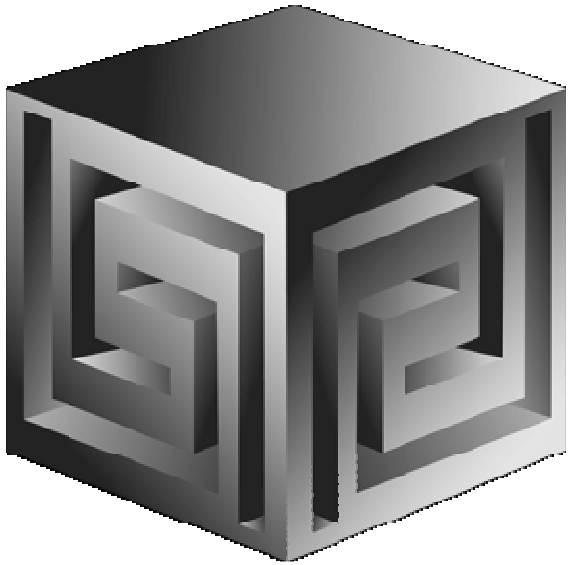
Implementing Oracle BI EE Using Oracle OLAP Cubes

Dallas Oracle User Group
Oct 12, 2007



Cathye Pendley & Mark Thompson

cpendley or mthompson @vlamis.com

Vlamis Software Solutions, Inc.

816-781-2880

http://www.vlamis.com

Vlamis Software Solutions, Inc.

- Founded in 1992 in Kansas City, Missouri
- Oracle Partner and reseller since 1995
- Specializes in ORACLE-based:
  - Data Warehousing
  - Business Intelligence
  - Data Transformation (ETL)
  - Web development and portals
  - Oracle OLAP-based applications
- Delivers
  - Design and integrate BI and DW solutions
  - Training and mentoring
- Expert presenters at major Oracle conferences

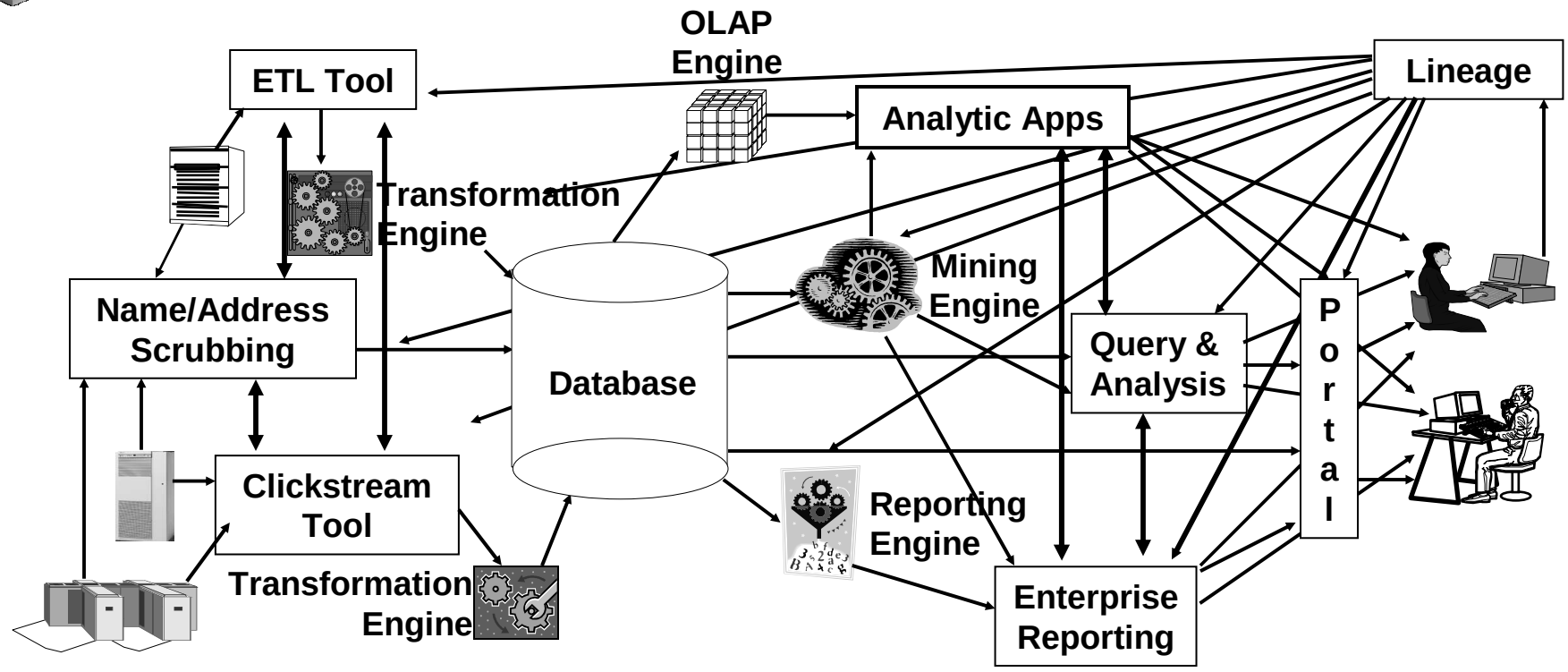
Biography

- **Mark Thompson, Senior Consultant**
  - **23 years working with Oracle OLAP and its predecessor (Express)**
  - **5 years with Oracle Consulting and Braun Consulting**
  - **Joined Vlamis Software Solutions in 2006**
  - **Presenter at numerous Oracle user conferences**
  - **Author of several white papers on OLAP**
  - **OLAP tools and DML expert**

Agenda

- Brief background of BI EE and Oracle OLAP
- Why Oracle OLAP?
- What is Oracle OLAP?
- Oracle OLAP storage options
- Structure of Analytic Workspace
- Demonstration of BI EE on Oracle OLAP
- 11g OLAP Preview – what changes?

Business Intelligence Market Multi-Vendor, Un-integrated



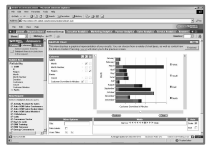
- Protracted and complex implementation
- Escalating maintenance costs
- Software ***and Metadata*** **Integration is key!**

Oracle BI Suite Enterprise Edition
Unified Business Intelligence Infrastructure

Interactive Dashboards

Reporting & Publishing

Ad-hoc Analysis



Proactive Detection and Alerts

Disconnected Analytics

MS Office Plug-in

Microsoft Office

Oracle BI Server

- Simplified Business Model and Abstraction Layer
- Intelligent Caching Services
- Multidimensional Calculation and Integration Engine
- Intelligent Request Generation and Optimized Data Access Services

OLTP & ODS Systems

Data Warehouse Data Mart

SAP, Oracle PeopleSoft, Siebel, Custom Apps

Files Excel XML

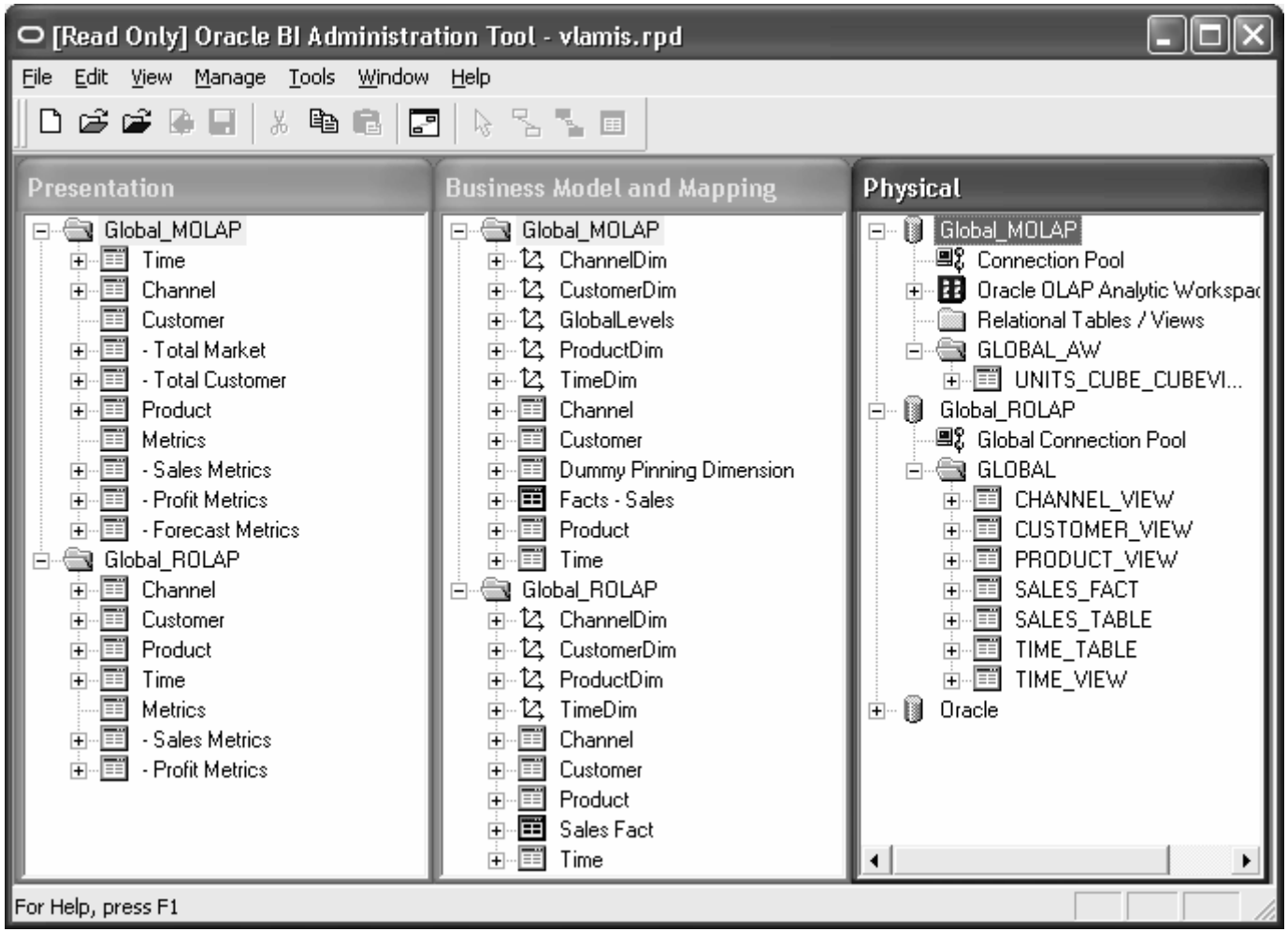
Business Process

Changing Oracle BI Product Line

- **Back Ends**
  - **Oracle relational (and Disco Administrator)**
  - **Oracle OLAP cubes**
  - **Heterogeneous sources (MS, SAP BW, etc.)**

- **Front Ends**
  - **Oracle BI EE (Siebel)**
  - **Oracle BI SE (Discoverer, BI Beans)**
  - **Oracle BI SE One (stripped down Siebel)**

BI EE Metadata Editor



⇐ ⇐ Data Flows

Definition of OLAP

OLAP stands for On Line Analytical Processing**.**

That has two immediate consequences: the *on line* part requires the answers of queries to be fast, the *analytical* part is a hint that the queries itself are complex.

i.e. Complex Questions with FAST ANSWERS!

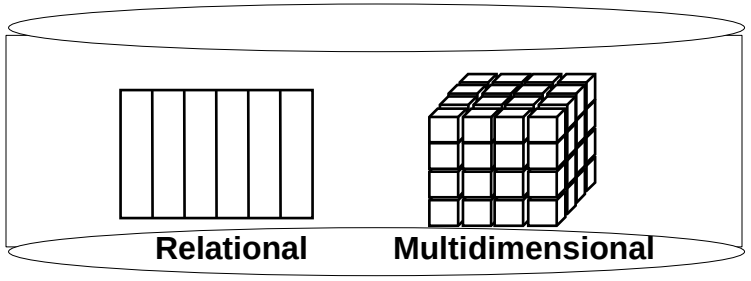
What Does Oracle OLAP Add to a DW?

- Multidimensional user view of data
- Users create own reports
- Users create own measures
- Easy drill-down, rotate
- Iterative discovery process (not just reports)
- Ad-hoc analysis
- Easy selection of data with business terms
- OLAP DML with what-if, forecasting

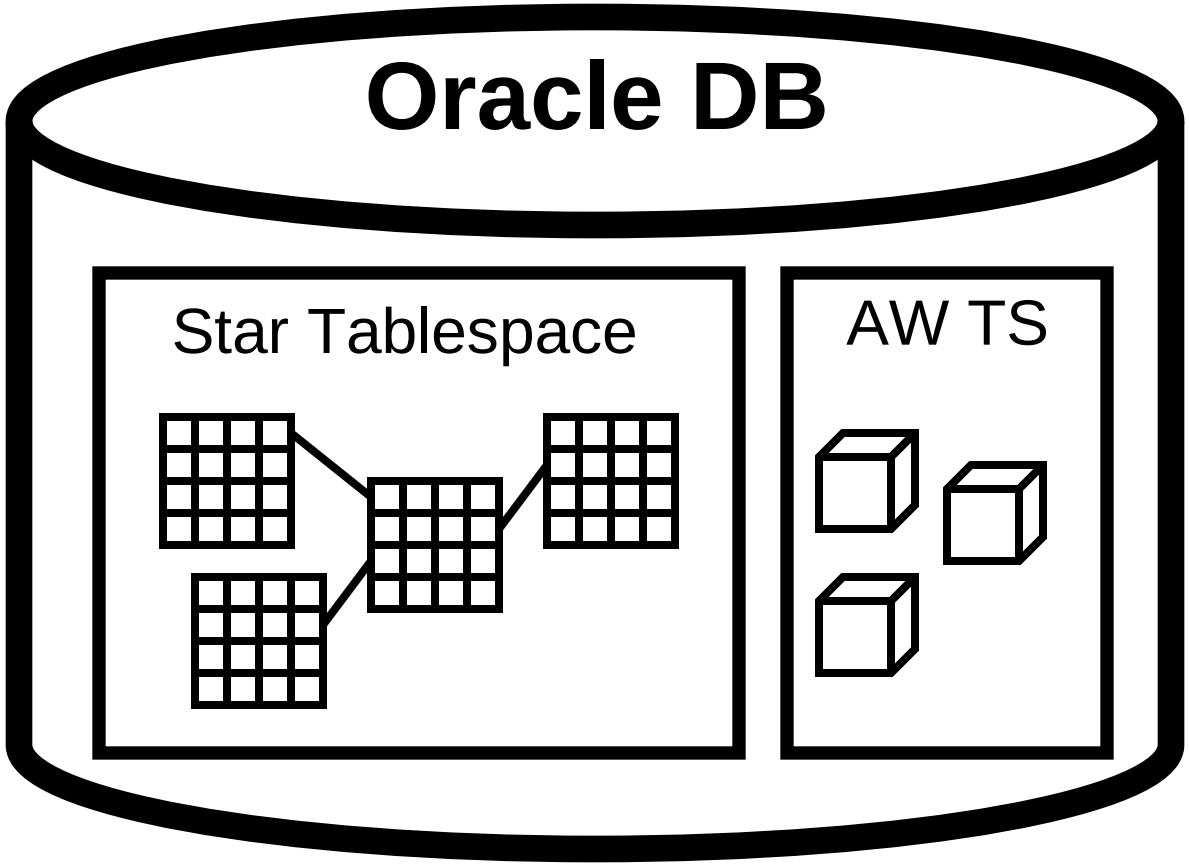
ROLAP vs. MOLAP

- **What is ROLAP? (Relational)**
- **What is MOLAP? (Multidimensional)**

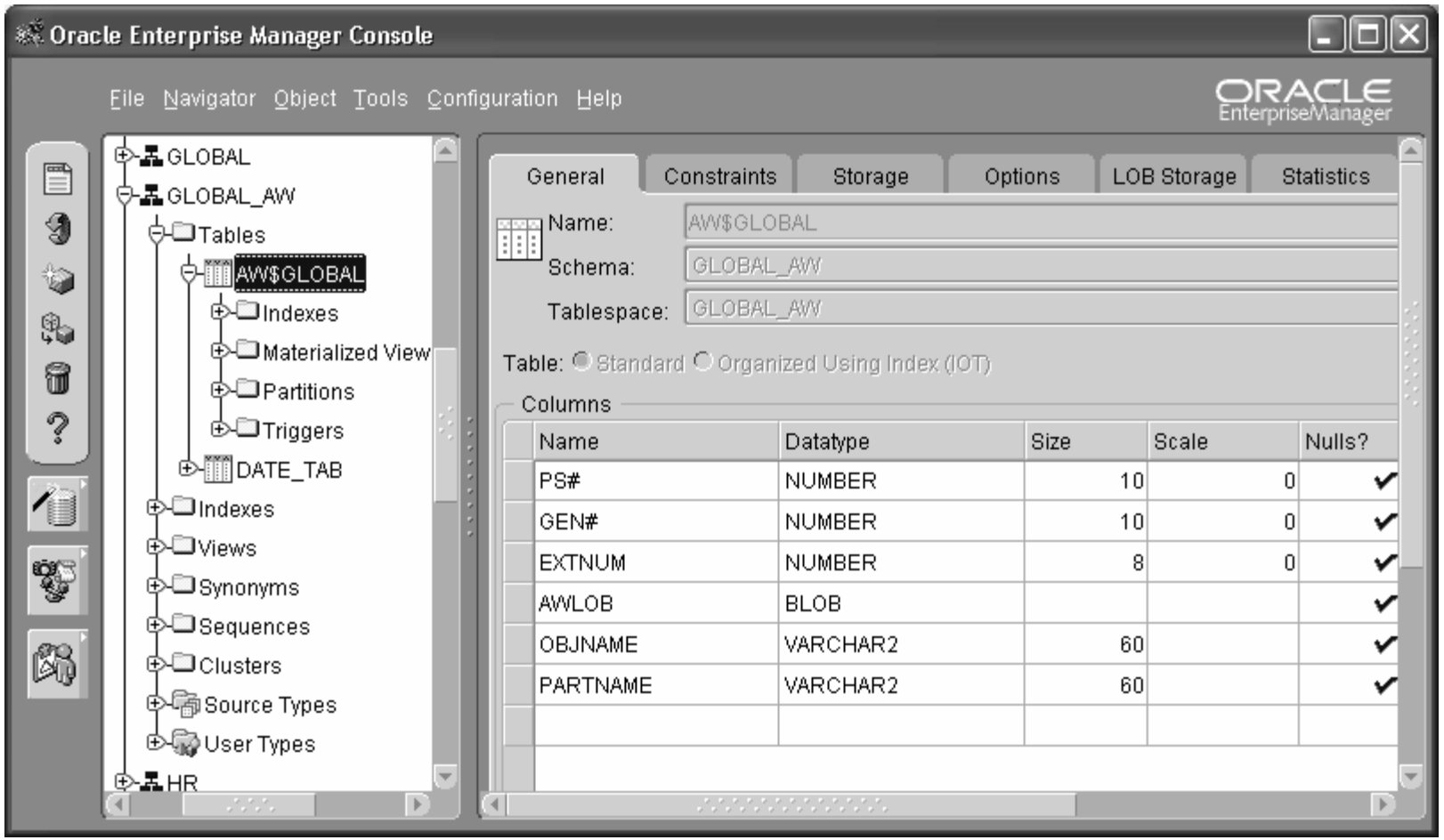
- **It's all in how the data is stored**



Analytic Workspaces Are Stored in Tablespaces in OLAP

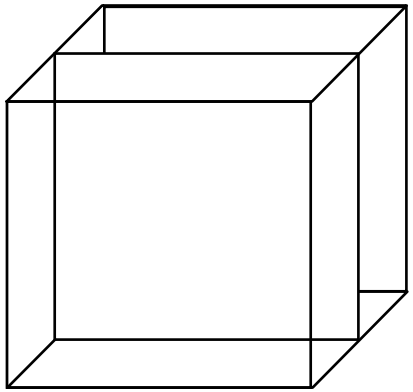


What is an Analytic Workspace?

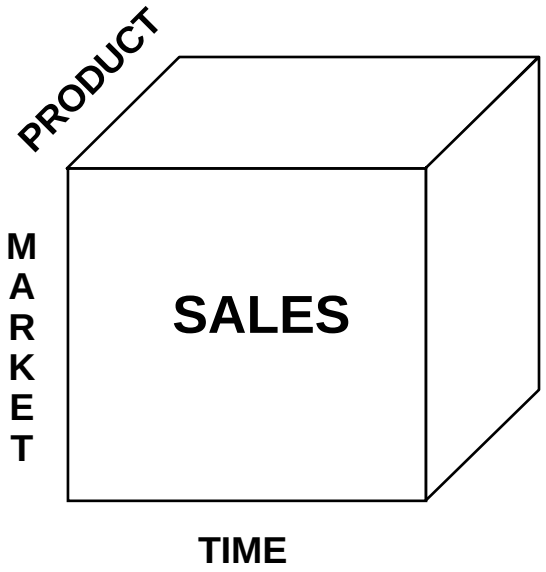


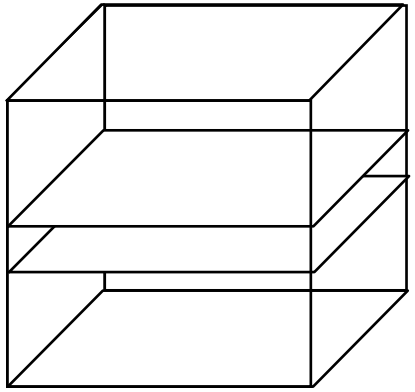
OLAP AW Stores Data in Cubes

Fast Flexible Access to Summarized Data

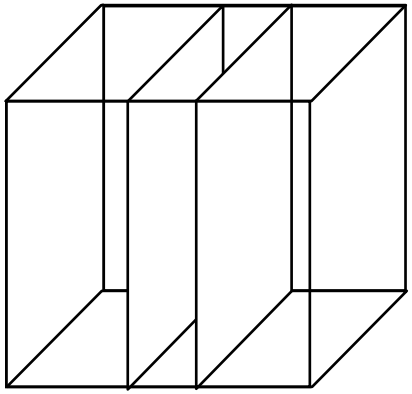


Product Mgr. View

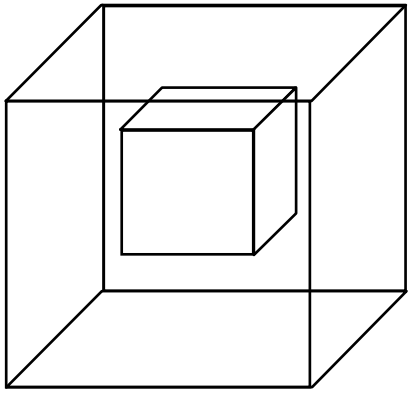




Regional Mgr. View



Financial Mgr. View

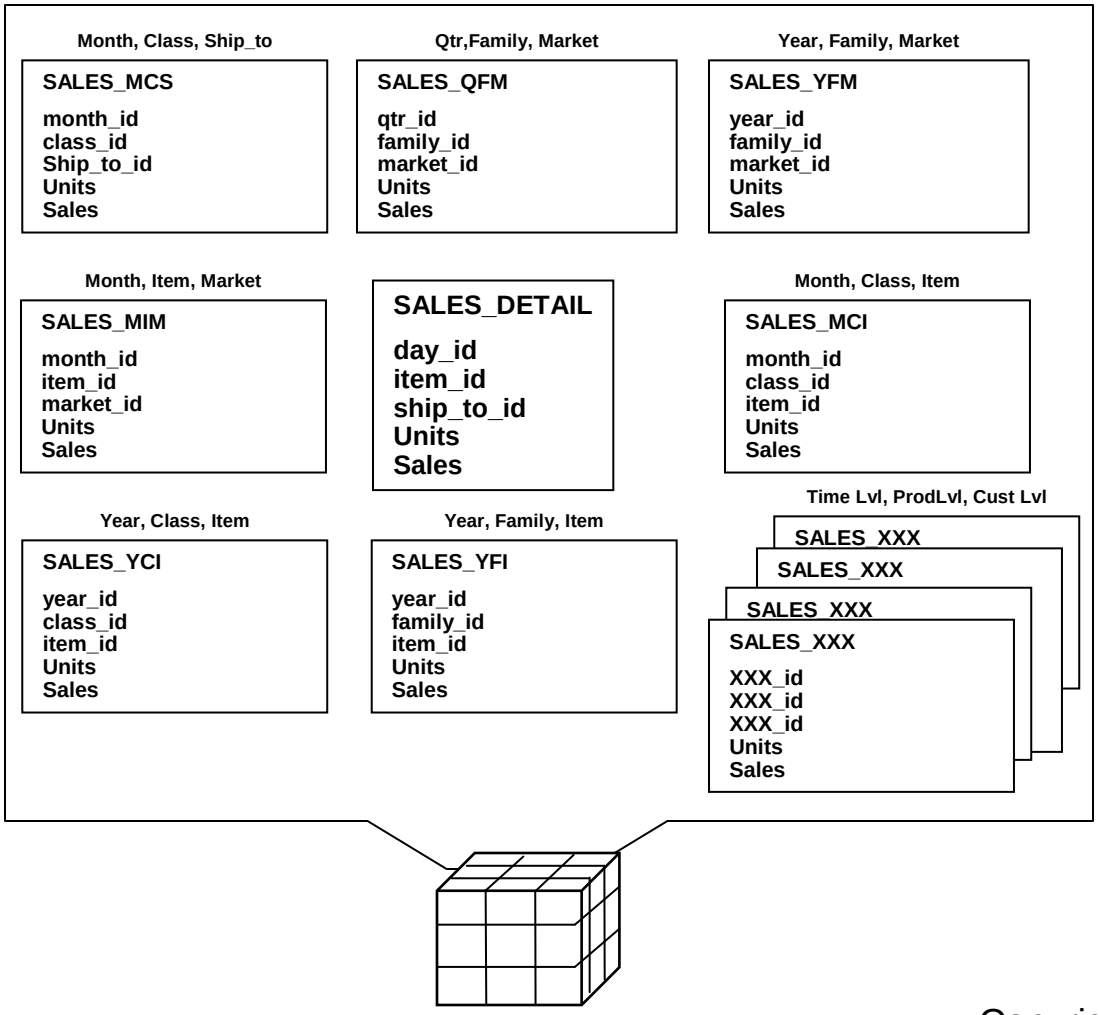


Ad Hoc View

Cubes Defined

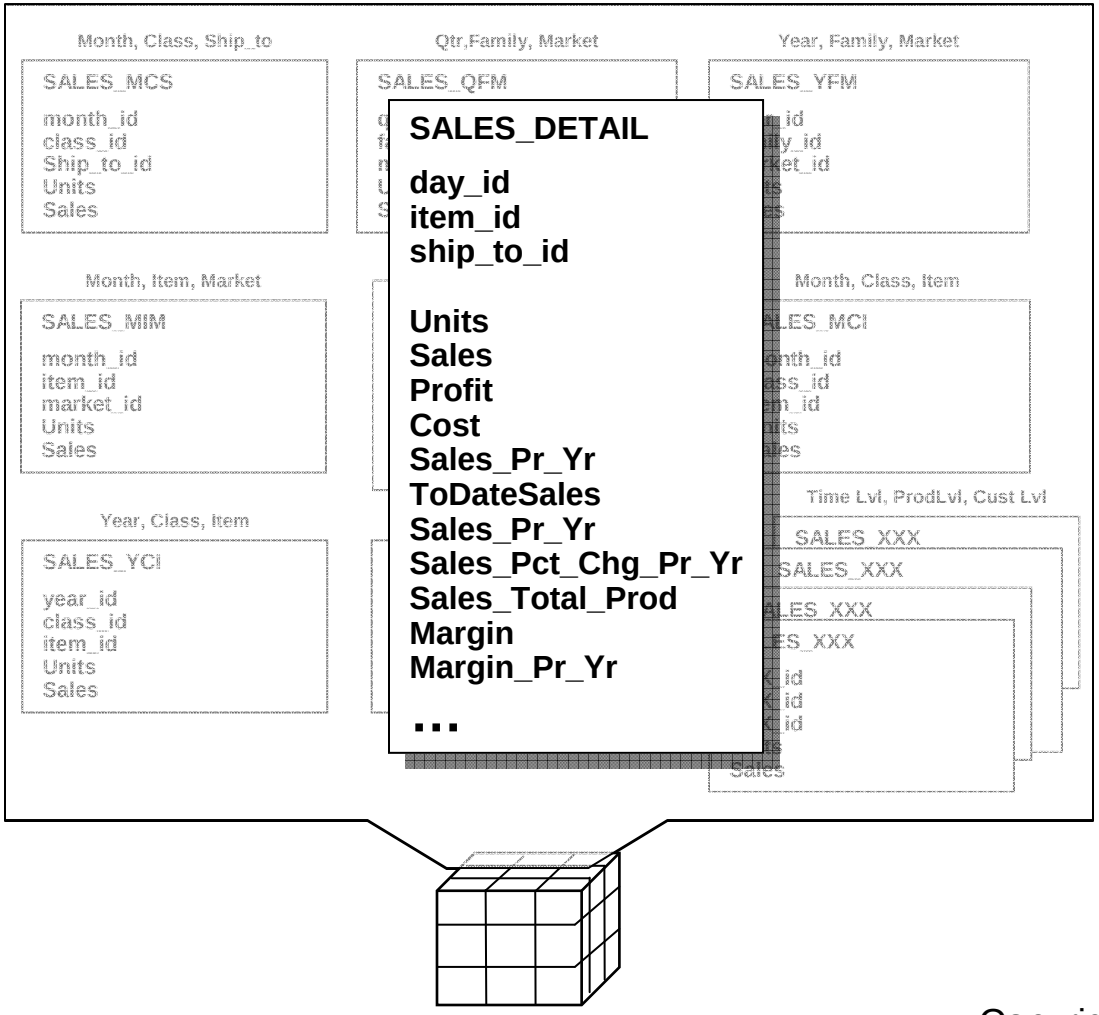
- **Definition:**
- **Cubes are collections of measures. They are a logical way to organize data. All measures in a cube share the same dimensionality, sparsity, and data type**
- **Examples:**
  - **Sales_Cube (with Units, Dollars, Profit)**
  - **Finance_Cube (with Actual, Budget, Variance)**

Classic ROLAP Approach



- **Define appropriate summaries based on query patterns**
- **Each summary is typically defined at a particular grain**
  - **Month, Class, Ship_to**
  - **Qtr, Family, Market**
  - **Year, Family, Market**
  - **etc.**

Summary Strategies
Classic ROLAP approach

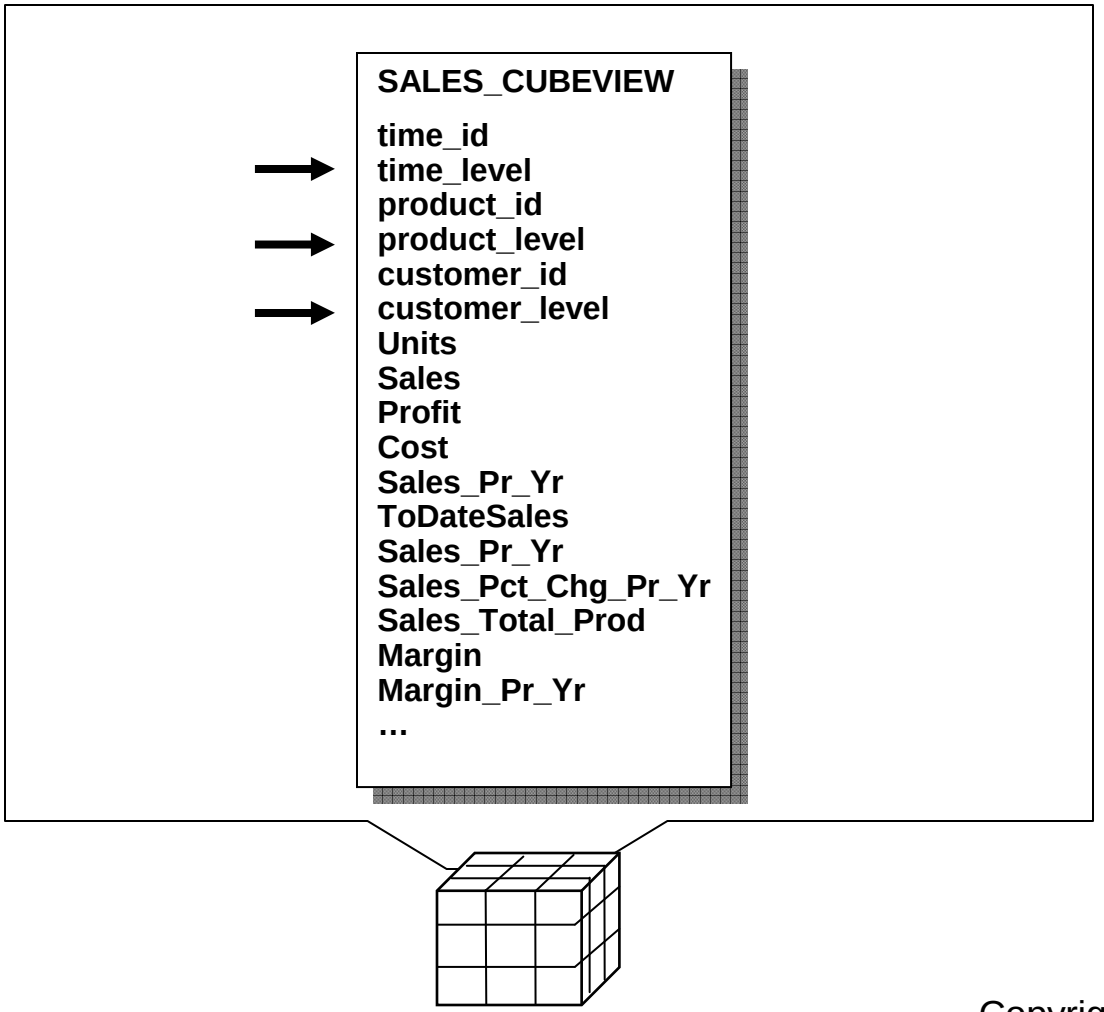


- **Most OLAP calculations do not aggregate easily**
  - **Percentages**
  - **Ratios**
  - **Moving Averages**
  - **Etc.**
- **Aggregation rules may be complex**
- **Difficult to handle case where user queries a grain that is not supported by a view**

Summary view required for each grain that will be queried

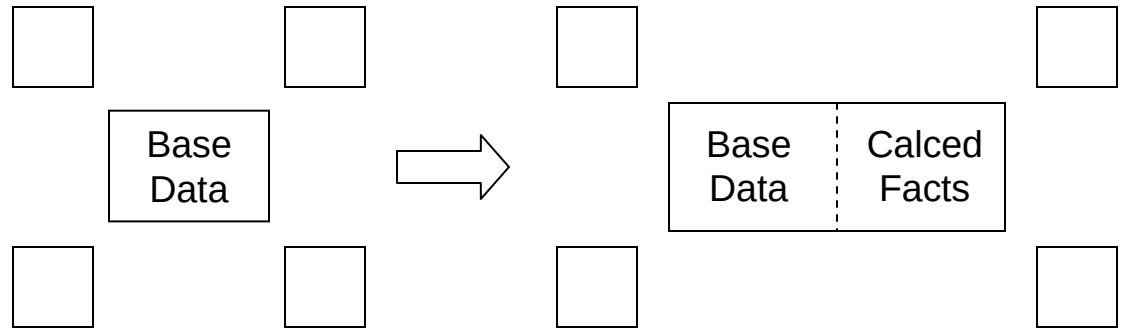
Is this manageable?

MOLAP Approach:
Single embedded total view for aggregations



- **Single view contains data for *all* summary levels**
- **Multi-dimensionally *based* Oracle OLAP engine handles all of the calculations**
- **No Summary Tables or Materialized Views**

BI EE on ROLAP



Family	Item	Sales	Sales % Chg Prior Year
Desktop PCs	Sentinel Financial	42,630,941	174.87%
	Sentinel Multimedia	13,676,650	16.40%
	Sentinel Standard	11,592,953	-4.05%
Portable PCs	Envoy Ambassador	6,065,510	-4.25%
	Envoy Executive	6,990,561	-13.73%
	Envoy Standard	6,099,743	-18.73%

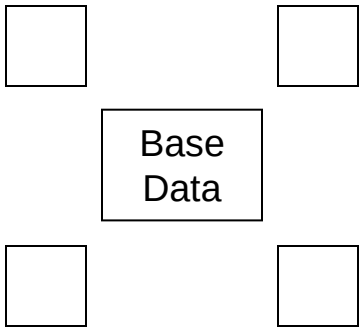
Source Star Schema

Materialized Views (for each level)

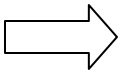
To help performance

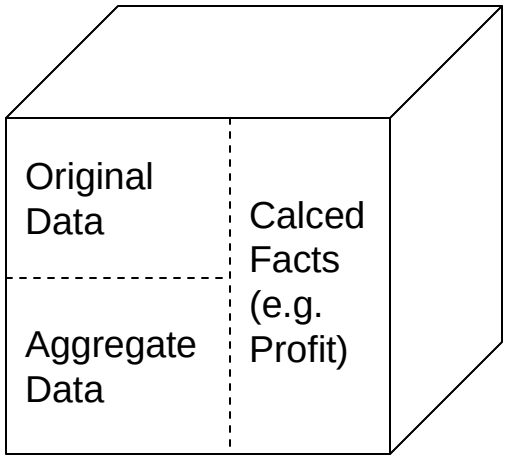
BI EE Report

BI EE on MOLAP

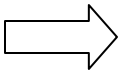


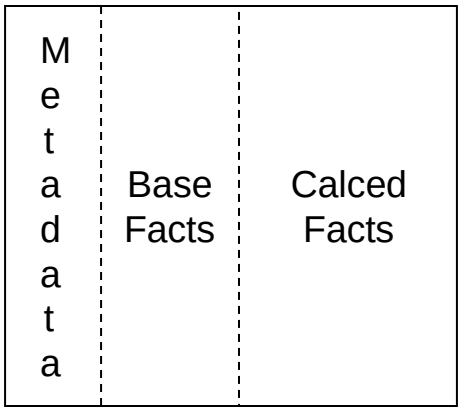
Source Star Schema





Analytic Workspace Cube





Cube View

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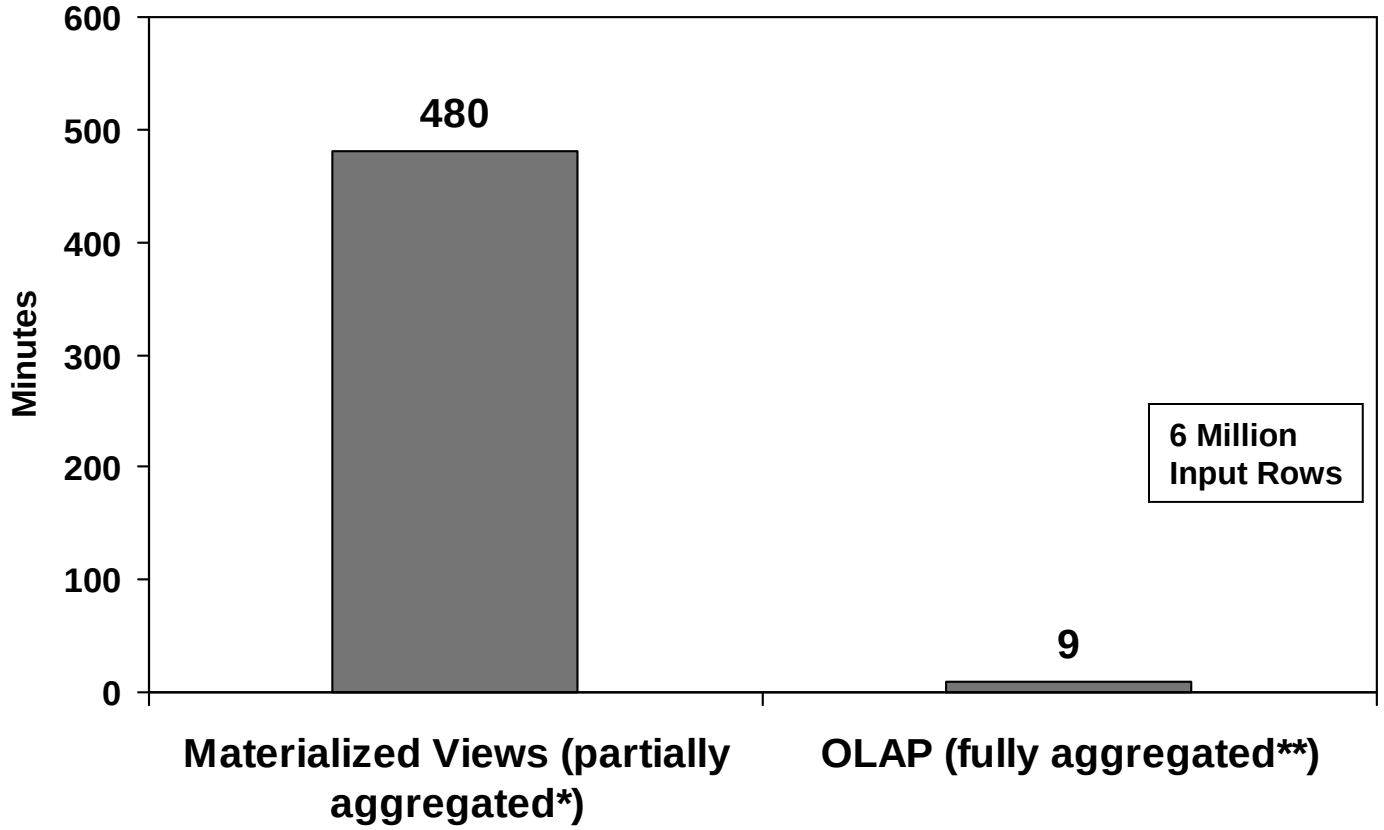
BI EE Report

Oracle Performance Case Study

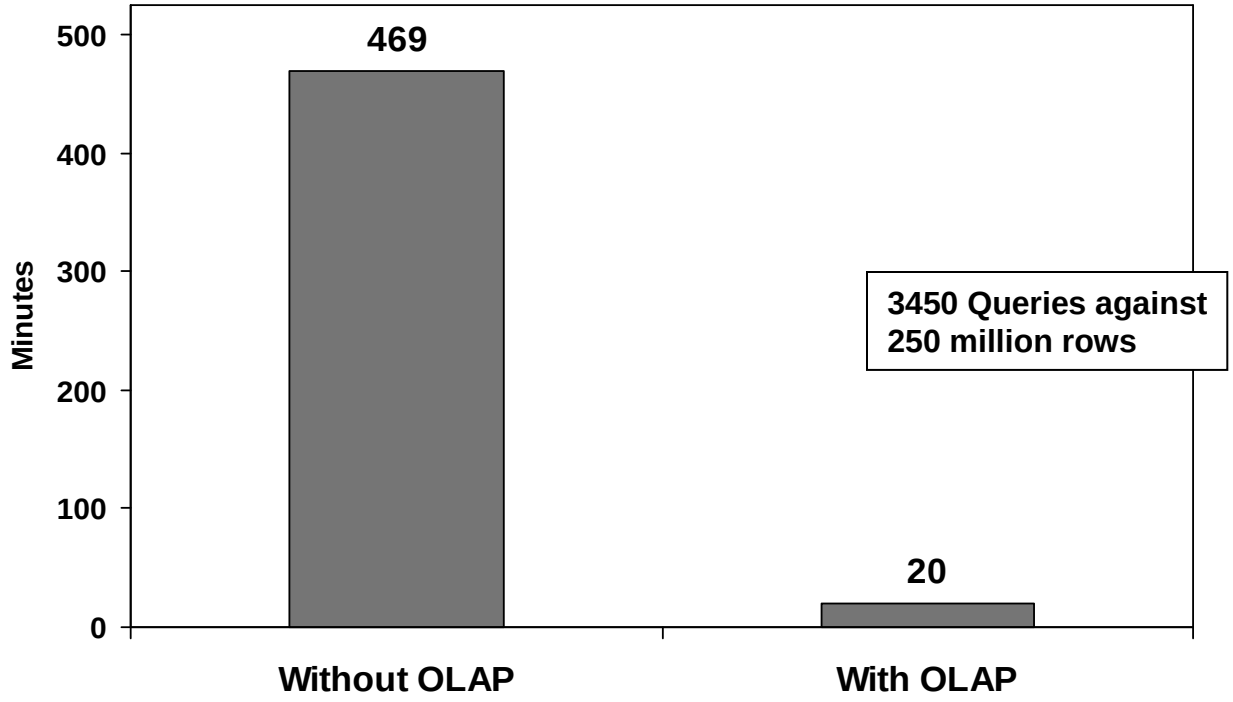
Oracle Applications: Finance DBI



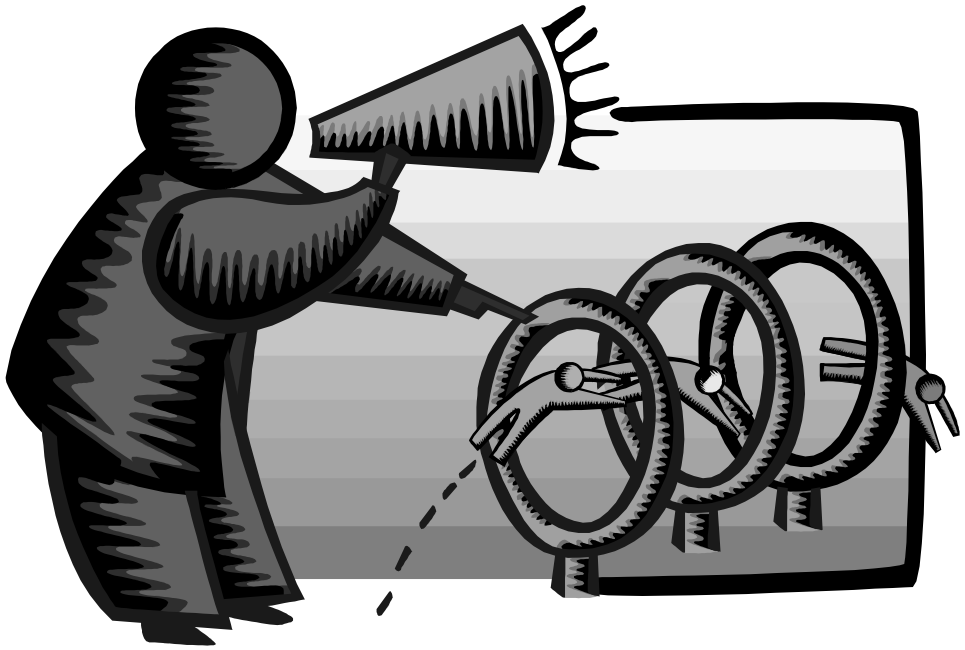
* MV aggregated 1 dimension and 1 measure

** OLAP aggregated 7 dimensions and 11 measures

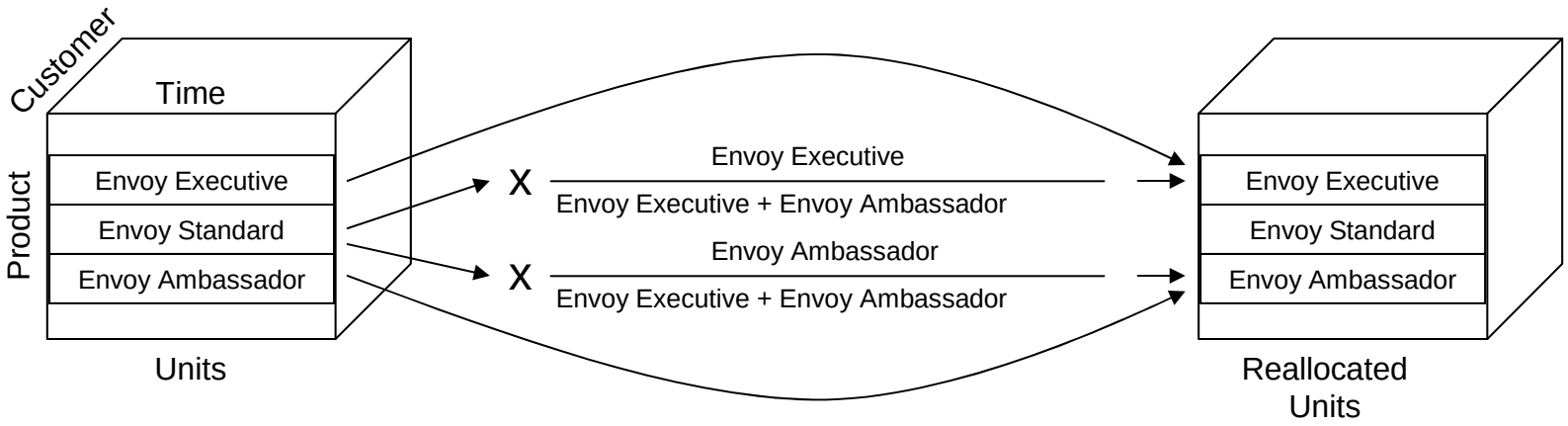
Oracle Performance Case Study
Ad Hoc Queries Across Summary Levels

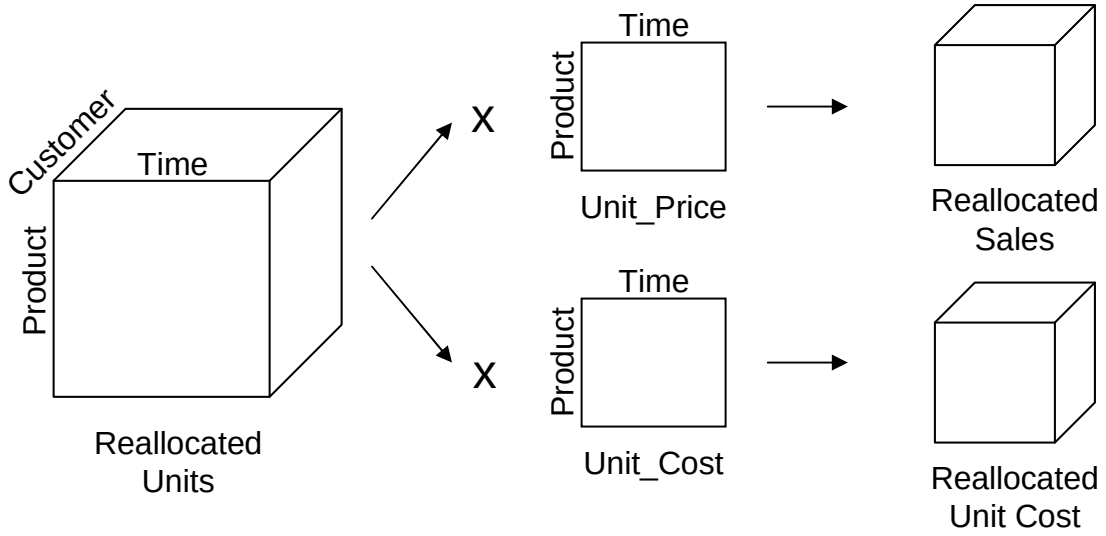


Demo of BI EE on Oracle OLAP

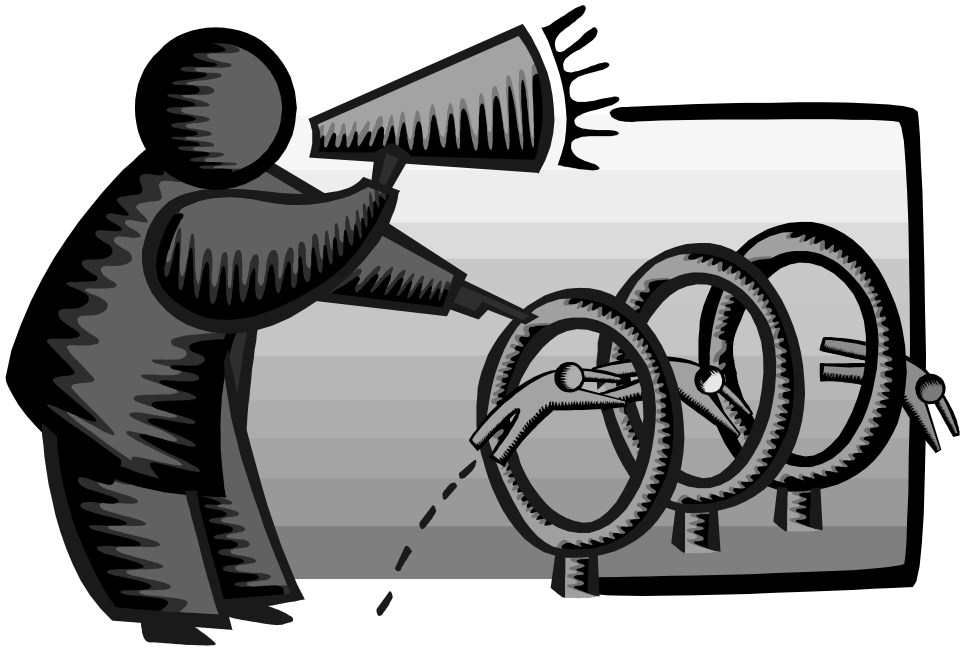


Reallocate Unit Sales





This concludes the demo!

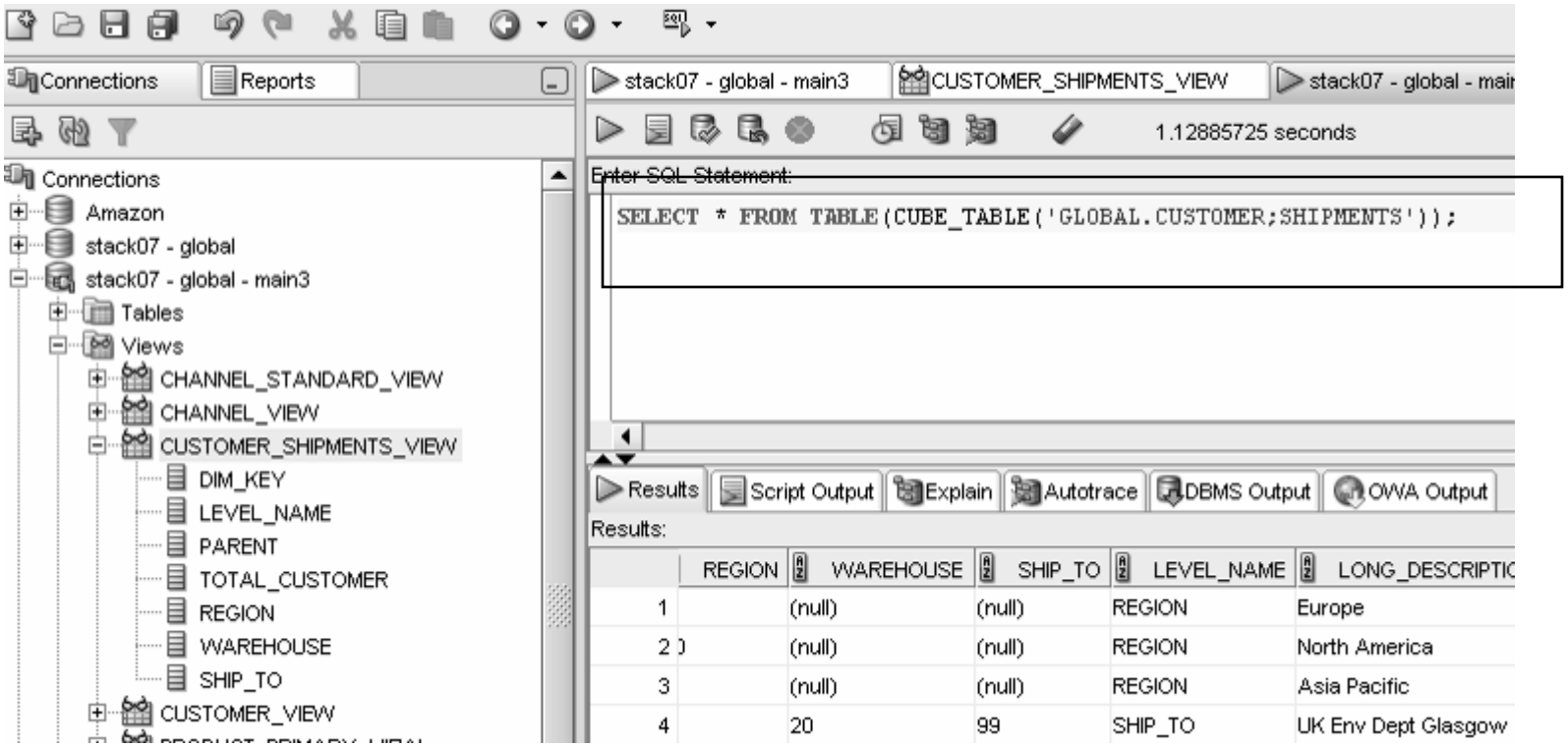


Sneak Peek at BETA OLAP 11g

- **Oracle 11g is currently in Beta, and Oracle OLAP has many NEW things Coming!**
  - **New CUBE_TABLE function in SQL**
  - **Tight integration with SQL (automatically generated views)**
  - **Tight integration with data dictionary**
  - **New Calc Wizard in AWM!**
  - **Easier to use and deploy**
  - **Ability to use OLAP for Materialized views (get MUCH FASTER response times!)**

OLAP 11g Changes

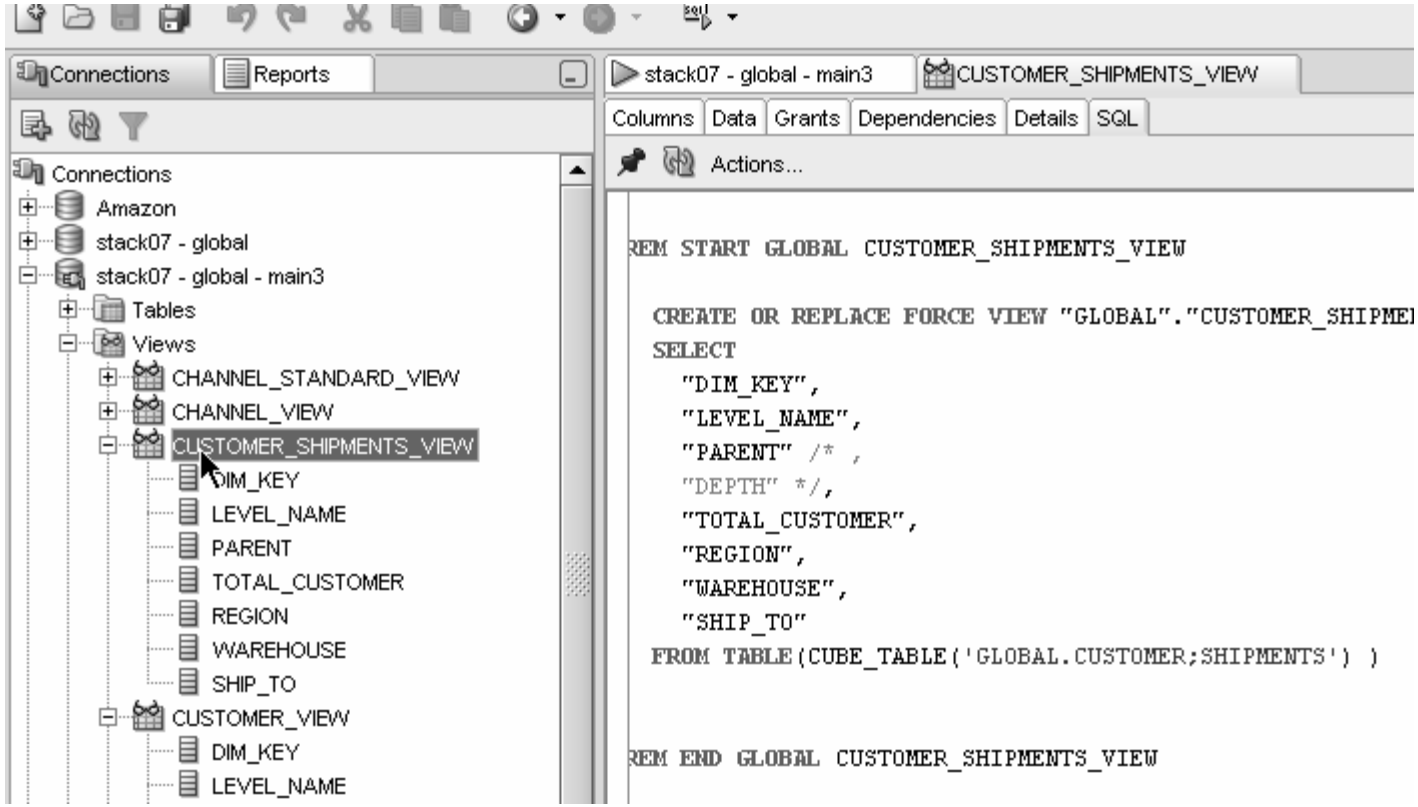
- **New CUBE_TABLE function simplifies access to AW data (replacing OLAP_TABLE)**



Standard Disclaimer – Beta software! No promises!

OLAP 11g Changes

- **Views automatically created for SQL access to AWs – Dimensions and Cubes!**



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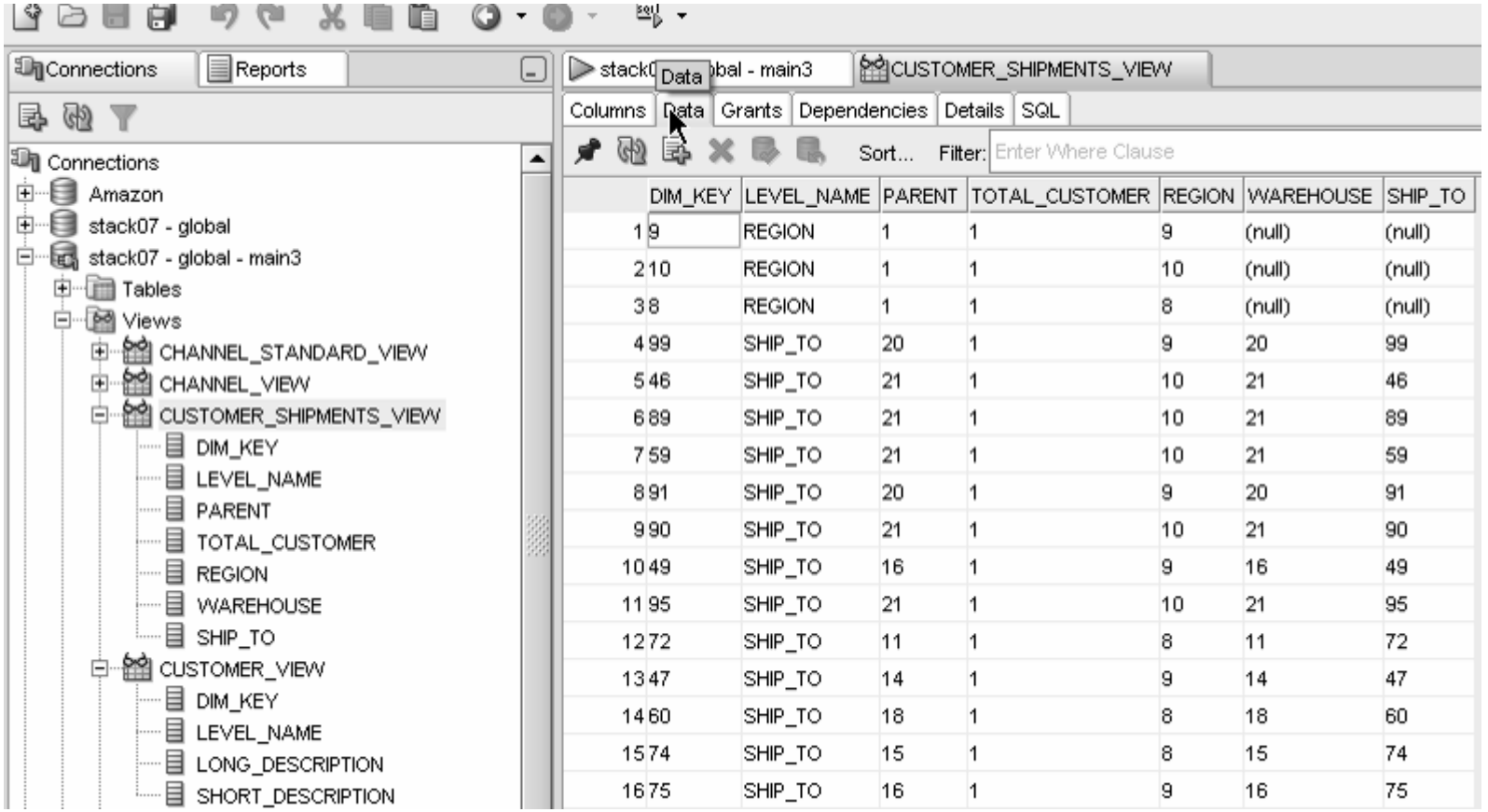
OLAP 11g Changes

- **Views easily accessed from SQL Developer**



	DIM_KEY	LEVEL_NAME	PARENT	TOTAL_CUSTOMER	REGION	WAREHOUSE	SHIP_TO
1	9	REGION	1	1	9	(null)	(null)
2	10	REGION	1	1	10	(null)	(null)
3	8	REGION	1	1	8	(null)	(null)
4	99	SHIP_TO	20	1	9	20	99
5	46	SHIP_TO	21	1	10	21	46
6	89	SHIP_TO	21	1	10	21	89
7	59	SHIP_TO	21	1	10	21	59
8	91	SHIP_TO	20	1	9	20	91
9	90	SHIP_TO	21	1	10	21	90
10	49	SHIP_TO	16	1	9	16	49
11	95	SHIP_TO	21	1	10	21	95
12	72	SHIP_TO	11	1	8	11	72
13	47	SHIP_TO	14	1	9	14	47
14	60	SHIP_TO	18	1	8	18	60
15	74	SHIP_TO	15	1	8	15	74
16	75	SHIP_TO	16	1	9	16	75

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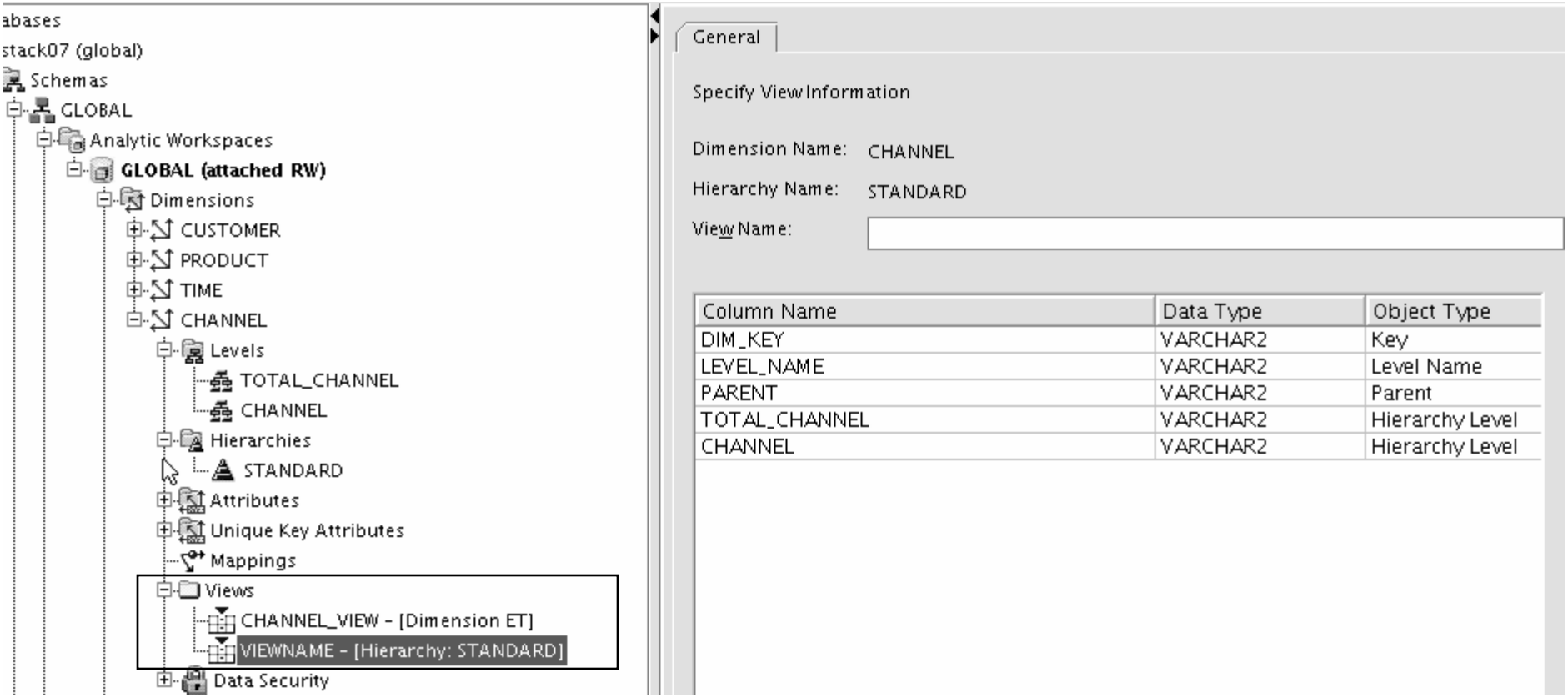
OLAP 11g Changes

- **Automatic views accessible from AWM**



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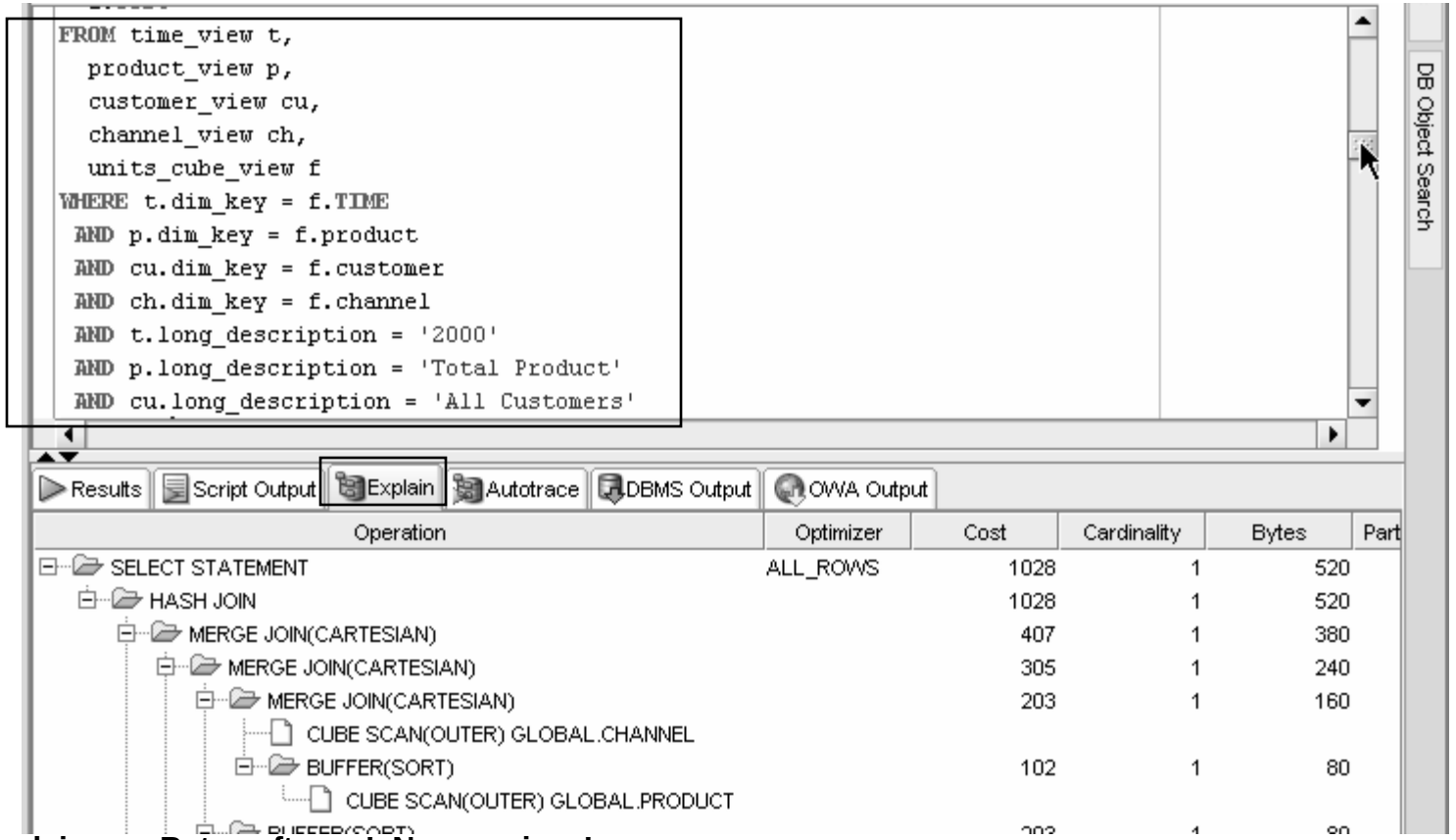
OLAP 11g Changes

- **Optimizer pushes joins down to AW**
- **Enables efficient non-OLAP-aware SQL queries**



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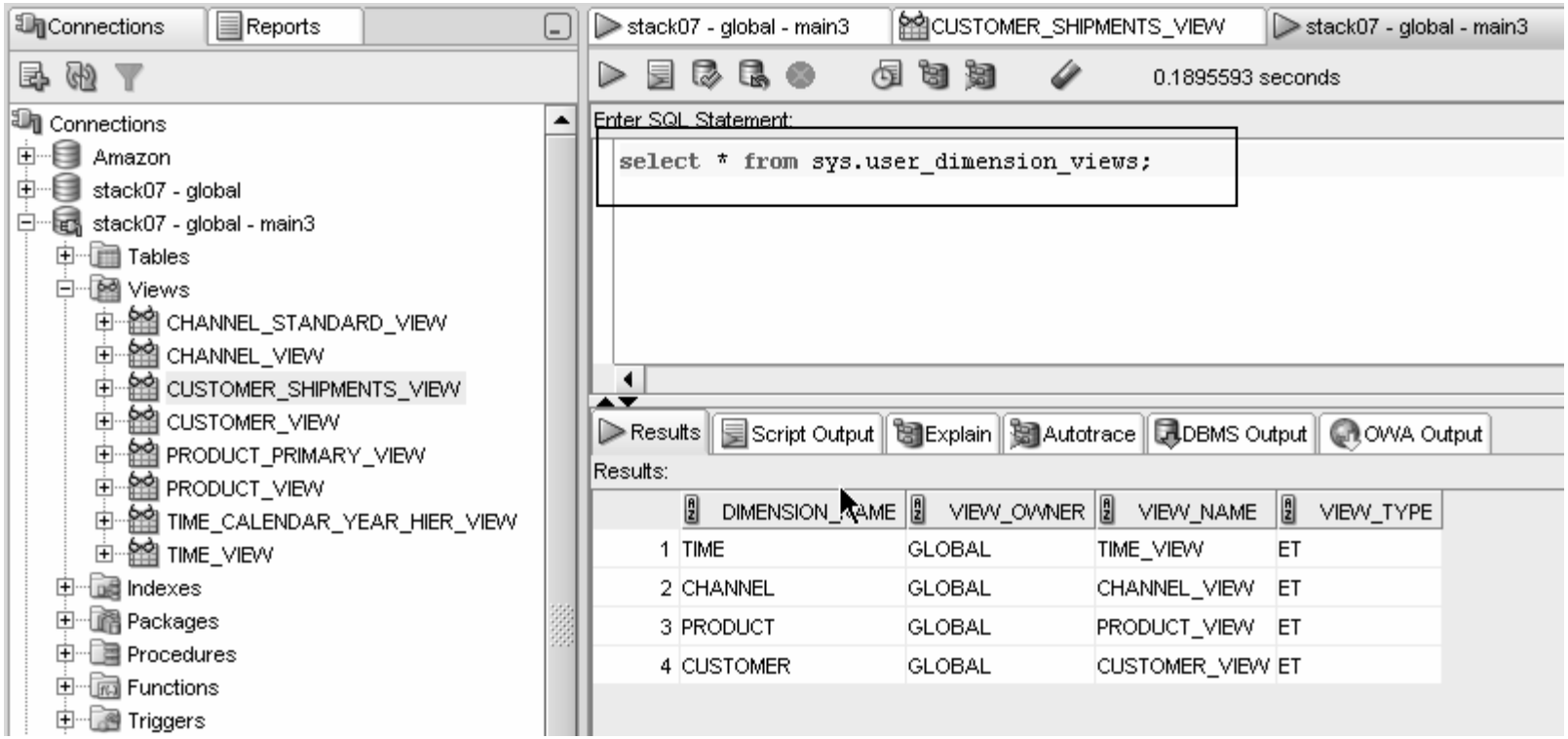
OLAP 11g Changes

- **Views are stored in Oracle Dictionary**
- **Notice in SYS.USER_DIMENSION_VIEWS**



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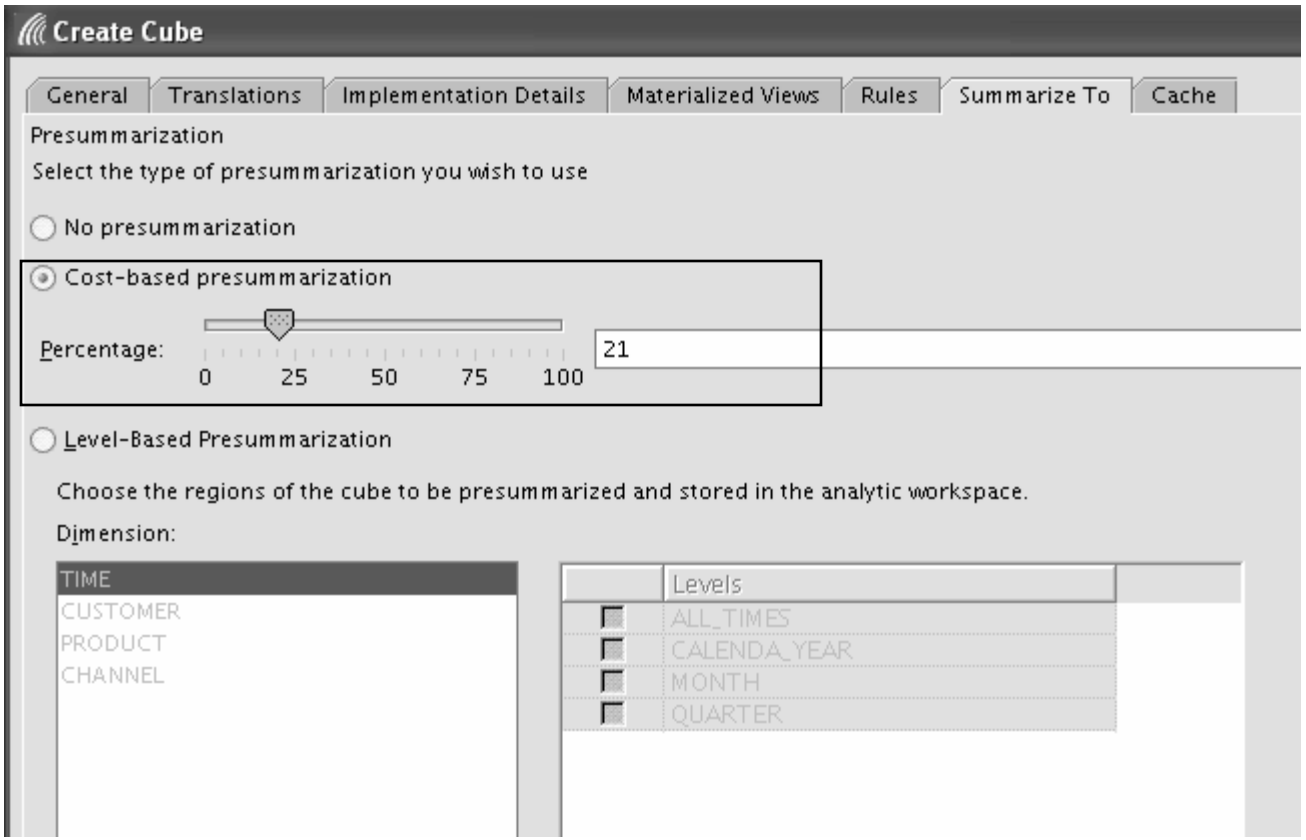
OLAP 11g Changes

- **Cost-based presummarization balances aggregation time with performance**



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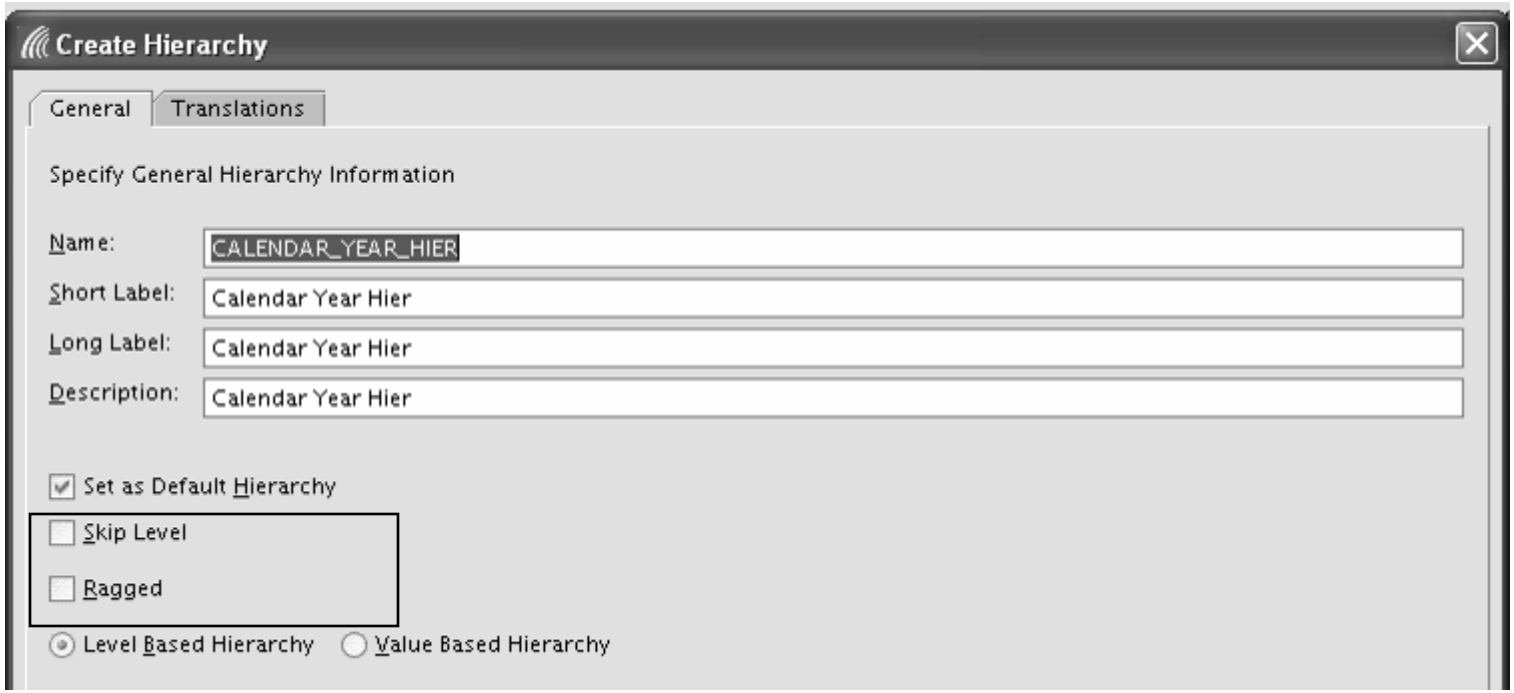
OLAP 11g Changes

- **Native support for AWs with skip level and ragged hierarchies**



Standard Disclaimer – Beta software! No promises!

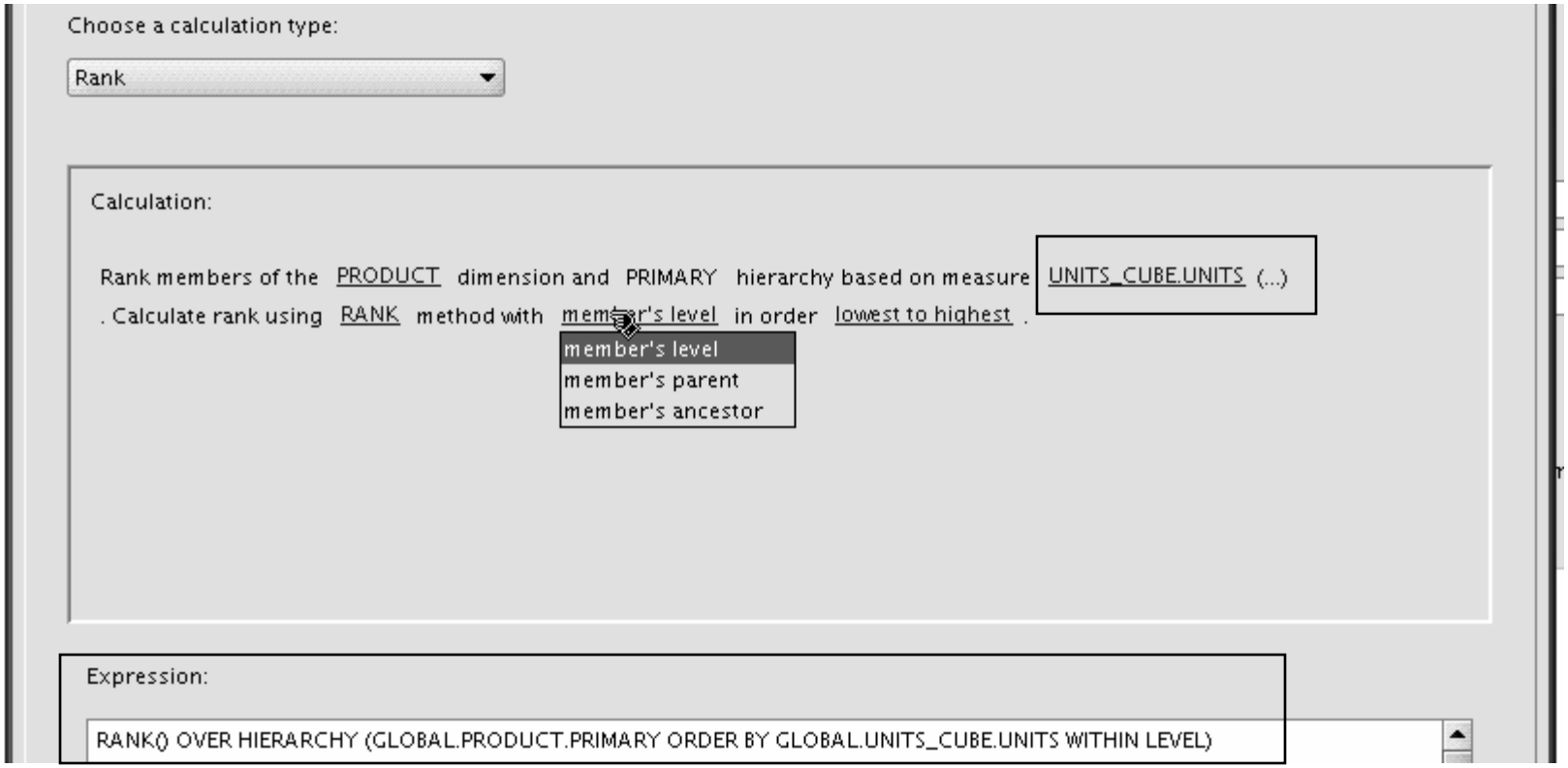
OLAP 11g Changes

- **Create security policies based on hierarchies**

Standard Disclaimer – Beta software! No promises!

OLAP 11g Changes

- Calc Wizard replaced by powerful "complete the sentence" wizard
- Expression language more SQL-like
- EQs of Calculated Measures in 11g-format AWs "read-only"



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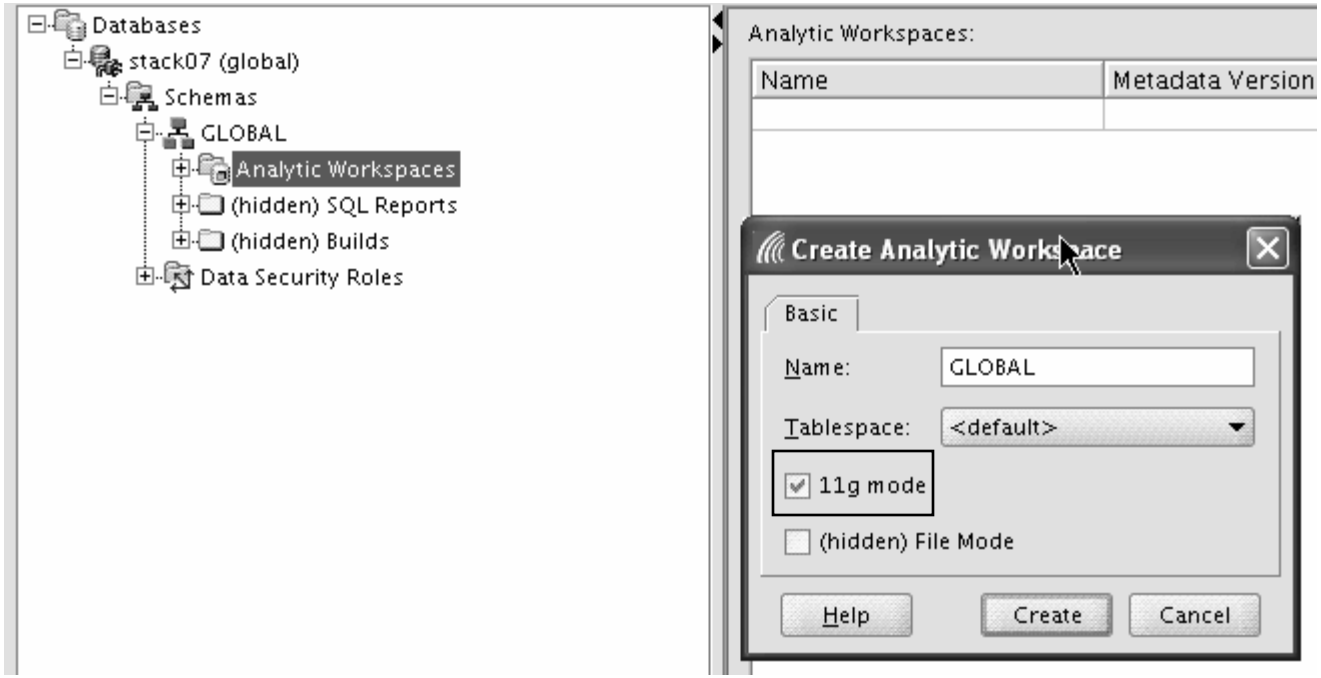
OLAP 11g Changes

- **Can Create AWs in 11g mode (automatic views)**
- **If no 11g mode, have same flexibility as 10g**



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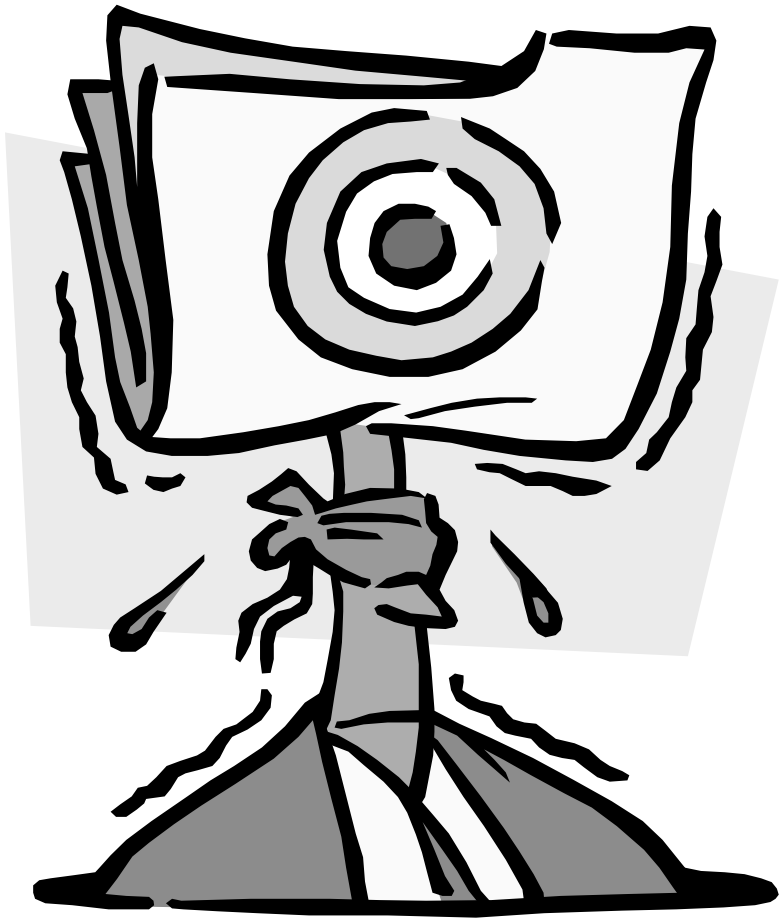
Further Information

- **Oracle BI Sales**
  - **http://www.oracle.com/bi**
- **Oracle BI Technical**
  - **http://www.oracle.com/technology/tech/bi/index.html**
- **Oracle BI EE on top of Oracle OLAP**
  - **Collaborate 208: Using Oracle BI EE with Oracle OLAP Cubes on www.vlamis.com/papers.html**
  - **http://www.oracle.com/technology/obe/obe_bi/bi_ee_1013/olap/index.html**
- **VMWare image with Demo environment**
  - **www.bic2g.com**
- **Oracle OLAP and AWM Sales**
  - **http://www.oracle.com/solutions/business_intelligence/olap.html**
- **Oracle OLAP Technical**
  - **http://www.oracle.com/technology/products/bi/olap/index.html**
- **This Demo**
  - **http://www.vlamis.com/demo**

QUESTIONS?



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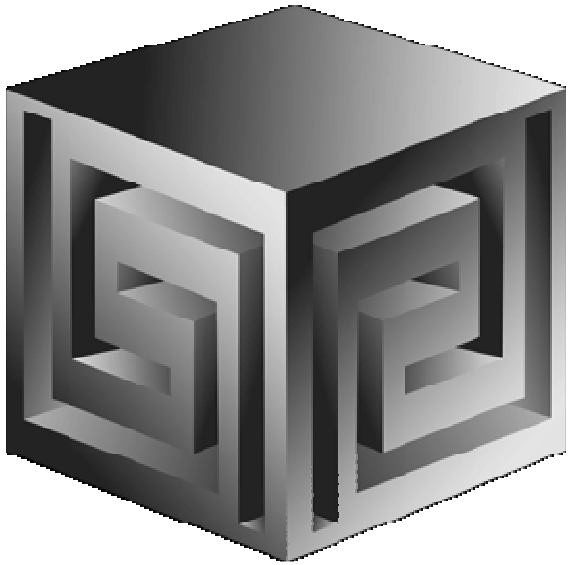

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816-781-2880

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