

ORACLE EDITIONS

A practical test

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AGENDA

- 1. Goal, Sense and Limits of Editions**
2. Theorie
3. Szenario for a practical test
4. Prepare the application
5. Just try ...
6. Resume
7. Questions

Goal, Sense and Limits

- Systems running 24h per day, each day, whole year ...
- Tests based on real data
 - Dangerous
 - Secure
- Implementation of changes with minimal or without downtime
- Use old and new application at the same time
 - No duplication of application data
 - No merge of data
- Use unchanged programs both in old and new application edition without duplication

Goal, Sense and Limits

- Editions expands the namespace in oracle by edition name
- Programs, Types, Views ... can exist with the same name in one schema but in different editions
- It is not a versioning tool (like Subversion)
 - Only the last compiled source code is in dictionary (for each edition)
 - Within one edition there is no way back to last "version"
 - Editions exist only as a linear chain of father – child relations
 - No merge of editions exists
- Some objects may not be editioned

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Theorie

- Edition is included in oracle since 11gR2
- Usage of Editions must be enabled by DBA
- Initial Edition "ora\$base" exists in each DB
- Following objects are editionable
 - View
 - Private Synonym
 - PL/SQL Objects
 - Function / Procedure / Package / Package Body
 - Type / Type Body
 - Trigger
 - Library

Theorie

- Not editable objects
 - Tables
 - Index
 - Materialized View
 - Public Synonym
 - Database Link
- Noneditioned objects cannot depend on an editioned object
 - Function based Index cannot refer an editioned function
 - Materialized View cannot depend on an editioned view
 - Table cannot have a column of a user-defined type
- ADT = **A**bstract **d**ata **t**ypes (object types) cannot be both editioned and evolved
- Foreign Keys cannot refer to editioned objects

Theorie

- New objects for editions introduced
- Editioning View
 - Shield against table
 - No JOIN, SUBQUERY, WHERE
 - No function for columns allowed
 - No performance impact
 - No INSTEAD OF Trigger
 - DML Triggers possible
- CROSSEDITION Tigger
 - FORWARD for transfer from old into new Edition
 - REVERSE for transfer from new back into old Edition
 - Create on tables only
- Dictionary Views DBA/ALL/USER_%_AE (**All Editions**)

Theorie

- Initially in the child edition all objects are inherited
- As soon as any editionable object is compiled (e.g. After change) **in the child edition**, a copy exists in the child edition
- Compile breaks inheritance

Theorie

- Impossible to enable editions for a user who owns evolved ADT
- Syntax

```
ALTER USER <schema> ENABLE EDITIONS [FORCE];  
CREATE EDITION <edition name> [AS CHILD OF  
<parent edition>];  
GRANT USE ON EDITION <edition name> TO PUBLIC;
```

- Each session uses exactly one edition at a time

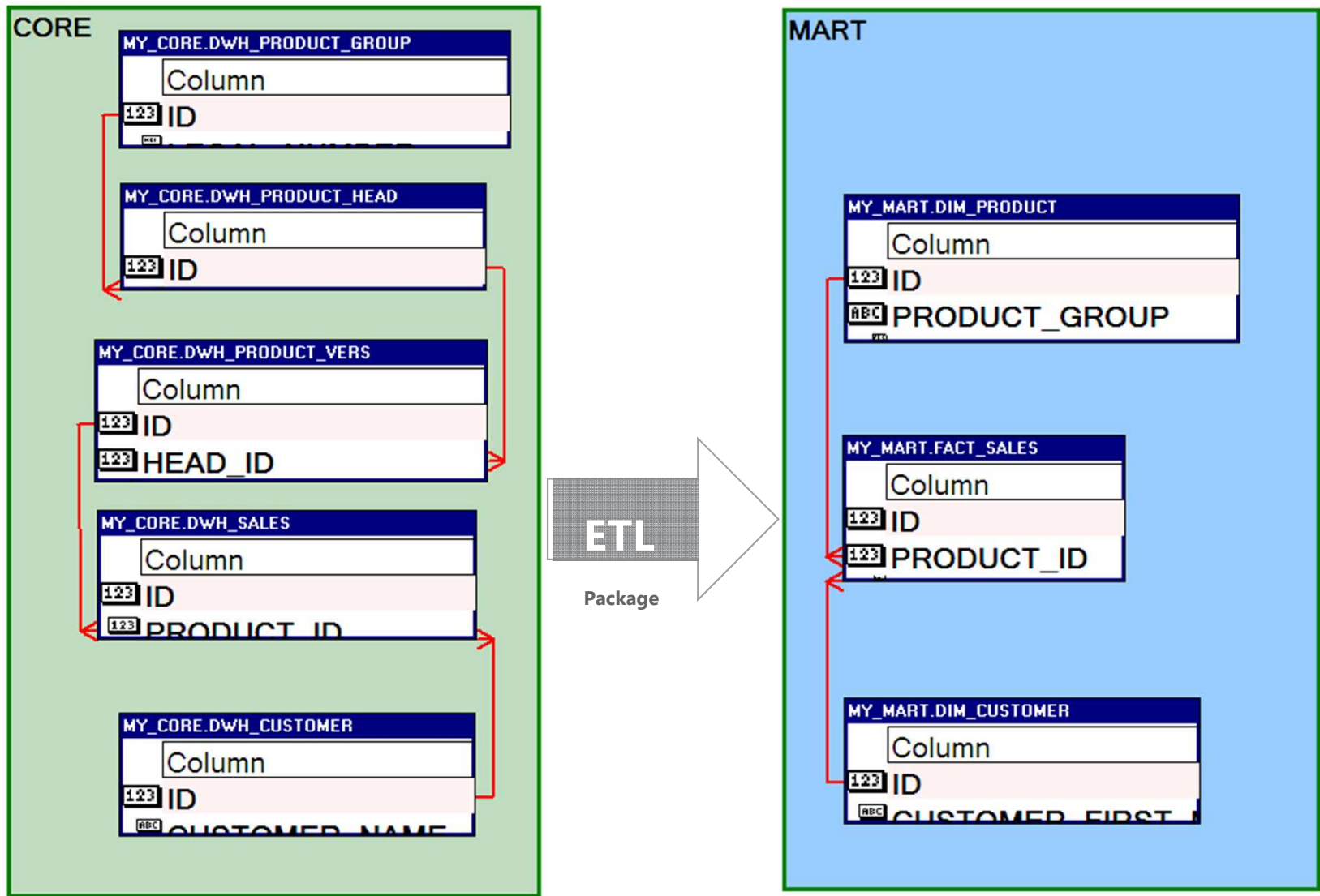
```
ALTER SESSION SET EDITION = <edition name>;  
SYS_CONTEXT('USERENV', 'SESSION_EDITION_NAME')
```

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Szenario for a practical test

- DWH running 24h per day, each day, whole year all over the world
- New columns where added to the data sources and will be load
- Some columns are no longer provided in the source
- Data type of some columns changes
- Calculation rule in ETL changes



Szenario for a practical test

- What has to be prepared **before** enabling editions?
- What has to be done **after** enabling editions?
- How can end user and developer **work at the same time**?
- Can user decide **which edition to connect**?
- After implementation of changes – how can **all objects be brought into the new edition**? (including unchanged objects)
- May the old edition be **dropped**?

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Prepare the application

- **Tasks required only one time before using editions**

- Replace evolved ADT)-:

- Either store individual ADT's without evolution
- Or shift Types with evolution to a schema not editioned

- Remove columns of user defined type from tables))-:

- Either remove user defined types from tables
- Or shift Tables with UDT to a schema not editioned

- Enable editions for all users (All ?)

- Create EDITIONING VIEWS for tables

- Necessary to apply changes to tables while user work with "old" application
- No performance impact

Prepare the application

- Tasks required **each time for edition based redefinition**
- Create the new edition
- Set edition for developer session
- Apply changes to the application
- Create CROSS REFERENCE TRIGGERS
 - Necessary if user have write access in "old" application
- Test carefully
- Ensure to move all objects to new edition
- Change Database default edition
- [Drop old edition]

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Just try ...

- Script 01 – Create tables in CORE
- Script 02 – Create tables in MART
- Script 03 – Create ETL Package (MART)
- **Script 04 – Enable Editions (CORE)**

Just try ...

- Script 01 – Create tables in CORE
- Script 02 – Create tables in MART
- Script 03 – Create ETL Package (MART)
- Script 04 – Enable Editions (CORE)
 - Error in Package *demo*
 - PLS-00754 *"A noneditioned object may not depend on an editioned object"*
- **Package in Schema MY_MART is not editioned but references editioned object in Schema MY_CORE**
- **Script 05 – Enable Editions (MART)**
Solve error in Package *demo*

Just try ...

- **Script 06 – Create Editioning Views (CORE & MART)**
 - Rename tables to <table_name>_T
 - Create Editioning View named as <table_name>
 - Grant Editioning Views
- **Search in Dictionary for all Schema objects! ...**

Just try ...

- Script 06 – Create Editioning Views (CORE & MART)
 - Rename tables to <table_name>_T
 - Create Editioning View named as <table_name>
 - Grant Editioning Views
- Search in Dictionary for all Schema objects! ...
- **%_OBJECTS_AE shows EDITIONING VIEWS as (simple) VIEW)-:**
 - Select %_EDITIONING_VIEWS
 - Similar situation with triggers
- Script 07 – Test Data Load (CORE => MART)
 - **Application still runs?**

Just try ...

- **Script 08 – Table-Changes (CORE)**
- Table *dwh_product_group* **change data type** from NUMBER to VARCHAR2 for column *legal_number* => *new column*
- Add **new column** *manufacturer_location* to table *dwh_product_head*
- Add **new column** *lot_nr* to table *dwh_product_vers*
- **Enlarge and rename column** *customer_first_name* to *customer_name* VARCHAR2(30) in table *dwh_customer*
- **Merge content** of first name and last name into new *customer_name* column
- **Rename column and make nullable** *customer_last_name* from table *dwh_customer*
 - The column should but cannot be dropped

Just try ...

- **The Editioning view dwh_customer remains invalid after compilation**
 - Columns have been renamed, but Oracle expanded "*" to column names during view creation
- **Script 10-Corrections in BASE-Edition (CORE)**
 - Editioning View DWH_CUSTOMER must be recreated
 - Mapping of column names
- **Script 11-Corrections in BASE-Edition (MART)**
 - Package DEMO must implement handling of first and last name

Just try ...

- **Script 15-Crossedition Triggers**

- FORWARD => Transfer data from "Old Modell" to "New Modell"
- REVERSE => Transfer data from "New Modell" to "Old Modell"

- Create Crossedition Triggers DISABLED

- ENABLE all at once
- Wait for pending DML operations

Just try ...

- Applicatin is still (again) running
- New Edition is not used!
- Nobody is connected to EDITION_2
- **Developers start implementation of changes ...**
- Script 20-Changes in NEW-Edition (CORE)
- Script 21-Changes in NEW-Edition (MART)
- **Script 30-Activate-CROSS Edition-Triggers**

Just try ...

- **Script 31-Test Application in both Editions**
- DML in old Edition
 - Forward Cross Edition Trigger should transfer data to new model
- DML in new Edition
 - Reverse Cross Edition Trigger should transfer data to old model

Just try ...

- **Script 50 ff-Drop Edition**
- All Editionable Objects must exist in new Edition
 - They must be compiled only
- Old Edition must be empty (Drop editionable Objects)
 - Be careful (-:
- OR – use DROP EDITION <edition_name> CASCADE
- Edition may not be used by any session ...

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Resume

- It works – no bugs found (-:
- Complex project for real productive applications!
- Some restrictions
 - Replacing table by editioning view with old table name may lead to blocking situation
 - Editioning views only allow name mapping but no formatting, calculation ...
- Some changes still need short down time

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THANK YOU.

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