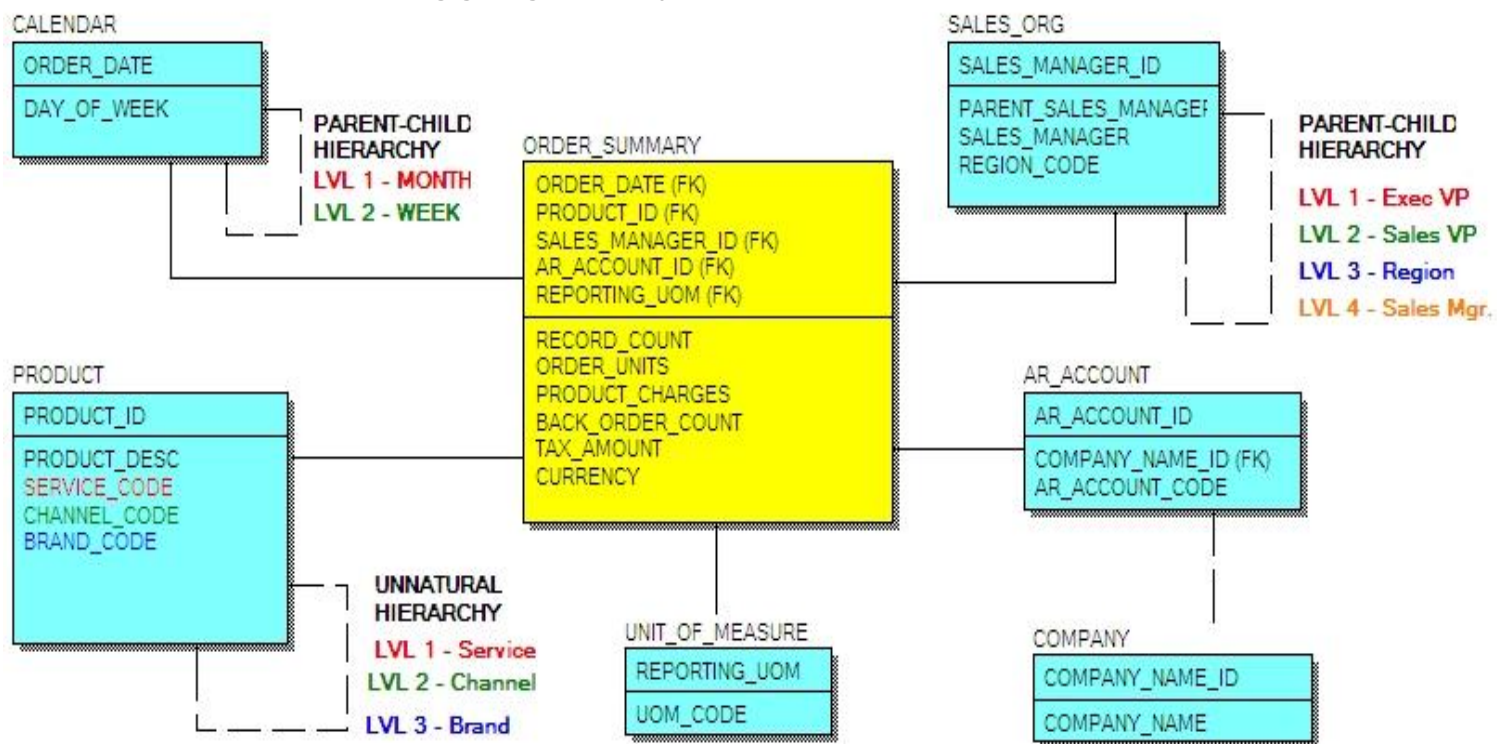


Product

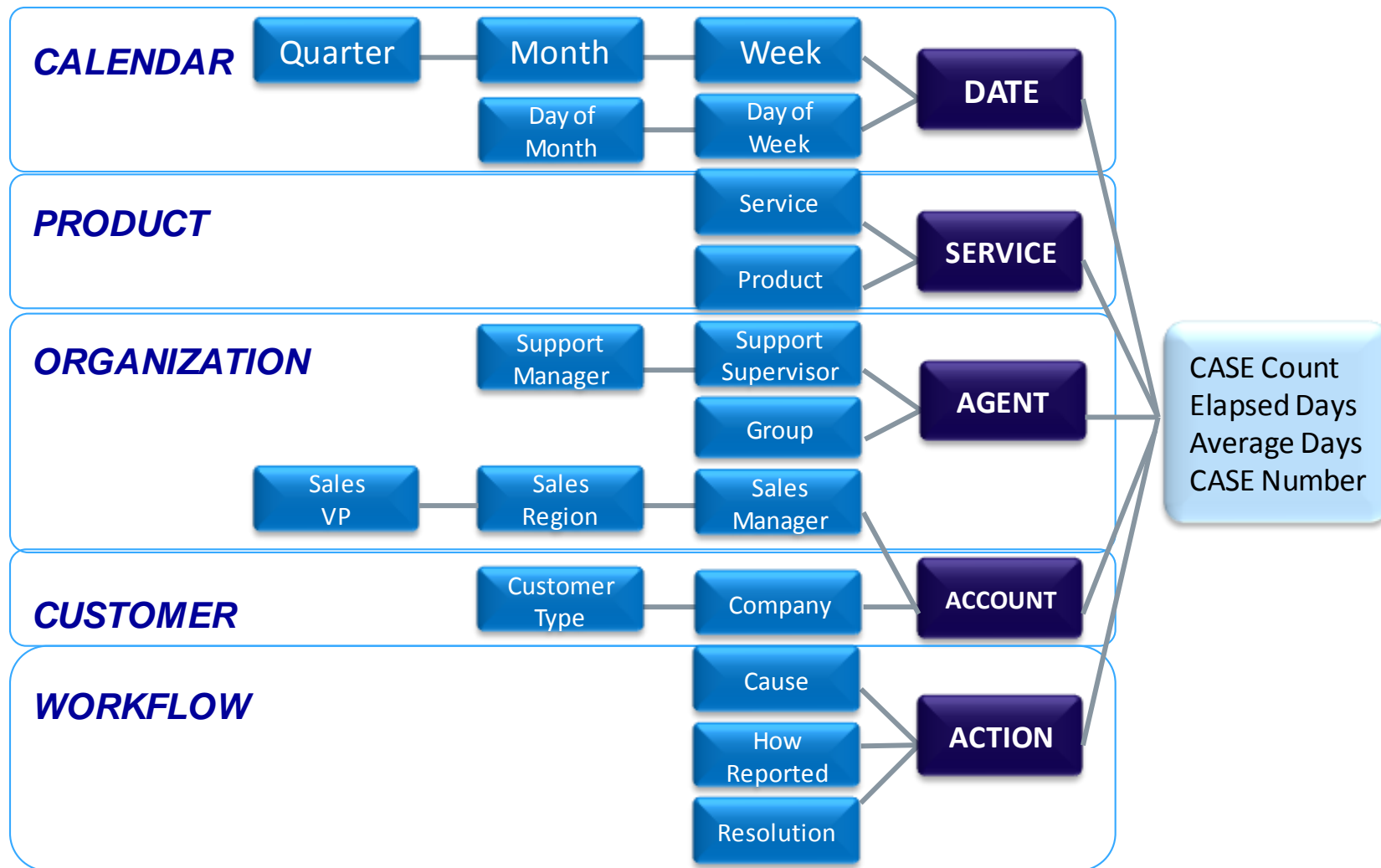
Dimension Hierarchies

Dimension entities are related with each other through one or more dimension hierarchies

- Also known as *Aggregation paths* or *Drill hierarchies*



Dimensional Model Drilldown



Slowly Changing Dimensions

W I W W I W¹

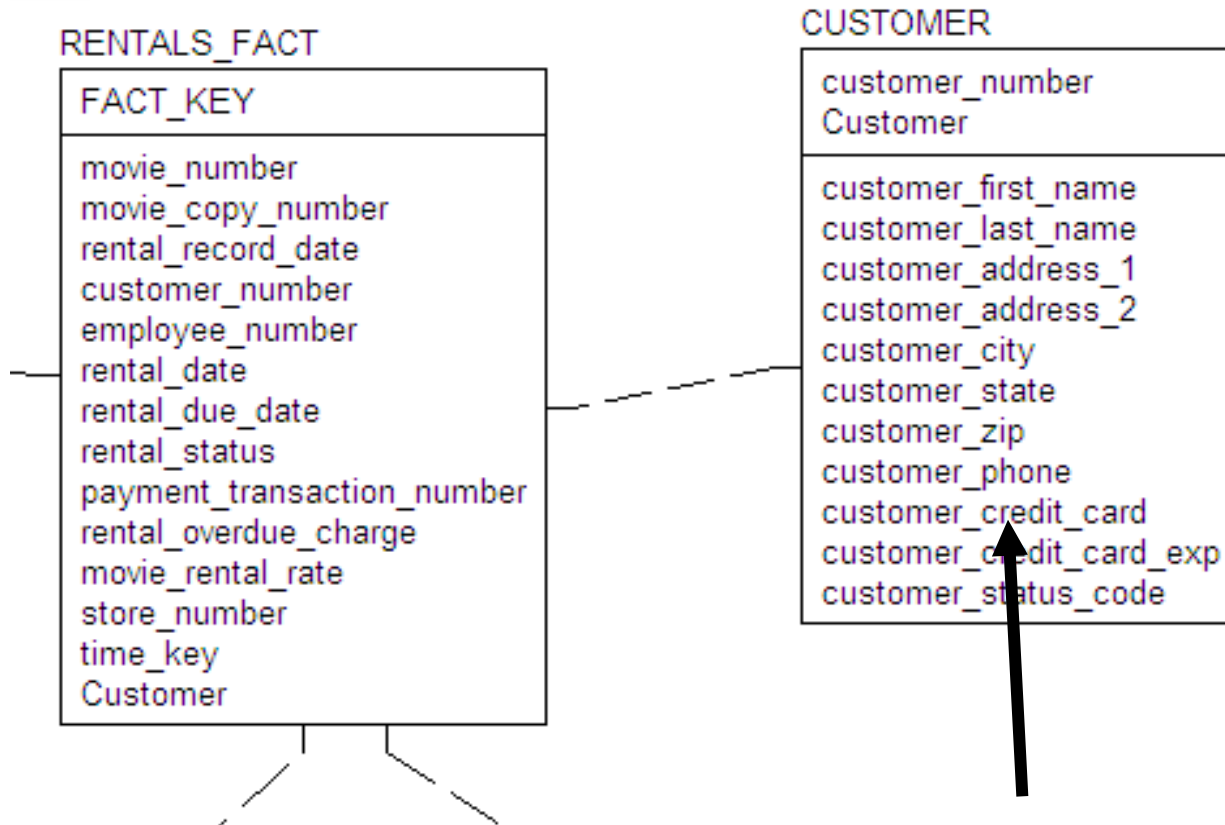
OR

W I W A I I W N²

1. What is was When it Was

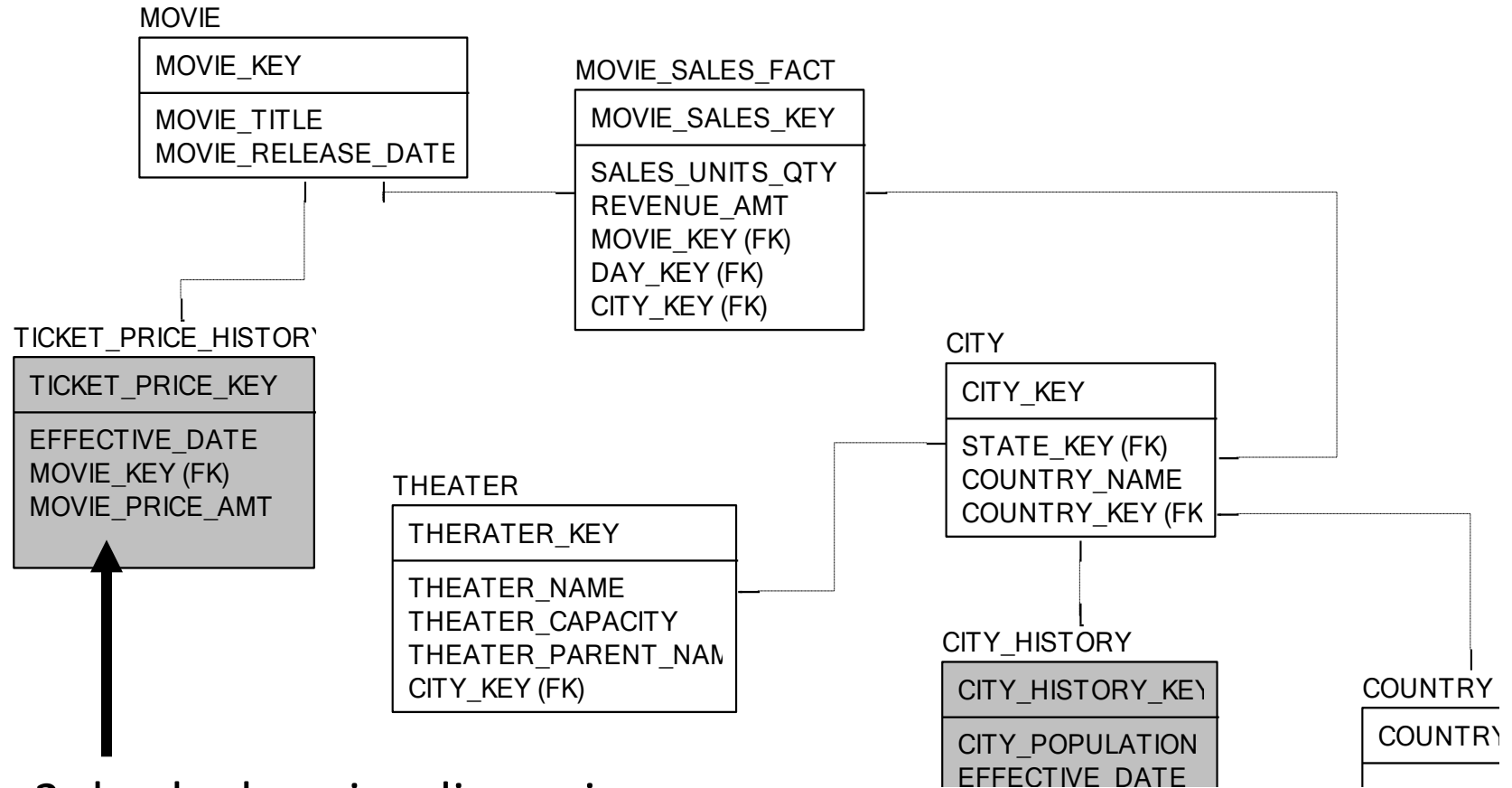
2. What it Was as if it Was Now

Modeling Slowly-Changing dimensions – Type 1



Type 1 slowly changing dimension, value does not change or is deemed to be constant

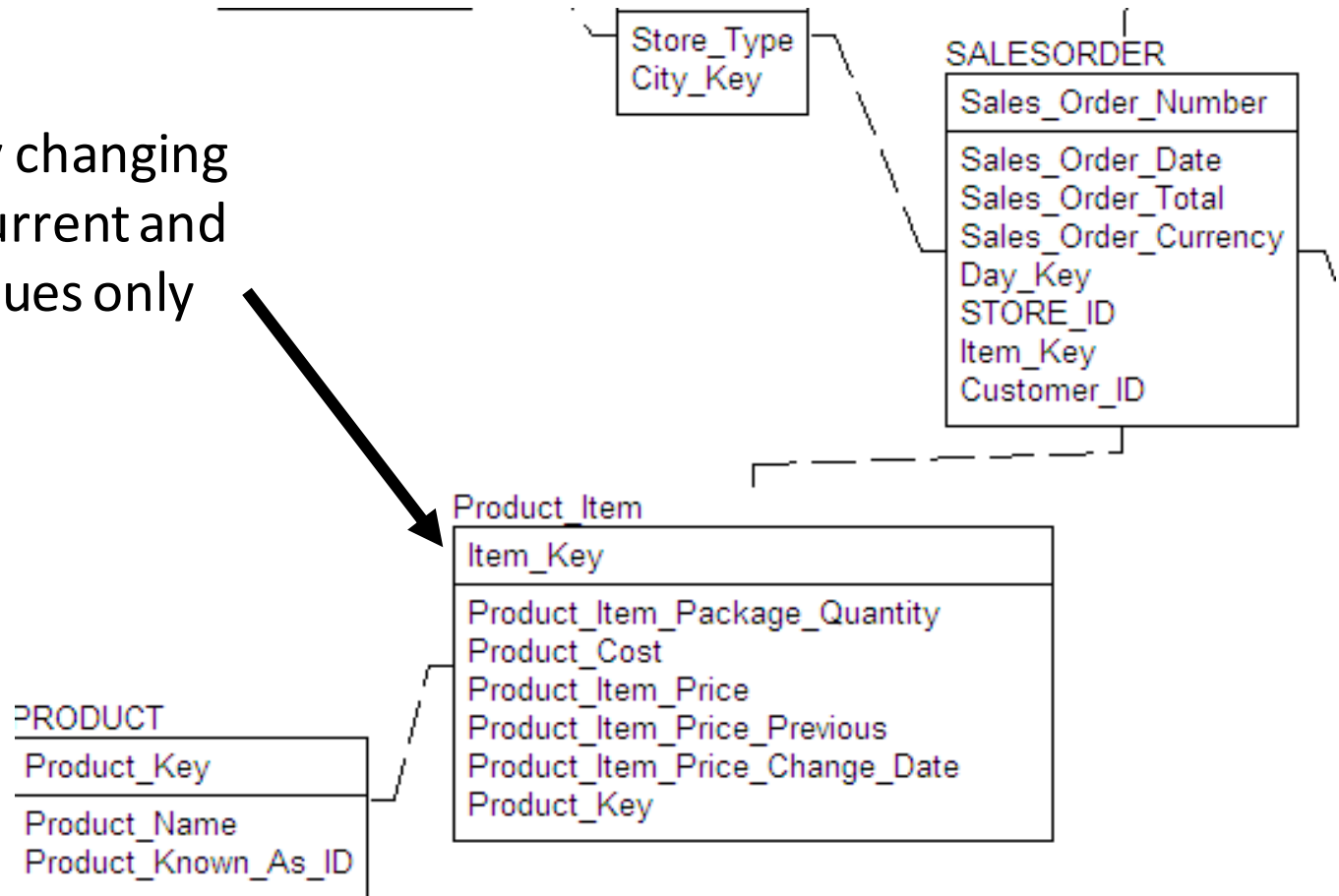
Modeling Slowly-Changing Dimensions – Type 2



Type 2 slowly changing dimension,
add more rows

Modeling Slowly-Changing Dimensions – Type 3

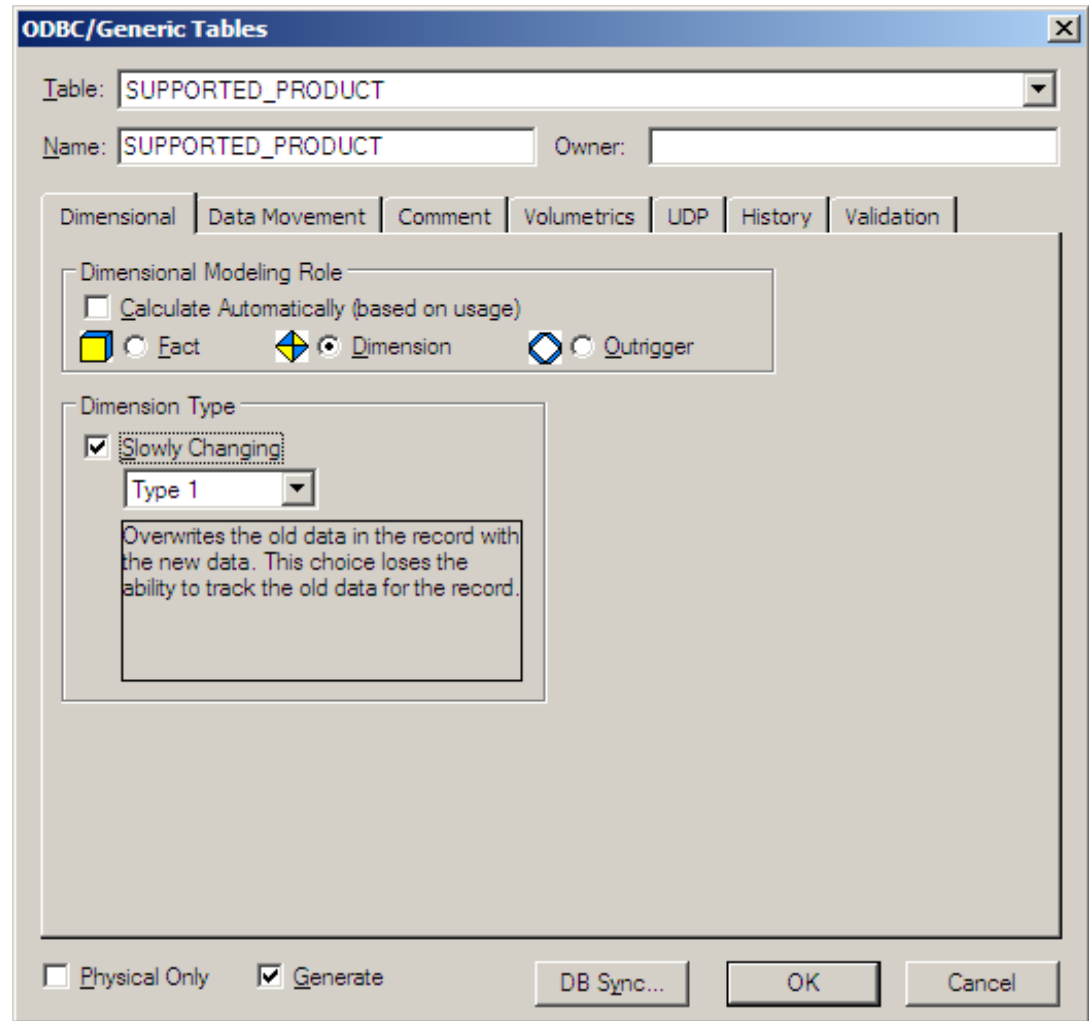
Type 3 slowly changing dimension, current and previous values only



ERWin - Slowly Changing Dimensions

– In the Table properties editor, “Dimensional” tab

- Check “Slowly Changing”
- Select type
- Note Automatic....



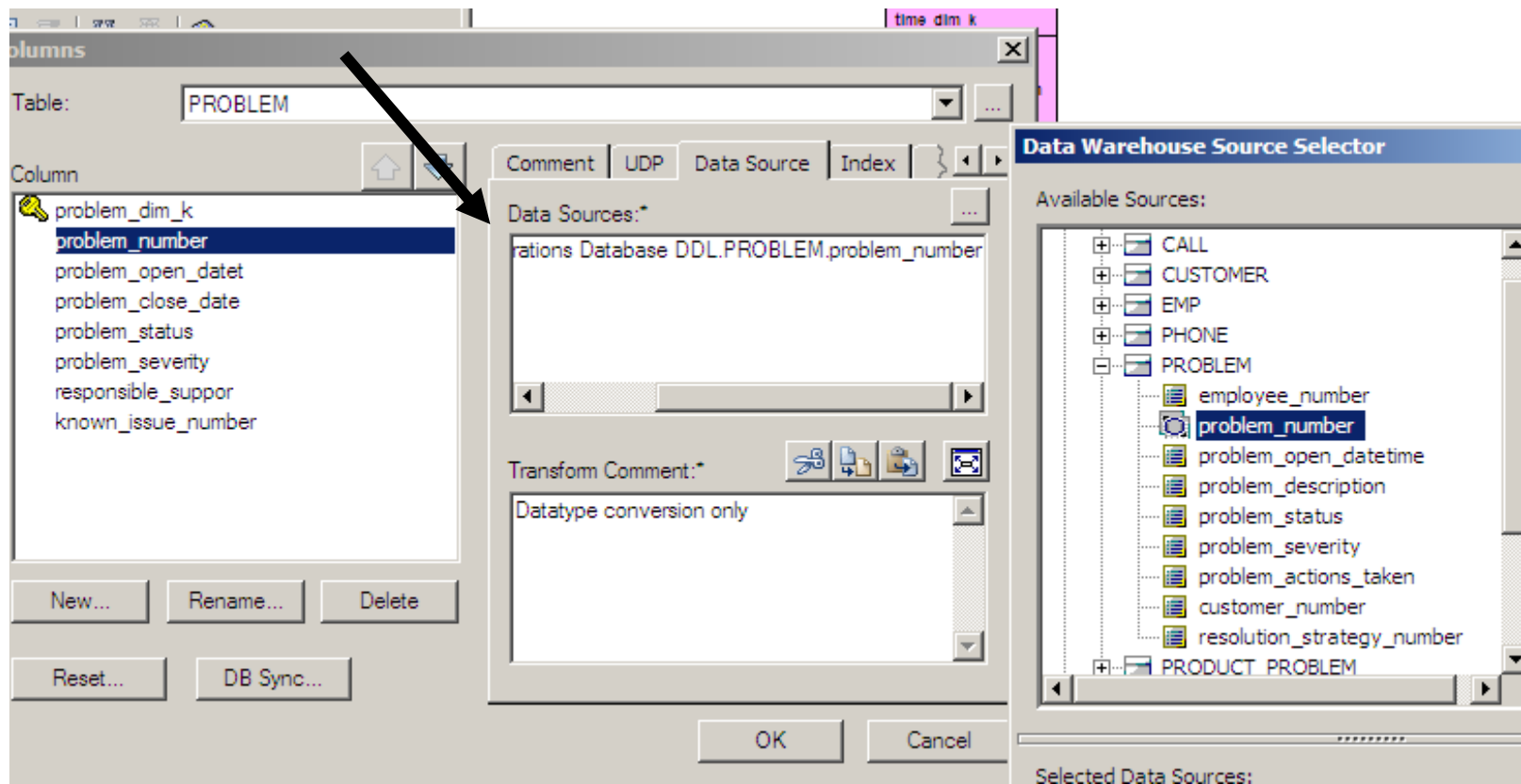
Slowly Changing Dimensions

All I really need
to know I learned
from watching
Star Trek.
Dave Marinaccio



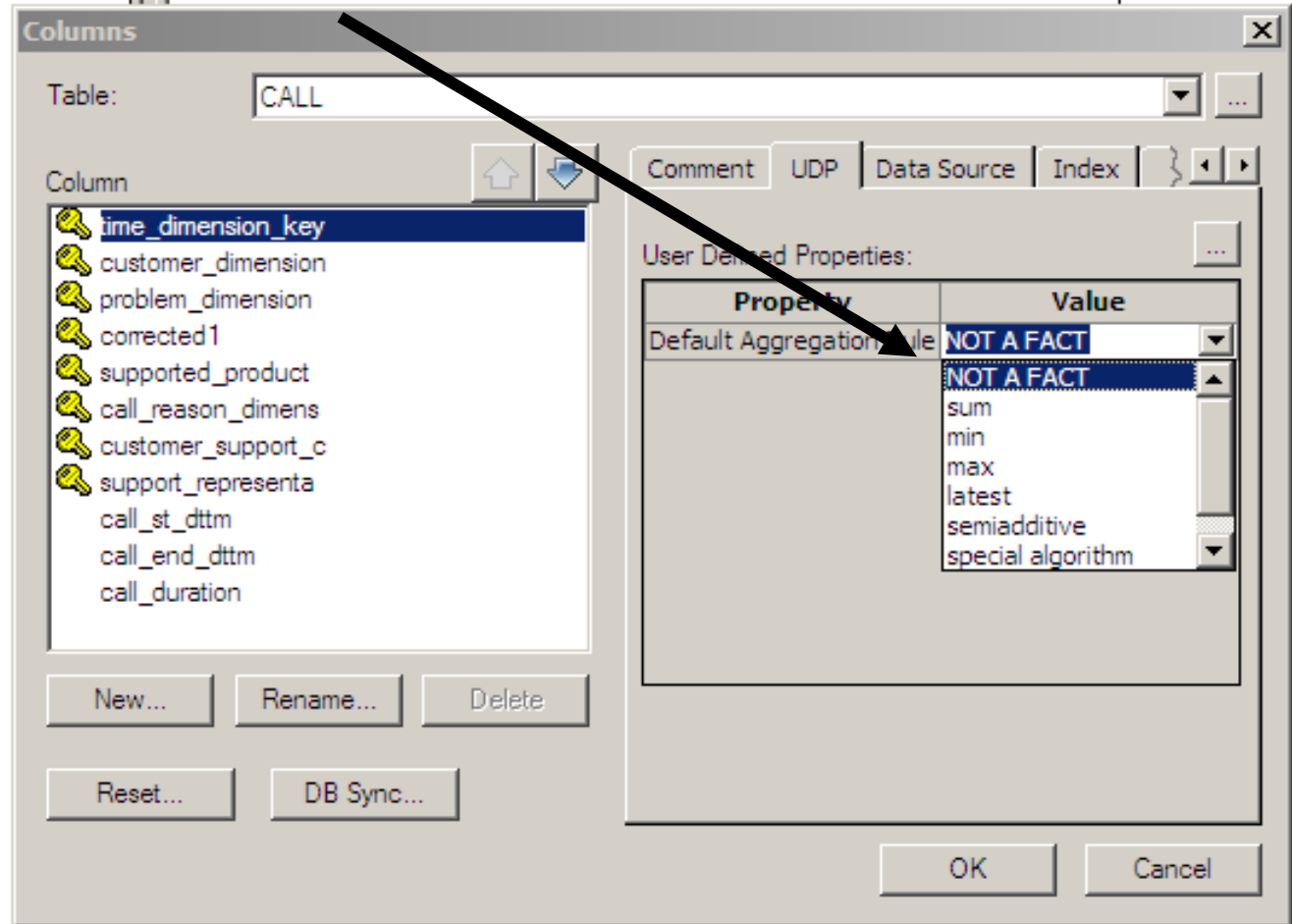
Creating Data Sources

Select the column(s) as source and a transform spec or comment



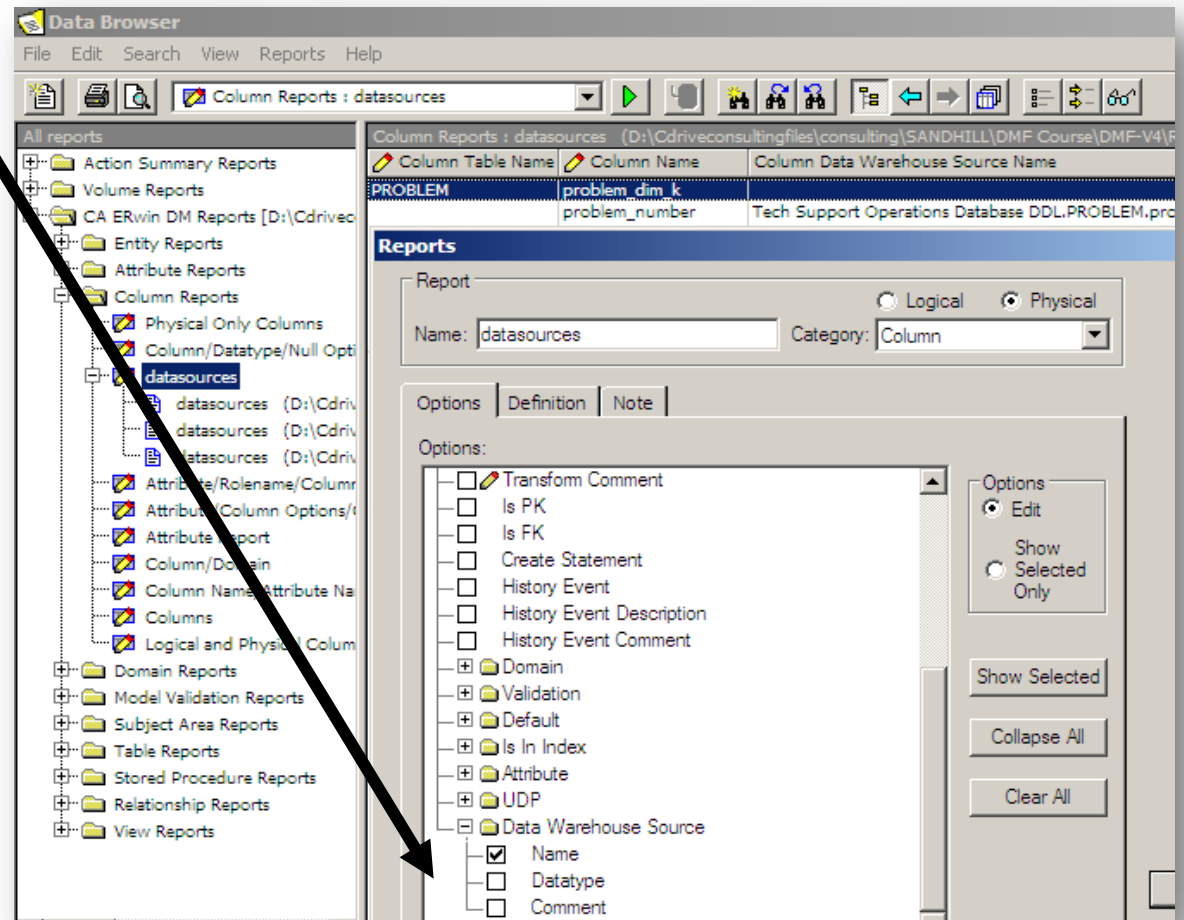
Creating Column Level UDP

Identify Aggregation Rules

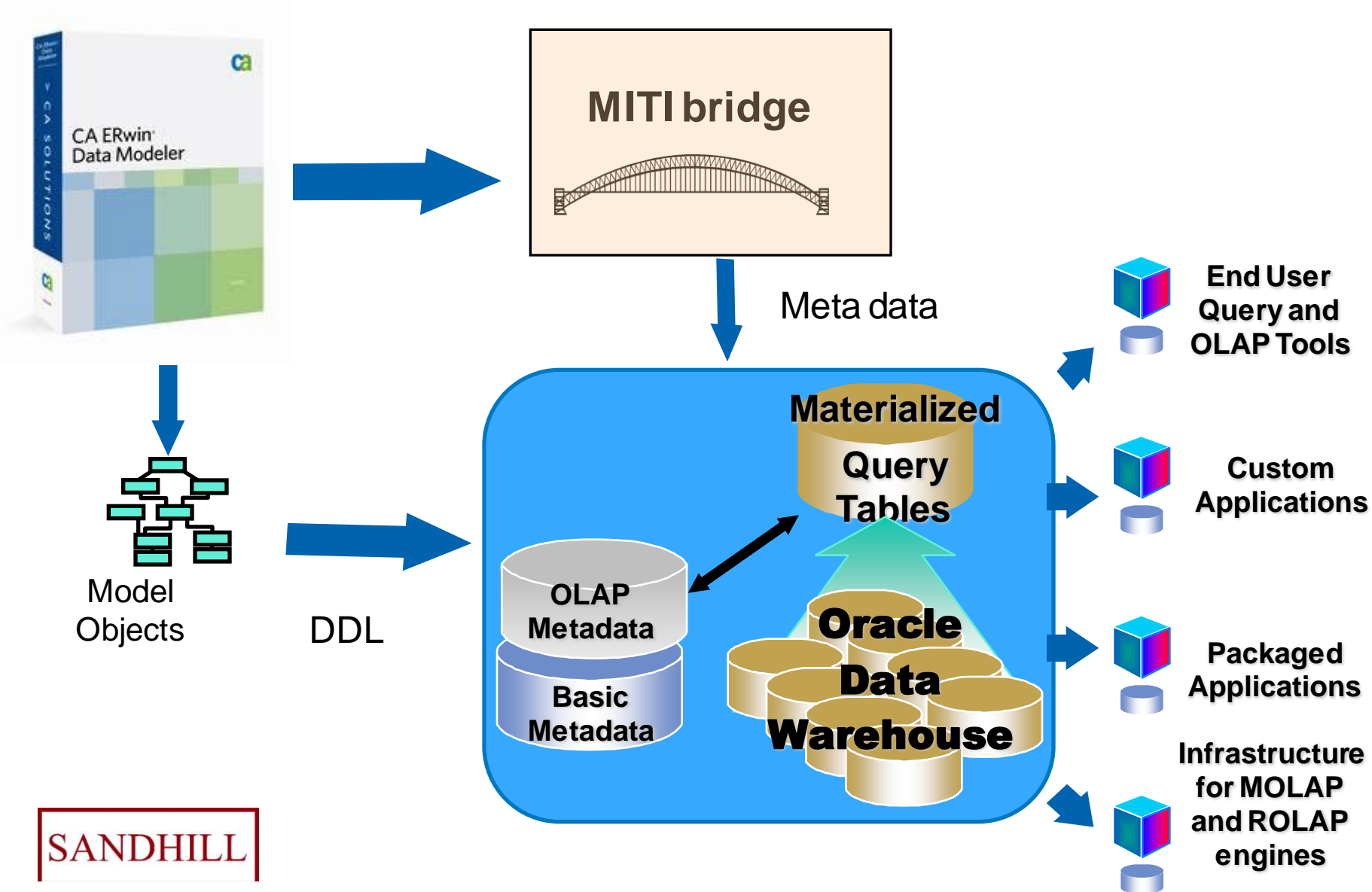


Publish a Data Browser Report

Report on Sales Orders data source

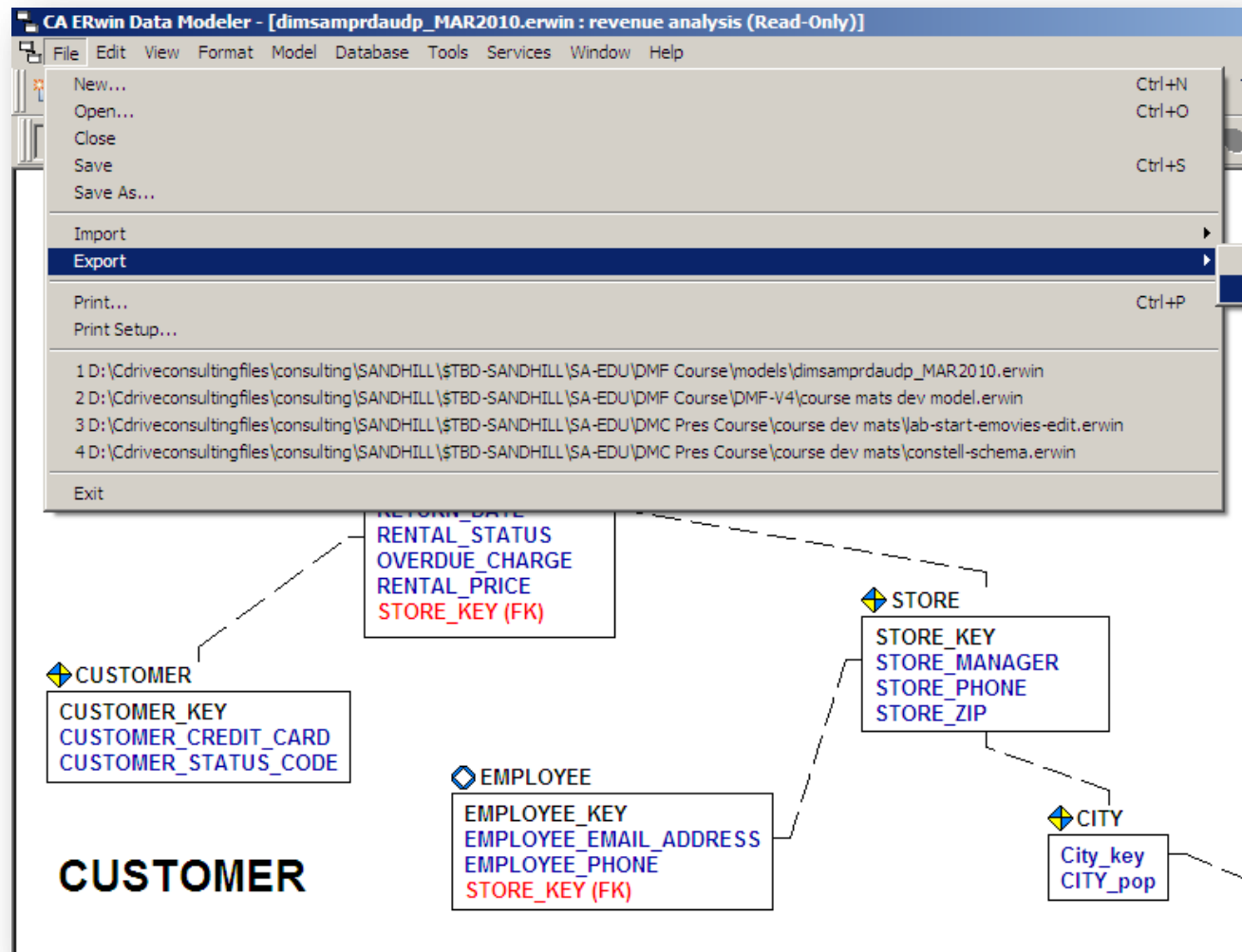


Meta Integration Bridge - MITI



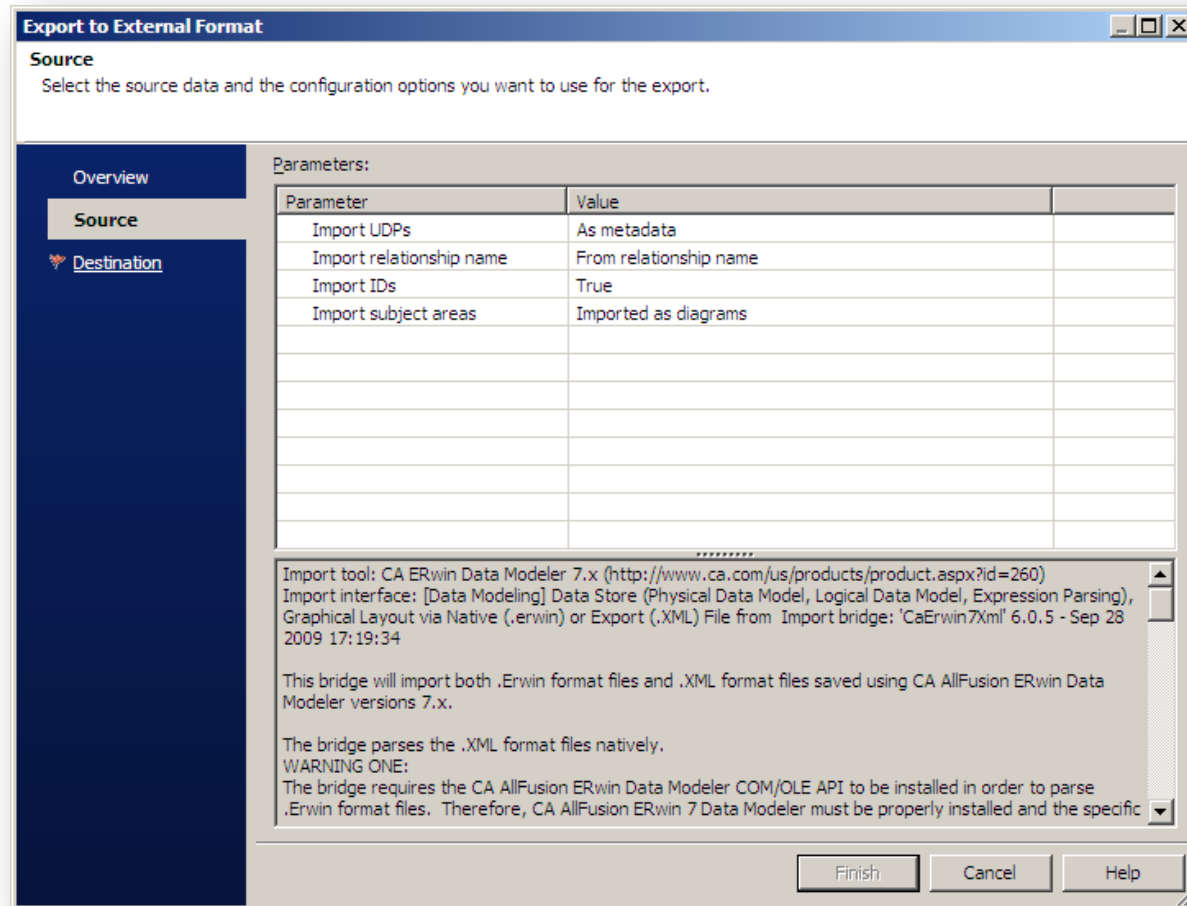
ERwin Metadata Export

File...Export



ERwin Metadata Export

Source Model options...



ERwin Metadata Export

Target Project ...note options

Export to External Format

Destination
Select the export data and configuration options you want to use for the export.

Overview
Source
Destination

Type: Oracle Warehouse Builder
Location: Oracle Warehouse Builder (via CWM XMI)
Parameter: SAP BusinessObjects Data Integrator, SAP BusinessObjects Designer (File), SAP BusinessObjects Metadata Manager (via MIR XMI), SAP NetWeaver Master Data Management (MDM), SAS Data Integration Studio (via CWM XMI), SAS Data Integration Studio (via MIR XMI), SAS Information Map Studio (via MIR XMI)

Parameter	Value
Override	True
Dimensional modeling detection	As defined by source model
Dimensional modeling detection Fact tables	
Dimensional modeling detection Dimension tables	True
Verbosity	True

ERwin Metadata Export

CWM Options...

Export to External Format

Destination
Select the export data and configuration options you want to use for the export.

Overview
Source
Destination

Type: Oracle Warehouse Builder (via CWM XMI)

Location: D:\OWB-export.xml

Parameters:

Parameter	Value
Model	RDB
CWM version	CWM 1.0
Schema mapping	Use Packages names
Default Schema name	
Export Index of Key	True
UUIDs	False
xmlns:CWM	org.omg.CWM1.0
xmlns:CWMRDB	org.omg.CWM1.0/Relational
xmlns:CWMOLAP	org.omg.CWM1.0/OLAP

This bridge generates an XML file compliant to the Object Management Group (OMG) Common Warehouse Metamodel (CWM) XML Metadata Interchange (XMI) file format. There are multiple versions of the CWM metamodel and XMI format, therefore make sure you generate the appropriate OMG CWM XMI version for your target tool. Set up the bridge options accordingly, or select another export bridge version if necessary.

Finish Cancel Help

ERwin Metadata Export

OWB Options...

Export to External Format

Destination
Select the export data and configuration options you want to use for the export.

Overview
Source
Destination

Type: Oracle Warehouse Builder

Location: ...

Parameters:

Parameter	Value
Host	localhost
Port	1521
Service	ord
Repository	test export
Project	JC DIM
User	SCOTT
Password	*****
OWB Home Path	C:\OraHome_1
Override	False
Dimensional modeling d...	As defined by source model

Enter a semi-colon separated list of tables to be represented as fact tables.

This bridge can use the dimensional role that has been specified for each table (fact, dimension) to infer how those tables are converted into BI facts and dimensions when forward-engineering a data model created in a data modeling or ETL tool and forward-engineer to an OLAP/BI model. This parameter manually controls how the tables are assigned the fact dimensional role. For example: dbo.Fact1; Fact2

Finish Cancel Help

- MITI bridge:
 - Uses the dimensional role that has been specified for each table (fact, dimension, outrigger) to infer how those tables are converted into BI facts and dimensions
 - Table's dimensional role (fact, dimension, outrigger) is to be determined from ERwin and the bridge may make such a determination, even if the source model did not specify table's dimensional role.

- 'As defined by source model' - Determine dimensional role only as defined in the source model.
- 'Autodetect from relational schema' - Determine dimensional role of fact and dimension tables based on foreign keys.
- The MITI algorithm determines a table to be a:
 - fact table - if the table has only incoming foreign keys
 - dimension table - if the table has with no foreign key relationships to any other tables
 - dimension table or outrigger table - if the table has outgoing foreign keys and depending on the minimum distance (number of foreign key relationships) to a fact table

Importing Metadata from an Object Management Group CWM

Oracle
Warehouse
Builder
Transfer
Wizard

OMG CWM Object

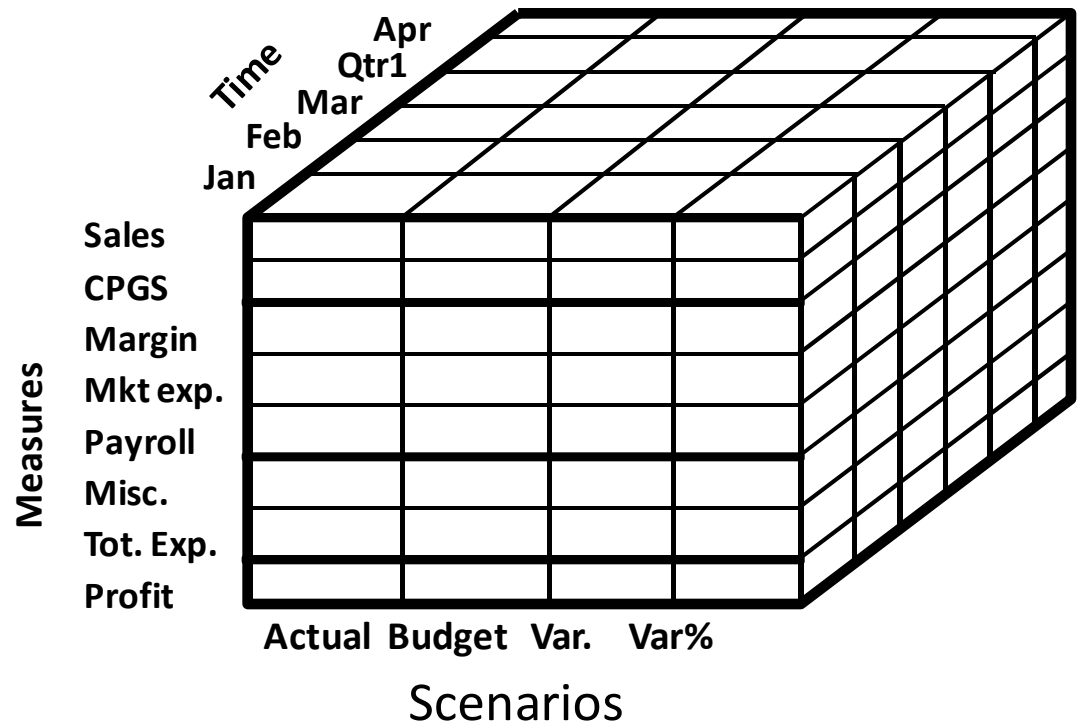
Package
Schema
Dimension
Level
Attribute
Hierarchy
Cube
Measure
Table
Column
Foreign Key
Unique Constraint/Primary Key
View
Column

OWB Object

Project
Module
Dimension
Level
Level Attributes
Hierarchy
Cube
Cube Measure
Table
Column
Foreign Key
Unique Key
View
Column

Hyperion Storage method

- Non-relational - Stores data in Blocks
- Contents of a block determined by dense dimensions
- Block size affects
 - Data Load time
 - Calculation time
 - Retrieval time



Oracle 11 BI Suite Enterprise Edition

Enterprise Business Model Administration

Business Model Layer – “Calculation Engine”

Physical complexity converted to logical subject areas

Drill-Paths

Complex/Derived Measures (Level-based, time series, dimension-specific, nested)

Can be designed in ERwin

Business Model and Mapping

- Paint
 - MarketDim
 - PeriodDim
 - ProductDim
 - Sales Facts
 - Markets
 - Periods
 - Products

Summary

- ERwin Model objects and metadata that Oracle can leverage:
 - Dimensional Modeling
 - Measures, Dimensions, Facts, and metadata (derivation and usage)
 - ETL mapping
 - Metadata publishing and extension
 - Dimension Hierarchy Characteristics