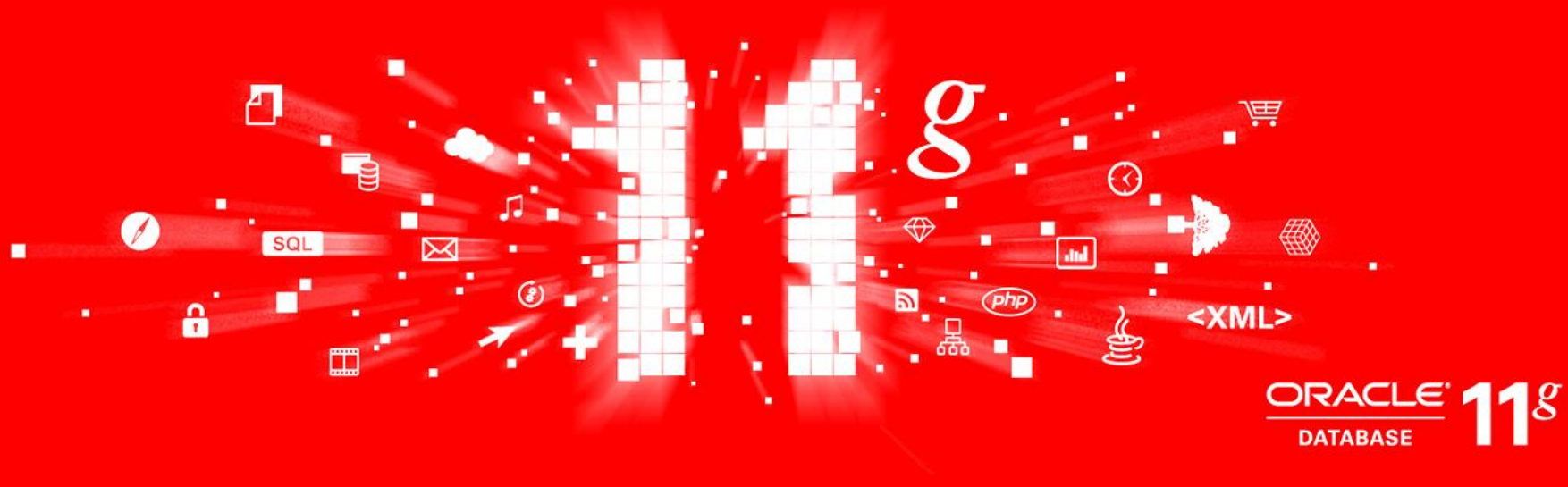


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Oracle SQL Developer Data Modeler 3.0: Technical Overview

February 2011

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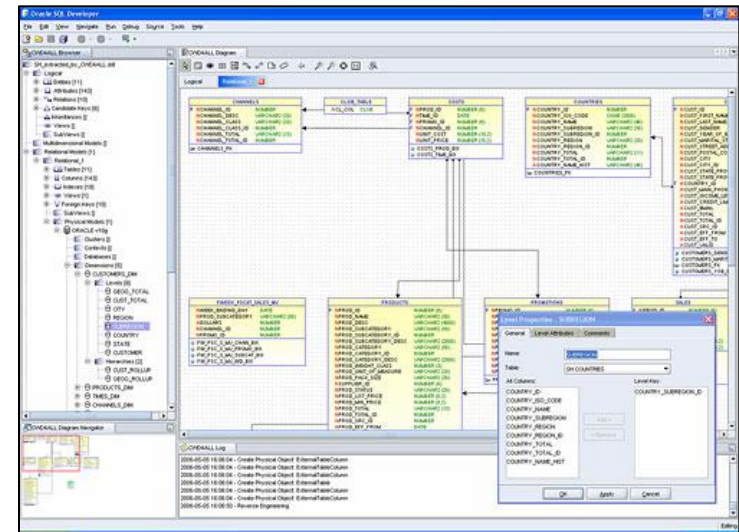
- Data Modeling
 - Why model?
 - SQL Developer Data Modeler Overview
 - Technology and architecture
- Features
 - Logical, relational, and physical modeling
 - Data types and multi-dimensional modeling
 - Forward and reverse engineering
 - Importing and exporting
 - Integrated and repository based reporting
 - Integrated version control for collaborative development
 - Custom Design Rules and transformations
- Finding out more...

Why Do You Need to Model Today?

- A diagram is a powerful communication tool
- Different models provide different solutions
 - Logical Model (Conceptual model) for architects and users
 - Relational Model (Schema or Data Design) for developers
 - Physical model for database administrators
 - Viewer for all users
- Data models improve application development
- Maintenance is easier
- Quality is improved
- Good models drive standards

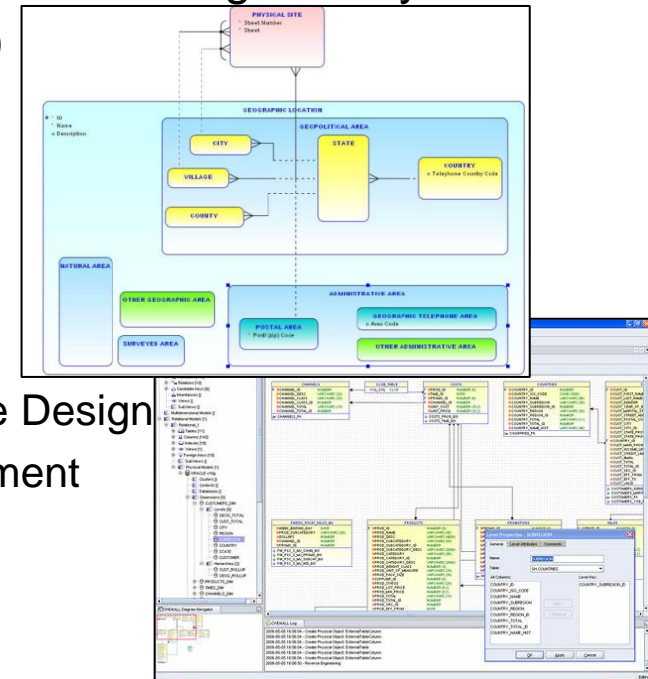
Oracle SQL Developer Data Modeler - Overview

- A **no cost** diagramming and data modeling tool
- A single tool for different users and functionality
 - Data Architect builds logical data models
 - Database Developer models relational models (tables and columns)
 - DBA adds tablespaces, partitions
- Use data models to
 - Verify accuracy and completeness of data requirements and business rules with customers
 - Build standards-driven DDL scripts
- Metadata is stored in XML files



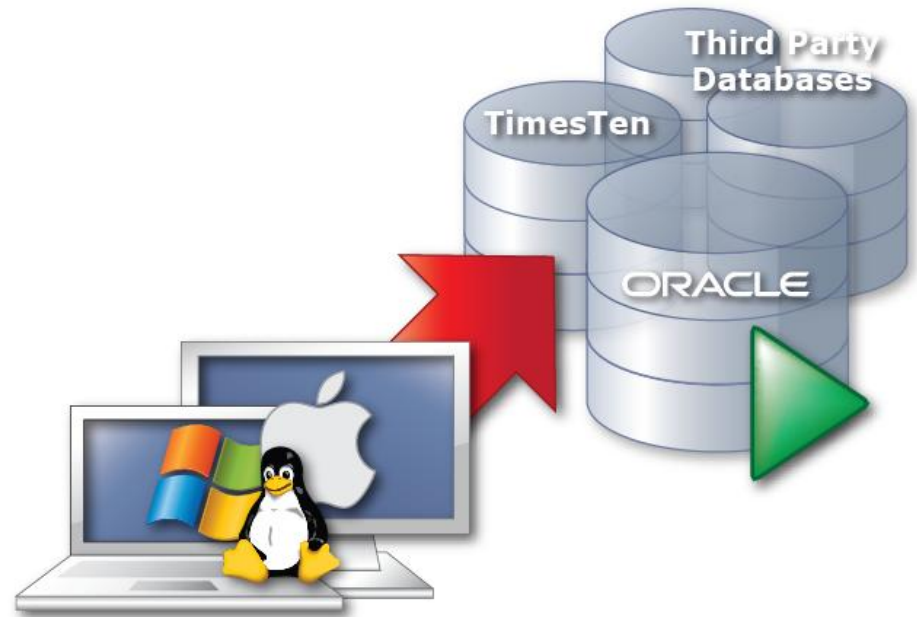
Oracle SQL Developer Data Modeler

- Multi-level Data Modeling across platforms within one integrated system
 - Designing logical Entity Relation Diagrams (ERD)
 - Multi-dimensional modeling
 - User Defined Data Types
 - Building relational schema designs
 - Generating and executing DDL scripts
 - Reverse engineering of existing data structures
 - Import of data models from CA ERwin and Oracle Design
 - Multi-level relational and physical design environment
- Multiple platform support
- Multiple database support
- Increases migration productivity
- Read only visualization of database data models



Technology and Architecture

- Technology and Architecture
 - Java based
 - Implemented as independent, standalone product
- Database support
 - Oracle 9i, 10g, and Oracle 11g
 - Third-party databases
 - Microsoft SQL Server
 - DB2, UDB
- Platform support
 - Windows
 - Linux
 - Mac OSX

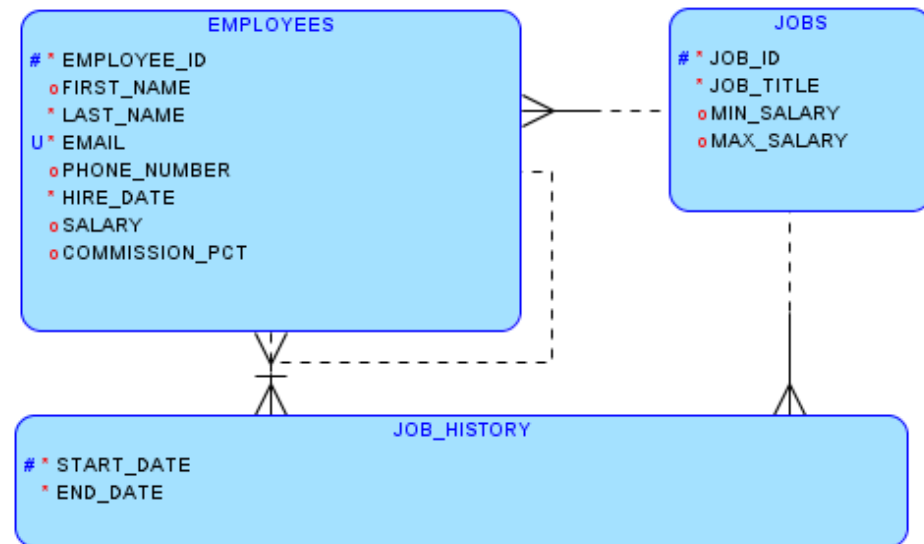


Features



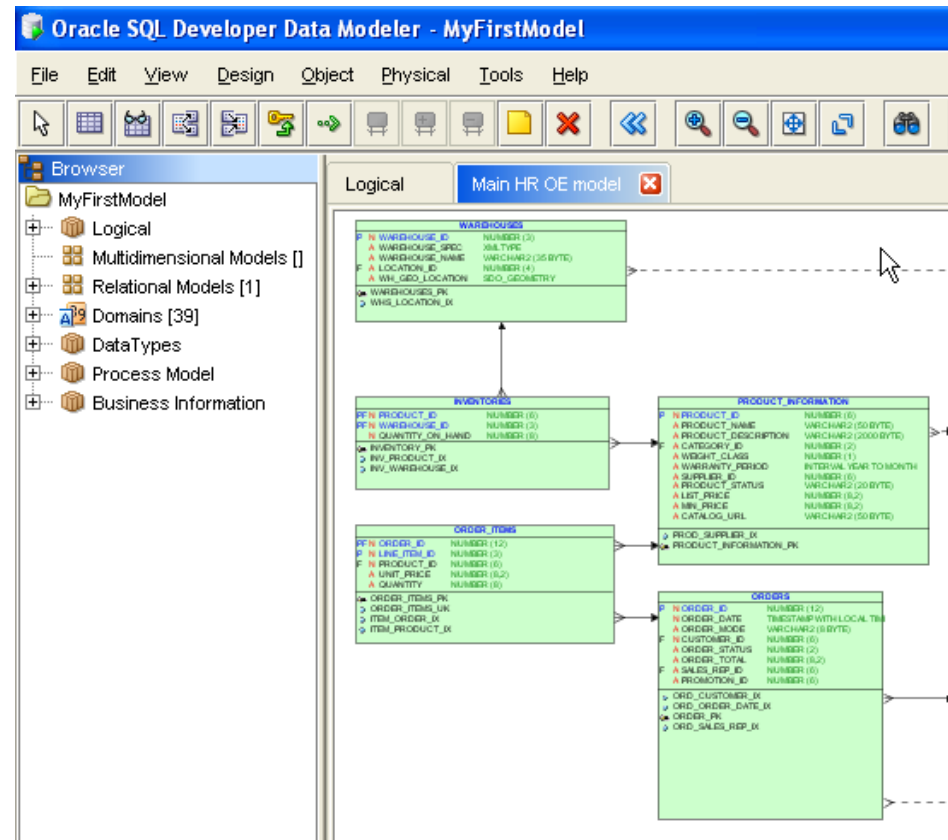
Logical Modeling

- Model entities, attributes and relations
- Support for
 - Super type
 - Sub types
- Transform one logical to many relational and multi-dimensional models
- Support for configurable forward and reverse engineering
- Support for different modeling notations



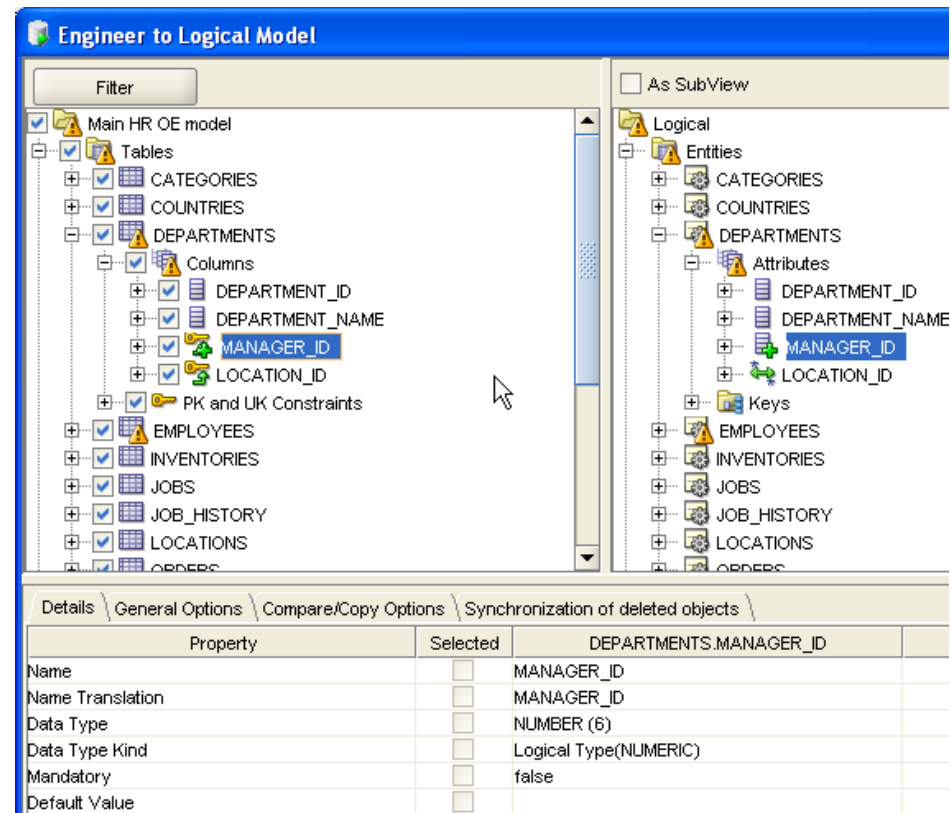
Relational Modeling

- Model tables, columns and FKs
- Create one logical for one or more relational models
- Support configurable forward and reverse engineering
- Use subviews to work with a subset of tables
- Provide different displays of the same model



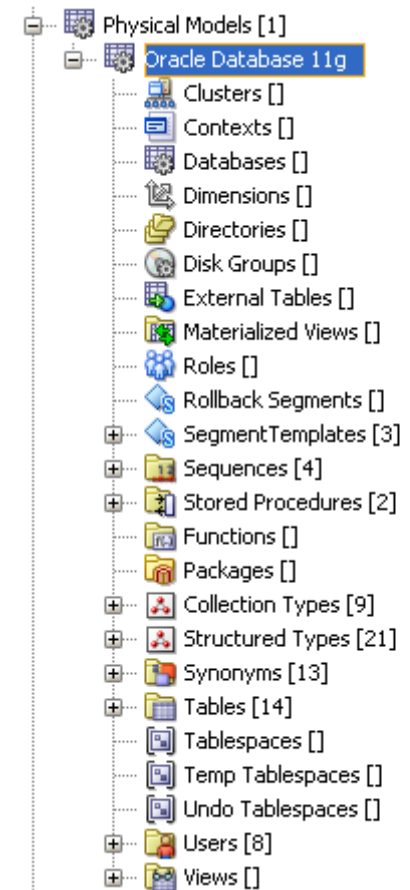
Forward and Reverse Engineering (Transformation)

- Each logical model maps to one or more relational models
- Each relational model maps to one logical model
- Each relational model maps to one or more physical models
- Each physical model maps to one relational model
- Engineering options
 - General
 - Compare/copy
 - Synchronization
- Include design glossary and naming standards



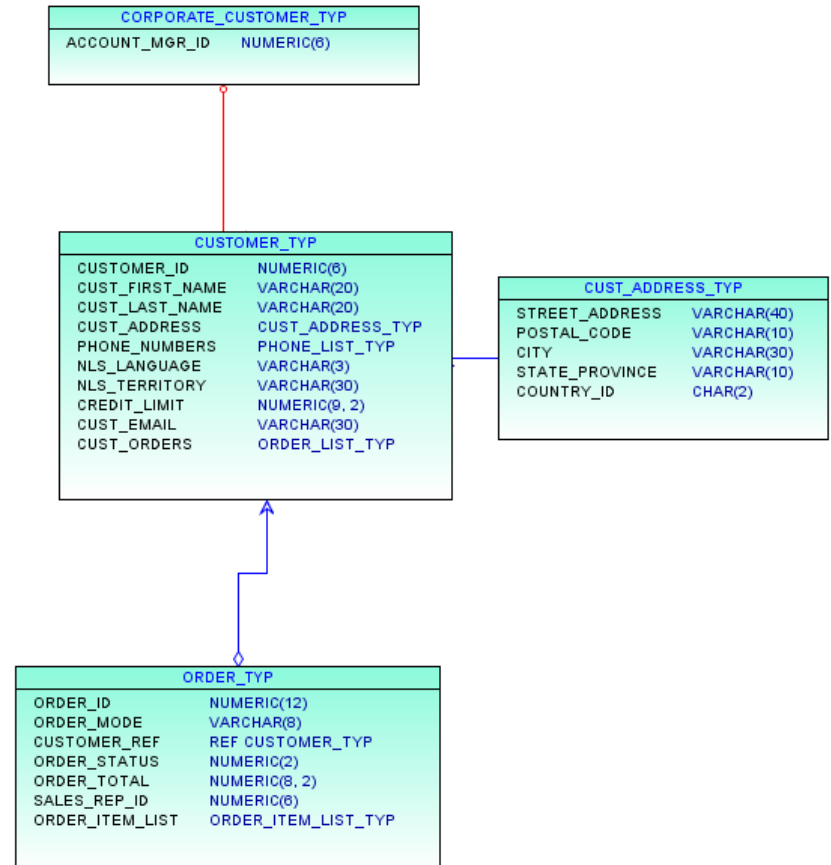
Physical Modeling

- One relational model for many physical models
- Add support for
 - Tablespaces
 - Users
 - Roles
 - Stored procedures
- Propagate properties
 - Apply properties to many elements at once
- Supports
 - Oracle9i, Oracle Database 10g and Oracle Database 11g
 - Microsoft SQL Server 2000 and 2005
 - IBM DB2/390 and DB2 LUW



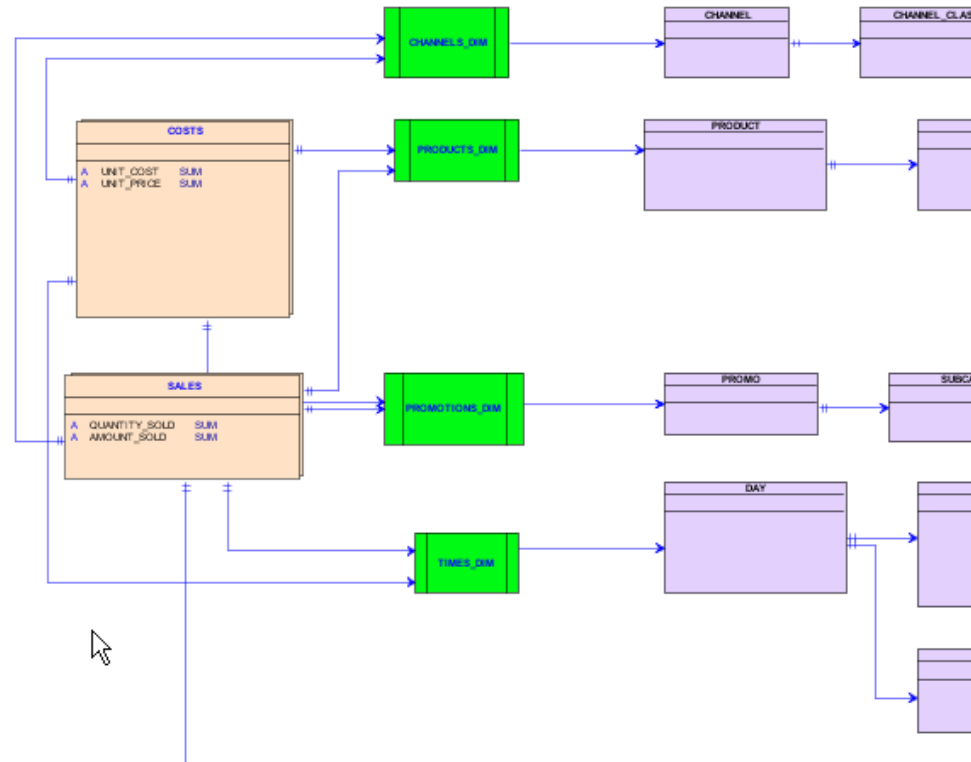
Modeling DataTypes

- Support for SQL99 (Object Relational Modeling)
 - Distinct Types
 - (Predefined) Structured Types
 - (Predefined) Collection Types
- Used in logical models
- Used in relational models
- Included on import
- Generated in DDL



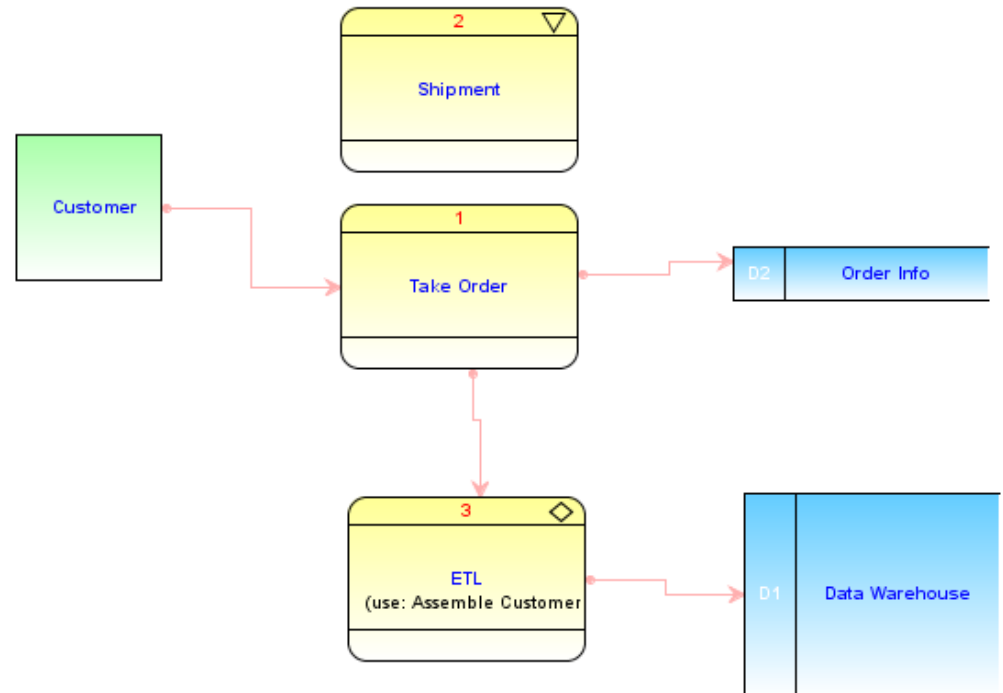
Multi-Dimensional Modeling

- Modeling of Cubes, Dimensions, Levels and Hierarchies, Measures and slices
- Start from ROLAP, XMLA or from scratch
- Generate Oracle Analytical Workspaces



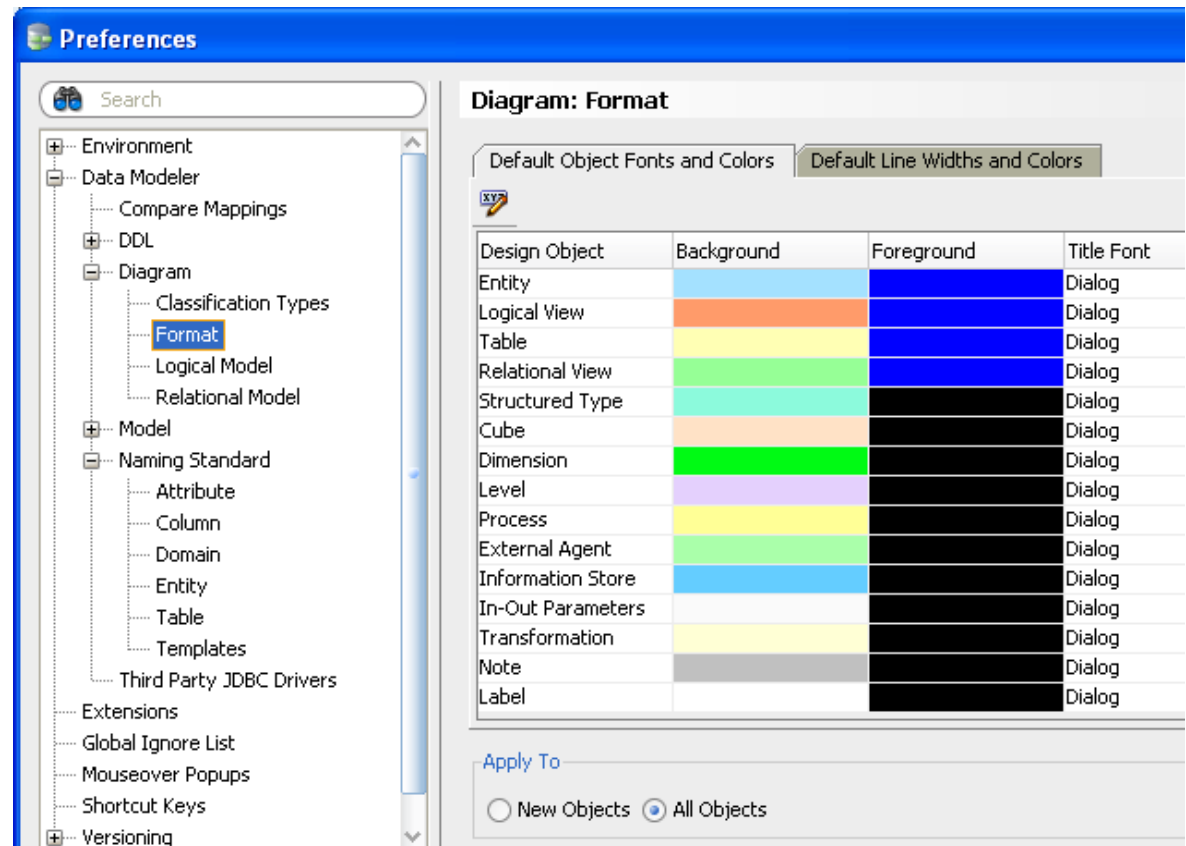
Working with Data Flow Diagrams

- Data Flow
 - External Agents
 - Primitive
 - Composite
 - Transformation
 - Information Flow
 - Information Store



Formatting and General Appearance

- Granular and general control
- Set per item type
- Synchronize tree with diagram
- Set notation



Importing Metadata

- Import using direct connections
 - Oracle Database
 - Microsoft SQL Server
 - IBM DB2 and UDB
 - Generic JDBC based dictionary
 - Examples: MySQL, Teradata
 - Oracle Designer repository
- File import
 - Other Modeling tools
 - CA ERwin
 - Bachman
 - Multi-Dimensional
 - Cube views
 - XMLA

Database Name: Oracle

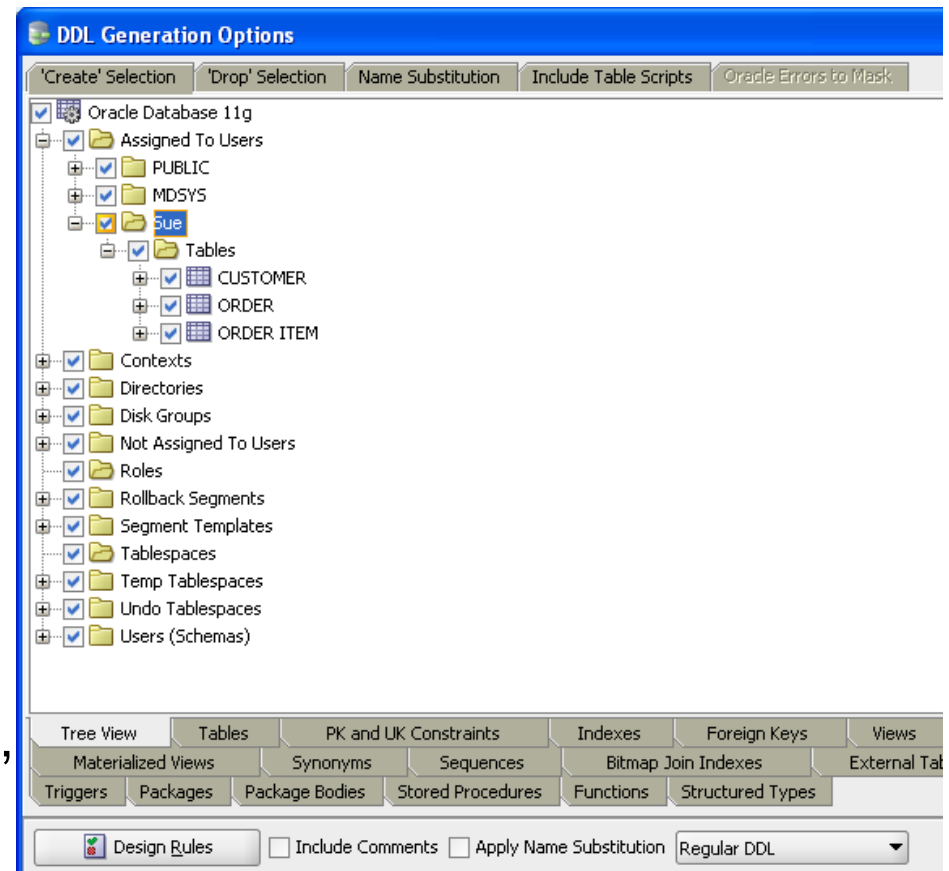
Database Version: Oracle Database 11g Enterprise Edition Release 11.

DB Objects that will be imported:

DIRECTORY	15
PROCEDURE	2
ROLE	64
SEQUENCE	3
SYNONYM	12
TABLE	9
TABLESPACE	11
TEMP TABLESPACE	1
UNDO TABLESPACE	1
USER	92
VIEW	1

Exporting and Code Generation

- DDL file editor supports
 - Design Rules
 - Object selection
 - Drop objects
 - Table scripts
- Standard database DDL scripts
 - Oracle
 - IBM DB2 and UDB
 - Microsoft SQL Server
- Multi-Dimensional Oracle AW, Cube Views and XMLA
- CSV export



Controlling the Design Environment

- Selection of tools available
 - Domain definition (data types)
 - Name abbreviation in the relational model (Customer to CUST)
 - Compare and merge facilities
 - Design Rules
- Tools Options
 - Naming standards
 - Specify default database
 - Controlling constraints
 - Physical properties
 - Notations (Barker, Bachman, Information Engineering)

Naming Standard: Templates

Table constraints

Primary Key:	<input type="text" value="{table abbr}_PK"/>	<input type="button" value="Add Variable"/>
Foreign Key:	<input type="text" value="{child}__{parent abbr}_FK"/>	<input type="button" value="Add Variable"/>
Check Constraint:	<input type="text" value="{table}_CK"/>	<input type="button" value="Add Variable"/>
Unique Constraint:	<input type="text" value="{table}__{column}_UN"/>	<input type="button" value="Add Variable"/>
Index:	<input type="text" value="{table abbr}__{column}_IDX"/>	<input type="button" value="Add Variable"/>
Column Check Constraint:	<input type="text" value="CK_{table}__{column}"/>	<input type="button" value="Add Variable"/>
Column Foreign Key:	<input type="text" value="{ref table}__{ref column}"/>	<input type="button" value="Add Variable"/>

Entity identifier

Primary Identifier:	<input type="text" value="{entity}_PK"/>	<input type="button" value="Add Variable"/>
Attribute Relation:	<input type="text" value="{ref entity}__{ref attribute}"/>	<input type="button" value="Add Variable"/>

Example

Example: Primary Key ▼

New Features Review

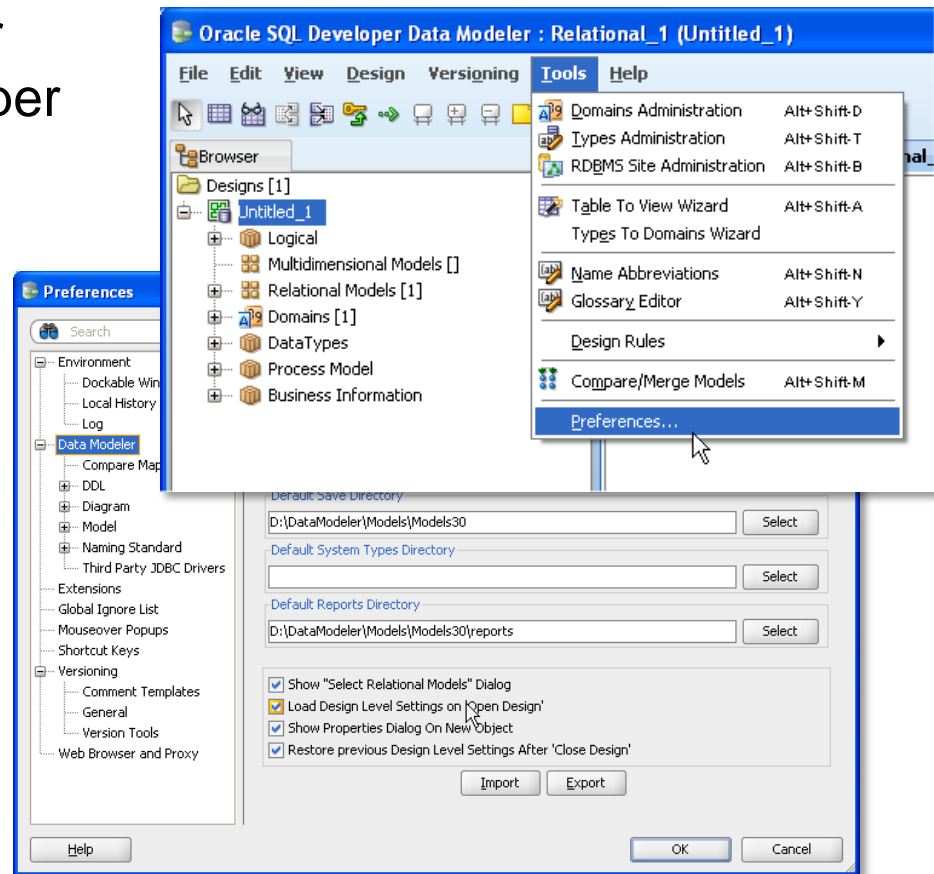


SQL Developer Data Modeler 3.0

- Integrated version control (Subversion) for collaborative development
- Integrated reports
- Incremental Oracle Database 11g features
- Support for multiple open designs
- Import and export packages, and functions
- Addition of custom Design Rules and transformations
- Import from CA ERwin Data Modeler Release 7
- Various additional enhancement requests and feature updates

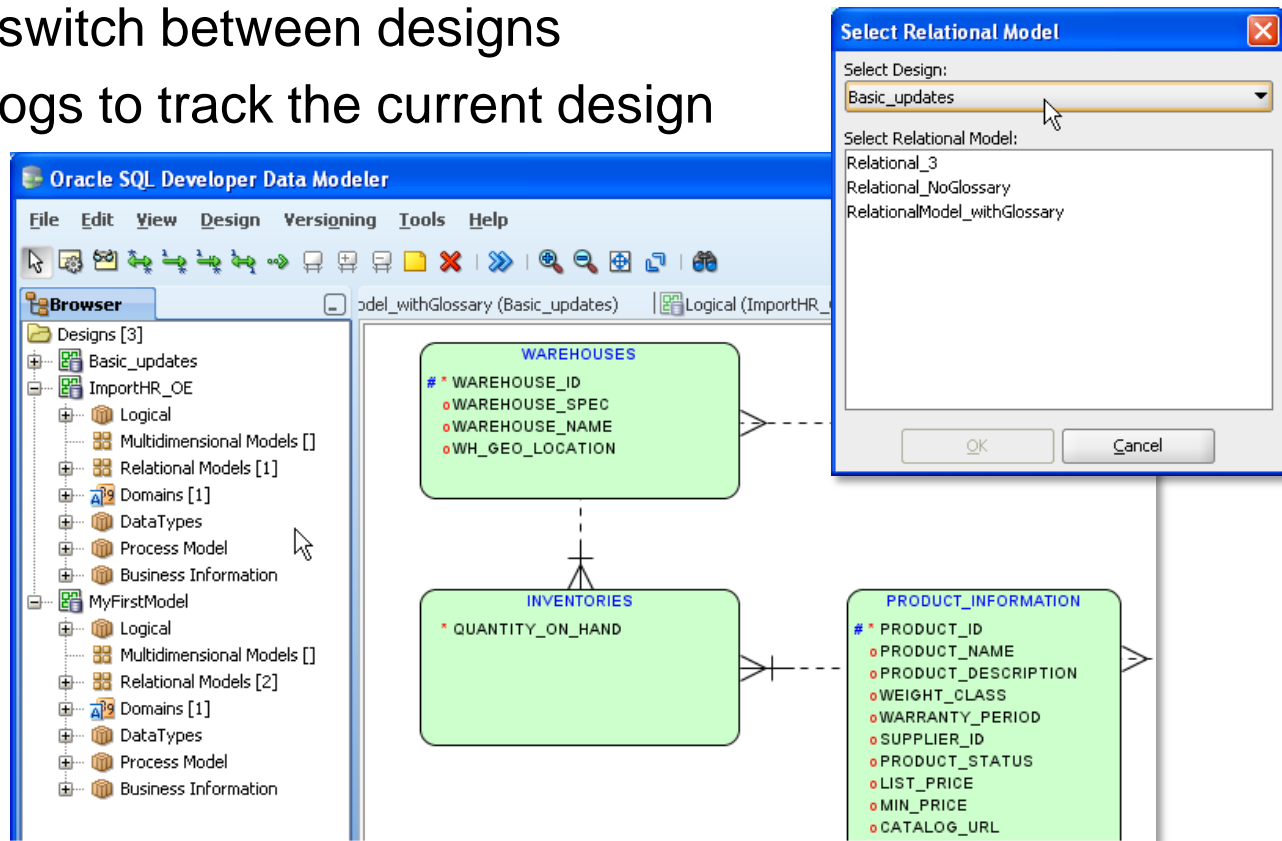
Common IDE: Fusion Client Platform

- Same core technology for SQL Developer, JDeveloper and Data Modeler
- Some features shared
 - Version control
- Common look and feel
- Preference dialog
 - Shortcut keys
 - Managing extensions
 - Set central location for saving and opening files



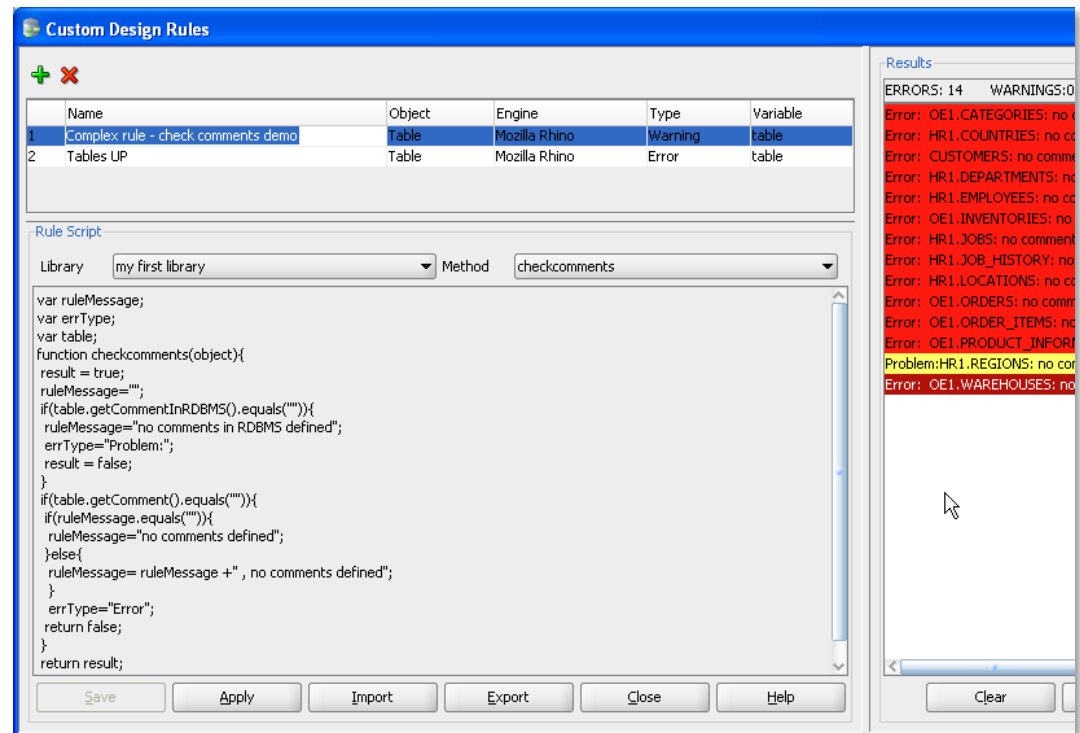
Multiple Open Designs

- Open multiple designs in single Data Modeler browser
- Easy to switch between designs
- Use dialogs to track the current design



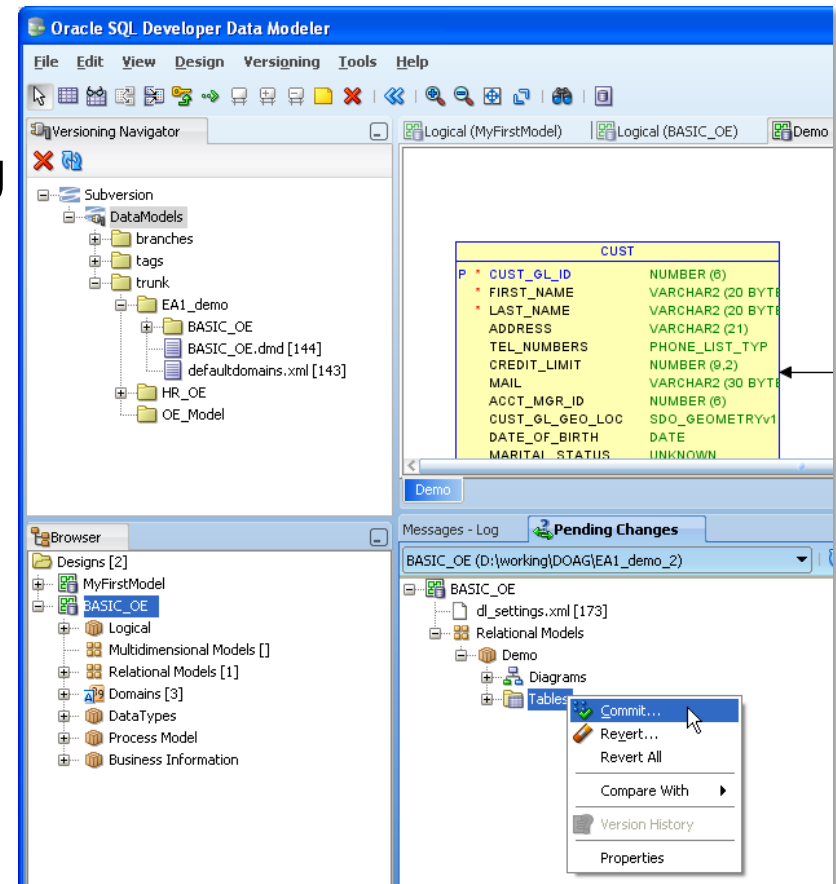
Custom Design Rules and Transformations

- Use scripting engine of choice
- Create user defined transformation scripts
- Apply multiple scripts or rules
- Build up Rule Sets
- Create Libraries



Collaborative Development

- Use Versioning Navigator to connect to Subversion repository
- Start by checking in Design using
 - Data Modeler
 - External client
- Multiple users check out designs
- Pending Changes dialog provides feedback to all users
- Commit changes to repository
- Manage conflicts



Integrated Reports

- Integrated reporting supported in addition to repository reports
- Generated as XML
- Open in MS Word

The screenshot displays a Microsoft Word document titled 'AllTablesDetails_1.xml [Compatibility]'. The document content is as follows:

All Tables Details

Design Name	ERD_BASIC_OE_updates
Version Date	20.09.2010 10:41:31
Version Comment	
Model Name	RelationalModel_withGlossary

Table Name	CUST
Functional Name	CUSTOMER
Abbreviation	CUST
Classification Type Name	
Object Type Name	

Comments

Description	
Notes	

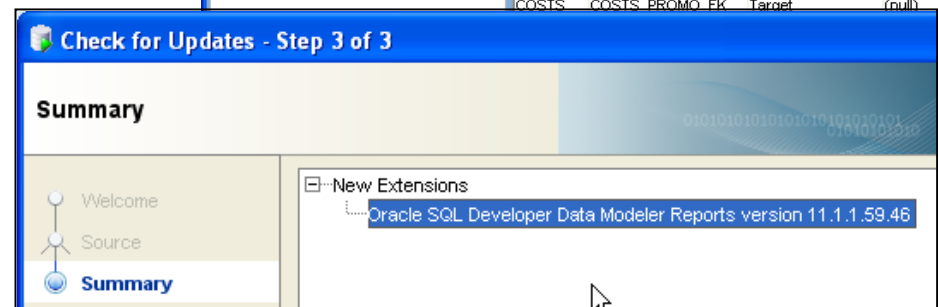
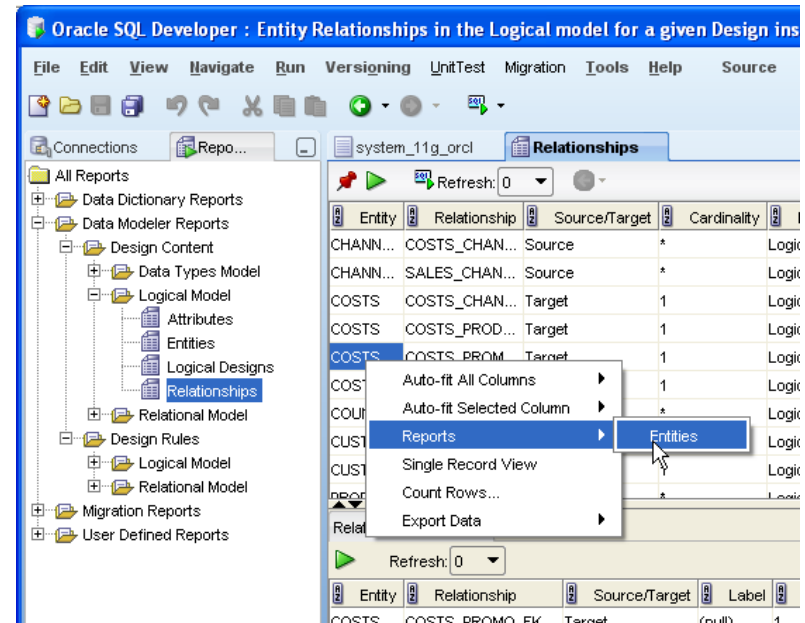
Quantitative Information

Number Of Columns	15
Number Of Rows Min.	0
Number Of Rows Max.	9999999
Expected Number Of Rows	0
Expected Growth	0

The 'Reports' dialog box is open, showing the 'Reporting Schema' design selected. The 'Available Reports' dropdown is set to 'Tables', and the 'Include All Objects' checkbox is checked. The 'Available Designs' dropdown is set to 'MyFirstModel', and the 'Available Models' dropdown is set to 'Main HR OE model'. The 'Selected Object' field is empty, and the 'Select' button is visible.

Reporting Repository

- Create repository user
- Export design to repository
 - Initial export creates repository
 - Exports initial version to repository
- SQL Developer support
 - Browse repository
 - Import reports
 - Run shipped reports
 - Create your own reports



Packaging Choices

- SQL Developer Data Modeler
 - Free, licensed with the Oracle Database, independent standalone product
- SQL Developer Data Modeler extension
 - Integrated into Oracle SQL Developer 3.0

Summary

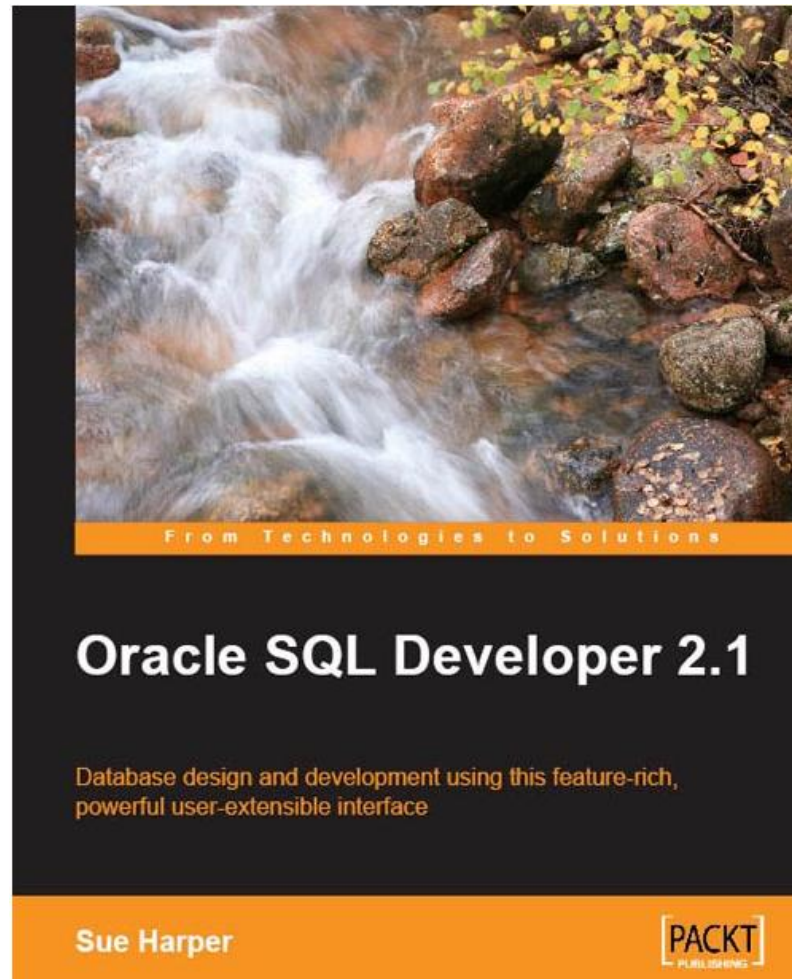
- Oracle SQL Developer Data Modeler provides
 - Logical modeling
 - Relational modeling
 - Physical modeling
 - Forward and reverse engineering
 - Data types modeling
 - Multi-dimensional modeling
 - Data flow diagrams
 - Importing and exporting
 - Design environment control features
 - Integrated and repository based reporting
 - Integrated version control (Subversion) for collaborative development
 - Custom Design Rules and transformations

Finding More Detail

www.oracle.com/technetwork/developer-tools/datamodeler/

- SQL Developer Data Modeler on OTN
 - White papers, Oracle by Example (OBE), online demos, models and scripts
 - www.oracle.com/technetwork/developer-tools/datamodeler/
- SQL Developer Exchange
 - Add feature requests: sqldeveloper.oracle.com
- Forums
 - SQL Developer
forums.oracle.com/forums/forum.jspa?forumID=1317
- Book
 - Oracle SQL Developer 2.1

Finding More Detail



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