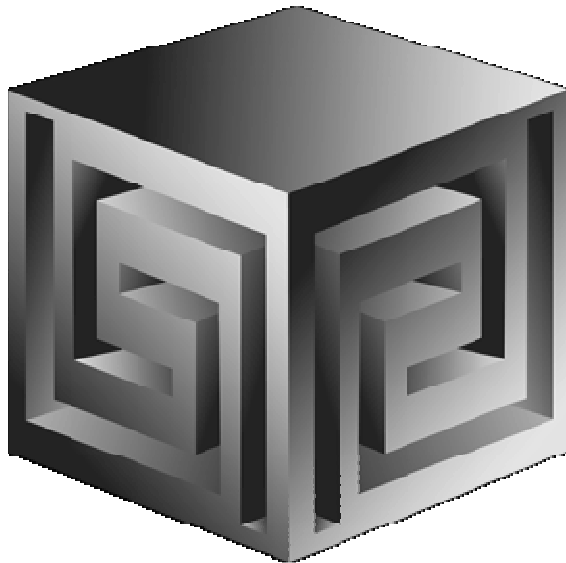


# Building an End to End OLAP Solution using Oracle Business Intelligence

***COLLABORATE '06***  
***Paper # 306***



Chris Claterbos  
claterbos@vlamis.com  
Vlamis Software Solutions, Inc.  
816-781-2880  
<http://www.vlamis.com>

Copyright © 2006, Vlamis Software Solutions, Inc.

# Vlami 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
  - Express-based applications
- Delivers
  - Design and integrate BI and DW solutions
  - Training and mentoring
- Expert presenter at major Oracle conferences

# Outline



- Introduction - History
- Technology Overview
- Starting with OWB
  - What is OWB
  - Using OWB to build OLAP
  - Deploying and viewing data
- The Front-End
- Overview of Options
- Discoverer OLAP Specifics
  - General Features of Discoverer OLAP
  - Plus or Viewer
  - Demo
- BI Beans Specifics
  - General Features of BI Beans Applications
  - Features Unique to BI Beans
  - Demo
- Spreadsheet Add-in Specifics
  - Demo
- Wrap it up!



# In the Past

---

- Previous development of BI and OLAP Applications required proprietary development environment
- Each deployment model required a different tool
- Development effort very labor intensive
- Concept to Deployment takes long time
- Requires specialized skills

# Customers need a Unified View

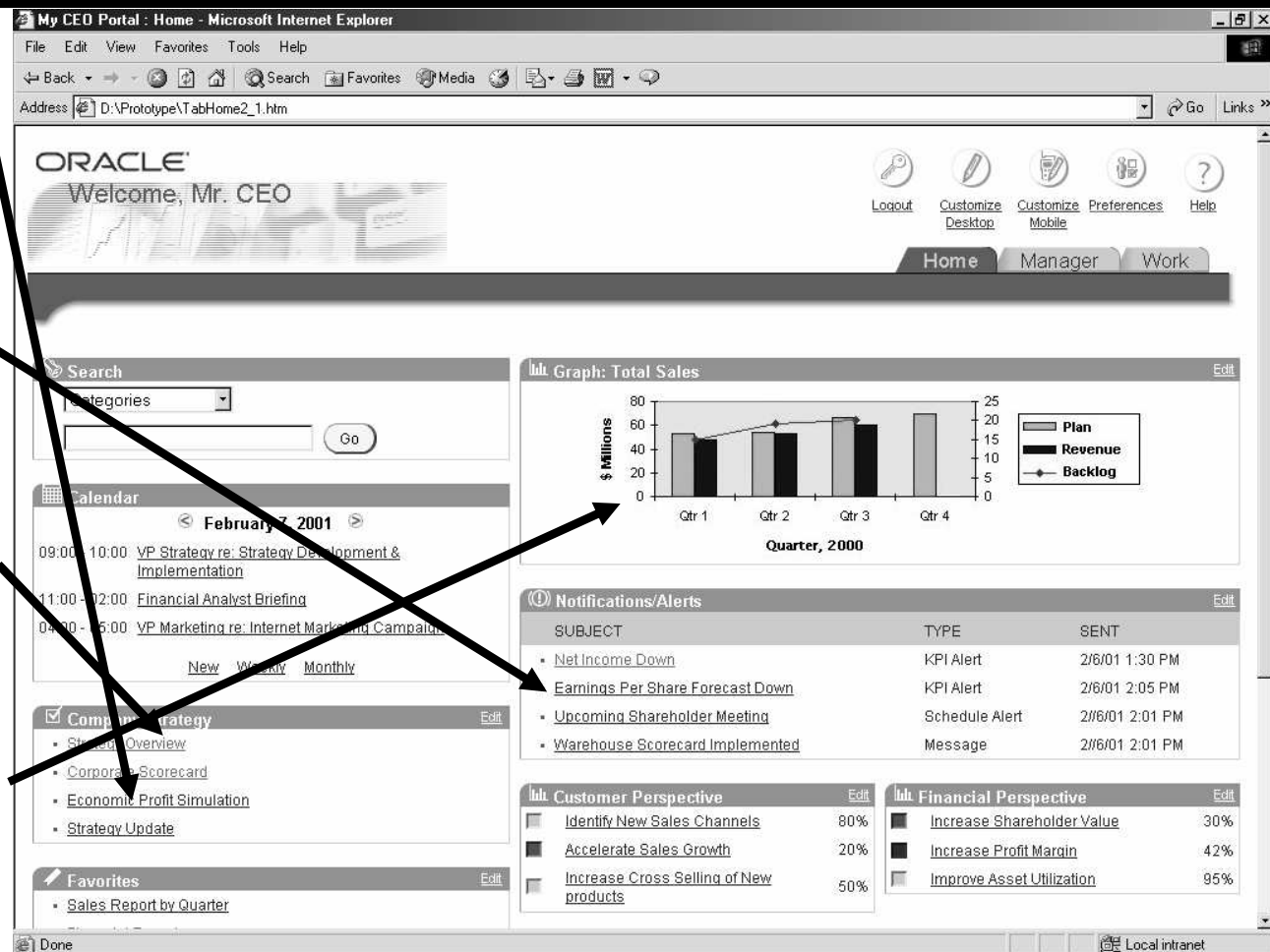


Planning

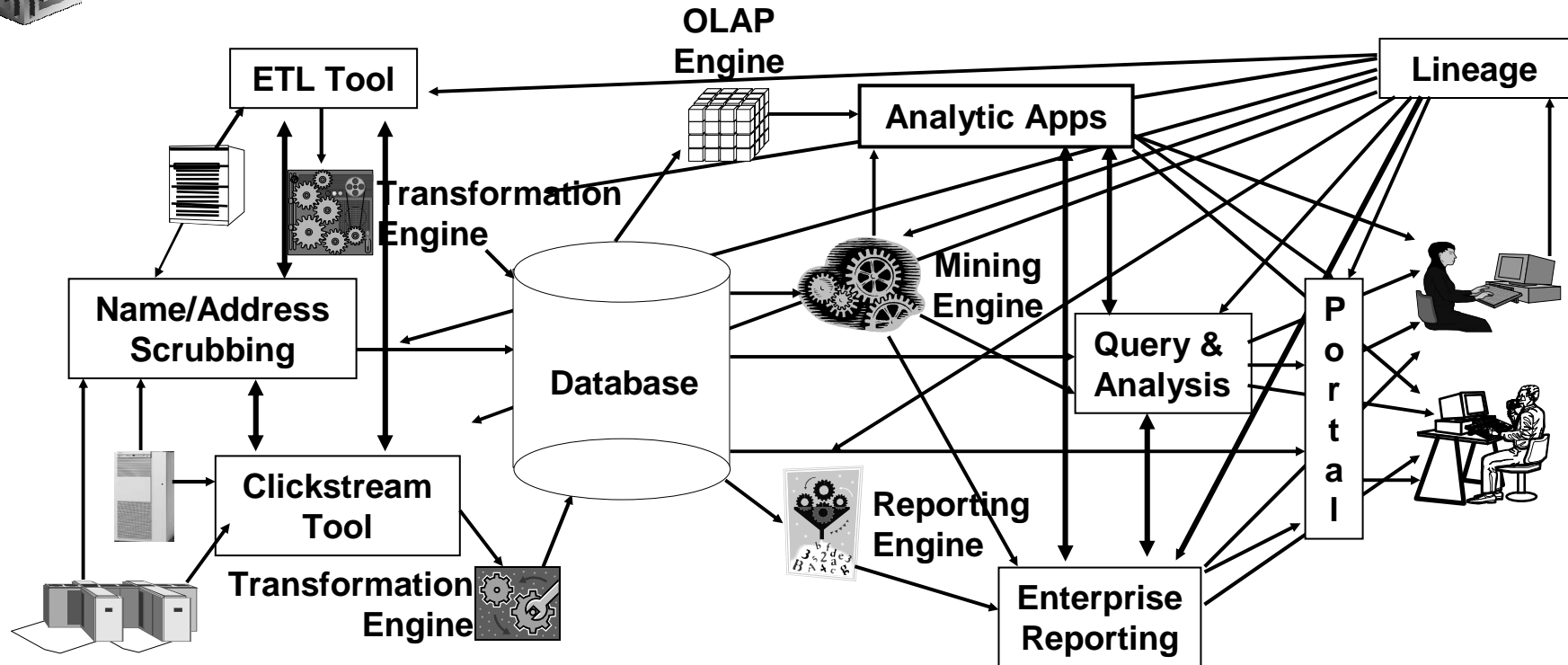
Monitoring

Analysis

Reporting

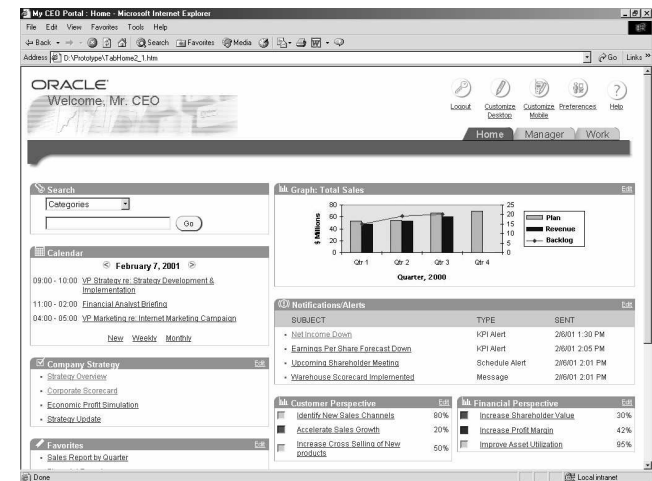
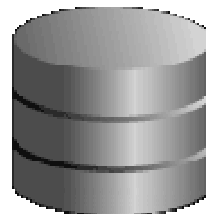
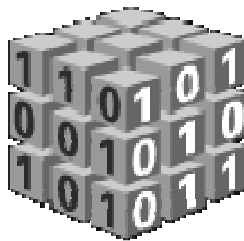
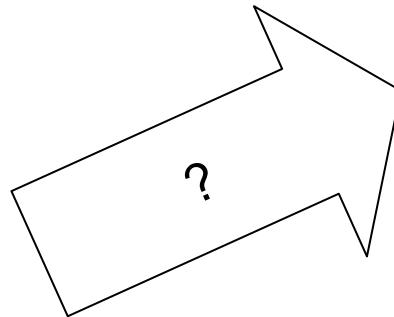
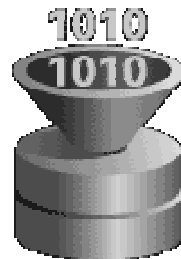
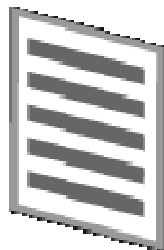


# Business Intelligence Market Multi-Vendor, Un-integrated

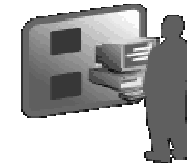
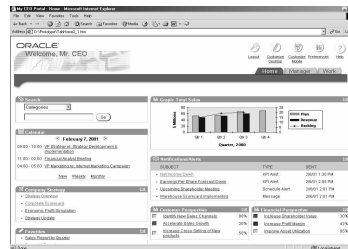
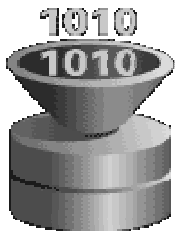
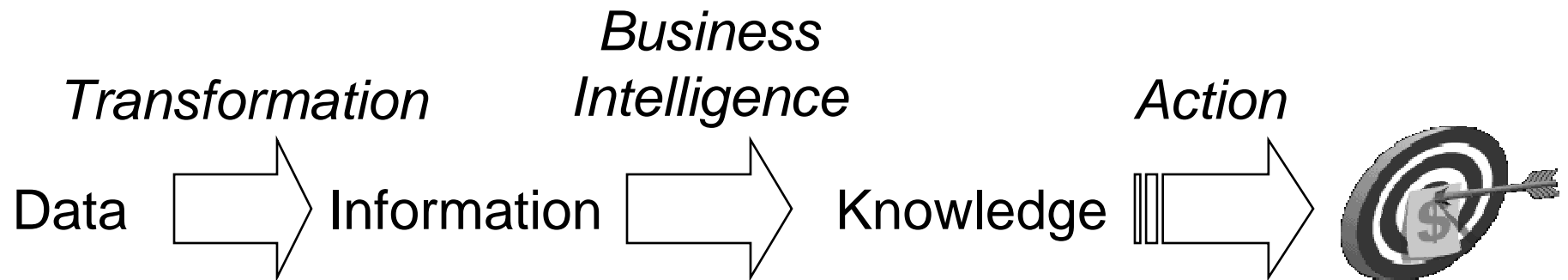


- Protracted and complex implementation
- Escalating maintenance costs
- Software ***and Metadata*** Integration is key!

# How do I get from Raw Data to Unified View?



# Turning Data into Profit....





# The Data → Information Transformation

---



Data becomes useful information when:

- You understand its content and structure (metadata)
- It's secure (unbreakable)
- You can access it in a timely manner (grid)

# The Data → Information Transformation

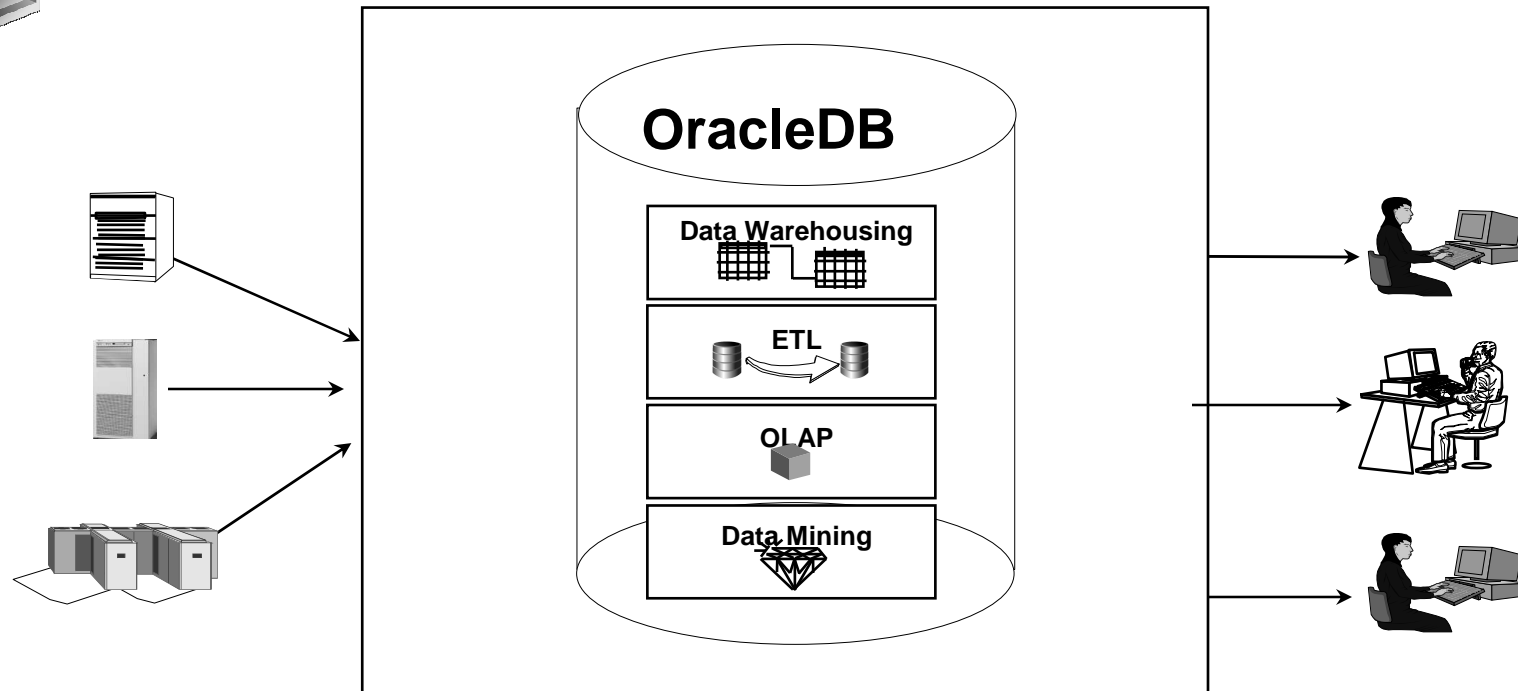
---



Data becomes useful information when:

- You understand its content and structure (metadata)
- It's secure (unbreakable)
- You can access it in a timely manner (grid)
- **You can trust it (quality)**

# BI the New Way: Oracle DB



- Single business intelligence platform
  - Reduce administration, implementation costs
  - Faster deployment & Improved scalability and reliability

# What Does 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

# What Makes a DW OLAP-Ready?

---



- Star schema design
- Simple dimension tables (level-based)
- All tables dimension or fact  
(no "auxiliary tables for dimension tables)
- Each child has single parent (no many-to-many)
- Total level at top of each dimension
- End\_date and Timespan attributes for TIME
- Unique descriptions across all levels
- Fact tables with additive measures

# Oracle BI – Getting the Data In

---



- Storing / calculating with the data
  - Oracle RDBMS
  - Oracle OLAP (an option to the RDBMS)
- Getting the data in / managing
  - Oracle Warehouse Builder
  - Oracle Enterprise Manager
  - Analytic Workspace Manager

# What is Oracle Warehouse Builder?



- Enables the extraction, transformation, and loading of data to produce *quality information* in the Oracle database
- Protects and leverages customer investment in the Oracle technology stack through *data and metadata integration*

# Paris themes

---



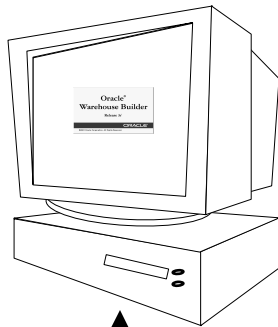
- Enabling Quality Information
- Enabling Business Intelligence
- Enabling Expertise capture



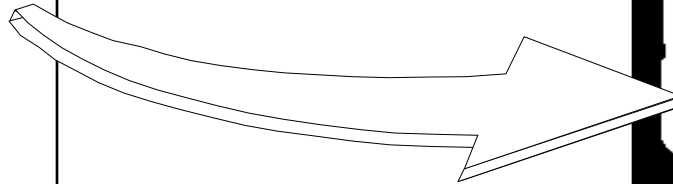
# Architecture



## Design



## Deployment



## Runtime

Warehouse Builder Browser - Runtime Repository

rtf - Execution Schedule Report

Repository: **OWB\_RUNTIME** Version: **9.8.4**

Filter on Execution: [ ]

Execution Details

Select	Execution	Name	Type	Date	Status	View
<input type="checkbox"/>	MAP_ADDRESSES	MAP_ADDRESSES	PLSQLMap	22 Apr 2003 20:56:23	COMPLETE @	Go
<input type="checkbox"/>	MAP_WAREHOUSE	MAP_WAREHOUSE	PLSQLMap	22 Apr 2003 11:29:40	COMPLETE @	Go
<input type="checkbox"/>	MAP_SALES_PIVOT	MAP_SALES_PIVOT	PLSQLMap	22 Apr 2003 08:44:57	COMPLETE @	Go
<input type="checkbox"/>	MAP_ADDRESSES	MAP_ADDRESSES	PLSQLMap	21 Apr 2003 20:15:54	COMPLETE @	Go
<input type="checkbox"/>	MAP_PRODUCTS	MAP_PRODUCTS	PLSQLMap	20 Apr 2003 22:10:19	COMPLETE @	Go
<input type="checkbox"/>	MAP_SALES	MAP_SALES	PLSQLMap	20 Apr 2003 21:21:28	COMPLETE @	Go
<input type="checkbox"/>	MAP_SALES	MAP_SALES	PLSQLMap	20 Apr 2003 21:14:01	COMPLETE @	Go
<input type="checkbox"/>	MAP_SALES	MAP_SALES	PLSQLMap	20 Apr 2003 21:10:51	COMPLETE @	Go



# Sources & Targets



---

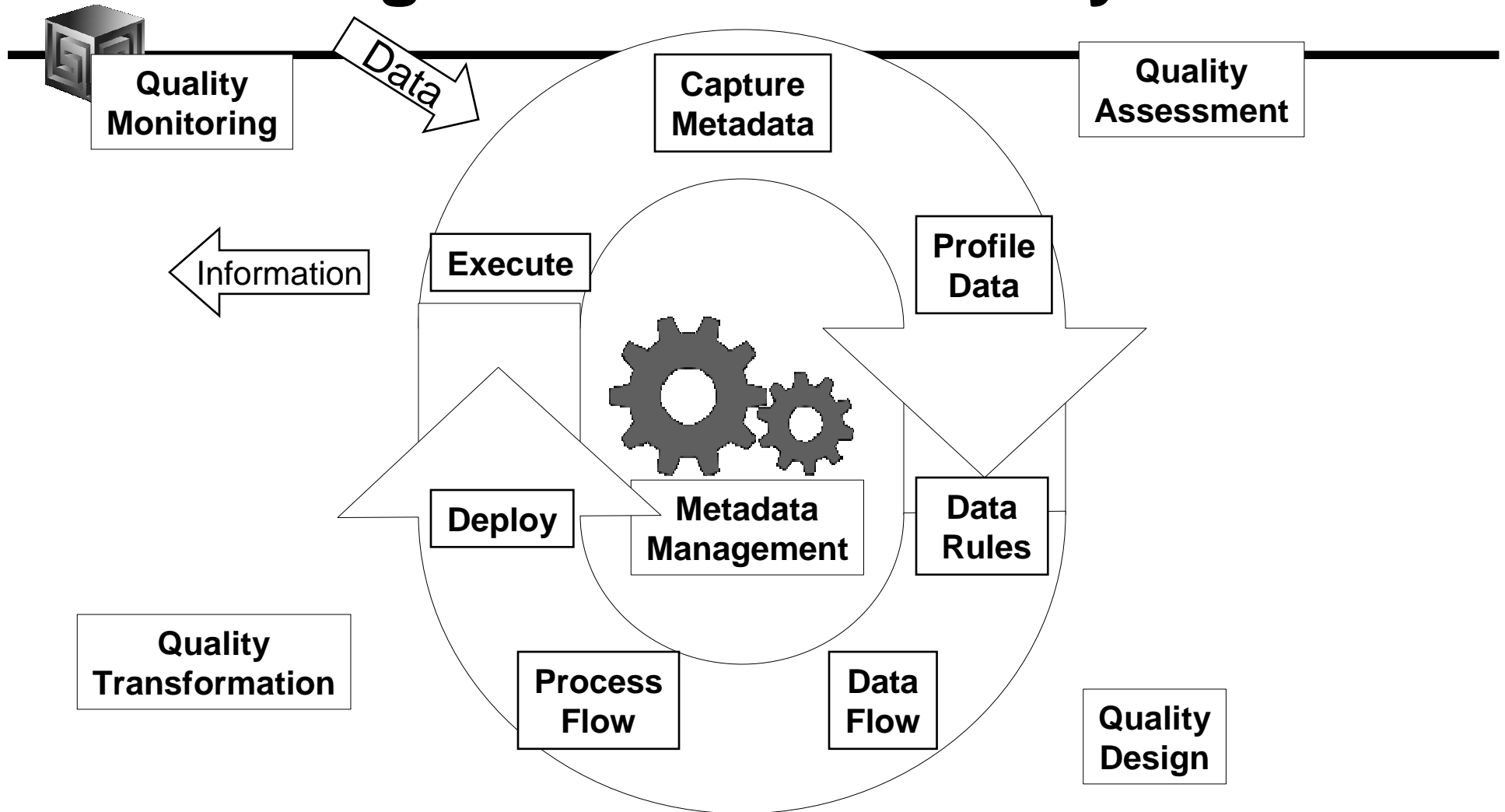
## Sources

- **Oracle**
  - **Tables, Views, MViews, Queues, External Tables, Table Functions, Streams, PL/SQL API's, Sqlloader...**
- **DB2, Sybase, SQLServer, Informix, ... (Oracle Transparent Gateways)**
- **Any ODBC source**
- **Flat Files**
- **Applications**
  - **Oracle Apps**
  - **SAP**
  - **Custom SQL App**

## Targets

- **Oracle**
  - **Tables, Streams, OLAP, Table Functions, PL/SQL API's**
- **DB2, Sybase, SQLServer, Informix, ... (Oracle Transparent Gateways)**
- **Flat files**

# Enabling Information Quality



# Data Profiling



Allow users to analyze data

- discover the structural content
- capture the semantics
- Identify anomalies and outliers
- Automatically derive business rules and maps to clean data
- Derive Quality Indices (e.g. 6-sigma)
- Auditors monitor quality on an ongoing basis
- Integrated as part of ETL

Columns	Pattern	Format	Format % Compliant	Unique
Hdate	YYYY-MM-DD	Date	82%	
SSN	9(3)-9(2)-9(4)	US Social Security Number	3%	
Phone	9(3)-9(3)-9(4)	US Phone Number	16%	
Id	9(5)	<Not Found>	N/A	Yes
Contact	A@A.A	Email	99%	No

# Data Profiling



**Data Profile Manager: HR\_PROFILE**

Profile Edit View Window Help

Object Trees

- Profile Objects
- Corrected N
- HR\_PROFILE
  - XWEEK
  - HRCOUNTRIES
  - HRDEPARTMENTS
  - HREMPLOYEES
  - HRJOBS
  - HRJOB\_HISTORY
  - HRLOCATIONS
  - HRREGIONS

Property Inspector

**LOAD\_CONFIGURATION**

Sample Set Filter

Null Value Representation null

Random Sample Rate 100

Copy Data Into Workspace ☒

**PROFILE\_CONFIGURATION**

Domain Value Compliance 10

Minimum Relationship Percentage 75

Enable Relationship Discovery ☒

Enable Pattern Discovery ☐

Left Hand Side Attributes 1

Domain Value Compliance 2

Minimum Redundancy Percentage 100

Domain Discovery Maximum Distinct 50

Enable Domain Discovery ☒

Enable Redundant Column Discovery ☒

Enable Unique Key Discovery ☒

Profile Results Canvas

Data Profile Profile Object Aggregation Data Type Pattern Domain Referential Unique Key

The following are the aggregation analysis results for HREMPLOYEES, which has 11 columns and 107 rows.

Columns	Minimum	Maximum	# Distinct	% Distinct	Null Allowed	# Nulls	% Nulls	Six-Sigma
COMMISSION_PCT	.1	.4	7	7%	Yes	72	67%	1.95
DEPARTMENT_ID	10	110	11	10%	No	1	1%	3.85
EMAIL	ABAND							
EMPLOYEE_ID	100							
FIRST_NAME	Adam							

Data Drill Panel

Here are drill results on HREMPLOYEES column COMMISSION\_PCT.

Distinct values:

COMMISSION_PCT	#
1	4
2	.35
3	.3
4	.25
5	.2
6	.15
7	.1
8	

Displaying 8 Rows out of 8

Property Inspector

**LOAD\_CONFIGURATION**

Sample Set Filter

Null Value Representation null

Random Sample Rate 100

Copy Data Into Workspace ☒

**PROFILE\_CONFIGURATION**

Domain Value Compliance 10

Minimum Relationship Percentage 75

Enable Relationship Discovery ☒

Enable Pattern Discovery ☐

Left Hand Side Attributes 1

Domain Value Compliance 2

Minimum Redundancy Percentage 100

Domain Discovery Maximum Distinct 50

Enable Domain Discovery ☒

Enable Redundant Column Discovery ☒

Enable Unique Key Discovery ☒

Profile Results Canvas

Data Profile Profile Object Aggregation Data Type Pattern Domain Referential Unique Key

Column: DEPARTMENT\_ID Property: Distinct

The frequency of distinct values for the column DEPARTMENT\_ID

Data Drill Panel

Here are drill results on HREMPLOYEES column DEPARTMENT\_ID.

Distinct values:

DEPARTMENT_ID	# Rows	% of 107
1	50	45%
2	80	34%
3	30	6%
4	100	6%
5	60	5%
6	90	3%
7	20	2%
8	110	2%
9	10	1%
10	40	1%
11	70	1%
12		

Displaying 12 Rows out of 12

Rows for the selected distinct value:

COMMISSION_PCT	DEPARTMENT_ID	EMAIL	EMPLOYEE_ID	FIRST_NAME
50	AFRIPP	121	Adam	
50	AWALSH	196	Alana	
50	ABULL	185	Alexis	
50	ACABRIO	187	Anthony	
50	BEVERETT	193	Britney	
50	CDAVIES	142	Curtis	
50	DOCONNEL	198	Donald	
50	DGRANT	199	Douglas	
50	GGEONI	183	Girard	
50	HPHILTAN	136	Hazel	
50	IMKKILI	126	Irene	

Displaying 45 Rows out of 45

# Data Quality in OWB

---



- Data Quality functionalities are *integrated* into ETL processes
  - Disciplined approach to Data Quality, not an afterthought
  - Data Quality is modeled, executed and audited just like any other transformation
- Consists of
  - Data Profiling
  - Name and Address Cleansing
  - Match-Merge
  - Data Mining

# Data Cleansing



- Parsing
- Standardization
- Correction
- Augmentation

	Input Data
<b>Name:</b>	Josephine Random
<b>Title:</b>	Senior Manager
<b>Company Name:</b>	Oracle
<b>Address:</b>	500 oracle parkay
<b>Line1:</b>	redwood, az 94065
<b>Line2:</b>	USA
<b>Phone:</b>	506 7000
<b>E-mail:</b>	joe.random@oracle.com

	Corrected Data
<b>Name:</b>	Ms. Josephine Random
<b>Title:</b>	Sr. Mgr.
<b>Company Name:</b>	Oracle Corp.
<b>Address:</b>	500 Oracle Pkwy
<b>City:</b>	Redwood City
<b>State:</b>	CA
<b>Postal Code:</b>	94065-1675
<b>Country:</b>	USA
<b>Phone:</b>	650 506 7000
<b>E-mail:</b>	joe.random@oracle.com
<b>Gender:</b>	F

# Match-Merge



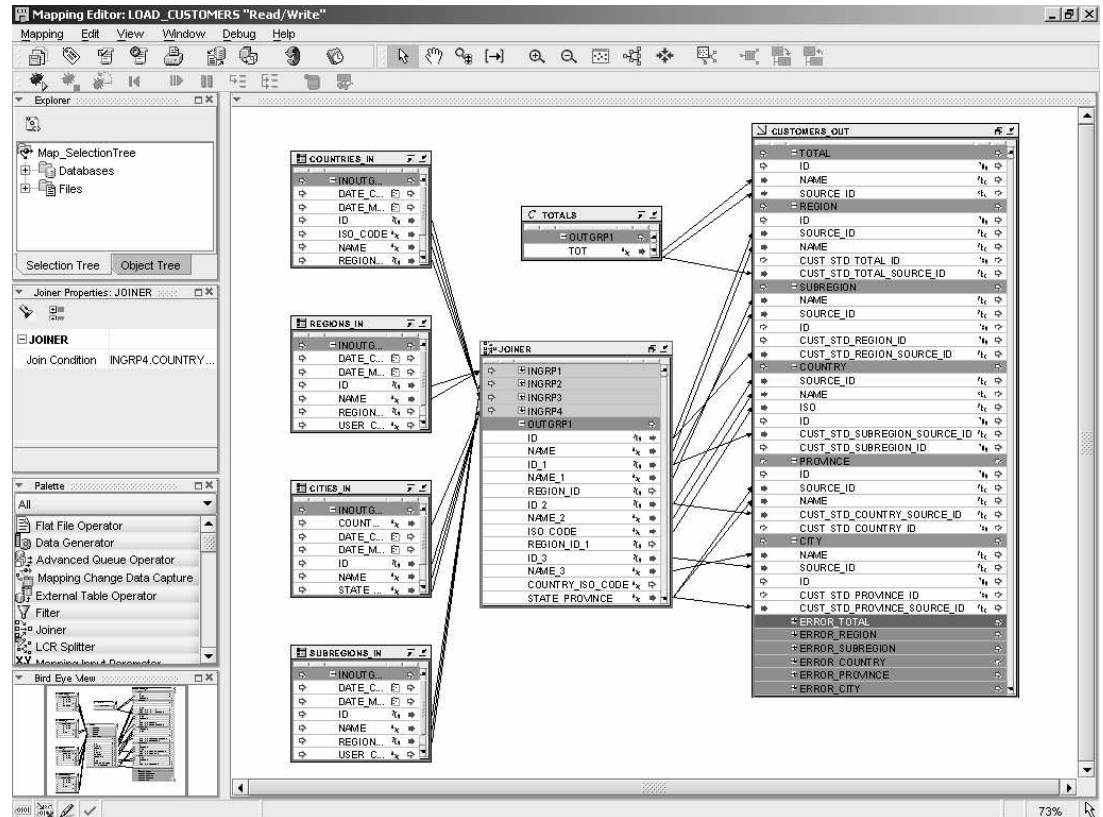
- Matching is the process of determining, through business rules, which records refer to the same logical data
- Merging is the business rules driven consolidation of the data from the matched set into a single record
- Uses of Match-Merge are
  - De-duplication
  - House-holding
  - Record Linking



# ETL: Mappings



- Graphical, declarative modeling of Data Flows
- Map from Source to Target
- Integrated Data Quality
  - N&A standardization
  - Match/Merge
  - Profiling
- Generates SQL & PL/SQL
  - Merge, transportable tablespaces, sqlloader, table functions, streams, xml data types, BLOBS/CLOBS, ...
- Leverage custom data transformations
- Pluggable maps for reusability of logic



# ETL: Mapping debugger



Mapping Editor: MAP\_CREDIT\_LIMITS "Read/Write"

Mapping Edit View Debug Window Help

Mapping diagram showing data flow from CUSTOMERS and EMPLOYEES sources through a JOIN, FLTR (Filter), and SPLIT transformation, leading to AGG (Aggregate) and UNASSIGNED targets, and finally to CREDIT\_LIMITS.

Messages Breakpoints Test Data

WBMappingDebuggerException: DBG1034: Cannot execute PL/SQL query:  
SELECT \* FROM EMPLOYEES  
java.sql.SQLException: ORA-00942: table or view does not exist

Analyzing map for debug...  
Configuring sources and targets...  
Validating map...  
Correlated Commit is OFF.  
Generating debug package...  
Deploying temp debug tables...  
Deploying debug package...  
Successfully installed  
Initializing debug package  
Successful debug initialization!  
STEPPING: CUSTOMERS.INOUTGRP1...  
DEPENDENCY: EMPLOYEES executing...  
STEPPING: JOIN.OUTGRP1...  
STEPPING: FLTR.INOUTGRP1...  
Hit breakpoint at FLTR

Step Data AGG CREDIT\_LIMITS

FLTR.INOUTGRP1: IN ROW COUNT: 319

ROW	ACTION	FIRST_NAME	LAST_NAME	NLS_LANGUA...	CREDIT_LIMIT	ACCOUNT...
129	✓ REJECTED	Mani	Buckley	i	500	149
130	✓ REJECTED	Mani	Kazan	i	500	149
131	✓ SELECT	Farrah	Lange	us	2400	149
132	✓ SELECT	Farrah	Quinlan	us	2400	149
133		Dan	Roberts	us	2400	149

FLTR.INOUTGRP1: OUT ROW COUNT: 19

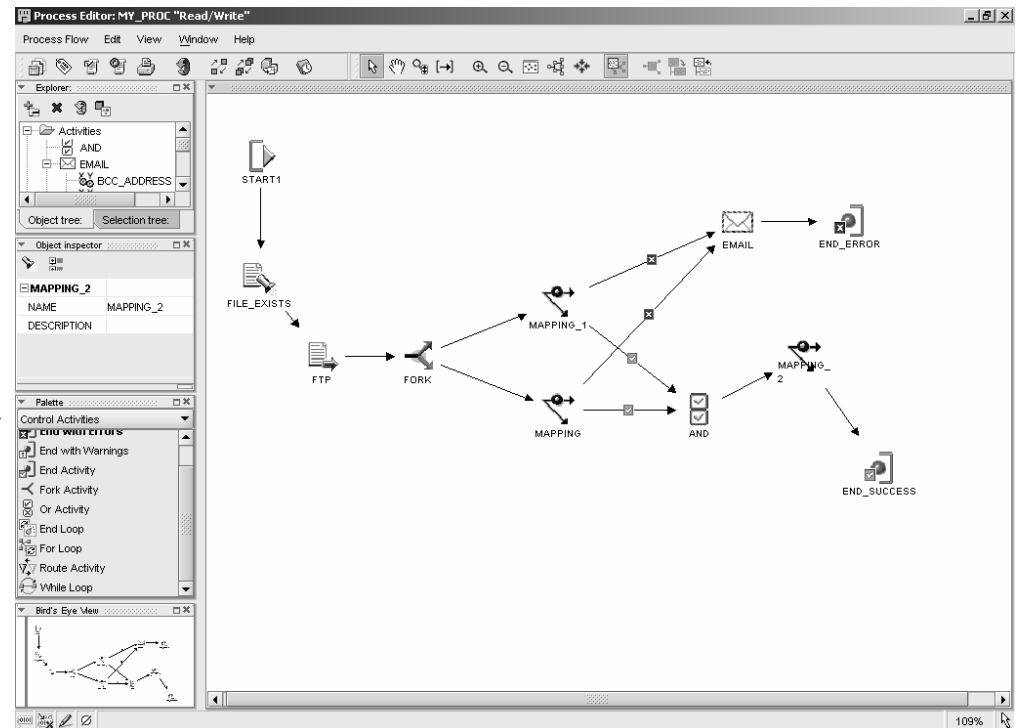
ROW	ACTION	FIRST_NAME	LAST_NAME	NLS_LANGUA...	CREDIT_LIMIT	ACCOUNT...
125	✓ PROCESSED	Max	von Sydow	us	2400	149
126	✓ PROCESSED	Matt	Gueney	us	2400	149
127	✓ PROCESSED	Mary	Collins	us	2400	149
131	✓ PROCESSED	Farrah	Lange	us	2400	149
132	✓ PROCESSED	Farrah	Quinlan	us	2400	149

Step execution done

# ETL: Process flows



- Graphical, declarative modeling of Process/work Flows
- Co-ordinate execution of Maps and other activities
- Send email, FTP source/target files, call any external process, Notifications
- Generates Oracle Workflow, Oracle Scheduler & XPD



# Real-Time Data Integration

---



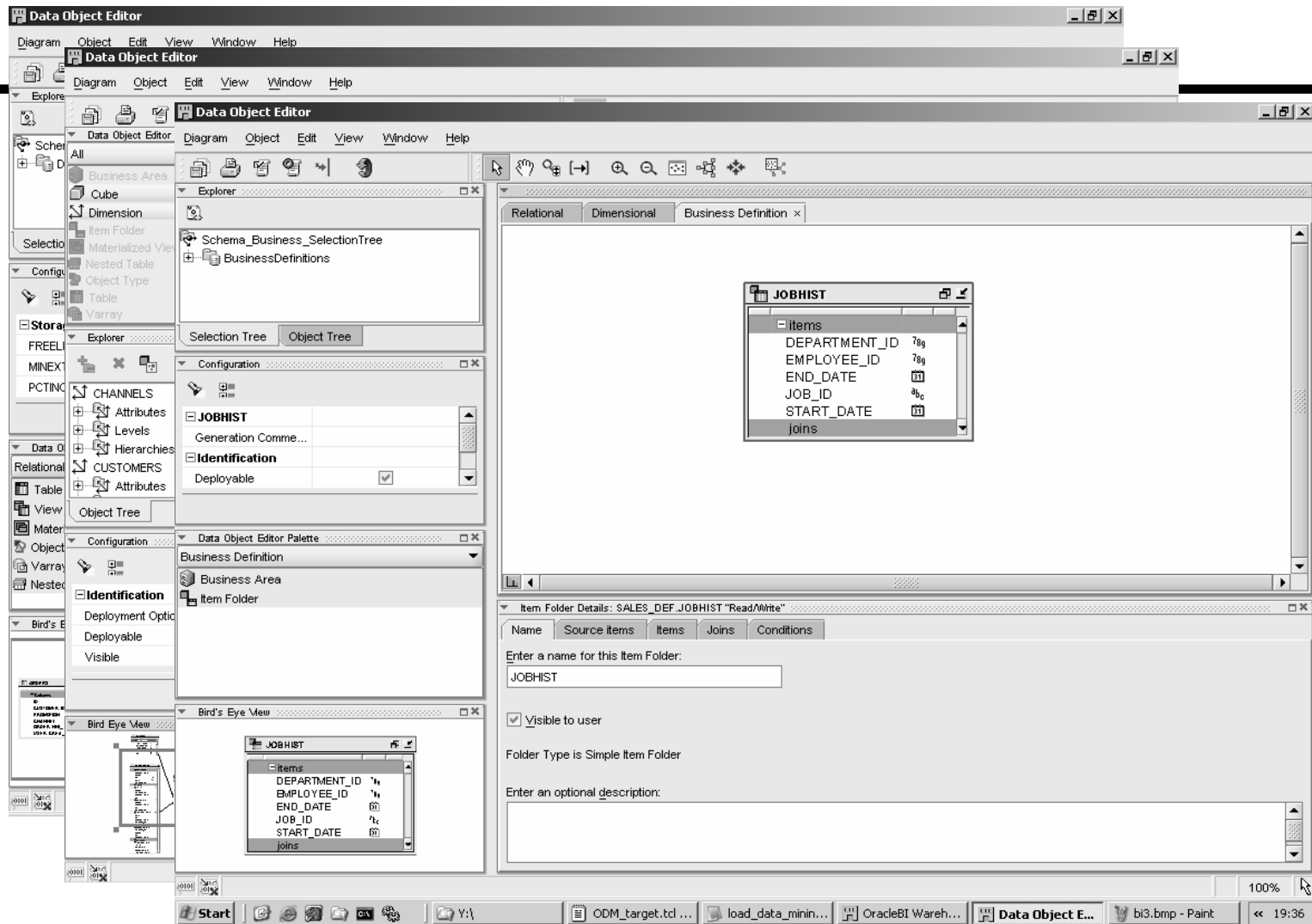
- Real-time Maps
  - Support pull-based, message-oriented processing of data
    - Maps as message listeners
    - Process data as/when it arrives
- Sources: Oracle Streams, AQ's
- Table Functions
  - Read from or write to Oracle Table Functions
    - Read: permits fast source read due to pipelined, parallel data flow
    - Write: permits map execution at time of data request
  - Avoids using temporary tables

# Data Object Design – One Editor



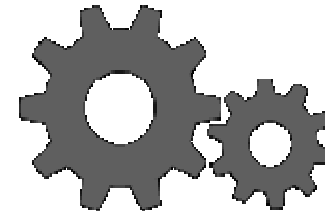
- Dimensions, cubes, tables, views, complex objects, ...
- Support for Star, Snowflake, Skip-Level, calculated measures, ...
- One editor for creation, configuration, validation, code generation, impact analysis, deployment, data viewing

# Data Object Editor



# Metadata Services

---

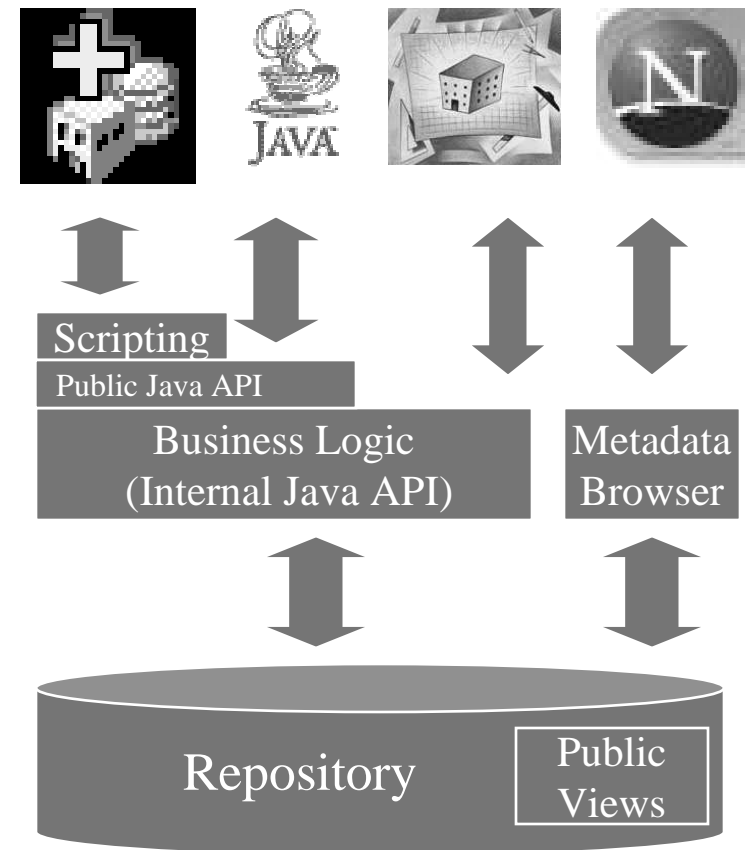


- Dependency Management
  - Data Lineage
  - Impact Analysis
- Metadata Snapshots
- Change Management (diff, merge and reconcile)
- Security (roles)
- Multi-language Support (MLS via XLIFF)
- Extensibility - user defined properties, objects, and associations
- Reporting (browser)
- APIs (JAVA, Scripting, SQL, PL/SQL)
- Exchange (import/export)

# Openness



- Metadata Repository
  - Public SQL Views
- Business Logic
  - Public Java API
- Clients
  - GUI
  - Metadata Browser
  - Scripting
  - Custom Java Application

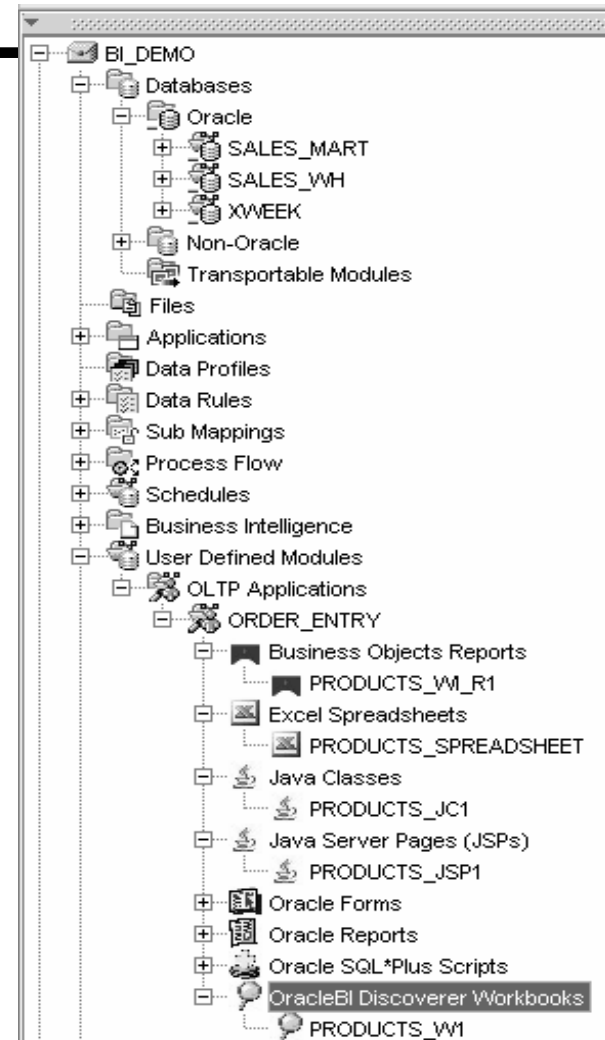




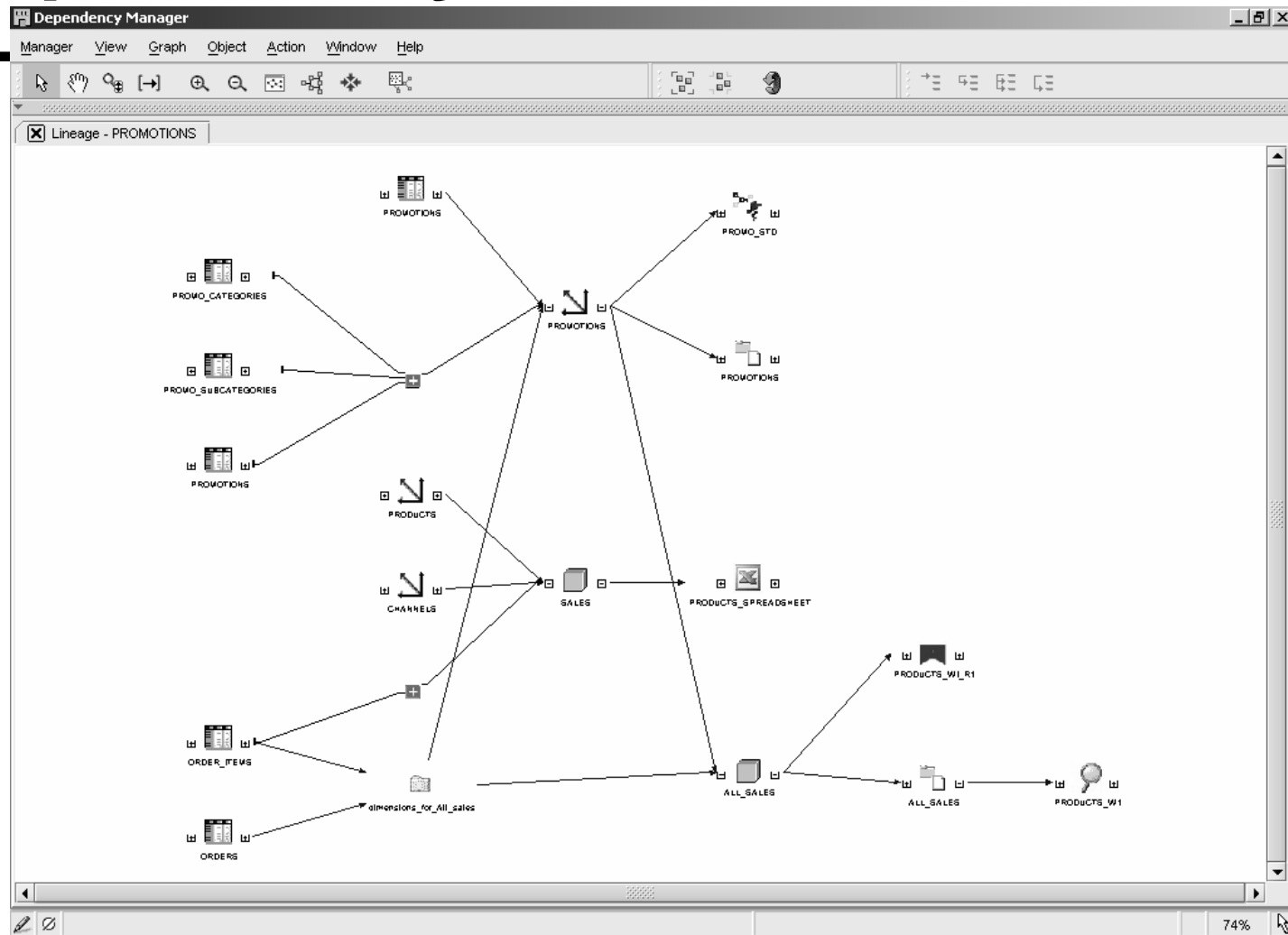
# User-Defined Objects & Icons



- User-Definable:
  - Objects
  - Associations
  - Properties
- ALL in the OWB repository!
- Custom icons for easy recognition
- Access full metadata services of OWB e.g. impact analysis



# Impact Analysis



# Runtime Management



http://127.0.0.1:8999/owbb/RABProcRunExecution.uix?event=navigate&p\_id=805&repos=RTR92 - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media Print

Address http://127.0.0.1:8999/owbb/RABProcRunExecution.uix?event=navigate&p\_id=805&repos=RTR92 Go

Google Search Web Search Site News PageRank Page Info Up Highlight

**ORACLE**  
Warehouse Builder Browser - Runtime Repository

Deployment Execution

Execution File

RTR92 > MASTER\_SALES\_CRED\_LIM

**MASTER\_SALES\_CRED\_LIM - Process Flow Run Execution Report**

Process Name **MASTER\_SALES\_CRED\_LIM** Type **Process Flow** Refresh

**Execution Details**

Start Time	29 Jul 2003 13:27:49	Location	WH_PROC_LOC
End Time	29 Jul 2003 13:29:52	Status	Complete
Elapsed Time (seconds)	123	Data Error Count	0

**Execution Parameters**

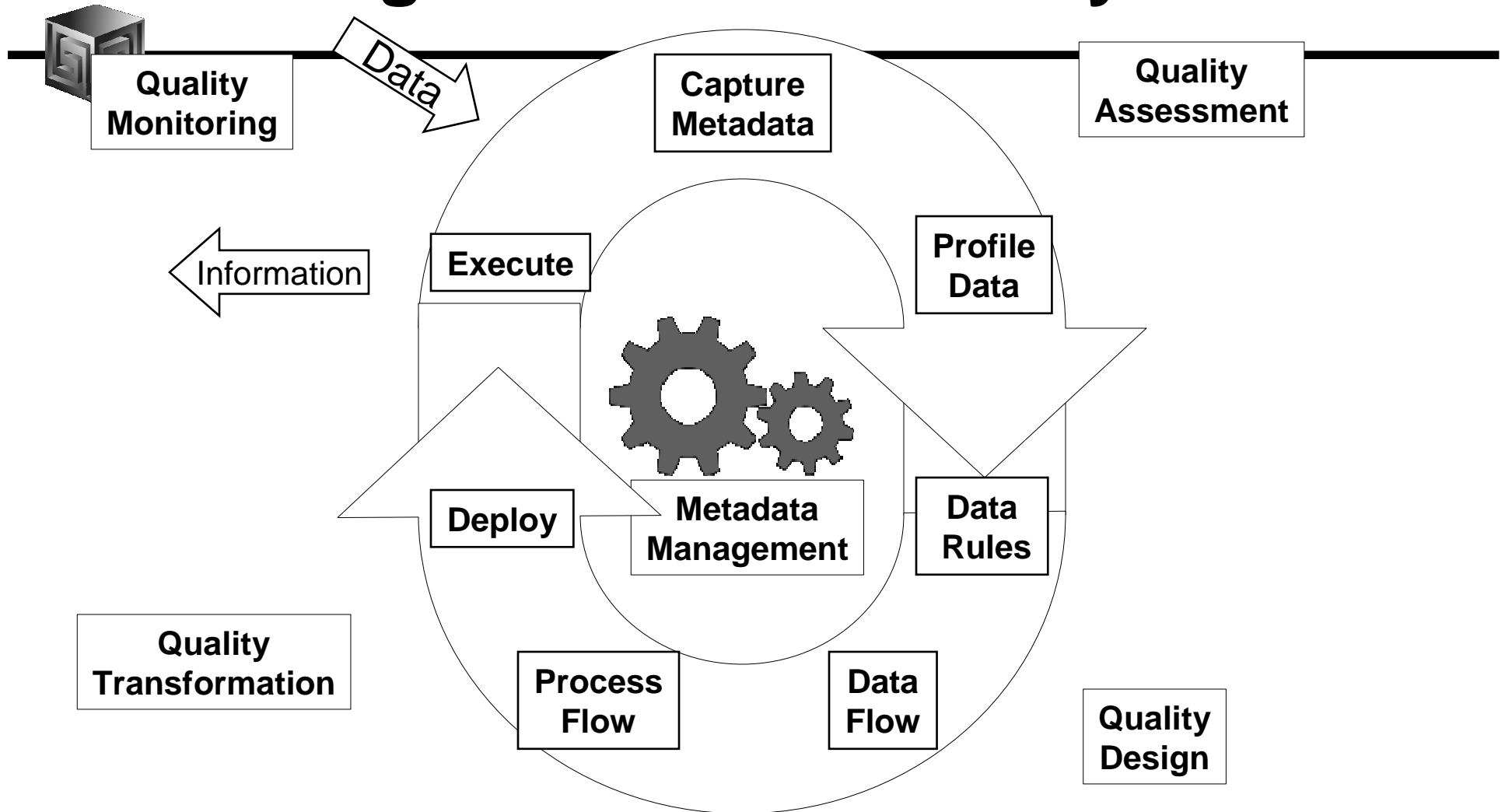
Category	Name	Input Value	Output Value
Custom	From Address	(default)	
System	Item Key	(default)	WB_IK_2003629_132754_805
System	Item Type	LD_SALES	
Custom	SMTP Server	(default)	
Custom	To Address	(default)	

**Activity Details**

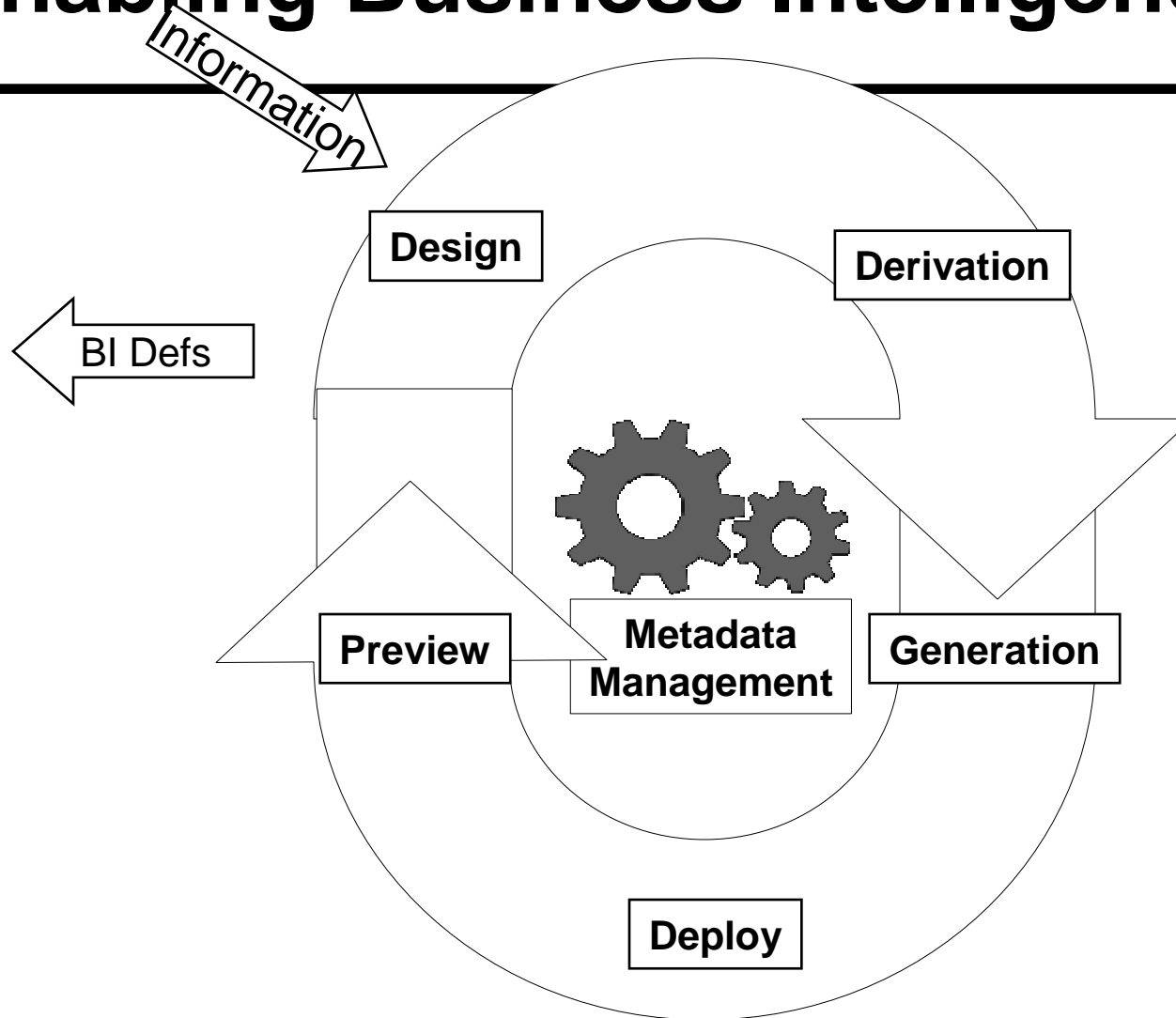
Details	Name	Type	Start Time	End Time	Elapsed Time (seconds)	Status	Data Error Count	View Execution Report
Show	LOAD_CUSTOMER	Process Flow	29 Jul 2003 13:28:03	29 Jul 2003 13:29:00	57	Complete	0	60
Show	LOAD_PRODUCT	Process Flow	29 Jul 2003 13:28:07	29 Jul 2003 13:29:21	74	Complete	0	60
Show	LOAD_PROMOTION	Process Flow	29 Jul 2003 13:28:07	29 Jul 2003 13:29:29	82	Complete	0	60
Show	LOAD_T_TIME	Process Flow	29 Jul 2003 13:28:07	29 Jul 2003 13:29:02	55	Complete	0	60

Done Internet

# Enabling Information Quality



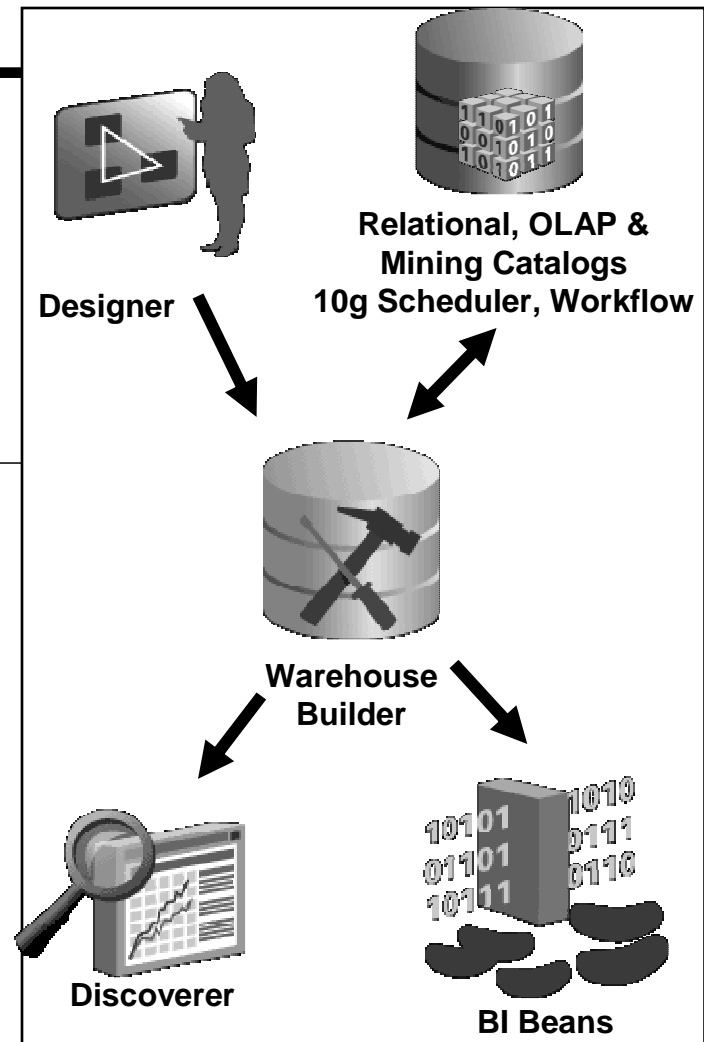
# Enabling Business Intelligence



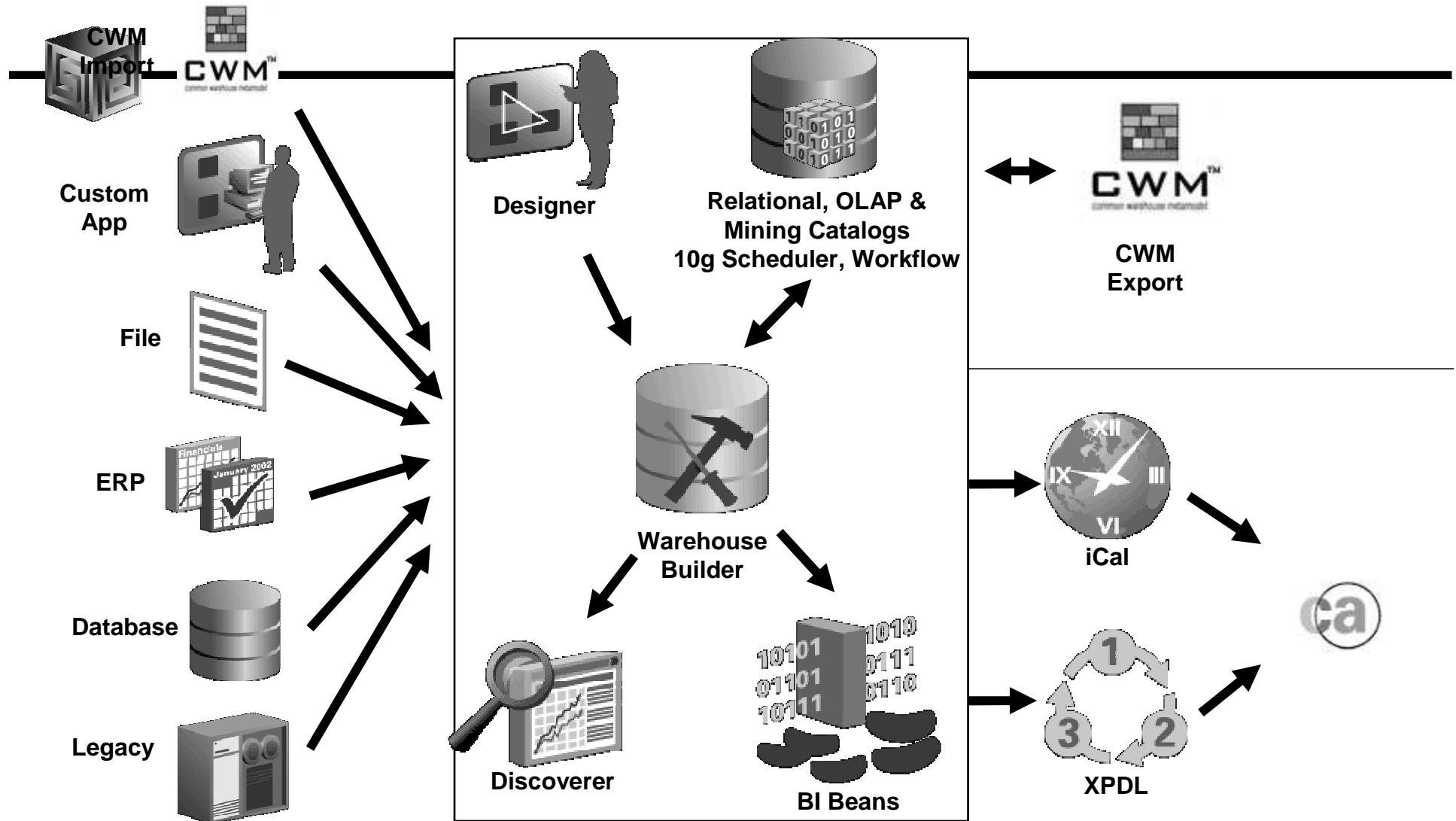
# Business Intelligence Object Derivation



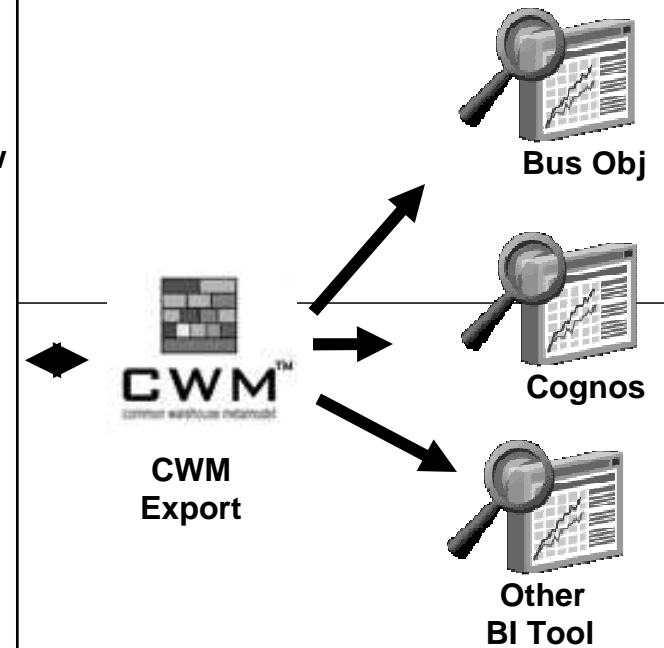
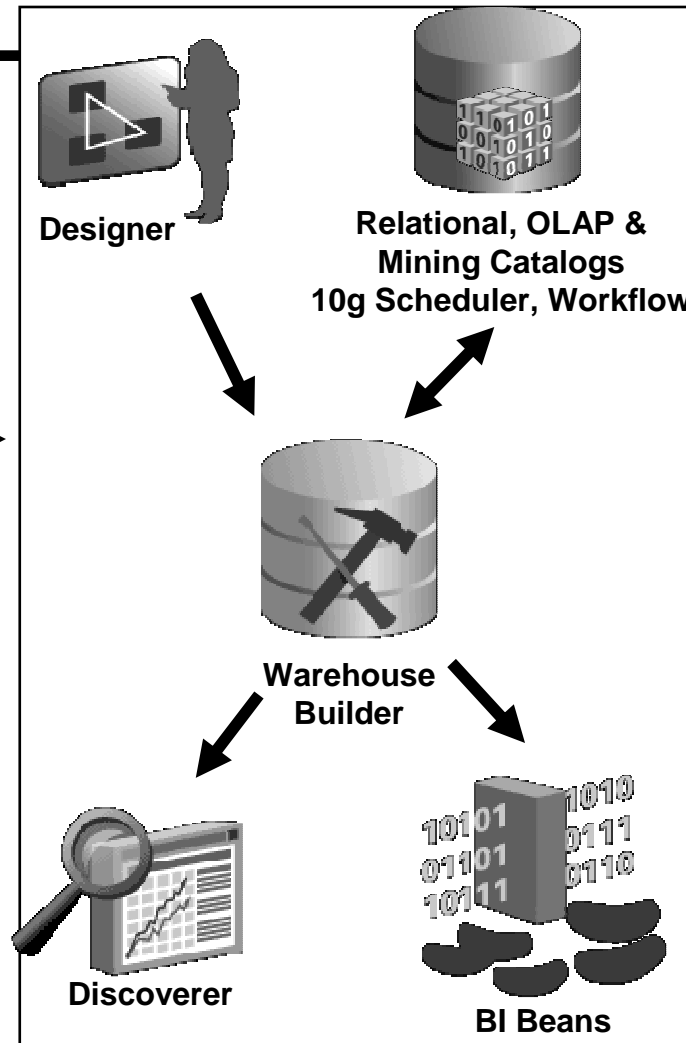
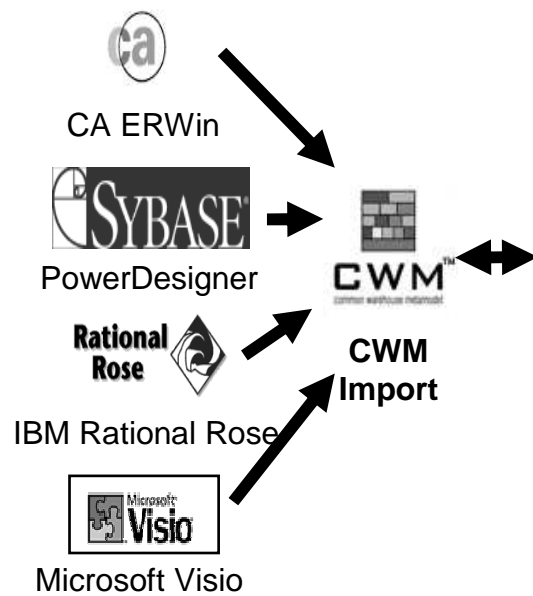
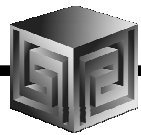
- Create and Derive Business intelligence objects
  - Oracle OLAP Cubes & Dimensions
  - OracleBI Discoverer EUL
  - OracleBI Beans Reports
- Included in Lineage and Impact analysis!



# End-to-End Meta Data Integration

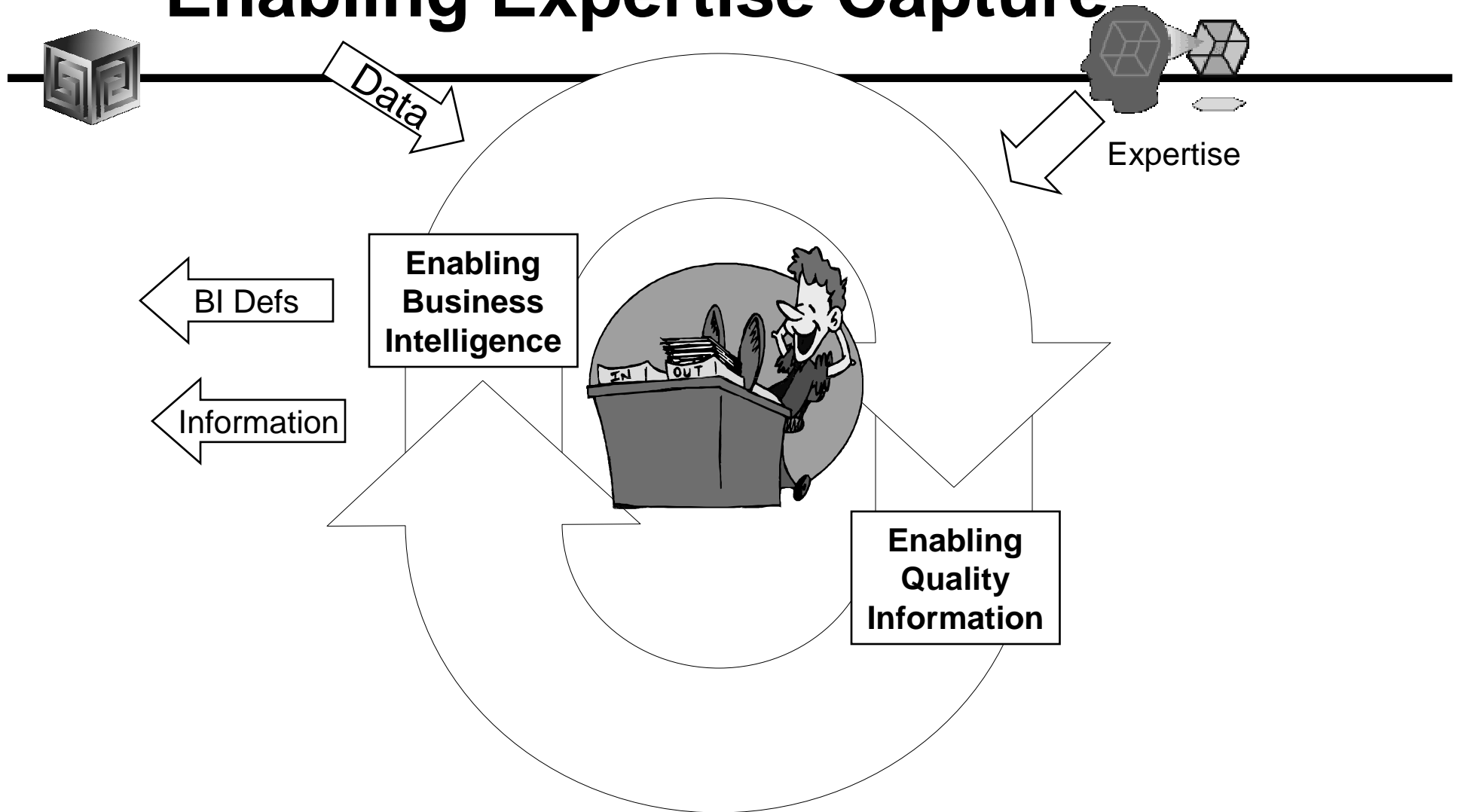


# OWB and CWM





# Enabling Expertise Capture



# Experts



- Re-use OWB Components to build your OWN application!
  - Define best practices & directed guidance
- Run Standalone or within OWB Design-time
- Declarative Definition & Guided execution
- E.g. “Data-Mover” Expert
  - Offers users the ability to easily copy data from:
    - Table-to-Table
    - File-to-Table

# Expert Editor



Expert Editor: DATAMOVER "Read/Write"

Expert Edit View Window Help

Task Assistant

Expert

Task: Source\_import Task

Goal

Instructions

Object tree: Selection

Object inspector

Source\_import Task

NAME

DESCRIPTION

Palette

All

Advanced Queue

Change Manager

Commit

Cube

Custom Dialog

Data Viewer

Deploy

Derivation

Dimension

External Table

File

Progress Graph

START\_TASK → ENVIRONMENT\_SETUP → SELECT\_SOURCE\_TASK → SOURCE\_IMPORT\_TASK

Flat File Sample Wizard: Welcome

This wizard guides you through the process of sampling a flat file.

Step 1: Describe the File

Step 2: Select the Record Organization

Step 3: Select the File Layout

Step 4: Select the File Format

Step 5: Select Record Types (multiple record files only)

Step 6: Specify Field Lengths (fixed length files only)

Step 7: Specify Field Properties

Click Next to continue.

☒ Show this page next time.

Cancel Help Back Next

OMBCC 'MDM\_DEMO'  
Context changed.  
OMUSELECTSOURCE  
OMBEXP\_FLAT\_FILE\_SRC LOCAL\_FILES\_LOC  
OMBCC 'OMBEXP\_FLAT\_FILE\_SRC'  
Context changed.  
OMUIMPORT FLAT\_FILE MINIMAL\_MODE

Start Command Prompt admin 92\_oracleapps\_meta... 4:47 PM

# Platforms, Packaging

---



- Available On:
  - Win32(Windows NT/2000/XP/2003), Win64(XP/2003), Linux x86, Linux Itanium, Solaris, HP-UX (RISC), HP-UX (Itanium), AIX, Tru64
- Packaging:
  - Oracle Developer Suite (iDS)
  - Oracle Business Intelligence

QUESTIONS  
ANSWERS

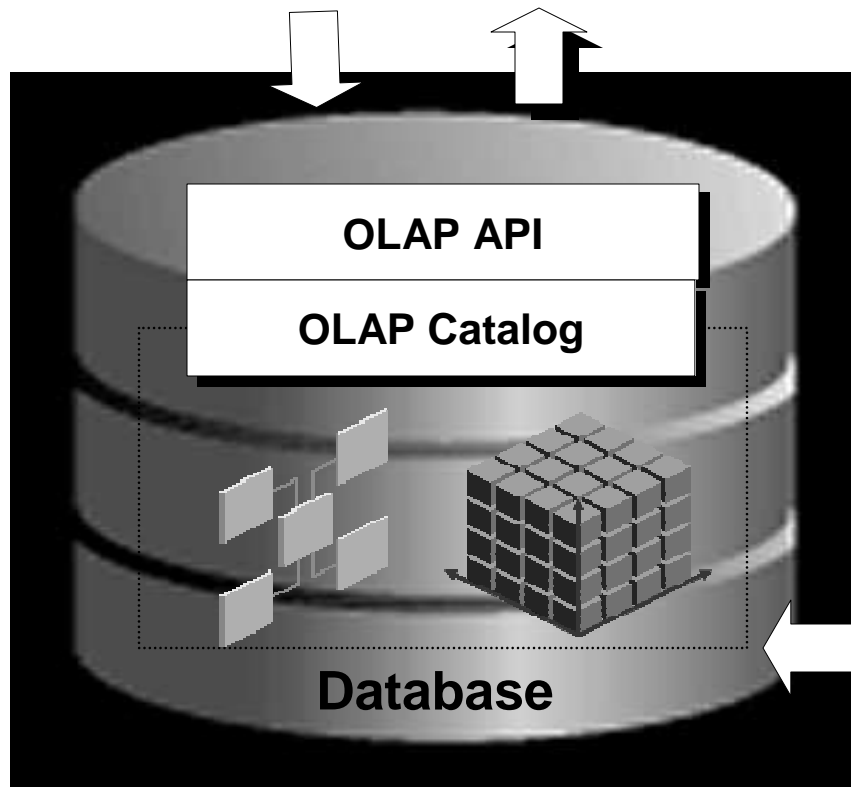
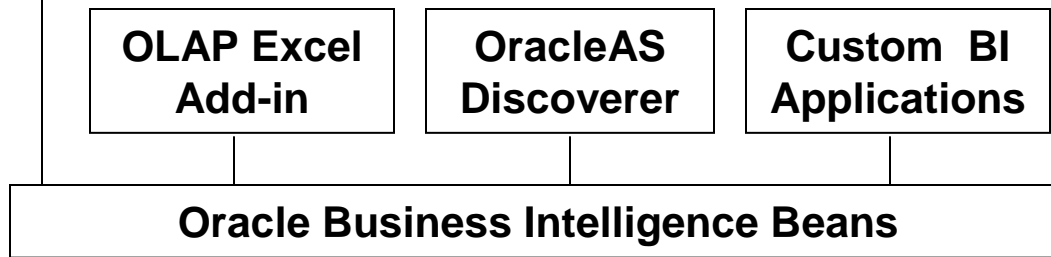
# Getting the Data Out

---



- Once the Data is in OLAP how do we get the data out?
- Alternatives
  - BI Beans applications (Custom or pre-built)
  - Discoverer
  - Discoverer and Oracle Portal
  - Oracle Reports
  - SQL Access from any SQL tool
  - Spreadsheet Add-in
  - Any except Spreadsheet add-in can be in a portal and with web interface

# Ad-hoc Access OLAP via Discoverer



## OracleAS Discoverer

- An intuitive ad-hoc query, reporting, analysis, and Web-publishing tool
- Enables advanced analyses on both operational and OLAP data sources

Warehouse Builder

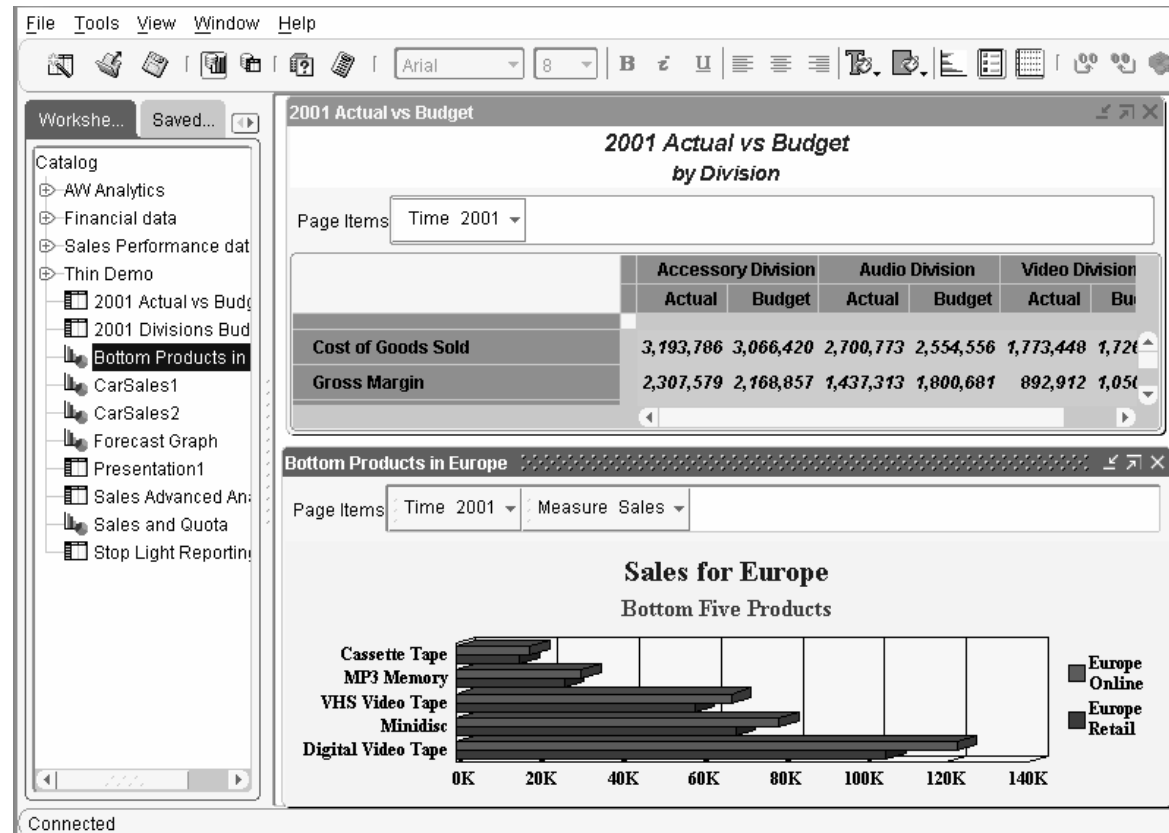
Enterprise Manager

AW Manager

# Discoverer 10g – Discoverer OLAP

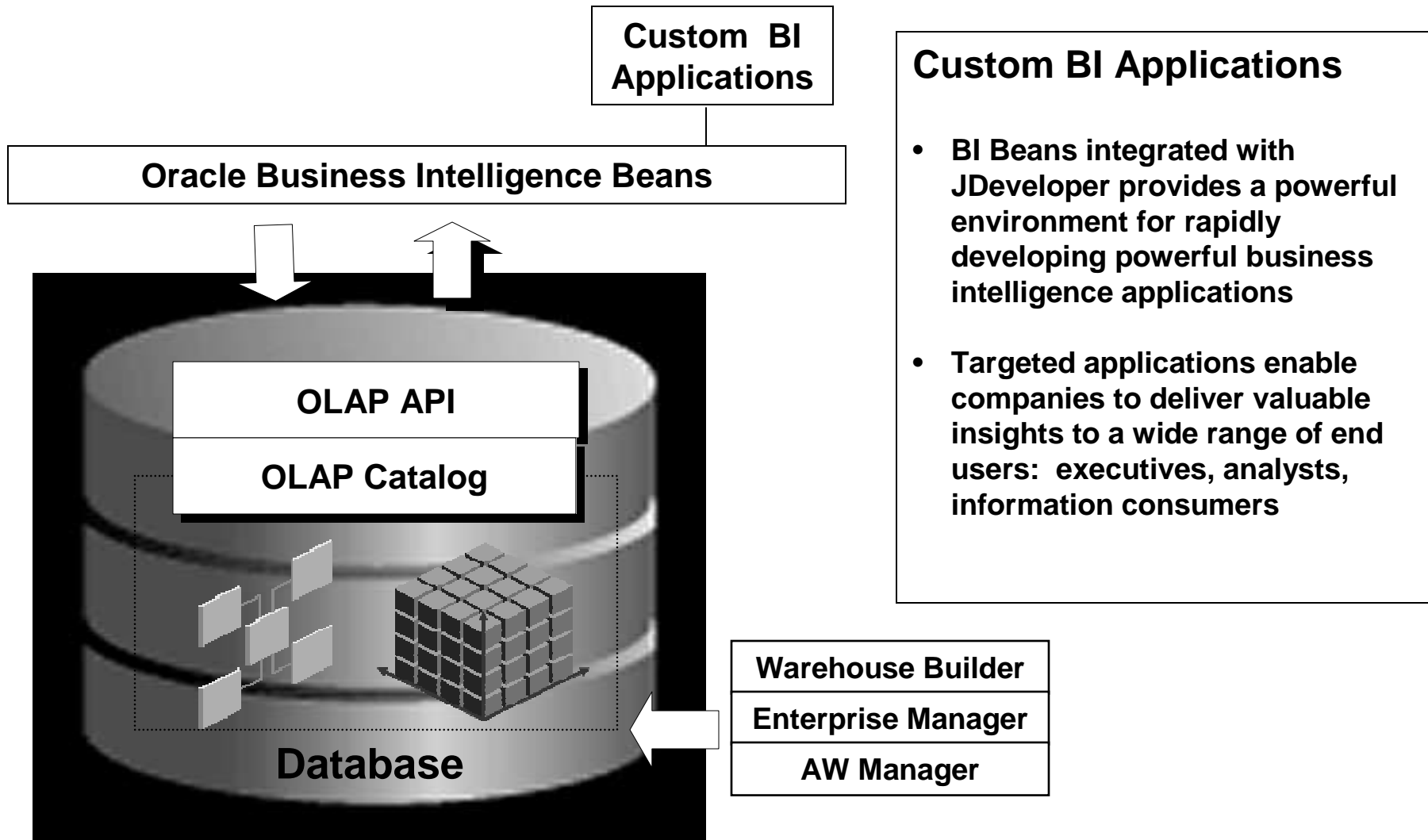


- Currently AWM creates EUL for SQL Access
- Disco 10g adds Direct Access to OLAP

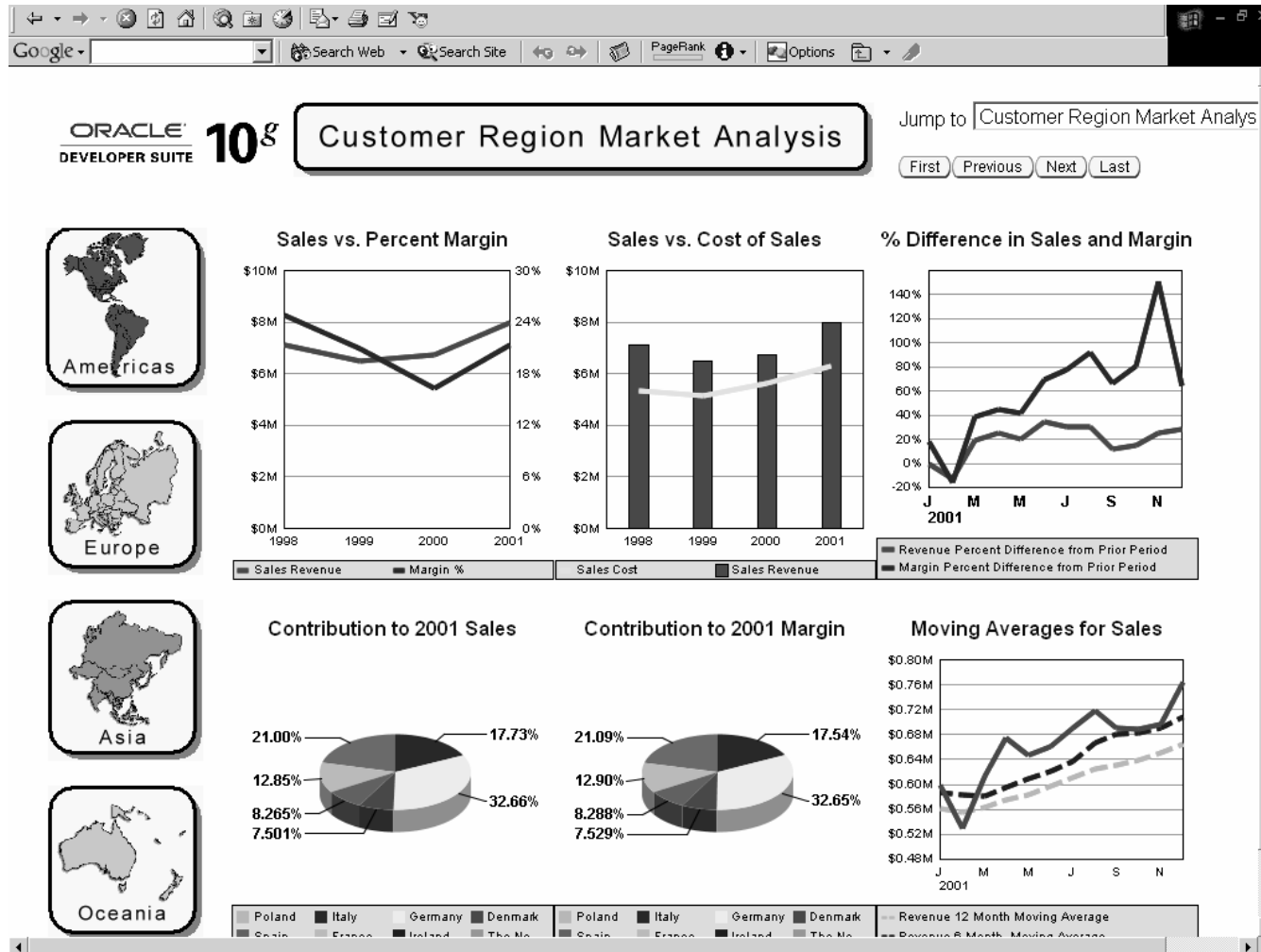




# Custom Development via BI Beans



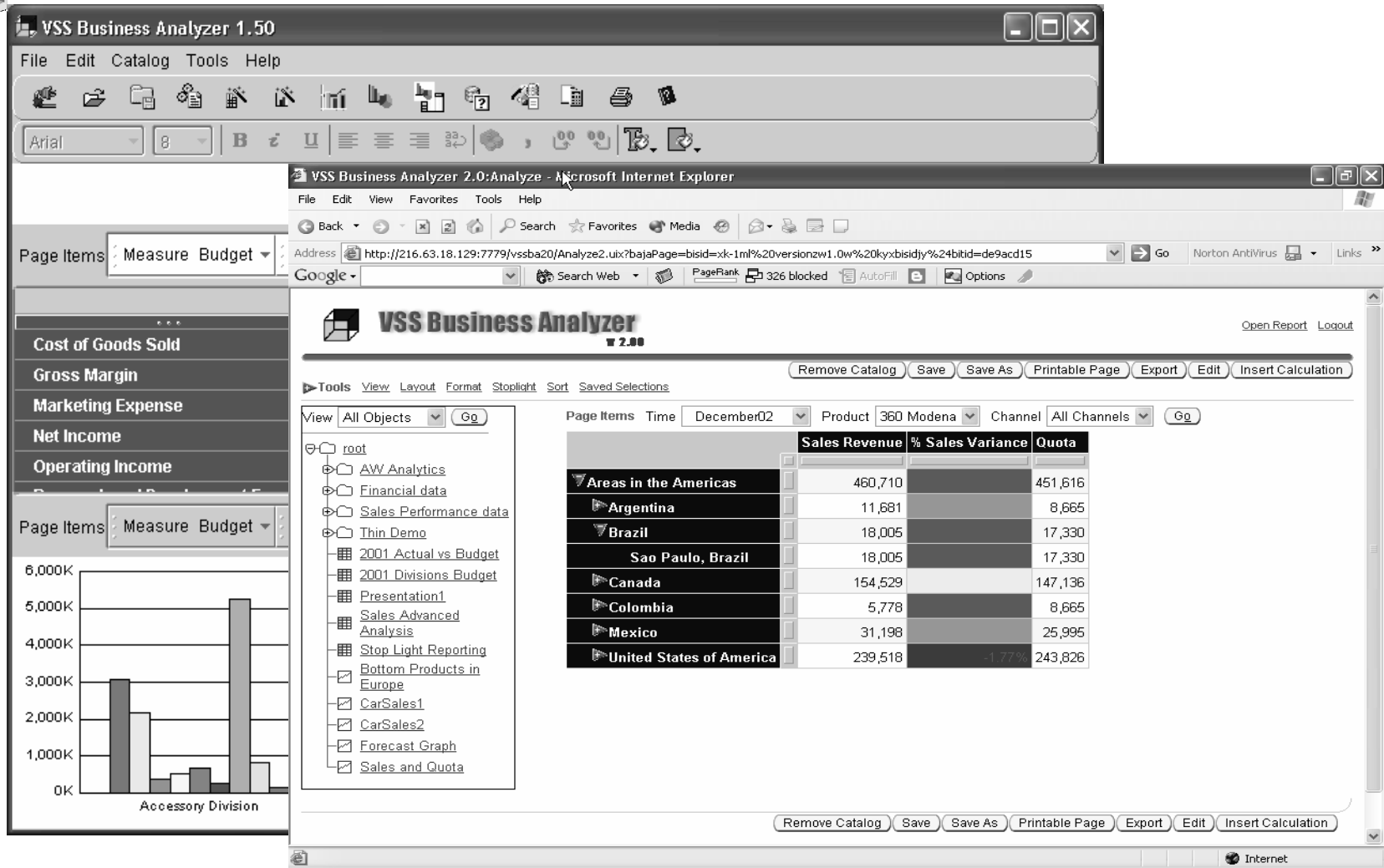
# Custom BI Application



# BI Beans Applications

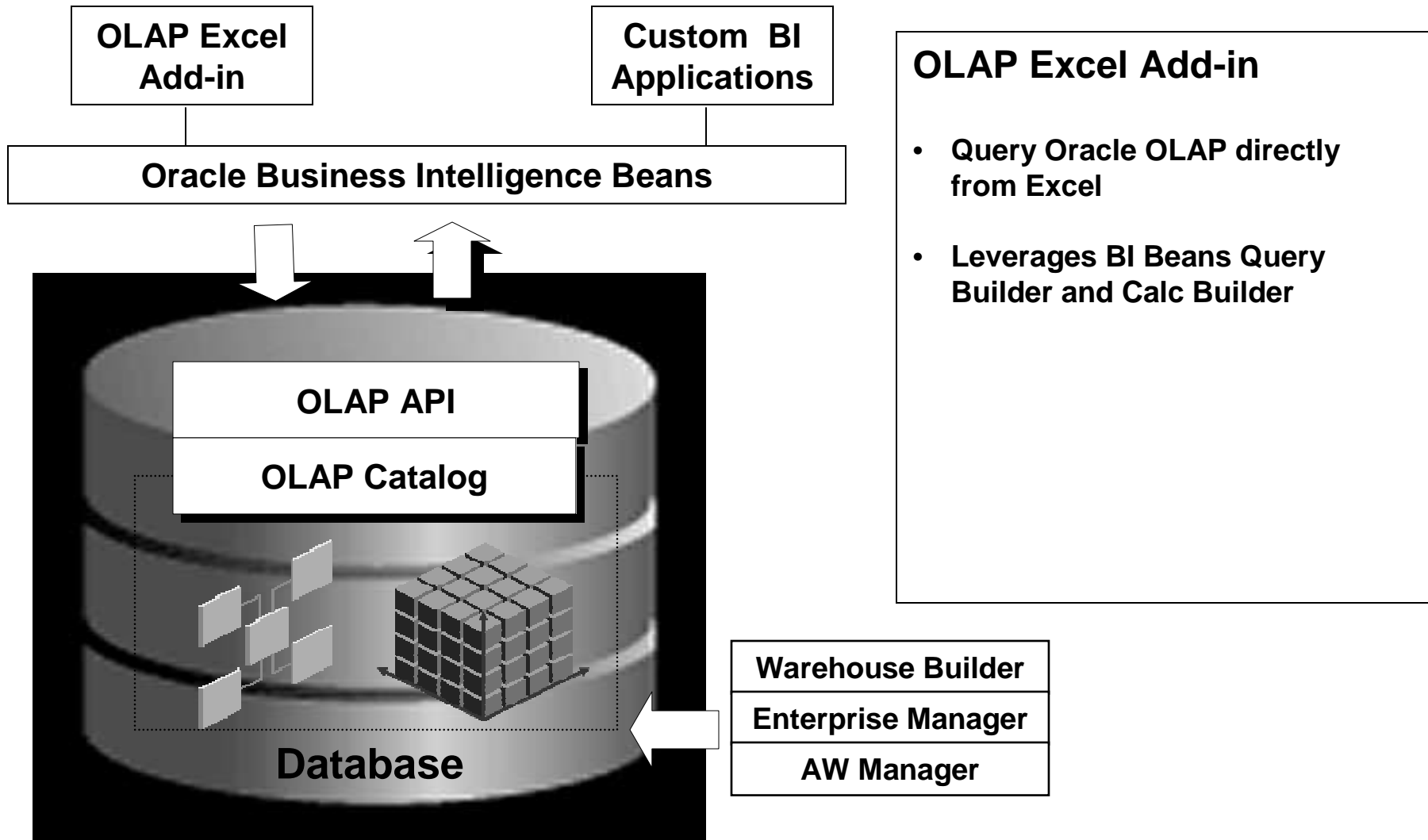


Thick  
Client



Thin Client

# Access to All OLAP Data from Excel



# Spreadsheet Add-In



Microsoft Excel - Book1

File Edit View Insert Format Tools Data Window OracleOLAP Help

Worldwide All Channels

	Sales	Quota	Quota Var %
2000	2000	2000	2000
CD Player	16 558 146	16 154 468	2 50%
Amplifier	14		
VHS Camcorders	13		
Receiver	13		
Digital Camcorders	12		
	70		

Oracle OLAP Query Wizard

Items Layout Dimensions

Choose Product From: Standard hierarchy

Available:

- Exception
- Top/Bottom
  - Top 10 based on Sales
  - Bottom 5.0% based on Quota
  - Making up top 3.0 % of Quota
- Hierarchy
- Time/Ordinal
- Match

Selected:

Steps Members

1. Start with Equipment/Parts: Top 5 based on Sales

Sort Save

Help OK Cancel

Sheet1 Sheet2 Sheet3

Ready

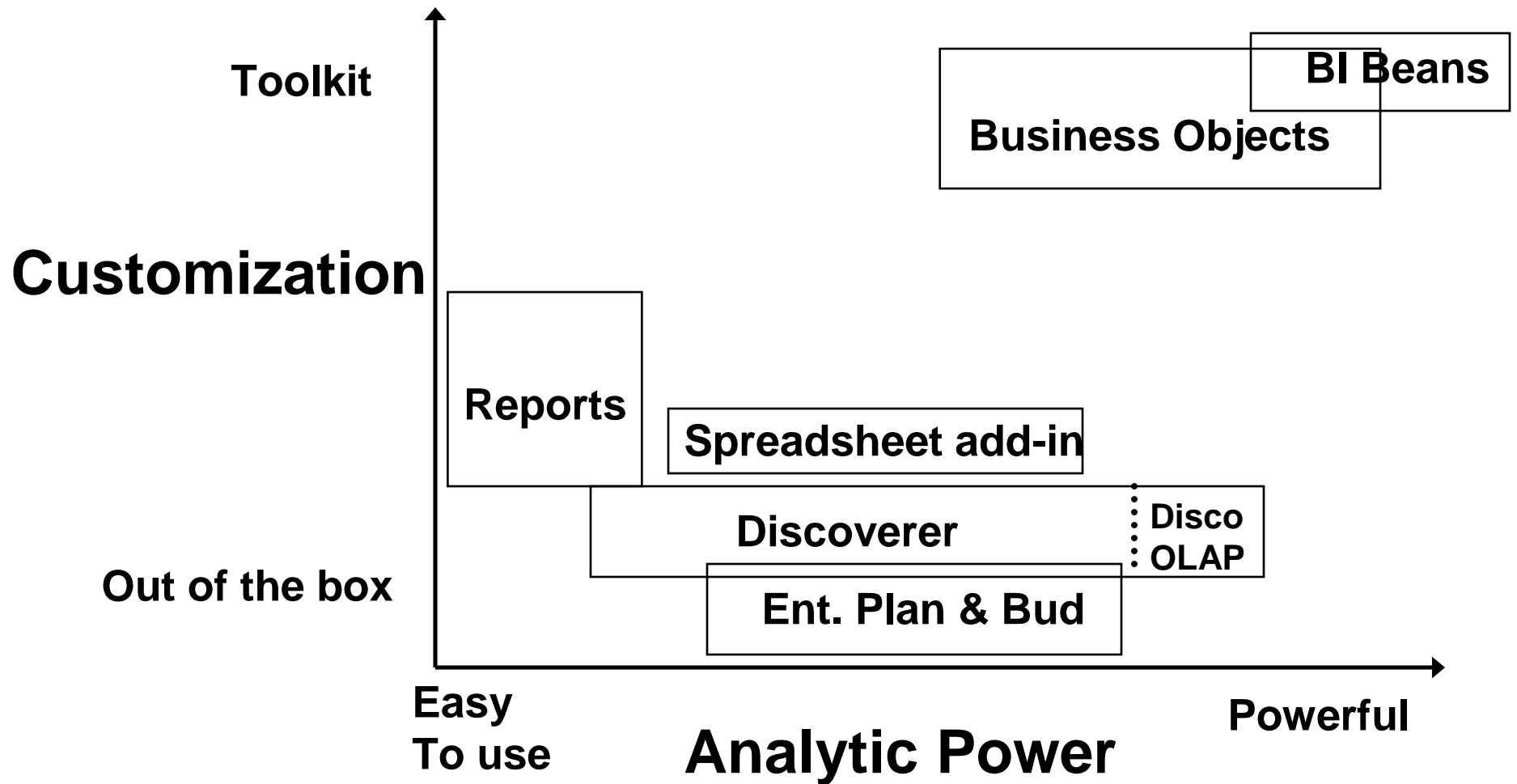
NUM

# What Access Tool?



- Java OLAP API designed for products
- Discoverer for ad hoc analysis
- BI Beans for custom applications (using JDev)
- Spreadsheet Add-in for access from Excel
- Oracle Reports for highly formatted reports
- Oracle Apps for analysis of Apps data
- 3rd Party tools fill in gaps

# Choices for Viewing Data



# Discoverer Specifics

---



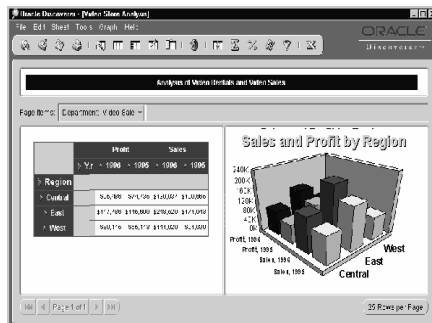
- Discoverer "Classic" still there
- Discoverer OLAP built with BI Beans
- Integrated Relational and Multidimensional access to data
- Discoverer OLAP uses BI Beans repository with Discoverer extensions
- Uses "Workbook" metaphor to organize crosstabs and graphs into screens



# Three Deployments of Discoverer

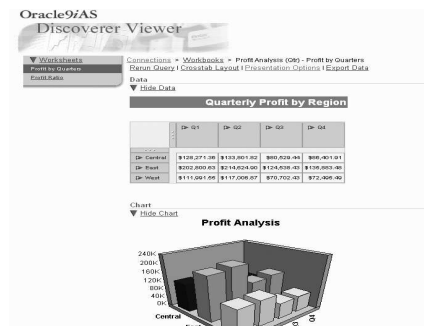


## Discoverer Plus



**Power user tool**  
**Creates new workbooks**  
**Runs via applet**

## Discoverer Viewer



**Casual user tool**  
**Existing workbooks**  
**Launched from Browser**  
**Zero footprint**

## Discoverer Portlets



**Casual user tool**  
**Existing workbooks**  
**Part of Portal**  
**Launches Viewer**  
**Zero footprint**

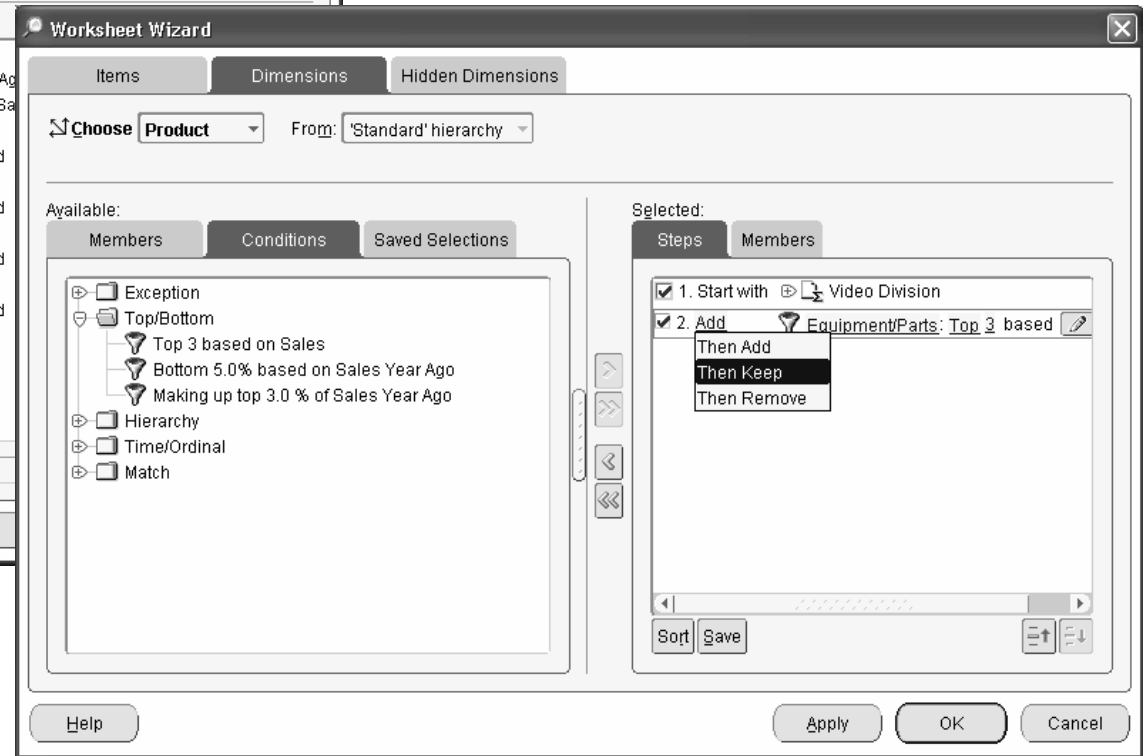
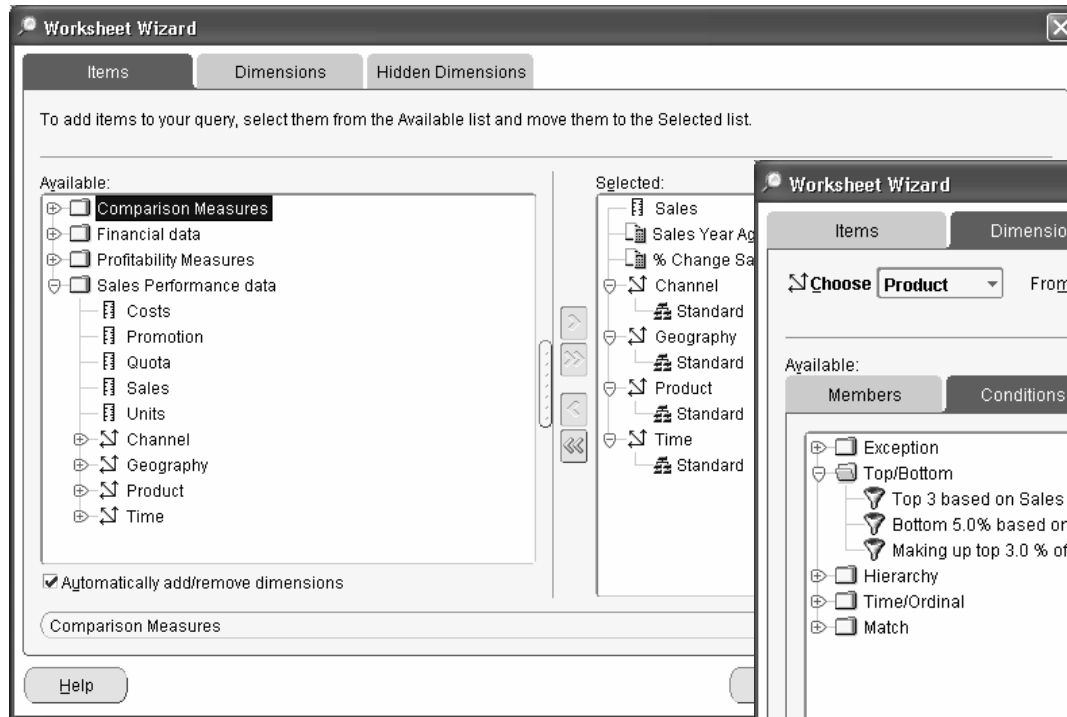


# Discoverer Development Themes

---

- Single tool for both relational and multidimensional analysis
- Easy access to powerful analytics of the database
- Highly customizable display
- Support collaboration

# Query Building



Simplified access  
to analytics

# Custom Calculations



Powerful calculations,  
simple user interface

Calculation Wizard - Step 1 of 3: Name and Type

What would you like to name this calculation?

What type of calculation do you want to create?  
Calculation Type:

- Advanced Arithmetic
  - Cumulative Total
  - Index
  - Percent Markup
  - Percent Variance
  - Rank
  - Share
  - Variance
- Prior/Future Comparison
  - Prior Value
  - Difference from Prior Period
  - Percent Difference from Prior Period

Description of selected type.

Help Back Next Finish

Calculation Wizard - Step 2 of 3: Percent Difference from Prior Period

**Percent Difference from Prior Period**  
Returns the percentage difference between the current value of a measure and the value of that measure from a prior period.

What measure do you want to calculate percent difference for?  
Measure:

Calculate percent difference based on values:  
Over time in:

From:  
☒ Year ago  
☐ Period ago  
☐

Number Format:

Help Back Next Finish Cancel

# Direct Manipulation



Oracle Discoverer OLAP Plus - [Performance Tracker]

File Edit View Format Tools Window Help

Clipping

Members Saved Selections

Dimension: Measures

- Root
  - Comparison Measures
    - % Change Sales
    - Quota Variance
    - Sales Year Ago
  - Financial data
  - Profitability Measures
  - Sales Performance data
    - Costs
    - Promotion
    - Quota
    - Sales
    - Units

1. Start with Members

- Sales
- Sales Year Ago
- % Change Sales

Performance Tracker

Page Items Product All Products Time March 2001

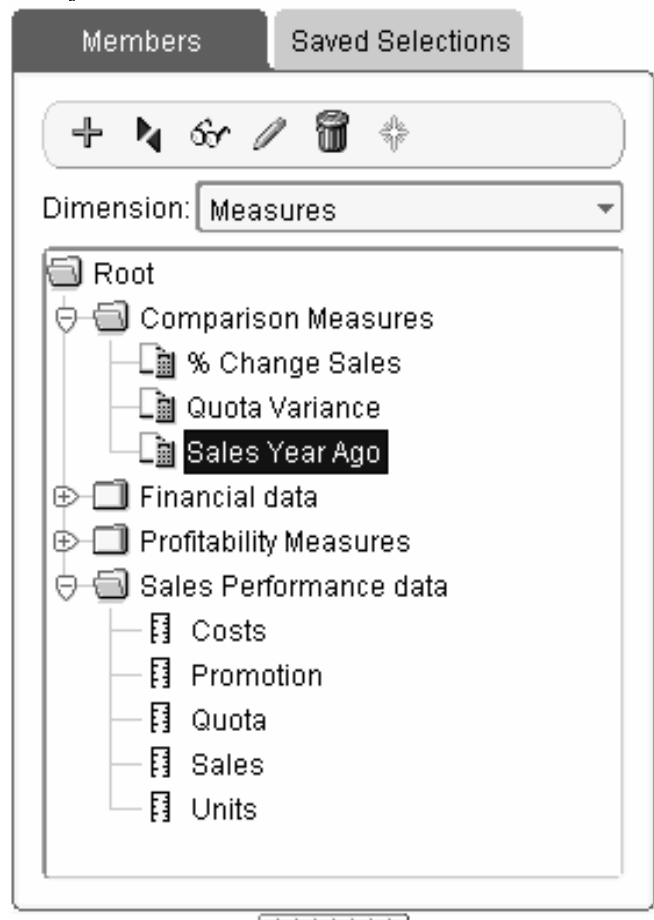
Page Items	Product	Time
Worldwide		9.2
Americas		3.5
Asia		2.5
Australia		1.0
Europe		2.5

Negative sales growth highlighted red.

Sales vs. Year Ago Product Performance by Region Sales Trends

Navigator allows for direct manipulation of the query by providing drag and drop, right mouse, and push button access to common query actions.

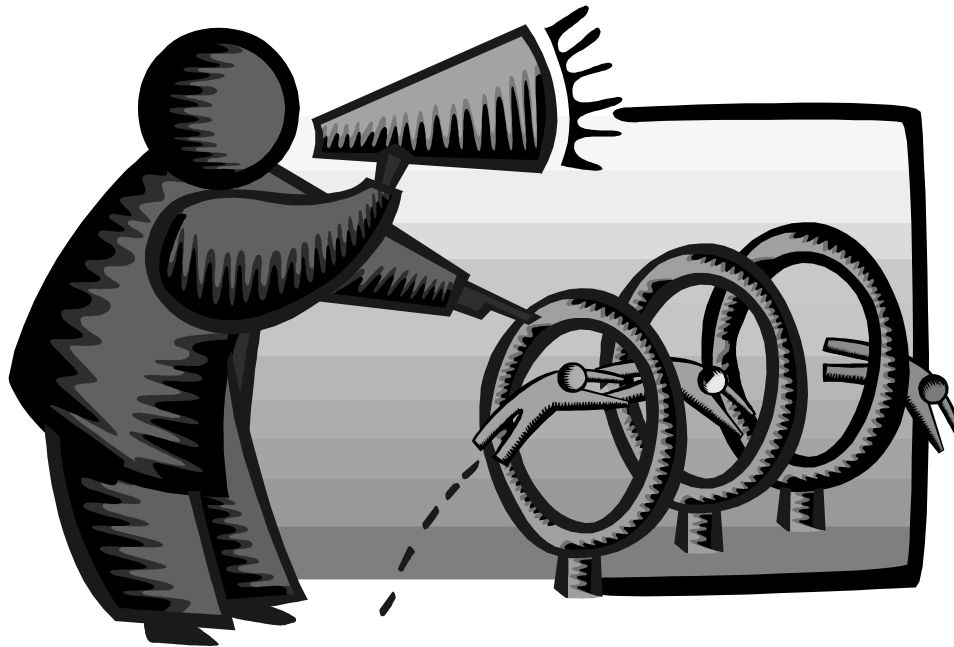
# Navigator – Member Selection



- Dimension members and measures can be selected and applied to the worksheet

# Demonstration of Discoverer OLAP

---



# Discoverer Plus Features Over Vanilla BI Beans Application

---



- Multiple deployments
  - Thick applet
  - Thin viewer
  - Portlet
- Worksheet metaphor
- Export to PDF
- Undo
- Drag and Drop selection changes
- Totals at bottom or right
- Other features as well



# BI Beans Specifics

---

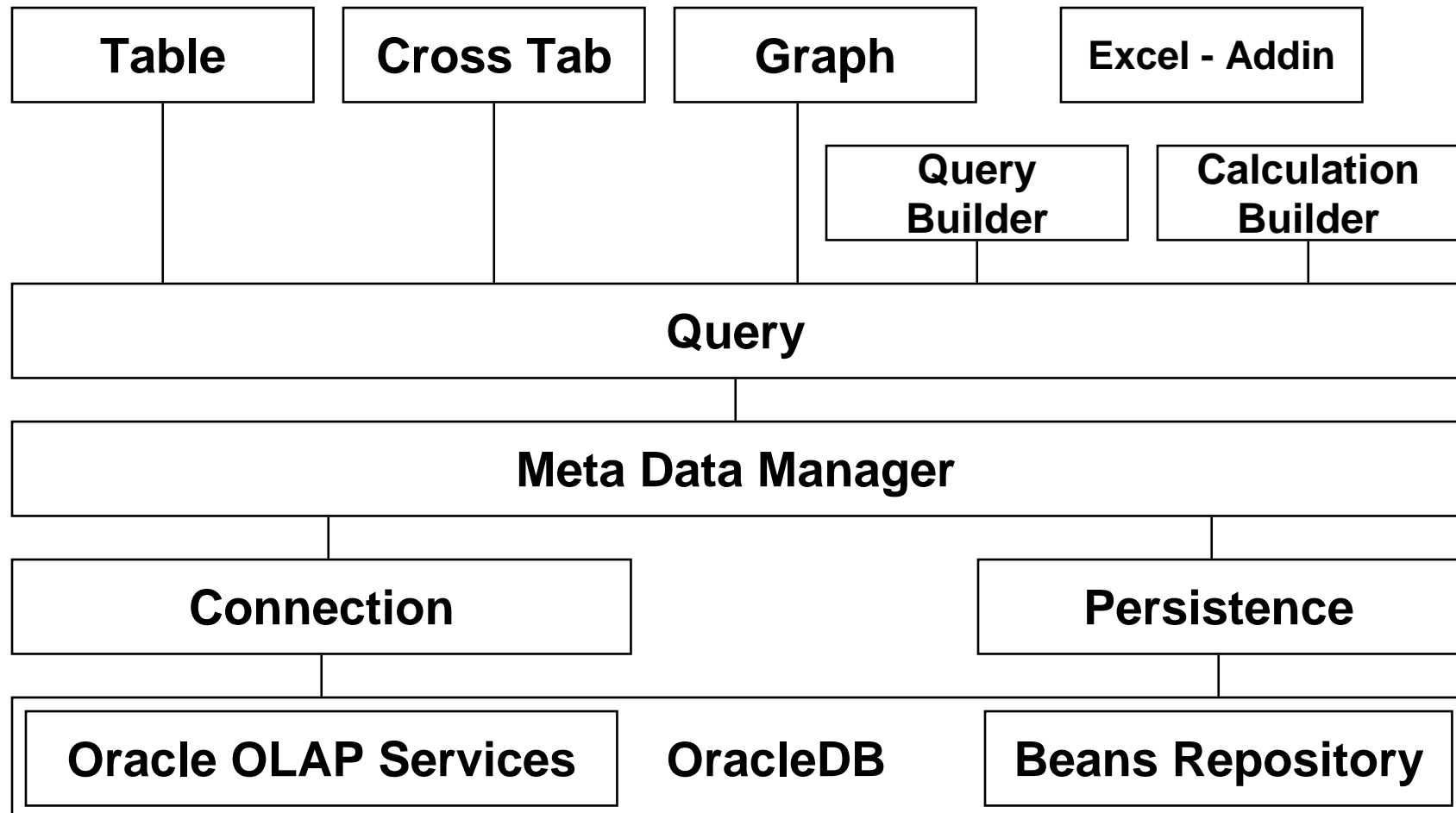


- Can look like anything
- Since custom coded, can do anything
- Generally, use Cross-tab and Graph bean to present data
- Can integrate other data easily
- JDeveloper not required, but helpful
- No deployment license necessary
- Requires Oracle OLAP to run



# Business Intelligence Beans

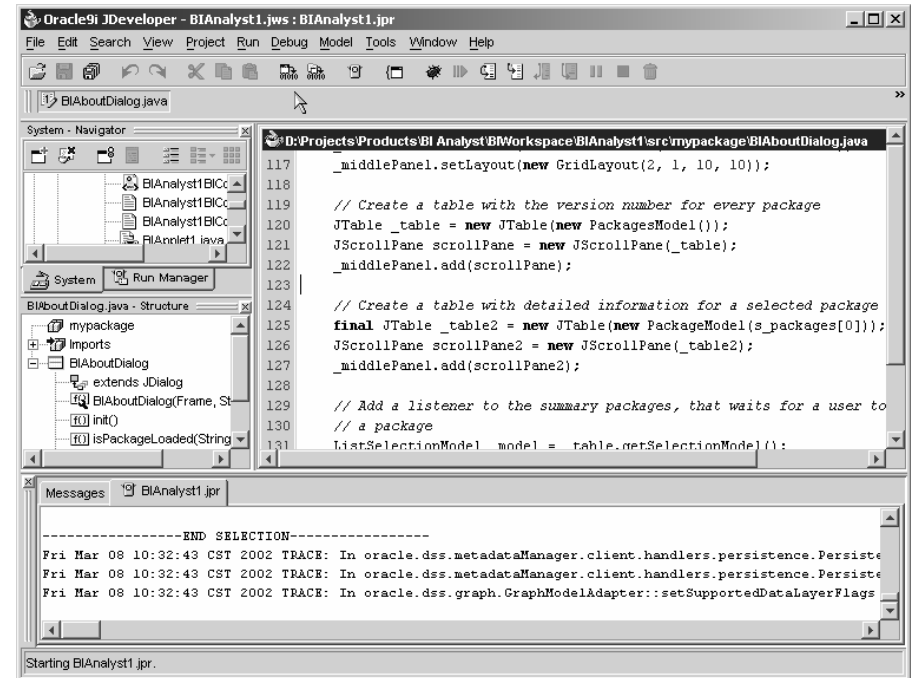
---





# JDeveloper Integration

- Single Development tool for Relational and OLAP dev
- Design-time integration objectives
  - Use JDeveloper concepts; extend when necessary
  - Live data access
  - Run application objects
  - Extensive use of Wizards to support rapid development
  - Use BI Beans runtime repository to enable multiple deployment options



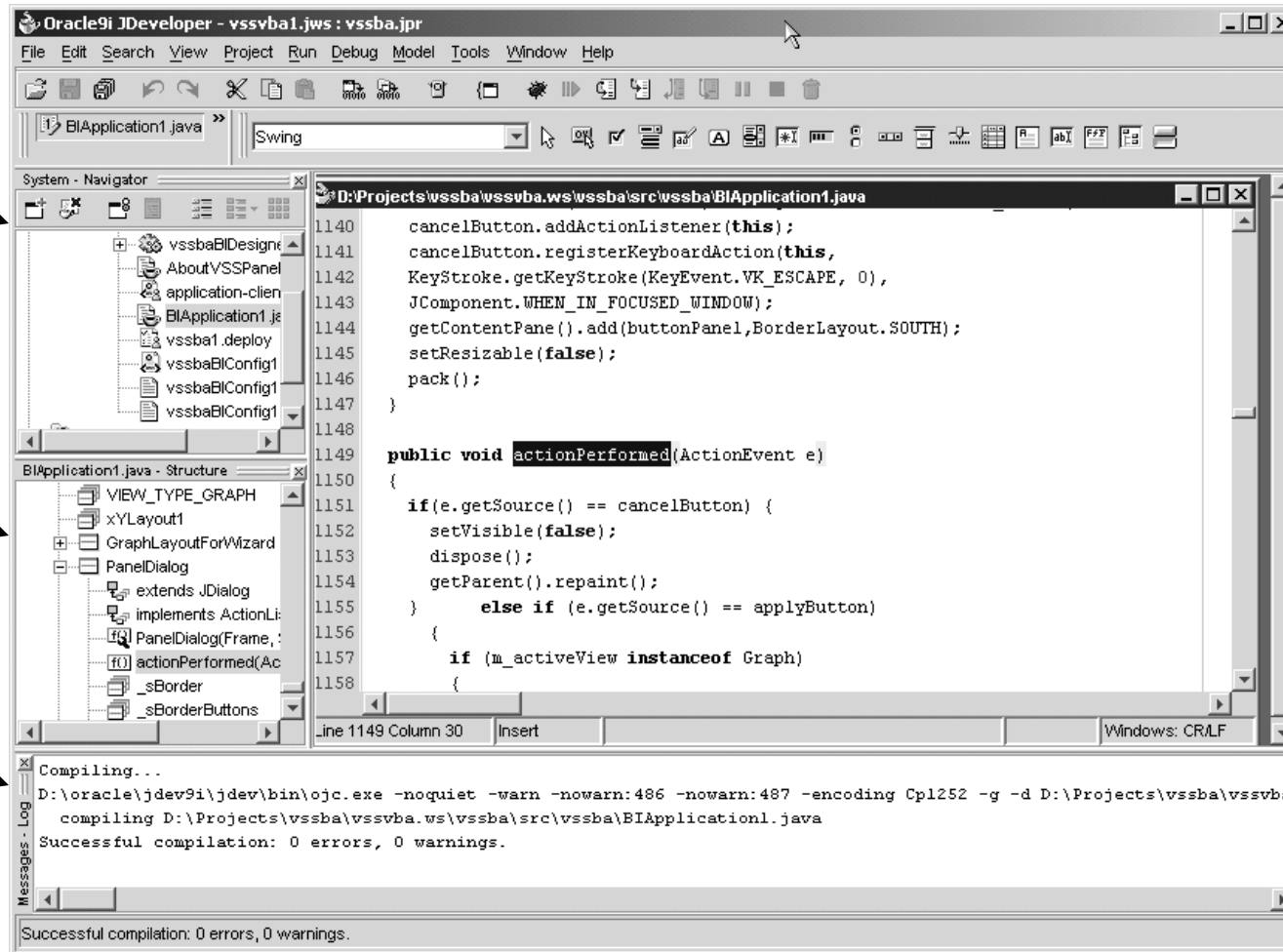


# JDeveloper Environment

**System  
Navigator**

**Structure  
Window**

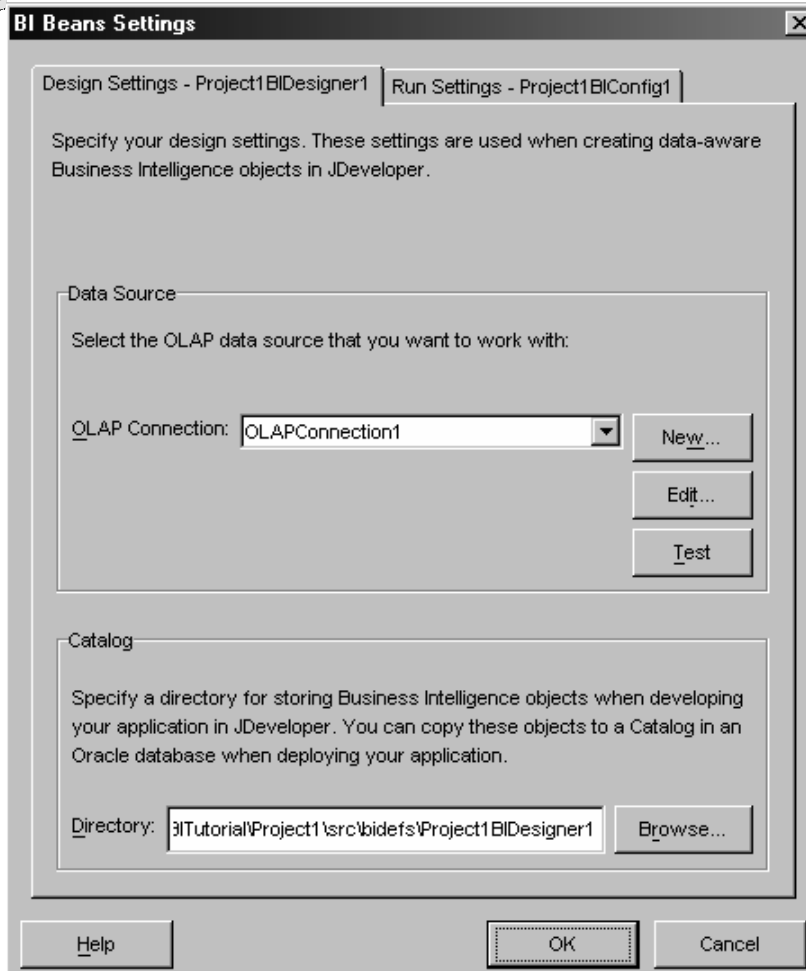
**Log  
Window**



**Component  
Toolbar**

**Code  
Window**

# BI Beans Designer Settings

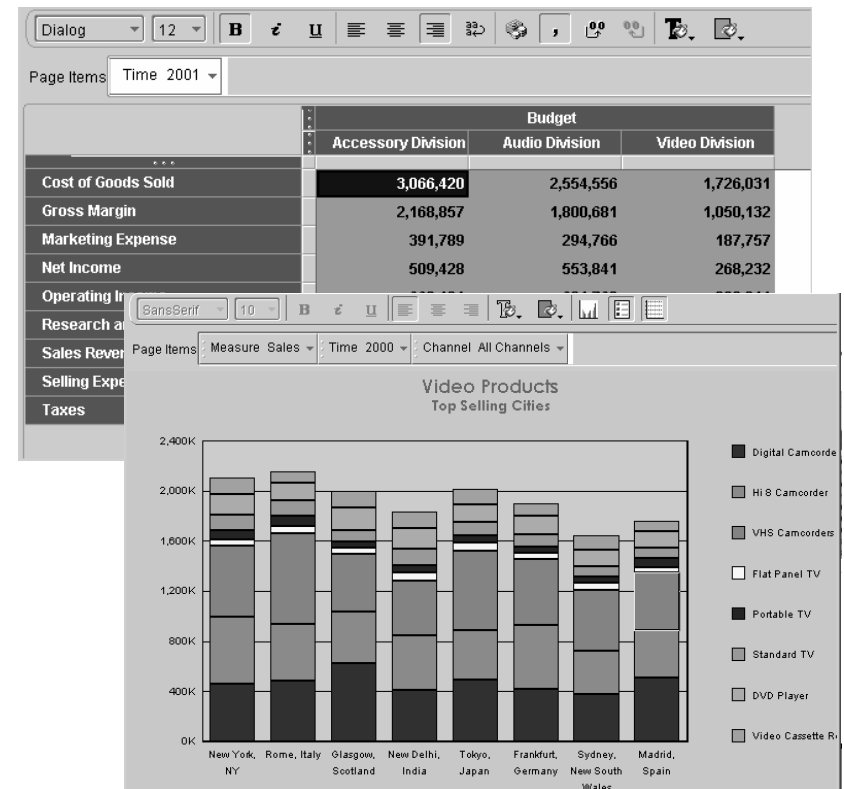


- Container for Business Intelligence Objects
- References information needed to connect:
  - to Oracle OLAP
  - and the BI Beans Catalog.
- Design Settings - Lets you view and edit settings in your BI Designer object
- Run Settings - Lets you view and edit settings in your BI Configuration file

# Presentation Beans



- Provides common user interface across Oracle BI products
- Translate UI gestures into OLAP events
- Graph
  - Over 50 graph types
  - Can modify appearance
- Crosstab/Table
  - Cell level formatting
- View toolbar enables simple access to formatting capabilities
- Customers: Discoverer, Reports, Portal, CRM, Enterprise Planning and Budgeting, Balanced Scorecard ...



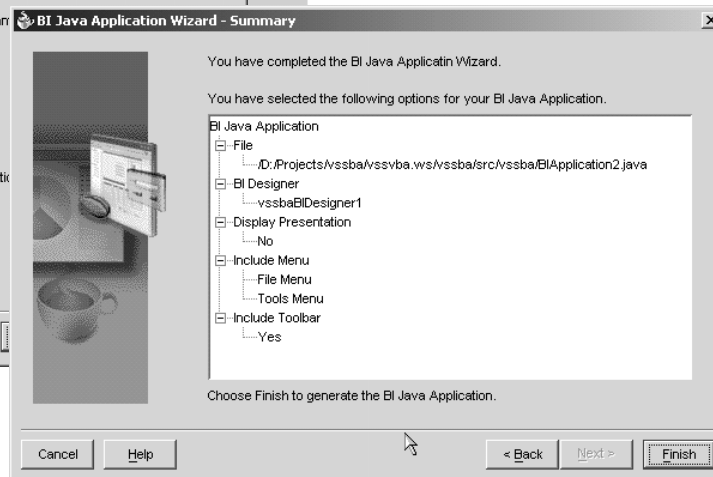
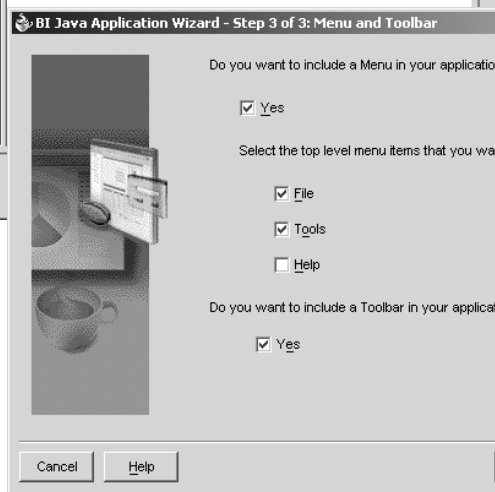
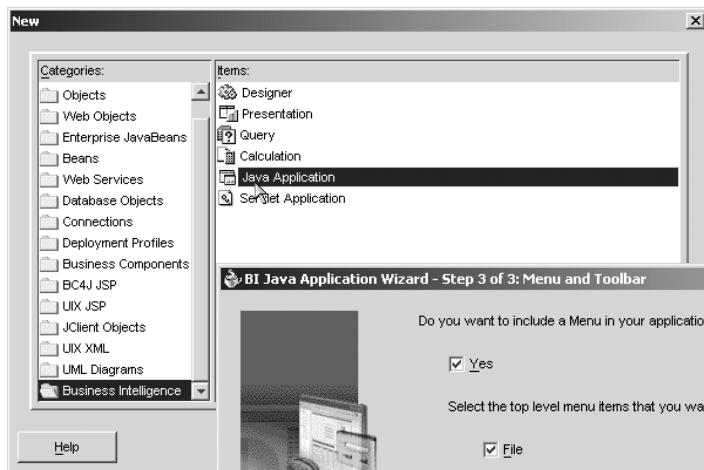
# Business Intelligence Wizards

---



- Specialized Wizards Built into JDeveloper
  - Connection Wizard
  - Calculation Wizard
  - Query Wizard
  - Presentation Wizard
  - Java Client Application Wizard
  - Servlet (JSP) Application Wizard

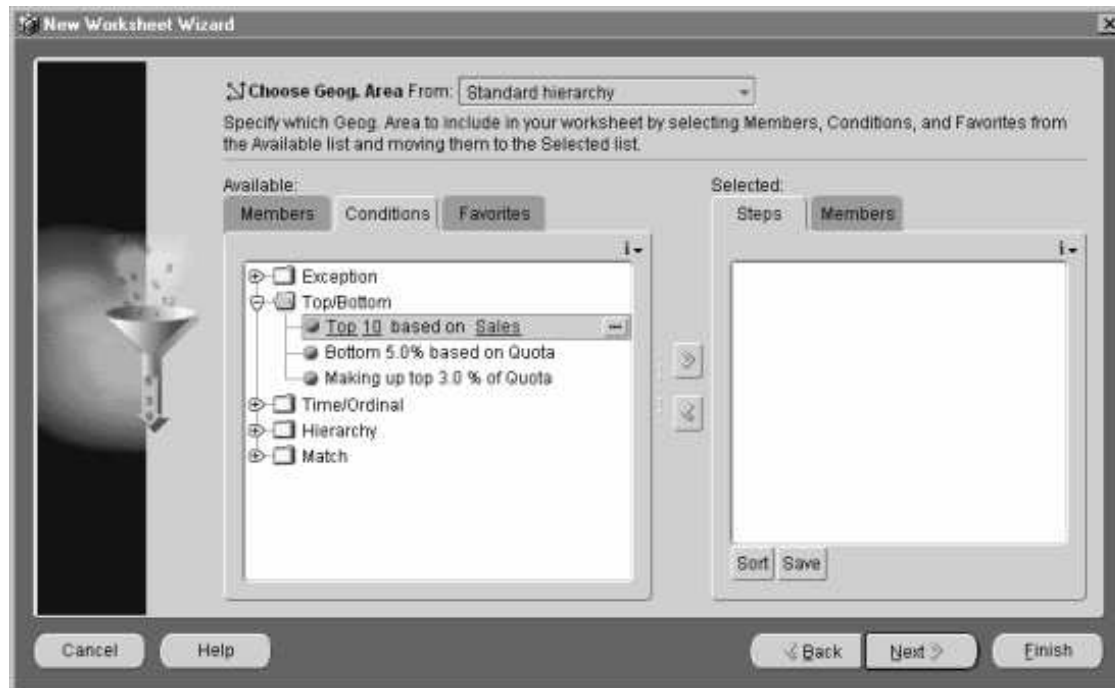
# JDeveloper BI Wizards



First Quarter				Second Quarter
	January	February	March	
Direct	5,000	5,400	5,800	7,200
Indirect	500	540	580	1,711



# Query Builder



- “Brains” behind the presentation beans
  - Data provider
  - Data navigation
  - Data selection
- QueryBuilder customizer
  - Enables end user to specify advanced queries using business terms - not SQL
  - Save favorite selections


# Customizer




**Crosstab Customizer - Step 1 of 3: Options**

Options | Titles | Format | Style

Select options for your crosstab.

☒ Show horizontal grid lines: 

☒ Show vertical grid lines: 

☐ 3D gridlines

☒ Show column headers

☒ Show row headers

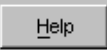

Row header style:

☒ Inline

☐ Outline

Sample:

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Product A				
Product B				
Product C				
Product D				



 

- Alter the look of your presentation.
- Add titles and footnotes.


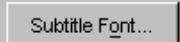
**Crosstab Customizer - Step 2 of 3: Titles**

Options | Titles | Format | Style


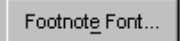
Enter text for your crosstab titles.

☒ Show Title  

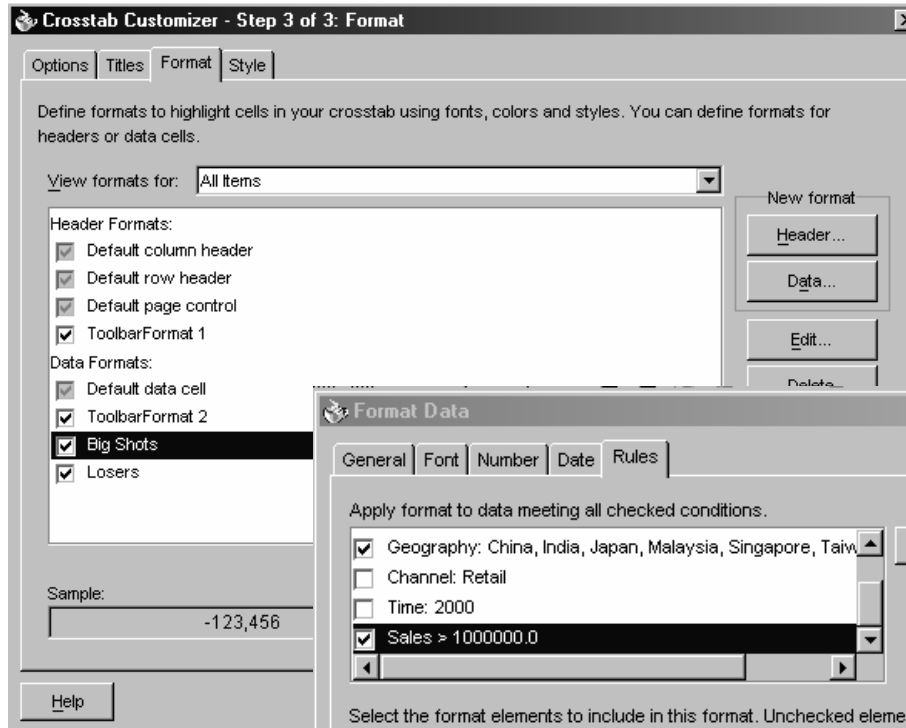
Asian Sales Summary

☒ Show Subtitle  

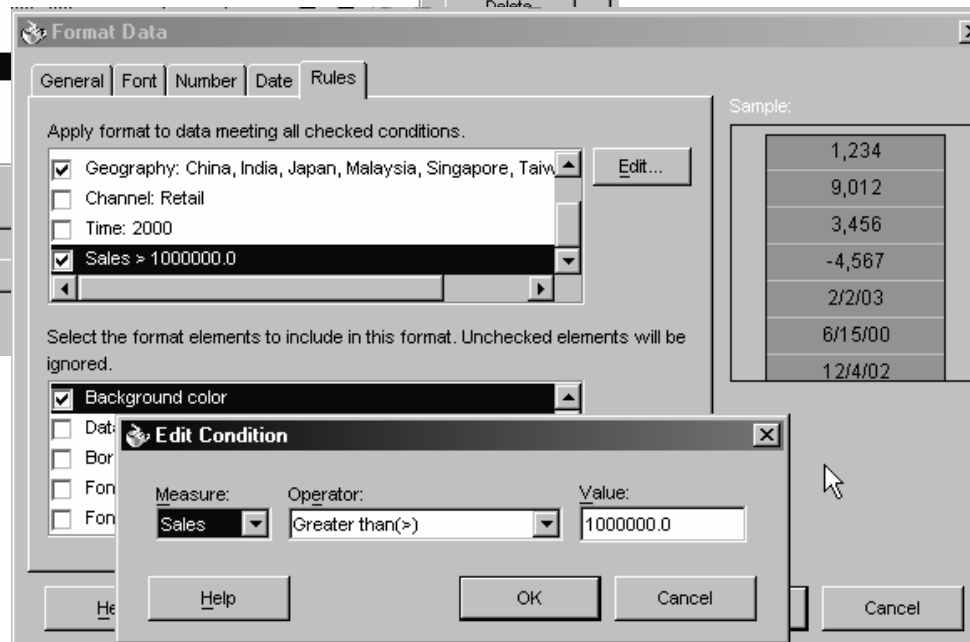
**Stoplight Report**

☐ Show Footnote  

# Customizer



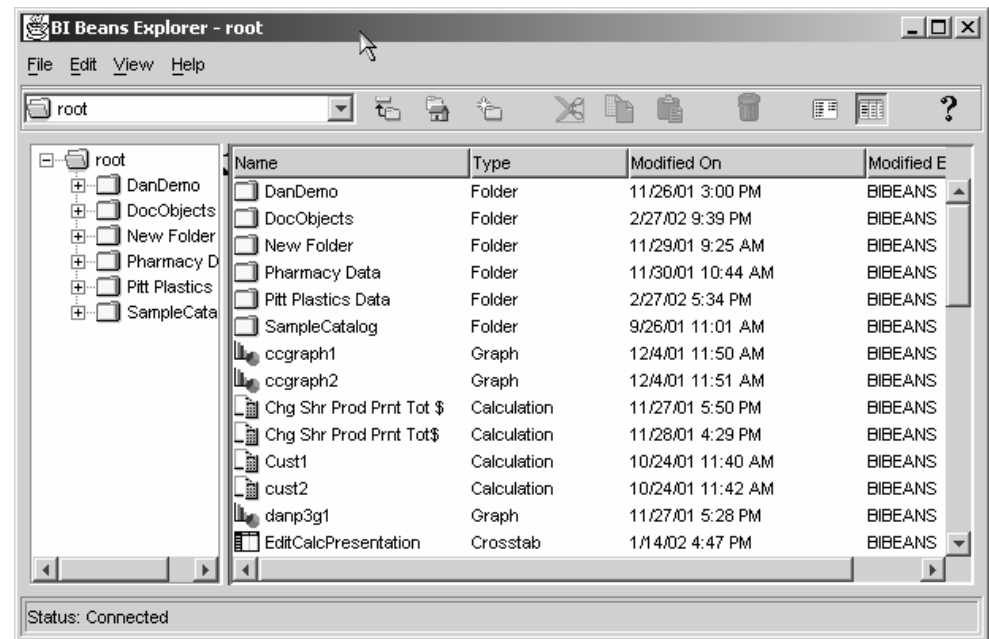
- Add data-driven formatting.





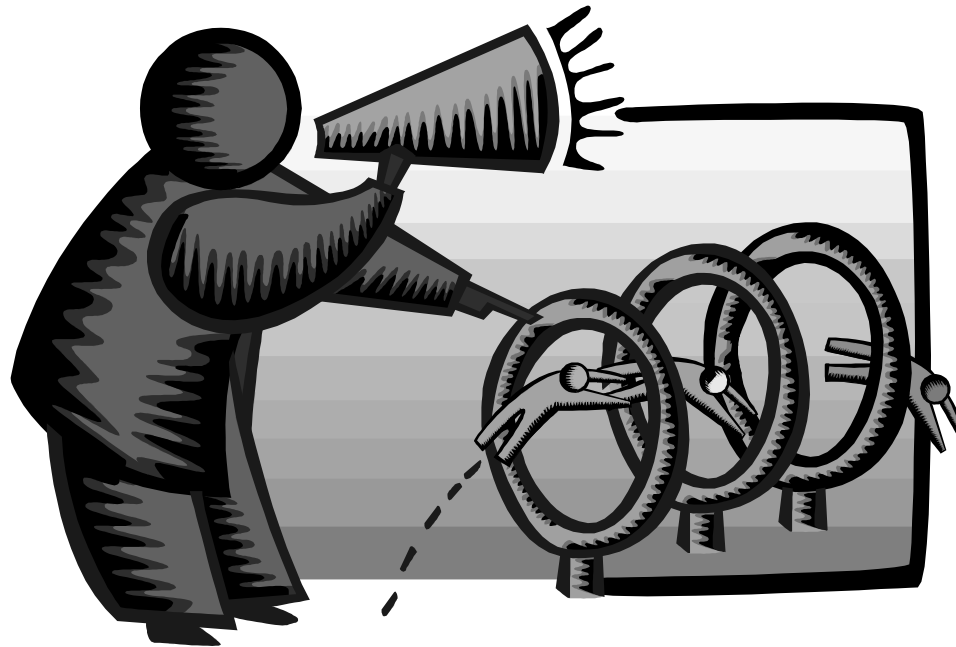
# Persistence Services – BI Catalog

- Enables end users to save personal analyses or share analyses with other users.
- Organizes information in folders
- Persisted objects include:
  - Crosstab, table and graph formatting
  - Entire queries or individual selections
  - Calculations
- Objects persisted in XML format
- Searchable



# Demonstration of BI Beans Application

---



# Spreadsheet Add-in Specifics

---



- Use instead of Discoverer as ETL OLAP Tool
- Allows access directly from Excel to entire OLAP cube
- Allows access to Query Editor
- Allows access to Calc Builder
- Presents data in familiar Excel interface
- Breaks down perception OLAP data "closed"
- Users love access from Excel!



# What Does Spreadsheet Add-in Do?

---

- Adds OracleOLAP menu to Excel menu
- New Query gets data into Excel
- Edit Query changes selection in Excel
- Add New Calculation calls Calculation Wizard
- Allows for drilling and paging on OLAP data
- Saves queries between sessions
- Refresh Query refreshes queries from server
- Several options to modify behavior

# Spreadsheet Add-In



Microsoft Excel - Book1

File Edit View Insert Format Tools Data Window OracleOLAP Help

Worldwide All Channels

	Sales	Quota	Quota Var %
2000		2000	2000
CD Player	16,558,146	16,154,468	2.50%
Amplifier	14		
VHS Camcorders	13		
Receiver	13		
Digital Camcorders	12		
	70		

Oracle OLAP Query Wizard

Items Layout Dimensions

Choose Product From: Standard hierarchy

Available:

- Exception
- Top/Bottom
  - Top 10 based on Sales
  - Bottom 5.0% based on Quota
  - Making up top 3.0% of Quota
- Hierarchy
- Time/Ordinal
- Match

Selected:

Steps Members

1. Start with Equipment/Parts: Top 5 based on Sales

Sort Save

Help OK Cancel

Sheet1 Sheet2 Sheet3

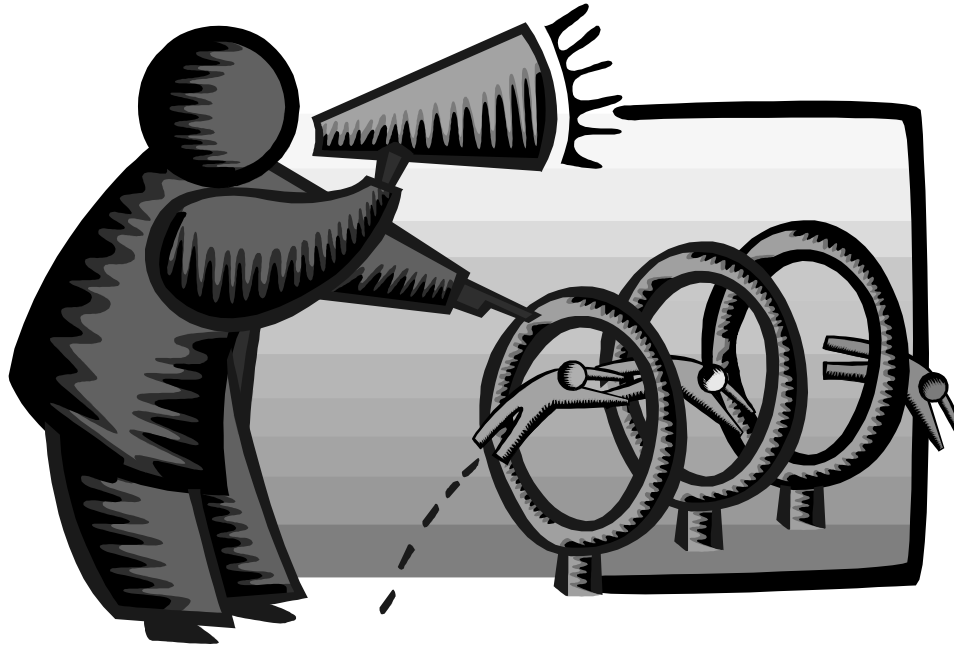
Ready

NUM



# Demonstration of Spreadsheet Add-in

---



# Which Is Right For You?

---



## BI Beans

- Need customizations
- Integrate with other non-Oracle Applications
- Need to extend in future
- Have Java programmers
- No problem with:
  - Documentation
  - Installation
  - Support
  - Training

## Discoverer

- Want out-of-the-box setup
- Already have Discoverer
- Want Portal integration
- Like Discoverer functionality

## Excel Add-in

- Want to drive from Excel
- Free (with Oracle OLAP)
- Users OK with creating own

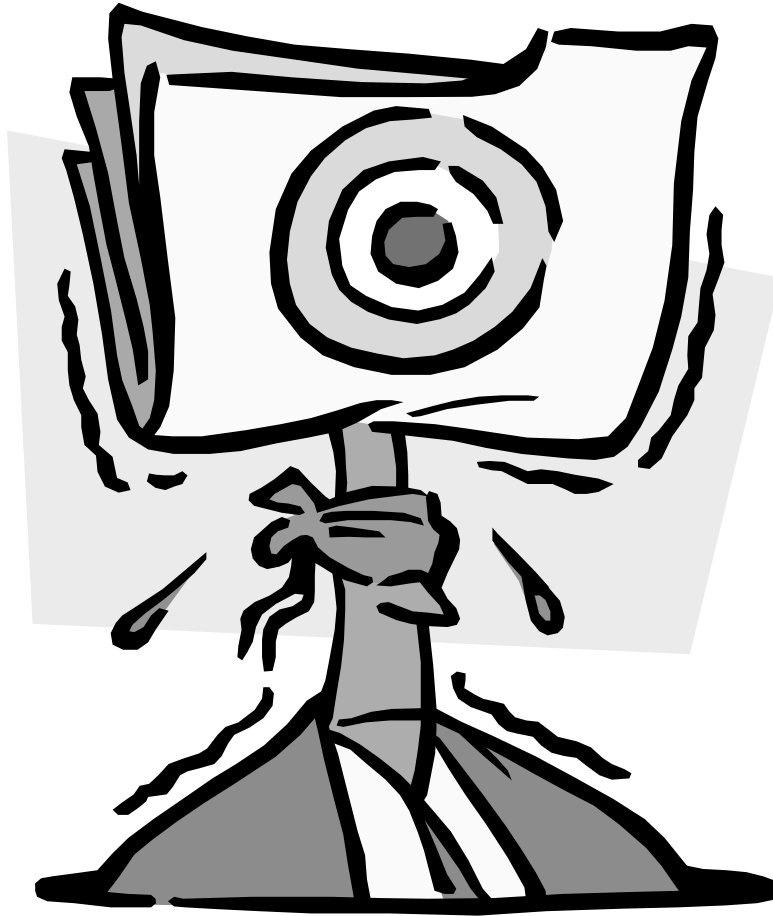
# Platforms, Packaging

---



- Available On:
  - Win32(Windows NT/2000/XP/2003), Linux x86, Linux Itanium, Solaris, HP-UX (RISC), AIX
- Packaging:
  - Oracle Developer Suite (iDS)
  - Oracle Business Intelligence
  - Oracle JDeveloper (BI Beans)
  - Separate Download for Excel Add-In

# QUESTIONS?



# More Information



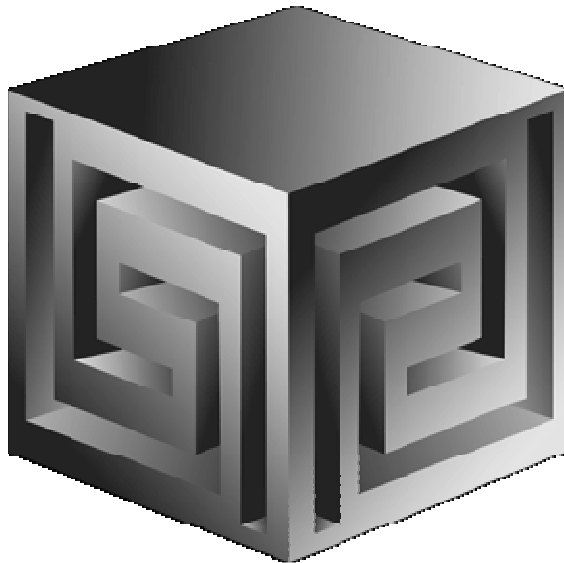
- <http://www.oracle.com/technology/products/owb>
  - Collateral
  - Software
  - Component Exchange
  - Discussion forum
  - SDK
  - Customer Testimonials
  - Partner Information



# Building an End to End OLAP Solution using Oracle Business Intelligence

---

## ***COLLABORATE '06*** ***Paper # 306***



Chris Claterbos

claterbos@vlamis.com

Vlamis Software Solutions, Inc.

816-781-2880

<http://www.vlamis.com>

Copyright © 2006, Vlamis Software Solutions, Inc.