

# AllFusion<sup>TM</sup> ERwin<sup>®</sup> Data Modeler

## Getting Started



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## Chapter 1

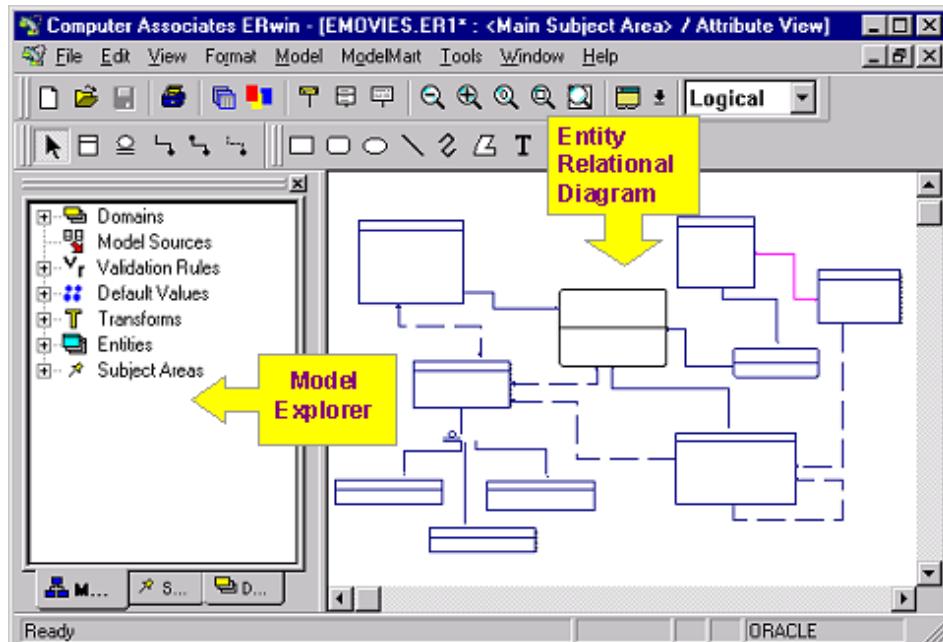
# ERwin: The Information Management Solution!

### Database Design Made Easy

Welcome to AllFusion™ ERwin® Data Modeler (hereafter referred to as ERwin), the database design tool that raises the level of data quality in transactional and data warehouse systems. ERwin is essential in helping your organization maintain its competitive edge by providing the tools to design and implement databases for transactional business, E-commerce, and data warehousing applications.

ERwin creates and maintains graphical models that represent databases, data warehouses, and enterprise data models. ERwin provides a modeling platform where corporate data requirements and related database designs can be defined, managed, and implemented across a wide variety of database platforms.

ERwin combines a Windows-based graphical user interface with powerful entity-relationship (ER) diagramming tools, custom editors to define physical database objects, a Model Explorer for a text-based view of model objects, and support for the leading SQL and desktop databases.



### Implement Enterprise-wide Design Standards

ERwin streamlines the application development process, allowing different groups (Standards Administrators, Business Analysts, Data Modelers, and so on) to perform work independently, while collaborating and synchronizing. In this way, different groups can simultaneously work on various parts of a model or different model types.

### Useful, Consolidated Data

Today's eBusiness architecture is a patchwork collection of technologies ranging from mainframe applications all the way down to thin-client systems running on the latest handheld devices. Transforming these peninsulas of information into new business opportunities and improved service levels are all critically important to gaining competitive advantage in this new eBusiness environment. ERwin's superior capabilities ensure that data is consistently defined and captured across all your deployment platforms.

### ERwin's Benefits

- **Easy-to-use Design Functionality:** Database design is made simple through point-and-click creation of a graphical entity-relationship (ER) model of your data requirements and data usage rules. Drag-and-drop functionality allows you to quickly create entities and attributes, tables, and columns, and other model objects. Additionally, ERwin's on-diagram editing facilitates quick and easy design changes.
- **Forward Engineering:** ERwin generates the physical database schema, including all supported options, from a physical model.
- **Reverse Engineering:** ERwin lets you capture information in an existing database or DDL script file and then create a physical or logical/physical model based on that information. You can quickly reverse-engineer existing databases for incorporation into new development efforts, and then proceed to add new database objects or even redesign the database structure.
- **Manageability:** ERwin handles large enterprise models by creating smaller subsets where specific areas can be highlighted. Subsets of large data models are treated as subject areas that are quickly and easily created — to make your designated business data model more accessible.
- **Environment Integration:** ERwin can design transactional systems, data marts, and data warehouses to be implemented on the same or different platforms. ERwin supports the most popular desktop and SQL database platforms. Because ERwin automatically converts datatypes and SQL syntax to match the target server you select, you can reuse a data model for different platforms and implementations.

You can use ERwin's application development features to:

- Create a model that contains business requirements as well as the exact design of your physical database.
- Create independent logical and physical models with unique notation and display options.
- Split models of older ERwin versions into separate logical and physical models, derive new models from existing models, and link a model to its source so that changes can be synchronized.

### The AllFusion Modeling Suite Manages Application Development

AllFusion ERwin Data Modeler is part of the AllFusion family of products, a foundation for building, deploying, and managing applications. AllFusion consists of process and project management, change and configuration management, modeling and design, and knowledge publication and visualization. AllFusion strengthens your ability to automate critical application life cycle processes and to thrive in the increasing complexity and rate of change in today's eBusiness climate. The AllFusion Modeling Suite helps you simplify the complex aspects of analyzing, designing, and implementing applications and business processes by providing a visualization of the relationships between business and technology. The other key components that provide the integration of design, data and process models are:

- **AllFusion Process Modeler (formerly BPwin)** - The essential tool for business process modeling.
- **AllFusion Model Manager (formerly ModelMart)** - Used in conjunction with the AllFusion ERwin Data Modeler and AllFusion Process Modeler, the AllFusion Model Manager supports concurrent team modeling for large client/server development projects.
- **AllFusion Data Model Validator (formerly ERwin Examiner)** - The database validation tool that raises the level of data quality in transactional and data warehouse systems.
- **AllFusion Component Modeler (formerly Paradigm Plus)** - The powerful modeling tool for designing, visualizing, and maintaining business applications.

## For More Information

After reading this *Getting Started Guide*, you can refer to the numerous resources for additional information. Your ERwin CD contains a useful tutorial that showcases ERwin's comprehensive, feature-rich components. Also, be sure to check out the readme.txt and the ERwin FAQ files, which are installed with ERwin.

### AllFusion ERwin Data Modeler Methods Guide

The *AllFusion ERwin Data Modeler Methods Guide* explains the basic concepts of data modeling and the IDEF1X and IE modeling notations, which are supported by ERwin. To learn about basic data modeling techniques and the modeling notations, we suggest that you read this book before starting to use ERwin.

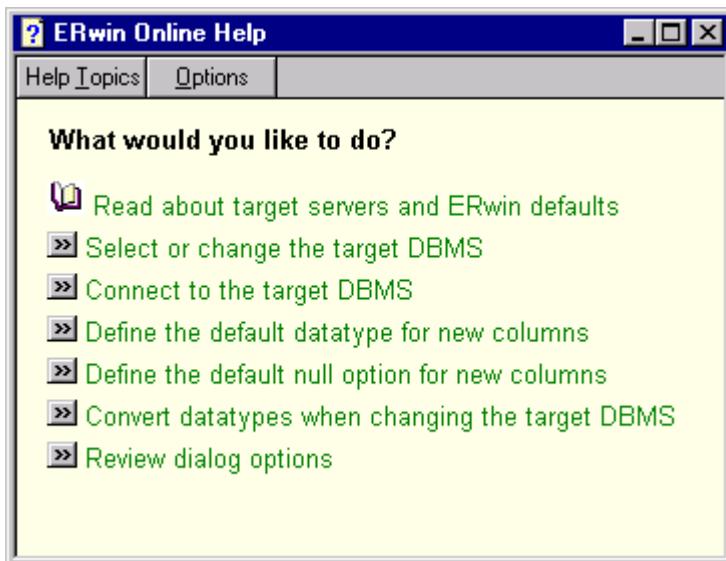
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NOTE: By default, the *Methods Guide* is installed with ERwin. It is provided in Portable Data Format (PDF) file, which can be read using Adobe Acrobat Reader 5.0. If you do not have the current version of Acrobat Reader, you can download a copy from the Adobe web site or install the reader from the installation CD.

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## Getting Online Help

The online help system offers procedural information and answers to any questions you may encounter. When you press F1 from any dialog, you will see a "What would you like to do?" topic, which lists all relevant topics for that task.



You can also search for a topic by going to the Help menu and choosing Help Topics and then click on the Contents, Index, or Search tab. In addition, go to the Help menu and choose What's New, which provides links to more information about all of the newest features. And, for tips on using the ERwin Online Help system, go to the Help menu and choose How to Use Help.



Most Help topics have links to related topics. You can usually find more information by clicking the links below the topic heading or on the buttons on the help topic menu bar.



### Technical Support

If you need technical support, visit us on the web at [esupport.ca.com](http://esupport.ca.com). When you contact Computer Associates Technical Support, please have the following information ready for the support analyst:

- The version number and the build number of the product (available from the About menu option on the ERwin Help menu).
- The operating system or platform (for example, Windows NT 4.0), as well as any service pack applied.
- A description of the problem, the steps that led to the problem, and any error messages.

To obtain more detailed information about ERwin from educational courses, go to this website: [www.ca.com/education](http://www.ca.com/education)

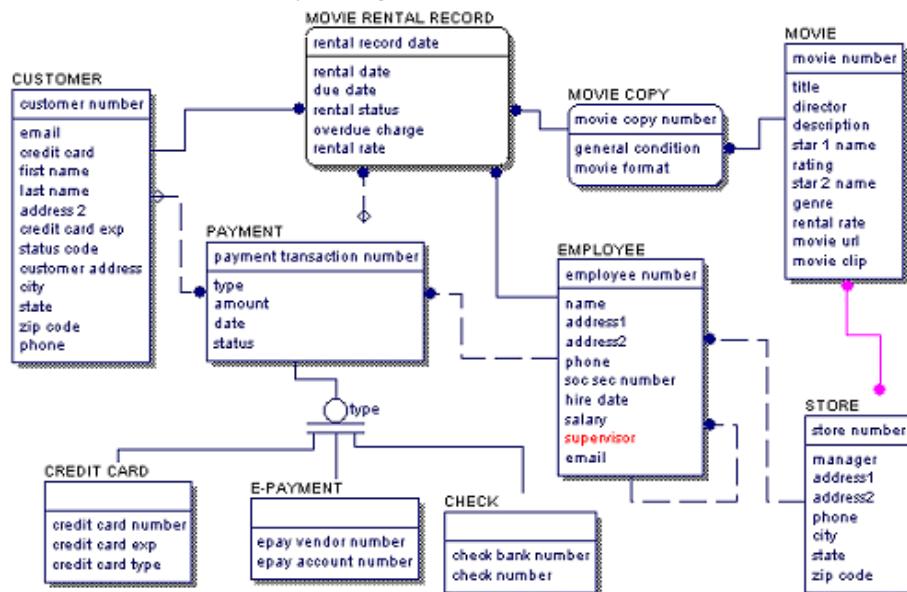
In addition, ERwin provides comprehensive training in its advanced features, along with offering the Best Practices Course for in-depth hands-on ERwin material.

## Chapter 2

# The Premier Model Solution At Your Fingertips!

### ERwin Overview And Installation Information

**E**Rwin is a powerful database design tool that combines a Windows-based graphical user interface with entity-relationship (ER) diagramming tools, and numerous innovative features. These features allow you to easily create and maintain your relational database and the logical and physical models that describe it. ERwin works by providing a design solution that helps you create a visual blueprint (a data model) for your organization.

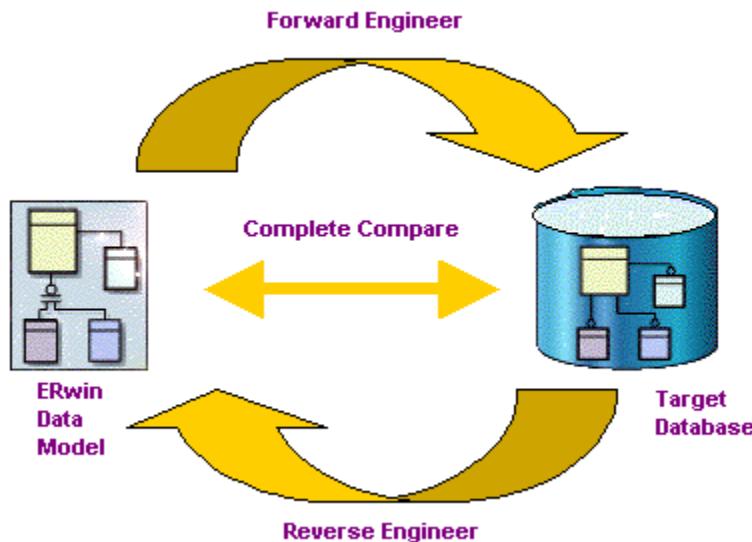


### How Do I Use ERwin?

ERwin is much more than a drawing tool. ERwin not only helps you design a logical data model, which captures business rules and requirements, it supports the design of a corresponding physical data model for your target server. This enables you to forward engineer this physical data model and automatically generate physical database structures to your system catalog.

ERwin supports reverse engineering of existing databases and provides both a physical and logical/physical data model so you can maintain an existing database, or migrate from your current target server to a different one.

In addition, ERwin's groundbreaking Complete Compare technology automates model and database synchronization by allowing you to compare the model with the database, displaying and analyzing the differences. This enables you to selectively move the differences into the model or generate them into the database.



### Before You Begin

Before you install ERwin, consider the following list of supported software and hardware to ensure a trouble-free installation:

Operating System	Microsoft Windows XP Microsoft Windows NT 4.0 (Service Pack 5 or 6) Microsoft Windows 2000 Microsoft Windows Millennium Edition Microsoft Windows 98 (1st and 2nd editions)
RAM	64 Mb (128MB recommended for large models)
Hard Disk Space	85 Mb

### Target Databases Supported by ERwin

Desktop Databases	SQL Databases
Microsoft Access	AS/400
Clipper	DB2 390
DBASE IV	DB2 UDB
FoxPro	HiRDB
Paradox	INFORMIX
	Ingres II
	InterBase
	ODBC Generic
	OpenIngres
	Oracle
	PROGRESS
	Rdb
	Red Brick Warehouse
	SAS
	SQL Anywhere
	SQLBase
	SQL Server
	Sybase
	Teradata
	WATCOM/SQL Anywhere

### Before You Install ERwin

Be sure to remove (uninstall) any previously installed copies of ERwin 4.x by using the Windows Add/Remove Programs feature on the Control Panel. When you see the InstallShield Wizard, choose Remove to uninstall all installed components of ERwin. Then proceed to install the new software.

### ERwin's Easy Installation Procedure

1. With Windows XP, Windows 98, Windows NT, Windows Millennium Edition, or Windows 2000 running, insert the CD in the CD drive.
2. If Autorun is enabled, you will be prompted to install. If autorun is disabled, click on the CD and double-click on Setup.exe.
3. A License Agreement appears for you to review. If you accept the terms as described in the License Agreement, select Yes. If not, select No and exit the installation process.
4. You are prompted to follow the instructions provided by the Install program. The installation program asks a series of questions you must answer, including:
  - Destination directory for the ERwin files
  - Product Registration

**Buddy Tip**—*The installation program notifies you when ERwin is installed successfully.*

### To register ERwin:

1. Go to the Windows Start menu and click on Programs. Then click CA Registration and choose RegisterIT from the menu.
2. When the RegisterIT Welcome screen appears, choose one of the registration options, and then click Next to begin the registration process.
3. Follow the steps on the screen until the process is complete.

### What's Next?

Now that you have installed ERwin, the road to database design and application development is just beginning . . . this book will guide you through ERwin's improved basic functions and new features.

The following chapters highlight ERwin's components and provide you with a clear idea of how to use them. You will soon see how the wide scope of ERwin's features combines with its ease of use to make ERwin an indispensable part of your organization.



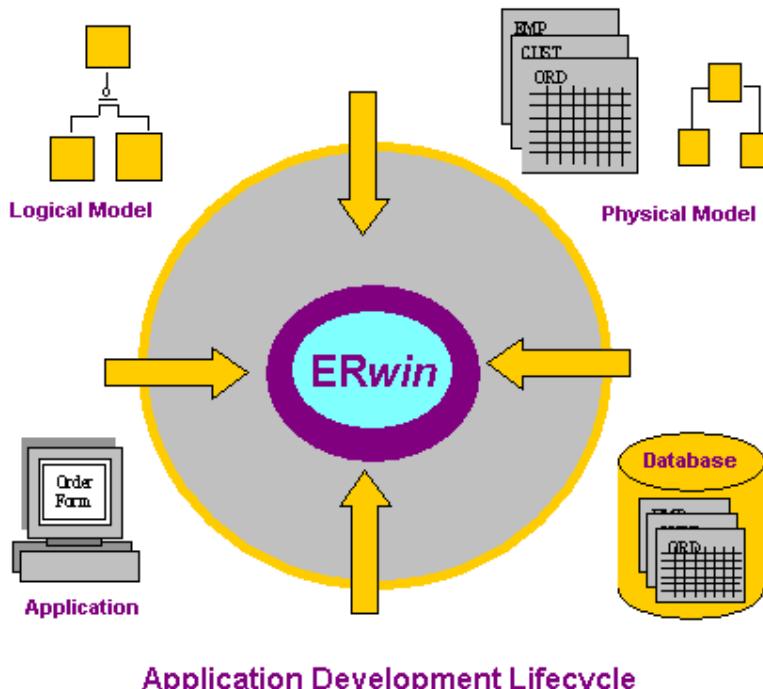
## Chapter 3

# ERwin's New And Advanced Features!

### Introducing Product Enhancements

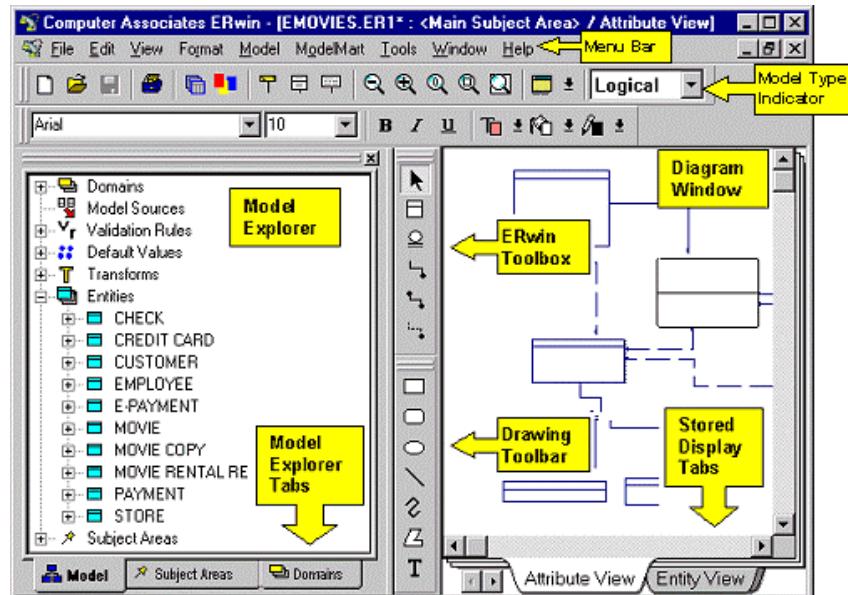
**W**hen database designers and information managers are asked for a “wish list” regarding requirements for their data modeling solution, in short what they ask for is a tool that supports the complete application development cycle. Typically, the cycle begins with the gathering of business rules and creating logical constructs and continues to the physical design phase followed by the implementation of a database that supports one or more applications. Clearly this is an iterative process.

For this reason, they want a tool that is flexible and easy to use. A tool that supports multiple platforms, reuse of objects, and the ability to synchronize changes between data models across their enterprise. ERwin delivers the usability and flexibility to support the application development process in new and dynamic ways.



## What's New In ERwin 4.0 or later?

Workplace and user interface enhancements in ERwin include a workspace with a Model Explorer, new and dockable toolbars, drawing objects, and a new menu structure. Also, you will notice improvements to basic ERwin modeling features such as Forward and Reverse Engineering and Complete Compare.



- The Diagram Window – Displays a graphical view of the data model.
- The Model Explorer – Provides a hierarchical text-based view of the data model that is displayed in the Diagram Window. By clicking on a Model Explorer tab, you can see different views of the model.
- ERwin Toolbars – All ERwin toolbars are dockable or free-floating. Toolbars contain task buttons, which you can use as shortcuts to quickly perform common ERwin tasks. When ERwin is running, simply place the cursor over each toolbar button to describe the task it performs.
- Stored Display Tab – By default, every ERwin data model has one Stored Display, which is named “Display 1”. You can rename “Display 1” and create other Stored Displays to customize the view of your data model.

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**NOTE:** In a Logical/Physical model, you can easily toggle between the logical model and the physical model by selecting the model type from the option list on the ERwin toolbar.

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### Flexible Support Of Multiple Model Types

ERwin provides flexible support for multiple model types, allowing the data modeler or data analyst to work with the models best suited for his needs.

The available choices are:

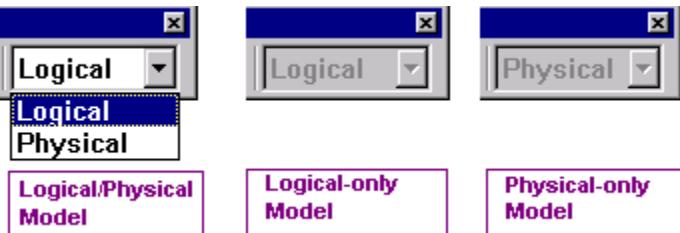
- Logical – A conceptual model that contains objects such as entities, attributes, and key groups.
- Physical – A database-specific model that contains objects such as tables, columns, and datatypes.
- Logical/Physical – Previously the standard ERwin model, a single model that includes both the logical and physical models.

#### Model Type Indicator

The Model Type Indicator on the ERwin Toolbar identifies the current model's type.



The Model Type Indicator can be switched between Logical and Physical only for a logical/physical model. For a logical-only or physical-only model, the model type appears dimmed in the Model Type Indicator list and cannot be switched.



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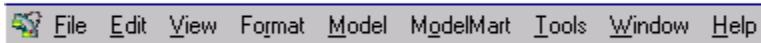
NOTE: A Dimensional Model is a physical data model that represents the facts and dimensions of a business process in a star schema diagram. Typically, Dimensional Modeling (DM) notation is selected to represent objects in a data warehouse model. For a Dimensional Model, the Model Type Indicator is set to Physical.

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### Adaptable Menu Structure

The ERwin menu structure adapts to reflect the options available to you:

#### Logical Menu



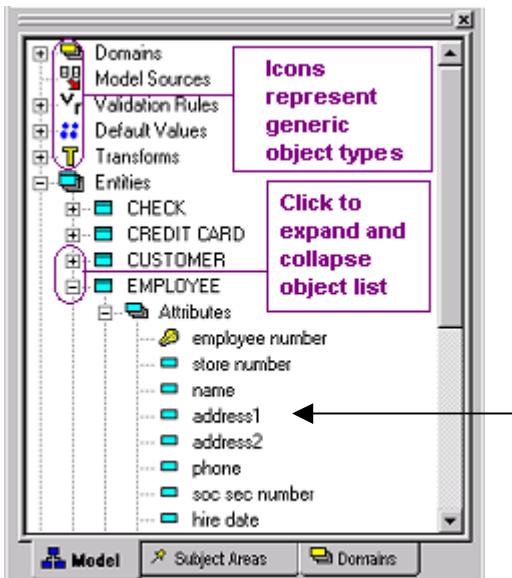
#### Physical Menu



NOTE: To help you find the new location of menu options, go to the Help menu and choose What's New. From the What's New list, click on Menu Structure Redesign.

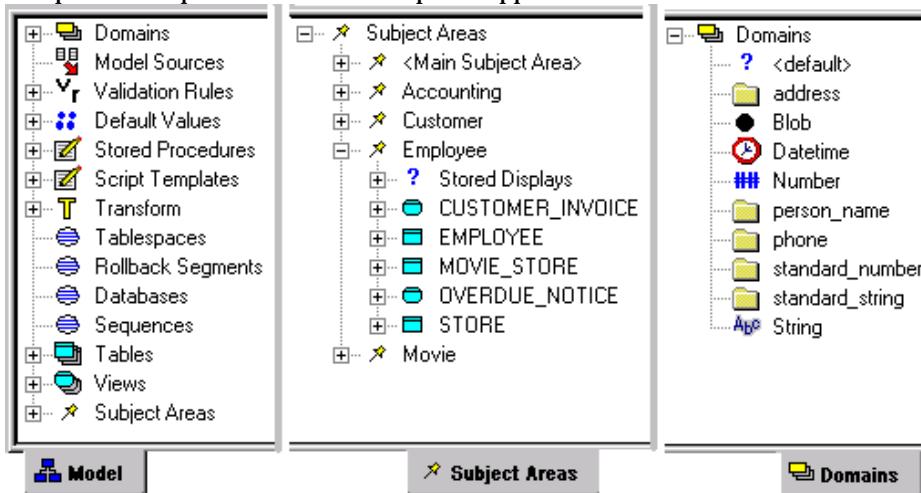
### The Model Explorer

The Model Explorer provides an organized, text-based view of your data model and its contents. It provides an easy one-click method for creating objects. The Model Explorer enables you to create, display, navigate, and modify your model using the Model, Subject Areas, or Domains pane.



Specific objects from your model appear under the generic object type.

To switch to a different pane, click the tab at the bottom of the Model Explorer. An example of each pane in the Model Explorer appears below.



### What Can You Do In The Model Explorer?

Just as you can work on a graphical view of a model in the Diagram Window, you can perform the same tasks from the Model Explorer using a text-based view of a model. When you make changes to an object in the Model Explorer, the graphical view of the model is immediately updated with the same change. For example, if you rename a table in the Model Explorer, the new table name replaces the existing table name in the diagram window and the relevant editors. Similarly, if you make a change to the diagram or in an editor, you will immediately see the change in the Model Explorer.

In addition to navigating, the Model Explorer provides a whole range of useful features that will help you easily create and modify your data model such as:

- Create new objects
- Rename existing objects
- Go to objects in the diagram window
- Open editors to view or change object properties
- Drag certain objects from the Model Explorer to create them in the Diagram Window
- Move, copy, and delete objects

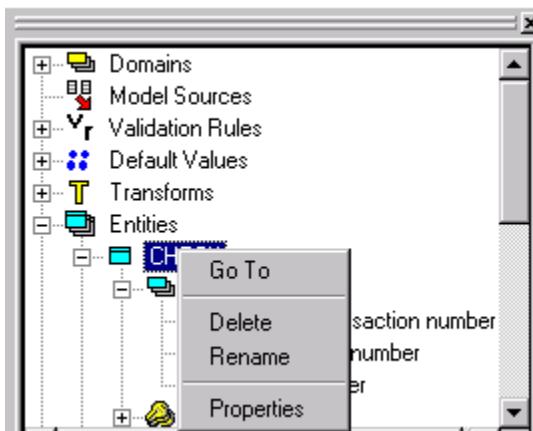
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NOTE: In order to work with the Model Explorer, the Model Explorer display option must be checked on the View menu.

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## Using The Model Explorer Context Menu

When you right click on an object in the Model Explorer, a context menu is displayed that lists the options available for that object.

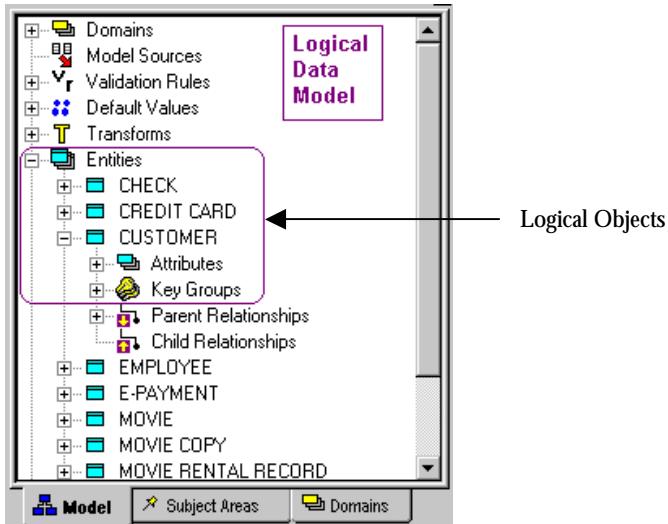


The object type determines which options are available on the context menu. On the context menu, choose:

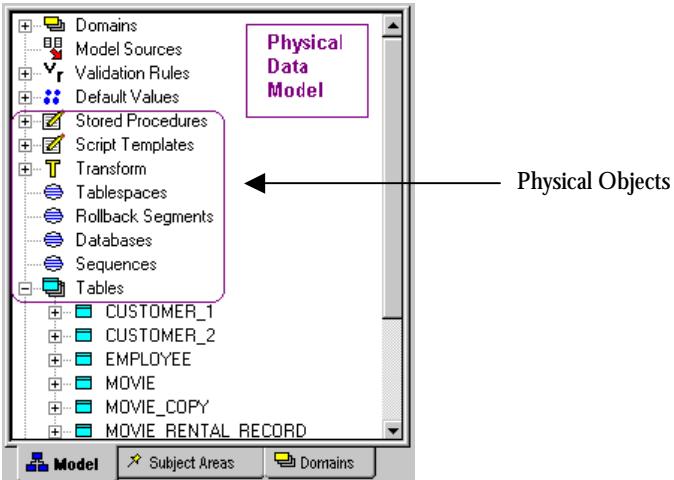
- New to create a new object
- Go To to go to the object in the Diagram Window
- Delete to remove the object from the data model
- Rename to edit the object's name in the Model Explorer
- Properties to open the editor for the object

## Model Pane

The Model pane of the Model Explorer lists all of the object types that appear in the current data model based on the model type and the target server. For example, if the model type is Logical, the Model Explorer does not include physical objects such as triggers, stored procedures, and database views.



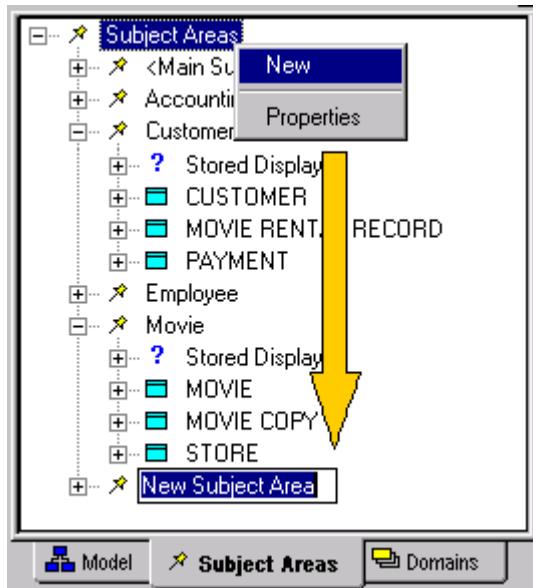
Similarly, if the model type is Physical, the Model Explorer may not include physical storage objects, such as a Tablespace, unless the target server supports that type of storage object.



### Subject Areas Pane

By default, every ERwin data model has a Main Subject Area, which includes all of the objects in the model. You can create other *subject areas* to divide the model into smaller manageable parts. In the Model Explorer, the Subject Areas pane displays model objects sorted by subject area. You can expand each subject area to see a list of the members of the subject area.

You can create a new subject area right in the Model Explorer. Just select the New option from the context menu. When an edit box appears at the bottom of the list, type the name of the new subject area in the box. To add members to a new subject area, drag entities or tables from the Main Subject Area into the new subject area.



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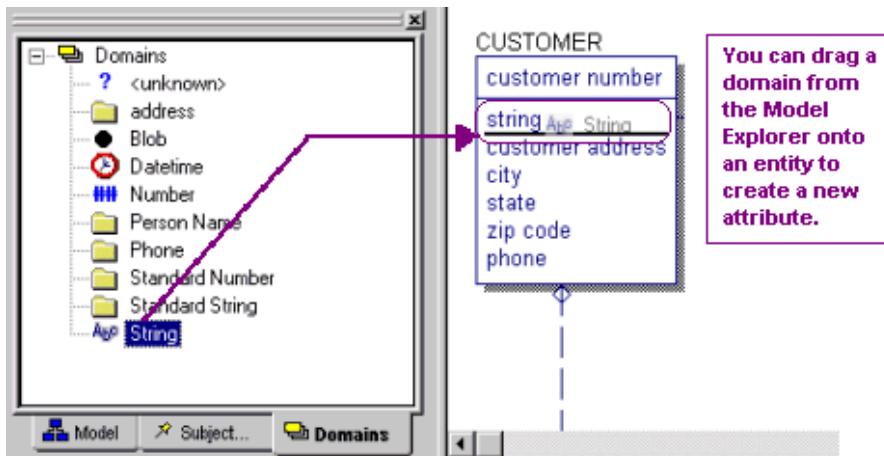
NOTE: Keep in mind, that subject area members just reference the objects in the Main Subject Area, so changes automatically apply to an object in every subject area in which it is a member.

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## Domains Pane

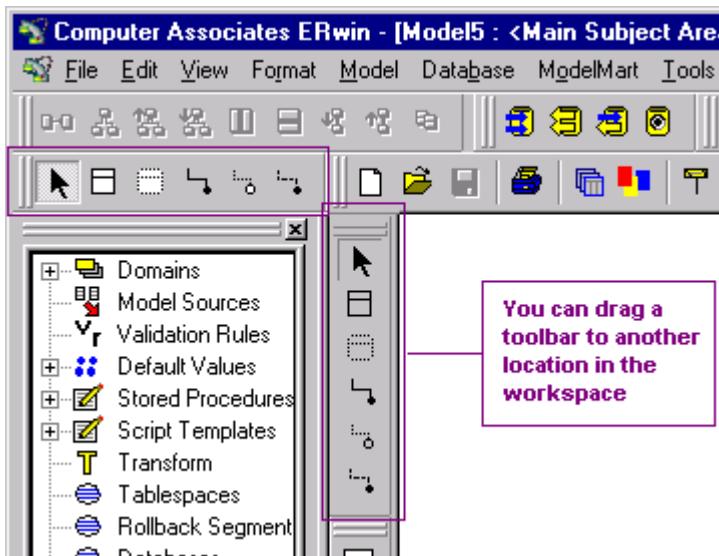
In ERwin, a *domain* is an object that helps to speed the creation of attributes and columns. A domain is similar to a template because it defines all of the properties that will be inherited by any attribute or column created from the domain. ERwin includes a set of default domains, which you can customize. You can also add new domains for your modeling purposes.

The Domains pane lists all of the Domains for the current model, which includes all of the default domains as well as any that you created. You can drag a domain from the Model Explorer right onto an entity to add an attribute or a column.

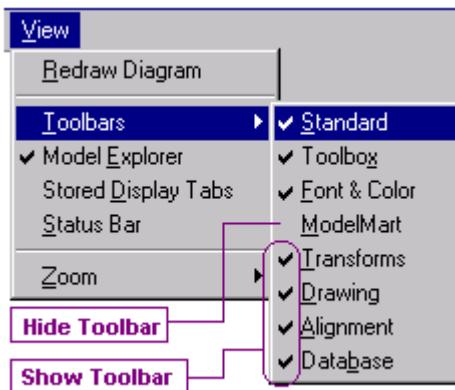


## Dockable Toolbars

All of the toolbars in ERwin are dockable. That means that you can drag them to any location in the workspace and they will dock along the edge of the window. Or, if you prefer you can let them float freely in the window.



Depending on your preferences, all of the toolbars may be shown or hidden. On the View menu, the Toolbars option lists all of the toolbars. Select (check) a toolbar to make it visible in the workspace and clear (unchecked) to hide it.




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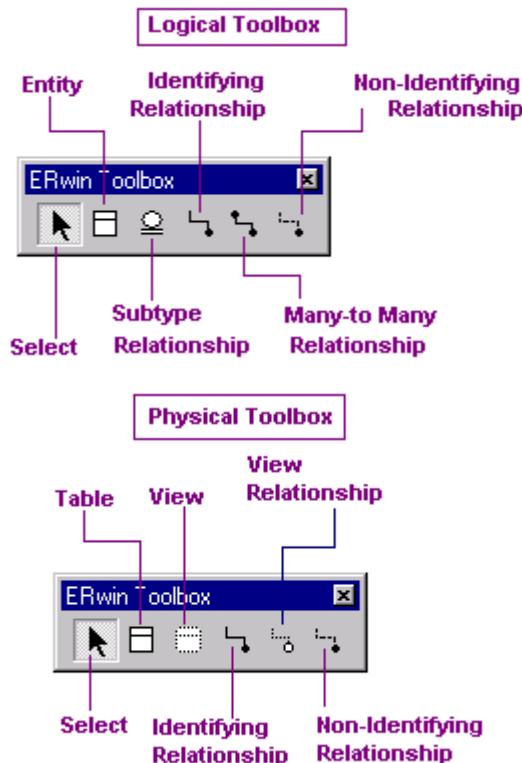
NOTE: For more information about all toolbars, go to the Help menu and choose Help Topics. Then search for Toolbar, overview.

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## ERwin Toolbox

The ERwin toolbox is the primary set of tools for drawing and editing a data model.

The toolbox changes based on the model type (logical or physical) and the notation (IDEF1X, IE, or DM) as shown below.



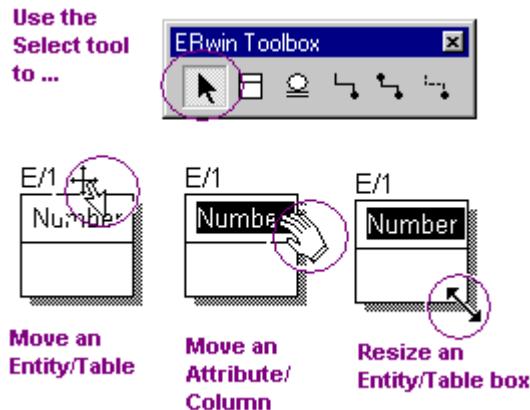
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NOTE: For more information about the IDEF1X, IE, and DM notation, from the Help menu, choose Help Topics, and search for Notation. To choose the notation for a data model, from the Model menu, choose *Model Properties* and click the Notation tab.

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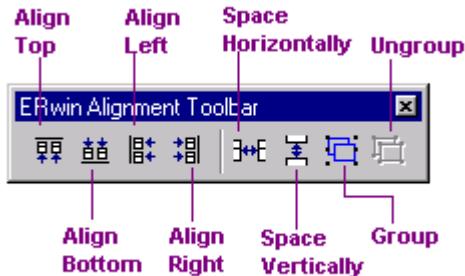
## Selecting, Moving, And Resizing Objects

In the ERwin Toolbox, the new Select tool is used for moving objects and resizing entity and table boxes. The cursor changes shape for each task so that you know what action will be performed.

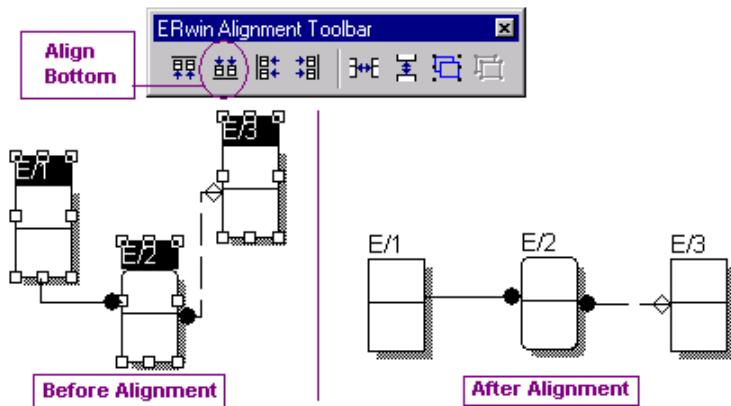


## Alignment, Spacing, And Grouping Tools

The appearance of your data model is important to you and the others who use it. ERwin has many features that help you enhance the appearance of your model. The tools on the Alignment Toolbar speed the process of graphically arranging and grouping model objects.

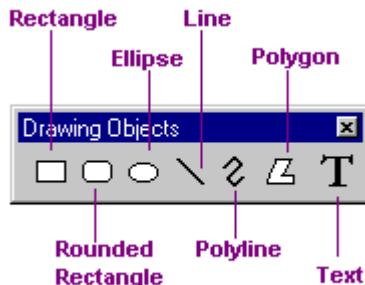


You can select multiple diagram objects, and space them to your preference. Similarly, the Group tool lets you group multiple diagram objects for easy manipulation.

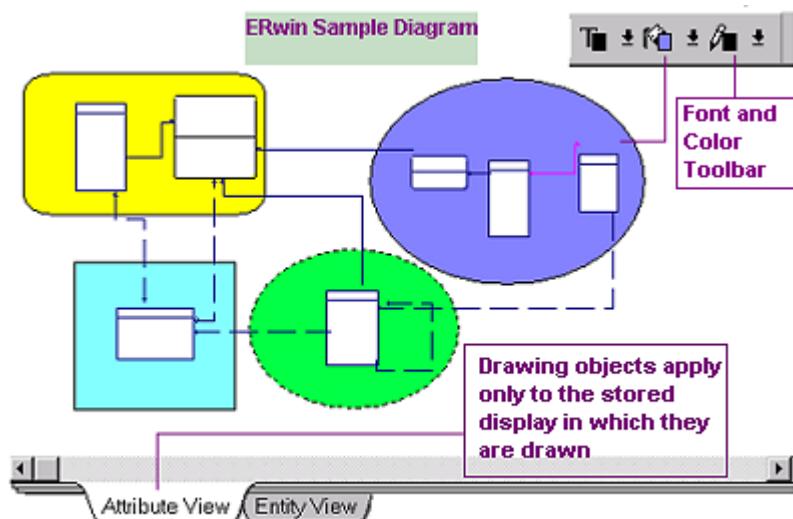


## Drawing Tools

The Drawing Objects toolbar includes a set of drawing tools that you can use to add text and objects to enhance the meaning of your data model. The tools work like many other popular point-and-click drawing applications. Just click on a tool, click in the diagram window and drag the mouse until the object is the right size.



After you add a drawing object, you can use the font and color toolbar to add color to the objects.



**Buddy Tip**— You can assign default font and color settings for drawing objects. From the Format menu, choose Default Fonts and Colors. Click the Drawing Objects tab on the Default Fonts and Colors editor to select the default setting for drawing objects.

### What's Next?

You have just skimmed the surface of ERwin's capabilities. But now that you are becoming acquainted with ERwin's features, you are ready for an in-depth exploration. The following chapter explains how to take advantage of the latest modeling techniques that help optimize your data models while managing the impact of design changes throughout your organization.

## Introducing Product Enhancements

## Chapter 4

# Putting ERwin To Work!

### Working With Data Models

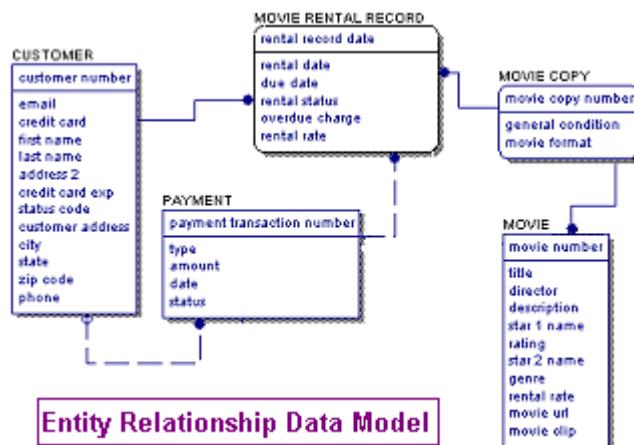
This chapter walks you through some very basic ERwin features and provides an opportunity for you to become familiar with the ERwin landscape. In this chapter you will be creating and editing ERwin data models. Before you begin exploring the workspace, you'll learn about the basic data modeling concepts and objects such as entities, attributes, and relationships.

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NOTE: If you are already familiar with these concepts, you can skip ahead to the section titled "Creating A Data Model".

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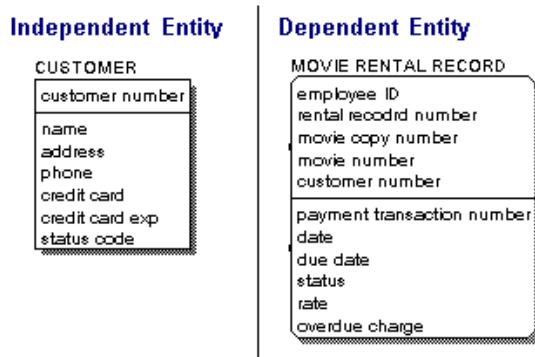
As its name implies, an Entity-Relationship data model, uses entities and relationships to represent the logical structures that will eventually become the physical tables in a database. ERwin uses a box with a horizontal line to depict an entity and solid or dashed connecting lines to depict a relationship between two entities.



### What Is An Entity?

An *entity* is a person, place, or thing about which an organization maintains information. In the logical model, an entity usually corresponds to a table in the physical model. Two types of entities/tables can be drawn in an ERwin data model: *independent* and *dependent*.

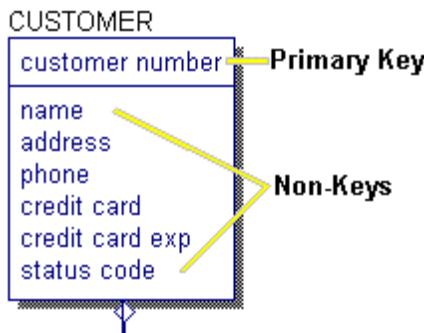
For example, an independent entity is an entity whose instances can be uniquely identified without determining its relationship to another entity. It is represented as a box with square corners. A dependent entity is an entity whose instances cannot be uniquely identified without determining its relationship to another entity or entities. It is represented as a box with rounded corners.



### What Is An Attribute?

Once you have discovered the people, places, and events that define the entities in your model, you can begin to define the *attributes* for each entity. For example, once you create the CUSTOMER entity, you can begin to define the individual pieces of information you want to track for each customer, including Name, Address, and Phone Number. In the logical model, each of these pieces of information is saved in ERwin as an attribute of the CUSTOMER entity. In the physical model, attributes equate to columns in a table.

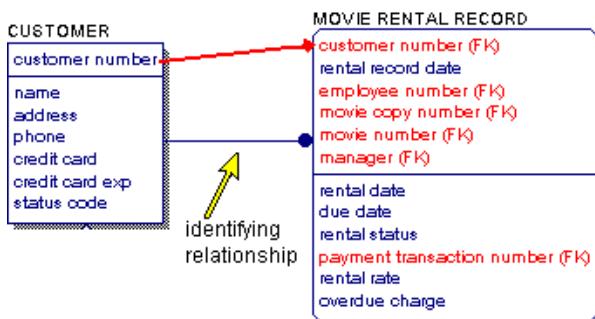
The area above the horizontal line is known as the key area because that is where the entity's primary key resides. The primary key may be comprised of one or more attributes that uniquely identify the entity. The area below the horizontal line is known as the non-key area because that is where all other attributes reside.



When you add an entity, ERwin determines the entity type based on the relationship in which it is involved. For example, when you initially place an entity in a model, it is represented as an independent entity. When you connect the entity to another entity using a relationship, ERwin determines if the entity is independent or dependent based on the relationship type.

### What Is A Relationship?

In an ERwin data model, a *relationship* shows an association between two entities or tables. ERwin represents a relationship as a line connecting two entities or two tables. Depending on the notation you choose, the symbols at either end of the line may change. The diagram below shows the relationship between the CUSTOMER entity and the MOVIE RENTAL RECORD entity using Integration DEFinition (IDEF1X) notation.



## What Is A Foreign Key?

When you create a relationship between entities, ERwin automatically *migrates* the primary key attribute(s) of the parent entity, to the child entity. The designator (FK) indicates the name of the migrated key attribute, also known as a foreign key. This migration occurs automatically in the physical model.

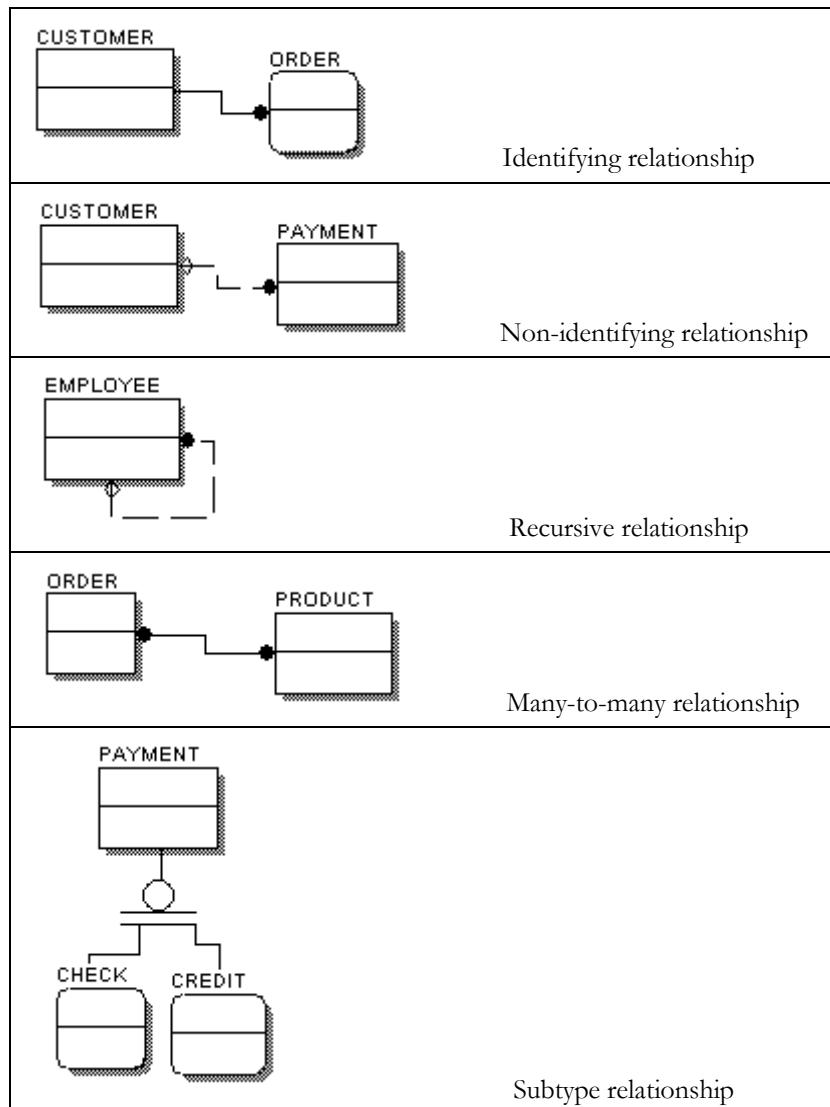
In an identifying relationship, the FK migrates above the line and becomes part of the primary key of the child entity. In a non-identifying relationship, the foreign key migrates below the line and becomes a non-key attribute in the child entity. In ERwin, a dashed line represents a non-identifying relationship.



**Buddy Tip**— If you want a non-key to migrate instead of the primary key, you can use the alternate key migration option. For more information, search for “Alternate Key Migration” in the Online Help system.

## Other Relationship Types

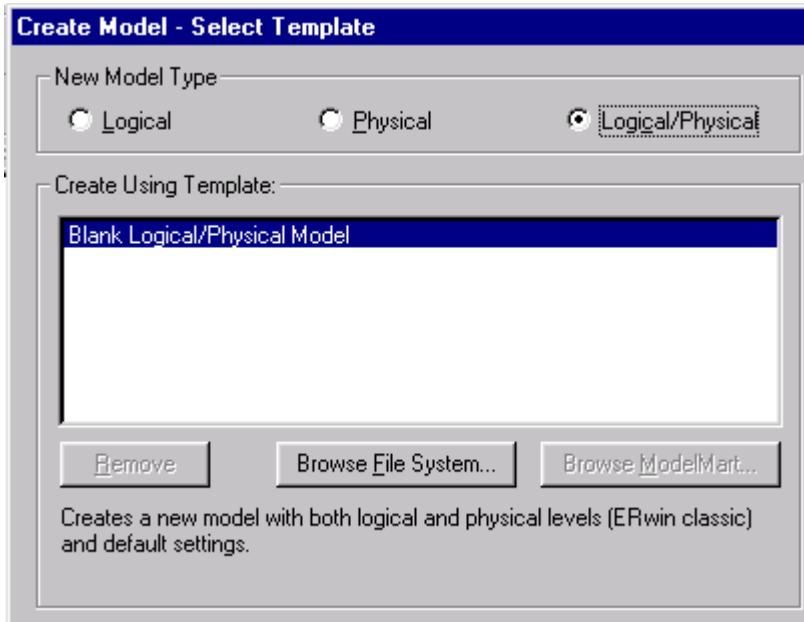
In addition to identifying and non-identifying relationships, you can also create other relationships in ERwin, as shown below:



### Creating A Data Model

To create a new logical/physical model, follow this easy step:

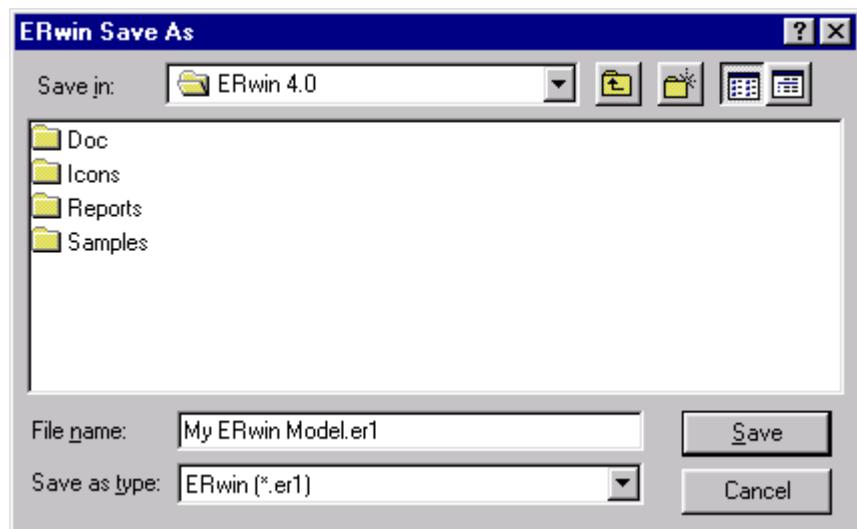
1. From the ERwin File menu, choose New. The following dialog appears:



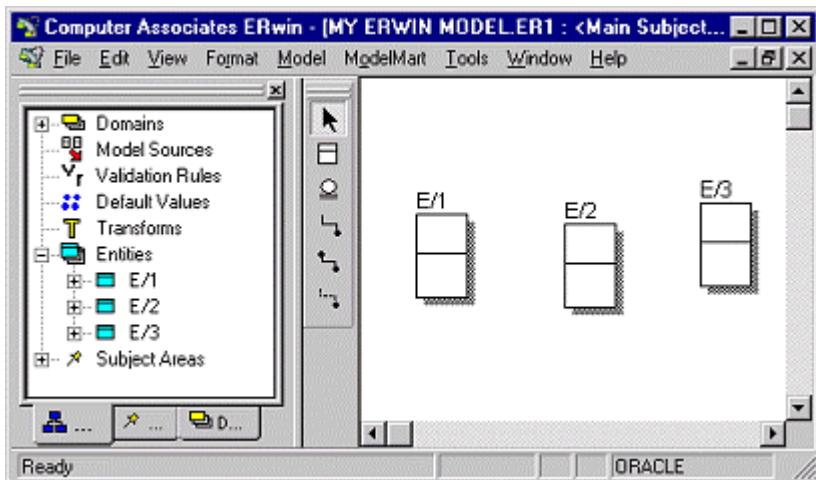
2. In the New Model Type group box, select Logical/Physical. For the purpose of this exercise, we use the default template, Blank Logical/Physical Model, and the default target database, Oracle 8.x, for the physical side of the model.
3. Click OK. ERwin opens a new Diagram Window.

### To Add Entities

1. Locate the ERwin toolbox and click on the Entity tool . Then click anywhere in the Diagram Window to place the first entity. By default, this entity is named E/1.
2. Repeat until two more entities appear in the diagram window (they are named E/2 and E/3).
3. At this point, you should save your data model. From the File menu, choose Save As. In the ERwin Save As dialog, name the model by typing “**My ERwin Model**”. ERwin adds .er1 as the file extension for data models.



4. Click Save to return to the Diagram Window. The name you typed in the ERwin Save As dialog appears in the ERwin title bar. Your data model should look like this:



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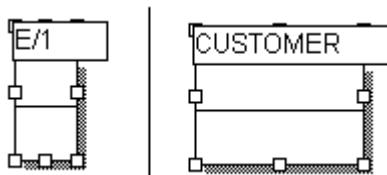
NOTE: Notice that the entities that you created in the Diagram Window also appear in the Model Explorer because ERwin automatically synchronizes both areas of the workplace.

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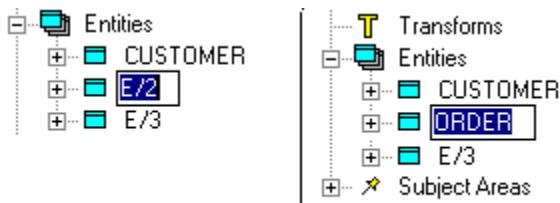
### To Name Entities

You can name an entity by typing directly in the Diagram Window or in the Model Explorer. The following procedure uses both methods:

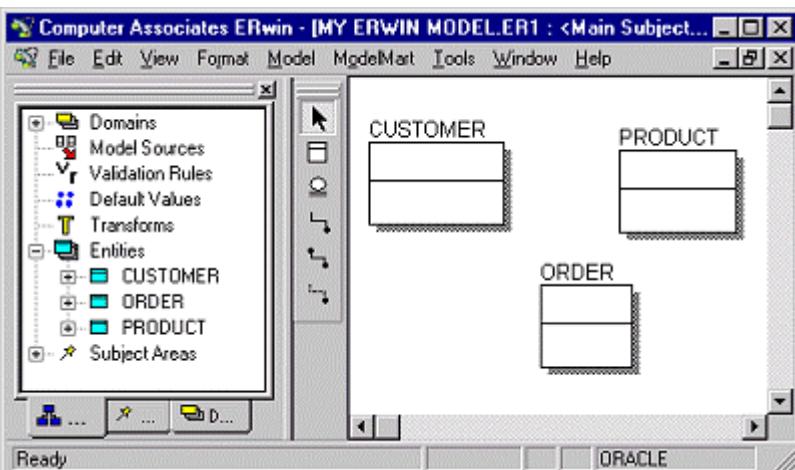
1. In the Diagram Window, locate the entity named E/1. Click once on the entity's name, wait briefly, and then click again. An edit box appears around the name. Type CUSTOMER over the default entity name and click the mouse once outside of the edit box.



2. In the Model Explorer, right-click on E/2, and from the context menu, select Rename. Type ORDER over the default entity name and click the mouse once outside of the edit box.



3. Using the method that you prefer, rename the last entity PRODUCT. When you're done, your diagram should look like this:



### To Add Attributes

You can also add attributes to the entities directly in the Diagram Window or in the Model Explorer. We will try both methods in the following exercise.

1. In the Diagram Window, click in the CUSTOMER entity box and press the Tab key. An edit box appears below the entity name with the default name, Attribute Name.

## Working With Data Models

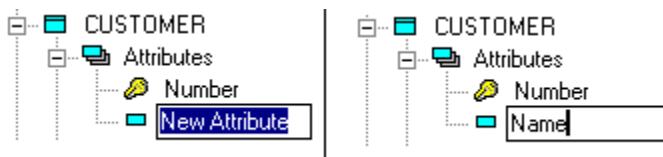
- To add the first attribute, which is the primary key, type Number directly over the default name. Then click the mouse outside of the edit box.

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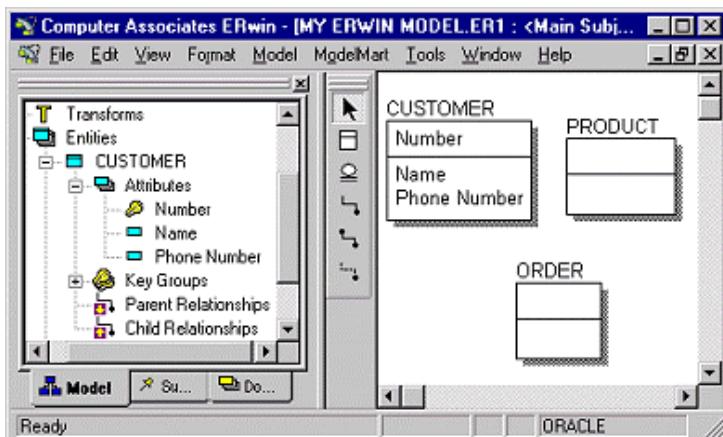
NOTE: To add another primary key, press Enter and the edit box will appear above the line in the entity. To add a non-key, press Tab and the edit box will appear below the line in the entity.

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- Now, to add an attribute in the Model Explorer, click on the plus sign next to CUSTOMER to expand the object list. Right-click on Attributes and choose New from the context menu. A New Attribute edit box appears under Number. Type Name in the edit box and when you're done click the mouse once outside of the edit box.



- Using the method that you prefer, add Phone Number as a non-key attribute in the CUSTOMER entity. When you're done, your diagram should look like this:

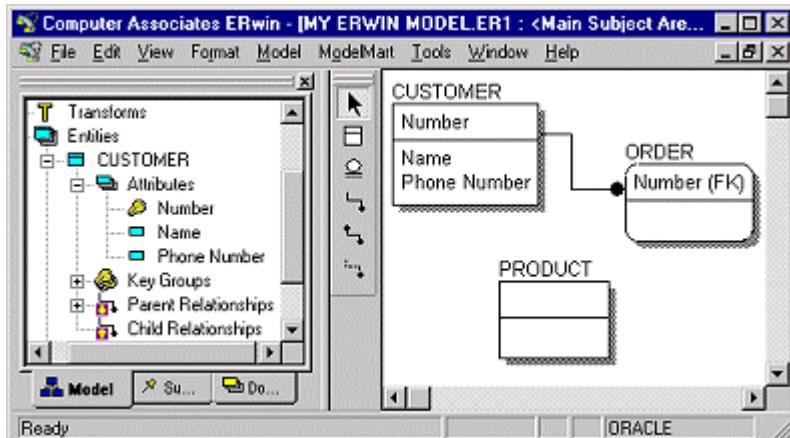


**Buddy Tip**— To designate an attribute as a primary key, in the Model Explorer, double-click on the attribute's name to open the Attributes editor. In the General tab, select (check) the Primary Key box. You can also assign other properties to the attribute such as datatype and domain.

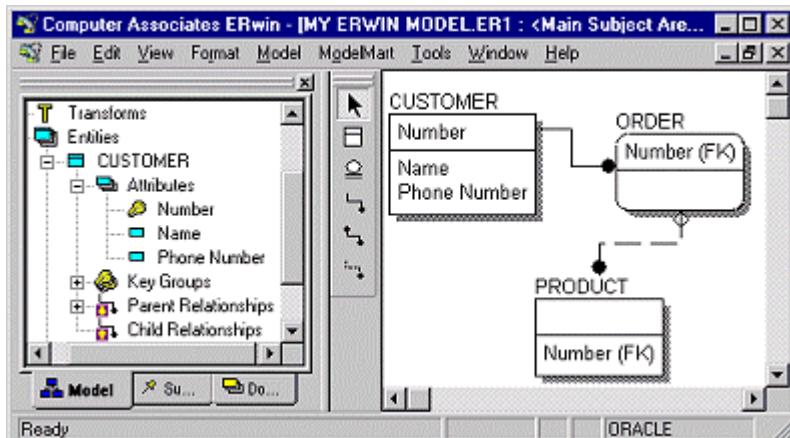
## To Add Relationships

In the following exercise, we will add two relationships an identifying relationship between CUSTOMER and ORDER and a non-identifying relationship between ORDER and PRODUCT.

1. In the ERwin toolbox, click the Identifying Relationship tool .
2. In the Diagram Window, add an identifying relationship between CUSTOMER and ORDER by clicking the CUSTOMER entity to designate it as the parent. Then click ORDER to designate it as the child entity. Your model should look similar to this:



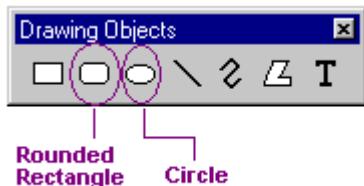
3. In the ERwin Toolbox, click the Non-identifying relationship tool . To add a non-identifying relationship between ORDER and PRODUCT, click ORDER and then click PRODUCT. Your model should look similar to this:



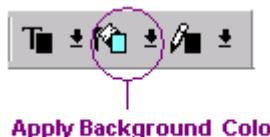
### Enhance Your Data Model

You can add drawing objects to a data model to enhance it or to provide meaningful annotations. In the following exercise, you will add a blue rectangle, a yellow circle, and some text.

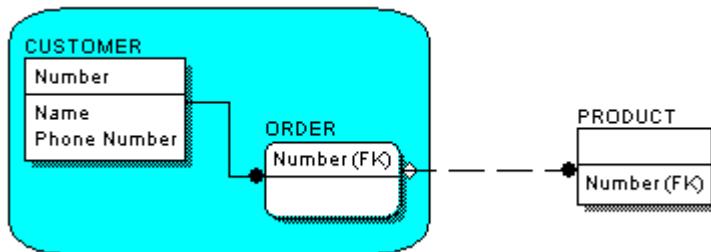
1. With My ERwin Modeler1 open, on the Drawing Objects toolbar, select the Rounded Rectangle tool.



2. Draw a rounded rectangle around CUSTOMER and ORDER.
3. On the Font and Color toolbar, click the arrow on the Apply Background Color tool.



4. Choose any blue color, which will be applied to the background of rectangle.



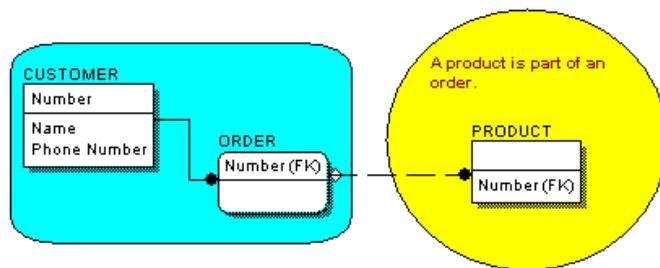
5. Repeat steps to draw a yellow circle around PRODUCT.
6. Double-click on the yellow circle to open the Drawing Objects dialog.

## Working With Data Models

7. Click the Text tab and type **A product is part of an order.** in the box.



8. Click the Text Properties tab and select any dark color for the text. Click OK to close the dialog and see the text in the circle. This is just an example of how you can use drawing objects to enhance your data model.

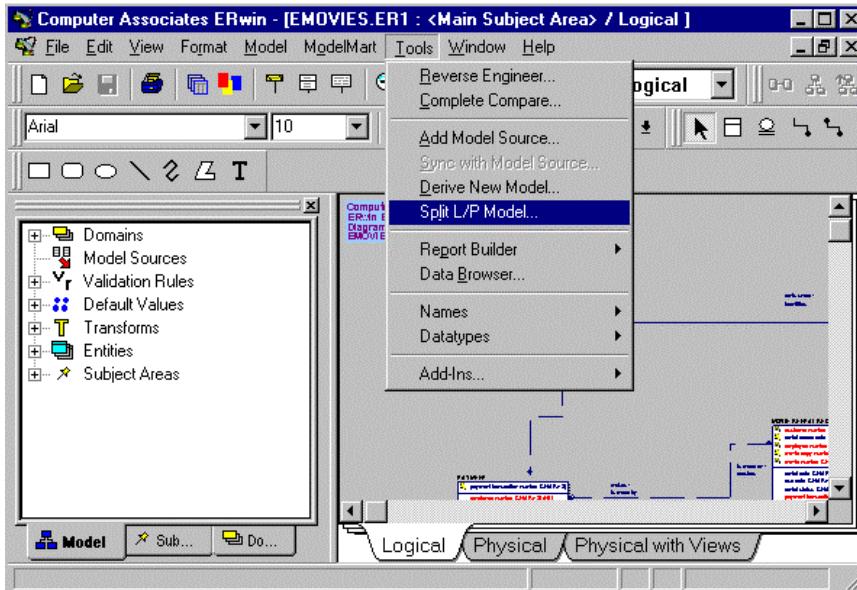


9. Save your work and close your model.

### Splitting A Logical/Physical Data Model

The following exercise shows you how to divide a single logical/physical model into two separate models – logical-only and physical-only.

1. From the File menu, open the emovies.er1, which is installed with ERwin in C:\Program Files\Computer Associates\ERwin 4.x\samples\standard directory.
2. When emovies.er1 opens, from the Tools menu select Split L/P Model.

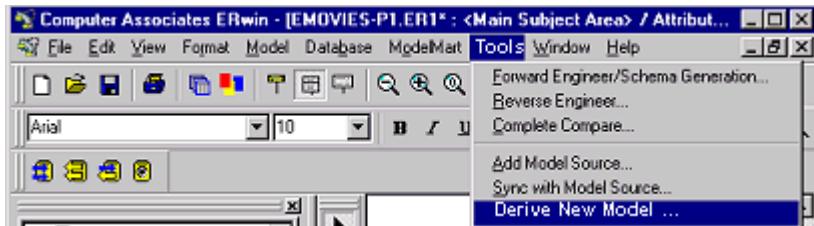


3. When the split model process completes, ERwin prompts you to save first the logical model, then the physical model. Save the logical model as *emovies-L1.er1*. Save the physical model as *emovies-P1.er1*.
4. After you save the models, close all other models except *emovies-P1.er1*, which you will use for the next exercise.

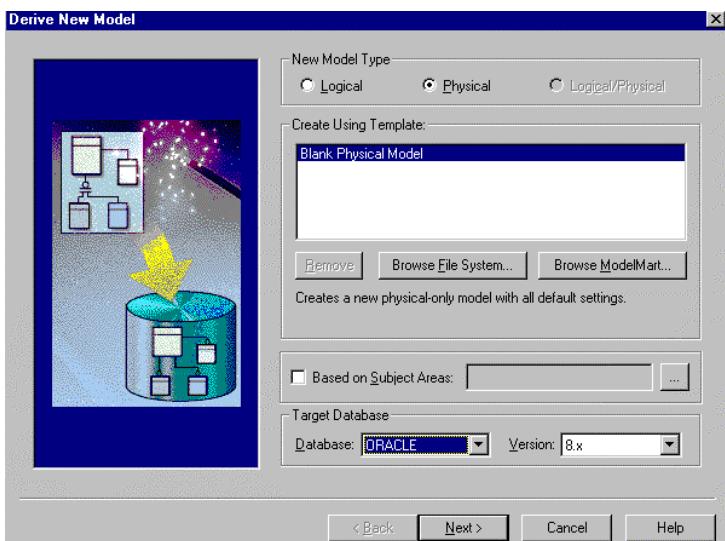
### Derive A New Model

Use the Derive Model Wizard to derive a new ERwin model from an existing ERwin model and transition from one design layer to another.

1. With emovies-P1.er1 open, from the Tools menu, select Derive New Model.

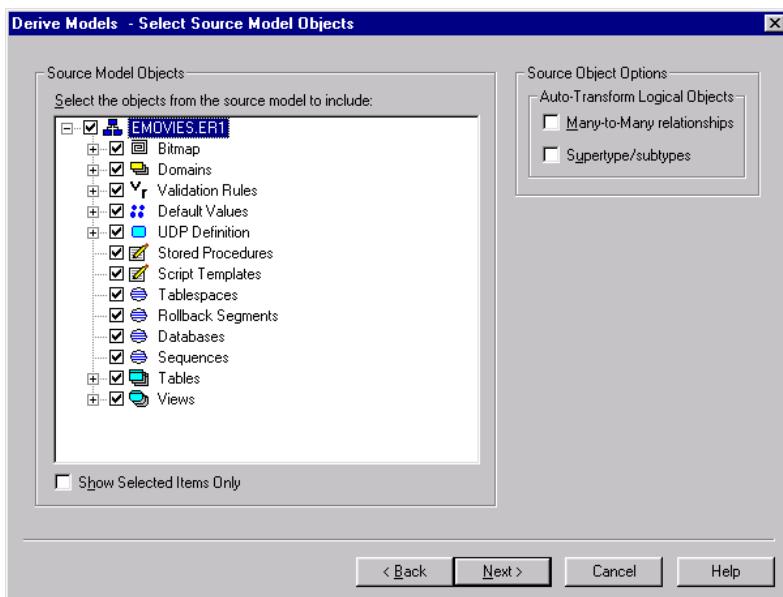


2. In the first page of the Derive New Model Wizard, in the Model Type group box, select Physical. In the Create Using Template box, accept the default template, Blank Physical Model. In the Target Database list, choose Oracle version 8x. Click Next.

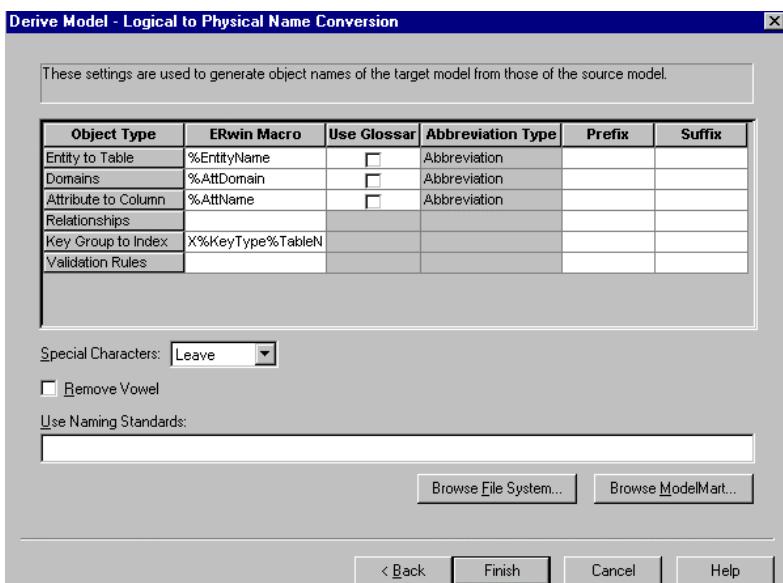


## Working With Data Models

3. On the second page, accept the default settings in which all objects are selected.



4. On the third page, also accept the default settings and click Finish.

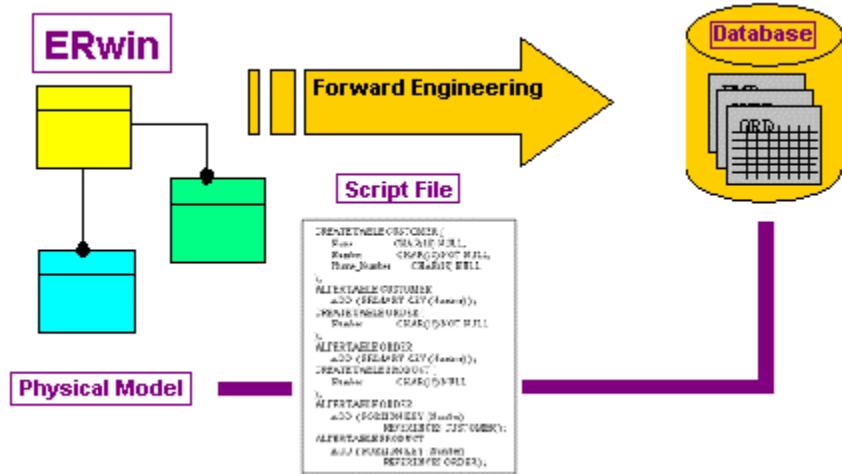


5. You have created a new physical model. Save the new model as emovies-P2.er1 and close both models.

## Forward Engineering

When you have a physical data model, ERwin automatically generates the schema for the target server as you build the model. *Forward Engineering* is the process that ERwin uses to transfer the schema from the data model to the target server.

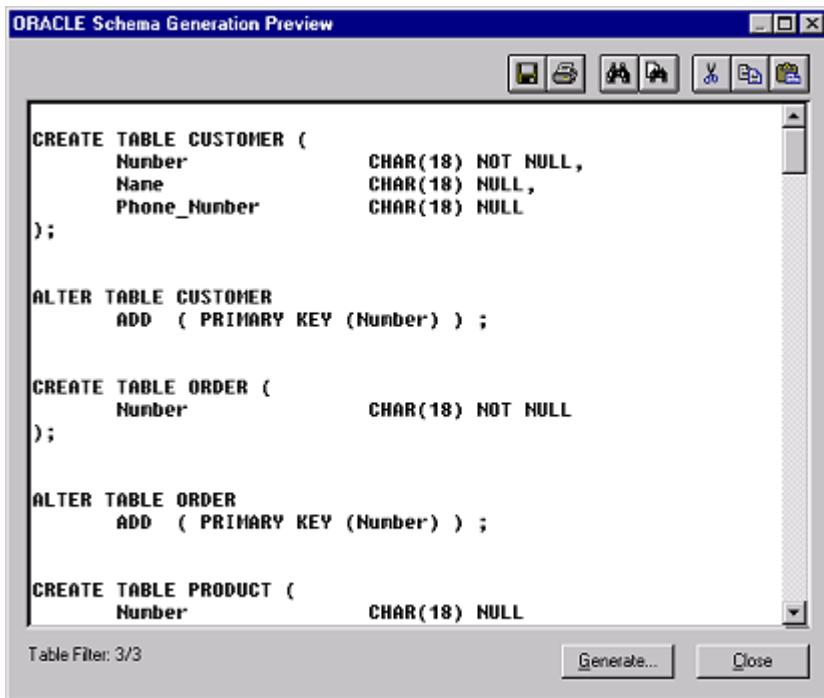
When you forward engineer a data model, you can choose to generate a script file, which you can use to update the database using a database administration tool or you can forward engineer by directly connecting to the database catalog. Either way, ERwin does the majority of work for you by generating the script for your target server.



Before you forward engineer, you can view the *schema*, which is a text-based representation of the database objects that will be created in the database from the script. ERwin uses the data definition language (DDL) for the target database to write the script. Each time you add an object or property to your data model, ERwin automatically updates the script file to reflect the change to the data model.

### To Preview The Script File

1. From the File menu, choose Open and locate *My ERwin Model.er1*, which you saved in a previous exercise.
2. When *My ERwin Model.er1* opens, using the Model Type Indicator, switch to the Physical model. Then from the Tools menu, choose Forward Engineer/Schema Generation.
3. When the Oracle Schema Generation dialog appears, click the Preview button at the bottom of the dialog. The Oracle Schema Generation Preview dialog appears.



4. When you are finished previewing the schema, click the Close button to return to the Oracle Schema Generation dialog.

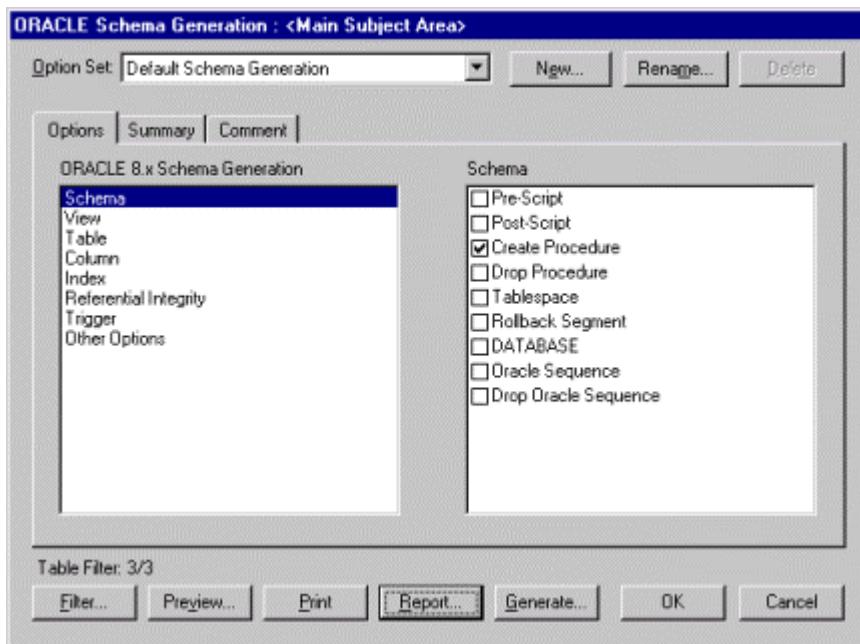
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NOTE: By default, the target server is Oracle. To change the target server, with a physical data model open, go to the Database menu and select Choose Database. Click the button next to the target server and select the version from the list.

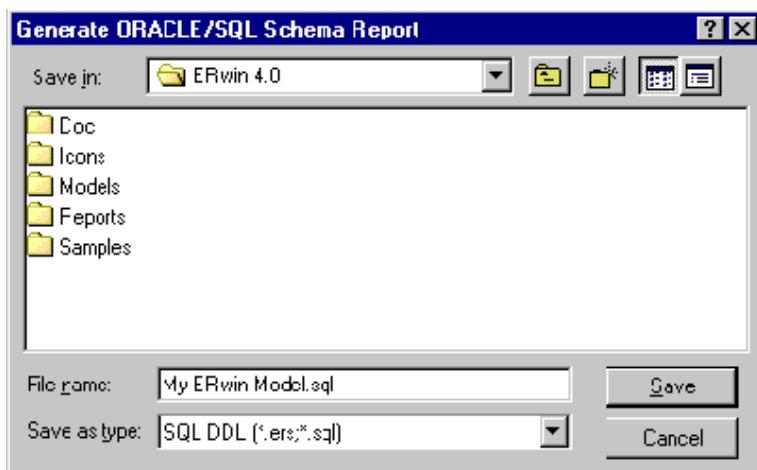
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### To Generate The Script File

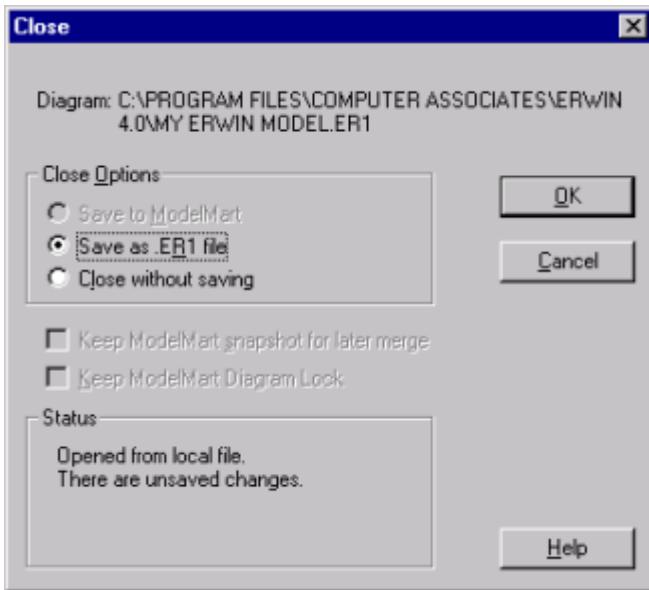
1. In the Oracle Schema Generation dialog, click the Report button at the bottom of the dialog.



2. In the Save As dialog, in the File Name box, type **My ERwin Model.sql** and click Save.



3. From the File menu, choose Close. When the Close dialog appears, choose the Save As .ER1 file option and then click OK. ERwin saves and closes My ERwin Model.ER1.



### What's Next?

By this time you have a better idea of the basic features that ERwin offers, and how they interact. The next chapter takes you to a new level of achievement: you will perform reverse engineering and compare the changes between a script file and a data model.

Chapter 5

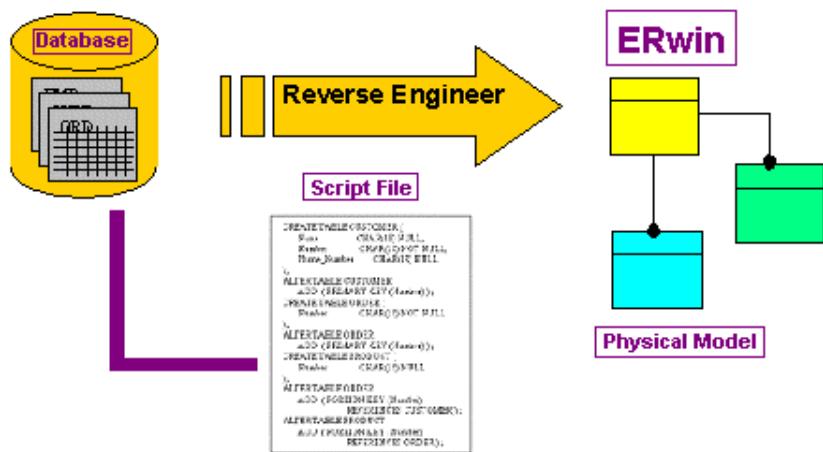
# Jump Start Your Data Design Process!

## Use Existing Data To Build A New Model

You are now familiar with how ERwin helps you create a model from scratch or from an existing model using the Split Logical Physical and Derive New Model features. In this chapter, we will explore how to create a data model by *reverse engineering*, which is a process that takes advantage of an existing database to speed the design of a new data model and the subsequent delivery of new systems.

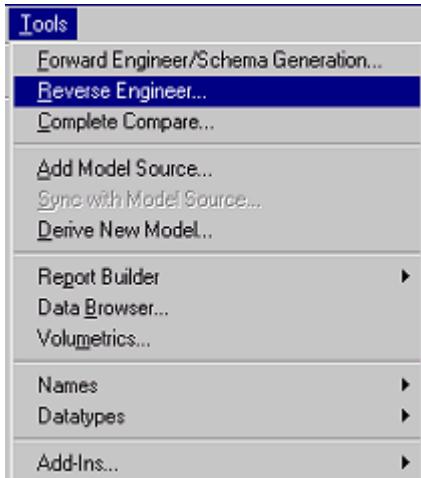
# Reverse Engineering

When you have an existing database from which you want to create a data model, ERwin lets you reverse engineer the database schema, which is converted by ERwin into a graphical representation of the database structures. The process of reverse engineering saves considerable time because ERwin does the work of creating the data model directly from the database.

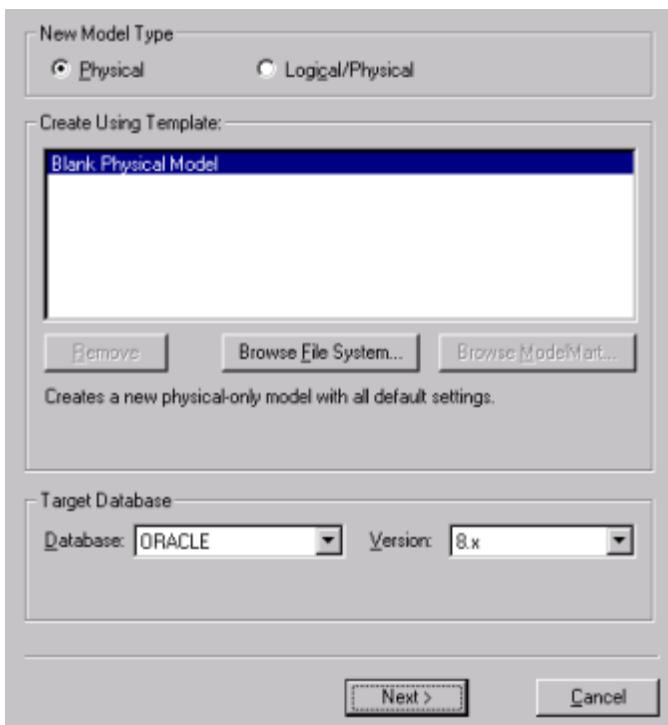


### Using The Reverse Engineer Wizard

1. From the Tools menu, choose Reverse Engineer.

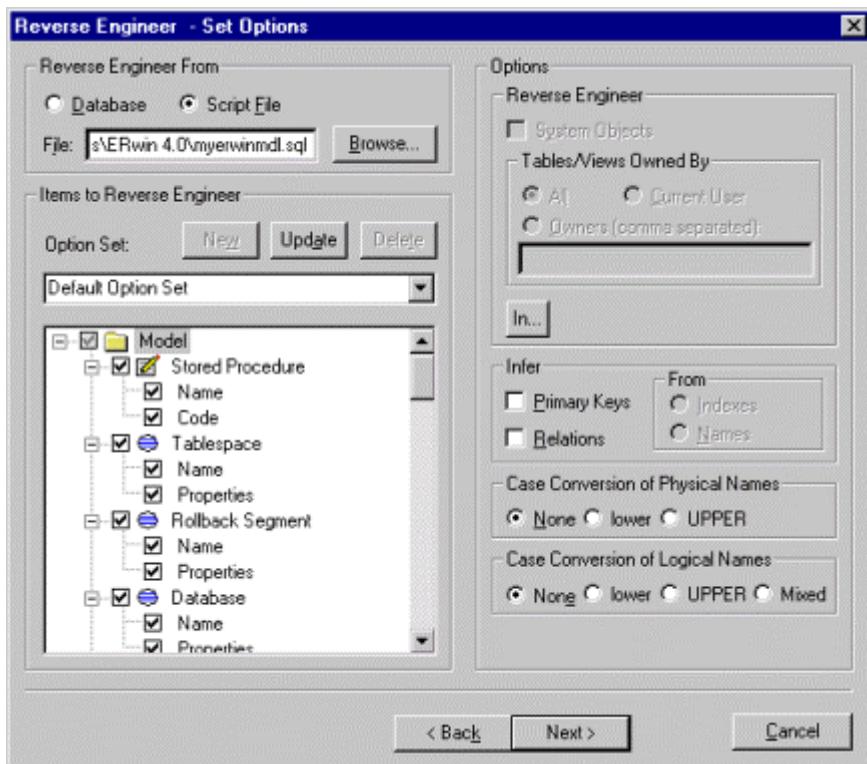


2. In the dialog, select Physical as the New Model Type, select Blank Physical Model as the template, and Oracle 8.x as the target database.



## Use Existing Data To Build A New Model

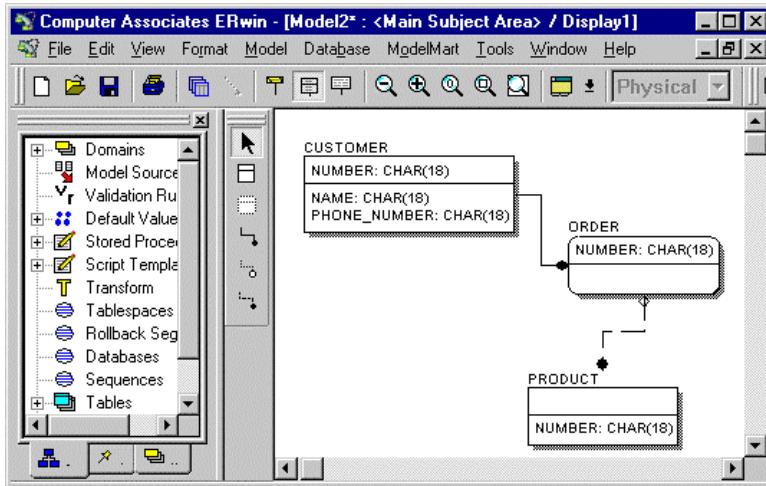
3. Then click Next. The Reverse Engineer Set Options dialog box appears:



4. In Reverse Engineer From, select Script File and then click Browse to locate the *MyERwin Model.sql* file that you saved in the previous chapter. For the purpose of this exercise, accept the default options in the remaining areas of the dialog and then click Next.

## Use Existing Data To Build A New Model

5. You will see a small dialog with text that describes the database structures that ERwin is reverse engineering. When the process ends, a new data model appears in the Diagram Window.



6. From the File menu, choose *Save* and save this model as *My ERwin Model.ER1*. When asked if you want to replace the existing file, click Yes.

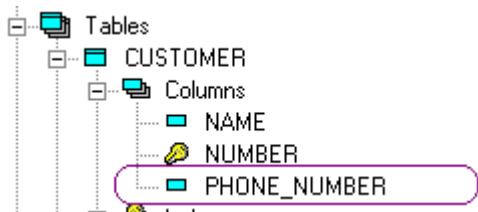
### Using ERwin's Complete Compare

Many say that the most valuable tool in ERwin is *Complete Compare*. This trademark technology helps you easily compare and synchronize changes between a data model and its related database or another data model. If you prefer, you can use a SQL script file generated from the database or connect directly to the database catalog.

Using a step-by-step approach, ERwin guides you into selecting the objects and properties that you want to compare and filters out those that you do not want to see. Then, it presents the differences in a side-by-side workspace in which you can selectively import or export changes. It's that simple to keep your data model and database synchronized.

The section that follows describes how to use *Complete Compare* to import and export changes between the data model and the database script file.

1. From the File menu, choose Open and locate *My ERwin Model.er1*.
2. In the Model Explorer, click the plus sign to expand Tables. Next, locate the CUSTOMER table and expand it. Then, expand the columns under CUSTOMER and locate the phone\_number column.

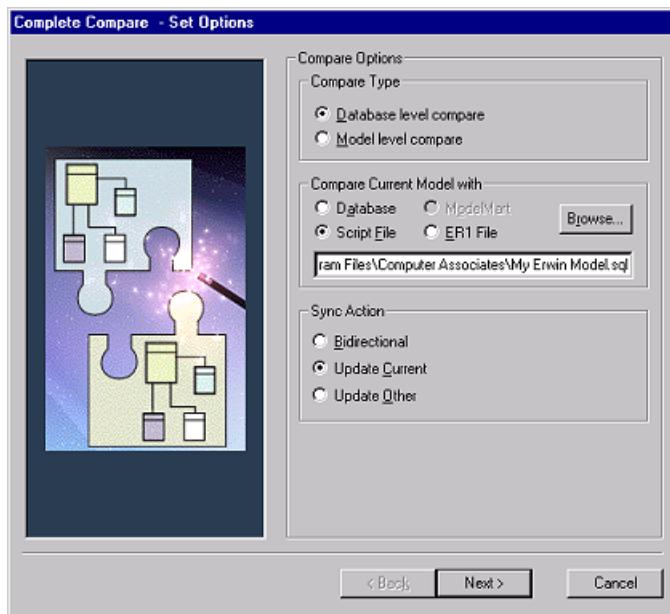


3. Right-click on phone\_number and select Delete.
4. Keep the model open.

## Use Existing Data To Build A New Model

To compare the differences in the model:

1. From the Tools menu, choose Complete Compare. The Complete Compare – Set Options dialog appears:
2. In the Compare Type group box, select Database Level Compare.
3. In the Compare Current Model With group box, select Script File and click Browse and locate *My ERwin Model.SQL*
4. In the Sync Action group box, select the default Update Current and click Next.



5. In the Items to Compare page, accept the default selection (all objects) and click Next.
6. On the Object Filter Options page, accept the default selection and click Next. At this point, ERwin begins to process the Script File.
7. On the Other Model Filter Options page, accept defaults, click Next.
8. On the Resolve Differences page, two trees appear next to each other. They represent the differences that ERwin finds between the current model and the script file. The left tree is named "My ERwin Model" and the right tree is labeled "MyERwinModel.SQL."

## Use Existing Data To Build A New Model

To resolve and synchronize the differences between the model and the script file:

1. On the Resolve Differences page, review the differences between the model and the SQL script.
2. In the right tree, locate the CUSTOMER table and select the Phone\_Number column by clicking on the line to highlight it.
3. Click the Import button on the right side of the dialog. Then click Next.
4. Click OK when prompted to import and apply the changes that you selected to the model.
5. In the Model Explorer, verify that *phone\_number* was re-added to the model after previously being deleted.
6. Close and save the model before you exit.

### What's Next?

The next chapter describes the ERwin Report Template Builder and explains how you can use this tool to quickly create reports about your model.



## Chapter 6

# Build Reports On Your ERwin Models!

### Use The Report Template Builder

The Report Template Builder creates predefined report templates in HTML, RTF and Text formats that can be reused to report on any model. For instance, if you choose the RTF format, the report output will automatically invoke your local word processing software. If you choose the HTML format, the report output will automatically launch your locally installed web browser. If you choose Text format, the report output will automatically launch Microsoft Excel.

You can view and save your reports to share with others using a web browser.

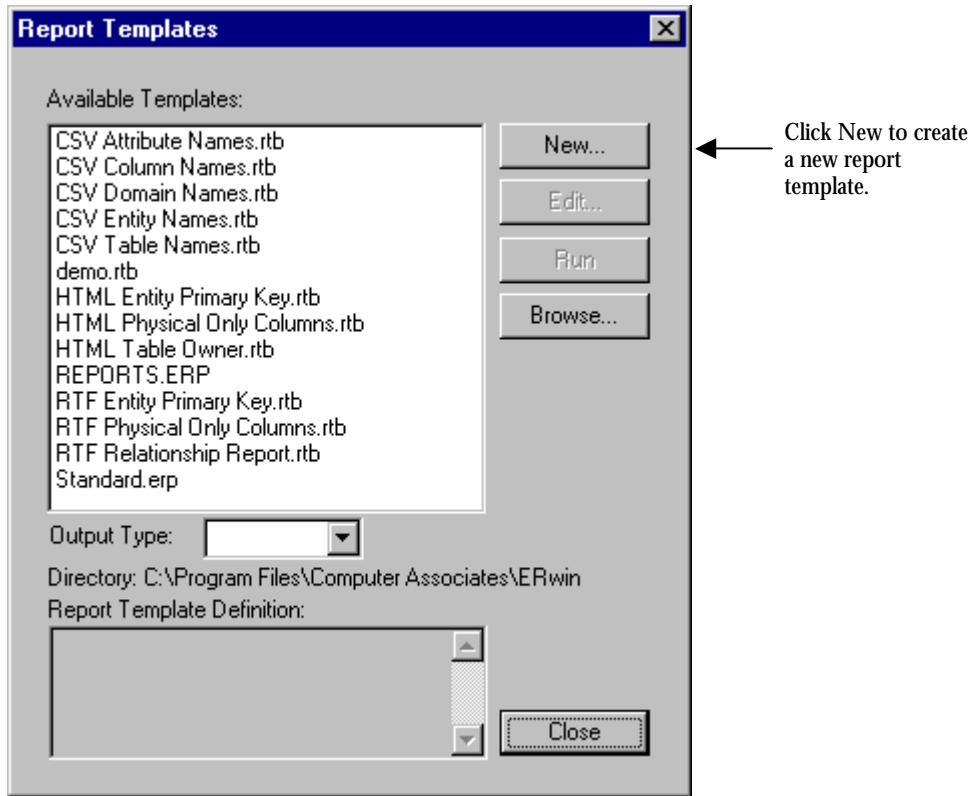
### Learn What Report Builder Can Do

You can preview the Report Template Builder before you actually use it:

1. After you open the Report Template Builder from the ERwin Tools menu, press F1 to display the online help.
2. Select any topic to learn more about the Report Template Builder or any other topic.

To create a Report Template:

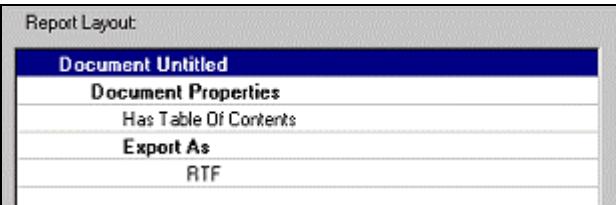
1. Open eMovies.er1 and switch to the Logical model.
2. Go to the Tools menu, choose Report Builder. Until the first template is saved in the Reports folder, you may see a message indicating that the folder is empty. Or you may see a message indicating that you need to click the Browse button on the next dialog and select a folder where you want to save your reports.



**Buddy Tip**—You can read or execute an ERP report file created in the ERwin Data Browser using the Report Templates dialog. Select your ERP report from the list, or click Browse to search for the file.

## Use The Report Template Builder

3. In the Report Template Builder, in the Report Layout pane, double-click Document Untitled.



4. Accept the defaults on the Property Tree tab. Click the Title Tab.
5. Enter **Basic Report on Model:** over the Document Title. Be sure to place a space at the end of the title before performing the next step.
6. Click the Add Macro button to append the model's name to the report title.
7. Click the Export tab and verify that HTML is the report output type. If not, choose HTML from the Export AS list. Then, in the HTML Export Properties group box, select Picture Reports as pop-up windows.
8. Close the window and return to the Report Template Builder pane.

To add report sections to a Report Template:

1. In the Report Template Builder, in the left Available Sections pane, select Picture, and click the right arrow to add this section to the Report Layout pane.
2. In Available Sections pane, select Entity (in Logical Section), and click the right arrow to add this section to the Report Layout pane.
3. In Report Layout pane, double-click Entity section to open the Properties dialog and specify the report details for this section.
4. Click the plus sign to expand Entity, then check Name and Definition.
5. Click the plus sign to expand Attribute, check Name, and close the window to return to the Report Template Builder.
6. Save this report template as MyReport.

To run an HTML report:

1. With emovies.er1 open, in the Report Template Builder, click the Run button on the toolbar  When you run the report, the Report Template Builder launches your web browser with the report displayed.
2. In the left frame of the browser, locate the links to the Report Components. Click the links in the Picture and Entity sections to review each section.
3. In the Entity section you can change the view from Tabular to Hierarchical.
4. Close the web browser.
5. Return to ERwin and close the Report Template Builder. Close emovies.er1.

A report produced in HTML, based on the emovies.er1 model, looks like this:

FORMATS:	<a href="#">TABULAR</a>	<a href="#">HIERARCHICAL</a>
RTB Entity Primary Key - HTML February 08, 2002		
<b>Entity</b>		
<b>Entity</b>		
Name	Primary Key Attribute	Definition
CHECK	→	A CHECK is a form of PAYMENT.
CREDIT CARD	→	A CREDIT CARD is a form of PAYMENT.
CUSTOMER	→	A CUSTOMER is a person who rents a video.
EMPLOYEE	→	An EMPLOYEE is a person that works for the

To apply a template to another model:

1. Open emovies-L1.er1.
2. Click the Report Template Builder button on the toolbar .
3. On the Report Templates dialog, from the Available Templates list, select MyReport.
4. From the Output Type list, select RTF.
5. Click Run to launch your local word processor and display the report in the document window.
6. After you have viewed the report, close your word processor and then close emovies1.er1.

## Use The Report Template Builder

# Using ERwin's Advanced Features!

## Working With Design Layers

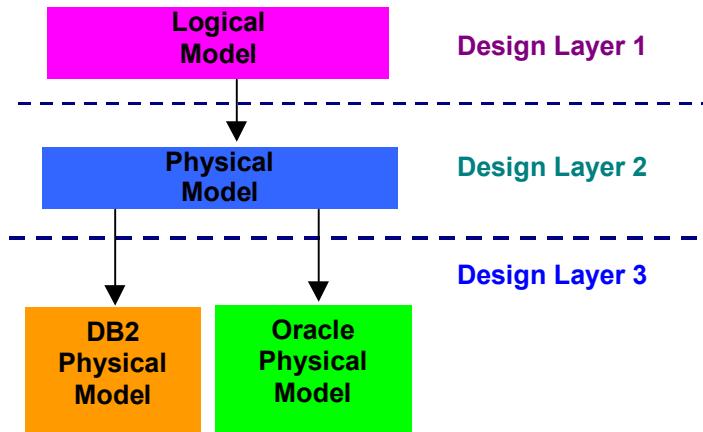
Generally, in a design layer hierarchy, different model types are used for a distinct purpose in the application development lifecycle. For example, a logical model may represent business requirements and rules. From that model, a generic physical model may be derived, in which physical constructs are designed for a generic database. Once the generic physical model is considered stable, you can derive from it multiple database specific models. In this way, the generic physical model becomes the standards model.

A variety of ERwin features are necessary to support the separation of model types and to keep related models linked and in sync. A brief discussion about these features follows in this chapter.

### What Is A Design Layer?

A *design layer* is a single data model or set of data models used for a particular purpose in the application development processes. Each design layer is part of a hierarchy of two or more design layers.

In the simplest view of design layer hierarchy, the first design layer is a logical data model that captures the business requirements for an application. Then in a second design layer, those business requirements are transformed into database implementation rules in a physical data model. A generic physical model may be created using generic ODBC as the target database. A third design layer may represent different physical implementations of the same data model, but on different target server platforms.



Generally, it is unfeasible to use the same model to accommodate all phases of the design process. Instead, you must be able to develop and link related models in different design layers. Within each design layer, you must be able to make and record design decisions that transform the structure from one layer to another. Finally, you must be able to maintain the links between the models in different design layers and to synchronize changes made in different layers while maintaining the appropriate structures in each. In ERwin, the combination of linking models in different design layers via model sources and applying transforms within a model provide this capability.

### The First Design Layer: The Conceptual Logical Data Model

ERwin delivers a superior approach to visualizing database structures and, facilitating the design of Logical and Physical data models. This structured, systematic approach to information management and application development begins with a conceptual Logical model, the first of several design layers to capture your specific business requirements (including generic entities and supertype/subtype structures).

### The Second Design Layer: The Generic Physical Model

This is where you establish the structure of the tables and columns and generic naming needed to represent the business application. But, in the physical generic data model, the objects and properties are independent of a database. Other database-specific data models can be derived from a generic physical data model.

### The Third Design Layer: Database-specific Physical Models

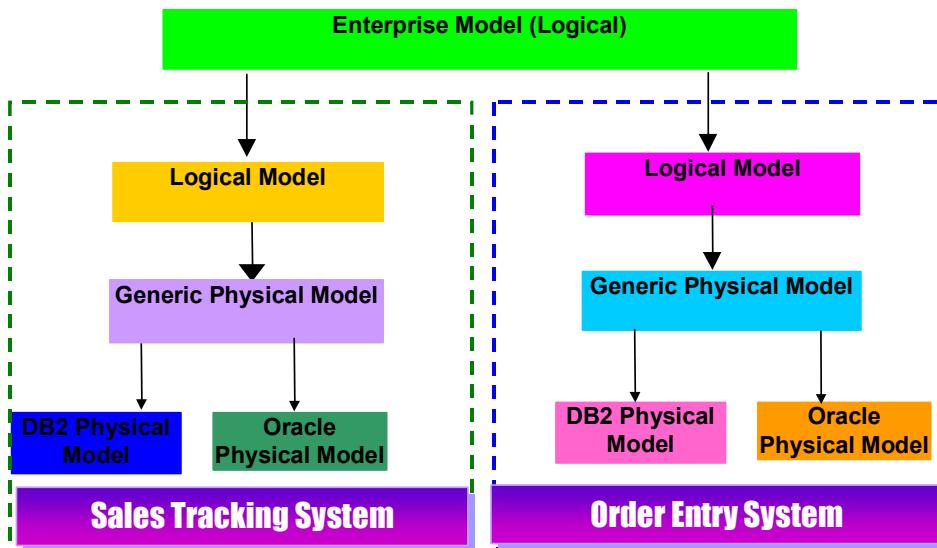
Now you can use ERwin to translate this expertise into database implementation by creating a database-specific physical design layer. Each application can run on several database platforms; a final design layer is needed for database-specific data models.

## Other Design Layer Hierarchies

### Enterprise Model Hierarchy

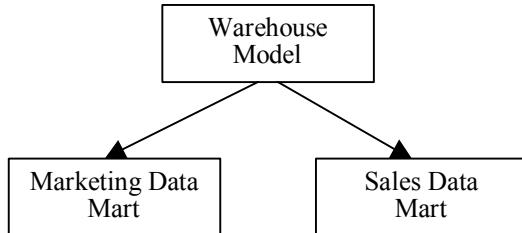
In a similar example, the conceptual data model may instead be an enterprise-level data model, which establishes the standards for all applications across the organization. The enterprise-level data model may be Logical and include all of the approved standards for entities and attributes that the organization supports. The next design layer may have multiple Logical data models for multiple business applications, such as an Order Entry application and a Sales Commission application.

While these are very different types of applications, it is likely that they share some common entities such as EMPLOYEE and CUSTOMER. The enterprise-level model may include both of these entities along with others that may not be selected for either of these application-specific models. In this hierarchy, the next design layer may be a generic Physical model for each application. As in the previous example, if each application runs on several database platforms, a final design layer is needed for database-specific data models.



### Data Warehouse Hierarchy

A data warehouse requires additional layers for models of the entire warehouse and data marts. ERwin provides options in the physical model for dimensional notation and for features related to data movement (data source information, data transformation rules) that allow you to optimize for warehouse models.



### Creating New Design Layers

#### Splitting A Model

If you have been working with a data model that was saved in a previous version of ERwin, you have a logical/physical model. If you want to separate that model into two models – a logical-only and a physical-only – you can use the Split Model option, which is on the Tools menu.

When you split a model, ERwin prompts you to save the separate logical and physical data models with different names. When you save the new models, the logical model becomes the source of the physical model, which is necessary for synchronizing changes between the two model types. The original logical/physical model is preserved with its original name.

#### Deriving A Model

Whether you have a logical/physical model or a logical-only or physical-only model, ERwin makes creating a new model easy. Rather than copying objects from one model to another or starting from scratch, the Derive New Model wizard takes a step-by-step approach to help you derive a new model from a model source. ERwin links the original model as the source of the new model. Then you and others can work on the separate models knowing that changes to each model can be synchronized at any time.

To derive a new model, choose the Derive New Model option on the Tools menu. The Derive Model wizard walks you through the process and lets you specify the objects that you want the source model to contribute to the new model.

### Adding A Model Source

A *model source* is the parent model that is linked to another model for the purpose of synchronizing changes. ERwin automatically assigns hidden identifiers to objects in the model source and the linked model. ERwin keeps track of changes made to both models using the object identifier. Then, you can synchronize the changes even if the object's name changes.

Sometimes building a design layer hierarchy requires linking two models that already exist rather than deriving a new model from an existing model. For example, you may have a generic model that you want to designate as the model source to other database-specific models. In this case, you can add the generic model as the model source to the database specific model. When you add a model source, you designate the objects and properties that you want the model source to contribute to the target model.

To add a model source, choose the Add Model Source option on the Tools menu. The Add Model Source wizard uses a step-by-step approach to help you specify the objects that you want to add to the target model. ERwin adds the objects to the target model and links the objects so that you can later synchronize any changes.

You can add multiple model sources if you want objects to be contributed by multiple models. After you add a model source, you can use the Model Sources Properties dialog to view and edit information about the model source.

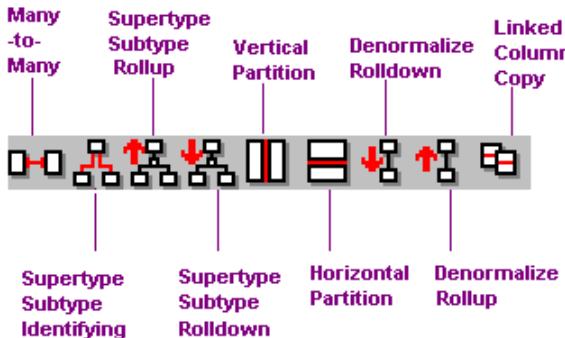
### What Is A Transform?

A *transform* is a method by which you can apply and maintain a record of a *design decision*, which is a decision to change objects or properties within a design layer. When applied, a transform changes a set of objects from one state to another for the purpose of refining, normalizing, or denormalizing a model. The main advantages of using transforms include:

- **Automation.** ERwin simplifies the refinement of the logical and physical model. You can use wizards to automatically apply design layer changes, instead of manually applying changes.
- **Traceability.** ERwin maintains historical information for each model object that the transform creates. You can trace the history of transformed objects.
- **Preservation of object properties.** ERwin preserves the properties of the transformed objects. (You do not have to manually reenter the information.)

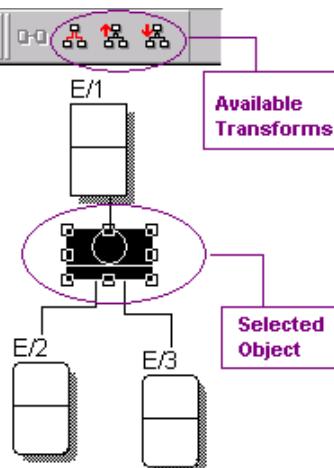
## Transform Toolbar

The Transform Toolbar provides a set of tools to apply transforms. The model type and the objects that you want to participate in the transform determine which tools are available on the Transform Toolbar.



## Applying Transforms

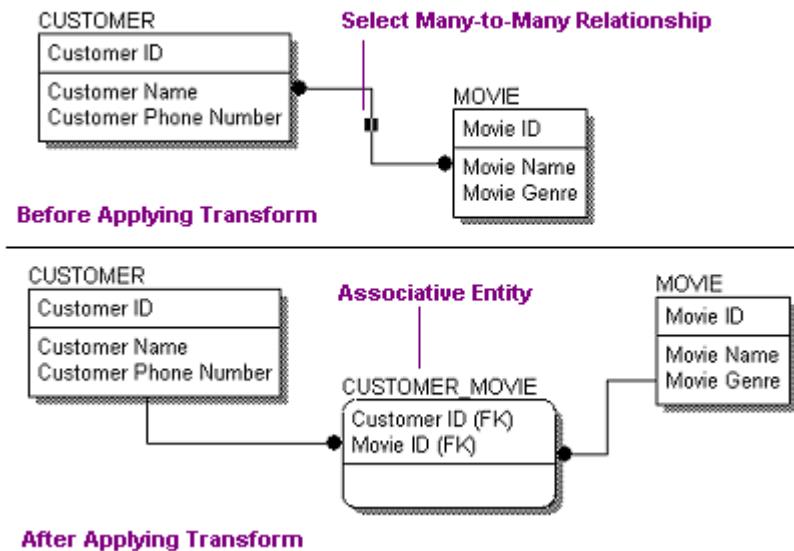
In most cases, when you select the objects that you want to transform, the appropriate tools on the Transform Toolbar become available. For example, to apply a Supertype Subtype Rollup transform you must first select the supertype/subtype symbol.



## How A Transform Works

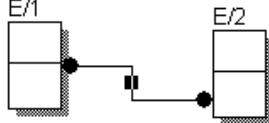
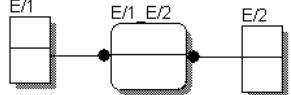
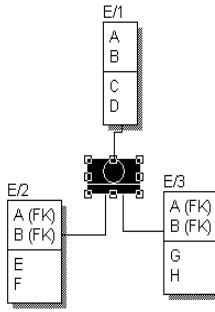
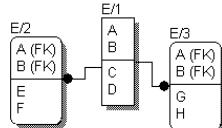
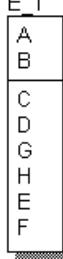
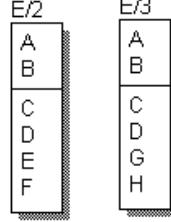
The Many-to-Many transform is probably the best example to demonstrate the ERwin transform process. To use this transform, you must have two entities connected by a many-to-many relationship. Often, to resolve this type of relationship, an association entity is added between the two original entities and connected to each with an identifying relationship. By using the Many-to-Many transform, the many-to-many relationship is automatically dissolved and replaced with an association entity and two identifying relationships.

After selecting the participating objects that you want to transform, you click the toolbar button, which opens a wizard. Then, you simply respond to a series of questions that determine how the transform is applied. The wizard clearly lays out the post-transform results. When the transform is finished, the participating objects are transformed.

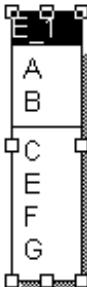
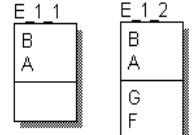
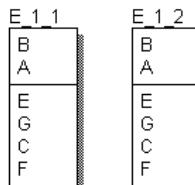
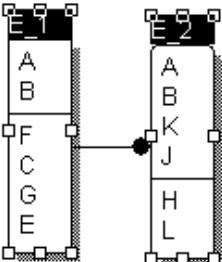
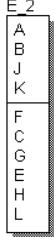
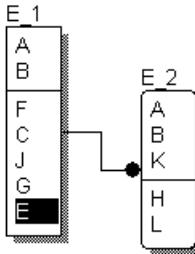
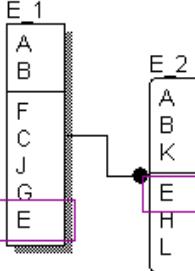


## Expected Transform Results

The following chart illustrates the before and after state of the objects that participate in a transform.

Select This Object(s)	Click This Tool	Result of Transform
	 Many-to-Many	
	 Supertype/Subtype Identity	
	 Supertype/Subtype Roll-up	
	 Supertype/Subtype Roll-down	

## Working With Design Layers

Select This Object(s)	Click This Tool	Result of Transform
	 Vertical Partition	
	 Horizontal Partition	
	 Roll-down Denormalize	
	 Roll-up Denormalize	
	 Copy/Link Column	

### Transforms And The Model Explorer

Each time you apply a transform, the Model Explorer is updated with important information under the Transforms folder. The information includes the name of the transform and the source and target objects involved in the transform.

### Creating Nested Transforms

When you apply a transform to an existing transform, you create a nested transform. You can work with nested transforms in the same way you work with single transforms.

### Resolving And Reversing Transforms

ERwin provides two methods for “undoing” a transform. You can *resolve* or *reverse* a transform.

When you resolve a transform, ERwin preserves the model objects that the transform creates but deletes the source objects.

To resolve a transform, go to the Model Explorer and right click on the transform. From the context menu, choose Delete and then choose Resolve.

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NOTE: If you have a model source linked to the model in which the transform was applied, the link between the transformed objects and the source objects in the model source will be broken when the transform is resolved.

---

When you reverse a transform, ERwin preserves the source objects and deletes the transform and the model objects that the transform creates.

To reverse a transform, go to the Model Explorer and right click on the transform. From the context menu, choose Delete and then choose Reverse.

### Synchronizing Changes Between Design Layers

As you’ve read, a model can be linked to a model source as the result of splitting a logical/physical model, deriving a model or adding a model source. Once a model has a model source, ERwin automatically tracks the changes to the objects that were contributed by the model source. At any time, you can use the Sync with Model Source wizard to import and export changes between a model and its source.

The Sync with Model Source wizard takes you step-by-step through the process of selecting the types of objects and changes that you want to compare and synchronize. You can also define case conversion and maximum length rules for logical and physical model objects, and specify a file to enforce naming standards in the target model. The result is a side-by-side list of changes that were applied to either the source and/or the target model.

Whether you import or export changes, ERwin updates the models and the Model Sources Properties dialog with the date of the synchronization.

### Managing Standards

When multiple individuals or groups are responsible for designing a set of data models, the enforcing of standards is a critical element. Typically, the naming of objects and the mapping of datatypes are primary areas in which inconsistency can be a problem. ERwin provides built-in tools to help you manage the naming conventions and datatype standards that you apply across your enterprise models.

### Naming Standards

ERwin has a wide-range of naming standard features that can help you develop new standards or implement existing standards. You can take full advantage of all of the naming standard features or use only those enforced by your organization.

On the Tools menu, choose Names and then choose the Model Naming Options dialog. In this dialog, you define the naming standards for the current data model. You can specify the case (lower or upper) and maximum length for physical objects. For all model types, you can specify how ERwin responds to non-unique names (ask, allow, or disallow).

On the Tools menu, when you choose Names and then choose Edit Naming Standards, ERwin opens the Naming Standard Editor. In this editor, you can specify separate naming standards for logical and physical objects.

In the Glossary tab on the Naming Standards Editor, you can either import an existing names glossary or build one from scratch. You can define how these standards are implemented, and create entries including business terms, and abbreviations, that are relevant to your business. ERwin saves naming standards information in a naming standards file (\*.nsm). For each ERwin model in which you use naming standards, you must attach a naming standards file. You can apply a naming standards file to multiple models.

When you attach a naming standards file to a data model, ERwin automatically applies the standards and conventions defined in the file. You can also use the file to check compliance of the names of objects in the model, which is similar to a spell checker in a word processing application. ERwin uses the naming standards file as a dictionary and compares the names in the data model to the names in the dictionary. When it finds a discrepancy, ERwin stops to let you decide whether to ignore or replace the non-compliant name.

**Buddy Tip**—*In ERwin, you can use the ERwin Macro Toolbox to assign names to model objects. ERwin includes macros designed to make it easy to distinguish between their application in the logical and physical model types.*

### Datatype Mapping

A *datatype* is a predefined set of characteristics for an attribute or column that specifies field length, acceptable characters, and optional and required parameters. For example, the datatype *char(18)* specifies that the column can store up to 18 alpha and numeric characters.

By default, ERwin applies a datatype to every attribute in a logical model and to every column in a physical model. In the logical model, the datatype is determined by the domain from which the attribute inherits its properties or from the datatype that you assign. In the physical model, the datatype is determined by the default value specified by the target server or the datatype that you assign. Considering the large quantity of attributes or columns a data model usually has, it can be quite tedious to manually assign and maintain consistency of datatypes. For this reason, ERwin has several tools that help you with this task.

The Datatype Standards Editor can be used to edit the default datatype mapping for your logical and physical models. For physical models, you can edit the default datatype that ERwin automatically attaches to each column. For logical models, you can add logical datatypes and assign the datatypes to the attributes in the logical model.

You define the datatype mapping standards by specifying how logical datatypes map to the available datatypes for your target server. If you have database applications running on multiple server platforms, you can map datatypes for all of the target servers. ERwin saves datatype mapping information in a datatype standards file (\*.dsm). For each ERwin model in which you use datatype standards, you must attach a datatype standards file. If you open an ERwin model and you have not attached a datatype standards file, ERwin uses the default datatype mapping.

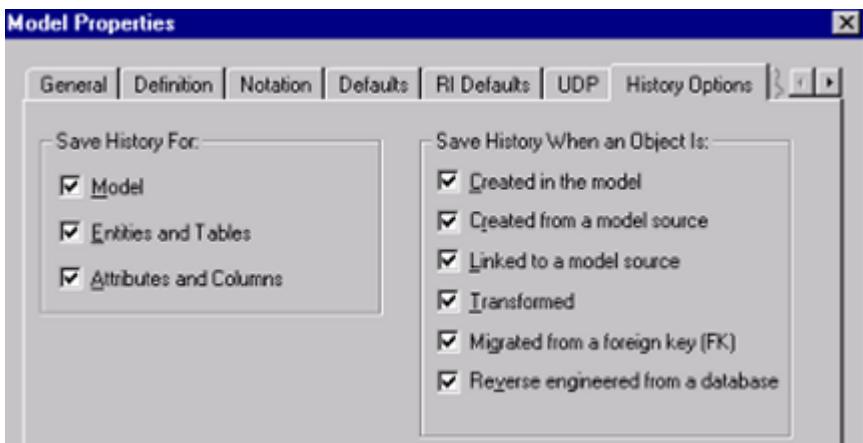
Of course ERwin lets you define your datatype mapping standards once and apply them to multiple data models. On the Tools menu, when you choose Datatypes and then choose Model Datatype Options, you can specify the datatype mapping file that you want to apply to the current model.

### Preserving Model History

You can save historical information for your model, entities, attributes, tables and columns. Using the History feature, you can track meaningful changes to derived and transformed models, as well as routine information about the creation and revision dates of your models.

To set the history options, from the Model menu, choose Model Properties. In the Model Properties dialog, click the History Options tab and select (check) or clear (uncheck) the history options for the model objects whose history you want to preserve.

## Working With Design Layers



You can save historical information for the following events:

- When you create a logical model and add entities and attributes.
- When you create a physical model and add tables and columns.
- When you derive a physical model from a logical model and create tables and columns in the derived physical model.
- When you split a logical/physical model into independent logical and physical components.
- When you apply a transform to two tables and create a single denormalized table.
- When you reverse engineer a database or script file and create tables and columns in the new model.
- When you add a model source that contributes tables and columns to a model.

## Chapter 8

# Ask Your Buddy

### Ask Your Buddy – Questions And Answers

**Question:** Where can I find out about ERwin's new features?

**Answer:** You can open the "What's New" menu item in the ERwin Help menu to review new features and related overview topics.

**Question:** How do you bring older 3.5.2 models into the new ERwin structure?

**Answer:** Perform a normal file open and point to the old 3.5.2 file. ERwin 4.x will automatically convert your models into the latest format.

**Question:** Once I have opened a logical/physical model, how do I split it into separate logical and physical models?

**Answer:** With the logical/physical model open, from the Tools menu, choose *Split L/P Model*. ERwin begins splitting the model and prompts you to save first the logical-only and then the physical-only model. When the split is complete, the new models will contain a history entry that indicates that they were created by splitting the original model. Additionally, the logical model will be linked to the physical model as its model source. The original logical/physical model is preserved without any changes.

**Question:** What is a Model Source?

**Answer:** A Model Source is a logical connection that ERwin maintains between related models. The purpose of this connection is to keep track of objects (e.g., entities and tables) that one model has contributed to another.

This connection allows ERwin to guide the synchronization of related models when changes are required. For example, when a physical model is derived from a logical model, a model source is created that records the entities that were used to generate the tables in the physical model.

**Question:** Can I provide model information on the Web?

**Answer:** ERwin 4.x has an integrated reporting option called the Report Template Builder or RTB. This option allows you to report both diagrams and tabular information from a model. Models can be reported in HTML, RTF, or CSV format. HTML format makes model information readily available for publishing on the web.

**Question:** How does ERwin connect to my database?

**Answer:** ERwin connects to your database using native DBMS connection software or through Windows ODBC standard drivers. You can read more about the software required for database connectivity in the ERwin online help. On the ERwin Help menu, choose Help Topics, click the Index tab and search on “Target Server:connection table”.

ERwin 4.x supports generic ODBC, which can be used to connect to any target server that is not directly supported by ERwin. On the ERwin Help menu, choose Help Topics, click the Index tab and search on “ODBC:Generic” for more information.

**Question:** How do I embed my ERwin diagram into another application?

**Answer:** On the Edit menu, choose Select All, then Edit>Copy Group. The clipboard image can now be pasted into another Windows application.

**Question:** When installing ERwin, the installation program could not create the Program Items or Program Group.

**Answer:** If you are installing ERwin on Windows NT, you must have the appropriate permissions to create a Program Group. Your System Administrator can assign these permissions in the Administrators, Power Users, and Server Operators groups. Contact your Administrator if you need to upgrade your permissions to allow you to create a Program Group.

**Question:** How can I export my model for use in other applications?

**Answer:** ERwin ERX output is replaced with a new XML format output file. This XML format provides access to all data within an ERwin model and is based on the ERwin 4.x metamodel. New options have been added to the File Save As and Open dialogs to support the reading and writing of files in XML format.

**Question:** How do I break the link between a model and its model source?

**Answer:** Use the Save as New Model feature to save an existing model with a new model identifier. When you save a source model as a new model, you break the associative link between the model and any derived models.

