

**Freedom/Visio  
Integrating CA 2E to MS Visio ERD  
User Guide**

Version 4.2

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## Overview

The text based modeling language of CA 2E is quite powerful, yet it is very difficult to understand and appreciate the object relationships. It is often necessary to convert it to a more conventional Entity Relationship Diagramming tool, such as Microsoft Visio, where a picture conveys a thousand words.

To make it easier to convert your CA 2E database relations to Microsoft Visio diagrams we have developed Freedom/Visio that will create a Microsoft Visio XML import file from one of your CA 2E data models.

## Features and Benefits

### Easily Understand Complex 2E Database Relationships

In the past developers have had to manually reconstruct the database relationships in visual tools from their own perception of the text based language. It was prone to error, resource intensive, and not easily reproduced. Freedom/Visio provides an efficient and effective means of visualising CA 2E database relationships.

### Defacto Industry Standard

Microsoft Visio has become the defacto standard for diagramming and helps to effectively document, design and communicate ideas, processes and systems. These diagrams can then be integrated with other Microsoft technologies to form a complete documentation of your business applications.

### Export of Implementation Details

Freedom/Visio allows the export of the implementation names of files and fields into the Microsoft Visio diagram.

### Exports all CA 2E Database Relation information

Freedom/Visio reads and processes the internal CA 2E data model files to build the CSV or XML export file. This ensures that all relationship types, entries and redirections are included in the CSV or XML export file. Other techniques and tools that use the OS/400 compiled physical and logical files fail to provide all the relationship details defined in CA 2E - such as the "For" text on certain relationship types or redirected relationship entries.

### Uses Microsoft Visio XML Import

Freedom/Visio uses the XML import facility of Microsoft Visio. This interface provides the greatest flexibility and versatility in the development of the Freedom/Visio product. This also helps keep the price of Freedom/Visio down as we have less code to manage and support.

### Flexible Command Interface

Freedom/Visio is IBM System i command based providing the flexibility for it to be:

- Submitted to batch,
- Run interactively,
- Included on your own menus, or
- Run as part of your normal change management procedures.

### Single Non-Tier Based Licence

Freedom/Visio only requires a single non-tier based licence that is installed on the IBM System i. There are **NO** PC client side licence fees which mean a single purchase for an IBM System i can be used by any number of developers.

## Simple and Easy to Use

Freedom/Visio automatically converts CA 2E data models into Microsoft Visio diagrams in three simple steps.

1. Run the Create Visio ERD Import File (HCRTVSOERD) command to generate a physical file containing the exported CSV or XML.
2. Transfer the physical file to the IFS or your PC.
3. Open the CSV or XML file directly in Microsoft Visio without the need to use any other intermediate tools.

## Value for Money

Freedom/Visio is very competitively priced with a single flat fee for any model IBM System i server.

## Shareware

This product is distributed as Shareware. You may install and use the product for 45 days on a trial basis. Should you wish to use the product after the 45 day trial you are required to purchase a license from HawkBridge Pty Ltd for your AS/400. The authorization will then enable you to install and use the product on a single AS/400 only.

Shareware products are provided without warranty either implied or expressed. It is your responsibility to ensure that the software is appropriate for your installation.

This shareware product has been restricted to only allow a maximum of five CA 2E files to be imported into Microsoft Visio in any single import file. The fully licensed version has no restrictions imposed apart from running on a single nominated AS/400.

## Prerequisites

The following prerequisites must be satisfied in order to use the tool:

- OS/400 V5R2M0 or above installed
- CA 2E 8.0, 8.1 or 8.5 Data Model
- Microsoft Visio 2000 or above

### **OS/400 V5R2M0 or later**

The AS/400 objects in this release have been saved for V5R2M0. If you are on an earlier release, then contact us for a version that supports your version of OS/400.

Objects have been saved in a format that will enable Freedom/Visio to be restored to V6R1 and V7R1 of OS/400.

### **CA 2E 8.0, 8.1 or 8.5**

The tool has been developed for Release 8.0, 8.1 and 8.5 of CA 2E. If you are on a later release, then contact us for the upgraded version of the tool. Prior releases may work, but may not due to internal file changes to the CA 2E data model.

### **Microsoft Visio 2000 or later**

The tool has been developed for Microsoft Visio 2000 or later.

Earlier versions of Microsoft Visio are not supported in this product. Prior releases of Microsoft Visio may work using the CSV import option, but is no longer supported.

The CSV file format will not work with Microsoft Visio 2003 or later. Microsoft have removed the capability to import this file type into Microsoft Visio diagrams.

The XML file format will only work with Microsoft Visio 2002 or later. XML for Microsoft Visio was only introduced with Microsoft Visio 2002.

## Using the Freedom/Visio Integration Tool

To use the Freedom/Visio integration tool to import into Microsoft Visio via the XML import option follow these steps:

### Create a Model Object List

Prompt the command YBLDMDLLST to build a model list as follows then press Enter:

```

Build Model Object List (YBLDMDLLST)

Type choices, press Enter.

Model object name:
  Object owner--*generic . . . . . > *SELECT_____
  Object name--*generic . . . . . _____
  Object type . . . . . _____ *ALL, *ACP, *APP, *ARR...
      + for more values _
Model object list . . . . . > HCRTVSOERD   Name, *MDLPRF, *USER
  Library name . . . . . _____ *MDLLIB_____ Name, *MDLLIB
List option . . . . . _____ *REPLACE *REPLACE, *ADD

Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys

```

From the Select Multiple Model Objects display that next appears select one or more files to add to the model object list. When complete press F12 to exit the process.

```

Select Multiple Model Objects           Model . . : HBUTLMDL
                                         Out list : HCRTVSOERD

Object . . _____ Type . . FIL
Owner . . _____ <--Select

Type multiple options, press Enter.
1=Select   8=Details

Opt Object                               Typ Atr Owner
1 Address                               FIL STR
1 Audit Trail                           FIL STR
1 Company Department                     FIL REF
1 Company Division                       FIL REF
1 Customer                               FIL REF
1 Customer Export                        FIL CPT
1 Employee                               FIL REF
1 Employee Territory                     FIL REF
1 Last Used Surrogate                     FIL CPT
1 Order                                  FIL REF
1 Order Product                          FIL CPT

More...

F5=Refresh   F12=Cancel

```

## Create the Visio Import File

Make sure that library FREEDOMVSO (or the library you installed Freedom/Visio in) is in your library list. The minimum library list to run the interface tool is:

- QTEMP
- FREEDOMVSO
- Y2SYVENG
- Y2SY
- Y1SYVENG
- Y1SY
- QGPL

Libraries Y2SYVENG and Y1SYVENG may have been merged into Y2SY and Y1SY respectively when installed. In which case, they should be omitted from the initial library list.

Prompt the command HCRTVSOERD and enter the following details then press Enter:

```

Create VISIO ERD Import File (HCRTVSOERD)

Type choices, press Enter.

Select object type . . . . . > *MDLLST      *APP, *FUN, *FUNSGT, *MDLLST
Model object list . . . . . HCRTVSOERD     Name, *SELECT, *S
  Model library name . . . . . *MDLLIB      Name, *MDLLIB
Edit list . . . . . *NO_                   Character value, *NO, *YES
Import file . . . . . HVSOIMPDTA           Name
  Library . . . . . *GENLIB                 Name, *GENLIB
Member options:
  Member name . . . . . *FILE               Name, *FILE
  Replace or add to member . . . *REPLACE   Character value, *REPLACE...
Import file format . . . . . > *XML         *CSV, *XML

                                Additional Parameters
Include Used By Relations . . . *NO        *NO, *YES
Include Internal Names . . . . *NO        *NO, *YES

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

```

If you are generating XML for Microsoft Visio 2002 or later, then you will need to select \*XML on the Import file format prompt under the additional parameters. Otherwise the default of \*CSV will generate a Comma Separated Variable file for Microsoft Visio 2002 or earlier.

## Transfer the Microsoft Visio Import File to the PC

Start an AS/400 to PC file transfer session to transfer the file HVSOIMPDTA member HVSOIMPDTA in the generation library to a temporary PC directory, such as C:\TEMP. The transfer details are as follows:

- From file: <\*GENLIB>/HVSOIMPDTA(HVSOIMPDTA)
- To File: C:\TEMP\HVSOIMP.XML
- To File Type: ASCII Text

Note: <\*GENLIB> should be replaced with the actual name of the generation library.

It is important that the PC file have the .vdx suffix so that Microsoft Visio 2002 or later will import the file correctly as an XML file. It is also important that the to file type be ASCII text as all the .vdx formatting has already been done by the AS/400 and does not need to be converted. For the \*CSV option it is important that the PC file have the .csv suffix so that Microsoft Visio 2002 or earlier will import the file correctly as a CSV file.

**Note:** A common error is to transfer the file as a CSV file. In which case it will add additional delimiters to the record layouts and not import into Microsoft Visio. Ensure that the file type is correct on the transfer so that additional delimiters are not added to the records in the file.

### **Import File into Microsoft Visio**

Launch Microsoft Visio. If prompted to choose a drawing template use the cancel button to close the dialog box.

Choose menu option File/Open... or click the Open button to display the open dialog box.

Change the look in directory to the temporary PC directory you transferred the import file into.

Change the files of type selection list to All Visio Files (\*.vs\*; \*.v?x) if using the \*XML option. For the \*CSV option change the files of type selection list to Text Files (\*.txt, \*.csv).

Your import file, in our example HVSOIMP.VDX, should now appear in the selection list. Select the import file and click the Open button.

If you received an error message then you need to resolve the import errors. If you cannot resolve the errors, then contact us for assistance.

### **Adjust Default Layout and Detail**

By default the diagram does not layout the shapes with enough space between them. Shapes/Lay Out of Shapes... to display the layout of shapes dialog box. The XML import file has already set the default settings for the layout of the shapes. Click the OK button to re-adjust the layout of the shapes.

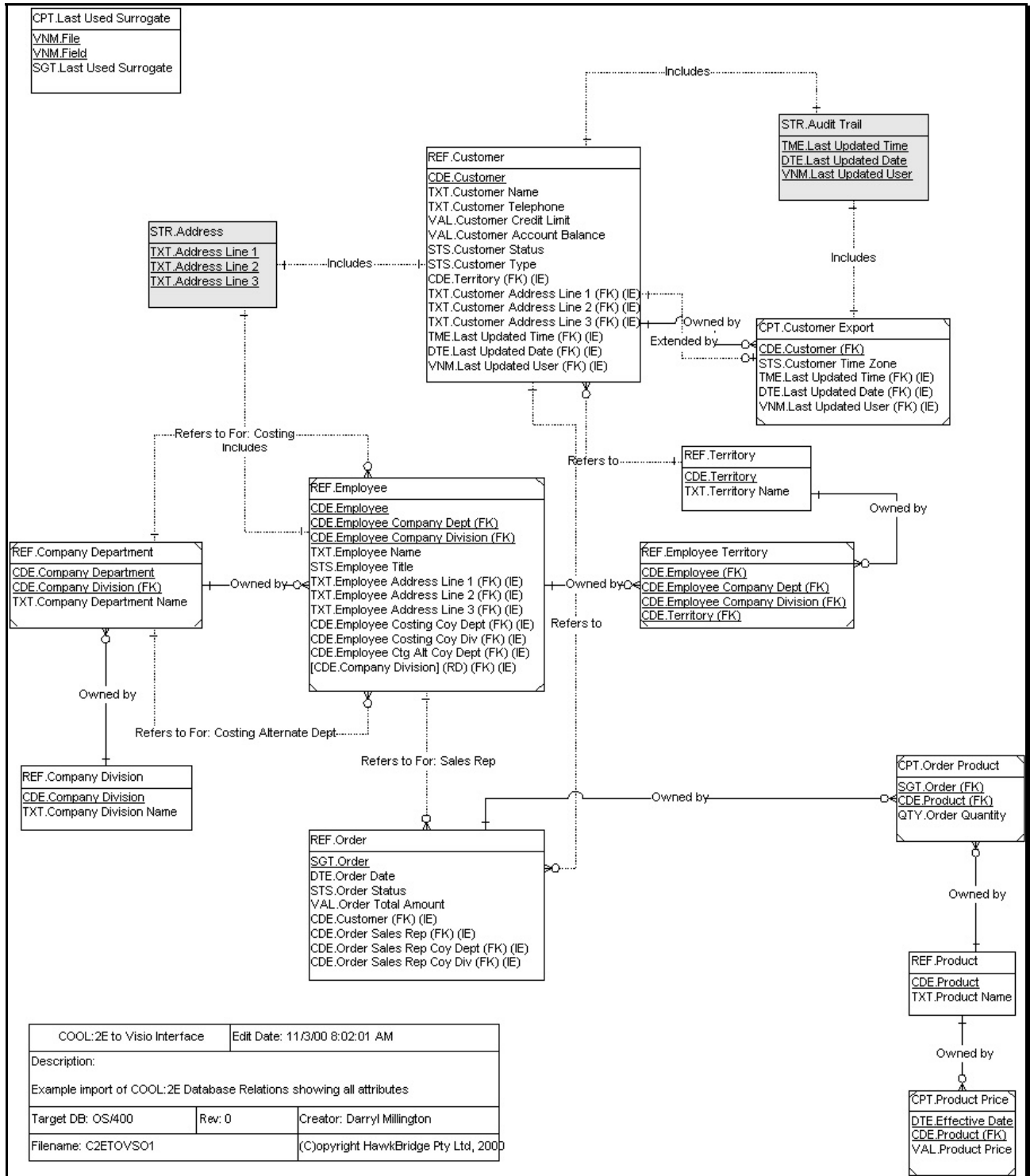
Click the OK button to return to your diagram.

By default the diagram does not display the entity attributes. To display them you must first select the entities you wish to display the attributes for, you can select multiple entity shapes by holding down on the shift key while you select the shapes. Now right-click one of the selected shapes to display the pop-up menu and select "Show Attributes". You may need to re-adjust the layout of the shapes again after using this add-in. You may also choose to hide all attributes or show only the key attributes for the selected entities by selecting "Hide Attributes" or "Show Keys Only" from the pop-up menu respectively.

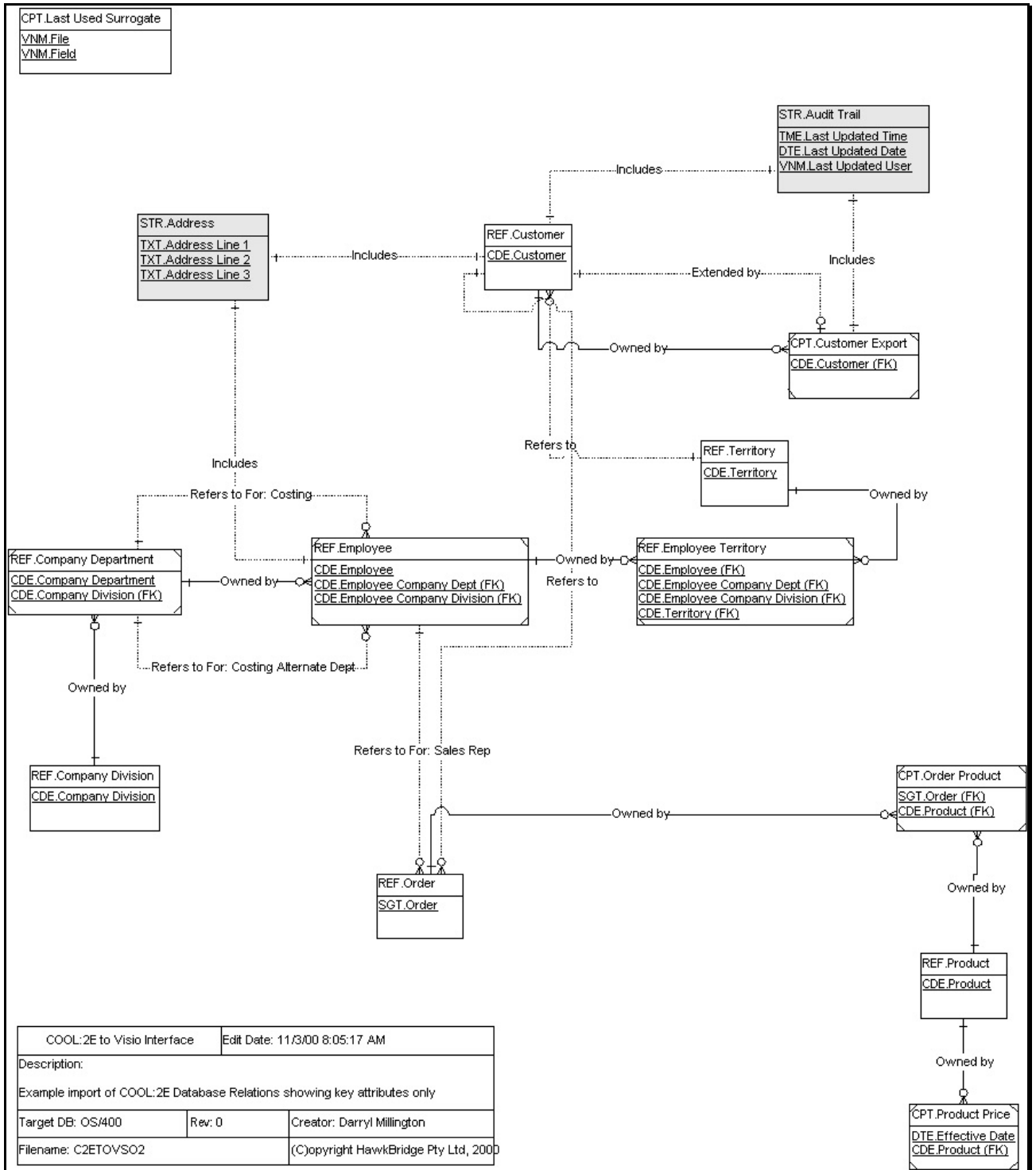


## Example Microsoft Visio Screen Shots

### CA 2E Database Relations Showing All Attributes

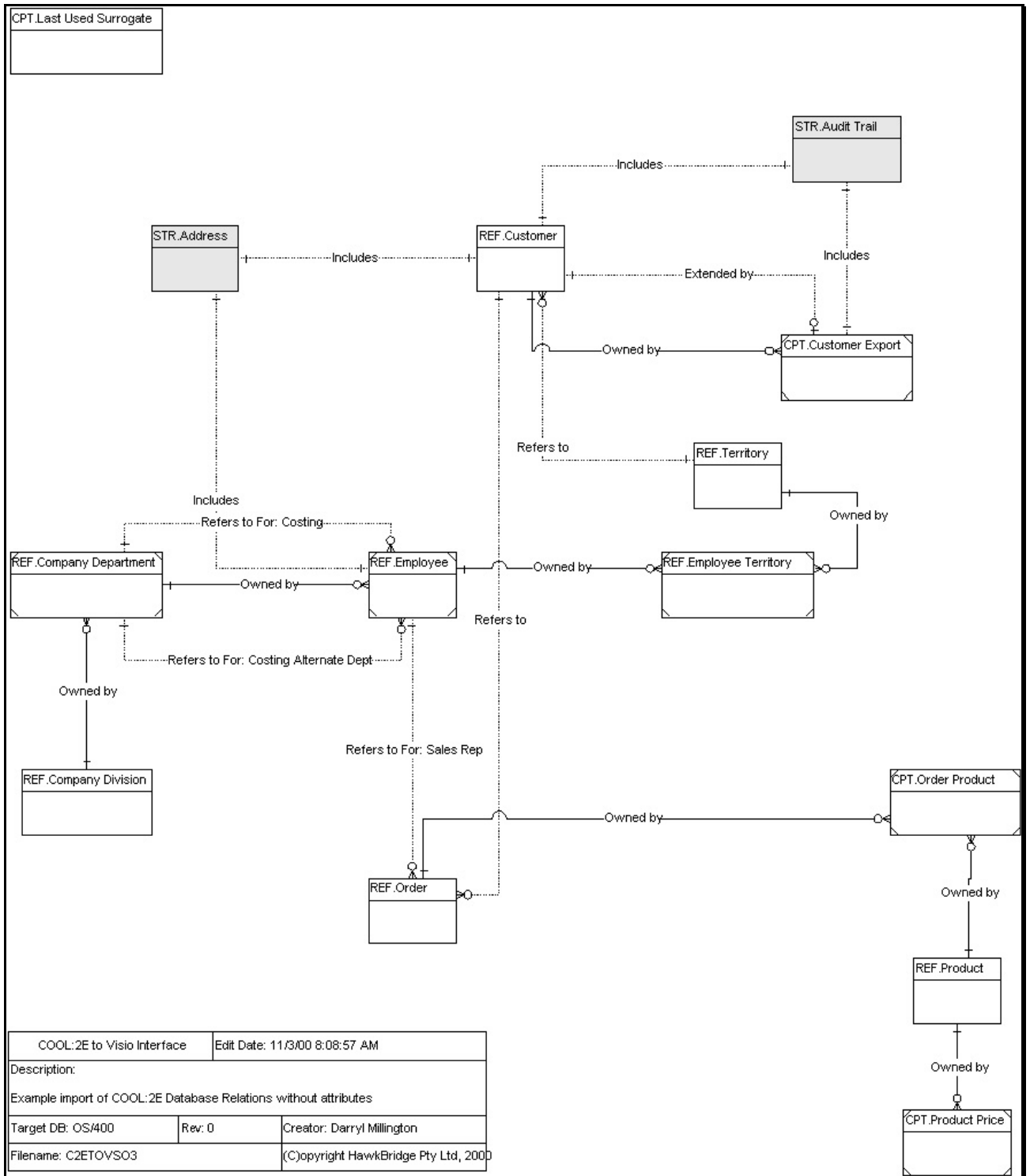


CA 2E Database Relations Showing Key Attributes Only



COOL:2E to Visio Interface		Edit Date: 11/3/00 8:05:17 AM
Description:		
Example import of COOL:2E Database Relations showing key attributes only		
Target DB: OS/400	Rev: 0	Creator: Darryl Millington
Filename: C2ETOVS02		(C)opyright HawkBridge Pty Ltd, 2000

CA 2E Database Relations Without Attributes



## Interface Issues and Design Standard

There were a lot of interface issues with the tool more so to do with Microsoft Visio not supporting certain features of CA 2E data modeling. This section will highlight the most crucial issues and how they have been resolved.

### CA 2E Files

Separate Microsoft Visio masters were created for each of the file attribute types available in CA 2E. This was to support differences in visual formatting of the files to make the file attribute type more visible in Microsoft Visio. In this release only the Structure file is formatted differently in the default Microsoft Visio stencil.

Entity names in Microsoft Visio are formatted as “XXX.YYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY”, where “X” is the file attribute type and “Y” is the file name.

Files that have been included in the diagram but do not appear in the selected application area will use the external entity masters. These files will only have their key file entries defined.

### CA 2E Structure Files

The Microsoft Visio database stencils do not support the concept of structure files and the includes relationship. For this reason all structure file attributes will be defined as primary key attributes. This enables the update foreign key add-in to resolve the includes relation correctly. For Microsoft Visio 2003 or later, the update foreign key add-in has been removed by Microsoft.

### CA 2E Extended by Relations

The Microsoft Visio database stencils do not support the concept of extended by relations. The extended by relation in CA 2E does not resolve to any foreign keys and is merely there to enforce a one-to-one file association and allow reverse virtualization for the corresponding owned by relation. For this reason the extended by master in the stencil for the tool is just a line and not a database relationship.

### CA 2E Includes Relation

This relationship direction has been reversed to enable the Microsoft Visio update foreign key add-in to correctly resolve the includes relation. For Microsoft Visio 2003 or later, the update foreign key add-in has been removed by Microsoft.

### CA 2E Database Relation Sharing

The CA 2E sharing option is not provided in the interface as Microsoft Visio does not support it. Although, the resultant re-directed fields are supported as discussed below.

### CA 2E File Entries

Attribute names in Microsoft Visio are formatted as “XXX.YYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY”, where “X” is the field attribute type and “Y” is the field name.

This release defines all fields as Microsoft Visio strings with a length of 50 characters. It is planned to further enhance the interface to provide the correct field format details.

Microsoft Visio has a limitation in the number of attributes that can be defined for an entity, it is around 150. If you have CA 2E files with more than 150 file entries, then not all entries will display. Although, they do appear in the Microsoft Visio shape sheet as a custom property. If you run the update foreign key add-in some or all of the additional attributes will be deleted from the shape sheet. This feature is beyond our capabilities and you will have to learn to live

with it, until we design and package our own master shapes and add-ins which depends upon the number of licenses we sell.

Microsoft Visio has a limitation in naming attributes defined for an entity, they cannot contain embedded double-quotes (""). Any double-quotes found in attribute names will be converted to single-quotes.

### CA 2E Re-placed File Entries

File entries in CA 2E can be replaced with another field based on the same domain. For example, a file may have the following database relations:

```
My File      Known by      My Field
```

this resolves to the following file entries by default:

```
My Field
```

you can use the R=Replace option as a designer to change the file entry to the following entry that is based on the My Field domain:

```
My Other Field
```

There are some undocumented problems with the manner in which the synchronization process in CA 2E resolves foreign keys from other relations to this file. In some cases it will resolve to My Field and others it will use My Other Field.

If this file is involved in another database relation in which it is the referenced file, then the Microsoft Visio interface will use the replaced field name in all instances and not the original field name from the database relation. You can view the re-named field details in Microsoft Visio by selecting the relationship and using the define relationship add-in. The original field is displayed as the foreign key and the re-placed field name appears as the role name.

### CA 2E Re-directed File Entries

Re-direction in CA 2E provides the ability to share foreign keys. It is controlled through the sharing option or manual re-direction of database relation entries.

Re-directed attribute names in Microsoft Visio are formatted as “[XXX.YYYYYYYYYYYYYYYYYYYYYYYYYYYY] (RD)”, where “X” is the field attribute type and “Y” is the field name. The (RD) identifies the attribute as a re-directed attribute, which means it does not appear as a CA 2E file entry.

### CA 2E Used By Relations

When the used by relation option is specified all relations that involve the selected files as referenced objects will be included in the diagram.

Used by relation names in Microsoft Visio are formatted as “(XXXXXXXXXXXXXXXXX)”, where “X” is the relations fully qualified name.

### Microsoft Visio Layers

All files and relations on the main page are allocated to their respective page layer associated with the specific file type or relationship type. This enables object types to be displayed or hidden on the page as a group.

## Command Reference

### Create Visio ERD Import File (HCRTVSOERD)

```

++*APP-----+
>>--HCRTVSOERD--SELECT(--*FUN-----)----->
++*FUNSGT-+
++*MDLLST-+

----->
|           +-*SELECT-----+           |
+-FUNNAM(---function-owner-name--function-name---)-+

----->
|           +-*SELECT-----+           |
+-FUNSGT(---function-surrogate---)-+

----->
|           +-*SELECT-----+           |
+-APP(---application-area-name---)-+

----->
|           +-*MDLLIB/-----+ +-HCRTVSOERD-----+           |
+-MDLLST(---library-name/-----model-object-list-name---)-+

----->
|           +-*NO--+           |
+-EDIT(---*YES---)-+

----->
|           +-QTEMP/-----+ +-HVSQIMPDTA-----+           |
+-FILE(---library-name/-----import-file-name---)-+

----->
|           +-*FILE-----+ +-*REPLACE-+           |
+-MEMBER(---member-name-----*ADD-----)-+

----->
|           +-*CSV-+           |
+-FORMAT(---*XML---)-+

----->>
|           +-*NO--+           |           +-*NO--+           |
+-INCUSEDDBY(---*YES---)-+ +-INCINTNAM(---*YES---)-+

```

#### Purpose

The Create Visio ERD Import File (HCRTVSOERD) command builds an import file of the database relations for use with Visio.

#### Select object type (SELECT)

Specify type of object used to build the list of files to include in the Visio import file.

#### \*APP

Indicates that the type of object used to build the list of files to include in the Visio import file is an application area identified by the application area name specified on the **Application area** prompt (APP parameter).

#### \*FUN

Indicates that the type of object used to build the list of files to include in the Visio import file is a function identified by the function owner and function name specified on the **Model function name** prompt (FUNNAM parameter).

#### \*FUNSGT

Indicates that the type of object used to build the list of files to include in the Visio import file is a function identified by the function surrogate specified on the **Model function surrogate** prompt (FUNSGT parameter).

#### \*MDLLST

Indicates that the type of object used to build the list of files to include in the Visio import file is a model object list identified by the model object list specified on the **Model object list** prompt (MDLLST parameter).

#### *Model function name (FUNNAM)*

Specify the name of the function used to build the list of files to include in the Visio import file. The function specified will be expanded to the maximum level to include all \*DBF and \*DEV type functions except PMTRCD function types. The list of files used to build the database relations for import into Visio will be derived from the owning files of the expanded list of functions.

This parameter consists of two elements that together identify a function.

#### \*SELECT

A single value indicating that the function is selected using an interactive display function.

#### function-owner-name

Specify the 25-character name of the model file that owns the function.

#### function-name

Specify the 25-character name of the function.

#### *Model function surrogate (FUNSGT)*

Specify the internal surrogate of the function used to build the list of files to include in the Visio import file. The function specified will be expanded to the maximum level to include all \*DBF and \*DEV type functions except PMTRCD function types. The list of files used to build the database relations for import into Visio will be derived from the owning files of the expanded list of functions.

#### \*SELECT

A single value indicating that the function is selected using an interactive display function.

#### function-surrogate

Specify the 7-digit surrogate of the function.

### *Application area (APP)*

Specify the name of the application area used to build the list of files to include in the Visio import file. The list of files used to build the database relations for import into Visio will be derived from the application area files.

#### \*SELECT

A single value indicating that the application area is selected using an interactive display function.

#### application-area

Specify the 3-character name of the application area.

### *Model object list (MDLLST)*

Specifies the name and library of the model object list used to identify the files to be used by the command.

The possible library values are:

#### \*MDLLIB

Indicates that the first data model library found in the current job's library list is used.

#### model-library-name

Specify the name of data model library.

### *Edit list (EDIT)*

Specifies whether or not the model object list is to be displayed in edit mode after it is built and before the extract takes place

The possible values are:

#### \*NO

Indicates that the model object list is not to be edited.

#### \*YES

Indicates that the model object list is to be edited.

### *Import file (FILE)*

Specifies the name and library of the database file to which the output of the command is directed. If the file does not exist, this command creates a database file in the specified library.

The possible library values are:

#### QTEMP

Indicates that the library of the database file is QTEMP.

#### library-name



Specify the library where the file is located.

#### *Member options (MEMBER)*

Specifies the name of the database file member that receives the output of the command.

The possible values are:

##### \*FILE

Indicates that the name of the member is the same as that of the database file that contains the member specified in the **Import file** prompt (FILE parameter). If the member does not exist, this command creates it.

member-name

Specify the name of the file member that receives output. If the member does not exist, this command creates it.

#### *Import file format (FORMAT)*

Specifies the format of the import file that will be created.

The possible values are:

##### \*CSV

Indicates that the format will be in CSV format. This option is only valid for Visio 2002 or earlier.

##### \*XML

Indicates that the format will be in XML format. This option is only valid for Visio 2002 or later.

#### *Include used by relations (INCUSEDDBY)*

Specifies whether or not used by relations are to be included in the extracted data,

The possible values are:

##### \*NO

Indicates that used by relations are not included.

##### \*YES

Indicates that used by relations are included.

#### *Include internal names (INCINTNAM)*

Specifies whether or not internal names for files and fields are to be included in the extracted data,

The possible values are:

##### \*NO

Indicates that internal names are not included.

\*YES

Indicates that internal names are included.

**\*\* END OF DOCUMENT \*\***