Oracle Designer 6i: Shortcuts and References

An Oracle White Paper

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2 Overview

The aim of this document is to answer some common questions such as:

- What is the difference between implicit references, explicit references, direct references, external references, dangling references, shares and shortcuts?
- What type of reference should be used?

This paper aims to look at how each of the tools handles the different types of reference. It does not cover all cases where references can be used; only the more common uses are discussed.

This paper has been written based on Designer 6i Release 4.

3 Audience

This document is intended for any Designer users wanting to reuse objects between containers and for discussion with Oracle Designer Development.

4 Introduction

In Designer 6i it is no longer necessary to share a repository object into other application systems in order to reuse that object. The mechanism still exists whereby an object owned by one application can be made visible in another; however in Designer 6i it is possible to directly reference an object in a different container without having to share it.

So what is the difference between all these terms?

Shortcut, Share	These are both the same thing, now known as Shortcuts. A shortcut is where a copy/pointer to an object in a different container is placed in the current container
Reference, Direct Reference	These are the same thing, known as References. A reference is where an object refers to another object that is not in the current container
External Reference	An External Reference is where an object in one container refers to an object in a different container, workarea or configuration. An External Reference can be a Reference or a Shortcut.
Dangling Reference	A Dangling Reference is where an object refers to another object that is not available

In the next sections, this paper examines how each of the Designer tools handles shortcuts and references.

5 Shortcuts

Shortcuts are very similar to shares in previous versions of Designer.

A shortcut can be created in both Application and Folder containers.

A shortcut can be seen in the container it is created in however it does not have to be actually referenced by anything in that container, for example a shortcut to Table A could be created in Application A, however Table A may not be referenced at all by other tables, modules, etc. in Application A.

The hand icon by the object indicates a shortcut ( ).

To create a shortcut in a referencing container select access must be granted on the container that owns the object. The user must also have update access to the container that the shortcut is to be created in (insert and delete access are not required to create and delete a shortcut). The properties of the shortcut object can be amended from the referencing container if the user has update access on the owning container. This is a major change from previous versions where the shared object could only be updated from the owning container.

If the user does not have select access to the owning container, existing shortcuts can still be seen (this can be useful if the owner of the owning container does not want the user to be able to see other objects in the owning container).

The Owning Container property in the property palette identifies which container the object has been referenced from, i.e. where the original is. However, the user must have select access on the owning container to see this property.

By using shortcuts, all objects that are used by the container can immediately be identified.

Applications migrated from previous versions of Designer will retain any shares as shortcuts.

Shortcuts work in a similar way to shared objects in previous releases, however the export utility no longer creates skeleton applications for any shortcut objects.

Note: The External References utility should be used to identify references of any sort before export, etc. (see Appendix B)

To aid identification of reused objects a 'library' container can be created as in previous versions. If carefully maintained this can aid activities such as exporting, as it is easier to identify reused objects (for example, exporting the application and the library will ensure all references are exported correctly).

Shortcuts cannot be created for a number of object types, for example, diagrams, events, functions, etc. For a full list of objects that cannot have shortcuts created see the online help titled 'Non-shareable objects'. Due to Bug 2191329 shortcuts to some of these objects can be created in the Repository Object Navigator however they will not be visible in other tools.

A shortcut can be created in the Repository Object Navigator, the Design Editor or the Matrix Diagrammer.

5.1 Matrix Diagrammer (MD)

The Matrix Diagrammer refers to shortcuts as Shares (see Appendix A, Diagram 1). Shortcuts can be created or deleted using the Matrix Diagrammer.

The Matrix Diagrammer does not include shortcuts in the matrix, instead it points to the original of the shortcut, for example if a module is based on a shortcut to a table, the module/table matrix will identify that the module uses the table in the owning application (see Appendix A, Diagram 2).

5.2 Repository Object Navigator (RON)

There are several ways to create a shortcut in the RON:

- Use Drag & Drop. The object must be dropped on the required container rather than the object node (the cursor will change to the square with a return arrow in it)
- Use the Create Reference toolbar button
- Select Create Reference from the right mouse menu
- Use Edit->Create Reference from the main menu
- Use Edit->Copy in the owning container and Edit-> Paste Reference in the target container

To move an object to a different container (for example, a common or library container) use SHIFT + Drag & Drop. A shortcut to the moved object can then be created in the required container as above.

Note: Moving objects to different containers automatically creates references if that object is referenced by any other object, for example if Table A has a foreign key to Table B and Table A is moved to a different application, the foreign key will now have a reference to Table B in the original application.

5.2.1 External References

The External References utility should be run to identify if all the containers that own any referenced objects are included in the workarea (see Appendix B). Due to a number of bugs, the External References utility does not currently list all external references, specifically it does not include shortcuts (Bug 2061473).

5.2.2 Export/Import

The export utility no longer creates skeleton containers if there are references of any type in the exported container. The import utility does not warn if there are any missing references when the container is restored, therefore when a container that contains shortcuts is exported, the export must also include all the containers that own the source of any shortcut objects (create a workarea containing all the required applications and export the workarea).

However, if an export *is* created without the objects referenced by the shortcuts, different results will be seen depending on where the data is imported to.

If the container is imported to a workarea that *does* contain the application that owns the object the shortcut points to, the shortcuts appears to restore correctly, however the Owning Container property cannot be seen in the RON. This property identifies the container that owns the referenced object. In the Design Editor the shortcuts are not seen at all.

If the container is imported to a workarea that *does not* contain the application the shortcut points to, the import will either appear to complete as above or fail with errors. If the shortcut is used by another object in the container, the import will appear to complete as above. However if the shortcut is not used in the container, the import errors and corrupts the workarea. The workarea then errors on

refresh. An Export and Import of the workarea to a new name seems to remove the error, however the original workarea is still corrupted and cannot be deleted (Bug 2061473). The Design Editor does not display the imported container.

5.2.3 Copy Application

The Copy Application utility does not copy short cuts into the new application. Instead a copy of the object referenced by the shortcut is created in the new application.

5.3 Process Modeler (PM)

Process Steps are stored in Designer as Business Functions. It is not possible to create a shortcut for Business Functions, however shortcuts can be created for other Process Model objects, for example Organization Units, Data Stores, etc.

Shortcut objects can be selected from the Include dialogs in the Process Modeler.

There is no indication on the diagrams or in the dialogs that an object is a shortcut and not owned by the context application.

5.4 Entity Relationship Diagrammer (ERD)

Shortcut entities can be selected from the Include dialogs. The Select All button will select all the entities displayed in the Include window not just the ones in the context application (see Appendix A, Diagram 3). Any relationships created to entities in other applications will create a reference.

There is no indication on the diagrams or in the dialogs that an entity is a shortcut and not owned by the context application.

5.5 Function Hierarchy Diagrammer (FHD)

It is not possible to create a shortcut for Business Functions, so to reuse an existing function it must be copied into the required application. The diagrammer can only include functions in the context application. (Common functions can not be used in Designer 6i due to Bug 1787721)

The Entity Usage dialog in the FHD can only reference entities and shortcuts in the context application (see Appendix A, Diagram 7).

5.6 Dataflow Diagrammer

Shortcuts can be selected from the Include dialogs.

There is no indication on the diagrams or the dialogs that an object is a shortcut and not owned by the context application.

5.7 Database Design Transformer (DDT)

Shortcuts to entities can be included in the run set and transformed to non-referenced tables by the DDT.

Note: If a shortcut to an entity is included in the run set, a table will be created in the context application.

5.8 Application Design Transformer (ADT)

As Business Functions cannot be referenced between applications, only functions that are defined in the context application can be included in the run set.

5.9 Design Editor (DE)

A shortcut can only be created in the DE using ALT + Drag & Drop. The object must be dropped on the required application rather than the object node (the cursor will change to the square with the return arrow in it).

To move an object to a different application (for example, a common or library application) use SHIFT + Drag & Drop. A shortcut to the object can then be created in the original application as above.

Note: Moving objects to different containers automatically creates a reference if that object is referenced by any other object, for example if Table A has a foreign key to Table B and Table A is moved to a different application, the foreign key now has a reference to Table B in the original application.

Shortcuts to server objects can be seen in the DE when the referencing application is expanded (see Appendix A, Diagram 4).

5.10 Server Generator & Design Capture

The Server Generator can see shortcuts from any of the tabs in the DE. They can be either selected from the Navigator before the generator is started or selected from the Objects tab within the generator.

5.11 Forms/Reports/Web Generators & Design Capture

Creating a module component and usages based on a shortcut to a table or view is the same as creating one based on a table or view owned by the context application. In the module diagram the application owning the object is displayed in brackets after the object name so it is possible to see that the object has been referenced. It is not possible to tell from the diagram if the object uses a shortcut or a reference.

Module components based on shortcuts to tables or views are recovered during Design Capture.

5.12 Repository Reports

Repository Reports allow shortcut objects to be selected in the parameters. Shortcut objects are included in the reports.

5.13 Dependency Manager

Analysis of a shortcut or an object that references that shortcut identifies the owning container of the shortcut.

Analysis of a 'normal' object identifies all containers that have shortcuts to that object.

5.14 Folders

Shortcuts cannot be created to folders. However shortcuts can be created for files within folders. This is not recommended though as potentially files could be updated inadvertently.

6 References

Referenced objects are a new feature of Designer 6i. Objects can be referenced in another container within the same workarea without needing a copy of the object in the current container, i.e. the object does not need to be 'shared' into the current container before using it (see Appendix A, Diagram 4).

References can be created between any structured elements whether in an application or a folder. References cannot be created between files in folders.

To create a reference to an object select access must be granted on the application that owns the object. The properties of the directly referenced object can only be amended from the owning application.

The External References utility should be used to identify references of any sort before export, etc. (see Appendix B).

To aid identification of reused objects a 'library' container can be created as in previous versions. If carefully maintained this can aid activities such as exporting as it is easier to identify reused objects (for example, exporting the application and the library will ensure all references are exported correctly).

A reference can be created in the Repository Object Navigator, the Entity Relationship Diagrammer, the Design Editor and the Matrix Diagrammer.

6.1 Matrix Diagrammer (MD)

The Matrix Diagrammer works in the context of the selected workarea; therefore it includes objects from all applications in the workarea, for example, if a module has a reference to a table in a different application in the same workarea, the module/table matrix will identify which modules use which tables, regardless of whether the tables and modules are in the same application or not. The matrix does not identify if the objects are used via a shortcut or a reference (see Appendix A, Diagram 2).

6.2 Repository Object Navigator (RON)

There are a number of ways to create a reference in the RON:

- Use Drag & Drop to drop the referenced object on the required association
- Select the required association and then use the Create Reference toolbar button
- Select the required association and then use Create Reference from the right mouse button

To move an object to a different container (for example, a common or library container) use SHIFT + drag & drop. Any existing references to the object will automatically become direct.

6.2.1 External References

The External References utility should be run to identify if all referenced objects are included in the workarea (see Appendix B). Due to a number of bugs, the External References utility may not list all references (Bug 1766898).

6.2.2 Export/Import

The export utility does not create skeleton applications if there are references of any type in the exported application. The import utility does not warn if there are any missing references when the

application is restored, therefore an export should *always* include all the applications that own the source of any directly referenced objects

However, if an export *is* created without the referenced objects owning application, different results will be seen depending on where the data is imported to.

If the application is imported to a workarea that *does* contain the referenced objects owning application, the references are restored correctly.

If the application is imported to a workarea that *does not* contain the referenced objects owning application, the import appears to complete successfully however the RON does not display the referenced object at all. In the DE the referenced object is displayed but the reference property displays **********.

6.2.3 Copy Application

When a reference is copied using the Copy Application utility the reference is maintained.

6.3 Process Modeler (PM)

References cannot be used in the Process Modeler.

6.4 Entity Relationship Diagrammer (ERD)

Entities in different applications in the same workarea can be selected from the Include dialogs creating a reference. The Select All button will select all the entities currently displayed in the Include window (see Appendix A, Diagram 3).

There is no indication on the diagrams or in the dialogs that an entity is directly referenced and not owned by the context application.

6.5 Function Hierarchy Diagrammer (FHD)

Business Functions cannot be referenced between applications, so to reuse an existing function it must be copied into the required application (common functions can not be used in Designer 6i due to Bug 1787721). The diagrammer can only include objects in the context application. Entity usages for functions can be created in the RON using references to entities in a different application, however these cannot be seen in the FHD dialogs (see Appendix A, Diagram 6 and Diagram 7).

6.6 Dataflow Diagrammer (DFD)

References cannot be used in the Dataflow Diagrammer, however they can be created in the RON for dataflows etc.

6.7 Database Design Transformer (DDT)

The DDT can only see objects that are in the context application.

It is possible to map a table to an entity in a different application using the RON however the DDT cannot see the mapping.

The DDT runs in the context of a single application. However, it is possible to transform entities from more than one application if the DDT is invoked from the ERD while the required entities are selected.

The table for the referenced entity will be created in the context application not the referenced application.

6.8 Application Design Transformer (ADT)

As Business Functions cannot be referenced between applications, only functions that are in the context application can be included in the run set.

6.9 Design Editor (DE)

A reference can be created when associating an object with one in another application, for example, foreign keys between tables in different applications. There are two ways to create a reference in the DE:

- Use Drag & Drop to drop the referenced object on the required association
- Select the required object from list in the dialog

An object in a different application can be selected from the dialog screens. Drag & Drop can also be used to create a reference by dragging an object from a different application and dropping it on the current object.

To move an object to a different container (for example, a common or library container) use SHIFT + Drag & Drop. Any existing references to the object will automatically become direct.

As directly referenced objects are not shown in the context application, the complete schema cannot always easily be seen in the Server Model Tab. To be able to view and generate a complete schema, user implementation data must be maintained in the DB Admin tab (see Appendix A, Diagram 4 and Diagram 5). The complete schema can also be maintained via a server model diagram.

6.10 Server Generator & Design Capture

If the server generator is run from the Server Model Tab, directly referenced objects are not available in the run set. It is possible to select objects in different applications from the DE Navigator before starting the generator to include them in the run set, however they can not be picked from the available objects in the Objects tab within the generator (see Appendix A, Diagram 4).

To generate all objects that are part of a schema, user implementation data must be maintained on the DB Admin tab and the server generator run from here (see Appendix A, Diagram 5).

During design capture, if an object refers to another object which is not in the context container, the generator will attempt to find the referenced object in the containers listed in the Additional Containers box. For example, Application A contains DEPT, if EMP is captured into Application B the foreign key to DEPT will also be captured if the Additional Containers box contains Application A, if not the foreign key will not be captured.

6.11 Forms Generator & Design Capture

Creating a module component and usages based on a directly referenced table or view is the same as creating one based on a table or view owned by the application. In the module diagram the application owning the object is displayed in brackets after the object name so it is possible to see that the object has been referenced. It is not possible to tell from the diagram if the object uses a reference or a shortcut.

The Design Capture utility cannot see referenced tables or views. For example, if a module component is based on a table that is referenced, i.e. is not in the context application, the module will generate successfully, however design capture of the same form will fail as the utility is looking for the table in the context application (Bug 1788205).

6.12 Repository Reports

Repository Reports cannot see referenced objects, for example, the Entity Definition report only includes entities that are in the context application.

6.13 Dependency Manager

Analysis of an object identifies which applications reference it as well as any references that it makes to other objects.

6.14 Folders

References cannot be created between files in folders. It is however possible to create a direct reference between a file in a folder and a document in an application if required.

7 Conclusion

From the above findings it is clear that both shortcuts and references have their own advantages and disadvantages.

Shortcuts

- The analysis tools can all use shortcuts to objects where appropriate
- The Server Model tab in the DE allows all objects that are part of the application to be clearly seen
- The Generators and Design Capture all handle shortcuts
- Shortcuts can be seen even if select access is revoked from the owning application
- The External References utility does not identify shortcuts

References

- References are recreated automatically when an application is imported to a workarea that contains the referenced object
- The Generators all handle references
- Of the analysis tools, only the ERD can use references
- To easily generate the complete schema, the Implementation details in the DB Admin tab or a server model diagram must be maintained
- The forms and reports Design Capture utilities do not recognize references
- The External References utility does not always identify all references

8 Appendix A

8.1 Diagram 1 – Matrix Diagram, Entity/Application Systems

Matrix Diagrammer - cheryl6i_v@ukp15858 - Sharing - MXD1

File Edit View Version Tools Options Window Help

MXD1:1

Entities Application Systems	Rental_new	Rental_orig	Members	Products	Common
Products/CATALOG				Owner	
Common/SUPPLIER				Shared	Owner
Rental_new/RENTAL	Owner				
Rental_new/RENTAL ITEM	Owner				
Rental_new/BOOKING	Owner				
Common/EMPLOYEE		Shared	Shared		Owner
Members/MEMBERSHIP			Owner		
Members/MEMBERSHIP TYPE			Owner		
Common/CUSTOMER			Shared		Owner
Common/COMPANY			Shared	Shared	Owner
Common/OTHER COMPANY				Shared	Owner
Rental_orig/RENTAL		Owner			
Rental_orig/RENTAL ITEM		Owner			
Rental_orig/BOOKING		Owner			
Products/COPY		Shared		Owner	
Products/TITLE				Owner	
Products/MOVIE				Owner	
Products/GAME				Owner	
Products/PRICE LEVEL				Owner	
Products/REVIEW				Owner	
Products/PUBLICATION				Owner	

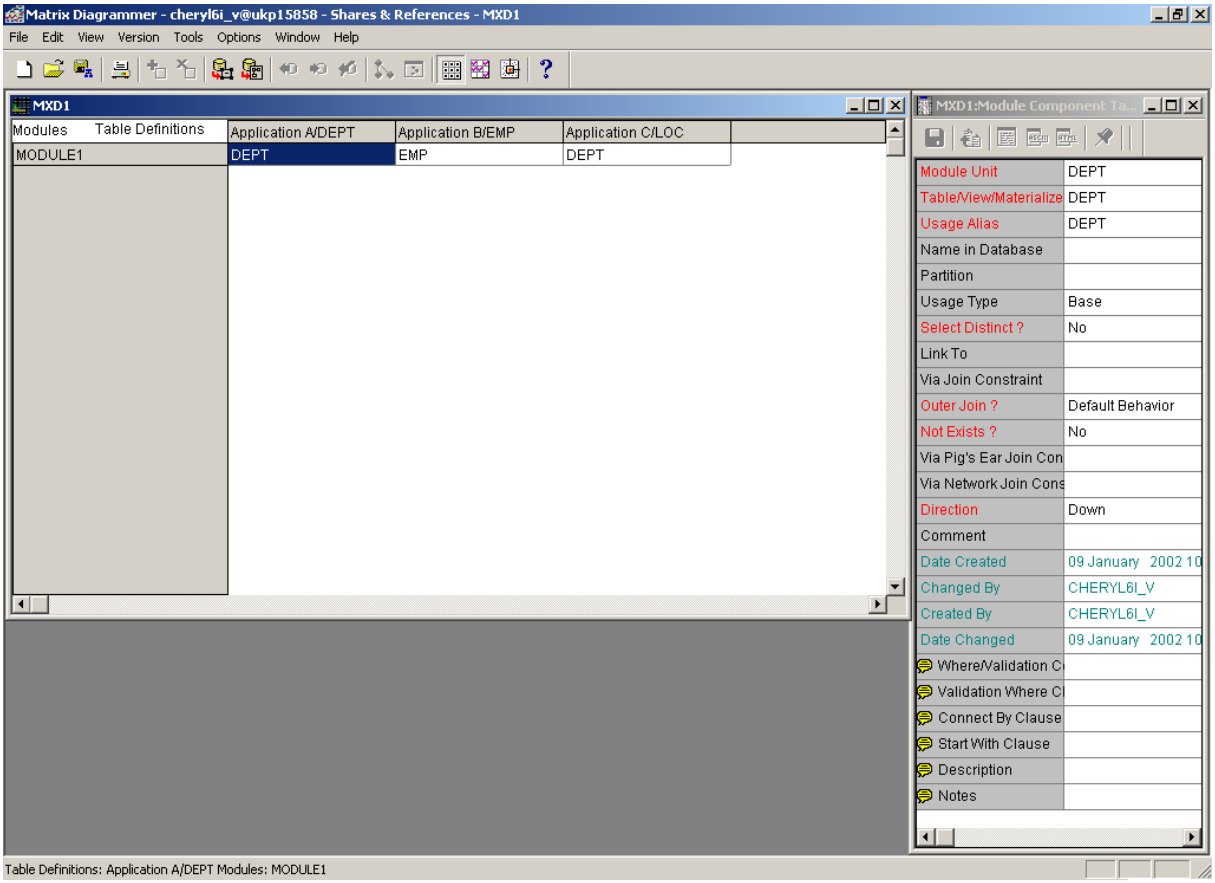
MXD1:Folder Members

Container	Rental_new
Member	
Changed By	CHERYL6I_V
Date Changed	29 August 2001 10:04:56
Date Created	29 August 2001 10:04:56
Created By	CHERYL6I_V

Application Systems: Rental_new Entities: Rental_new/RENTAL

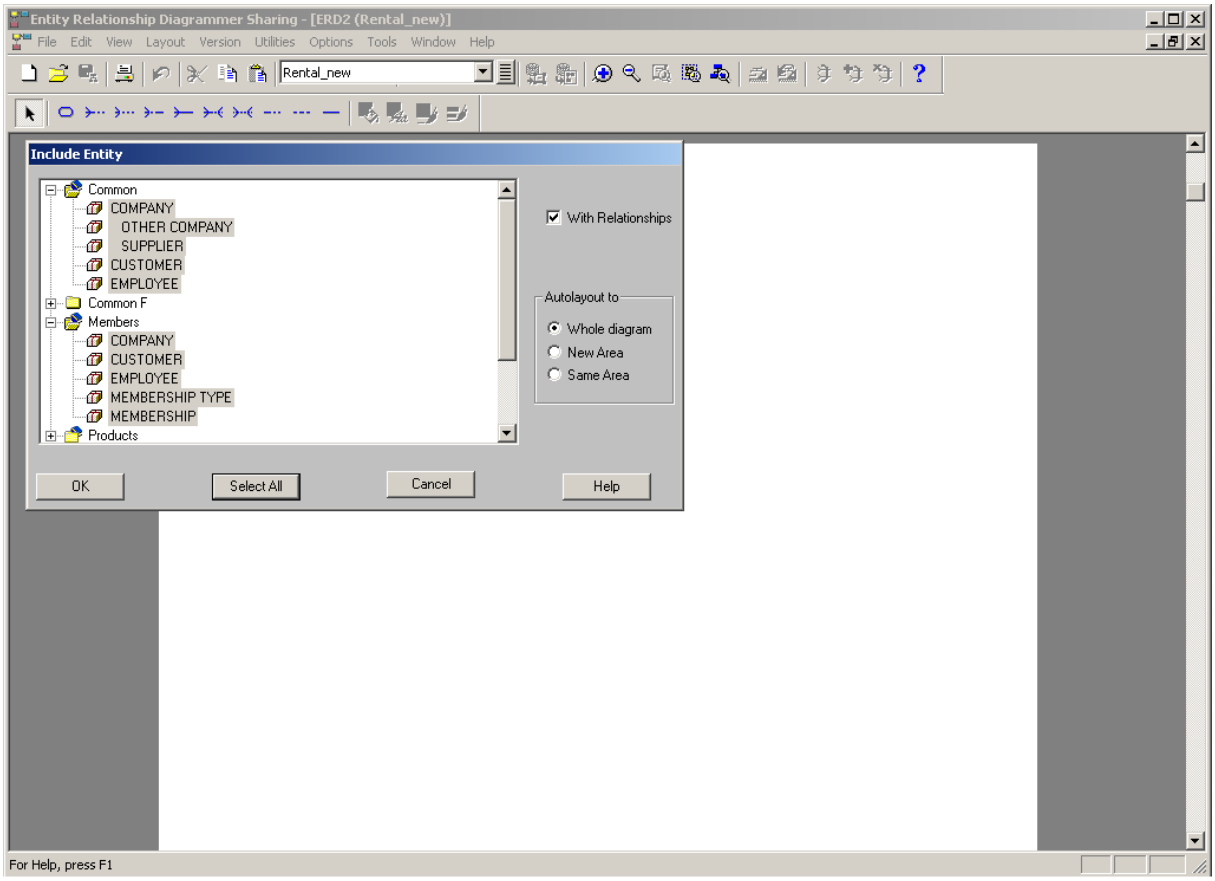
This matrix identifies which entities are owned or shared into which applications.

8.2 Diagram 2 – Matrix Diagram, Module/Table Usages



MODULE1 is in Application B. In Application B there is the table EMP, a shortcut to DEPT in Application A and a reference to LOC in Application C (see Diagram 4). The matrix identifies which tables are used by the module but does not identify if the tables are shortcuts, owned by the application or references.

8.3 Diagram 3 – Entity Relationship Diagram, Select All



[Select All] highlights all the entities displayed in the list. There is no indication on the dialog or the diagram that EMPLOYEE is shared from Common into Members. If a short cut and the original entity are selected at the same time, the original is included in the diagram.

8.4 Diagram 4 – Design Editor, Server Tab

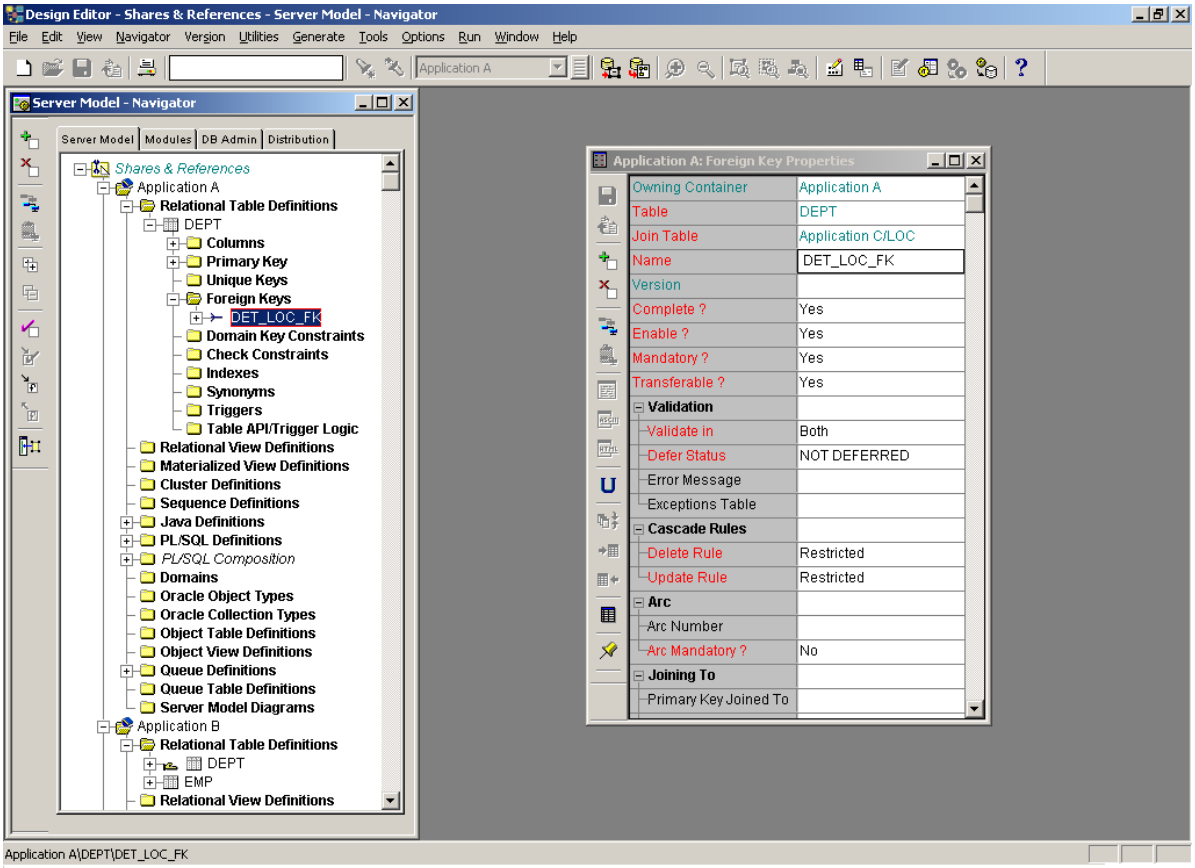
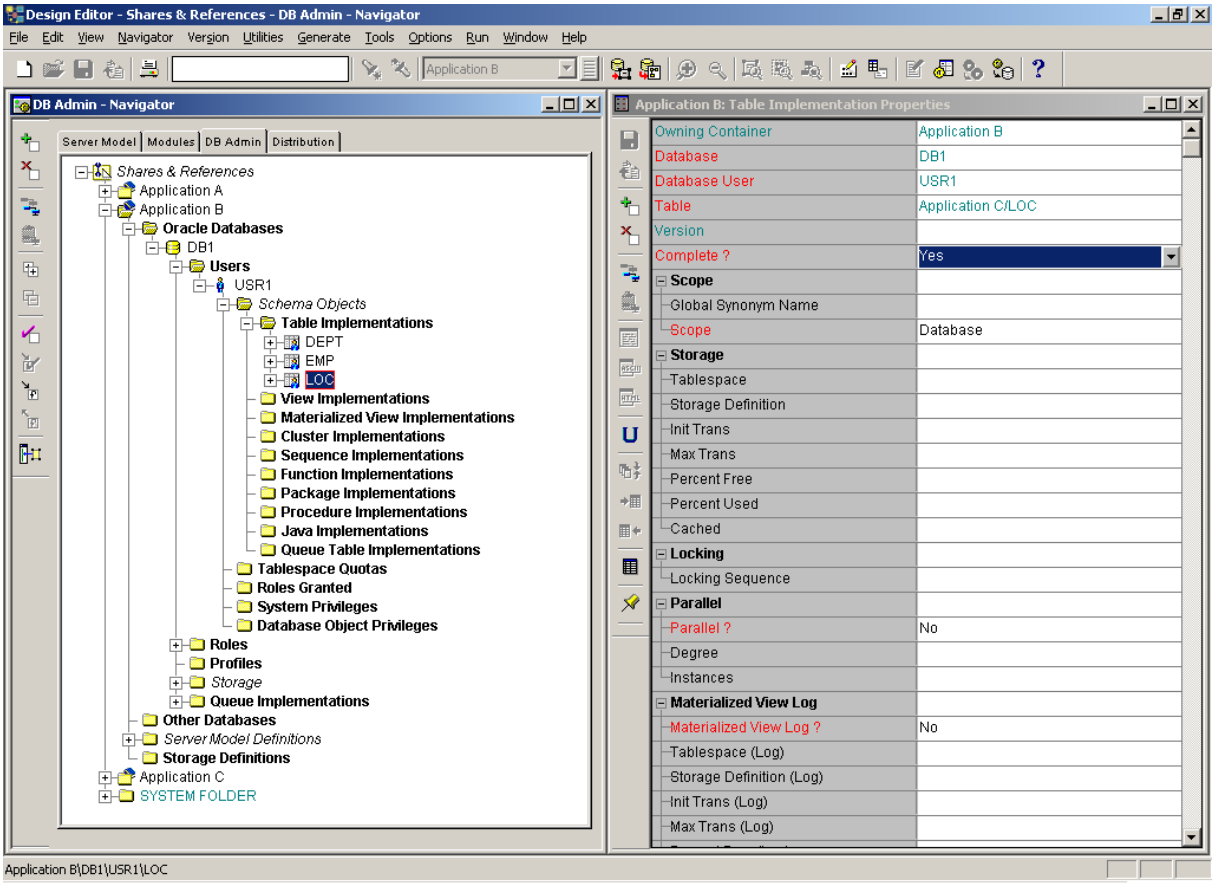


Table DEPT in Application A directly references table LOC in Application C. LOC is not seen in the Relational Table Definitions node in Application A.

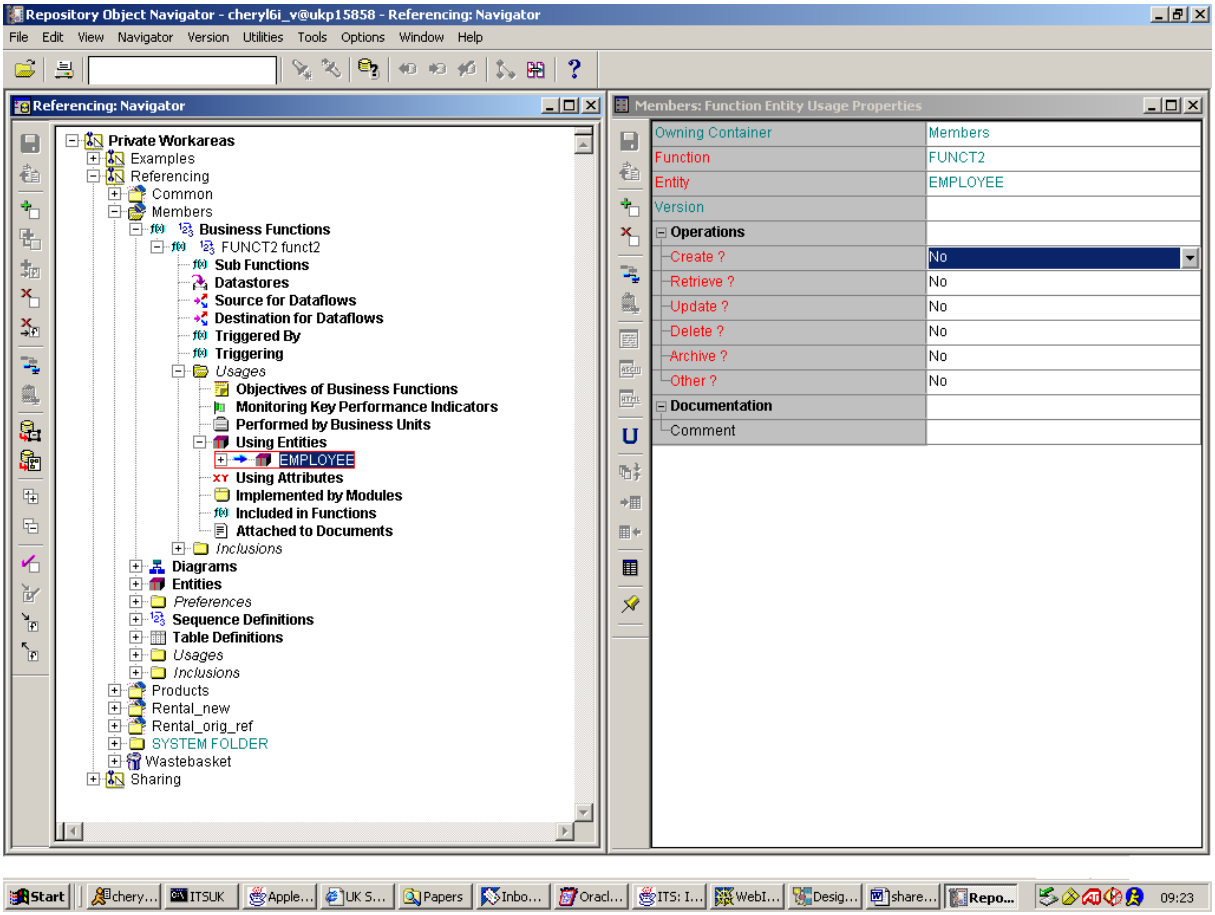
Table EMP in Application B references table DEPT using a shortcut (to Application A). Both tables are shown in the Relational Table Definitions node in Application B.

8.5 Diagram 5 – Design Editor, DB Admin Tab



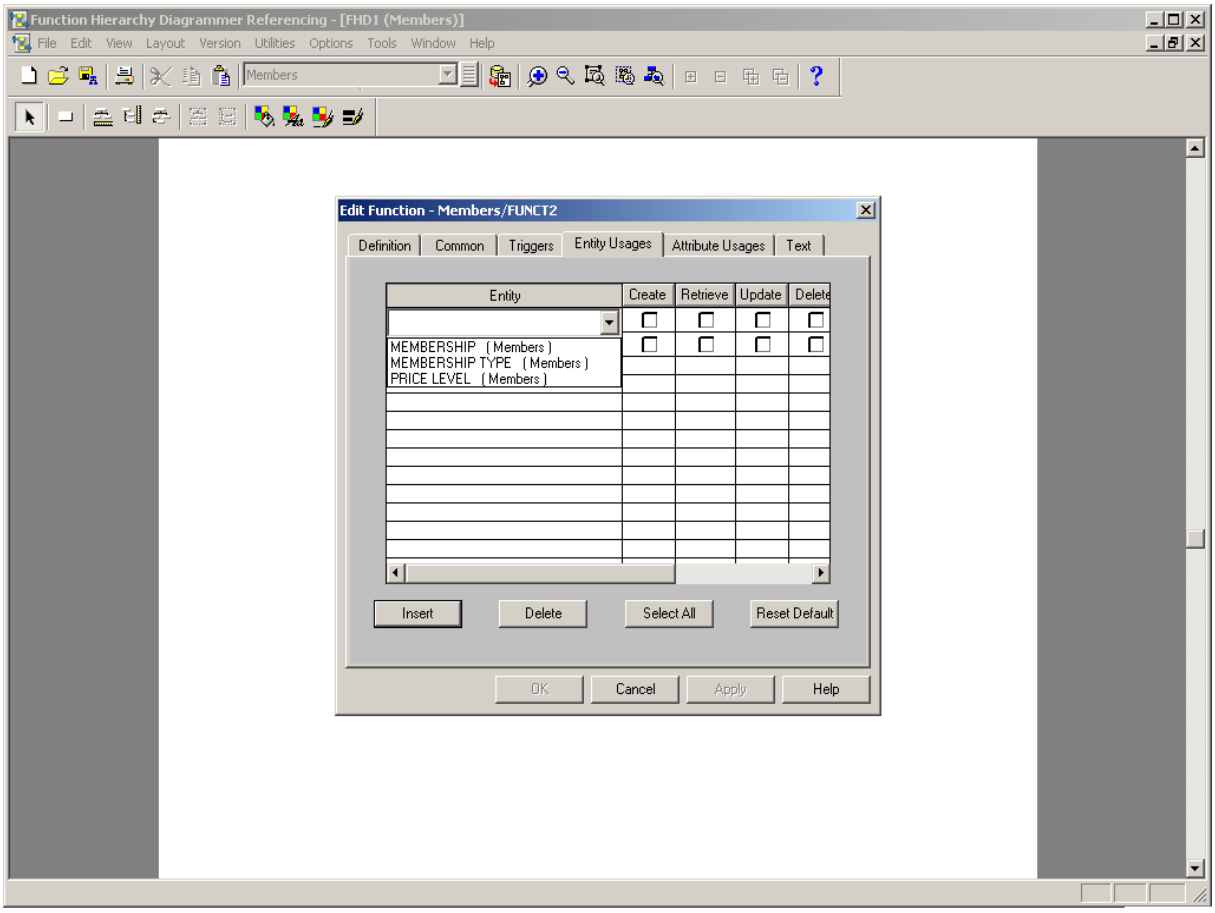
The complete schema consists of DEPT from Application A, EMP from Application B and LOC from Application C.

8.6 Diagram 6 – Entity Usages, References



A reference for a function entity usage can be created in the RON. In the diagram above, function FUNCT2 has an entity usage that directly references EMPLOYEE in application Common. This usage will not be visible in the FHD

8.7 Diagram 7 – FHD Entity Usages



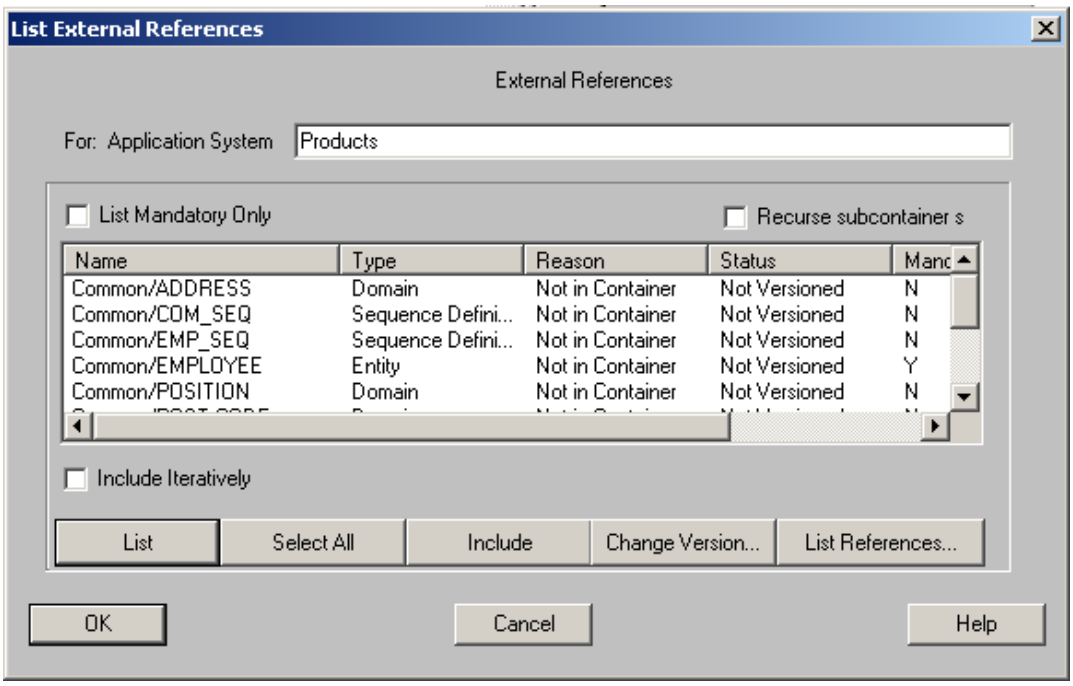
The entity usage created in Diagram 6 that directly references EMPLOYEE in application Common cannot be seen in the FHD. Entity usages can only be created for those entities in the context application.

9 Appendix B

9.1 External References

The External References utility should be used to identify any objects that are referenced by the selected container or workarea. It is important that all referenced objects are included in the same workarea. If not this will cause dangling references (references to something that does not exist in the current context).

To ensure that all references are included select the workarea and then run the External References utility. If this returns the message 'There are no external references for this Workarea' all referenced objects are included in the workarea. If it returns a screen similar to the one below, referenced objects may be missing from the workarea.



This screen identifies which referenced objects were not found in the selected container or workarea and the reason why. This could be any of the following:

Lost + Found	The object resides in the Lost+Found area, i.e. it has no owning container
No Access Rights	Users does not have access to the container that owns this object
Not in Folder	This object is not in the selected container
Not in Workarea	This object is not in the selected workarea
Not in Repository	This object is not in the repository; this message indicates a problem that requires resolution, for example, by creating the required object
Wrong Version	The referenced version of this object has no record of the reference; use Change Version to choose a different version

By selecting the Include button or checking the Include Iteratively box Designer will include all the missing objects in the selected container or workarea, thus resolving any missing references.

Oracle Designer 6i: Shortcuts and References

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