Enterprise Architect

User Guide Series

Building Models

How do I build a UML model? Sparx Systems Enterprise Architect is the ideal tool for building any kind of UML or extended model from scratch or from a wide selection of Patterns in the Model Wizard, and managing the structure with the Browser Window.

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Table of Contents

Building Models 17
Views 19
Add Views 21
Rename Views 23
Delete Views 24
Packages 26
Add a Package 28
Open Package in the Browser Window 32
Rename a Package 34
Copy a Package 36
Delete a Package 40
Model Wizard 41
Customize Model Content 48
Diagrams 51
Diagram View 54
Context Filter a Diagram 60
Diagram Tabs 62
Switch Between Views 67
Diagram Toolbox 70
Toolbox Appearance Options 82
Toolbox Shortcut Menu 87
Add Multiple Elements 90
Common Page 97

Artifact Toolbox 101
Use Case Toolbox 112
Class Toolbox 115
Object Toolbox 118
Composite Toolbox 120
Communication Toolbox 122
Interaction Toolbox 124
Timing Toolbox 126
State Toolbox 128
Activity Toolbox 131
Component Toolbox 134
Deployment Toolbox 136
Profile Toolbox 138
Metamodel Toolbox 141
Analysis Toolbox 143
Custom Toolbox 145
Requirements Toolbox 148
Maintenance Toolbox 151
User Interface Toolbox 154
WSDL Toolbox 157
XML Schema Toolbox 159
Data Modeling Toolbox 161
Test Domain Toolbox 164
XML Transformation Toolbox 166
Set Diagram Properties 168
General Tab 170
Configure Diagram Display 176

Define Element Characteristics 185
Features Tab 192
Connectors Tab 196
Theme Tab 200
Set User and Model Default Diagrams 204
Diagram Context Menu 207
Navigation Cells 217
The Quick Linker 222
Create New Elements 227
Create Connectors 229
Floating Icons 231
The Pan & Zoom Window 239
Working In Diagrams 242
Add New Diagrams 247
Insert Diagram Properties Note 250
Drop Package From Browser Window 252
Show or Hide Package Contents 256
Drop Elements from Browser Window 258
Z Order Elements 266
Move Elements Within Diagrams 268
Move Elements In Diagram Sections 272
Move Elements Between Diagrams 274
Copy Elements Between Diagrams 276
Move/Copy Elements To & From Floating Diagrams 280
Autosize Elements 283
Virtual Connector Ends - Represent One Element

Several Times on a Diagram 285
Locate Related Elements 290
Manage Object Labels 292
Hide/Show Labels 296
Show Realized Interfaces of Class 298
Open Package From Diagram 300
Undo Last Action 301
Redo Last Action 303
Add Diagram Links to Diagrams 304
Hyperlinks Between Diagrams 309
Pan and Zoom a Diagram 312
Diagram Navigation Hotkeys 314
View Previous and Next Diagram 317
Change Diagram Type 318
Scale Image to Page Size 320
Set Up Diagram Page 323
Lock Diagram 326
Copy (Duplicate) or Move Diagram 327
Save Diagram Image to File 331
Copy Image to Clipboard 334
Delete Diagrams 336
Diagram Filters 338
Work With Diagram Filters 344
Diagram Layers 353
Roadmap Diagrams 359
Roadmap Diagram Options 370
Alternative Views of Diagram Content 381

Custom Diagram Styles 385
Diagram List 400
Diagram Relation Matrix 405
Layout Diagrams 416
  Circular/Elliptical Layout 420
  Box Layout 425
  Per Page Layout 428
  Digraph Layout 431
  Spring Layout 432
  Neaten Layout 434
  Converge/Diverge Layout 437
  Fan Relations Layout 439
  Auto Route Layout 442
  Lay Out a Diagram Automatically 444
  Chain Diagram Layouts 453
Swimlanes 457
  Creating Sub-lanes 465
  Swimlane Details 469
Swimlanes Matrix 471
Diagram Legends 478
  Create Legends 482
  Legend Properties 485
  Legend Key 488
Image Assets 498
Using the Image Manager 503
  Create Custom Diagram Background 510
  Import Image Library 513

Print Preview 516
Elements 518
Element Facilities 520
Create Elements 525
Add Elements Directly To Packages 527
Auto Names and Counters 532
Apply Auto Naming to Existing Elements 537
Set Up Templates Package 543
Set Element Font 550
Move Elements Between Packages 554
Copy Elements 558
Copy Features Between Elements 562
Highlight Context Element 564
Move Features Between Elements 567
Insert Related Elements 569
Change Element Type 574
Make Linked Element a Local Copy 576
Set an Element's Default Appearance 577
Feature Visibility 582
Align Elements 589
Resize Elements 593
Element Grouping 596
Create Notes and Text 598
Link Note to Internal Documentation 602
Delete Elements from Diagram and Model 607
Customize Visibility of Elements 611
Set Up Cross References 613

Show Element Use 616
Manage Structural Elements 622
Template Classes 628
Set Element Parent 630
Composite Elements 635
Show Structural Elements In Composite Diagram 642
Visual Representation 645
Compartments 646
Rectangle Notation 648
Info view Style 650
Element Property Displays 654
Properties Dialog 656
General Settings 660
Details 666
Advanced Properties 670
Links 672
The Features Window 675
Responsibilities 677
Requirements 684
External Requirements 689
Constraints 690
Scenarios 694
Scenarios Tab - Responsibilities Window 696
Scenarios Tab - Properties Dialog 700
Scenarios View 705
Scenarios View Toolbar 708
Scenarios View Item Context Menu 713

Scenarios View Selected Text Context Menu 718
Scenarios View Entry Points Context Menu 724
Scenarios View Floating Toolbar 727
Import a Scenario File 728
Set Up Scenario Specification 730
Generate Diagrams 736
Generate Activity Diagram 740
Generate RuleFlow Diagram 745
Generate StateMachine Diagram 747
Generate Sequence Diagram 751
Generate Robustness Diagram 756
Generate Scenario From Activity Diagram 759
Generate Test Cases 762
Context References Tab 768
Scenario Constraints Tab 771
Associated Files 773
Dynamic Document View 776
Select <Item> Dialog 787
Select Property Dialog 791
Set Feature Dialog 794
Element Context Menu Operations 796
Selectable, Dockable and Printable Options 807
Advanced Operations on Elements 810
Finding Elements 817
Changing Element Appearance 820
Operations on Multiple Elements 825
Linked Documents 833

Create Document Artifact 838
Create Linked Document on an Element 841
Edit Linked Documents 845
Linked Documents in the Document Window 849
Replace or Delete Linked Documents 855
Create Linked Document Templates 857
Edit Linked Document Templates 860
Hyperlink From Linked Document 864
Create Element From Document 871
Connectors 873
Connector Management Options 881
Connector Type-Specific Options 883
Manage Connector Properties 887
Advanced Connector Management Options 889
Connector Style Options 892
Connector Appearance Options 899
Connector Tasks 902
Connect Elements 904
Connect to Element Feature 907
Feature Quick Linker 910
The Feature Matrix 912
Connect to a Connector 923
Add a Note to a Connector 927
Arrange Connectors 929
Change Connector Type 931
Change the Source or Target Element 933
Connector Styles 936

Create Connector in Browser Window 943
Relationship Visibility 945
Freeze Visible Connectors 947
Hide/Show Connectors 950
Delete Connectors 953
Creating Generalization Sets 955
Connector In-place Editing Options 958
Reverse Connector 959
Set Association Specializations 960
Change Sequence Message Scope 962
Show Uses Arrow Head 964
Tree Style Hierarchy 965
Tagged Values 968
Quick Start - Add Tagged Value To Elements 972
Assign a Tagged Value to an Item 974
Assign Notes to a Tagged Value 976
Modify Tagged Values 978
Show Duplicate Tags 981
Advanced Tag Management 983
Attributes 985
Create and Manage Attributes 990
Attribute Tagged Values 998
Display Inherited Attributes 1000
Create Object From Attribute 1003
Classifiers and Instances 1005
Classify an Object 1008
Add Property Slots to Instance 1011

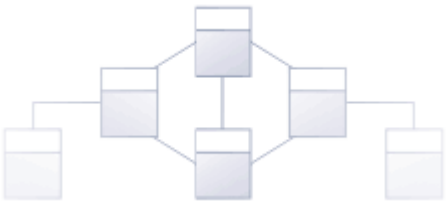
Classify Object Via Classifier Associations 1013
Behavior 1017
Operations 1018
Define Properties of Operations 1021
Operation Behavior 1027
Behavior Code 1033
Redefine Operation and Check for Exceptions 1036
Operation Constraints 1040
Operation Tagged Values 1043
Override Parent Operations 1046
Display Inherited Operations 1048
Behavior Parameters 1051
Define Parameters 1052
Parameter Tagged Values 1057
Operation Parameters by Reference 1060
Interactions and Activities 1062
Behavior Calls 1064
Associate with Different Behaviors 1066
Behavior Call Arguments 1067
Synchronize Arguments 1070
Hyperlinks 1072
Hyperlink Target Objects 1082
In-place Editing Options 1093
In-place Editing Tasks 1094
Edit Element Item Name 1100
Edit Feature Stereotype 1102
Edit Feature Scope 1105

Edit Attribute Keyword 1108
Edit Operation Parameter Keyword 1111
Edit Parameter Kind 1113
Edit Custom Compartment 1115
Insert New Feature 1117
Insert Operation Parameter 1119
Insert Maintenance Feature 1121
Insert Project Features 1124
Insert Testing Features 1127
Non-printable Elements 1130
Properties Window 1133
Properties Window for Diagrams 1139
Diagram Tab 1144
Properties Window for Elements 1154
Element Tab 1158
Properties Window and Dialog for Connectors 1166
Connector Advanced (Dialog) 1173
Connector Tagged Values 1175
Source and Target Role 1178
Connector Constraints 1186
Binding 1190
Properties Window for Attributes 1191
Create Properties 1199
Attribute Constraints 1203
Properties Window for Operations 1206
Notes 1213
Notes Toolbar 1225

Text Translation 1227
Model Glossary 1233
Project Glossary View 1237
Glossary Styles 1243
The Glossary Dialog 1248
Create a Glossary as a Package Structure 1253
Create a Translation Glossary Model 1264
Generate a Report 1269
Glossary Report Output Sample 1271
Bookmarks 1273
Model Transformation 1276
Transform Elements 1283
Chaining Transformations 1288
Built-in Transformations 1289
C# Transformation 1292
C++ Transformation 1295
Data Model To ERD Transformation 1297
DDL Transformation 1299
EJB Transformations 1305
ERD To Data Model Transformation 1309
Java Transformation 1313
JUnit Transformation 1316
NUnit Transformation 1319
PHP Transformation 1322
Sequence/Communication Diagram Transformations 1324
VB.Net Transformation 1327

WSDL Transformation 1328
XSD Transformation 1330
Edit Transformation Templates 1335
Write Transformations 1341
Default Transformation Templates 1345
Intermediary Language 1347
Intermediary Language Debugging 1349
Objects 1352
Connectors 1362
Transform Connectors 1367
Transform Foreign Keys 1372
Copy Information 1374
Convert Types 1376
Convert Names 1377
Cross References 1380
Transform Template Parameter Substitution 1383

Building Models



An Enterprise Architect model is a top level (root) Package in a repository. It is possible to have more than one root Package in a repository and hence more than one model. Each model is the root node of a hierarchy of Packages, elements, features and diagrams that are nested under the Package. The **Browser window** is used to manage the model and the hierarchy of elements, features and diagrams, showing how the models are structured and helping you to reorganize a model by dragging and dropping objects to new locations in the hierarchy.

Enterprise Architect has a powerful **Model Wizard** that helps you to create models and a hierarchy of Packages under each root, from a wide selection of model Patterns. The Wizard is displayed automatically when a new model is added to a repository, but can be invoked manually. Using the Wizard simplifies the process of setting up repositories and models for the novice modeler. More experienced modelers are free to add a single Model Package and build up the structure as they see fit, or to create a model from a base (template) repository.

As the repository is developed and during the lifetime of a project or program of work, new models might have to be added and existing ones refactored.

Views

The top-level Packages in a model (below the project root nodes) can be created as Views, which are simply used to structurally partition and extend the model according to specific requirements and modeling techniques, such as Component View or Dynamic View. These Views have the same concept as the Simple UML Views generated as Model Packages; however, unlike the Model Package views, basic Views:

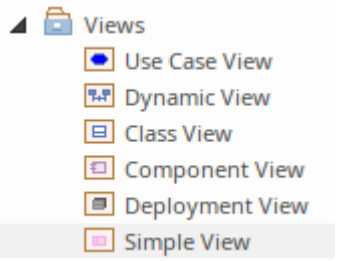
- Do not have any automatically-generated components
- Can be created only under a root node
- Are top-level Packages with special Package icons
- Are not directly available for Requirements, Analysis or Testing, although you can develop these Views from Simple Views or within Use Case Views

Types of View

There are six main types of View, each with their own Package icon, as listed; the types of diagram are the suggested content of each View type:

- Use Case View - containing Use Case diagrams and Analysis diagrams
- Dynamic View -containing Activity diagrams, Communication diagrams, Sequence diagrams and StateMachine diagrams

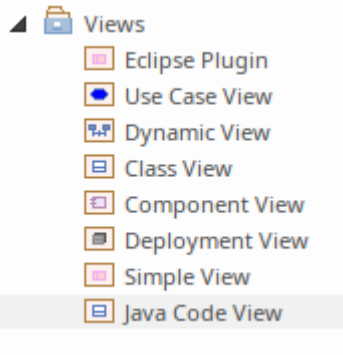
- Class View - containing Class diagrams, Code Engineering and Data Models
- Component View - containing Component diagrams
- Deployment View - containing Deployment diagrams
- Simple View - to customize your own type of view



You can work within the first five standard View types, or devise your own type based on the Simple View. You can create Views, rename them, move them into a different order or delete them, by right-clicking on the selected View and choosing the appropriate context menu option.

Add Views

This example shows a customized view called Java Code View, which has been added to the end of the Views list.



Access

In the **Browser window**, select a model root node, then:

Ribbon	Design > Model > Add > Package
Context Menu	Right-click on root node | Add | Add View
Other	**Package Browser** caption bar menu | New Package

Create a View

Option	Action
Name	Type the name of the View (in the example, this is Java Code View).
Set View Icon Style	Click on the appropriate radio button to set the icon to display next to the View name (the Java Code View has a Class icon).
Add to Version Control	If the model root node is under **Version Control**, this checkbox displays, defaulted to selected. If you do not want the new View to also be under Version Control, deselect the checkbox.
OK	Click on this button to add the View to the **Browser window**.

Rename Views

If you decide to change the name of a View, you can do so very easily.

Rename a view

Step	Action
1	Right-click on the View in the **Browser window**, and select the 'Properties' option. Alternatively, click on the View name and press **F2**. The 'Package Properties' dialog displays.
2	In the 'Name' field, type the new name and click on the **OK button**.

Delete Views

You can use Views as the main divisions of your project, or as temporary holding structures that you delete after you have redistributed any content you want to keep.

Delete a View

Step	Action
1	In the **Browser window**, right-click on the View to delete and select the 'Delete <viewname>' option.
2	If you have selected the 'Confirm Deletes' option in the **Browser window** section of the 'Start > Desktop > Preferences > Preferences > General' dialog page, the system displays a warning that child elements are to be deleted. • To delete the View and its contents, click on the **Yes button**. • To cancel the deletion, click on the **No button**.

Notes

- If you delete a View, its contents are deleted at the same time; they cannot be restored

Packages



A Package is a grouping element that acts as a container for other modeling elements (including other Packages) and diagrams; Packages are represented in the **Browser window** as a familiar folder icon. Using the Package element, you can construct hierarchical models, allowing complex systems to be decomposed and categorized. Packages and their contents can be moved around freely in the Browser window, so that you can easily refactor the repository. Packages can be copied and pasted between model branches, renamed or viewed as a list.

Packages are important in Enterprise Architect because a number of functions can be applied at Package level, such as Baselining, **Version Control**, Transformation and more. Formally, the Package is a Namespace for the members it contains, and a model element can be a member of one and only one Package. In software engineering and other formal modeling disciplines a Package can be set as a Namespace Root, which acts as the starting point of a given namespace.

Notes

- In the Corporate, Unified and Ultimate Editions of

Enterprise Architect, if security is enabled you must have 'Update Element' permission to update or delete a Package

Add a Package

Adding a Package to a model is a simple but versatile process. It is possible to add a new Package to a View, Model Package or lower-level Package. In the process you can automatically:

- Create a Package using a specific Model Pattern
- Create a child diagram for the Package
- Add the new Package to the **Version Control** system that its parent object is under

Access

Ribbon	Design > Model > Add > Package
Context Menu	**Browser window** | Right-click on Package | Add a Package
Keyboard Shortcuts	**Ctrl+W**
Other	**Browser window** caption bar menu | New Package ( )

Add a Package to the model hierarchy

Option	Instruction
Owner	Displays the name of the currently-selected Package or View, to which you are adding the new Package. If this is not the required owner Package, click on the  button and select the correct Package.
Name	Defaults to the automatic name, either 'Package n' or, if you have an autonaming scheme turned on, the defined name. If necessary, overtype this name with the preferred name of the new Package.
Select and Apply Model Pattern	Select this radio button to create the new Package from a Model Pattern.
Create diagram	Select this radio button if you want to immediately create a child diagram for the Package.
Package Only	Select this radio button if you want to just create a Package.

Add to Version Control	(Available if you are adding this Package to a parent object that is under **Version Control**.) Select this checkbox to add the new Package to the same Version Control system, deselect the checkbox to exclude the Package from Version Control.
OK	Click on this button to create the Package in the **Browser window**. If you selected the 'Select and Apply Model Pattern' radio button, the **Model Wizard** screen displays. Select the appropriate Technology and select the checkbox against the Model Pattern (in the 'Name' panel) to import. If you selected the 'Create diagram' radio button, the 'New Diagram' dialog displays. Provide a name for the diagram and select the Technology and type. The new Package is inserted into the Browser window under the selected parent Package or View.
Cancel	Click on this button to abort the changes you have made and close the dialog.

Notes

- You can also add a new Package element by dragging the Package icon from the Toolbox into a diagram; in this case the Package is created under the diagram's owning Package
- If the change is not immediately visible in the **Browser window**, click on the parent Package and press the **F5** key to refresh it
- In a multi-user environment, other users do not see the change until they also press the F5 key or reload their project

Open Package in the Browser Window

When you access a model in Enterprise Architect, you can explore the contents of any Package in the **Browser window** by clicking on the white arrow to the left of the Package name, to expand the Package structure. You can in an analogous way collapse an expanded package by clicking the black triangle to the left of the Package name. If the model has a default diagram (which displays automatically when you open a repository) the diagram's parent Package will already be expanded.

To display the Package's properties, select the Package name and view the docked properties window. Alternatively right-click on the Package name and select the 'Properties | Properties' menu option; the **Properties window** displays for the Package.

Notes

- Package contents are arranged alphabetically, and elements can be dragged from one Package to another using the computer mouse
- To collapse the Package structure again, click on the black arrow to the left of the Package name in the **Browser window**
- To refresh the view of the Package contents, click on the Package in the Browser window and press the **F5** key

Rename a Package

If you want to correct or change a Package name, it is very simple to do so using the 'Properties' dialog for the Package.

Access

In the **Browser window**, select a Package and:

Ribbon	Design > Model > Manage > Properties
Context Menu	Right-click on Package | Properties
Keyboard Shortcuts	**F2** **Alt+Enter**
Other	Double-click on Package

Rename a Package

Step	Action

1	In the 'Name' field, type the new name.
2	Click on the **OK button**.

Notes

- In a multi-user environment, other users do not see the change until they reload their project

Copy a Package

In developing your model, you might want to duplicate the structure and organization of a section so that, for example, you can replicate that part of the model in another model, or make it easier to cross-refer the contents of duplicate sections. You can quickly do this by copying a complete Package, including its child Packages, elements and diagrams, and then pasting it under:

- The same parent Package
- One or more other Packages in the same model or project, or
- One or more other Packages in another model or project

You would tend to use this procedure for copying sections of a model within the project rather than reproducing an entire model or project, although copying these larger structures is equally feasible.

Duplicate a Package

Action	Detail
Copy the Package	In the **Browser window**, right-click on the Package and select the 'Copy / Paste | Copy to Clipboard | Full Structure for Duplication' option (or click on the Package and press **Ctrl+Shift+C**).

	The 'Copy selected Package to Clipboard' dialog briefly displays until the copy operation completes.
Paste the Package	In the **Browser window**, right-click on the target Package into which to paste the copied Package, and select the 'Copy / Paste | Paste Package from Clipboard' context menu option (or click on the Package and press **Ctrl+V**). The 'Paste Package from Clipboard' dialog briefly displays until the paste operation completes. In the Browser window, the target Package is expanded to show the pasted Package; if you are pasting the Package within the same model as the copied source, the source parent Package is also collapsed. Note that any **Version Control** settings on the initial Package are removed from the pasted version. If the target Package already contains: • A Package with the same name as the pasted Package, the pasted Package name has the suffix - Copy • A Package with the same name as the pasted Package including the - Copy suffix, the suffix becomes - Copy1 (or - Copy2, - Copy3 and so on, as copies of

	the Package accumulate in the target parent Package) You can keep the same Package name as the source, or you can rename the Package by either: • Clicking twice on it and editing the name in the Browser window, or • Double-clicking on it and editing the name in the 'Properties' dialog

Notes

- You cannot paste a Package into a parent Package that is locked by another user or that is checked in; the 'Paste...' option is grayed out in the context menu
- This procedure is effectively the same as exporting and importing the Package XMI file, with the 'Strip GUIDs' checkbox selected
- The paste operation can be a single transaction or a series of transactions to paste each data item separately, depending on the setting of the 'Import using single transaction' checkbox in the 'XML Specifications' page of the 'Preferences' dialog
- You can also move a Package to a different part of the model, in the same way as moving an element

Delete a Package

If you do not want to keep a particular Package in the model, it is very simple to remove it.

Access

Context Menu	Right-click on Package | Delete '<package name>'
Keyboard Shortcuts	**Ctrl+Del**

Notes

- Deleting a Package also deletes all contents of the Package, including sub-Packages and elements; make very sure that you really want to do this before proceeding
- In a multi-user environment, other users do not see the change until they reload their project

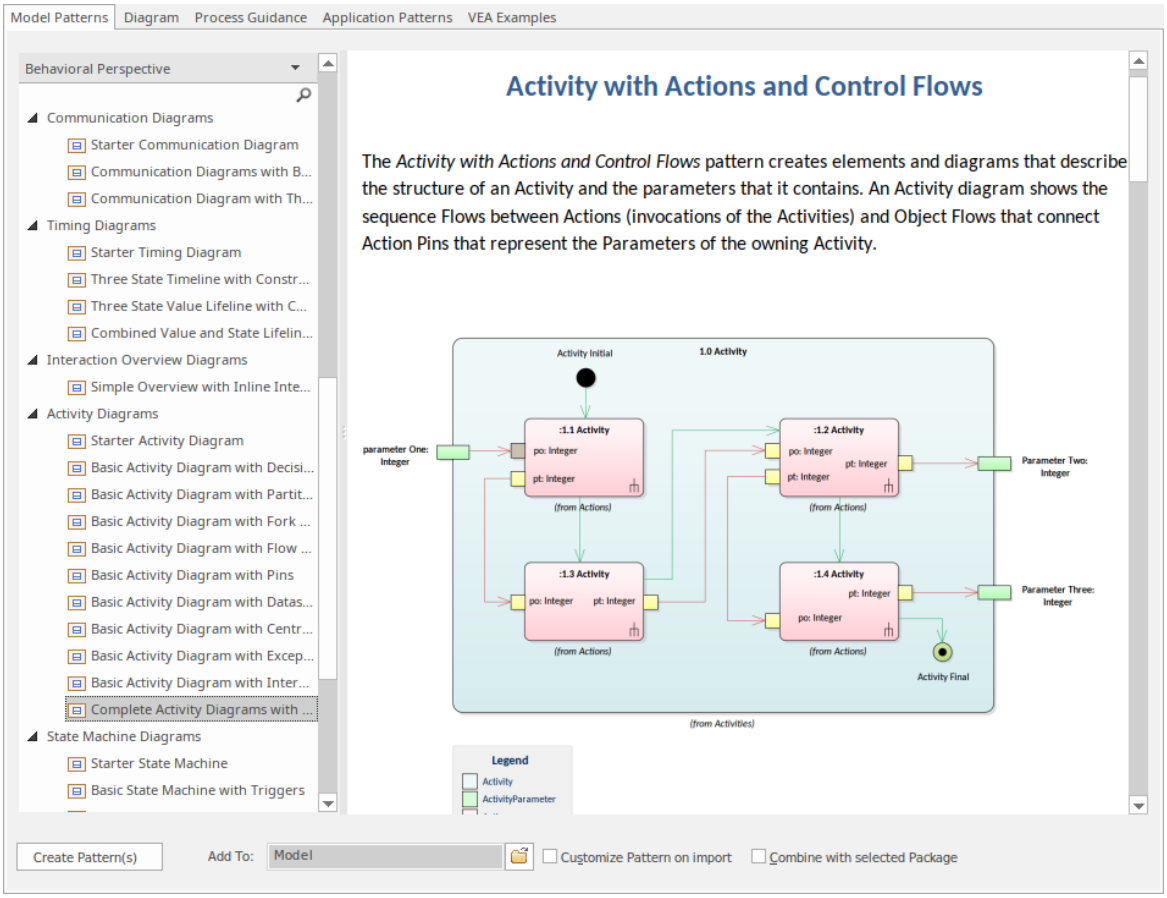
Model Wizard

The **Model Wizard** view provides Patterns from a wide range of technologies, which you can use to quickly generate new models in your project both when you first create the project and over time. The Model Wizard view has five tabs:

- Model Patterns - from which you can create basic models that you can develop further as components of your project
- Diagram - provides filtered groups of Patterns for generating individual diagrams
- Process Guidance - providing a series of Patterns that define the steps of business and development processes, including checklist elements that users can fill in as they complete the stages of the process
- Application Patterns - from which you can generate starter projects including model information, code and build scripts for several basic application types
- **VEA** Examples - through which you can import complete sample models (Packages), including all necessary model information, code and build scripts, to explore and try out the **Visual Execution Analyzer**

For the 'Model Patterns', 'Process Guidance' and 'Diagram' tabs, a 'Perspective', 'Select From' or **Filter** Group panel on the left of the view shows a list of Pattern groups and the Patterns they contain. If you click on a Pattern, a description displays in the right-hand panel of the window, showing a

type diagram (where appropriate) and an explanation of what the Pattern is and what it does. This description is drawn from an RTF file paired with the Pattern's source XML file.



Use of the 'Model Patterns' tab is described here. For information on the other tabs, see these Help topics:

- *Applying Process Guidance*
- *Application Patterns*
- *Visual Execution Analyzer Samples*

Note that the 'Diagram' tab closely resembles the 'New Diagram' dialog, and you work with the tab in the same way as you do with the dialog. See the *Add New Diagrams* Help topic. The only difference is that, being a model-level facility, the 'Diagram' tab enables you to create a new

Package into which to create the diagram. To create a new Package under the current Package, select the 'Create Package' checkbox. When you click on the **Create Diagram button**, the system prompts you to enter the name of the new Package.

Access

The **Model Wizard** automatically displays when creating a new project; otherwise use these options to access it:

Ribbon	Design > Model > Add > **Model Wizard**
Context Menu	Right-click on Package | Add a Model using Wizard
Keyboard Shortcuts	**Ctrl+Shift+M**
Other	**Browser window** caption bar :  Browser window caption bar :  > New Model from Patter_n

Generate a New Model

Field/Button	Action
Perspective	When you open the **Model Wizard**, the Pattern groups and Patterns available for the current Perspective are listed. The display defaults to showing the groups expanded. If you click on the **drop-down arrow** in the '**Perspectives**' title bar, a list of all the Perspective groups displays. As you mouse-over an option in the list, the Perspectives available in that group also display. When you click on a Perspective to select it, the panel is updated with the Pattern groups and Patterns provided by the selected Perspective. As you click on a Pattern in the list, a description is provided in the right-hand panel. It is possible to list every Pattern Group and Pattern available in the model; click on the drop-down arrow and select the 'All' option. Conversely, you can restrict the list of Patterns shown by typing a text string in the **Filter** Bar underneath the panel heading. Only Patterns that have that text string in their name are listed. This is also a useful tool for locating specific Patterns when you are not sure where they are

	held - select 'All' Perspectives and type the Pattern name in the Filter Bar field. The panel lists each Pattern that has the text string in its name If you are a Technology Developer you can create and import your own MDG Technology, and distribute one or more custom Model Patterns from that Technology through the Model Wizard; the name of your Technology (or Technology categories) is added to the selection list for your users to access the Technology Patterns. To select a Model Pattern, simply click on it. If you want to select more than one Pattern, hold the **Ctrl** or **Shift key** down while you click on each Pattern.
Create Pattern(s)	Click on this button to import a model structure derived from the Pattern(s) you have selected. The 'Importing Model Templates' dialog displays whilst the import is in progress, and any problems with the import are reported in the **System Output** window. The generated model structure displays under your selected Package in the **Browser window**.

Add To	Displays the name of the Package you have selected in the **Browser window**. If you are using the **Model Wizard** by default on a newly-opened project, this field shows the Model root, 'Model'. If you need to change the Package to generate the model under, click on the  icon and browse for the correct Package on the 'Navigator' browser.
Customize Pattern on import	A Pattern can contain several Packages; select this checkbox to indicate that you will import only some of these Packages from the Pattern into your model. After you click on the **Create Pattern(s) button**, the 'Select Packages' dialog displays on which you specify which of the Packages to import. If you select more than one Pattern, the 'Select Packages' dialog displays for each Pattern in turn. If you do not select the checkbox, all Packages in each Pattern will be imported into the model. The option is disabled if there are too few Packages to select from, or if it is not logical to import only some of the Packages.

Combine with selected Package	Select this option to import the contents of the Pattern into the selected Package. When creating a Pattern, Enterprise Architect will normally create a new Package to represent the Pattern, as a child of the selected Package. If you select this checkbox, no new Package is created and instead the contents of the Pattern are added to the selected Package (provided that the selected Package is not a root node).

Notes

- The 'Select Package(s)' dialog does not display for some of the Simple Template and Basic Template Patterns, even if the 'Customize Pattern on import' option is selected

Customize Model Content

When you set up a project by importing models using the **Model Wizard**, you generate the model structures from Patterns that you select in the Wizard. Each Pattern can contain a number of Packages and sub-Packages, and it is possible to select which of these Packages to add to your model and which to omit, using the 'Select Packages' dialog.

This is especially useful when setting up a new model with a reasonably complex structure, such as the TOGAF framework model. Being able to select which Packages are included and which are omitted is a good way to customize the level of implementation necessary for the current project.

Access

Ribbon	Design > Model > Add > **Model Wizard** > Select 'Customize Pattern on import' : **Create Pattern(s) button**
Context Menu	**Browser window** | Right-click on a Package node | Add a Model using Wizard | Select 'Customize Pattern on import' : **Create Pattern(s) button**

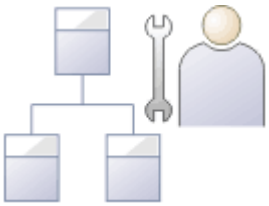
Keyboard Shortcuts	**Ctrl+Shift+M** | Select 'Customize Pattern on import' : **Create Pattern(s) button**
Other	**Browser window** caption bar menu | New Model from Pattern | Select 'Customize Pattern on import' : **Create Pattern(s) button**

Select Package(s) dialog

Option	Description
Select Package(s) to import from <pattern>	Shows the hierarchy of Packages contained in the Pattern, with a checkbox to the left of each item. The checkboxes are selected by default. Deselect the checkbox against each Package that you do not want to import. • Deselecting a Package automatically deselects all its child Packages • Re-selecting a Package automatically selects all its ancestor Packages
OK	Click on this button to import the selected Packages from the current Pattern.

Cancel	Click on this button to abort the creation of model structures from the current Pattern. If you originally selected only one Pattern, clicking on this button also closes the **Model Wizard**.

Diagrams



Diagrams are one of the most expressive views of the repository. They show a number of elements connected to each other by relationships, creating a narrative that describes a part of the repository in a visual language. Quite commonly the elements in a diagram exist in the same Package in the **Browser window**; however, the most expressive diagrams typically contain elements of different types from different Packages.

Creating a diagram is one of the most common ways for a modeler to add elements or relationships to the repository. As new elements are dropped onto the diagram canvas from the Toolbox, they are added to the same Package (or element) that contains the diagram. These same elements can participate in other diagrams; in fact, the more diagrams the elements appear in, the richer the model.

Diagrams are displayed in the Browser window as a child of either a Package or another element. While they often reside in the same Package (or element) as the elements they contain, they can be freely moved around the Browser window to any location.

Like learners of natural languages, newcomers to modeling often create basic diagrams that lack expression, but with a little practice and some time spent examining the diagrams

of experienced modelers their diagrams will soon become rich and expressive.

Enterprise Architect supports a wide range of modeling languages, each of which has a set of diagrams; these include the UML, BPMN, SysML and many other languages and technologies.

Developing Diagrams

As you create your diagrams and add modeling elements to them, you can use a number of powerful facilities to add extra meaning and expression, such as:

- Partition the diagram, whatever the type, either vertically into columns or horizontally into rows, using Swimlanes
- Partition the diagram into a grid of cells, using a Swimlanes Matrix
- Create a Kanban diagram, sectioned and color-coded to organize the elements' project management properties
- Add Legend elements, which both provide and can automatically apply a key to the colors and styles you have used for the modeling elements on the diagram
- Depict the more elements on the diagram as the objects that they represent, using graphical images from the **Image Manager**
- Automatically apply one of a range of layout formats to the diagram

Notes

- If the diagram display is too small to read comfortably, click on the diagram, press and hold **Ctrl** and use the mouse wheel to temporarily expand or reduce the display magnification
- Diagrams can be the subjects of informal discussions and formal reviews; to add a diagram to a:
  - Discussion, simply click on it when the **Collaborate window** is open
  - Review, encapsulate it in a Navigation Cell on the Review diagram

Diagram View

If you have created diagrams in the **Browser window**, you can select to open them and then add elements and connectors to them within the **Diagram View**. This is the main workspace for developing the structure of your model components, dragging new objects onto the diagram from the **Diagram Toolbox** and existing objects from the Browser window. You can also add elements and connectors using the Quick Linker and other context menus within the Diagram View, and move, format and edit them.

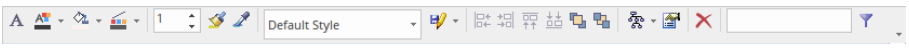
Most work on elements and connectors is carried out in the Diagram View, so understanding how it works and how to manipulate elements is essential. You can use the EAExample project supplied with the system, or your own 'sandpit' models, to explore the capabilities and behavior of the Diagram View.

Access

Browser Window	• Double-click on the diagram name or • Select the diagram node and press the **Enter key**

Diagram sections

Section	Description
Caption Bar	Across the top of a diagram is the diagram caption bar, which includes: • A horizontal 'chevron' icon to display or hide the **Diagram Toolbox** docked on the left of the **Diagram View**, from which point you can drag it and dock it elsewhere; if you then hide the toolbox and show it again, it is placed back on the left of the Diagram View Whichever diagram you have displayed, the Toolbox pages are appropriate to that diagram type • Icon and text label for the diagram type • Diagram name • A second 'chevron' icon that toggles display of the inline specification panel for the diagram (see the later table entry on this view). • A **drop-down arrow** that lists the currently-open diagrams and views; click on: - A diagram or view name to switch to that diagram or view - Options to redisplay the hidden

	Start Page and (if defined) the Model Default diagram, Model Default Kanban chart, User Default diagram or User Default Kanban chart • The window 'close cross'; click on this to close the displayed diagram
The Diagram Toolbar	This is the fixed Toolbar that displays at the top of every diagram if the 'Show Diagram Toolbar' option is selected on the 'Window Behavior' page of the **Preferences window**. It provides a wide range of options to help you lay out, format, view and filter the contents of diagram. 
Diagram View	The larger area underneath the Caption bar is the work area within which you can create and view the diagram structures. The borders of the printable diagram page are represented by pale broken lines; structures created beyond these borders will print on separate pages. The **Diagram View** area is also where the diagram and object context menus operate, and where the representation of

	the model structure can be changed to a **Specification Manager** view, Relation Matrix View, Construct View (Resource Management), Gantt chart or **Diagram List** format.
Inline Specification Panel	This panel presents a textual specification of each element in the diagram, the elements being listed initially in alphabetical order. This helps you to visualize and read, at the same time, the section of the model represented by the diagram, giving a comprehensive view of the model. It is also useful when you are creating Package structures using templates (with the **Model Wizard**); you can quickly update your elements without having to open another docked window. As you click on an element in either the diagram or panel, it is also selected in the other. The panel does not display separately from the diagram; you toggle it on or off for each diagram individually. You can double-click on the element name or notes in the panel and edit the text directly. You can also right-click on an element and select from these context menu options:

	• Properties - to display the 'Properties' dialog for the element • Edit Selection - to immediately put the element name in edit mode, to change it • Edit Notes - to immediately put the element notes in edit mode, to change them • Find in Project Browser - to locate and highlight the selected element in the **Browser window** • Properties Window - to display the **Properties window** for the element • Extended Properties - also displays the Properties window; view the 'Tags' tab and/or the <<stereotype>> segment of the 'Element' tab • Apply Sort - to change the order in which the elements are listed, to the sequence of elements either left to right across the diagram, or top to bottom down the diagram • Reload View - to refresh the display in the Inline Specification View

Notes

- Diagrams can contain hyperlinks to other diagrams, which are opened when you click on the links
- It is possible to open several diagrams at once, but within the **Diagram View** you can only view one at a time
- You can view and work on several diagrams at once by making each tab containing a diagram into a floating window, using the tab context menu; the docked Toolbar remains on the left of the Diagram View frame
- You can also work on elements using the **Diagram List**
- Additional information on the diagram, or a selected element within the diagram, is displayed in the system Status bar

Context Filter a Diagram

As you review a modeling diagram, it is possible to click on any element on the diagram and show only those elements that are directly related to the selected element. All other elements are grayed out until you click on the diagram background.

Access

Ribbon	Layout > **Filter** : Choose 'Relationships' from the drop-down list Layout > Tools > Filters and Layers : Right-click dialog background > Context Filtering Explore > Portals > Windows > Diagram > Filters and Layers : Right-click dialog background > Context Filtering

Notes

- When you set the option and click on an element, any elements on the diagram that are not directly related to the selected element are grayed out

- Setting the context filter applies to all diagrams that are open; you can select an element on each opened (floating) diagram and examine their relationships together
- To clear the filtering (but not turn Context Filtering off) press the **Esc** key
- To select the next element in a direct chain or group of relationships on a diagram, press the **Tab key**; the Tab key does not take you out of the element group
- To select the next element on the diagram, and display that element's related elements, use the arrow keys to move up, down, left or right to the next element in that direction; when moving left or right, the selection tends to be upwards rather than downwards
- When you enable the option on the Filters & Layers window, it overrides the Diagram Filters settings; to use the Diagram Filters again, toggle the 'Context Filtering' option off
- Context filtering can be made even more useful by highlighting the incoming and outgoing relationships in different colors, by pressing and holding the **L key** on the selected element

Diagram Tabs

Diagram tabs indicate which diagrams and views (such as the **Start Page**, document reports, code editors and the **Model Search**) are currently open in the work area, by showing the view name and icon. The currently displayed view is indicated by the name being in bold on a white tab. An asterisk against the tab name indicates that the diagram or view contains unsaved changes.



To open the view that you want, click on its tab. You can select options for saving, reloading, moving and closing the views from the tab context menu. You can also review the tabs and select one using the **View Tab Switcher window**. The tabs are located, by default, at the top of the **Diagram View**; if you prefer, you can move them to the bottom of the Diagram View using the 'Application Look' dialog (the '**Main View** Tabs at bottom' checkbox).

Access

Context Menu	Right-click on the 'Diagram' tab
Other	The **View Tab Switcher window** can be accessed by pressing and holding the **Ctrl**

	key, while pressing the **Tab key**.

Diagram tabs context menu options

Option	Action
Save Changes to '<tab name>'	Select this option to save changes made to the diagram or view.
Save All	Select this option to save changes made to the model.
Reload '<tab name>'	Select this option to reopen the diagram or view without the unsaved changes; that is, revert to the state before any of your changes were made. This also refreshes the diagram or view from the repository, to show any changes made by other users in a shared model.
Float	Select this option to convert the diagram or view into a floating window that you can move around your screen(s). An alternative is to simply click on the selected tab and drag it off the 'Diagram

	Tabs' row. You could use this option to display and work on several diagrams at the same time, provided that you have not enabled the 'Open Diagrams in Single Window' option in the 'Application Look' dialog. To restore a floating view to a tab in the **Diagram View**, right-click on its Caption Bar and select the 'Tabbed Document' option.
Close '<tab name>'	Select this option to close the selected diagram or view; the system prompts you to save any changes. You can also close the tab by clicking the middle mouse button/scroller.
Close All	Select this option to close all open diagrams and views; the system prompts you to save any unsaved changes.
Close All Except '<tab name>'	Select this option to close all diagrams and views except for '<tab name>'; the system prompts you to save any unsaved changes.
Close All <view type>	(Where several views of the same type can be opened at the same time, such as diagrams, report documents, or text

	editors.) Select this option to close all views of the same type as the selected tab, leaving views of other types still open.
Hide	(**Start Page** only) Select this option to hide the Start Page. To redisplay the Start Page, use the drop-down menu at the top right of the **Diagram View**, or select the 'Start > Desktop > Workspaces > Show Start Page' ribbon option.

Notes

- You can change the sequence of tabs by clicking on each tab and dragging it to a different position, as required; however, you cannot change the position of the '**Start Page**' tab - when displayed, it always sits at the left-hand end of the sequence
- If you have enabled the 'Open Diagrams in Single Window' option on the 'Application Look' dialog, you can open only one diagram at a time; however, you can scroll back through previously opened diagrams by clicking on the diagram tab and pressing the **Backspace key**
- One of the strengths of Enterprise Architect is that you

can work in one of the central views (the 'active' view) and instantly display and edit aspects of your model in one or more of the windows surrounding the view; having completed your review in a window, however, you can quickly switch focus back to the object you were working on in the active view by pressing **Ctrl+Shift+`** (effectively **Ctrl+~**)

- The only context menu option available for the 'Start Page' tab is the 'Hide' option

Switch Between Views

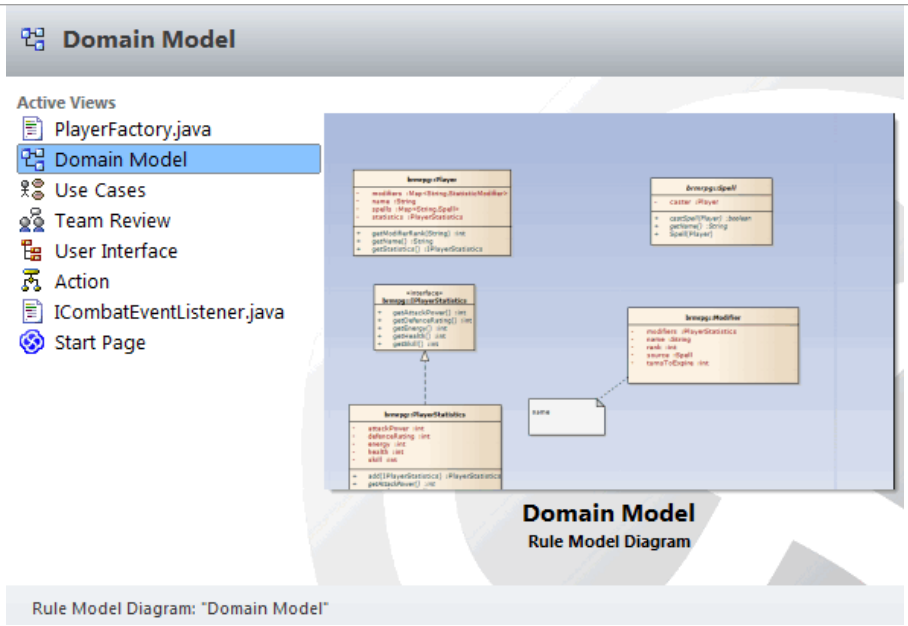
When there are a number of open views available in the **Diagram View** (such as separate diagrams, editors and the **Model Search** screen), you can review them and switch between them using the View Tab Switcher.

Access

Other	Click on a view tab, press and hold **Ctrl** while you press the **Tab key**.

Switching between views

Action	Detail
Selecting a different view	



The View Tab Switcher lists the currently open views, in order of most recently activated to least recently activated; the selection cursor is on the name of the view that was activated just before the currently active one.

Details of the selected view are displayed on the right hand side of the screen, and include:

- A preview thumbnail of the view, and
- A description of the view and its contents

Continue holding the **Ctrl key** to keep the window open; to move the selection cursor:

- Down the list of views, press the **Tab key**
- Up the list, press the **Shift+Tab** keys

	Alternatively, use the arrow keys.
Activating a view	To activate a view in the **Diagram View**, either release the **Ctrl key** or press the **Enter key**; alternatively, click on the required view. Activating a view moves it to the top of the 'Active Views' list, whereas closing a view removes it from the list completely.

Notes

- One of the strengths of Enterprise Architect is that you can work in one of the central views (the 'active' view) and instantly display and edit aspects of your model in one or more of the windows surrounding the view; having completed your review in a window, however, you can quickly switch focus back to the object you were working on in the active view by pressing **Ctrl+Shift+`** (effectively **Ctrl+~**)

Diagram Toolbox

The **Diagram Toolbox** is a panel of icons that you can use to create elements and connectors on a diagram. You can also use the Toolbox to add elements to:

- A Package through the **Specification Manager** and
- A Package or an element in the **Browser window**

Within the Toolbox, related elements and connectors are organized into pages, each page containing the elements or connectors used for a particular type of diagram. The diagrams include standard UML diagrams, Enterprise Architect Extended diagrams, and diagrams customized for any MDG Technologies and Profiles that you have added to the system.

When you open a diagram, the Toolbox automatically provides the element and relationship pages corresponding to the diagram type. This does not prevent you using elements and connectors from other pages in a given diagram, although some combinations might not represent valid UML.

The Toolbox provides a number of mechanisms for locating the page or object you want to use.

Access

Ribbon	Design > Diagram > Toolbox

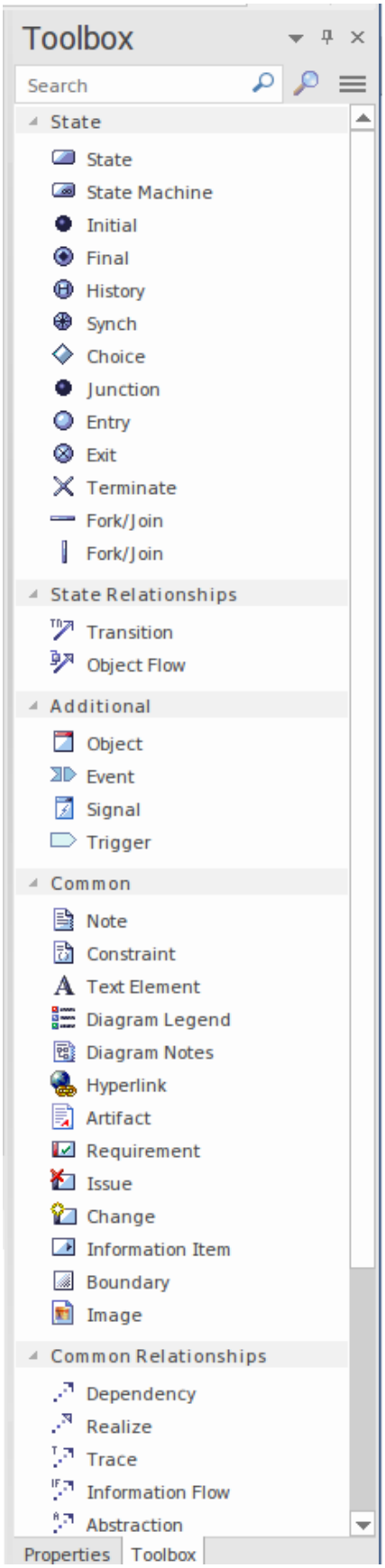
Keyboard Shortcuts	**Ctrl+Shift+3**
Other	You can display or hide the **Diagram Toolbox** by clicking on the » or « icons at the left-hand end of the Caption Bar at the top of the **Diagram View**.

Example

For any given diagram a number of Toolbox pages might display, but these generally include:

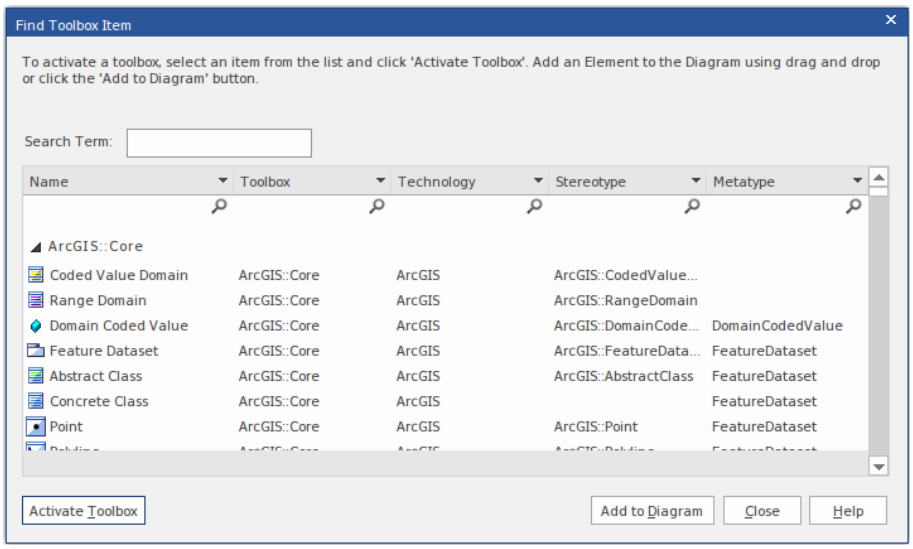
- <type> Elements
- <type> Relationships
- Common and
- Artifacts

This is illustrated in the example:


Toolbox
Search
State
State
State Machine
Initial
Final
History
Synch
Choice
Junction
Entry
Exit
Terminate
Fork/Join
Fork/Join
State Relationships
Transition
Object Flow
Additional
Object
Event
Signal
Trigger
Common
Note
Constraint
Text Element
Diagram Legend
Diagram Notes
Hyperlink
Artifact
Requirement
Issue
Change
Information Item
Boundary
Image
Common Relationships
Dependency
Realize
Trace
Information Flow
Abstraction
Properties
Toolbox

Locating Diagram Toolbox Pages or Icons

These options help you to locate and display particular pages or icons in the **Diagram Toolbox**

Option	Detail
Search for a Toolbox page or icon	The easiest way to locate a Toolbox page or specific icon that you require is to use the 'Find Toolbox Item' dialog, which you display by clicking on the button at the top of the Toolbox. The 'Find Toolbox Item' dialog displays every Toolbox page, listed by Technology name and page name, in alphabetical order.  The columns that display on this dialog can be added to using the 'Field Chooser' dialog (right-click on the column headings and select the 'Field Chooser' option), and dragged into a different

	sequence. You can also select options to use the 'Group Box' to reorganize the display of information in the dialog, and to expand or hide the contents of every **Diagram Toolbox** page. You can expand the Toolbox pages individually by clicking on the white arrowhead to the left of the page name. To locate a Toolbox page or icon, you can type some or all of the characters in the name or property of the object you are searching for in either: • The 'Search Term' field or • The appropriate **Filter bar** field underneath each column header (right-click on the column headers and select the 'Toggle **Filter** Bar' option) or • 'Search Term' and Filter bar fields in combination to further refine the search As you type, the list immediately reduces to show only the objects that have those characters in their name or property text. Be aware that if you have the list collapsed, showing only the Toolbox page name, the list might show page names that do not include the characters. Those pages do contain objects that have those characters. The search automatically selects the first object in

	the list; to move to the next object, press the Down Arrow key. To confirm what the object is that you have positioned the cursor on (especially if you do not want to use all the columns available in the 'Field Chooser' dialog) the stereotype and page name for the object display in the bottom left corner of the dialog. Having located the Toolbox page or object you require in the dialog, you click on the **Add to Diagram button** or drag the objects onto an open diagram to generate elements or connectors. You can also drag element icons into the **Specification Manager** to generate elements there. If you want to refresh the Diagram Toolbox to display the Toolbox page you have selected, so that you can use all the icons in it during this session, either: • Click on the **Activate Toolbox button**, or • Double-click on a page name or an object in the 'Find Toolbox Item' dialog, or • Right-click on an object in the list and select the 'Show Toolbox' option The context menu also provides options

	to • Pin the Toolbox page to the Diagram Toolbox so that it is always included there until it is specifically unpinned • Move the cursor to the first Filter Bar field ('Name') to edit it • Hide the Filter Bar • Expand or collapse all the Toolbox pages displayed in the dialog
Search for an icon on the current Toolbox page	To locate an element or link on the currently-displayed Toolbox pages, simply overtype the *Search* field at the top of the Toolbox with some or all of the characters of the object name. The field filters the pages to show only those objects that have those characters in their names. To clear the field, click on the  icon or press the **Delete key** or **Backspace key**. This facility is very useful if you have long pages of elements or several pages pinned in the Toolbox (see the *Customize the Toolbox* section).
Filter Pages by Perspective	Click on the  icon at the right of the Toolbox toolbar. This displays a list of Toolbox pages, filtered for the currently-selected Perspective. To set or

	change the Perspective, select the 'Change Perspective' option at the top of the menu. This displays the list of Perspective Groups; click on these to show a submenu of **Perspectives**, and select the required Perspective. In some cases the list of Toolbox pages might be of page groups that you select to list the pages themselves. Scroll through the lists to find the name of the pages you want. If the list is very long, you can scroll using the mouse wheel or up arrow and down arrow keyboard keys, or by clicking on the small black arrows at the top and bottom of the list window. Click on the required name to display the pages in the Toolbox. If you select the <default> option, at the top of the list, you display only the 'Common' and 'Artifact' pages. You can pin various pages in the Toolbox to customize it, showing the elements and relationships you most commonly use for the types of diagram you model with, and you can add MDG Technologies and UML Profiles to the Toolbox under their own Perspectives.

Create elements and connectors on the diagram from the Toolbox

Step	Instruction
1	In the **Browser window**, double-click on the icon against the required diagram. The diagram opens with the appropriate Toolbox pages for that diagram type. If you want a different set of elements and connectors, select the appropriate Toolbox pages as explained previously.
2	Click on the icon for the required item; for example, the Class element or Associate relationship.
3	For element items, click anywhere on the diagram to place the new element at the cursor position.
4	For connector items, drag the cursor between the source and target elements on the diagram; as you pass the cursor over the elements, a hatched border displays inside each element's solid border, indicating the source and potential target elements. To add bends to the connector, press **Shift** as you

	change the drag direction of the cursor. Alternatively, drag from the source element to an empty area of the diagram; the Quick Linker suggests common target element types and connector types to create.
5	Edit the element properties or connector properties, as required.

Create elements in the Browser Window

Click on the element icon in the **Diagram Toolbox**, then click on the parent Package or element in the **Browser window** to select it, and click again to drop the element under the parent.

You cannot add objects that do not display in the Browser window, such as Note elements, Text elements, connectors or Boundaries.

If an element is of a type that cannot be added as a child of the object in the Browser window, an error message displays.

Notes

- Dropping a Package icon from the Toolbox into a diagram creates a new Package in the **Browser window**, and a default diagram of the same type as the current diagram
- If you are creating several elements of one type, after creating the first just press **Shift+F3** or **Ctrl+click** to create the next element of that type; for connectors, click on the source element and press **F3** to create another connector of the same type
- You can change an unstereotyped element to one of its stereotyped elements by dragging the stereotyped element icon from the Toolbox onto the unstereotyped element in the diagram; for example, you can stereotype a Class by dragging a Table icon or a Profiled Class icon onto it
- As you drag the stereotyped element icon, you can press **Ctrl** to apply the element stereotype to the unstereotyped element, or **Shift** to add the stereotyped element as a new element; otherwise a small context menu displays offering these actions as options
- If the diagram element already has the stereotype, you can also drag the Toolbox icon onto it to synchronize the element's stereotype Tagged Values
- The Toolbox can be docked on either side of the diagram, or free floated on top of the diagram to expose more surface for editing; you can also hide and redisplay the Toolbox by clicking on the horizontal 'chevron' icon at the left of the diagram header bar
- Enterprise Architect provides Toolbox pages for a wide range of MDG Technologies, such as ArchiMate, BPEL, BPMN, Data Flow diagrams, ICONIX and Mind

Mapping, as part of the initial install

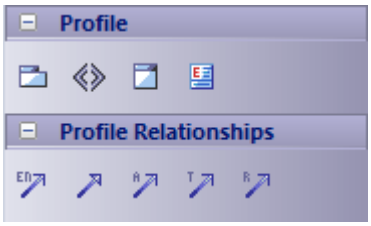
Toolbox Appearance Options

You can modify the appearance of the **Diagram Toolbox** pages in several ways, through the Toolbox context menu.

Access

Other	Right-click on a Toolbox page background

Options

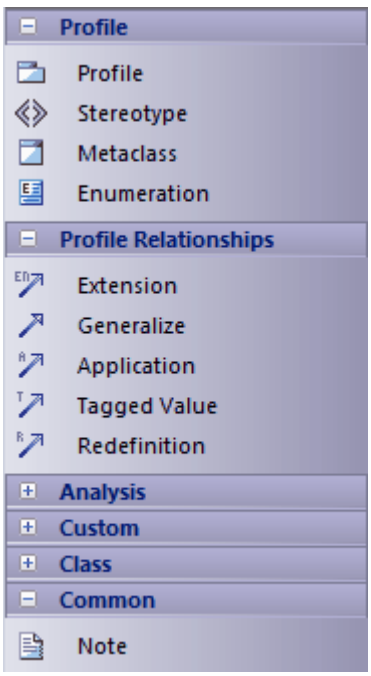
Option	Detail
Hide or Show element or relationship name labels	Select the 'Hide Labels' (or 'Show Labels') context menu option. The icons in the page then 'wrap' within the page, without text labels.  When you hide the labels, you can

	display the label of an individual element or relationship by moving the cursor over the icon.
Pinning individual pages to display all the time	Select the 'Pin in Toolbox' context menu option (not available on the 'Common' page, which displays all the time anyway). For example, if you 'pinned' the expanded 'Class elements' page, and switched to the 'Communication' pages, the Toolbox would include a collapsed 'Class elements' page below the 'Communication' pages. You can also pin a 'SysML Common' page to the Toolbox, simply by making the SysML 1.4 Technology the Active technology for your work login.
Unpinning pages	To unpin the expanded page so that it displays only in its own Toolbox group, select the 'Unpin from Toolbox' context menu option. This applies to pages pinned from the context menu or through the 'Pinned Toolbox Pages' dialog (see the *Tailor Toolbox to list all required pages at once* table).
Collapsing	To collapse a page to just show the

pages	heading (<type> elements, <type> Relationships or Common), select the 'Collapse the current branch' option. Alternatively, click on the page name. To expand the page again, click on the page name.

Tailor Toolbox to list all required pages at once

Step	Instruction
1	On the context menu, click on the 'Set Toolbox Visibility' context menu option. (This option is also displayed in the drop-down menu.) The 'Pinned Toolbox Pages' dialog displays, showing all the Toolbox pages available under the currently-selected Perspective.
2	By default, the dialog lists the element pages only, in alphabetical order. To include the corresponding relationship pages, select the 'Show Relationship Pages' checkbox at the bottom of the dialog.

3	For each page to display on the Toolbox, select the 'Pinned' checkbox. Deselect the checkbox if you no longer require a page to be displayed.
4	When you have defined the list of pages to display, click on the **OK button**. The pages you have selected are pinned to the Toolbox in a collapsed state, underneath the current diagram-type pages. 
5	To expand a page, click on the heading. To remove an individual page, expand it, right-click on it, and select the 'Unpin from Toolbox' option.

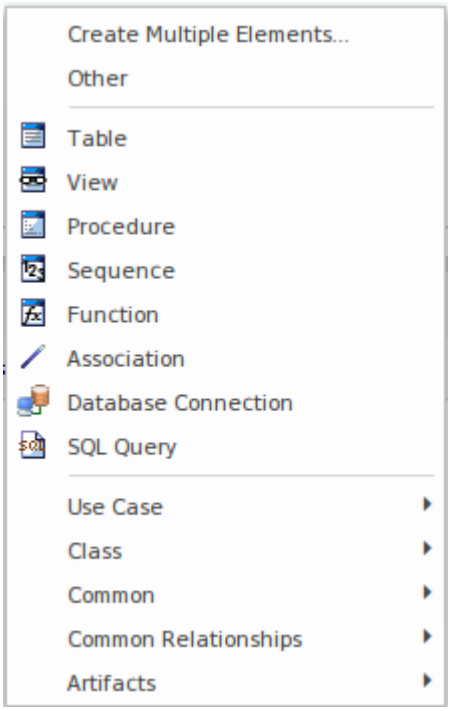
Notes

- On a Toolbox page for an MDG Technology or UML Profile, if you right-click directly on a Profile element an additional option - 'Synchronize Stereotype' - is available at the end of the context menu; this enables you to synchronize the Tagged Values and constraints for all elements created from the selected Profile element
- MDG Technologies can impose their own Toolbox page visibility; for example, if ICONIX is the active technology, all six ICONIX pages are automatically exposed in the Toolbox
- If the active Technology pages duplicate UML or Extended pages (as the ICONIX pages do), the pinned Technology pages override and replace the pinned UML and Extended pages; for example, if ICONIX is active and you have pinned the 'Extended | Analysis' page, the 'Analysis' page in the list is the ICONIX-defined page, not the 'Extended | Analysis' page

Toolbox Shortcut Menu

When you add elements and connectors to a diagram, you can do so using the 'Toolbox Shortcut' menu as an alternative to employing the full graphical Toolbox.

The menu resembles this example:



It provides options to add to the diagram:

- Multiple elements at once, of types appropriate to the diagram or selected Toolbox page
- Elements and connectors from Toolbox pages assigned to other diagram types (the 'Other' option)
- Elements and relationships specific to the current diagram type (in the example, the Database elements)
- Elements and relationships from any pages pinned in the Toolbox (in the example, the 'Use Case' and 'Class' options)

- Common elements and relationships
- Artifacts of any type

The advantage of using the shortcut menu is that it provides an increased amount of the workspace to be used for diagramming rather than displaying fixed (instead of pop-up) menus.

Use the Toolbox Shortcut Menu

Step	Action
1	Open a diagram.
2	Click on the diagram background and press the **Insert key** or **Spacebar** or, using the mouse, hold the left button and click the right button. The 'Toolbox Shortcut' menu displays.
3	If you want to: • Create a group of elements in one go, select the 'Create Multiple Elements' option to display the 'Create Multiple Elements' dialog, or • List elements and connectors for a different diagram type, either: - Select a pinned Toolbox page option, or - Select the 'Other' option to display the 'Find

	Toolbox Item' dialog and search for the appropriate element or toolbox page • Add a common element or an Artifact element, expand the appropriate option
4	Click on the element or connector to include in the diagram; the element is added to the diagram, or you can drag from one element to another to create the connector. If you select the 'Other' context menu option, the 'Find Toolbox Item' dialog offers the 'Activate <Type> Toolbox' option; this opens and activates the corresponding page in the Toolbox.

Notes

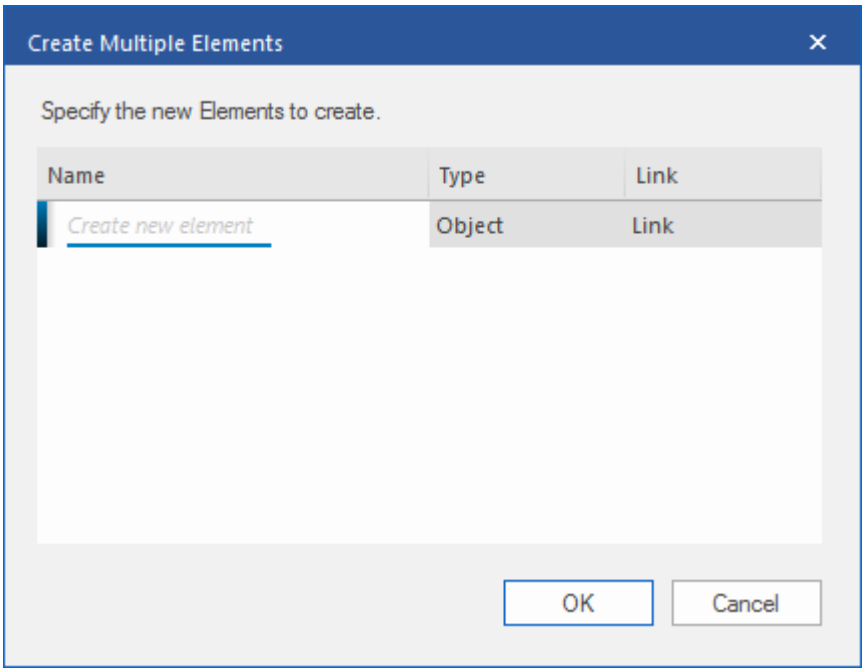
- As with the Toolbox itself, if an MDG Technology:
  - Is active
  - Automatically pins Toolbox pages, and
  - Duplicates UML or Extended pages

  then the pinned Technology pages override and replace the pinned UML or Extended pages in the 'Toolbox Shortcut' menu

Add Multiple Elements

Enterprise Architect provides a facility for quickly creating a number of elements to be added to a diagram in one go. This helps you to organize a set of elements - all the same type or a mixture of types - and review them, renaming or deleting some if necessary, before committing them to the diagram and model. One of the very useful features of this facility is that you can import a block of lines of text and automatically create a new element from each line. You can use this to generate a large number of, say, Requirement or Business Rule elements with meaningful names, from a source document such as a spreadsheet or specification in an instant.

You set up the group of new elements using the 'Create Multiple Elements' dialog.



There are two variants of this dialog. You can create:

- Separate elements through one of a number of keyboard commands, in which case the dialog shows the 'Name' and 'Type' columns, or
- Elements related to one selected element using the Quick Linker arrow, in which case the dialog also provides a 'Link' column (as shown) through which you specify what the relationships are between the selected element and the new elements

Access

On an open diagram:

Ribbon	Design > Element > Add > Multiple Elements
Keyboard Shortcuts	**Insert key** > Create Multiple Elements Space Bar > Create Multiple Elements Ctrl+right-click > Create Multiple Elements Shift+right-click > Create Multiple Elements
Other	Drag an element's Quick Linker arrow to an open space on the diagram and release the mouse button > Create Multiple Elements

Create the group of elements

On the 'Create Multiple Elements' dialog:

Step	Action
1	In the 'Name' column, overtype the *Create new element* text with the name of the new element.
2	In the 'Type' column, click on the **drop-down arrow** at the right of the field and select the required element type. The types offered in the drop-down list are those currently listed in the Toolbox selected for the diagram (or, if you selected the option with the Quick LInker arrow, the types are the same as those in the Quick Linker list).
3	Selecting the type positions the cursor on the next line, with the 'Type' field set to the same element type as you selected from the previous element. You can simply type in the next element name and press the **Enter key** to create another element of the same type, or type in the name and repeat Step 2 to add an element of a different type.

4	If you have displayed the 'Create Multiple Elements' dialog from the Quick Linker arrow menu, the dialog displays a 'Link' column for the type of relationship between the selected element and each new element. Click on the **drop-down arrow** and select the relationship type from the list; the list is the same as that provided by the Quick Linker, and consists of the appropriate common relationships for the source and element types. The first selected relationship sets the default for the next relationship you create on the dialog, and you can either leave that as it is or select a different type.
5	When you have specified a complete set of elements and relationships, you can quickly review and - if necessary - modify them using a context menu within the dialog (see the *Review New Elements* table) before you commit them to the diagram and model. When you are satisfied that you have defined the objects you require, click on the **OK button** to add them to the diagram and model. If the linked elements need to have other structures (such as the Object Flow link between an Activity and an Action) these are also added (in this case, an ObjectNode on the Activity and an ActionPin on the Action).

6	If you decide not to create elements from the names you have entered, press the **Cancel button** to delete them all and to close the dialog.

Review New Elements

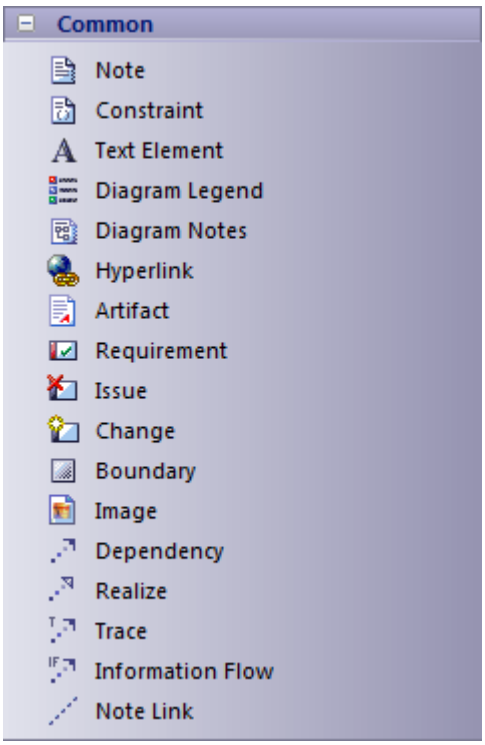
Right-click on an item in the list, to display the context menu.

Option	Action
Add New Element	Position the cursor in the next empty 'Name' field, ready for you to type in an element name. The 'Type' and 'Link fields' default to the values from the previous entry. Shortcut: **Ctrl+N**
Edit Ite	Place the selected element name in Edit mode, to be typed over with a different name. You can also change the name, element Type and

m	Link type by clicking on the field and overtyping or selecting a new value from the drop-down list. Shortcut: **Enter key**
Delete item	Immediately remove the selected item from the dialog. The element does not and will not exist in the diagram and model, and therefore will not have any links to other elements, Packages or diagrams to check. There is no validation to establish whether to delete the element from the diagram only, or from the diagram and model. Shortcut: **Ctrl+D**
Import Names from Clipboard	Insert a number of lines of text from the Windows clipboard, each line becoming the name of a new element. The element Type and Link type default to the last-defined types, which you can leave as is or change as required. If the dialog is too narrow to display the element names, you can resize it. The imported text can come from an internal or external file. The system takes any line break (Enter, **Shift+Enter**, **Ctrl+Enter**) as the end of the text string and hence the end of the element name.

Common Page

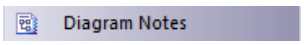
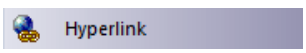
The 'Common' page of the **Diagram Toolbox** provides the elements and relationships that can be used on any diagram. It is displayed at the bottom of every other set of pages in the Toolbox.



The Artifacts Toolbox page is also a common page, displayed at the bottom of every Toolbox.

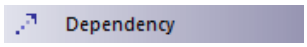
Common Elements

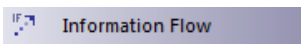
Element	Description
Note	A Note element is a textual annotation that can be attached to a set of elements

	of any other type.
	A Constraint is a form of Note, identifying a constraint on other elements.
	A Text element is a textual annotation that is similar to a Note, however has no boarder or background color.
	A Legend element provides a key to the colors and line thicknesses you have used to distinguish between element and/or connector groupings on the diagram.
	On a diagram, it is possible to display a customized text box called the Diagram Properties Note, which automatically shows the diagram properties.
	A Hyperlink element is a special kind of Text element that, when double-clicked, opens the configured target object such as a document, web page or diagram.
	An Artifact is any physical piece of information used or produced by a system.

	A Requirement element captures the details of a system requirement.
	An Issue element represents an item of concern (that might or might not arise) or a failure to meet a defined requirement in the current system.
	A Change element represents a change in the defined requirements for the current system and can be used to request and manage the change process.
	A System Boundary element is a non-UML element used to define conceptual boundaries.
	An Image is a System Boundary element that automatically has an Alternate Image defined.

Common Connectors

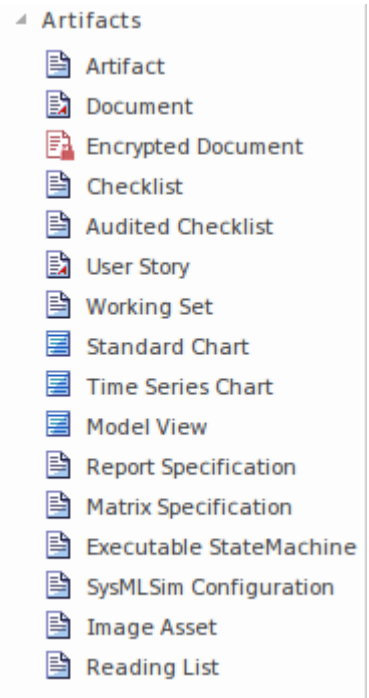
Connectors	Description
	Dependency relationships are used to

	model a wide range of dependent relationships between model elements.
	A source object implements or Realizes its destination object.
	The Trace relationship is a specialization of an Abstraction, connecting model elements or sets of elements that represent the same concept across models.
	An Information Flow represents the flow of Information Items (either Information Item elements or classifiers) between two elements in any diagram.
	A Notelink connector connects a Note to one or more other elements of any other type.

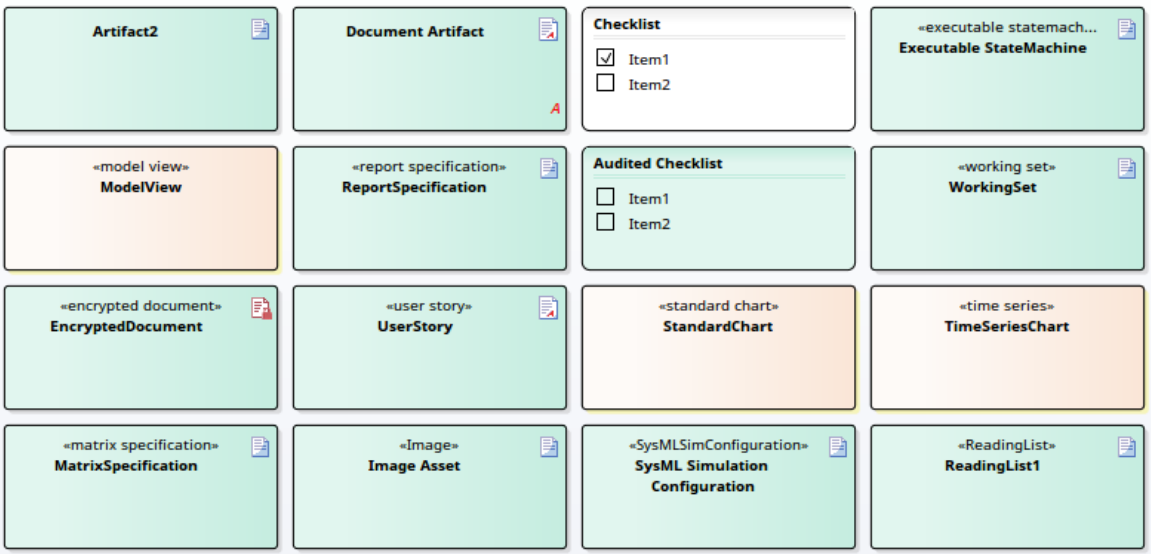
Artifact Toolbox

An Artifact is any physical piece of information used or produced by a system. In Enterprise Architect these are represented by the Artifact element, which can have one of a number of stereotypes to tailor it to a specific purpose, including internal operations and structures within the model as indicated in the examples. Artifacts can have associated properties or operations, and can be instantiated or associated with other Artifacts according to the object they represent.

You can create an Artifact element by dragging one of the Artifact icons from the 'Artifacts' page of the **Diagram Toolbox**, or from one of several other Toolbox pages according to type. The 'Common' page of the Toolbox also has a generic Artifact icon that - when you drag it onto a diagram - offers a choice of types of Artifact to create.

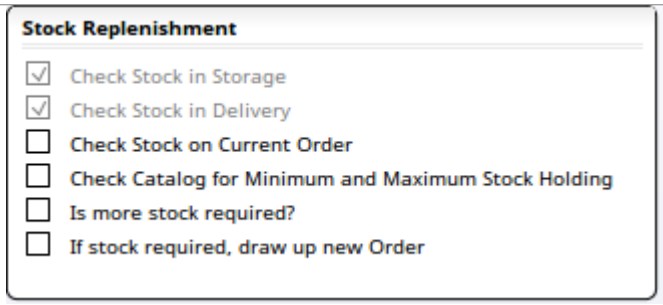
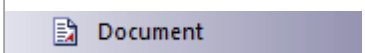


Types of Artifact

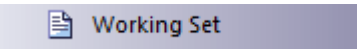
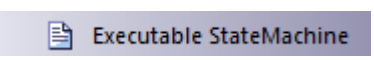


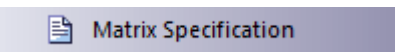
Type	Description
Artifact (Base)	A Base Artifact defines the external artifacts used in a process and the internal artifacts generated in the process, such as model files, source files, database tables, development deliverables or support documents. The files represented by the Artifact are listed on the 'Files' tab of the **Properties window** for the element. To open the files represented by the Artifact, click on the element on the diagram and press **Ctrl+E**. Each file is opened either on a separate tab in the **Diagram View** workspace (if the file can be opened within Enterprise Architect) or in the default Windows viewer/editor for

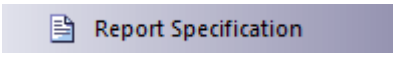
	the file type (if the file cannot be opened within Enterprise Architect). Files can also be launched individually from the 'Files' tab (opening in the Windows default editor), as for elements of any other type that have associated files. **Toolbox Icon** 
Checklist Artifact	A Checklist Artifact provides the facility for generating a list of items, each with a checkbox, to be used as a checklist. You can set each checkbox to default to being selected or unselected, and set all selected options to be grayed out or struck through, so that the unselected options are more prominent. The end users can then work with the element to tick off items that have been obtained or activities that have been completed. A version of this Artifact - the Requirements Checklist - is available in the 'Extended Requirements' Toolbox page. This automatically contains ten characteristics of a good Requirement, for a Requirement author to tick off as they check that their Requirement has been set up to show those characteristics.

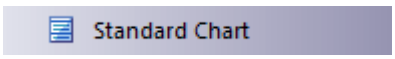
	 **Toolbox Icon** 
Document Artifact	A Document Artifact is an Artifact having a stereotype of «document». You create the Document Artifact using the Artifacts, Component, Documentation or Deployment pages of the **Diagram Toolbox**, and associate it with an RTF document or CSV file. Double-click on the element to display the Linked Document Editor. When you have created the Linked Document, the Document Artifact element on the diagram shows an 'A' symbol in the bottom right corner.  **Toolbox icon** 
Encrypted Document Artifact	An Encrypted Document Artifact is used to create and hold a Linked Document that is automatically encrypted, and that cannot be opened and automatically

	decrypted within Enterprise Architect without entering a password. You can therefore use the generated Artifact element to record sensitive information, which you protect from general access by assigning a password. When you drag the 'Encrypted Document' icon onto the diagram from the 'Artifacts' page of the Toolbox, a prompt displays to type in a password. When you enter the password, you can create the Linked Document. Thereafter, if any user attempts to open the document, the same password prompt displays. If the user does not provide the password that you originally specified, the document will not open. If the correct password is provided, the document is decrypted and opened. The Encrypted Document Artifact is indicated in the Toolbox page, diagram and **Browser window** by a red 'document' icon - .
Working Set Artifact	A Working Set Artifact defines a Working Set that opens various windows, diagrams and views, recreating a work environment that you frequently use. • To create or modify the Working Set,

	right-click on the element and select the 'Edit Working Set' option • To execute the Working Set to open the defined windows and views and execute any commands, double-click on the element **Toolbox icon** 
Executable StateMachine Artifact	An Executable StateMachine Artifact is the vehicle through which you can generate, build (compile) and execute - via simulation - code for a StateMachine or complex of StateMachines. Each StateMachine is the child of a Class element; when you drag the Class from the **Browser window** onto the Artifact element, it is pasted inside the Artifact as a Part. You can paste several Classes - and, therefore, Parts - into a single Artifact. Having set up the Executable StateMachine Artifact, you use simple context menu options on the Artifact to perform the code generation, build and execution operations on all StateMachines bound within the Artifact. **Toolbox icon** 

Matrix Specification Artifact	A Matrix Specification Artifact encapsulates a **Relationship Matrix** Profile definition. When you have created the element on the diagram, you double-click on it to display the 'Matrix Specification' dialog, in which you create the Profile definition. The Profile takes the name of the element. The profile defined in the Artifact is independent of the Package that contains the Artifact element, and therefore could specify source and target Packages other than parent Package. After you create the Profile definition, each time you double-click on the Artifact element the Relationship Matrix displays with the Profile applied. To edit the Profile, right-click on the Artifact and select the 'Documentation | Edit Matrix Profile' option. **Toolbox icon** 
Report Specification Artifact	A Report Specification Artifact encapsulates a report definition. When you have created the element on the diagram, you double-click on it to display the 'Generate Documentation' dialog, on

	which you enter the report parameters and, if required, generate the report. After you create the Report Specification, each time you double-click on the Artifact element the 'Generate Documentation' dialog again displays with the same report parameters. You can continue to generate the same report, or alter the parameters if necessary. If you change the parameters, they are re-presented until such time as you change them again, **Toolbox icon** 
User Story Artifact	A User Story Artifact provides a means of documenting a business Use Case, in the context of Agile methodologies such as Extreme Programming (XP). In the Linked Document, you define the functions a business system must provide; it captures the 'who', 'what' and 'why' of a requirement in a simple, concise format. The User Story Artifact behaves as a Document Artifact, prompting you to select a Linked Document template to base the document on. **Toolbox icon**

	
Standard Chart Artifact	A Standard Chart Artifact provides the facilities for generating a Pie Chart or Bar Chart on an aspect of the data in your model. It adds three 'Chart Details' tabs to the standard tabs of the element 'Properties' dialog. After you have added the element to your diagram, double-click on it. The element 'Properties' dialog automatically opens at the 'Chart Details - Source' tab. Define the chart type and data source, then go on to define any filters you want to apply, and how the chart should display. Once you have defined the chart, it automatically displays with the latest information whenever you open the parent diagram. **Toolbox icon** 
Model View Artifact	A **Model View** Artifact provides the facilities for generating a tabular Model View Chart on a segment of the data in your mode, extracted using a custom SQL search. After you have added the element to your diagram, double-click on it. The element

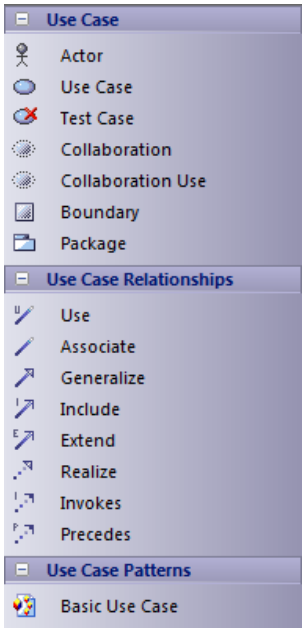
	'Properties' dialog automatically opens at the 'Chart Details - Source' tab. Define the SQL Search to extract and tabulate the information. Once you have defined the chart, it automatically displays with the latest information whenever you open the parent diagram. **Toolbox icon** 
Time Series Chart Artifact	A **Time Series Chart** Artifact provides the facilities for generating a linear graph of a model property over time. After you have added the element to your diagram, double-click on it. The element 'Properties' dialog automatically opens at the 'Chart Details - Source' tab. Define the Package from which the data is to be extracted, and the time interval over which the data is to be sampled. Then go on to define the appearance of the chart. Once you have defined the chart, it automatically displays with the latest information whenever you open the parent diagram. **Toolbox icon** 

Use Case Toolbox

The Use Case Toolbox pages are used to model system functionality from the perspective of a system user. Use Case objects are used to build the Use Case models, which describe the functionality of the system to be built, the requirements, the constraints and how the user interacts with the system.

Sequence diagrams can be associated with Use Cases to capture workflow and system behavior.

Use Case Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. These two relationships are stereotyped Dependency relationships defined by the OPEN Modeling Language (OML - Object-oriented Process, Environment and Notation Modeling Language - is an international de facto standard object-oriented development method

	developed and maintained by the OPEN Consortium). They have been incorporated into the Use Case modeling elements. • **Invokes** indicates that Use Case A, at some point, causes Use Case B to happen • **Precedes** indicates that Use Case C must complete before Use Case D can begin The 'Basic Use Case' icon adds the Basic Use Case Pattern to your diagram as a starting point for developing the diagram (drag the icon onto the diagram to open the 'Add Pattern <name> to Diagram' dialog and click on the **OK button**).

Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

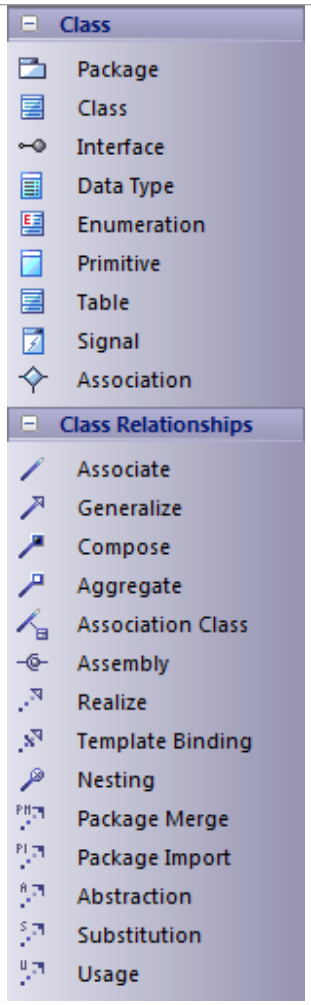
Class Toolbox

The Class Toolbox can be used for creating Class models and Data models. Such models contain Package diagrams, Class diagrams and Object diagrams - those diagrams that usually display elements concerned with the logical structure of the system, such as Objects, Classes and Interfaces.

Logical models can include domain models (high level business driven object models) through to strict development Class models (defining inheritance, attributes and operations).

Class Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. You use the Table element to insert a stereotyped Class for use in data modeling. The Association element is an n-ary Association, which is used to model



complex relationships between three or more elements.

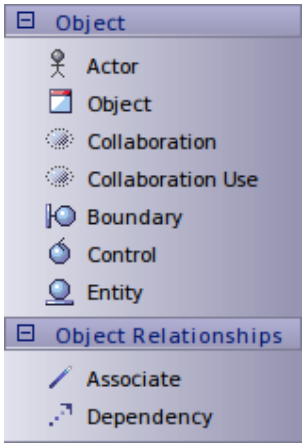
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Object Toolbox

The Object Toolbox is used to create Object diagrams, which reflect multiplicity and the roles that instantiated Classes could serve. They are useful in creating different cases in which relationships and Classes are applied.

Object Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the UML Elements and UML Connectors sections of the Help. A Boundary is a stereotyped Object that models some system boundary, typically a user interface screen. A Control is a stereotyped Object that models a controlling entity or manager. An Entity is a stereotyped Object that models a store or persistence mechanism that captures the information or knowledge in a system.

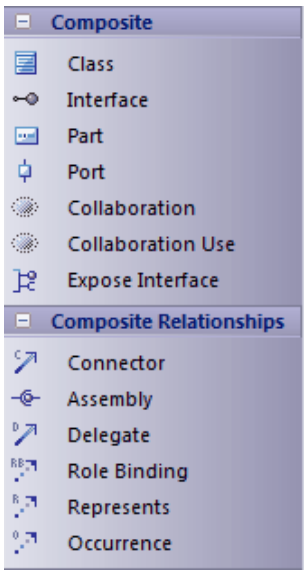
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Composite Toolbox

The Composite Toolbox is used to create **Composite Structure** diagrams. These reflect the internal collaboration of Classes, Interfaces or Components to describe a functionality or to express run-time architectures, usage patterns and the participating elements' relationships, which static diagrams might not show. The Class elements form the basic structure of the diagram, with Interface, Part, Port and Collaboration elements defining the functionality or use of the Classes.

Composite Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the UML Elements and UML Connectors sections of the Help.

Notes

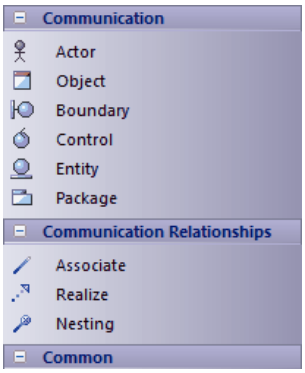
- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Communication Toolbox

The Communication Toolbox is used to develop Communication diagrams, in which you model dynamic interactions between elements at run-time. These diagrams are used to model workflow and sequential passing of messages between elements in real time; they are often placed beneath Use Case elements to further expand on Use Case behavior over time.

The Actor element models a user of the system, while the other elements model things within the system, including standard elements (Object) and the user interface component (Boundary), Controller and Entity.

Communication Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the UML Elements and UML Connectors sections of the Help. A Boundary is a stereotyped Object that models some system boundary, typically a user interface screen. A Control is a stereotyped Object that

	models a controlling entity or manager. An Entity is a stereotyped Object that models a store or persistence mechanism that captures the information or knowledge in a system.

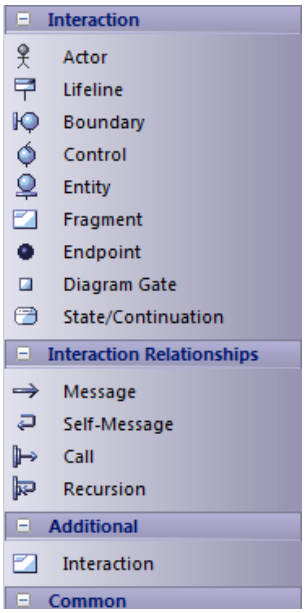
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Interaction Toolbox

The Interaction Toolbox is used to develop Sequence diagrams. You use Sequence diagrams to model dynamic interactions - workflow and the sequential passing of messages - between elements in real time. Sequence diagrams are often placed beneath Use Case elements to further expand on Use Case behavior over time.

Interaction Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the UML Elements and UML Connectors sections of the Help. A Boundary is a stereotyped Object that models some system boundary, typically a user interface screen. A Control is a stereotyped Object that models a controlling entity or manager. An Entity is a stereotyped Object that models a store or persistence mechanism that captures the information or

	knowledge in a system.

Notes

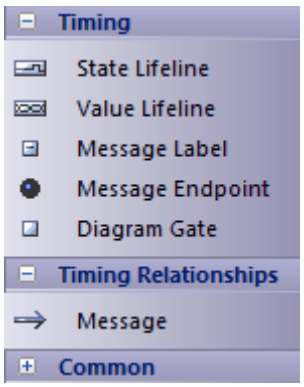
- The Interaction element supports the capture of Interaction diagrams through the **Browser window** and diagram context menus; you cannot capture these diagrams by dragging the element onto a diagram
- The 'Fragment' icon creates Combined Fragment elements
- Message, Self Message and Call are described as Sequence diagram messages
- Messages can be simple or recursive calls
- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Timing Toolbox

The Timing Toolbox provides the modeling elements for creating Timing diagrams, which define the behavior of objects along a time-scale to visualize how the objects change state and interact over time.

Timing diagrams can be used for defining hardware-driven or embedded software components, and time-driven business processes.

Timing Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the UML Elements and UML Connectors sections of the Help. The Message relationship is specifically described for Timing diagrams.

Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

State Toolbox

The State Toolbox is used to develop StateMachine diagrams, to show the enableable states a Class or other element might be in and the transitions from one state to another. These diagrams are often placed under a Class element in the **Browser window** to illustrate how a particular element changes over time. States can have substates; for example, Accelerate and Brake might be substates of Active.

State Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. Event is used to create a basic Send element (the default) or Receive element on the **StateMachine diagram**.



Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Activity Toolbox

The Activity Toolbox is used to model system dynamics from a number of viewpoints (represented by activities and the flows between them) in Activity diagrams and Interaction Overview diagrams. Both types of diagram are usually created under Activity elements.

Activities can be stereotyped as a process to display a business process icon; the Activity represents some work that is carried out, which might overlap several Use Cases or form only a part of one Use Case.

Activity Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. The 'Basic Activity' icon adds the Basic Activity Pattern to your diagram as a starting point for developing the diagram (drag the icon onto the diagram to open the 'Add Pattern <name> to Diagram' dialog and click on the **OK button**).



Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

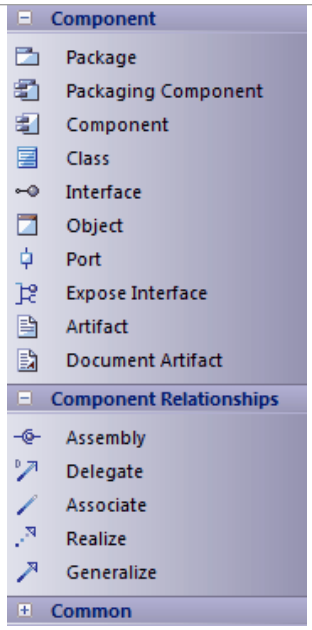
Component Toolbox

The 'Component' pages of the **Diagram Toolbox** provide model elements that you can use to model the physical components of your system in a Component diagram. The 'Component' pages contain elements and connectors related to the actual building of the system - the components that make up the system (such as ActiveX DLLs or Java beans), the Interfaces they expose and the dependencies between those elements.

A component is a piece of hardware or software that makes up the system; for example, a DLL or a Web Server are components that might be deployed on a Windows 2000 Server (Node).

Component Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. A Packaging Component is an element that appears very similar to a Component in a diagram but behaves as a Package in



the **Browser window**.

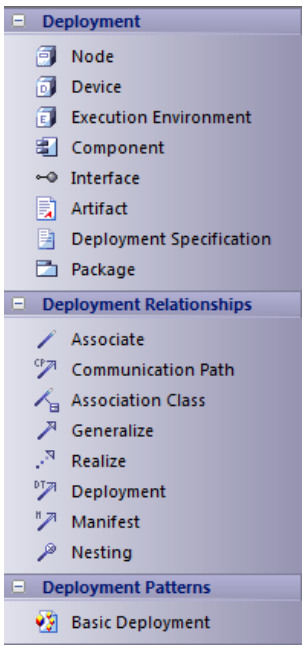
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Deployment Toolbox

The Deployment Toolbox provides model elements that you can use to model the physical components and deployment structure of your system in a Deployment diagram. The Deployment group contains elements related to the actual building of the system - the hardware or software Components that make up the system (such as ActiveX DLLs or Web Servers) and the physical platforms (Nodes) those Components run on (such as a Windows 2000 Server), including the physical connections between Nodes.

Deployment Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. The 'Basic Deployment' icon adds the Basic Deployment Pattern to your diagram as a starting point for developing the diagram (drag the icon onto the diagram to open the 'Add Pattern <name> to Diagram' dialog and click on the **OK**

	button).

Notes

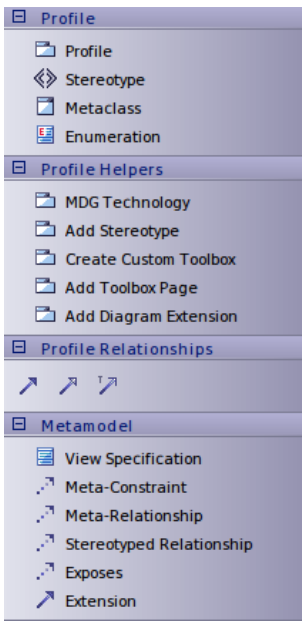
- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Profile Toolbox

The Profile Toolbox is used in creating Profiles, a generic mechanism for extending UML models. Profiles can define custom Stereotypes, Tagged Values, Diagram Types and Toolboxes.

The Toolbox also contains a set of Profile Helpers that provide templates and dialogs to help you create Stereotype Profiles, Toolbox Profiles and Diagram Profiles within an MDG Technology.

Profile Toolbox pages

Image	Detail
	The Profile Package element acts as the container for the diagrams, elements and connectors that define the Profile itself. The Stereotype element provides a mechanism for varying the behavior and type of a base UML model element. A Metaclass element represents the base UML element or connector type that you are extending. An Enumeration element is used to define an enumeration Tagged Value, which can be attached to one or more Stereotype

	elements that have been defined in the Profile. Profile Helpers are templates and dialogs that help you create, respectively: • An MDG Technology Package to contain Profile definitions • Stereotypes and Metaclasses within a UML Profile • A customized Toolbox Profile • Toolbox pages within the customized Toolbox • A Diagram Profile to define an extended diagram type An Extension relationship shows that a Stereotype extends a Metaclass; all Stereotypes must extend either: • One or more Metaclasses, or • Another Stereotype that extends a Metaclass; you can create a chain of extending Stereotypes that ultimately extend the Metaclass (however, in practice you are unlikely to have more than two Stereotypes in the chain) A Generalize relationship shows that one Stereotype specializes a more general Stereotype; the more general Stereotype must still extend a Metaclass. A Tagged Value relationship defines a

	reference-type (that is, RefGUID) Tagged Value owned by the source stereotype; the Tagged Value is named for the target role of this association, and is limited to referencing elements with the stereotype by the association target element

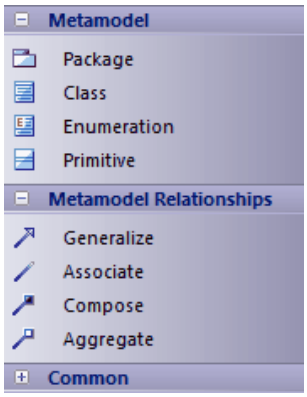
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Metamodel Toolbox

The Metamodel Toolbox provides model elements for creating Metamodel diagrams.

Metamodel Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the UML Elements and UML Connectors sections of the Help. The Metamodel Primitive element that supports the MOF specification, which you create using the Primitive icon, is deprecated. Use the Primitive element from the Class Toolbox.

Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the

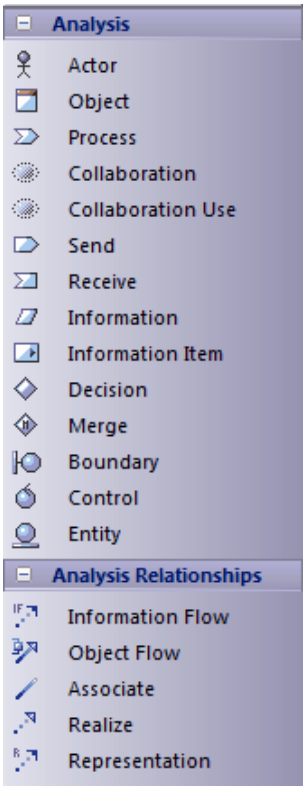
diagram; set an element name and other properties as prompted

- To add a relationship, click on the appropriate icon, then click on the source element in the diagram and drag to the target element

Analysis Toolbox

Analysis-type elements are used early in modeling to capture business processes, activities, collaborations and general domain information. They are generally used in Analysis diagrams.

Analysis Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. A Process is a stereotyped Activity, used to model business processes. A Boundary is a stereotyped Object that models some system boundary, typically a user interface screen. A Control is a stereotyped Object that models a controlling entity or manager. An Entity is a stereotyped Object that models a store or persistence mechanism that captures the information or knowledge in a system.

	You can also use a number of stereotyped elements from the 'Business Modeling' pages of the Toolbox, to capture UML business process modeling extensions such as worker, case worker, entity and controller.

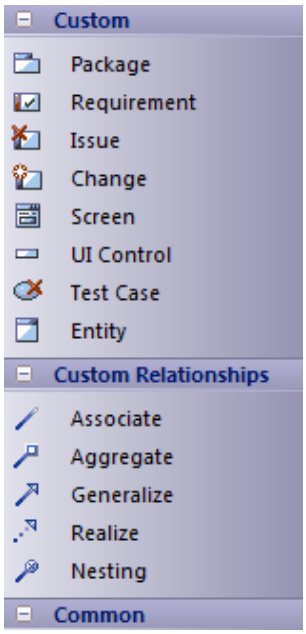
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Custom Toolbox

The Custom Toolbox contains extended UML elements that can be of use in modeling or designing your system in a Custom diagram.

Custom Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the UML Elements and UML Connectors sections of the Help. A Requirement is a custom element used to capture requirements external to standard UML elements; a Requirement expresses required system behavior that can cross several Use Cases. You can connect Requirements to other elements using the Realize connector to express the implementation of a requirement and hence the traceability from user requirements to what is being built.

	An Issue element is a structured comment that contains information about defects and issues relating to the system/model; affected elements are connected by Trace connectors. A Change element is a structured comment that contains information about changes requested to the system/model; affected elements are connected by Trace connectors. A Screen provides a stereotyped Class element that displays a GUI type screen; this can be used to express application GUI elements and flows between them. A UI Control likewise can be used to express GUI controls. A Test Case element defines what must be set up in order to test a particular feature; you can use it to define a set of tests once for a number of elements. As an element rather than a property, it provides greater visibility for tests. Entity - use of this element is deprecated - it was originally intended to take the role now supplied by the Table element.

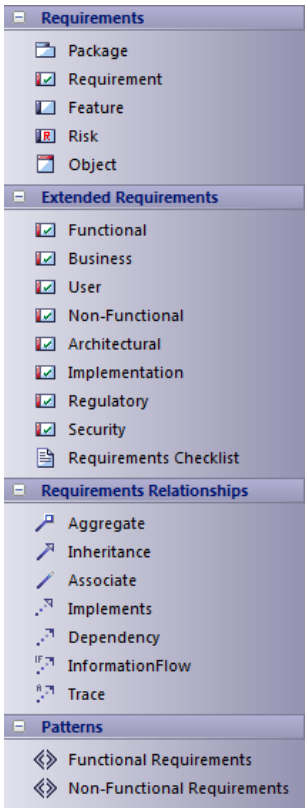
Notes

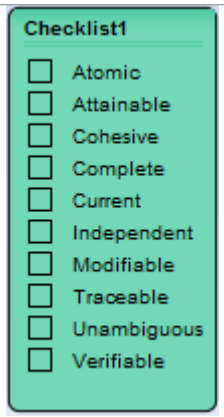
- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Requirements Toolbox

As an analysis step, often it is desirable to capture simple system requirements. These are eventually realized by Use Cases.

Requirements Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. A Requirement is a custom element used to capture system requirements external to individual UML elements; a Requirement expresses required system behavior that can cross several Use Cases. You can create a number of specific types of stereotyped Requirement from their own element icons. Requirements Checklist is a stereotyped Checklist, and is rendered as this element:

	 A Feature is a small client-valued function expressed as a requirement. Features are the primary requirements-gathering Artifact of the Feature-Driven Design (FDD) methodology. A Risk element represents an identified risk to the project. You can also add structures of Functional and Non-Functional Requirements to your diagram, each with a Checklist, using the two Requirements Patterns.

Notes

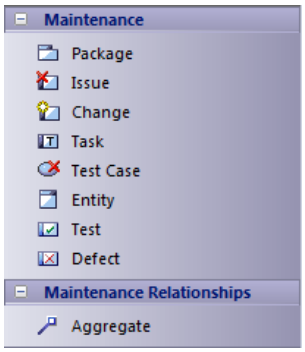
- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted

- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Maintenance Toolbox

The Maintenance Toolbox provides the elements and connector for defining and monitoring Issues, Defects, Changes, work Tasks and Tests for project management.

Maintenance Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. An Issue element is a structured comment that contains information about issues relating to the system or model; affected elements are linked by Trace connectors. A Change element is a structured comment that contains information about changes requested to the system/model; affected elements are connected by Trace connectors. A Task element defines a task attached to an element; you can assign resources specifically to the task rather than just to

	the parent element, and monitor the tasks on diagram Gantt charts. A Test Case element defines what must be set up in order to test a particular feature; you can use it to define a set of tests once for a number of elements. As an element rather than a property, it provides greater visibility for tests. An Entity is an abstract type that is often used in analysis to record that something is of interest to the system, without necessarily defining how it will be represented in the system. A Test element represents a step in any of the Basic, Alternate or Exception Paths of a Scenario, created within a Use Case or other element. A Defect element is a structured comment that contains information about defects relating to the system or model; affected elements are linked by Trace connectors.

Notes

- To add an element to the currently-open diagram, click on

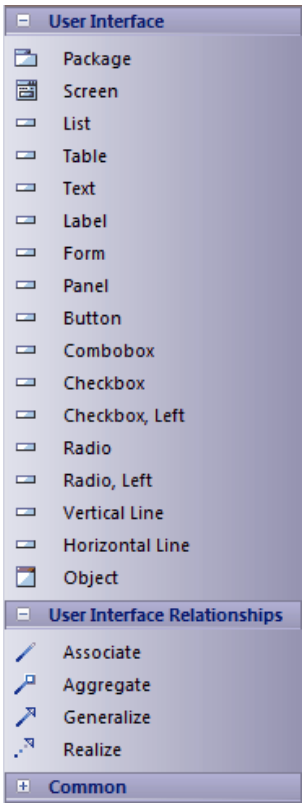
the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted

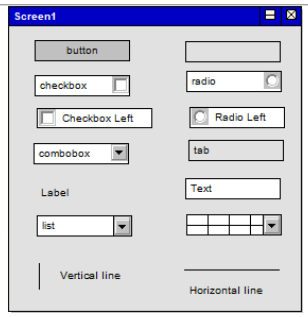
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

User Interface Toolbox

The User Interface Toolbox provides a wide range of icons that you can use to create User Interface diagrams.

User Interface Toolbox pages

Image	Detail
	Except where discussed here, each element and relationship that you can create using these Toolbox pages is described in the *UML Elements* and *UML Connectors* sections of the Help. The Screen element represents the screen or dialog frame in a graphical user interface. You can identify fields, delimiters and buttons on the screen using the different UI Control elements. UI Control elements are different stereotyped elements defining controls such as buttons, fields and combo boxes. You arrange these on the Screen element, as part of a User Interface diagram, to define a screen or dialog in a user interface.



This diagram illustrates each type of UI Control element from the Toolbox, within a Screen element.

Notes

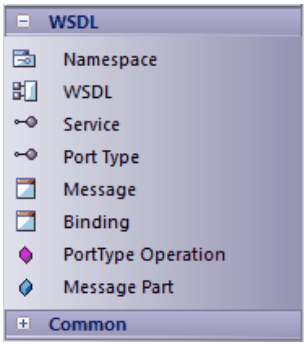
- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element
- To place one UI Control object inside another (for example, adding fields or options to a Panel or Form), press **Shift** as you drag the object into place
- You can add objects to the diagram and move them around, but once the object is within the boundary of a Screen element (or another UI Control element) you cannot move it out of that boundary on the diagram; you can move child elements between parents on the **Browser window**
- If you delete a Screen (or other parent element) on the diagram, all the UI Control elements it contains are also

deleted from the diagram

WSDL Toolbox

The WSDL Toolbox provides elements you can use to rapidly develop a W3C Web Service Definition Language (WSDL) model, from which you can automatically generate WSDL documents.

WSDL Toolbox page

Image	Detail
	A Namespace represents the top-level container for the WSDL model. Drag this element onto an open diagram to create the necessary model structure for WSDL documents. A physical WSDL document is represented as a **UML Component**. Its interfaces represent the WSDL Services. A WSDL Port Type is modeled as a **UML Interface**. Its Port Type Operations are realized by Binding elements. Each of the operation parameters is derived from the Message elements defined in the Messages Package.

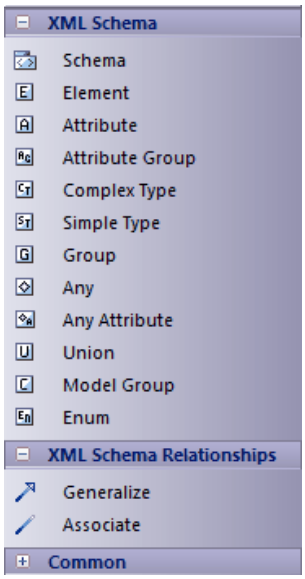
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

XML Schema Toolbox

The XML Schema Toolbox provides model elements that you can use to model W3C **XSD** schema files. This Toolbox implements the constructs provided by the UML Profile for XML Schema. Having created your model, you can automatically generate the W3C XSD schema files from it.

XML Schema Toolbox pages

Image	Detail
	A Schema corresponds to a **UML Package**, which contains the type and element definitions for a particular targetNamespace. Drag this item onto an open diagram to create the Package to contain your schema model elements. The Package is stereotyped as XSDschema. Open the logical diagram created under the XSDschema Package and add additional schema elements to define the model.

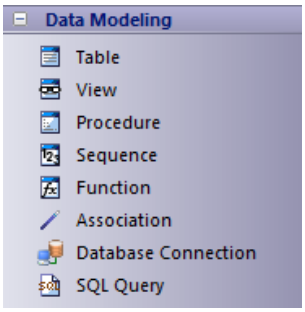
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Data Modeling Toolbox

The Data Modeling Toolbox provides a basic set of elements for database modeling and database design, in conjunction with the UML Data Modeling Profile.

Data Modeling Toolbox page

Image	Detail
	In the data model, a: • Table defines a database table • View represents a database view • Procedure represents database (or Stored) procedures • Sequence represents a database Sequence • Function represents a database Function • Database Connection helps you to configure a connection to the database you are modeling, for testing, import and export of schema, and comparison of differences between database and model using the **Database Builder** When you drop this icon onto the diagram the system prompts you to

	indicate whether to create the connection for an Access database, a Firebird database or an ODBC database For the first two options, when you click on the **OK button** the system prompts you to select the file to create the connection to If you select the 'ODBC database' option, the 'Select Data Source' dialog displays; click on the 'Machine Data Source' tab and select the data source (project on a database) After you have defined the data source, when you double-click on the element the Database Builder view opens for the current database model • SQL Query is an Artifact element that provides a convenient mechanism for storing an SQL Statement in the repository, for repeated execution on live database(s)

Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as

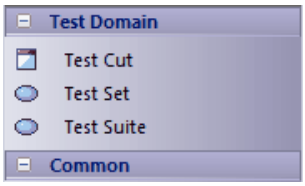
prompted

- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Test Domain Toolbox

The Test Domain Toolbox provides a basic set of elements that you can use to create Test Domain diagrams, used in the **Testpoint** facility. A Test Domain diagram provides specific elements that can aid in the logical composition of tests into Test Sets and Test Suites.

Test Domain Toolbox page

Image	Detail
	A Test Cut is a group of operations that represent a specific behavior (such as Print) defined for a Class, separate from other constraints defined for the Class. A Test Set aggregates one or more groups of methods (Test Cuts) that perhaps span multiple Classes, into a single task. A Test Suite aggregates one or more groups of tasks (Test Sets).

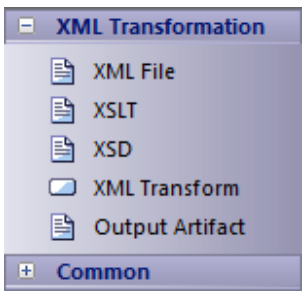
Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

XML Transformation Toolbox

The XML Transformation Toolbox page provides elements for modeling and executing the transformation of an input document into XML or other document formats under the control of an XSL Stylesheet. You can model and execute the transformation on an XML Transform diagram.

XML Transformation Toolbox page

Image	Detail
	XML File generates a File Artifact element, through which you identify the location of the input file to be transformed. **XSLT** generates a File Artifact element, through which you identify the XSLT Stylesheet to apply to the transformation. **XSD** generates a File Artifact that identifies the schema against which the output of the transformation (as directed in the Output Artifact element) is validated. The results of the validation are written to the 'XSL' tab of the **System Output** window. XML Transform generates a stereotyped

	Activity that performs the transformation. Output Artifact generates a File Artifact element, through which you specify the location of the output file generated by the transformation, on the 'Files' property page of the element. Output from the transformation will be written to this file. The elements can be connected to each other using Trace connectors.

Notes

- To add an element to the currently-open diagram, click on the appropriate icon and drag it into position on the diagram; set an element name and other properties as prompted
- To add a relationship, click on the appropriate icon, then click on the start element in the diagram and drag to the end element

Set Diagram Properties

You can set several properties of a diagram using either the:

- 'Properties' dialog or the
- **Properties window**

This topic discusses the 'Properties' dialog. For information of the Properties window, see the Help topic *Properties Window for Diagrams*.

There are several options for opening the 'Properties' dialog for a given diagram:

- Double-click in the background of the open diagram
- Right-click on the background of the open diagram and select the 'Properties' option
- Select the 'Design > Diagram > Manage > Properties' ribbon option to open the 'Properties' dialog for the currently open diagram

In the 'Properties' dialog you can set properties including name, author and version information, zoom factor, paper size and layout, diagram notes and various appearance attributes. Some properties influence the display of the diagram and some are logical attributes that appear in the documentation.

Notes

- In the Corporate, Unified and Ultimate Editions of

Enterprise Architect, if security is enabled you must have 'Update Diagrams' permission to change diagram properties

- Using the 'Diagram - Gradients and Background' page of the 'Preferences' dialog, you can define the default diagram background color and color gradients for all your diagrams; these settings are also applied to any Diagram Theme you apply across your model

General Tab

You use the 'General' tab of the diagram 'Properties' dialog to record facts concerning the diagram as an object, such as its title, version and modification date.

Access

Ribbon	Design > Diagram > Manage > Properties > General
Context Menu	Right-click diagram in **Browser window** | Properties | General Right-click background of open diagram | Properties | General
Other	On the **Properties window** for a diagram, click on the  icon

Set Diagram Properties

Option	Action

Name	Defaults to the name of the parent Package, as the name of the diagram. If necessary, overtype the field with a different diagram name. You can change the diagram name in this field whenever necessary.
Author	Defaults to the name of the person who created the diagram. If necessary, overtype the field with a different author name, or click on the **drop-down arrow** and select a name from the list. You might do this if the diagram becomes the responsibility of another person.
View	Shows the specialization or viewpoint of the diagram within its type, initially set when you create the diagram through the 'New Diagram' dialog. For example, each of the UML Behavioral diagrams can be a Simple (Default) diagram or a more complex Behavioral (Complete) diagram; each UML Structural diagram could be a Simple diagram or a more complex Structural (Complete) diagram, whilst a Class diagram can additionally be a Domain Modeling, Hierarchy or Metamodel diagram. The View

	determines what elements and connectors are provided through the **Diagram Toolbox**, the Simple diagram types having the most basic set of toolbox items. You can change the View within the diagram type; click on the **drop-down arrow** and select the preferred View.
Version	Displays the version number (or other version reference) that has been manually set for the diagram. If this is a cloned diagram, the version number will have been defined as part of the cloning process. If no number has been set, the field defaults to 1.0. To update the version number, overtype the field.
Filter to Version	Select this checkbox to filter the elements on the diagram and mute those that do not have the same version number as the diagram. This is of particular value when you are working on the elements of a cloned diagram and want to distinguish between elements that have been cloned to match the diagram and Package structure, and elements that are still the same version as the source.

	You can use the facility to check more generally which elements are not of the same version as the diagram, such as when you drag elements from the **Browser window** as links to local or, more especially, external elements. The filter takes effect when you click on the **OK button**.
Set new elements to Version	Select this checkbox to set the version of every new element added to the diagram to the same version as the diagram. Elements dragged and dropped from the **Diagram Toolbox** or added using the 'New Element' dialog will have the same version as the diagram. The version value of elements dragged and dropped from the **Browser window** will not be updated.
Stereotype	(Optional) Type in the name of a diagram stereotype to apply, or click on the **drop-down arrow** and select a stereotype from the list. You can define stereotypes to select here using the 'Configure > Reference Data > UML Types' ribbon option, selecting the 'Stereotypes' page and creating stereotypes with a 'Base Class' of

	'Diagram'.
Created	Automatically displays the date on which the diagram was created. If necessary, overtype the field with an amended creation data, or click on the **drop-down arrow** and select the date.
Modified	Automatically displays the date and time when the diagram was last modified.
GUID	Read-only field, displaying the GUID of the selected diagram.
Notes	Type in any additional information on the diagram. You can format the notes using the Notes toolbar at the top of the field.
OK	If you have finished updating the diagram properties, click on this button to save the changes and close the 'Properties' dialog.
Cancel	If you do not want to save the changes you have made, click on this button to discard the changes and close the dialog.
Help	Click on this button to display this Help topic.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Update Diagrams' permission to update diagram properties

Configure Diagram Display

A diagram can show or hide information, and represent it in different ways depending on how you configure the display characteristics. You can maintain your display configuration using the diagram 'Properties' dialog ('Diagram' tab).

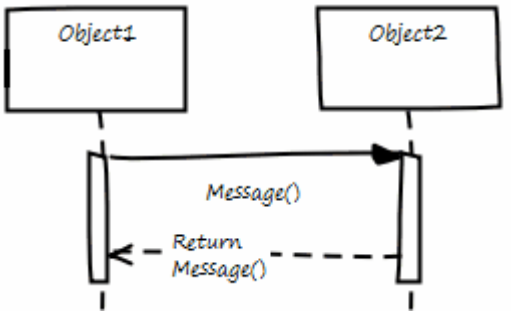
Access

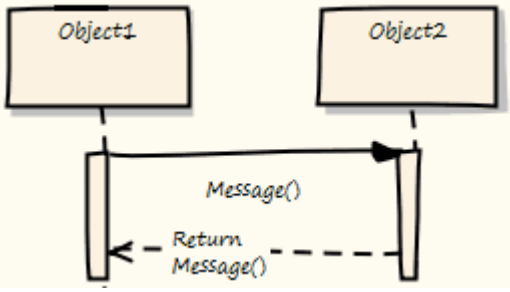
Ribbon	Design > Diagram > Manage> Properties > Diagram
Context Menu	Right-click diagram in **Browser window** | Properties | Diagram Right-click background of open diagram | Properties | Diagram

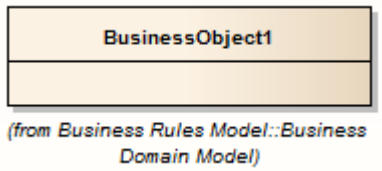
Set the diagram display options

Option	Action
Use Alias if Available	Select this checkbox to display the element alias as the element's name,

	wherever the alias is specified.
Show Additional Parents	Select this checkbox to display the names of all parent elements not in the current diagram, for all Classes and Interfaces.
Hide Page Border (All Diagrams)	Select this checkbox to disable the display of page borders on all diagrams in the model.
Hide Page Border (Current Diagram)	Select this checkbox to disable the display of the page border on the current diagram only. (Disabled if 'Hide Page Border (All Diagrams)' is selected.)
Show Diagram Details	Select this checkbox to show diagram details in a note in the top left corner of the diagram.  Deselect the option to hide the diagram details.
Show Sequence Notes	(On a Sequence diagram) Select this checkbox to display the internal Notes for each Message down the left-hand edge of the diagram. Each note has the same number as the Message it comes from.

	
Whiteboard Mode	Select this checkbox to display the diagram as if it had been drawn on a whiteboard, with white fill and background.  (This illustration also has 'Hand Drawn' mode enabled.)
Disable fully scoped object names	Select this checkbox to disable the use of fully scoped object names for elements in this diagram. This automatically deselects the 'Show Namespace' option and hides the 'Namespace::element Name' in each element, but does not hide the '(from 'Namespace')' label. The effect of this option is disabled if 'Fully Qualified Namespace' is also selected.
Hand Drawn	Select this checkbox to display the diagram contents as if they had been roughly drawn by hand.

	
Display Element Lock Status	Select this checkbox to add a locking indicator (! or !) outside the top left corner of each locked element on the diagram. If the element is: • Fully locked or locked by another user, the indicator is red • Locked by you or by another user in the same user group as you, the indicator is blue • Not locked, no indicator displays
Show Namespace	Select this checkbox to show the namespace of each element on the diagram.  For Class, Interface, Enumeration, Component, Node and Artifact elements, the namespace is shown as part of the element name; that is,

	'Namespace::element Name'. For elements of other types, the namespace is shown as a '(from 'Namespace')' label beneath the element.
Fully Qualified Namespace	(Enabled when 'Show Namespace' is selected) Select this checkbox to show the fully qualified namespace of each element on the diagram, as a '(from 'Namespace')' label under the element. 
Show Shape Scripts	Defaults to selected to show elements and connectors with their Shape Scripts, on the diagram. Clear the checkbox to show elements and connectors in their native shapes. This option does not affect Custom Compartments. To hide those, deselect the appropriate checkboxes in the 'Show Compartments' panel, or on the element 'Compartment Visibility' dialog.
Always Open as Element List	Select this checkbox to always display the diagram contents as a **Diagram List** rather than as a diagram.

Always Open as Gantt	Select this checkbox to always display the diagram contents as a Gantt chart.
Always Open as Specification	Select this checkbox to always display the diagram contents as a list of text descriptions in the **Specification Manager**.
Page Setup	Adjust the scaling of the diagram image according to the size of the page it is to be printed on.
Print Page Header and Page Footer	Select this checkbox to add page headers and footers to a print-out of the diagram. The headers and footers are generated from the diagram characteristics, such as the name of the creator and the date of modification.
Background Tile	Click on the ... button and select a background tile design to apply just to this diagram. The filename of the background design file displays in the left-hand field. If you no longer want to apply a background tile to the diagram, click on the **Clear button**.
Document	These are options for generating

Generation Options	document reports that include the selected diagram.
Exclude image from Documentation	Select this checkbox to exclude this diagram image from any document report generated on the parent Package or element.
Add each contained element in Documentation	Select this checkbox to include documentation on each element in this diagram, in any document report generated on the parent Package or element.
Divide Diagram into Multiple Pages	Select this checkbox to divide each large diagram into separate pages in the document report.
Rotate Images	Select this checkbox to rotate each diagram image by 90 degrees in the document report.
Default Zoom	This facility is enabled when the selected diagram in the 'Properties' dialog is open and available for editing in the **Diagram View**. Zoom in or out of the diagram to achieve the required magnification using either

	Ctrl+mouse wheel before you open the 'Properties' dialog, or the slider control on this 'Diagram' page. Click on the **Set as Default button**. Now, each time the diagram is opened, it will default to this zoom level. This diagram-local default zoom overrides any global zoom setting you have imposed for your user ID, using the slider in the Status bar.
Make all elements dockable	Select this checkbox to set all elements on the diagram as dockable. Setting elements as dockable allows you to align and join the elements either vertically or horizontally, on the current diagram only. Elements that you dock must have the joining edges parallel. As the distance between the elements narrows, the moving element snaps to the edge of the stationary element. Deselecting the 'Dockable' option does not separate the elements; if necessary, you can simply move the elements apart again. Activity Partitions already have the option selected by default.
Set Layout	Click on this button to define the layout

Style	of the diagram, to be applied automatically when you select the 'Layout Diagram' options.
OK	If you have finished updating the diagram properties, click on this button to save the changes and close the 'Properties' dialog.
Cancel	If you do not want to save the changes you have made, click on this button to discard the changes and close the dialog.
Help	Click on this button to display this Help topic.

Notes

- The 'Divide Diagrams into Multiple Pages' option is only effective when the 'Scaled Printing' option on the 'Print Advanced' dialog is set to 'None'
- 'Rotate Images' is only available for bitmap (.bmp) images

Define Element Characteristics

It is possible to show a number of element characteristics on a selected diagram. You can define which of these characteristics to show, by selecting the corresponding checkboxes on the 'Elements' tab of the diagram 'Properties' dialog (and, conversely, which to hide by clearing their checkboxes). You can also override the model default coding language and set a different language for the elements in the context of this diagram.

Access

Ribbon	Design > Diagram > Manage > Properties > Elements
Context Menu	Right-click background of open diagram | Properties | Elements

Set Component Display Options

Option	Action

Use Stereotype Icons	For elements that have whole shapes drawn by Enterprise Architect (such as Analysis stereotypes), select this checkbox to draw the alternative shape (if defined). For elements that have an icon displayed in the top right corner (such as an Artifact element), if 'Show Element Stereotypes' is selected, select this checkbox to display the stereotype icon instead of the stereotype text.
Show Element Stereotypes	For elements that have whole shapes drawn by Enterprise Architect, if 'Use Stereotype Icons' is deselected, select this checkbox to display any stereotype on the element. For elements that have an icon displayed in the top right corner, select this checkbox to indicate that a stereotype is present (icon if 'Use Stereotype Icons' is selected, text if not).
Show Port Classifiers	Select this checkbox to show the classifier of each Port on the diagram.
Show Property Type	Select the checkbox to show Port and Part types on the diagram by default.

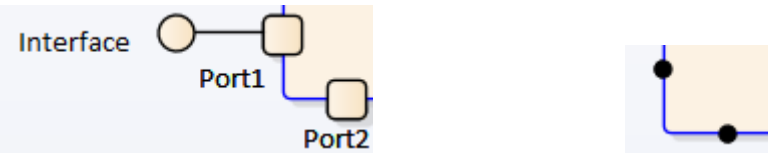
Show Data Model Owner	Select this checkbox to display the owner of each Table element in the diagram. This is defined in the Owner Tagged Value on the table or, for PostgreSQL, Owner To.
Show Element Property String	Select this checkbox to show the advanced property string for all elements; for example, {leaf}.
Collapse Embedded Elements	Reduces edge-mounted structural elements to black dots on the parent element border, on the current diagram. Each black dot represents one structural element or one hierarchy of elements; for example, a Port with an Interface collapses to one dot.  This simplifies the information presented by the diagram, when the structural elements are currently not the focus of interest. You can move the dot representing a structural element, but you cannot create new structural elements or connectors involving structural elements on the

	diagram whilst this option is in use.
Group Tags by Stereotype	Select this checkbox to organize the Tagged Values shown on the element on the diagram into groups according to stereotype.
Show Compartments	Select each checkbox to show the corresponding feature or property compartment for all elements using Rectangle Notation on the diagram: • Attributes • Inherited attributes • Operations • Inherited operations • Requirements • Inherited requirements • Testing (Testing Scripts) • **Discussions** • Resources (including 100% complete resources allocated to the element) • Notes • Tags (Tagged Values) • Inherited tags • Fully Qualified tags • Receptions • Constraints

	• Inherited constraints • Maintenance (Maintenance Scripts) • Reviews • Project • Package contents Deselect the checkbox for each compartment you want to hide. If you have added custom compartments to your model display, such as Related Elements, Flow Ports or Parts, 'Show Compartments' checkboxes are also listed for each of them. These checkboxes default to selected to show the compartments on the diagram; deselect the checkboxes to hide the compartments. If the checkboxes do not seem to operate for an element on a diagram, also check the 'Compartment Visibility' settings for that element.
Language	Click on the **drop-down arrow** and select the programming language that elements created on this diagram receive, overriding the model default language. If you do not want to override the model default, select the value <none> from the drop-down list.

Support Collaboration	Select a value to flag elements on this diagram where monitoring for new messages has been turned on for: • Elements that are the subject of **Discussions** • Chat messages to specific user groups (Chat messages to individual users are automatically monitored) If an element is the subject of a monitored Discussion, and an unread message is in the 'Discuss' tab of the **Collaborate window**, the  icon displays against the element on the diagram. Each monitored Chat group or user should be represented by an Actor element on the diagram. If a user or a member of a group sends a Chat message, the  icon displays against the appropriate Actor element on the diagram. There are four options: • None - to turn Collaboration support off so that no notification icons display (any other option turns Collaboration support on for Discussions) • With Alias - for Chat messages, to check the Actor elements to locate the one that has the poster's user ID or

	group ID in the 'Alias' field • With Locking User - for Chat messages, to check the Actor elements for the one that has been locked under the poster's user ID or group ID • With Both - for Chat messages, to check firstly for the user ID that locked the element and, if that is not found, for the 'Alias' field containing the poster's user ID
OK	If you have finished updating the diagram properties, click on this button to save the changes and close the 'Properties' dialog.
Cancel	If you do not want to save the changes you have made, click on this button to discard the changes and close the dialog.
Help	Click on this button to display this Help topic.

Features Tab

The features - attributes and operations - of an element have a number of properties that you can show or hide on a diagram, or use to show or hide the features themselves. You control how the features are displayed using the 'Features' tab of the diagram 'Properties' dialog.

Access

Ribbon	Design > Diagram > Manage > Properties > Features
Context Menu	Right-click diagram in **Browser window** | Properties > Features Right-click background of open diagram | Properties > Features

Define the display of features on the diagram

Option	Action

Show Qualifiers and Visibility Indicators	Select this checkbox to show the qualifiers and visibility indicators of each feature on the diagram. Qualifiers include such things as the 'derived' symbol (/) and the public key symbol (PK). Visibility indicators include such things as +, -, # and ~, which indicate the scope of access of the item (such as an attribute, operation or role).
Show Stereotypes	Select this checkbox to show the stereotypes of all features that have them. Deselect the checkbox to hide the stereotypes.
Show Operation Return Type	Select this checkbox to display the return data type of each operation.
Show Property String	Select this checkbox to show the advanced property string for all element features, for example, {readOnly}.
Suppress Brackets for Operations Without Parameters	Select this checkbox to suppress brackets on operations that have no parameters; that is, Opn; rather than Opn();.

Always Show Linked Features	Select this checkbox to force display of linked attributes and operations, regardless of the setting of any other option that might hide them.
Visible Class Members	Select the appropriate checkboxes to show Class members according to their scope and methods that specify properties.
Show Attribute Detail	Click on the **drop-down arrow** and select whether to show both the attribute name and type, or the attribute name only.
Show Parameter Detail	Click on the **drop-down arrow** and select how to display method parameters: • None - No details shown • Type Only - Show the type of parameter only • Full Details - Show all details of each parameter • Name Only - Show the name of the parameter only
Supress Compartment Items	These three edit control fields each suppress the display of the feature names listed in the field, in the corresponding

	feature-type compartment of an element depicted on the diagram. • In the 'Attributes' field, list the attributes to suppress in the Attributes compartment of the element • In the 'Operations' field, list the operations to suppress in the Operations compartment of the element • In the 'Tag Names' field, list the tags to suppress in the Tagged Values compartment of the element You can type the feature names separated by commas or by carriage returns.
OK	If you have finished updating the diagram properties, click on this button to save the changes and close the 'Properties' dialog.
Cancel	If you do not want to save the changes you have made, click on this button to discard the changes and close the dialog.
Help	Click on this button to display this Help topic.

Connectors Tab

It is possible to control a number of aspects of how connectors are shown on a diagram, using the 'Connectors' tab of the diagram 'Properties' dialog.

Access

Ribbon	Design > Diagram > Manage > Properties > Connectors
Context Menu	Right-click diagram in **Browser window** | Properties | Connectors Right-click background of open diagram | Properties | Connectors

Define connector appearance

Option	Action
Show Relationships	Select this checkbox to show connectors between elements in the current diagram. Deselect the checkbox to hide all

	connectors on the diagram.
Freeze Visible	Click on the checkbox to select it, to freeze the diagram to show only the connectors that are visible on this diagram at this point. Connectors that are subsequently created on other diagrams between the same elements are not added to this diagram until the option is deselected and the diagram is refreshed.
Show Collaboration Numbers	(In Communication diagrams) Select the checkbox to show the group numbering on Communication Messages. Messages are added to Association connectors in the Communication diagram.
Show Non-Navigable Ends	Select this checkbox to indicate when Association ends are not navigable; a cross is shown on each non-navigable end of an Association connector.
Show Connector Property String	Select this checkbox to show the property strings (constraint text) for connectors.
Suppress All	Select this checkbox to hide all connector

Connector Labels	labels on the diagram.
Show Stereotype Labels	Select this checkbox to show a label on each connector indicating the connectors' stereotype. Deselect the checkbox to hide these stereotype labels.
Connector Notation	Click on the **drop-down arrow** and select the required connector notation: • UML 2.1 - use the standard UML 2.1 notation for connectors • Information Engineering - use the Information Engineering (IE) connection style • IDEFX1 - use the Integrated Definition Methods IDEFX1 connection style
OK	If you have finished updating the diagram properties, click on this button to save the changes and close the 'Properties' dialog.
Cancel	If you do not want to save the changes you have made, click on this button to discard the changes and close the dialog.
Help	Click on this button to display this Help

	topic.

Theme Tab

A Theme is a definition of the display characteristics for a diagram, such as the text font used or the background colors of the elements and diagram. You generally create and/or select a theme to apply to all diagrams across the model, but you can apply a different (existing) theme to a selected diagram, using the 'Theme' page of the diagram's 'Properties' dialog.

Themes applied to diagrams are model-based rather than user-based. If the diagram is imported into a model without an applied theme, the global theme will be used instead.

Access

Ribbon	Design > Diagram > Manage > Properties > Theme
Context Menu	Right-click diagram in **Browser window** | Properties | Theme Right-click background of open diagram | Properties | Theme

Select Theme

Option	Description
Theme	Click on the **drop-down arrow** and select the theme to apply to the current diagram. The field defaults to the value 'Use global theme', which applies the theme selected on the 'Diagram > Themes' page of the model 'Preferences' dialog.
Font	Select the checkbox to apply the 'User Font Face' and 'Font Size' settings assigned to the selected theme on the 'Appearance' page of the model 'Preferences' dialog. Deselect the checkbox to apply the font from the global theme on the 'Preferences' dialog.
Color	Select the checkbox to apply the element, connector and diagram colors assigned to the selected theme on the 'Gradients and Background' page and the 'Standard Colors' page of the model 'Preferences' dialog. Deselect the checkbox to apply the colors from the global theme on the 'Preferences' dialog.

Line Thickness	Select the checkbox to apply the default element border width and connector line thickness assigned to the selected theme on the 'Appearance' page and 'Link' page of the model 'Preferences' dialog. Deselect the checkbox to apply the line widths from the global theme on the 'Preferences' dialog.
Gradient	Select the checkbox to apply the gradient of the diagram background color and element fill color, as assigned to the selected theme on the 'Gradients and Background' page of the model 'Preferences' dialog. Deselect the checkbox to apply the gradients from the global theme on the 'Preferences' dialog.
Background Image	Select the checkbox to apply the diagram background image assigned to the selected theme on the model 'Preferences' dialog. Deselect the checkbox to apply the image from the global theme on the 'Preferences' dialog.
Element	Select the checkbox to apply the element

Shadows	shadow setting ('on' or 'off') and color assigned to the selected theme on the model 'Preferences' dialog. Deselect the checkbox to apply the shadow setting and color from the global theme on the 'Preferences' dialog.
OK	Click on this button to apply the theme aspects you have defined on this tab, and to close the 'Properties' dialog.
Cancel	Click on this button to abort the changes you have made and close the 'Properties' dialog.
Help	Click on this button to display this Help topic.

Set User and Model Default Diagrams

As you develop your model, you might create a central diagram that represents the current area of work or the direction of development, with hyperlinks to other diagrams and resources, thus creating a Home Page for your model. You could set this diagram to open automatically when you access the model at the start of a work session. You have two options for configuring such a diagram:

- As your user default, so that the diagram opens when you (or, if appropriate, members of your log-in group) access the model but not when any other user opens the model
- As your model default, so that the diagram opens when any user opens the model

You can have separate diagrams defined as a user default and as a model default, in which case the user default diagram takes precedence and is the diagram that opens automatically. However, both diagrams are overridden by any project shortcut that defines displays to present on opening the model.

The options to set default diagrams are available in the Corporate, Unified and Ultimate Editions of Enterprise Architect; User Security must be enabled and you must have 'Manage Project Settings' permission to set a diagram as a user or model default.

Set User Default Diagram

Make the current diagram the default diagram displayed when you re-open this model.

- Start > Desktop > Workspaces (**drop-down arrow**) > My Places > Manage > Set Current as Default (if the required diagram is open and active)
- Start > Desktop > Workspaces (drop-down arrow) > My Places > Manage > Choose Default (to browse for the required diagram)

Once you select this diagram, it will display automatically when you open the model.

Set Model Default Diagram

Make the current diagram the default diagram displayed when any user re-opens this model.

- Start > Desktop > Workspaces (**drop-down arrow**) > Model Places > Manage > Set Current as Default (if the required diagram is open and active)
- Start > Desktop > Workspaces (drop-down arrow) > Model Places > Manage > Choose Default (to browse for the required diagram)

Once you select this diagram, it will display automatically when any user opens the model.

Managing Default Diagrams

If you have closed a default diagram and want to return to it, use one of these options:

- Start > Desktop > Workspaces (**drop-down arrow**) > My Places > Open My Diagram
- Start > Desktop > Workspaces (drop-down arrow) > Model Places > Open Model Diagram
- In the Diagram Status Bar, click on the drop-down arrow on the right and select the 'User Default Diagram' or 'Model Default Diagram' option as appropriate, or

If you want to change either the user default diagram or the model default diagram, use the 'Set' options as described previously, and select a different diagram.

If you want to clear a default diagram, so that you no longer have a default, select one or both of these options:

- Start > Desktop > Workspaces (drop-down arrow) > My Places > Manage > Clear
- Start > Desktop > Workspaces (drop-down arrow) > Model Places > Manage > Clear

Diagram Context Menu

You can perform a wide range of tasks and operations on a diagram and its contents. To access and initiate these operations, you select options from the diagram's context menu.

Access

Context Menu	Right-click on the diagram background

Options

Option	Action
Specialize	Provides two sets of functions: • Scripts - scripts created using the **Scripting** facility, to be executed on diagrams; click on a script name to execute it (this option is not shown if no appropriate scripts have been created)

	• Extensions - a list of the enabled technologies on the system, each of which provides options for performing technology-specific operations on the diagram
Collaborate	Select this option to display a short menu of options to exchange electronic notes on the selected diagram with team colleagues, in the form of Reviews, **Discussions** and, if User Security is enabled, Chats and **Model Mail** messages.
Switch View	Provides options to display the diagram contents in a number of alternative formats: • Graphical view - the standard graphical display format • List view - a tabular, editable list of elements • Gantt view - shows the Project Resources assigned to each element • Specification view - each element is represented by a text description in the **Specification Manager** • Relation Matrix view - a table showing the relationships between the diagram elements

	• **Construct view** - displays the resources and progress of work on the diagram elements • Inline Specification View - when in the graphical display format, select between displaying and hiding a Specification view of the diagram elements in the right half of the diagram
Show All Bookmark Values / Hide All Bookmark Values	It is possible to assign bookmarks with numerical or text values to elements on a diagram. Each bookmark is displayed as a red circle containing the bookmark value, just above the parent element. These two menu options reveal or hide all the assigned bookmarks on the diagram.
Properties	Displays the diagram 'Properties' dialog, through which you can define properties including name, author and version information, zoom factor, paper size and layout, diagram notes and various appearance attributes. Some properties influence the display of the diagram and some are logical attributes that appear in the documentation.
Validate	(In a Business Process diagram)

Diagram	Validates the diagram, and the elements and connectors within the diagram, for correctness. The results of the validation are displayed in a tab of the **System Output** window.
Insert	Displays a short menu of options for adding objects to the diagram: • Other Element - displays the Select Element browser, through which you locate and select an existing element to add to the diagram as a linked element • Store Document(s) in Model - displays the default file browser, through which you locate a file to store as a File Artifact element in the model and in the diagram; double-click on the Artifact to show the file contents • Link to Document(s) in File System - again displays the default file browser, but when you select a file the system creates a hyperlink to that file • Show Toolbox - Select this option to display the **Diagram Toolbox** at the appropriate pages for the type of diagram, if the Toolbox is not already displayed
Paste	Displays a short menu of options for

	pasting copied elements or images into the diagram. • Element(s) as Link - paste copied elements into the diagram as links to the original element(s) • Element(s) as New - paste copied elements into the diagram as new elements • Image from Clipboard - paste an image held on the clipboard into the diagram (shortcut: **Ctrl+Shift+Insert**) • Image Asset - paste an image held on the clipboard into the diagram as a new Image Asset Artifact
Hide Diagram Frame / Show Diagram Frame	This option applies to these diagram types when the diagram is a composite diagram: • Any SysML type • UML StateMachine The elements on the diagram are automatically enclosed in a Diagram Frame representing the element that owns the diagram. Click on the options to hide and redisplay this Diagram Frame. On a SysML diagram, the frame will: • Auto-resize to fit the bounds of the diagram if the frame is non-selectable,

	expanding from its default size but not shrinking smaller Note that diagrams showing Diagram Frames applied using release 14.0 or later of Enterprise Architect will draw the parent object on the diagram when opened using a release of Enterprise Architect earlier than release 14.0.
Interaction Parameters	(On an Interaction diagram.) Displays the 'Interaction Occurrence' dialog, on which you define the arguments, return value and attribute to create an Interaction Occurrence.
Supress Activations	(On a Sequence diagram.) Hides or redisplays the activation rectangles on the Lifeline elements of the diagram.
Set Top Margin	(On a Sequence diagram.) Displays the 'Top Margin' dialog, through which you change the space above the Lifeline elements on the diagram to between 30 and 250 units.
Sequence Communication Messages	(On a Communication diagram.) Displays the 'Communication Messages' dialog, through which you can change the order of the communication messages in the

	current diagram.
Synchronize Structural Elements	Applies to a SysML Internal Block diagram or a SysML Parametric diagram, where it shows all structural elements (such as Ports and Parts) relating to the Block that owns this diagram. This command will also generate Properties defined by existing Association connectors.
Swimlanes and Matrix	Displays the 'Swimlanes and Matrix' dialog for diagrams, through which you can add or modify Swimlanes or a Swimlanes Matrix on the diagram.
Roadmap	Displays the 'Roadmap options' dialog, which you use to define a Roadmap Timeline on the diagram.
Kanban	Displays the 'Kanban' dialog, through which you can define the structure, content and appearance of a new or existing Kanban diagram, or to convert a different type of diagram to a Kanban diagram.
Clear all Checklists	Clears all selected checkboxes within every Checklist Artifact element in the

	current diagram.
Set diagram flow direction	(On a Business Process diagram) Displays a short menu of options to set the flow orientation of the diagram. Click on: • None (the default, no specific orientation set) • Horizontal (diagram flows across the page, Pool and Lane elements occupy the full width of the diagram), or • Vertical (diagram flows down the page, Pool and Lane elements occupy the full height of the diagram)
Statechart Editor	(For a **StateMachine diagram**.) Displays a short list of options to switch the current format of the diagram to: • Diagram • Table (State-Next State) • Table (State-Trigger) or • Table (Trigger-State)
Lock Diagram	Select this option to lock the diagram to protect it from inadvertent changes. This does not apply in the Corporate, Unified and Ultimate Editions if security is enabled, in which case you lock the

	model elements.
Find in Project Browser	Locates and highlights the current diagram in the **Browser window**. Shortcut: **Shift+Alt+G**
Execute Simulation	(On a behavioral diagram.) Displays a short menu of options for performing a model simulation: • Interpreted simulation - perform dynamic execution of a simulation (Corporate and extended Editions) • Manual simulation - step through a simulation manually (the only option available in the Professional Edition) • Using Script - if simulation scripts exist for the diagram, list the scripts available; if no scripts exist, the option does not display
Save Current Changes	Saves any changes to the current diagram. Shortcut: **Ctrl+S**
Help	Displays the Help topic on this type of diagram.

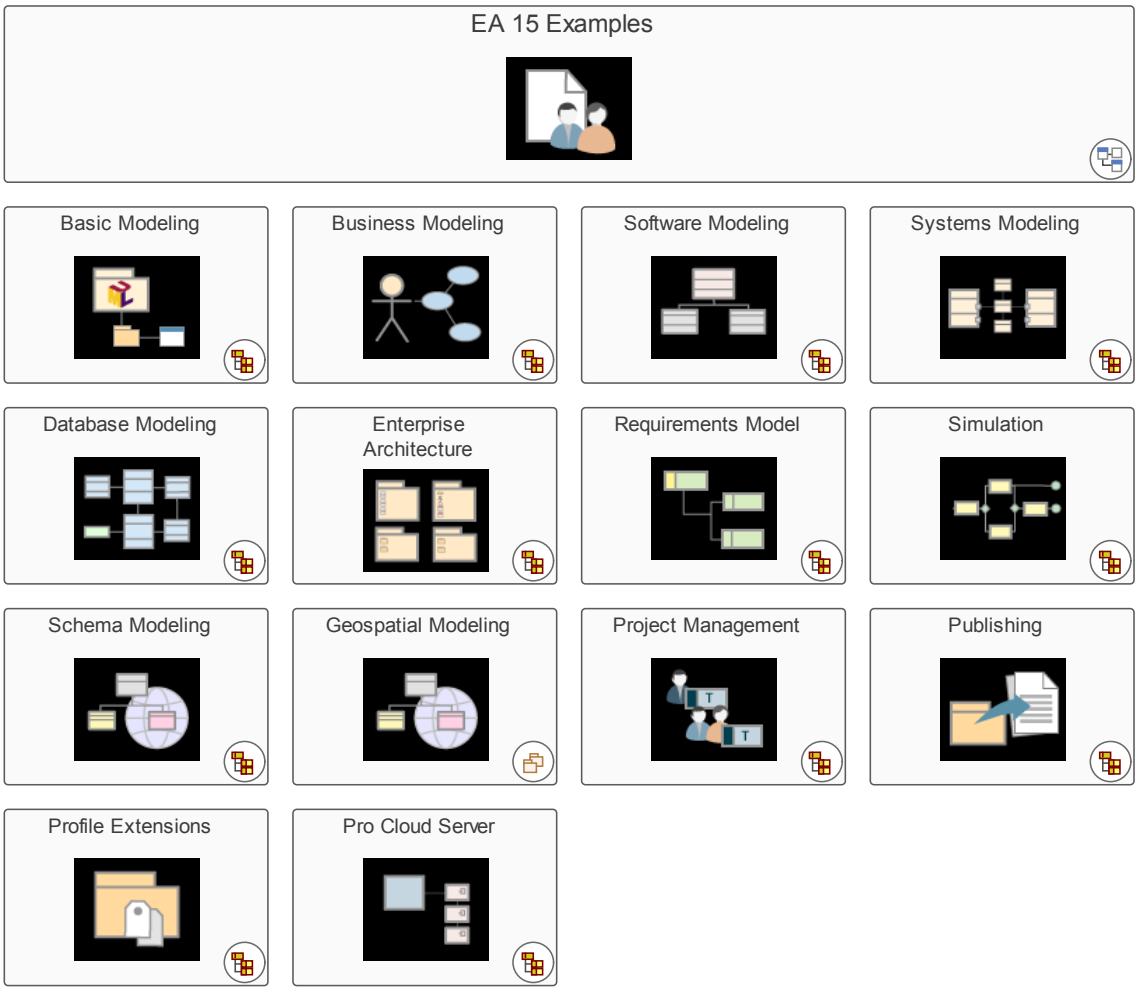
Notes

- Not all the menu options described appear on the context menu of every diagram

Navigation Cells

Enterprise Architect makes it easy for users to navigate through a repository by providing a powerful diagram mechanism to hyperlink to any other diagram in the repository. This is the Navigation Cell, which you use to provide a simple or more ornamental direction and link to a diagram of significance to the user. You can add several Navigation Cells to a diagram to create a top-level home page, directing users to areas of the model they are interested in or responsible for. You can add Navigation Cells to a hierarchy of diagrams, further directing the user to more and more specific aspects of the model. An excellent illustration of this is the 'Getting Started' diagram of the Enterprise Architect EAExample model.

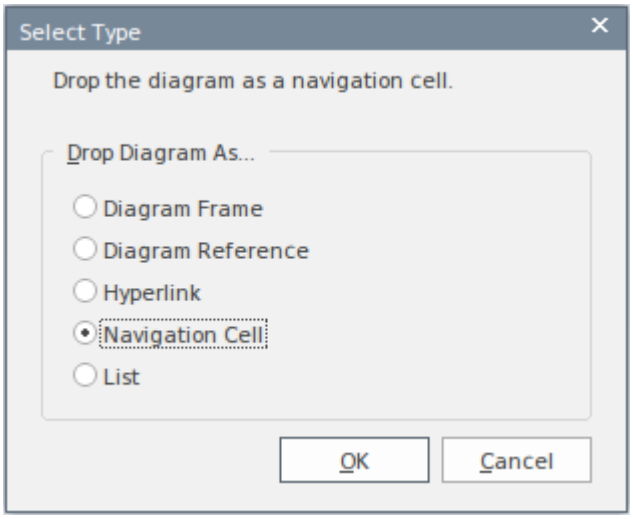
Getting Started



The diagrams containing Navigation Cells are viewable through the Internet browser and Cloud products, and provide a compelling experience for casual users and non-modelers, as well as more technical and experienced users. The navigation diagrams can be used as a Marketing tool, Customer information tool, or quick introduction to a model's composition. Navigation Cells are also the vehicle for identifying and providing access to diagrams that are to be reviewed in a Formal Review.

Creating Navigation Cells

To create a Navigation Cell, open the diagram you are developing as the Home Page and, from the **Browser window**, drag a target diagram onto that Home Page. The 'Select Type' dialog displays. Select the 'Navigation Cell' radio button.



This option creates the Navigation Cell, containing the name of the target diagram and, in the top right corner, an icon representing the diagram type. Just after you click on the **OK button**, the 'Select Image' dialog displays, from which you can select a graphic that represents the nature of the diagram. You can also select a diagram Theme for the image, from the 'Image List' field. If you do not want to add an image to the element, click on the **Cancel button**.

If you are using an image, it displays in the center of the element with the target diagram name at the top, as shown in the EAExample illustration. If you are not using an image, the name displays in the center of the element.

If you subsequently decide to change or remove the image in a Navigation Cell, right-click on the element and select the 'Appearance > Select Navigation Image' option. The

'Select Image' dialog displays, and you can simply click on a different image or - to just remove the existing image - click on the Cancel button.

Selecting the 'Navigation Cell' option also enables the 'Run auto layout' checkbox, which you can select to automatically adjust the layout of the Navigation Cells to form a grid with 10 units of separation between cells. (The unit is defined in the diagram 'Properties' dialog). If you do not want to adjust the layout of the cells, clear the checkbox before clicking on the OK button.

If you use Navigation Cells in a model, they add the stereotype <<NavigationCell>> and its associated Shape Script to the model. Users opening the model in builds of Enterprise Architect earlier than 13.5 can then use this stereotype to create more Navigation Cells that are functionally the same as the Cells under Release 13.5, though a little more rudimentary.

Using Navigation Cells

When a Navigation Cell is displayed on a diagram, it provides a number of options for opening and displaying its linked diagram.

- Double-click on the Navigation Cell element in the diagram - the linked diagram opens in a separate tab in the **Diagram View**
- Click on the icon in the top right corner of the cell - the

linked diagram is shown in a floating Diagram Pop-up window; click off the diagram to close the window

If the Navigation Cell element is selectable (right-click on the element and select the 'Behavior | Selectable' option) you can also:

- Press the **= key** to display the linked diagram on a separate tab in the Diagram View
- Click on the  icon above the top left corner of the element - the linked diagram is shown in the floating Diagram Pop-up window; click off the diagram to close the window

If the 'Enable Concise Diagram Navigation' checkbox is selected on the 'Application Look' (Visual Style) dialog, and you double click on the Navigation Cell or press the = key, the linked diagram replaces the parent diagram in the same tab. To return to the parent diagram (or, in a chain of diagrams, the next up in the chain) either:

- Press the **Backspace key** or
- Click on the arrow at the right-hand end of the diagram tab

If you have used the = key to display the linked diagram, when the parent diagram redisplays the Navigation Cell element is also selected and given focus.

The Quick Linker

If you want to create new elements and connectors quickly on a diagram, you can use the Quick Linker on an initial element to guide you in creating related elements and connectors of the appropriate types, without having to weigh up the full range of options from the **Diagram Toolbox**.

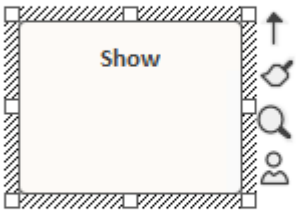
The Quick Linker consists of paired menus that list the commonest objects appropriate to the context of the selected element. You simply choose the type of element you need from the first menu, and that displays the second menu offering a choice of appropriate types of connector between the original and new elements. When you select the connector, you create a new element connected to your initial element, complete with any subordinate objects such as Object Nodes and Action Pins.

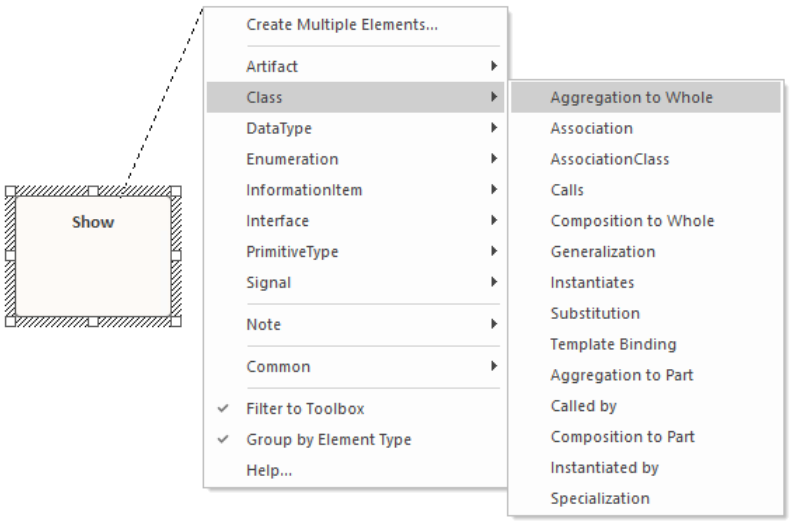
If you drag the Quick Linker arrow onto an existing element on the diagram, only the connector menu displays, so that you select the type of connector to create between the two existing elements.

Display the Quick Linker Menus

There are two methods of accessing the Quick Linker menus.

Action	Detail

Click on Quick Linker Arrow	When you click on an element in a diagram, the Quick Linker arrow is displayed at the upper right corner of the element:  Click on this arrow and drag it in the direction in which you want to create the new connector and element. When you release the mouse button, the element menu displays. When you select an element type, the connector menu displays.

	 When you select the connector type, the element and connector are added to the diagram in the location in which you displayed the menus.
Press Ctrl+Shift+Arrow key	After selecting the element, press Ctrl+Shift and the keyboard arrow key for the direction in which you want to create the new connector and element (Right, Left, Up or Down). The element and connector menus display. When you select the type of connector, the new element and connector are created off the edge of the element appropriate to the arrow key you pressed. For example, if you press the

	Right arrow key, the new element is created to the right of the original element.

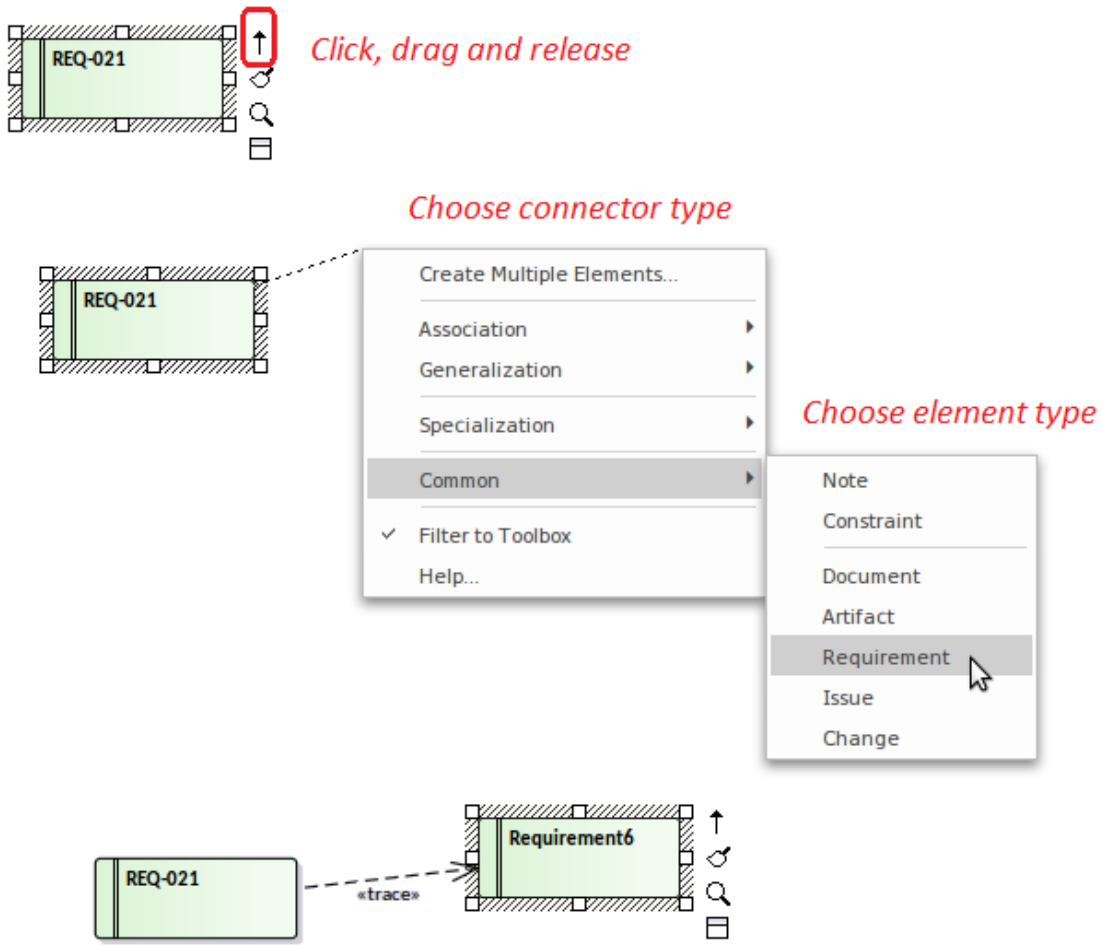
Notes

- On the initial (element) menu, the 'Create Multiple Elements' option displays the 'Create Multiple Elements' dialog, on which you specify a number of elements to create; the default entry is the base element and connector for the diagram type, but you can click on the **drop-down arrow** in each field and select other types of element and connector appropriate to the diagram type
- Also, the '**Filter** to Toolbox' option, which defaults to selected, filters the list of elements and connectors to only those also available through the Toolbox page for the current diagram type; deselecting the option allows the full range of types of relationship and target element for the type of source element to be listed
- When using the Ctrl+Shift+<arrow key> method on a Sequence diagram, you cannot use the Up or Down keys; the Right and Left keys create a connector to a Lifeline element
- When using the Ctrl+Shift+<arrow key> method on a Timing diagram, you cannot use the Right or Left keys
- If the connectors and elements suggested by the Quick

Linker do not include the types you need, you can also create them from the **Diagram Toolbox** pages

- A Technology Developer can create new or different lists and combinations of elements and connectors

Create New Elements



The connectors and elements listed on the two menus depend on the type of the element you initially selected; for example, if you click on the Quick Linker arrow for a Class, the options are not the same as if you clicked on the arrow for an Actor. However, in either case the menus show the most appropriate, commonly used connectors and target elements for that initial element; you can create other connectors and target elements by selecting them from the appropriate Toolbox page.

Certain types of element - such as Action and Artifact - are

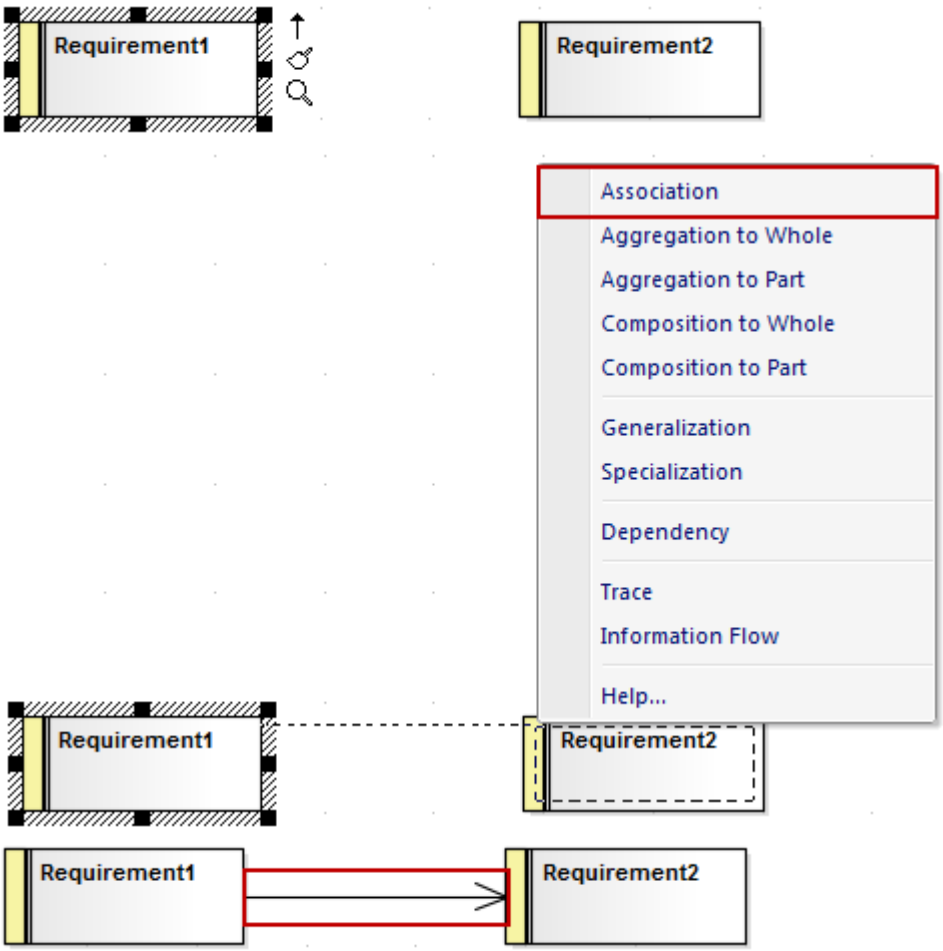
available in a range of subtypes. You can select which subtype to create by holding down the **Ctrl key** as you select the main element type. For an:

- Action element, the 'New Action' dialog displays from which you select the Action subtype, such as CallOperation or SendObject
- Artifact element, a submenu displays from which you select the Artifact subtype, such as Report Specification or Checklist

Notes

- You can create a connector to an existing classifier from the **Browser window**, by pressing **Shift** while clicking on the type of connector; the 'Select existing element' dialog displays on which you browse for and select the element, then the connector and element are added to the diagram

Create Connectors



The connector list does not actually display until you release the mouse button over the target element; however, a dotted line shows where the connector would be at any point, and a hatched outline displays within the border of an element as you move the cursor onto it - this helps you identify where the connector should connector to, if there are many closely-arranged elements, Parts, Ports or other extensions.

The list contains the most appropriate, commonly-used types of connector for the source and target element types. If you want to use a different type of connector, select the appropriate Toolbox page, click on the required connector

and then on the source element, and drag across to the target element.

Notes

- You can quickly create a Notelink to attach a Note or Constraint to a connector, simply by dragging the Quick Linker arrow on the Note element onto the connector

Floating Icons

When you select an element on a diagram, or add a new element, a number of small icons display off the *right* hand side of the element underneath the Quick Linker arrow ( ); for example:



These icons display context menus and/or toolbars of diagramming options or perform specific actions, to help you quickly edit the element you have highlighted. If you do not want to show or use these icons, you can prevent their display by deselecting the 'Show buttons for selected Object on diagram' checkbox on the 'Objects' page of the 'Preferences' dialog.

Also, if an element shown in the diagram is locked, and the 'Display Element Lock Status' option is selected in the 'Properties' dialog for the diagram, a locking indicator is displayed outside the top *left* hand corner of the element. The indicator is the same as the exclamation mark (!) against a locked element in the **Browser window**:

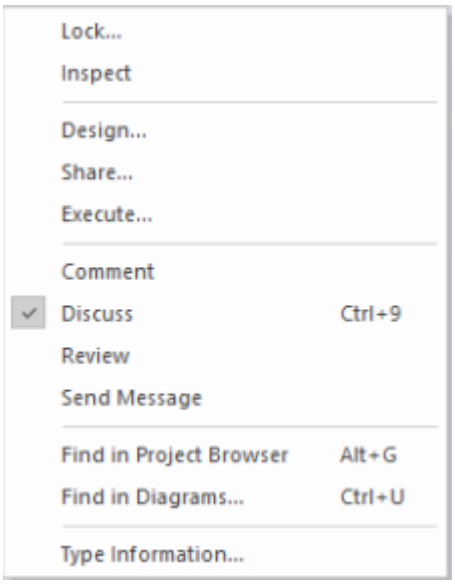
- Red if the element is under a full lock or locked by another user
- Blue if the element is under a lock set by yourself or by a user in the same User Group as yourself

You might also see, on the left hand side of the element, another floating icon ( ). This displays when:

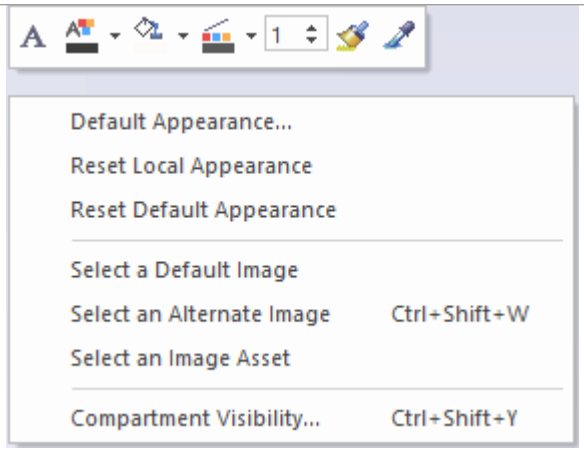
- In the 'Diagram' tab of the **Properties window** for the diagram, in the 'Connectors' section, the 'Show Feature Linker' checkbox is selected, and
- The element name or an operation, attribute or reception within the element is selected and highlighted

The icon helps you to create a relationship between the selected feature in one element and another element or a feature within it. See the *Feature Quick Linker* Help topic.

Icon Use

Icon	Action
	Click on this icon to display a context menu of options for operating on the selected element or elements. The common set of options are as shown:  You can use these options to:

	• Set a lock on the selected element • Display details of the element's properties and characteristics on the 'Details' tab of the **Inspector window** • Open the Design, Share and Run **Quick Access windows**, to select windows and dialogs to edit the element's properties and features • Open the **Collaborate window** at the 'Comment', 'Discuss' or 'Review' tabs, or the 'Model Message' dialog; if appropriate, an option is also provided to access the 'Chat' tab of the Collaborate window • Locate the element in the 'Project' tab of the **Browser window**, or in any other diagrams in which it is used • Display the Help topic describing the element type
	Click on this icon to display a toolbar and context menu of options for operating on the element appearance, to change the appearance of the element. If you select the icon for a single element , the toolbar and options appear as shown:



The toolbar icons, in order of display, enable you to set the element's text font, text color, fill color, border color, and border line width, or to set the element fill color to a previously-sampled color, or to sample (copy and store) the current element fill color.

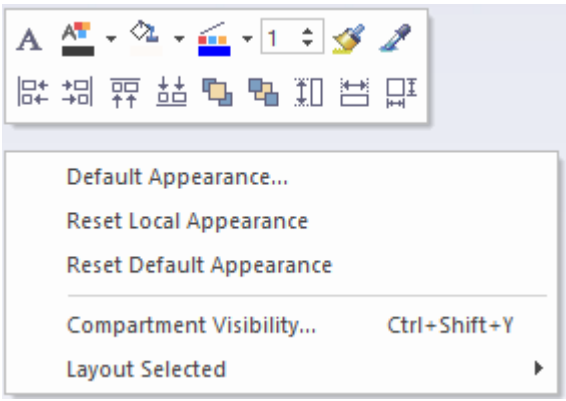
The context menu options enable you to:

- Define the border, font and background colors and the border thickness for the selected element, as its default appearance wherever it is used
- Reapply the appearance of the element as specifically defined for that element on this diagram
- Reapply the defined default appearance of the element
- Change the element's appearance to either a new default image or an alternative image, using the **Image Manager**; this appearance applies to the element on all diagrams in which it

is used

- Display the 'Select Element' browser, and locate an Image Asset element containing the required image to use for the selected element
- Define which features and characteristics of the selected element are shown in compartments of the element on the diagram, using the 'Compartment Visibility' dialog
- For elements that do not have the default rectangle/compartment rendition, such as Use Cases and Actors, toggle display of the element between their default shape and rectangular notation

If you select this icon on an element within a group of selected elements, further options are listed, as shown:



The additional options on the toolbar enable you to:

- Align the left, right, bottom or top

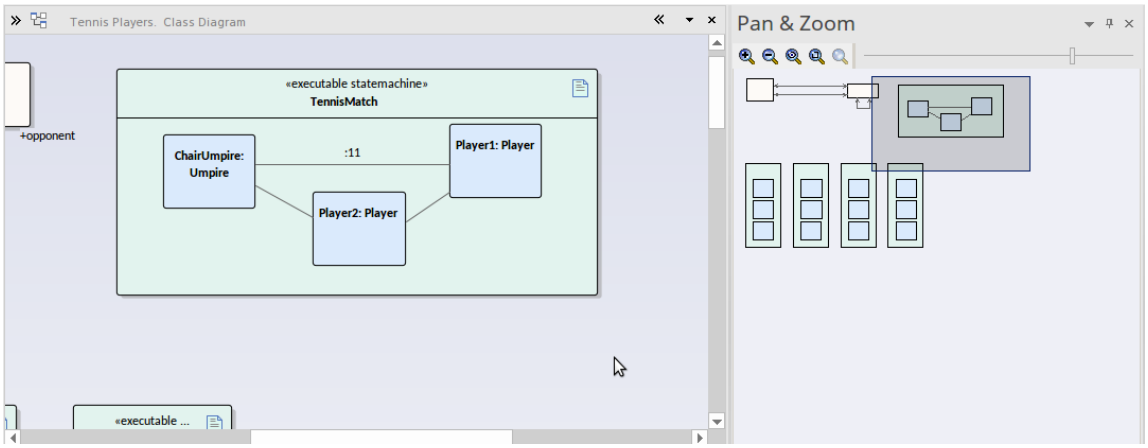
	borders of the elements in the group with the appropriate edge of the selected element • Bring the selected elements further forward or further back in the diagram relative to the unselected elements • Make all elements in the group the same height as the selected element, the same width, or both An additional context menu option - 'Layout Selected' - enables you to apply one of the ten diagram layout styles (other than Fan Relations), or to apply a style with finer control through the **Layout Tools window**.
	(Displays if the diagram has the 'Custom Styles' option selected.) Click on this icon to display a toolbar for applying custom diagram style options to the selected element or elements. The toolbar enables you to set the element: • Shape • Fill opacity • Name and Notes text position and orientation • Icon size, position and padding • Border line style

	• Outline stacking direction and the number of outlines in the stack
	Click on this icon to rotate a Fork/Join element from vertical to horizontal or vice-versa.
	On a Package element, displays two further icons to generate: • A document file using the 'Generate Documentation' dialog, or a • Web page document using the 'Publish as HTML' dialog
	(Or ) Click on this icon to toggle an Activity Partition between vertical and horizontal.
	Indicates that the Interaction Fragment currently contains messages; in this state you can: • Move the fragment vertically, but not horizontally; all elements and messages below the fragment move up or down by the same amount • Resize the fragment to larger than the contained messages/elements, but not smaller

	This is the default condition when you open or reload a diagram containing a fragment. You can click on the icon to toggle to 'move freely' mode.
	Indicates that the Interaction Fragment can be moved independently of the Messages or other elements contained within the fragment. This is the default condition when you first create the fragment. You can click on the icon to toggle to 'contains messages' mode (earlier).

The Pan & Zoom Window

The Pan & Zoom window provides a 'birds-eye' view of diagrams. It enables you to navigate quickly around large diagrams.



Access

Ribbon	Layout > Tools > **Pan and Zoom**
Keyboard Shortcuts	**Ctrl+Shift+N**

Reference

Topic	Detail

View	The window shows a reduced image of the whole diagram. The shaded box represents the viewed area, displayed on the open diagram.
Toolbar	The toolbar provides these functions (in order): • Zoom In • Zoom Out • Zoom to fit diagram • Zoom to fit page • Zoom to 100% • Zoom Slider
Use	Open the required diagram. Move the cursor onto the shaded box inside the Pan & Zoom window. Hold down the mouse button as you move the cursor to move the shaded box over the open diagram. As you do this, the corresponding area is brought into view on the open diagram. To zoom, use either the Zoom Slider (drag the rectangle along the line) or the buttons located on the tool bar (click on the appropriate button).

Working In Diagrams

Enterprise Architect provides a wide range of facilities for creating, editing and managing the diagrams that represent aspects of your models.

Facilities

Facility
Create a UML diagram, Extended diagram or MDG Technology diagram in your model, through the **Browser window**.
Set or change various properties of a diagram, such as the diagram name, through the diagram 'Properties' dialog. Some properties influence the display of the diagram and some are logical attributes that appear in the documentation.
Display a Diagram Properties Note on the diagram. A Diagram Properties Note is a simple fixed-text box containing the diagram name, author, version, creation date and modification date. You can move this text box to any point on the diagram.
Add new elements and connectors to a diagram using

the **Diagram Toolbox** pages specific to the diagram type, or other Toolbox pages as you need.
Add new elements and connectors to a diagram using the **Quick Linker** facilities.
Drop existing elements from the **Browser window** into the diagram.
Drop elements copied from a diagram into another diagram.
Change the Z-order of selected elements on the diagram, to define which elements might lie over or underneath other elements.
You can convert a tabbed diagram in the **Diagram View** into a floating diagram. In this case, you can move or copy elements between that diagram and another floating diagram or tabbed diagram.
Move sections of the diagram independent of the rest of the diagram.
Automatically resize the selected elements on the diagram to the default size for the element type, or as close to it as the element contents allow.
Identify which other elements are related to a selected

element on the diagram and, if necessary, add one or more of those other elements to the diagram.
Generate virtual images of connector end elements, to simplify complex and extended relationships on a diagram.
Control the display of labels around elements and connectors on the diagram.
More precisely represent realized interfaces of a Class on your diagram.
Expand the contents of a Package element within a diagram.
Manage the visibility of a range of element features on the diagram.
Undo and redo the immediately previous changes to the diagram.
Pan across and down a large diagram, and zoom into or out of the diagram display.
Select and move elements on the diagram using keyboard keys ('hotkeys').
Switch between the currently-open diagrams and views in

the **Diagram View**.
Change a diagram from one type (such as Class) to another (such as Data Modeling).
Flag a selected diagram as the Model Default diagram for your project, or your User Default diagram.
Scale down the Printable image of the diagram to fit the size of paper it is being printed on.
Set the scrollable/printable area of the diagram display area.
Present a set of diagrams in a **Model Views** slideshow.
Lock the current diagram so that it cannot be updated.
Create a duplicate copy of an existing diagram.
Save an image of the diagram to a file, in a range of graphic file formats.
Copy an image of the diagram to the MS Windows clipboard.
Delete one or more diagrams from the model.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Update Element' permission to update or delete items on a diagram, and 'Manage Diagram' permission to create, copy or delete diagrams

Add New Diagrams

Enterprise Architect provides a number of ways in which to create a new UML diagram, Extended diagram or MDG Technology diagram in your model. The principal method is to select the Package or element under which to create the diagram and select a menu option to add it, as explained here.

Add a New Diagram to the Model

Step	Action
1	In the **Browser window**, click on the Package or element under which to place the diagram.
2	Either: • In the **Browser window** header bar, click on the  button, or • Right-click on the object to open the context menu and select the 'Add Diagram' (Package) or 'Add | Add Diagram' (element) option, or • Press the **Insert key** and select the 'Add Diagram' menu option The 'New Diagram' dialog displays.

3	The 'Package' field defaults to the name of the Package selected in the **Browser window** or, if the parent is an element, the name of the Package containing that element. If you are adding a diagram directly to a Package and notice that it is not the correct Package, click on the  button and browse for the correct Package. (The  button is disabled when you are creating a diagram under an element, and the 'Parent' field shows the name of the element under which you are creating the diagram.)
4	The 'Diagram' field defaults to the name of the selected Package or element; if necessary, type a different name for the new diagram.
5	Click on the **Perspectives** field underneath the 'Type' header, and select the Perspective Group and Perspective or Workspace most appropriate to the area you are working in. The panel underneath the header displays a list of diagram groups; click on the required group.
6	In the 'Diagram Types' panel, click on the type of diagram to create and, where listed, the view to create. The view is a refinement of the type to further tailor the diagram to a purpose, and restricts the elements and connectors provided in the Toolbox pages to those appropriate to the purpose.

	A description of the selected diagram type displays in the field underneath this pane.
7	Click on the **OK button** to create your new diagram.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Manage Diagrams' permission to create new diagrams
- The diagram type determines the default Toolbox pages associated with the diagram and whether the diagram can be moved as a child of another element in the **Browser window** (for example, a Sequence diagram under a Use Case)

Insert Diagram Properties Note

On a diagram, it is possible to display a customized text box called the Diagram Properties Note, which automatically shows the diagram properties:

- Name
- Author
- Version
- Creation date and
- Modification date

You can move this Note around the diagram and change its appearance, and you can create several instances of it to, for example, put the property information on each page of the diagram. You cannot change the content.

Access

Ribbon	Layout > Diagram > Appearance > Show Diagram Property Note
Other	Drag the 'Diagram Notes' icon from the 'Common' page of the Toolbox onto the diagram Click on the 'Diagram Properties Note' icon in the UML Elements toolbar and

	click on the diagram

Notes

- The Diagram Properties Note is not the same as the Diagram Details Note, which displays if the 'Show Diagram Details' checkbox is selected on the 'Properties' dialog for the diagram; this always displays in the top left corner of the diagram - you cannot move it, change its appearance or have more than one instance of it on the diagram

Drop Package From Browser Window

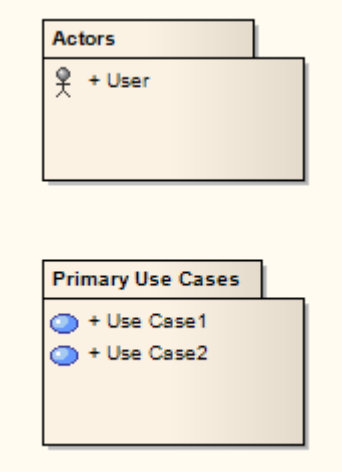
You can drag a Package element from the **Browser window** and drop it onto the current diagram, to show a representation of the Package in one of several formats. You select the format from a short context menu. This is a useful feature to help organize the display, reporting and documentation of models.

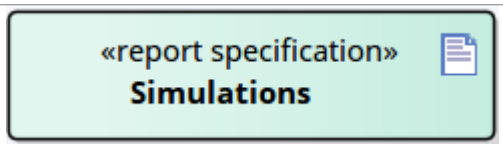
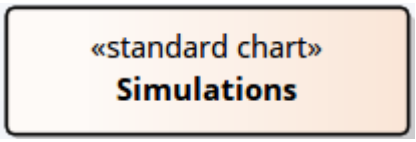
Access

Other	Drag existing Package(s) from the **Browser window** onto the diagram.

Select Drop options

Option	Action
Package element	Select this option to generate a Package element on the diagram, containing a list of the Package contents. In this illustration, note the child Actor and Use Case icons.

	 You can hide the contents of the element if necessary. See the *Show or Hide Package Contents* Help topic. The diagram element is a simple link to the Package in the **Browser window**; any changes to the Package are reflected in all diagrams in which it is shown.
Report Specification linked to package	Select this option to generate a Report Specification Artifact element linked to the Package, which immediately opens to the 'Generate Documentation' dialog on which you enter the parameters for generating the report. Thereafter, you can simply double-click on the element and click on the **Generate button** to generate the same report on the Package, whenever necessary. The report can be read as a Linked Document on the element.

	
Graph based on Package contents	Select this option to create a Standard Chart Artifact. The Standard Chart 'Properties' dialog displays at the 'Chart Detail' pages, on which you can configure the generation of a Pie Chart or Bar Chart to graphically represent an aspect of the Package content. 
Matrix profile	Select this option to create a Matrix Specification Artifact. The 'Matrix Specification' dialog displays.
Package as List	Drop the Package as a **Model View** chart element that lists the elements within the Package and shows the type (by icon), name, Scope, Status and Author of each element.

Notes

- If you drop several Packages onto a diagram together, the

'drop type' context menu displays once; the option you select applies to all Packages you have dropped on the diagram

Show or Hide Package Contents

If you have Package elements displayed in an open diagram, you can toggle between showing the Package contents within the elements, or leaving them clear.

Access

Ribbon	Design > Diagram > Manage > Properties > Elements
Context Menu	**Browser window** or open diagram | Right-click on diagram | Properties > Elements

Steps

Step	Instruction
1	Select the 'Package Contents' checkbox to list the content of each Package within its element. Clear the 'Package Contents' checkbox to hide the

	content of each Package within its element.
2	Click on the **OK button**.

Drop Elements from Browser Window

As well as creating new elements in the current diagram, you can drag existing elements (individually or as a group) from the **Browser window** into the diagram. To select multiple elements, click on the element names in the Browser window while pressing and holding:

- **Ctrl** to add single items to the selection of multiple elements, or
- **Shift** to select all the elements between the first and last selected items

When you drag an element onto a diagram from the Browser window, the system response depends on whether you are dragging a Package element or any other type of element. For information on dragging a Package element onto a diagram, see the *Drop Package From Browser Window* topic.

It is not possible to duplicate an element on the *same* diagram, but you can generate representations of the element at the ends of connectors, called virtual connector ends. See the *Virtual Connector Ends - Represent One Element Several Times on a Diagram* Help topic.

Access

Other	Drag existing element(s) from the

	Browser window onto the diagram (If the 'Drop <element> from Project Browser' dialog does not display, press **Ctrl** while dragging the elements)

Select Paste options

Option	Action
Drop as	Click on the **drop-down arrow** and select one of the drop types: • Link - Drop the element as a simple link: in this case the one element is represented in the **Browser window** and in any diagram to which it has been added; changes to the element are reflected in all diagrams in which it is shown • Lifeline - (On Sequence diagrams) Drop a copy of the element as a separate Lifeline element, classified by the original element • Instance - (On diagrams other than Sequence) Drop a copy of the element as a separate instance of the original element, classified by the original

	element • Invocation - Drop a copy of a StateMachine or Activity element as an invocation of the source element; the resulting element is a State object or Action - respectively - with the source element as its classifier • Property - Drop a copy of the element as a separate Object instance • Attribute - (Available when dragging a classifier onto an element that supports attributes) Create a new attribute classified by the dragged classifier; the attribute is automatically selected in in-place editing so that you can add the attribute name • Child - Drop the element as a child of the copied element - that is, as a new element with a Generalization connector back to the copied element; this is very useful when you have a Class library or framework from which you inherit new forms - for example, you can drop a Hashtable as 'MyHashtable', which automatically becomes a child of the original Hashtable Used with the 'Override Parent

	Operations' feature, this is a quick way to create new structures based on frameworks such as the Java SDK and the .NET SDK
Name	If the dropped element is being added as a new element (that is, a Lifeline, Instance, Child, or Property), this field is active; type a name for the new element.
Structural Elements	If the original element has any structural elements (for example, Ports and Parts) this field contains the value 'Select'. Either: • Leave this value as is, so that when you click on the **OK button** the **Features window** displays, from which you can select the child elements to reproduce with the pasted element (on the 'Parts / Properties' tab, 'Interaction Points' tab or 'Connection Points' tab, depending on the element type) or • Click on the **drop-down arrow** and select: - 'None' to not reproduce any child elements - 'All' to reproduce all child elements on the original element, or - '<diagram name>' to reproduce

	the configuration of child elements on an instance of the original element on another diagram (if there are any other instances); there can be more than one diagram name, if the original element is found on several diagrams The resulting Object element is created large enough to display the selected child elements laid out neatly within the Object border. (If the element has no structural elements, the field contains the text 'No Embedded Elements'.)
Copy Connectors	This checkbox is enabled when you select to drop the copied element as an Instance, Property or Invocation. Select the checkbox to reproduce on the diagram any connectors between the original element and any other elements that have also been dropped into this diagram, as connectors between the instances.
Select for all	(If dragging multiple elements onto the diagram at once.) Select the checkbox to apply the dialog

	settings to all multiple-selected elements being dragged onto the diagram, and to add the elements together. Leave the checkbox unselected to add the elements to the diagram one at a time, with the opportunity to change the dialog settings for each element.
Save selection as default	Select this checkbox to make the current settings on this dialog the default for all drag and drop operations from the **Browser window**. This option also deselects the 'Auto Instance' checkbox on the 'Diagram > Behavior' page of the 'Preferences' dialog. The automatic drop operation becomes whatever you have set on the 'Drop ... from Project Browser' dialog, and is not overridden by the drop-as-Instance imposed by the 'Auto Instance' checkbox. The default setting you apply on Sequence diagrams is separate from the default for other types of diagram. Therefore, you can set the default to 'Lifeline' (if you prefer) and this does not affect or get changed by the default you might set for other types of diagram.
Hold Ctrl to	Select this checkbox to display this dialog

Show this dialog	for drag and drop operations only if you press and hold **Ctrl** as you drag the element onto the diagram. If you select this option, you can drag elements from the **Browser window** without displaying the dialog; the paste operation complies with whatever settings you used the last time you opened the dialog. To change these settings, hold Ctrl as you drag an element, and edit the field values on the dialog.
OK	Click on this button to complete the drop operation and close the dialog.
Cancel	Click on this button to cancel the drop operation and close the dialog. If you have selected multiple elements, the first-selected element is not dropped, but the remainder are.
Cancel All	(If dragging multiple elements onto the diagram at once.) Click on this button to cancel the insertion of all the multiple-selected elements being dragged onto the diagram.

Notes

- Not all drop options apply to all element types; for many types, the only option available is 'Link'
- When an element dragged from the **Browser window** is dropped into the diagram, its default style and size is applied rather than any alternative styles and sizes used for instances of the element in other diagrams
- If an element is dropped onto a diagram as a Link, any attached Boundary, Note, Text or Constraint elements are duplicated on the diagram
- When using the 'Drop as - Instance' option, if the Instance is the same element type as the Classifier, then any stereotype that has been applied to the Classifier will be propagated to the Instance also

Z Order Elements

Z Order refers to the sequence in which elements are layered through the depth of the diagram; each element on the diagram has a specific Z-order number that - when elements overlap - determines which elements the selected element displays in front of, and which behind. You can move an element:

- One place further back, deeper into the diagram
- One place further forward, towards the front of the diagram
- To the bottom of the diagram (deeper in than all other elements in the diagram)
- To the top of the diagram (further forward than all other elements in the diagram)

You have options to change the Z order of a single element approximately in relation to the rest of the diagram; you can also select the 'Configure Z Order' option from the diagram context menu, to review and adjust the Z Order of each element on the diagram precisely relative to every other element

Access

Ribbon	Layout > Alignment > choose either 'Bring to Front' icon (top of the Z order)

	or 'Send to Back' icon (bottom of the Z order) Design > Diagram > Manage > Configure Z Order
Context Menu	Right-click on element in a diagram | Z-Order : Select the appropriate option to reposition the selected element.

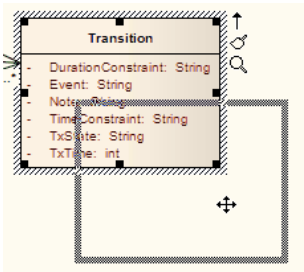
Notes

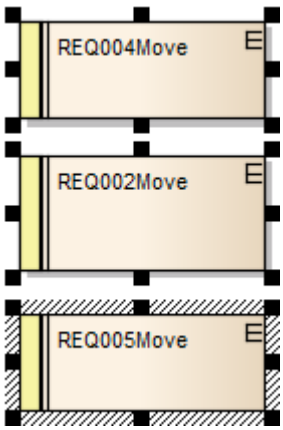
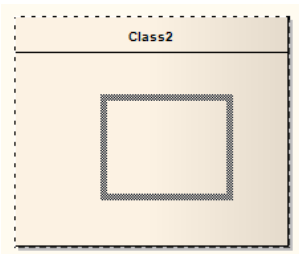
- On a diagram, you can move the focus from element to element according to Z Order, by pressing **Shift+Tab**; each time you press these keys, the element with the next-lowest Z Order number is selected

Move Elements Within Diagrams

As you add new elements to a diagram, you might want to move the existing elements to create more space, make a structure more apparent, or create a nesting relationship between two elements. There are several ways in which you can move the elements within the diagram.

Move Elements

Image	Action
Change Position 	Select an element or group of elements in the diagram, then: • Use the mouse to drag the element or group of elements to the required position (the cursor switches to the four-arrow icon as shown) • Hold down **Shift** and press the appropriate arrow keys to move the element or group of elements by small increments in the arrow direction If you are moving a single element and you have selected the 'Layout > Alignment > ⊞ > Smart Placement' and 'Show smart placement guide' options, as you move the element colored lines will

	display around the element. These indicate the positions of the edges and edge-centers as they align with an adjacent element or connector. Note that the objects must be contemporary - not at different hierarchical levels and not in different partitions of the diagram.
Align Elements 	Select a group of elements in the diagram and align them on the last-selected element using: • The 'Align...' options in the right-click context menu or • The **Alignment buttons** on the Diagram toolbar 
Confirm Possible Nest Elements 	If you want to nest one element within another, you can drag that element onto the 'nest' element; the nesting element is then always encapsulated by the nest and moved within the nest. Not all element combinations are valid. For example: • Drag a Signal element over a Class; because a Class element can nest a Signal, the Signal element is encapsulated

	• Drag a Class element over a Signal element; because a Signal cannot nest a Class, the Class element is not encapsulated To confirm that the proposed nest element is able to accept the selected nesting element, observe the nest element border as you drag the nesting element over it: • If the nest element can accept the selected element, the nest element border changes to a dashed line • If the border does not change, the selected element cannot be encapsulated within the nest element

Notes (on Adding nesting element to nest)

- The 'Support for Composite Objects' checkbox must be selected on the 'Objects' page of the 'Preferences' dialog (select the 'Start > Desktop > Preferences > Preferences' ribbon option and click on the 'Objects' page); if this option is not selected, the dashed border does not show and the nesting element cannot be embedded on the nest element in the diagram
- Both elements must already exist on the diagram; the nest

element border does not change if you drag a potential nesting element over it from the Toolbox or **Browser window**

- The nesting element must be dragged right over the nest element, so that its borders are completely within the nest element borders
- The Z-order of the nesting element is automatically adjusted so that it is not hidden by the nest element
- When you embed a nesting element on its nest element, the nesting element becomes part of the nest element hierarchy in the Browser window; if you drag the nesting element out of the nest element, the nesting element becomes independent and is no longer embedded in the nest element hierarchy

Move Elements In Diagram Sections

As you build up a diagram, you might find that you have to move all elements within a part of the diagram up, down or to one side. You can do this in a number of ways.

Fine Movement

You can nudge the position of a single element or a selected group of elements in 1 pixel increments. Press **Shift** and then the arrow key for the direction of movement (Right, Left, Up or Down).

Drag Selected Groups of Elements

If you want to reposition a certain group of elements, hold down the left mouse button and drag the cursor over the elements to move (creating an outline around the elements), then click on an element within the outline and drag the group as required.

Move Sections of the Diagram

You might need to create some space in the diagram.

Selecting and moving even groups of elements around in a large diagram can be difficult, so it is possible to just move everything beyond a certain point further away from the rest of the diagram, without having to select the elements you are moving. To do this:

- Select the 'Layout > Helpers > Sweeper' ribbon option, click on the diagram at an appropriate point and drag the cursor to move everything beyond the cursor in the direction of the movement

or

- Hold down **Alt**, click on the diagram at an appropriate point and drag the cursor to move everything beyond the cursor in the direction of the movement

Depending on whether you drag the cursor vertically, horizontally or diagonally, either a horizontal or vertical line or both displays on the diagram just behind the cursor. If you are moving the cursor left, everything to the left of the line moves with the cursor. If you move the cursor up, everything above the line moves upwards. If you move the cursor diagonally, everything within the quadrant formed by the lines moves. For example, if you move the cursor left and down, everything below and left of the cursor is moved.

Move Elements Between Diagrams

If an element is present in one diagram but actually belongs in another, you can simply move the element from the first diagram into the second. You can also cut multiple elements from one diagram and paste them into another. When you cut elements from a diagram, the elements are held on the clipboard but are not cleared from the source diagram until they are specifically pasted into the target diagram. A moved element is not affected in any other way.

Access

Open the diagrams:

- Containing the element(s) to be moved, and
- Into which the elements(s) will be moved

Keyboard Shortcuts	With the element selected in the source diagram: • **Ctrl+X** With the cursor in the target diagram: • **Ctrl+V** or **Shift+Insert**
Other	Display the 'Default Tools' Toolbar (Explore > Portals > Show Toolbar > Default Tools) and: • On the source diagram, click on the

	element to be moved and on the  icon in the Toolbar • Click on the target diagram and on the  icon in the Toolbar

Notes

- By selecting more than one element at a time, you can move multiple elements in the same operation

Copy Elements Between Diagrams

As you develop a diagram, it is not uncommon to find that some of the elements and structures of elements could also be used on another diagram. You can copy those elements and structures onto another diagram as a new set of elements without losing the element composition or the organization of the structure. In doing this, you can change any of the element names within the structure and preserve the relative nesting of the elements.

Access

Ribbon	With element(s) selected in source diagram: • Layout > Diagram > Select > Copy Selected Elements With input focus on target diagram: • Layout > Diagram > Select > Paste as Reference or • Layout > Diagram > Select > Paste as New
Keyboard Shortcuts	With element(s) selected in source diagram: • **Ctrl+C**

	With input focus on target diagram: • **Shift+Insert** (Paste as Link) • **Ctrl+Shift+V** (Paste as New)

Paste Element(s) as Reference

If you select to paste the copied elements as references (or links) to the source element(s), the elements are added to the diagram as instances of the source element(s) on the target diagram, with any connectors between them. Notes, Text, Boundary and Constraint elements attached to the pasted element are duplicated on the target diagram.

Complete the Paste Element(s) as New Dialog

If you select to paste the copied elements as new elements, the 'Paste Element(s) as New' dialog displays.

Option	Action
Original Element Name	Each element name defaults to selected, to be inserted in the target diagram. If you want to omit an element from the copied structure, clear the checkbox

	against it.
New Element Name	If you want to give a copied element a new name, delete the current name (highlight it and press the **Delete key**) and type in the new name.
Include Connectors	This checkbox defaults to selected, to make copies of the original connectors where both source and target elements in the relationship have been copied. This maintains the relationships between and organization of the copied elements. If you do not want to copy the connectors, clear the checkbox.
Paste	Click on this button to add the copied elements and connectors to the target diagram as new elements.
Don't show this again	Select this checkbox if you want to hide this dialog next time you paste an element as new (the pasted element has the same name as the original element). You can set the dialog to display again by clearing the 'Hide diagram element paste as new dialog' checkbox on the 'Objects' page of the **Preferences window** (select the 'Start > Desktop > Preferences >

	Preferences' ribbon option).

Notes

- Package elements cannot be copied as structured elements
- The 'Date Created' and 'Time Created' parameters of a pasted-as-new element are set to the current date and time; the parameters for a linked element remain the same as the copied element
- Elements - including special embedded elements such as SysML Properties - do not have to have a parent element when pasting as new, although normal embedded elements such as Ports must have a parent
- Elements in State regions cannot be pasted as new outside the parent element
- Parenting is still applied when copying and pasting as new using **Ctrl+click-and-drag** between (floating) diagrams
- You can also use the 'Cut', 'Copy' and 'Paste' icons in the Default Tools toolbar

Move/Copy Elements To & From Floating Diagrams

If you have converted a tabbed diagram in the **Diagram View** into a floating diagram, you have a number of context menu options to move or copy elements between that diagram and another floating or tabbed diagram.

Access

Other	Drag element(s) from one diagram to another and release mouse button

Move or copy selected elements

Option	Action
Move to this diagram	Select this option to cut the selected element or elements from the source diagram and paste them into the target diagram. If the moved elements are held in a different Package, when the elements are

	pasted each has a label underneath identifying the parent Package. Function Keys: **Drag+Shift**
Create link on this diagram	Select this option to create an element or elements on the target diagram, each as an instance of a selected element on the source diagram. Function Keys: **Drag+Alt**
Copy as New Object(s)	Select this option to create an element or elements on the target diagram, each as a copy of a selected element on the source diagram. The 'Paste Element(s) as New' dialog displays, on which you enter a new name for each element to identify it as a new, separate element. Click on the **Paste button** to complete the create task. Function Keys: **Drag+Ctrl**
Instance (Object)	Select this option to create an element or elements on the target diagram, each as an object instance or invocation of an element on the source diagram. The source element is the classifier for the new object element. Function Keys:

as New Child (Generalization)	Select this option to create a new child element on the target diagram, as a generalization of the element of the source diagram. The 'Element Name' dialog displays for each copied element, on which you enter a new name for the element to identify it as a new, separate element. Click on the **OK button** to complete the create task. Function Keys:

Notes

- Multiple elements are processed individually, so if one element is 'illegal' the other elements are still copied and/or transferred
- If you select multiple elements to copy as instances or generalizations, those elements must be of the same type and stereotype
- Embedded elements are moved or copied only if they are specifically selected with the parent element

Autosize Elements

You can autosize an element or group of elements in a diagram to the default size for the element type (for a Class, 90 x 70 pixels at 100% zoom). However, if the element contains more information than the default size can show (such as a long name, long attributes or additional compartments) the autosize option resizes the element to the minimum size for displaying the information.

The size change effectively operates around the mid point of each element, so the layout and size of the diagram do not change. Automatically changing the layout of a diagram is a different process.

Access

Context Menu	Right-click on selected elements | Autosize (available only when multiple elements are selected)
Keyboard Shortcuts	**Alt+Z**

Notes

- Not all elements resize: elements such as Events remain the same; Timing and Sequence diagrams (where position is crucial) are unchanged; and elements added from a profile or Shape Script maintain any size definitions imposed by the profile
- With an element image created with a Shape Script that contains a defSize command, Autosize returns the element to the defSize value and not the element default size

Virtual Connector Ends - Represent One Element Several Times on a Diagram

Virtual connector ends assist you to simplify complex diagrams containing many elements with multiple connectors, supporting good layout strategies that minimize crossed relationship lines and group related elements accordingly. They are highly effective when the element of interest is:

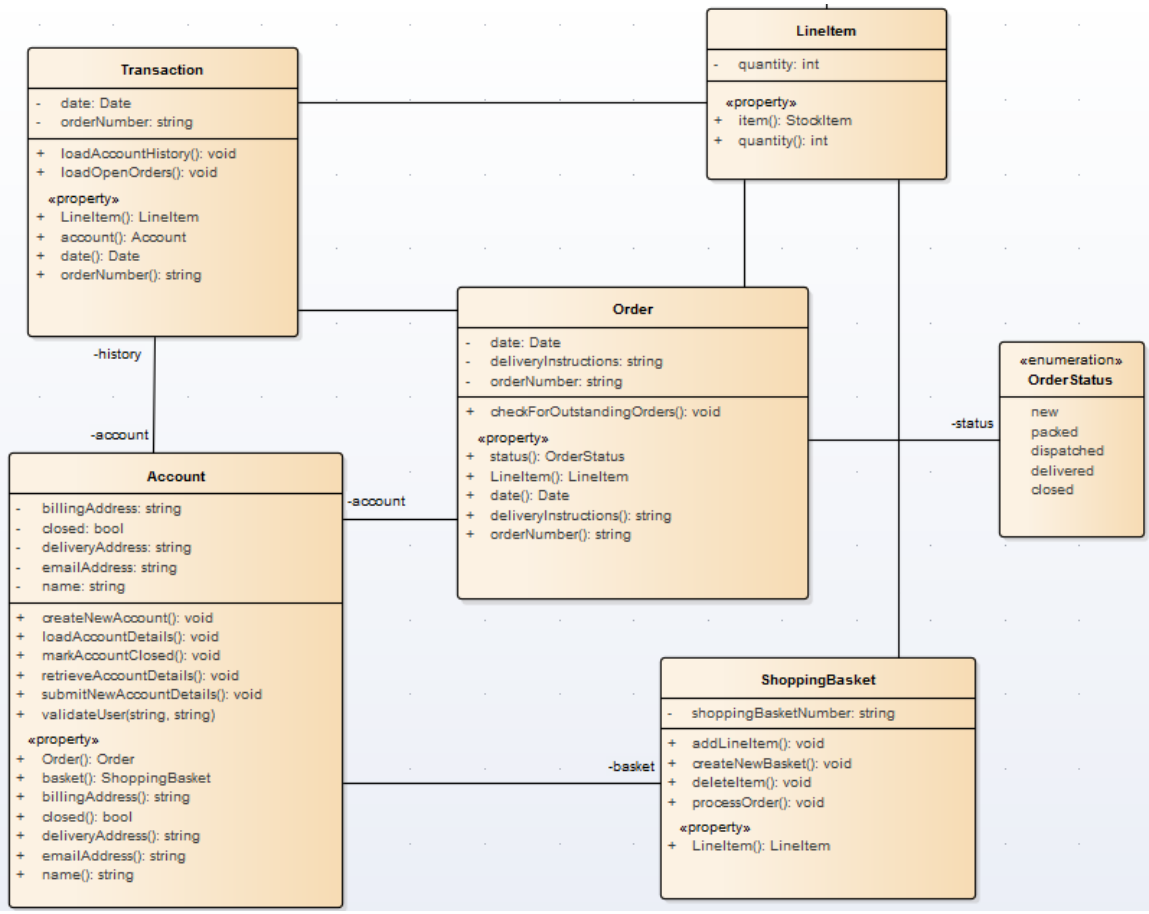
- The focus of a large number of relationships, or
- A member of two or more groups of elements that are a distance apart on the diagram, or
- Simply used in several contexts when you currently want to focus attention on one of those contexts

While Enterprise Architect does not support placing an element on the diagram more than once, using this strategy you can create any number of **virtual representations** of the element on the diagram, so that you can show the full image of the element in one context and have separate, simpler images of it on the same diagram in other contexts. This reduces the number of visible connectors crossing the diagram without you having to hide the connectors individually, and helps you create cleaner, more readable diagrams on which you can place linked elements closer together.

To achieve this, you right-click on the connector that you

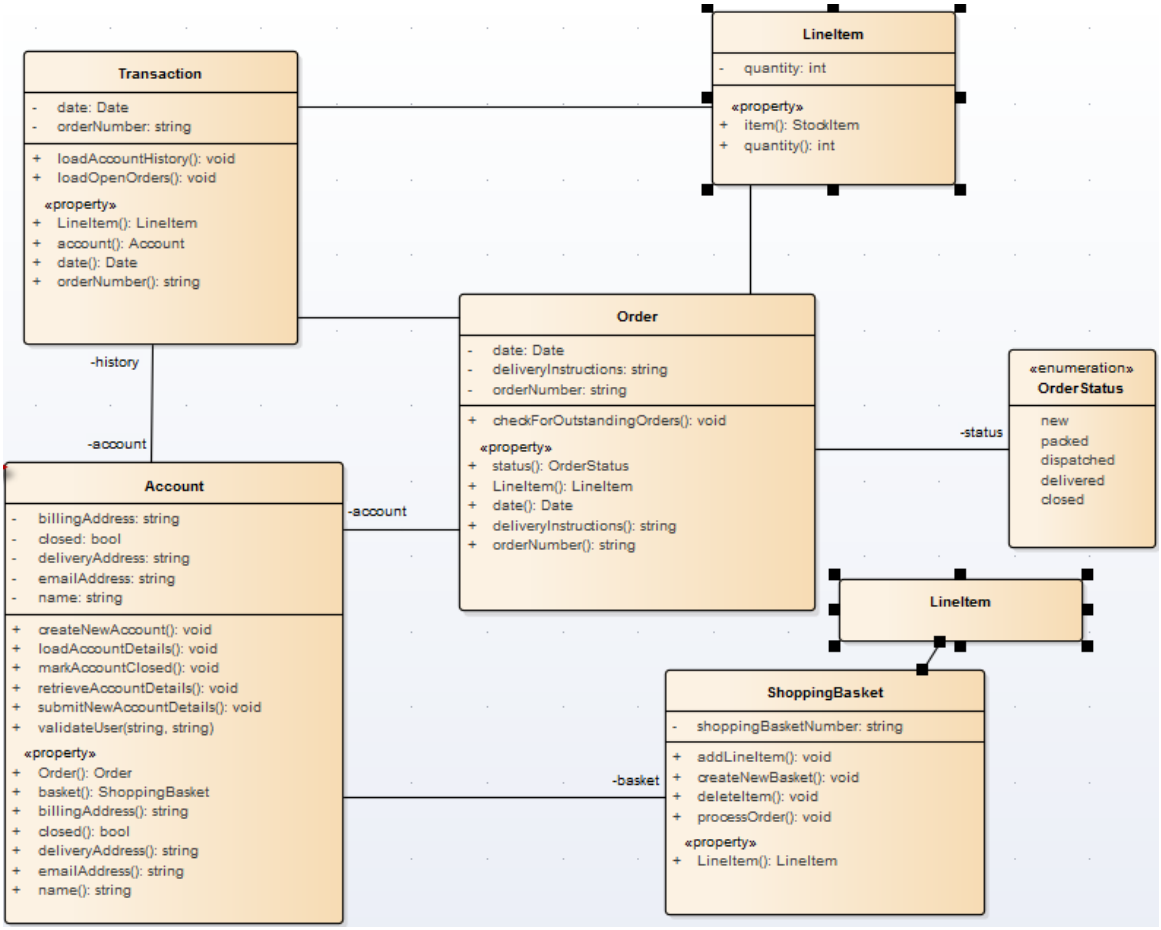
want to keep the element on, and select to virtualize the appropriate connector end (source or target). The system adds a simple rectangle containing the element name and with the element fill color to the connector end, with no other connectors on it.

Consider this example:



The diagram is relatively simple but still quite large, and the connector between the ShoppingBasket and LineItem elements crosses another connector. You might want to simplify the diagram for any of several reasons, such as avoiding the crossover or temporarily bringing the LineItem element more closely into the Account/Order/ShoppingBasket group as a simple participant. So, you create a virtualization of LineItem as the

target of the Association connector to ShoppingBasket.



Access

Context Menu	On diagram | Right-click on connector | Virtualize Connector End | Target (or Source)

Notes

- A 'Virtual Element' is an extension of a connector that provides access to **some** of the properties of the element it represents
- Virtualization operates on waypoints in a connector line, and therefore requires the connector line style to be set to **Custom Line**
- If no waypoints exist on the connector, the operation creates one
- If you virtualize the target element on a connector, the virtual connector end displays on the last waypoint of the connector line
- If you virtualize the source element on a connector, the virtual connector end displays on the first waypoint of the connector line
- You cannot virtualize both ends of a connector
- The original connector still exists, and if you click on the 'Virtualize Connector End' option again, the full connector redisplays and the virtual element disappears
- If you click on one virtual element, the original element and all its other virtual elements are selected and highlighted; any changes to properties made through the 'Properties' dialog of a virtual element affect the original element
- Changes to an element's **appearance** (other than fill color) do not affect its virtual elements
- Virtual elements appear on prints, reports and copies of **diagrams**; they do not appear in lists or reports on the **model** structure

- Virtual elements are specific to the diagram they are created on; if you copy a diagram (with or without virtual elements) and add virtual elements to the copy, those changes are not reflected in the original diagram

Locate Related Elements

When you are reviewing an existing element on a diagram, it is possible that the diagram does not show all of the relationships between that element and others. The related elements might be:

- On the diagram, but with the relationships hidden, or
- Depicted on a different diagram

You can quickly check what other elements have relationships with the selected element, using the Relationships window. The right-click context menu for each relationship listed in the window also indicates if the corresponding related element is not shown on the same diagram, by providing the 'Place Related Element in Diagram' option to add the related element to the diagram. This is useful when you are building up a picture of what an element interacts with, especially when reverse engineering an existing code base. To put the element in a specific position on the diagram, click on that point.

Access

Ribbon	Explore > Portals > Windows > Trace > Relationships Start > Desktop > Design > Relationships

Keyboard Shortcuts	**Ctrl+Shift+2**

Manage Object Labels

When you create certain elements or connectors, some of the properties of the created object are displayed on the diagram as labels offset from the object. For example, these properties display as labels:

- Embedded element name
- Run state, attributes and operations (if they exist) of an element that has an alternative image
- Connector name, stereotype, constraints and/or source and target role names

You can format and hide these labels using the 'Labels' context menu.

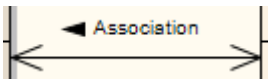
Access

Context Menu	Right-click on a label

Options

Option	Action

Edit Label	(Connector Labels only.) Select this option to display the text within a small editing box, with the cursor within the text. Delete or add text as appropriate. Shortcut: **F2**
Set Label Color	Select this option to display the 'Color' dialog, on which you select a standard color or define a custom color in which to display the label text.
Hide Label	Select this option to hide the label on the diagram; to reveal the label again: • For an element label, right-click on the element and select the 'Appearance | Show labels' option • For a connector label, right-click on the connector and select the 'Visibility | Set Label Visibility' option; select the checkbox against each label to redisplay You can also hide all connector labels on a diagram using the 'Suppress All Connector Labels' option on the 'Connectors' tab of the 'Properties' dialog for the diagram.
	Select this option to display the label text

Bold	in bold.
Label Rotation	(For embedded elements and connectors.) Select this option to orient the label in the horizontal (default) or vertical planes. You can rotate the text in the vertical plane either clockwise or anti-clockwise from horizontal.
Text Alignment	Select this option to align the text to the left, center or right of the label text area. This is more apparent where there are several items of text in the label, of different lengths.
Direction	(Connector name labels only - ensure that the connector has a name.) Select this option to set or clear a small arrow on the name label. You can choose to set the arrow pointing to the label source or destination.  This arrow is part of the label, so if there is no label text (or if the label consists only of spaces) there is no direction indicator.
Default	Select this option to move the label to the

Position	position it was initially created in, relative to the parent element or connector.
Default Color	Select this option to set the label color to the default color in which it was first created.

Notes

- As labels can be concentrated on and around the element or connector, try to click on a section of the required label that is clear of any other label or structure
- The 'Label Rotation' option is not currently available for stereotyped elements and connectors

Hide/Show Labels

A connector can have a number of different labels along its length and at each end. It is possible to selectively hide or display these labels to reduce the volume of text around the connector or to focus attention on specific properties.

Access

Context Menu	Right-click on connector | Visibility | Set Label Visibility

Hide or display labels on a connector

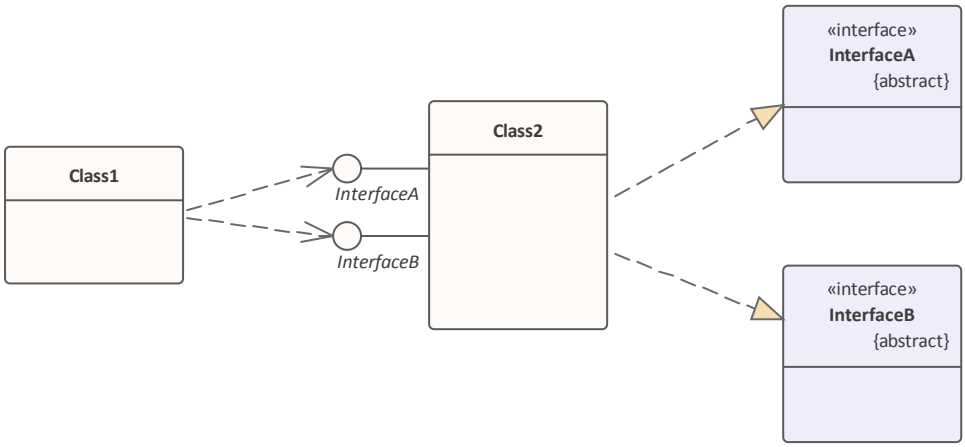
Step	Action
1	On the 'Label Visibility' dialog: • Select the checkbox against each label to show, and • Clear the checkbox against each label to hide
2	Click on the **OK button**.

	The diagram displays the connector with the selected labels shown.

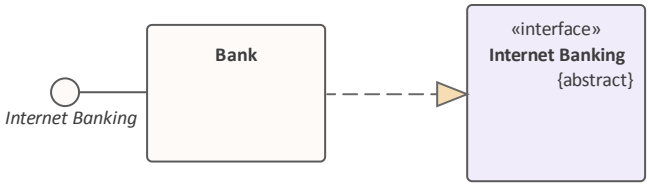
Show Realized Interfaces of Class

If you are modeling interfaces that are directly realized by a Class, you can render each of those interfaces as a 'lollipop' style interface node, which protrudes from the left-hand side of the Class.

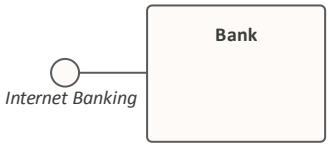
Consider this example:



The Bank Class realizes (or *provides*) the Internet Banking Interface. The diagram would be a useful depiction of this simple relationship if you wanted to populate the elements with visible features and properties. However, in more complex diagrams with more detailed realized (and dependent) interfaces, you might not want to show all the information defining each element. Therefore you can represent the realized interface as the 'lollipop' node, and remove the original Interface element from the diagram (but not from the model).



and then



To depict the interfaces that a Class realizes as nodes, right-click on the Class and select 'Features | Show Realized Interfaces'. This setting only applies to the selected Class, and can be changed at any time. If you turn the option off, in the scenario here, neither the node nor the Interface element are shown. If you turn the option back on, the node redisplays.

Notes

- There are various mechanisms for showing that an interface is realized by one object and required by another, including using the Expose Interface element; however, the simplest method of representing such interactions is to create an Assembly connector between the 'realizing' object and the 'using' object

Open Package From Diagram

As you develop your model, you might create diagrams that show the organization and/or content of some or all of the Packages in the model. From a Package element shown in one of these diagrams, you can quickly locate and expand the Package in the **Browser window** and open the Package default diagram in the **Diagram View**.

The default diagram is the first available diagram in the Package, selected in alphabetical order - for example, a diagram called Alpha in a child Package or element several levels down opens before a diagram called Beta immediately under the selected Package.

Access

Double click on the package.

Keyboard Shortcuts	Ctrl+K

Undo Last Action

When you are editing diagrams, moving, re-sizing and deleting elements and deleting connectors, and you make a mistake, you can work back through multiple levels of undo to roll back the error.

Access

Ribbon	Layout > Diagram >  Undo
Keyboard Shortcuts	**Ctrl+Z**
Other	Click on the **Undo button** in the Default Tools toolbar - 

Notes

- Currently you cannot undo element additions or connector moves
- If an undo action is itself in error, you can reverse it with a redo action

Redo Last Action

When you are editing diagrams, moving, re-sizing and deleting elements and deleting connectors, and you make a mistake, you can work back through multiple levels of undo to roll back the error. If the undo actions are themselves in error, you can reverse them with the equivalent number of redo actions.

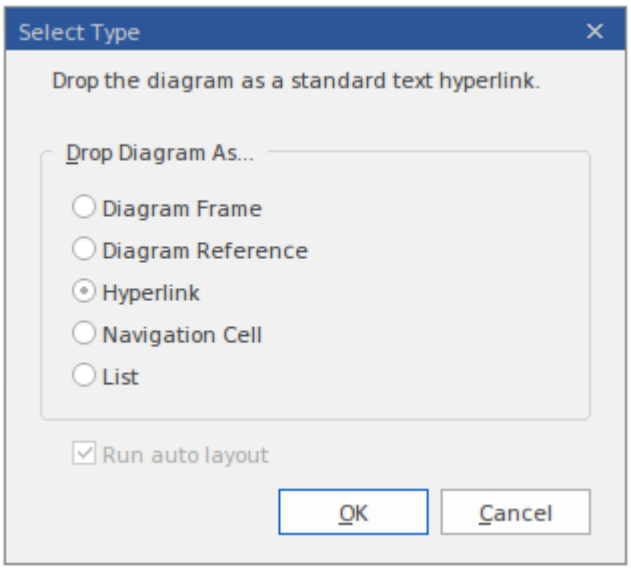
Access

Ribbon	Layout > Diagram >  Redo
Keyboard Shortcuts	**Ctrl+Y**
Other	Click on the **Redo button** in the Default Tools toolbar - 

Add Diagram Links to Diagrams

Whilst a diagram usually represents a structure of modeling objects, it can also act as a portal through which you can access related diagrams that provide more detail on an aspect, or alternative views of the structure, or views of other structures. Where there are many diagrams (or, indeed, other objects and features) to move on to, the initial diagram can become a home page for a part of the project, or even the entire project.

Several options for linking to another diagram are provided by the 'Select Type' dialog, which displays when you drag the target diagram from the **Browser window** onto the host diagram.



Drop Diagram Options

Select the appropriate option to set up the required type of

link to the target diagram, and then click on the **OK button**.

Option	Description
Diagram Frame	This option creates a Diagram Frame element containing an image of the dropped diagram, with the name of the dropped diagram in the frame label. Any user looking at the host diagram can double-click on the Diagram Frame and open the target diagram for review and - if they have the access permissions - for edit.
Diagram Reference	This option creates an empty Diagram Frame element with the name of the dropped diagram in the frame label. Any user looking at the host diagram can double-click on the Diagram Frame and open the target diagram for review and - if they have the access permissions - for edit. You can also open the referenced diagram from the **Browser window**, by double-clicking on the Diagram Frame name.
Hyperlink	This option adds a Hyperlink element to the diagram, containing a diagram icon with no frame, followed by the names of

	the parent Package and target diagram. Double-clicking on this hyperlink will open the target diagram. You can edit the hyperlink to point to another diagram, or to not display the diagram icon, by right-clicking on the element and selecting the 'Properties' option. You can also create an identical Hyperlink element by dragging the **Hyperlink icon** onto the host diagram from the 'Common' Toolbox page, right-clicking on the element and selecting 'Properties', and then selecting 'Diagram' from the 'Type' drop-down list.
Navigation Cell	This option creates a Navigation Cell (a **UML Diagram** element) that contains the name of the target diagram and, in the top right corner, an icon representing the diagram type. Just after you click on the **OK button**, the 'Select Image' dialog displays, from which you can select a graphic that represents the nature of the diagram. You can also select a diagram Theme for the image, from the 'Image List' field. If you do not want to add an image to the element, click on the **Cancel button**.

List	This option creates a **Model View** chart that lists the elements within the target diagram. When you select the option and click on the **OK button**, the Model View element 'Properties' dialog displays at the 'Chart Details > Source' page, showing the SQL statement that populates the list. Click on the OK button to execute the search and generate the List of Elements Chart.

List of Elements in Diagram Java Model

Name	Status	Author
Account	Proposed	Paulene Dean
LineItem	Proposed	Paulene Dean
Order	Proposed	Paulene Dean
OrderStatus	Proposed	Paulene Dean
ShoppingBasket	Proposed	Paulene Dean
StockItem	Proposed	Paulene Dean
Transaction	Proposed	Paulene Dean

Showing 1 - 7 of 7 items

Other Links to Diagrams from Diagrams

There are additional ways to link to and access one diagram from another. These include:

- From the **Browser window**, drag a Package containing the target diagram (as the first diagram listed in the Package) onto the host diagram, and select the 'Package

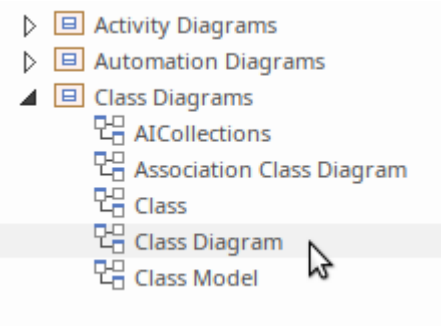
Element' option; when a user double-clicks on the Package element on the host diagram, the target diagram displays

- Right-click on a suitable element in the host diagram and select the 'New Child Diagram | **Composite Structure** Diagram' option, then double-click on the element to display the first diagram underneath the element; if that is not the required diagram, right-click on the element and select the 'New Child Diagram | Select Composite Diagram' option, then choose the target diagram from the 'Select Classifier' dialog
  - You can display the target Composite diagram instead of the parent element on the host diagram; right-click and select the 'New Child Diagram | Show Composite Diagram in Frame' option
  - Alternatively, you can display the target diagram in a compartment within the parent element outline; right-click and select the 'New Child Diagram | Show Composite Diagram in Compartment' option
- For most types of diagram link, when a user clicks on the link the target diagram opens; the diagram name tab has a small arrow on it which, when you double-click on it, returns you to the original diagram (

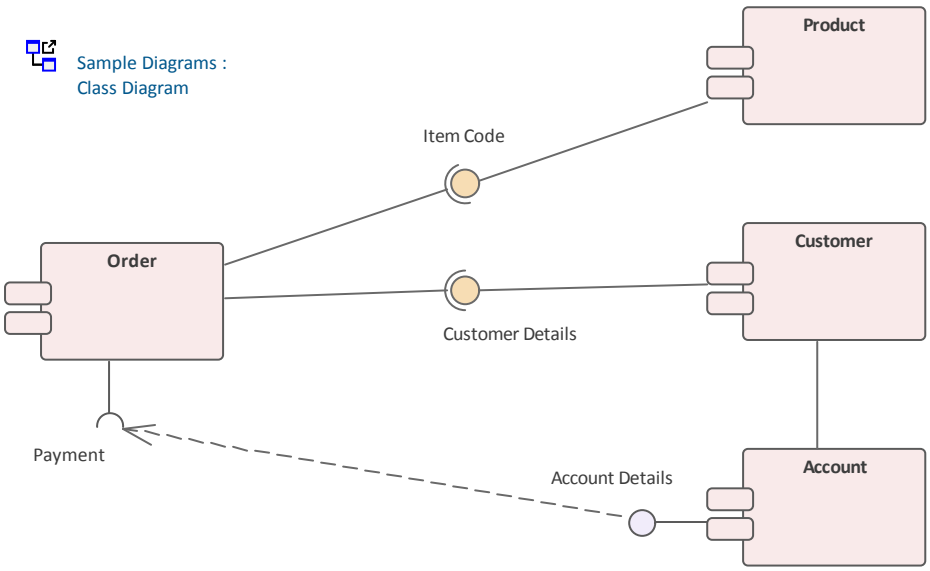
), closing the linked diagram

Hyperlinks Between Diagrams

Create a hyperlink between diagrams

Step	Action
1	Open the diagram in which to display the hyperlink to another diagram. From the **Browser window** select the diagram you want to create a hyperlink to: 
2	Drag the diagram on to the current diagram. The 'Select Type' dialog displays.
3	Select the 'Hyperlink' option and click on the **OK button**. The final hyperlinked diagram should resemble this diagram, where the 'Class' diagram is the diagram to which the 'Product Order' diagram hyperlinks (notice that the hyperlink icon is different).

Example



Notes

- If the hyperlink appears as a Sub Activity, select the 'Start > Desktop > Preferences > Preferences > Diagram > Behavior' option and deselect the 'Use Automatic SubActivities' checkbox
- When a user clicks on the hyperlink, the linked diagram opens (in the example, *Class*); the diagram name tab has a small arrow on it which, when you double-click on it, returns you to the original diagram (

), closing the linked diagram

Pan and Zoom a Diagram

When you are viewing a diagram, you can pan across, up and down the whole diagram in a low magnification to locate a particular section, and then zoom into that section in a higher magnification.

Pan over diagram

You can pan over the **Diagram View** using the:

- Left, Right, Up, Down, Page Up, Page Down, Home and End keys when the Diagram View is selected
- Diagram scrollbars
- Middle mouse button
- Pan & Zoom window (**Ctrl+Shift+N**)

Zoom into and out of diagram

You can zoom into and out from the diagram using the:

- 'Layout > Diagram > Zoom' options or
- The Zoom + and - icons and slider bar in the Status bar at the bottom of the screen, or
- Zoom buttons on the Diagram toolbar or Pan & Zoom window toolbar



Change the zoom level by clicking on either the **Zoom In (+) button** or **Zoom Out (-) button**; each click changes the magnification by 10%.

You can return the diagram to 100% in one of these ways:

- Click on the  ('Zoom to 100%') button
- Press **Ctrl** and click on the middle button of the mouse

Notes

- You can zoom in and out of the main window dynamically by holding **Ctrl** and rolling the mouse wheel
- Changes in diagram magnification through the zoom options can be saved as permanent changes to the diagram
- At high levels of zoom, element features cease to display; this is because the Windows font mapper cannot easily select a font for extreme conditions, and the result can look odd

Diagram Navigation Hotkeys

Whilst you are working on a diagram, a number of facilities are also available to you through the keyboard keys. Some of these facilities are exclusively provided by keyboard keys - the diagram navigation hotkeys - which you can use to quickly move or operate on elements within a diagram.

Keys

Key Combination	Facility
Shift+Arrow	Move the selected element(s) by increments (in the direction of the arrow).
Arrow key	Scroll the diagram (in the direction of the arrow).
Esc	Clear the current selection. (Alternatively, simply click on the diagram background.)
Tab key	(If no element is selected) Select the element with the lowest Z-Order number - the furthest back in the diagram. (If an element is selected) Move focus to

	the element with the next-lowest Z Order number (coming forward out of the diagram).
Shift+Tab	(If no element is selected) Select the element with the highest Z-Order number - the furthest forward in the diagram. (If an element is selected) Move focus to the element with the next-highest Z Order number (moving back into the diagram).
Shift+click or Ctrl+click	Toggle the addition of the clicked element to the current selection. If you are clicking on the area of overlap between elements: • **Shift+click** toggles selection of the element with the lower Z-order (the element behind or further back than the others) • **Ctrl+click** toggles selection of the element with the higher Z-order (the element in front of or further forward than the others)
Alt+G	Locate the item in the **Browser window** and highlight it.
T	When you have selected an element in the diagram, you can press the **T key** to

	open the **Testing window** for that element.

View Previous and Next Diagram

If you are working on more than one diagram at a time, and have the diagrams open on separate tabs, you can step backwards and forwards through them. You will also step through any other views that are open, such as the **Model Search**, Project Gantt chart and **Start Page**.

You move between views using buttons on the floating Diagram Toolbar:



To access

- The previous diagram or view, click on the **Previous Diagram button** or press **Alt+Left**
- The next diagram or view, click on the **Next Diagram button** or press **Alt+Right**
- The default model diagram (if one has been defined) click on the **Home Diagram** button

Change Diagram Type

If necessary, you can change the type of a diagram to another type. This is useful if you have either made a mistake in selecting the diagram type to begin with, or if the purpose and nature of a diagram changes during analysis.

Access

Ribbon	Layout > Diagram > Options > Change Type

Change a Diagram Type

Step	Action
1	On the 'Change Diagram Type' dialog, click on the 'Select From' header and select the appropriate Perspective group, and then select the Perspective from the panel beneath the header. The 'Diagram Types' panel displays a list of the diagram types for the selected Perspective; click on

	the diagram type to change the diagram to.
2	In the 'Diagram Types' panel, click on the diagram type to change to.
3	Click on the **OK button** to change the diagram type. The system checks whether there is a template diagram for this diagram type in the **Templates Package** and, if so, applies the display characteristics defined in that template.

Notes

- Some diagram types do not switch to others - for example, you cannot change a Class diagram into a Sequence diagram; you can change, say, a Sequence diagram from one technology into a Sequence diagram from a different technology

Scale Image to Page Size

When you print a diagram, the default setting is to scale the image to fit the size of the printer paper you have defined in the page set-up. The image is not scaled up to fill the page, but it is scaled down if it exceeds the current page boundary. The image retains its current proportions; that is, it is scaled down equally in the X and Y dimensions. For a large diagram, this can mean that the components of the diagram are small and hard to read.

Alternatively, you can print a multi-page image; that is:

- allow the diagram image to print on as many printer pages as it naturally occupies, (no scaling), or
- scale the diagram image to exactly fit a specified number of pages

In all three cases you also define the paper size and orientation.

Access

Ribbon	Design > Diagram > Manage > Properties > Diagram: Advanced
Context Menu	Right-click on background of open diagram | Properties > Diagram: Advanced

	Right-click on diagram in **Browser window** | Properties > Diagram: Advanced

Turn off or customize image scaling options

Step	Action
1	Select from these options as required: • 'None': select to print on as many pages as the diagram image requires • 'Scale to 1 page': select to scale the diagram image to fit on the currently selected page • 'Custom': select to specify the width and height of the diagram images in terms of the number of pages in height and width; specify the number of pages for each dimension • 'Page Setup': click to select the page size and alignment

Notes

- Before printing, make sure you have selected the required page layout using the **Page Setup button**

Set Up Diagram Page

You can change the size of the diagram area (or scrollable/printable area) using the 'Properties' dialog for the diagram.

Access

Ribbon	Design > Diagram > Manage > Properties > Diagram
Context Menu	Right-click on background of open diagram | Properties > Diagram Right-click on diagram in **Browser window** | Properties > Diagram

Set the page size

Step	Action
1	Select the 'Show Page Border' checkbox.

2	On the 'Page Setup' panel, click on the **Advanced button**. The 'Print Advanced' dialog displays.
3	Click on the **Page Setup button**. The 'Page Setup' dialog displays. As you adjust the settings on this dialog, the page icon at the top illustrates the effects of your changes.
4	In the 'Size' field, click on the **drop-down arrow** and select an appropriate page size.
5	In the Orientation panel click on the radio button for the orientation of the page to print.
6	In the Margins panel, type the required left, right, top and bottom page margins for the diagram, in inches.
7	Click on the **OK button** on the 'Page Setup' dialog, the 'Print Advanced' dialog, and the 'Properties' dialog for the diagram, in turn. The area within the page boundary lines on your diagram is expanded or reduced accordingly. When you print or print preview, the output is cropped to these boundary lines and the diagram divided between the necessary number of pages.

Notes

- You can set the default paper size for new diagrams on the 'Diagram' page of the 'Preferences' dialog (select the 'Start > Desktop > Preferences > Diagram' ribbon option); once the paper size is set there, all new diagrams have that as the default size
- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Update Diagrams' permission to change diagram page set up

Lock Diagram

If User Security is not enabled, to protect a diagram against inadvertent changes such as moving or resizing elements, you can lock the diagram. If you or any other users select any object on a locked diagram, the object's border or outline displays in red.

Access

Context Menu	Right-click on the background of open diagram | Lock Diagram

Notes

- This does not apply in the Corporate, Unified and Ultimate Editions if User Security is enabled; in this case, see the *Lock Model Elements* topic
- To unlock the diagram, select the 'Lock Diagram' menu option again

Copy (Duplicate) or Move Diagram

As you develop the diagrams in your model, you might find that some of the diagrams use many of the same elements and have a similar format. You can copy and replicate the complete diagrams for minor modification, resulting in a duplicate diagram with either:

- Links back to the original diagram elements, unless those elements are Text, Note, Hyperlink, Lifeline or Object elements, or embedded elements on Objects, that are specific to the diagram and that are copied (shallow mode) or
- Complete copies of all elements in the diagram, other than Packages (deep mode) or
- Complete copies of all elements in the diagram that have the same parent as the diagram, and links back to the original diagram elements for all other elements on the diagram (smart mode)

You might find that a diagram is better held in a different Package - such as a diagram library - and you need to move it. To do this you simply open the parent and target Packages in the **Browser window**, click on the diagram and drag it from the parent to the target. Note that some diagrams - particularly those in Systems Engineering - show diagram frames that are renderings of the element that currently holds the diagram. As you are moving the diagram to a new owner, you are breaking that relationship between the parent element and the diagram, so you need to turn off

the display of the diagram frame before moving the diagram. See the *Diagram Context Menu* Help topic.

Access

Context Menu	Right-click on diagram in **Browser window** | Copy/Paste | Copy Diagram then: Right-click on Package | Copy/Paste | Paste Diagram or Right-click on element | Copy/Paste | Paste Diagram
Keyboard Shortcuts	Copy the diagram then: • Select Package > **Ctrl+V** or • Select element > Ctrl+V

Duplicate a diagram

Option	Action
Name	Type the name for the new diagram.
	Click on the radio button for the type of

Type of copy	copy you require; either: • Shallow • Deep, or • Smart
OK	Click on this button to initiate the copy. The new diagram is automatically created with linked or new elements arranged as in the original diagram. All connectors are also copied between diagram elements where appropriate.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Manage Diagrams' permission to copy diagrams
- For a diagram copied in shallow mode, any changes to the properties of the original elements are reflected only in those elements that are copied as simple links in the pasted diagram
- For a diagram copied in deep mode, any changes to the properties of the original elements are not reflected in the elements in the pasted diagram
- For a diagram copied in deep mode, Package elements are

copied as simple links only; you cannot paste as new

- For a diagram copied in smart mode, any changes to the properties of the original elements are reflected only in those elements that are copied as simple links in the pasted diagram
- Element position and size are independent in all copy modes

Save Diagram Image to File

It is possible to capture a modeling diagram as an image file in your file management system, for later use in - for example - external documents and presentations. You can capture the image in a number of different file formats, including:

- Windows bitmap
- GIF image
- Windows Enhanced Metafile (standard metafile)
- Windows Placeable Metafile (older style metafile)
- PNG format
- JPG
- TGA

Access

Ribbon	Publish > Diagram Image > Save > Save to File
Keyboard Shortcuts	**Ctrl+T**

Capture a diagram as an image file

Step	Action
1	On the 'Save As Image' dialog, select the appropriate folder location for the file.
2	In the 'File name' field, type the file name to save the image under.
3	In the 'Save as type' field, click on the **drop-down arrow** and select the appropriate graphic format.
4	Click on the **Save button**.

Notes

- The system clips the image size to the smallest bounding rectangle that encompasses all diagram elements
- You can scale the size of the saved (bitmap) image upwards or downwards, using the option on the 'Diagram' page of the 'Preferences' dialog ('Start > Desktop > Preferences > Preferences > Diagram')
- You can also enable and disable Diagram Frames on the

images that you capture of a diagram, on the same page of the 'Preferences' dialog

- By deselecting the 'Printable' option on an element on a diagram, you can omit that element from the diagram image copied to file

Copy Image to Clipboard

It is possible to capture a modeling diagram as an image on the MS Windows clipboard for immediate use in - for example - external documents and presentations in MS Word™ or other applications, or in another diagram within Enterprise Architect.

You can set the format of the clipboard images - bitmap or metafile - on the 'Preferences' dialog ('Start > Desktop > Preferences > Preferences' ribbon option; the dialog opens at the 'General' page).

Access

Ribbon	Open diagram, then: Publish > Diagram Image > Save > Save to Clipboard
Keyboard Shortcuts	Open diagram, then press **Ctrl+B**.

Notes

- You can scale the size of the saved (bitmap, or non-metafile) image upwards or downwards, using the option on the 'Diagram' page of the 'Preferences' dialog ('Start > Desktop > Preferences > Preferences > Diagram')
- You can also enable and disable Diagram Frames on the images that you capture of a diagram, on the same page of the 'Preferences' dialog

Delete Diagrams

Diagrams are representations of the ways in which model element structures are organized. If you no longer want to depict an arrangement of model elements, you can quickly delete the diagram from your model. This has no effect on the elements shown in the diagram - they and their relationships remain unchanged within the model, and accessible through the **Browser window** and several other views and windows.

Access

Context Menu	**Browser window** | Right-click on diagram name | Delete '<diagram name>' A confirmation prompt displays. Click on the **Yes button** to confirm the deletion.
Keyboard Shortcuts	Select diagram in **Browser window** | **Ctrl+Del** A confirmation prompt displays. Click on the **Yes button** to confirm the deletion.

Notes

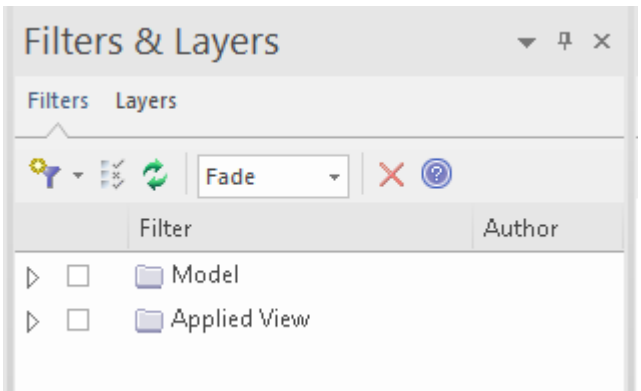
- In Enterprise Architect there is no 'Undo' feature for deleting diagrams, so be certain that you want to delete a diagram before you do so
- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Manage Diagrams' permission to delete diagrams
- You can also delete multiple diagrams from the **Browser window**, by holding **Ctrl** or **Shift** while you select them, then right-clicking on one of them and selecting the 'Delete selected items' option

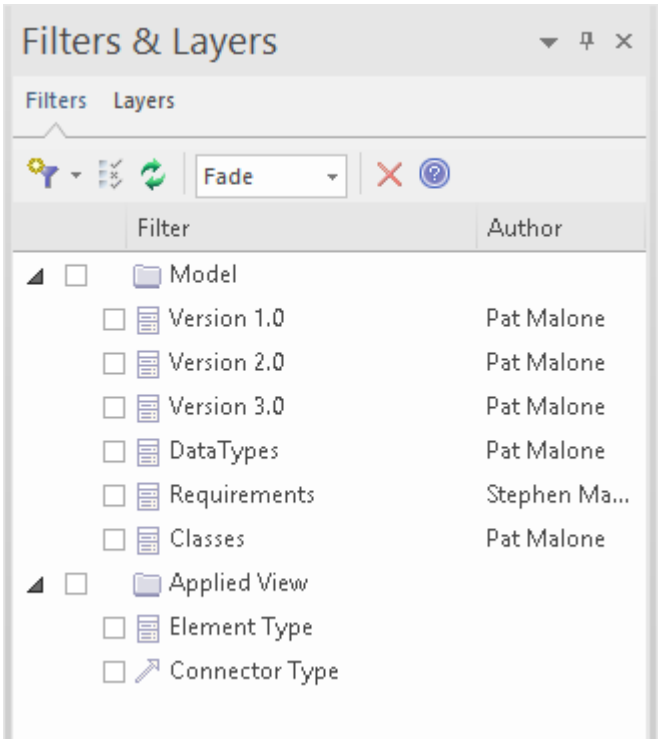
Diagram Filters

Using Diagram Filters (Dynamic Visual filters), you can modify the display of diagram components so that the required items are immediately identified, without damaging the structure and integrity of the model. The filters operate on elements, connectors or Tagged Values according to properties such as Author, Status, Date Created or Stereotype Value and, for connectors, whether the connector is hidden or visible. Filters are stored against the model, so a filter you create is available to other users of the model; however, use of a filter is specific to the user, so your use of a filter does not affect another user's view of the diagram.

Access

When you first display the Filters & Layers window at the 'Filters' tab, the filter groups are collapsed. Click on the white arrow head to show the defined filters.





Ribbon	Layout > Tools > Filters and Layers > Filters or Explore > Portals > Windows > Diagram > Diagram Filters > Filters
Keyboard Shortcuts	A+1 > Diagram Filters > Filters

Applying Diagram Filters

You can use Diagram Filters singly, in sequence, or in combination to tailor the display of diagrams to show:

- Information for different users, so that - for example -

technical staff and stakeholders each can apply filters that highlight the information pertinent to them

- What elements have been recently developed or changed
- Which part of a model was developed by a particular person
- Which parts of a diagram are at a particular phase, status or version

Examples of ways in which you might apply filtering include:

- Setting up a filter for immediate use on a diagram, and modifying that filter as you review the diagram so that you highlight elements with different values for the same properties - perhaps, by filtering on Phase, to compare 'As-Is' and 'To-Be' elements
- Setting up a filter and leaving it active so that all diagrams you display are automatically filtered the same way
- Setting up a series of filters to use:
  - in one or more sequences to progressively highlight a diminishing set of items, or
  - alternately, to highlight contrasting views of the diagram
- Grouping filters so that their combined results identify objects that meet the characteristics of each filter and indicate an 'overview' status as well; for example, 'Work In Progress' plus 'Work Not Started' show objects in each category at the same time, under the group filter 'Work Not Completed'

Filters for elements can also be applied to the **Package**

Browser and **Diagram List**.

The 'Diagram Filters' context menu (right-click on the body of the window) provides an option for toggling between the filters and simple context filtering of diagrams; if you select the 'Context Filtering' option, the Diagram Filters are disabled and the contents of the diagram are grayed-out, except for a selected element and those elements directly related to it.

Facilities

Facility	Detail
Developing Filters	You create and define as many filters as you require, setting up each filter by defining which element, connector or Tagged Value properties to specifically check for and (depending on how you set up the filter parameters) whether to include or exclude elements or connectors having particular property values. You cannot combine element, connector and/or Tagged Value *properties* in one filter, but you can apply any combination of element filter, connector filter and/or Tagged Value filter to a diagram at the

	same time, individually or as a grouped filter. You can select to: • Mute the excluded items in Gray Scale, or Fade the display color • Hide the excluded items completely, or • Select and highlight (with a hashed line) the included items
Filter Effect - Gray Scale, Fade or Hide	If you select 'Gray Scale', 'Fade' or 'Hide', the action of the filters is to exclude items that do not match the parameters rather than include items that do. If, for example, you selected to filter on element name, looking for elements with the word 'Class' in the name, the filter would apply this logic: Does 'Name' contain string 'Class'? If 'No', apply effect; if 'Yes', take no action. The elements you want are therefore what is left on the diagram, rather than what was operated on. The filter effect remains in force while you do other work on the diagram, until such time as you disable the filter.
Filter Effect - Highlight	If you click on 'Select', the logic is reversed:

	Does 'Name' contain string 'Class'? If 'No', take no action. If 'Yes', apply effect. In this case, the filter effect is not permanent, and clicking off the items deselects them. This effect is excellent for selecting items having the same characteristics across a large diagram, to be processed in a single task; instead of having to locate the items and select them with **Shift+click** individually, you can apply the filter. If you inadvertently lose the selection by clicking off the items, you can get it back again almost immediately by re-applying the filter.

Work With Diagram Filters

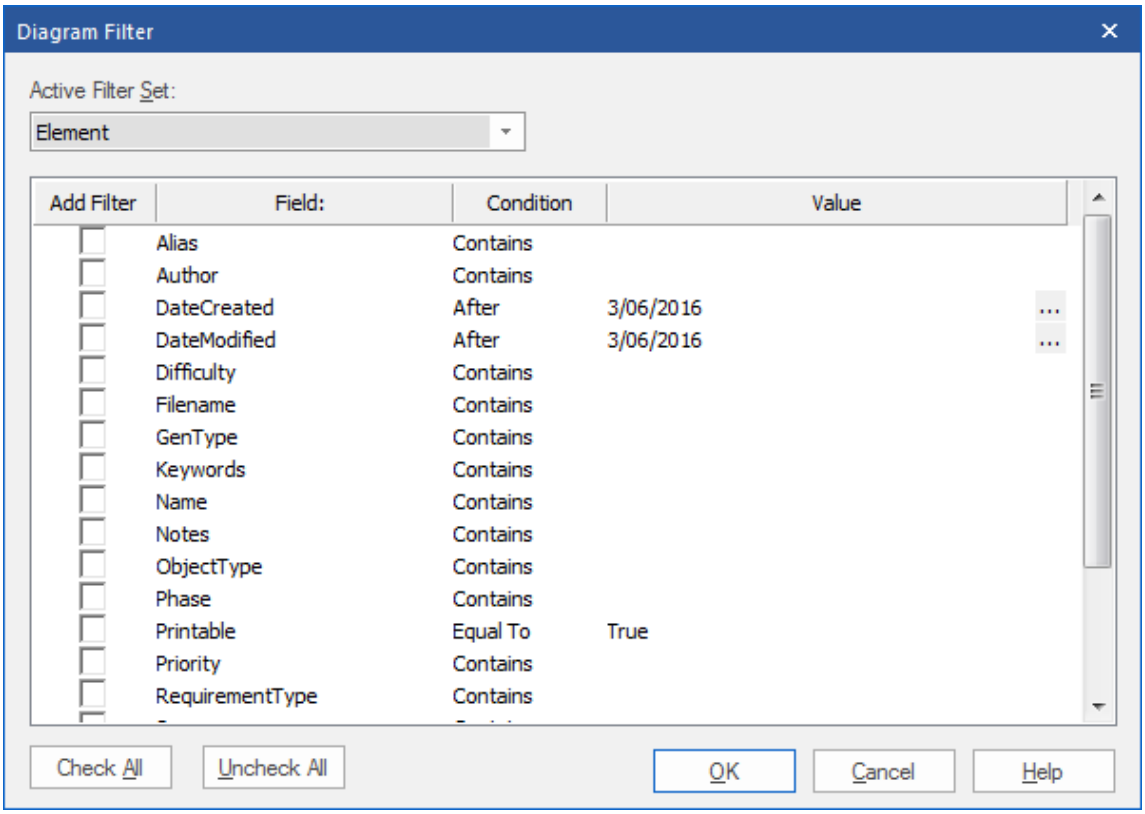
You can modify the display of objects on a diagram using Diagram Filters, which you create and use through the Filters & Layers window. This window is dockable, so you can move it around or 'fix' it next to the **Diagram View** while you activate, deactivate and edit the filters.

Access

Ribbon	Layout > Tools > Filters & Layers > Filters or Explore > Portals > Windows > Diagram > Diagram Filters > Filters
Keyboard Shortcuts	A+1 > Diagram Filters > Filters

Create a single filter to be applied to your diagrams

Step	Action

1	Perform one of these actions: • On the Diagram Filter toolbar, click on the 'New **Filter**' icon - the first on the left • Right-click on the list panel and select the 'New Filter' option The 'Create New Diagram Filter' dialog displays.
2	In the 'Enter **Filter** Name' field, type a name for the filter, then click on the **OK button**. The 'Diagram Filter' dialog displays. 
3	In the 'Active **Filter** Set' field, either: • Use the default value of 'Element' or • Click on the **drop-down arrow** and select

	'Connector' or 'TagValue' The body of the dialog displays a list of properties of elements, connectors or Tagged Values.
4	Scroll through the properties to filter on, and select the checkbox against each property you require.
5	For each property, click on the 'Condition' field and select, from the drop-down list, the comparison condition to be applied. Consider how the combination of 'Condition - Equal To / Not Equal To' and '**Filter** Effect' might affect the results on the diagram.
6	For each property, double-click on the 'Value' field and type or select any specific value to filter on.
7	Click on the **OK button** to save the filter and return to the Filters & Layers window. Unless you have specifically created the filter in a **Filter** Group, the filter is listed underneath the default Model group at the top of the window.

Create a Filter Group

Step	Action
1	In the Filters & Layers window toolbar, click on the **drop-down arrow** next to the **Filter** icon and select the 'New Filter Grouping' option. The 'Create New Diagram Filter Grouping' dialog displays.
2	In the 'Enter **Filter** Name' field, type the name of the filter group, and click on the **OK button**. The filter group is added to the end of the list in the Filters & Layers window, and the 'Create New Diagram Filter' dialog displays for you to add a new filter to the filter group.
3	Define the new filter in the group as described in the *Create a single filter to be applied to your diagrams* table. You can apply that procedure to define the other filters for the group, clicking on the group name and then on the 'New **Filter**' option to start. Alternatively, you can copy or cut an existing filter from the Model list or from another filter group, and paste that filter into the new group. Right-click on the source filter and select the 'Cut' or 'Copy' option, then right-click on the target group and select the 'Paste' option.

Other Operations

Operation	Detail
Edit a Filter	To edit an existing filter on the Filters & Layers window, either: • Double-click on the filter name • Click on the filter name and select the 'Properties' icon from the toolbar (the second icon from the left), or • Right-click on the name and select the 'Properties' option The 'Diagram Filter' dialog displays; adjust the filtered fields as described in the *Create a single filter to be applied to your diagrams* table.
Change the name of the Filter or Filter Group	Right-click on the name and select the 'Change Name' option. The appropriate 'Create New Diagram **Filter** ...' dialog displays. Type over the existing name with the new name, and click on the **OK button**.
Define how filters in a	When you define two or more filters in a filter group, they default to operating in

group combine	combination, with an AND relationship. That is, an object must satisfy the criteria of **all** the selected filters in the group before being operated on. You can change this to an OR relationship, where the object must satisfy the criteria of **any** of the filters before being operated on. To set the relationship of the group filters to OR (or change it back from OR to AND): 1. Right-click on the filter group name and select the 'Properties' option. The 'Set logical operator for **Filter** Grouping' dialog displays. 2. In the 'Operator' field, click on the **drop-down arrow** and select the required value - OR or AND. 3. Click on the **OK button**.
Set Effect of Filters	The filter effect applies to all filters in the Filters & Layers window. To set how your filters identify selected items on your diagrams, click on the **drop-down arrow** of the toolbar '**Filter** Effect' field, and select one of these options: • Fade - display all items that do not match the filter criteria in a pale version of the diagram background color

	• Gray Scale - display all items that do not match the filter criteria in pale gray • Hide - conceal all items that do not match the filter criteria • Select - select and highlight (with a hashed line) all those items that do match the filter criteria If the filter is for elements in the **Package Browser** or **Diagram List**, note that the 'Select' filter effect cannot show up in this context.
Enable Filters	To enable a filter so that it takes immediate effect on your diagrams, select the checkbox against the filter name. You can select more than one filter at a time, to combine their effects. For a **Filter** Group, if you select the group checkbox all filters in the group are selected. You can then, if necessary, disable individual filters in the group.
Disable/Clear Filters	To disable a filter and clear the effect of the filter on the diagram so that it displays in full, clear the checkbox. To disable all filters, either: • Click on the 'Reload Filters' icon in the toolbar (third option from the left), or

	• Right-click on the list panel and select the 'Reload Filters' option
Copy or Move a Filter between Filter Groups	To add an existing filter to another **Filter** Group, right-click on the filter and select the 'Copy' or 'Move' option as appropriate. Then right-click on the target Filter Group and select the 'Paste' option. If you are moving a filter, it is not removed from the source group until it has been pasted to the target group. You cannot move a Filter Group or add one group to another.
Toggle between Diagram Filters and Context Filtering	To disable the filters you have defined and simply highlight a selected element and its immediate relatives, right-click on the Filters & Layers window background itself and select the 'Context Filtering' option. To re-enable the Diagram Filter effects, display the Filters & Layers window again and deselect the 'Context Filtering' option.
Delete a Filter	To remove a filter or filter group from the Filters & Layers window, either: • Click on the filter name and click on the **Delete icon** in the toolbar, or

	• Right-click on the filter name and select the 'Delete **Filter**' option A prompt displays to confirm the deletion.

Diagram Layers

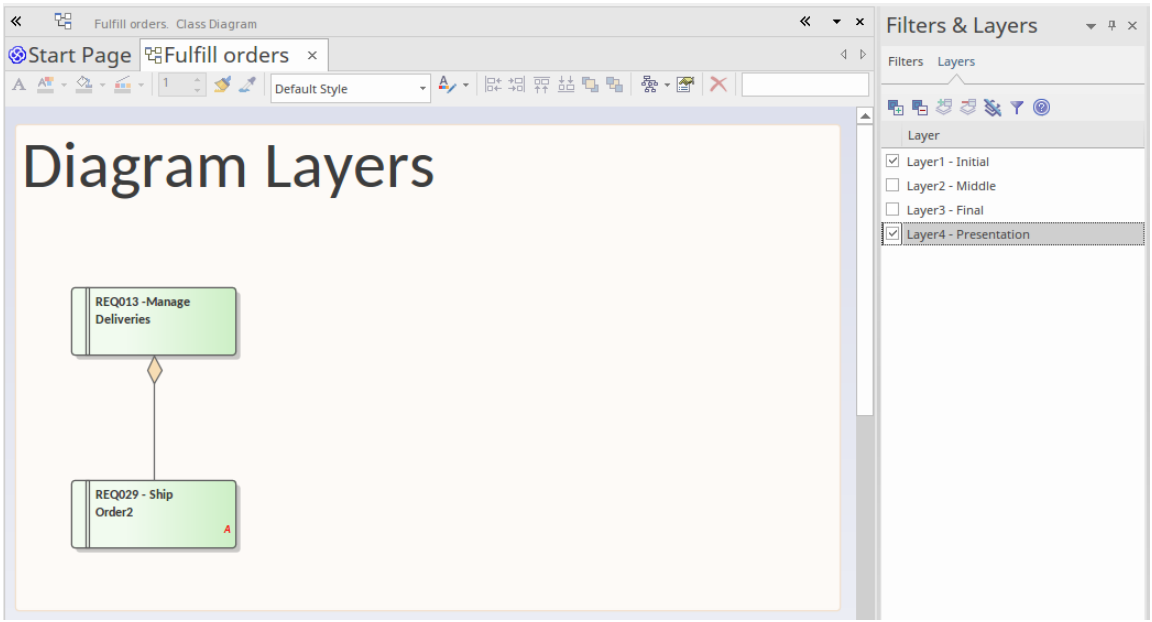


Diagram Layers provide a way of creating and viewing segments of a diagram to represent any concept that is the basis for separating or grouping the elements on that diagram. The layers can be compared to transparencies laid on top of one another in a stack, as in paper-based encyclopedias where, for example, a base image of a human skeleton would have a transparent sheet showing the arteries laid on top, then one for veins and another for nerves. The analogous process with Enterprise Architect's Diagram Layers is to reveal parts of any diagram, including Business Process Models, Architecture diagrams, Kanban diagrams or Roadmap diagrams. The tool has the added flexibility of being able to selectively apply any subset of the layers, which can't, of course, be done with the encyclopedia transparencies. The tool also has the ability to bring a selected layer to the foreground while showing the other layers with reduced opacity. Diagram Layers will be a

welcomed tool for people who need to present complex models to an audience, creating an easy-to-understand narrative built up in stages rather than confusing the audience with the complete diagram from the start.

Diagram Layers - like the related Diagram Filters - can be used to hide or expose parts of any diagram. Filters are applied using element metadata such as status or complexity, whereas Layers are applied using any ad hoc criterion for the separation of the elements; for example, items to be focused on in a workshop or elements of a particular architectural style. Layers can be used to separate elements in architecture diagrams to show strategic, tactical or implementation intent, or to show particular sequences of activations in a Sequence diagram, or to show a time-ordered sequence in a Business Process model, and much more.

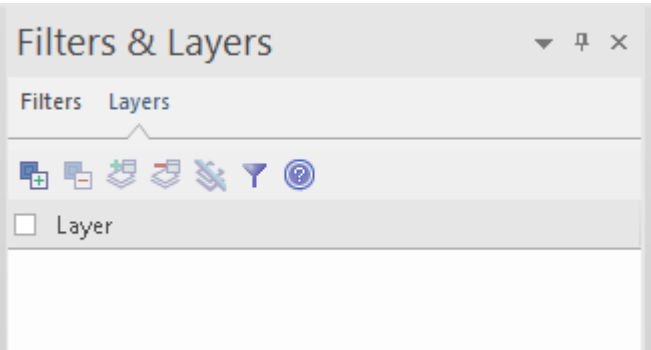
An important difference between Filters and Layers is that Filters are defined at a meta-level and so can be applied to any diagram in the repository. So, for example, a **Filter** that hides all elements except critical requirements can work on a business level diagram in Project A and a technical level diagram in Project B. Layers, on the other hand, are intentionally defined on and for a specific diagram and cannot be applied to other diagrams. Advanced modelers might want to use Layers and Filters together to create powerful visualizations of the underlying diagrams, remembering that the definitions of Filters apply at the level of the repository but their usage and application with Layers apply to a user's view of a diagram. Diagram legends can

also be used in conjunction with both Layers and Filters to assist in improving the narrative of the diagram.

Access

Ribbon	Layout > Tools > Filters & Layers > Layers or Explore > Portals > Windows > Diagram > Diagram Filters > Layers
Keyboard Shortcuts	A+1 > Diagram Layers > Layers

Options



The icons in this table are described in order of use, not in order of display in the toolbar.

Option	Action

Create New Layer	Simply click on this icon to display a selected checkbox and the text 'Layer *n*'.  Overtype the text with whatever name you want to apply to this layer of elements. The checkbox is selected so that the elements in the layer are shown on the diagram. If you clear the checkbox the layer is not active and the elements within it are not shown. You now select elements to add to the new layer.
Add elements to layer	On the diagram, select the element or elements to show or hide using a layer. Then click on the name of the layer, and on this icon. The icon is enabled when the elements and layer are selected. If you now clear the layer checkbox, the elements assigned to it are hidden on the diagram. If you select the checkbox, those elements are shown again.
Filter by layer	With a layer checkbox selected, click on this icon to fade all elements NOT in the layer, leaving the selected layer displayed

	in clear. Click on the icon again to restore all elements to full display.
Remove selected elements from layer	In the diagram, select the elements that you no longer want to include in the layer. Then click on the layer name and click on this icon. When you clear the checkbox against the layer name the selected elements are no longer hidden on the diagram, and when you select the layer and click on the **Filter** icon, those elements are faded.
Clear all elements from layer	Simply click on the layer name and click on this icon. All elements assigned to the layer are cleared from it. If the layer has no assigned elements, the icon is not enabled.
Delete layer	Click on the layer name and on this icon to remove the layer from the window. Any assigned elements display as normal.
Layer	Select this check box to set the filter state for all filters in the list.
Help	Display this Help topic.

Notes

- Layers operate on elements; connectors between elements are hidden or filtered in if the target and/or source element is assigned to the selected layer
- If a diagram layer is selected, it will remain selected as you click out of and into the diagram
- If a layer is hidden, the elements in it cannot be selected

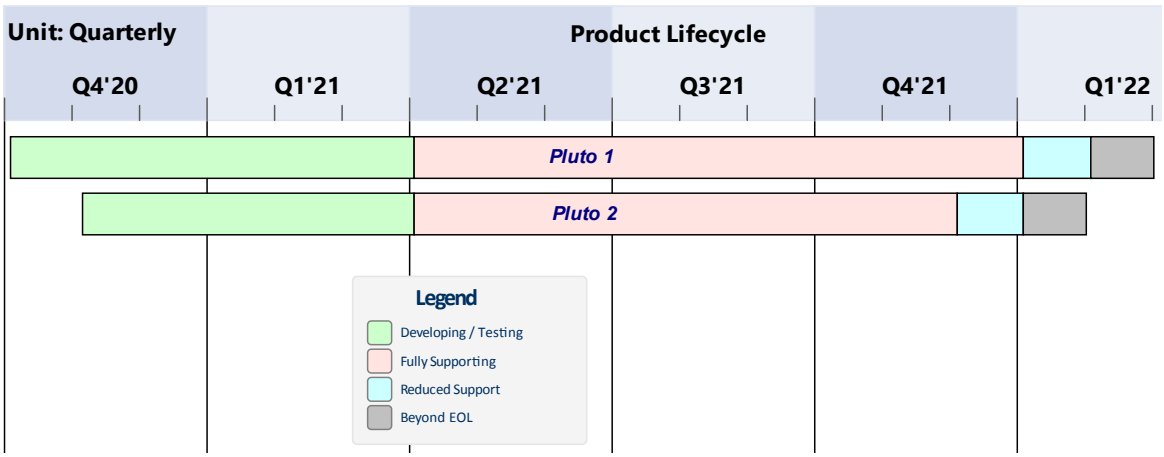
Roadmap Diagrams

Roadmap diagrams help you to map existing elements against a timeline. This is useful for visualizing how a system changes over time, planning a migration of responsibility between two teams, documenting the concurrent support for multiple platforms or representing just about any time based data. To ensure the modeler and viewer always have appropriate context, the timeline is always displayed on screen, on any saved images and when printed.

Changes of phase or state of each element can be represented in Roadmap diagrams using a dedicated notation of a bar divided into colored segments representing each state. The states available, the order they appear in and the colors used are controlled by a Diagram Legend. Each element displayed then shows the length of each segment (and hence **duration** of each state), and also provides the ability to hide individual segments on that element.

Creating a Roadmap Diagram

This diagram shows an example Roadmap that documents the planned lifecycle for two products through development, release, support and retirement, by quarter over a period of one and a half years.



You can develop this diagram as the example for the guided procedure in the *Setting up a Roadmap Diagram* table. To create the initial, basic diagram:

1. Right-click on its parent Package and select the 'Add Diagram' option.
2. On the 'New Diagram' dialog, in the 'Diagram' field type in the diagram name, such as 'Example Roadmap'.
3. Click on the **drop-down arrow** in the 'Type' header and select the 'Construction > Project Management' Perspective group, and then click on 'Project Management' in the panel beneath the header.
4. The 'Diagram Types' panel lists the diagram types - Project Management, Roadmap and Backlog. Click on the Roadmap diagram type.
5. Click on the **OK button**. The system opens the diagram in the central work area.

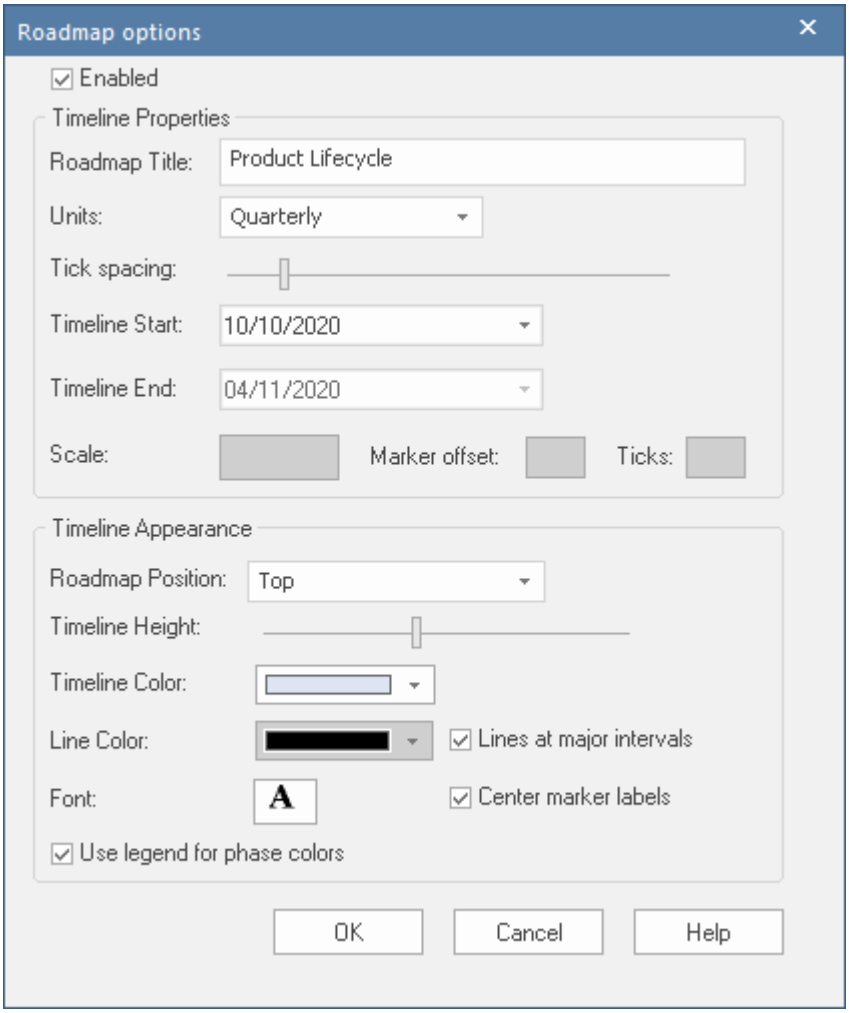
You can also generate one of the pre-designed Roadmap diagrams from the Patterns provided by Enterprise Architect, to tailor the Roadmap for any of a range of areas of work. To access these Patterns, select the 'Design >

Model > Add > **Model Wizard**' ribbon option, then select the 'Construction > Project Management' Perspective. If necessary, expand the 'Roadmaps' group.

Select the required Roadmap(s) and click on the **Create Pattern(s) button**. Each Roadmap is automatically created within its own Package.

Access

To begin setting up the diagram you have just generated, on the open diagram display the 'Roadmap Options' dialog using one of the methods described here.



Ribbon	Design > Diagram > Manage > Roadmap
Context Menu	In the diagram, right-click on the background | Roadmap

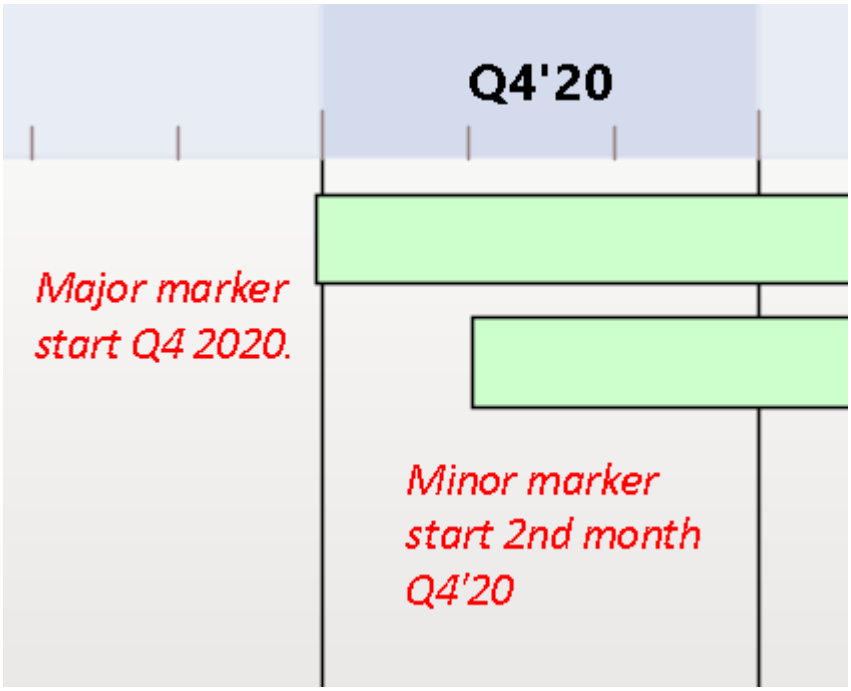
Setting up a Roadmap Diagram

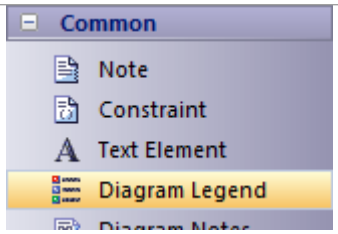
Starting with the 'Roadmap options' dialog, follow these steps to set up the Roadmap diagram. The fields are

described in greater detail in the *Roadmap Diagram Options* topic. This procedure includes using a Diagram Legend to automatically divide an element into phase segments in different colors. The steps lead you to create the diagram shown at the start of this topic.

Step	Action
1	Select the 'Enabled' checkbox, to enable the timeline on the diagram.
2	In the 'Roadmap Title' field, type a title for the diagram such as 'Product Lifecycle'. (The title is optional, and you can leave the field blank if you prefer.)
3	In the 'Units' field, click on the **drop-down arrow** and select 'Quarterly'. The major sections are displayed in alternating light/dark shades to make it easy to distinguish between adjacent sections. The 'Units' field offers a wide range of pre-defined units for the scale of the Timeline, and you can define your own customized units. You can also change the section display color using the 'Timeline color' field in the 'Timeline Appearance' panel.
4	Click on the 'Tick Spacing' slider and drag it left or right to scale the timeline to a size that is appropriate for your diagram.

5	In the 'Timeline Start' field, click on the **drop-down arrow** and click on the date on which the Roadmap Timeline is to start. (For the example, select October 10th 2020; the exact value doesn't matter, as long as it is within the quarter you want to start in.) The 'Timeline End' field is disabled for date unit scales (that is, years, quarterly, months and days).
6	Adjust the appearance settings: • In the 'Roadmap Position' field, select the 'Top' option to position the roadmap timeline headers at the top of the diagram • Drag the 'Timeline Height' slider about half way across the bar • In the 'Line Color' field click on the **drop-down arrow** and select a dark color such as charcoal • Select the 'Lines at major intervals' checkbox • Select the 'Use legend for phase colors' checkbox
7	Click on the **OK button** to save the settings and close the dialog.
8	In the **Diagram Toolbox**, switch to the Class pages and drag two Class elements onto the diagram. Give them the names 'Pluto 1' and 'Pluto 2'. Move and resize 'Pluto 1' so that its left edge is on the Q4'20 major marker line (the start of October

	2020), and its right edge is just under the second Q1'22 minor marker (the end of February 2022). Move and resize 'Pluto 2' so that its left edge is under the first Q4'20 minor marker (November 2020) and its right edge is under the first Q1'22 minor marker (the end of January 2022).  (Note: The diagram has been annotated to show the element positions; this text is not generated on the actual diagram.)
9	(This step is a 'placeholder' to show where in the process you add a Diagram Legend and roughly what you do. The actual procedures are in the linked Help topics in the 'See also' column.) From the 'Common' page of the **Diagram Toolbox**, drag a 'Diagram Legend' icon onto the diagram.

	 You will use this to add and format the phase segments on the two elements. Double-click on the Diagram Legend to display its 'Properties' dialog, and define how the Legend element itself will be displayed and how the phase segments will be applied. In the example, you will define these four phases: • Developing/Testing • Fully Supporting • Reduced Support • Beyond EOL For each phase, type the name in the 'Value' field, select a display color in the 'Fill color' field and click on the **Save button** to save the phase definition. Select the 'Apply auto color' and 'Apply Fill' checkboxes, and then click on the **OK button** to save the settings and close the dialog.
10	You now have two elements on the Timeline, each with four colored segments of equal length that represent the product lifecycle phases as indicated in the Diagram Legend. To set the **duration** of each phase, click on the dividing line between two phases and drag it to the

	appropriate point relative to the scale on the Timeline. You have now created a Roadmap diagram resembling the example shown at the start of this topic.

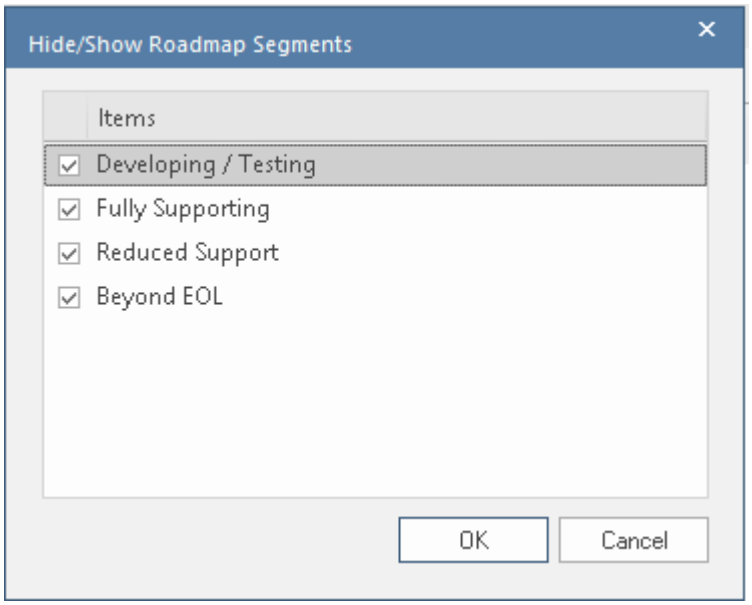
Hide and Show Segments

When you set up a Legend to apply segments to the elements on a Roadmap, every element on the Roadmap has all the defined segments. However, certain segments might not be relevant to particular elements, in which case you can hide those segments on those elements. Should a hidden segment be relevant to an element, you can show it.

A new element added to the diagram will show all the segments. However, if you add a new segment to an existing element, that segment is automatically hidden and - if it is to be displayed - should be set as described here.

To hide or redisplay segments on an element:

1. Right-click on the element and select the 'Hide/Show Roadmap Segments' option. The 'Hide/Show Roadmap Segments' dialog displays, listing the segments defined in the Legend. Each segment has a checkbox.



2. For each segment to show on the element, select the checkbox. For each segment to hide on the element, deselect the checkbox.
3. Click on the **OK button**. The selected segments on the element display on the diagram.

When a segment is hidden, the most directly-affected visible segment automatically occupies the space of the hidden segment. This is generally the segment immediately to the right (the chronologically later segment) except where the final segment in the element is hidden, when the segment to the left extends to fill the space. The overall length of the element does not change, and neither do the lengths of the remaining segments in the element; if they do need to be adjusted, drag the separator lines to the appropriate time line.

When a hidden segment is made visible, it occupies the first time unit of the next segment in the chronological sequence (or, if it has been added to the end of the element, the final time unit of the previous segment). Again, the total length of

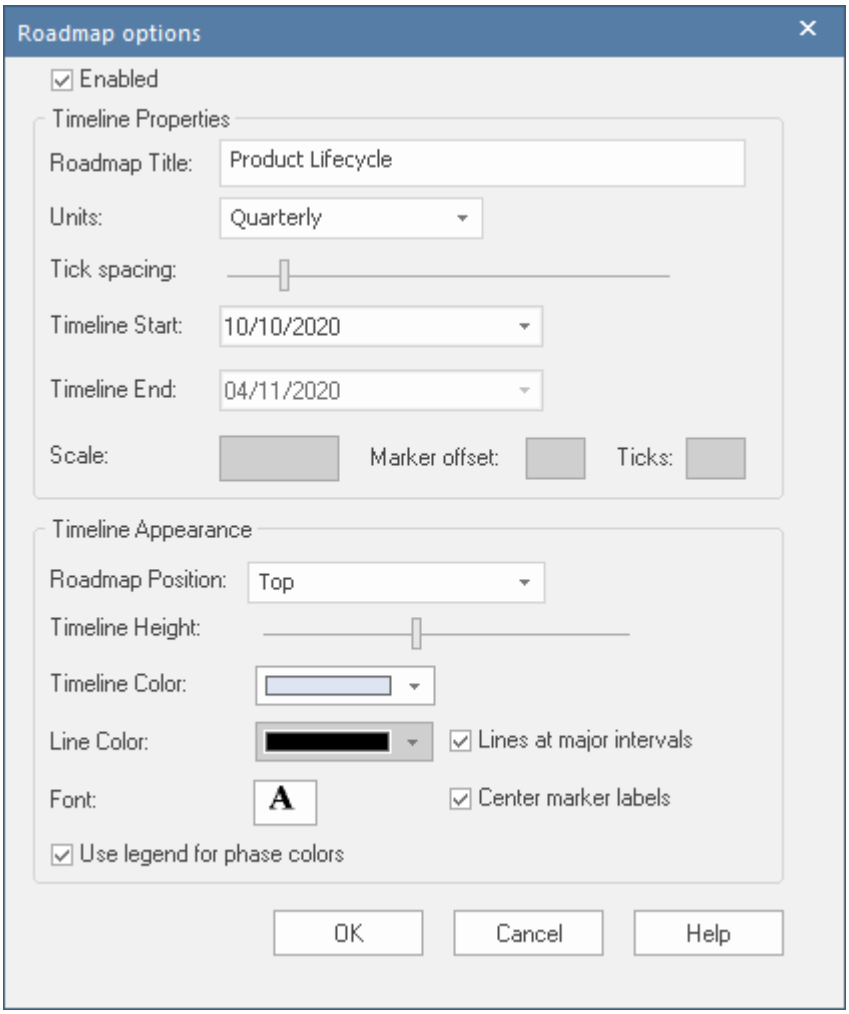
the element is not affected, not are the lengths of the other segments in the element. You can make manual adjustments to set the length of the new segment and any other segments that need to be adjusted to accommodate it.

Notes

- The Timeline and the text displayed on it are always shown, as you scroll the diagram up or down
- You can apply further grouping or categorization of the elements on the Roadmap, by defining horizontal Swimlanes for the diagram

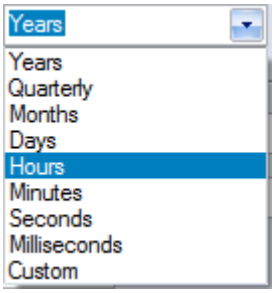
Roadmap Diagram Options

This topic describes each of the options available on the 'Roadmap options' dialog, which you use to define a Roadmap Timeline on a diagram. The process of creating a Roadmap diagram is described in the *Roadmap Diagrams* topic.



Roadmap Options

Option	Description

Enabled	Select this checkbox to show the Roadmap Timeline and associated features on the diagram. Clear the checkbox to hide the Roadmap on the diagram (which will hide Roadmap features derived from a Legend, but not element features applied by a Legend independent of the Roadmap).
Roadmap Title	Type in an appropriate name or title for the Roadmap, or leave blank if no title is required.
Units	Click on the **drop-down arrow** and select the appropriate unit of time for the Timeline.  You can also select 'Custom' and define your own scale of measurement; see *Setting up a Custom Scale* at the end of this topic. The selected unit is automatically identified in the top left corner of the Timeline, and the appropriate sequence of units displays along the width of the

	Timeline. Each standard time unit is automatically divided into the appropriate number of smaller divisions by separators (or 'ticks'); each Quarter is divided into three months, each year has twelve divisions, each day has 24 divisions, and so-on. To see some of the finer divisions (such as seconds in a minute) you might have to set the 'Tick spacing' slider to the left hand end, which minimizes the width of the labeled units so that you can see more of them on the screen.
Tick spacing	Click on the slider and drag it left or right to decrease or increase the width of the scale divisions in the Timeline. If you change this setting after positioning elements on the diagram, those elements are shortened or lengthened automatically to maintain their relationship to the scale divisions.
Timeline Start	If the 'Units' field is set to 'Years', 'Quarterly', 'Months' or 'Days', this field defaults to today's date. To change this either click on the section of the date and overtype it, or click on the **drop-down arrow** and select another date from the

	calendar. For smaller units of time and for the 'Custom' setting, the field is blank and you can set a start value. If you do not set a start value, the first marker on the diagram defaults to 0. The start date or value is shown as the label of the first major section on the Timeline.
Timeline End	If the 'Units' field is set to 'Years', 'Quarterly', 'Months' or 'Days', this field is disabled and the Timeline is indefinite. For smaller units of time and for the 'Custom' setting, the field is blank and you can set an end value. If you do not define an end value, the unit count increments up to the marker containing the right edge of the rightmost element. When an end value is defined and that end is reached, the timeline loops back to the 'Timeline Start' value. This allows the single timeline to be extended using the diagram width instead of the height, documenting a different set of elements against the same timeline.
Scale	This field is enabled when you select 'Custom' in the 'Units' field. Type in the

	appropriate scale unit; the value is displayed in the top left corner of the Timeline as the Unit. See *Setting up a Custom Scale* at the end of this topic.
Marker offset	This field is enabled when you select 'Custom' in the 'Units' field. Type in the number of units that each major segment of the scale represents. See *Setting up a Custom Scale* at the end of this topic.
Ticks	This field is enabled when you select 'Custom' in the 'Units' field. Type in the number of 'ticks' to subdivide each major segment of the Timeline. See *Setting up a Custom Scale* at the end of this topic.
Roadmap Position	Click on the **drop-down arrow** and select whether to show the Timeline at the top of the **Diagram View** or the bottom, or in both places. ('Top & Bottom' is particularly useful if your diagram fills the screen height.)
Timeline Height	Click on the slider and drag it to the left or right to decrease or increase the depth of the Timeline ribbon. The optimum depth keeps all the Timeline text separate and distinct without hiding too much of

	the diagram itself.
Timeline Color	Click on the **drop-down arrow** and select from the standard palette the color in which to display the Timeline. The display alternates between a lighter and darker shade of the color to help distinguish between the individual segments. This shading is less clear with dark or vibrant colors. If you want to select a color other than those in the standard palette, click on the **More Colors button** and select or define the required color.
Line Color	It is possible to display vertical guidelines to the diagram, issuing from the main segment boundaries (see the 'Lines at major intervals' option). Click on the **drop-down arrow** and select from the standard palette the color in which to display these lines. If you want to select a color other than those in the standard palette, click on the **More Colors button** and select or define the required color.
Font	Click on the **A** icon to display the 'Font' dialog, and select the font type, style,

	size, color and effects to apply to the text of the Timeline.
Lines at major intervals	Select the checkbox to display vertical lines across the diagram, to mark the major segments of the Timeline. Deselect the checkbox to hide the lines. On the example diagram, the lines separate the quarters and are shown in black.
Center marker labels	Select this checkbox to display the segment labels in the center of the segment. Clear the checkbox to display the segment labels straddling the left edge of the segment.
Use legend for phase colors	Select this checkbox to apply the roadmap notation of a bar divided into colored segments representing phases to all elements. This requires a legend with 'Apply auto color' enabled to exist on the diagram. Each property color you define in the Legend is represented by a color band in each element in the Roadmap. When you have set up the Legend and the Roadmap, resize the elements to span the appropriate number of unit segments that they map to. Within each element, drag

	the left and/or right boundary of each color segment so that they also span the number of unit segments that they align to, as illustrated in the example Roadmap.
OK	Click on this button to close the dialog and apply any changes you made to the settings.
Cancel	Click on this button to close the dialog and abort any changes you made to the settings.

Setting up a Custom Scale

A Custom scale gives you the ability to create a Roadmap diagram for a process that is not mapped against time, or to give a different scale to a unit of time. For example, you might want to show the consumption of raw materials in tons over several stages, or the progress of a step taking two minutes where the changes in flow are better mapped at 10 second intervals than at 1 second intervals.

To set up a Custom scale on a Roadmap diagram, set the fields on the 'Roadmap Options' dialog as described in the previous *Roadmap Options* table, but provide specific values for the fields described in this table.

Field	Action
Units	Click on the **drop-down arrow** and select 'Custom'. This setting enables the 'Scale', 'Marker offset' and 'Ticks' fields, and clears the 'Timeline Start' and 'Timeline End' fields for free-text input.
Timeline End	In the blank field, type the end, cut-off or target value for the scale. For example, a target revenue or a maximum cost, period or capacity. When an end value is defined and that end is reached, the timeline shows the 'Timeline Start' value again and increments from there. You can use this repeated scale to set up a different group of elements under the same timeline. If you do not define an end value, the unit count increments up to the marker containing the right edge of the rightmost element.
Scale	Type in the required unit of measurement, in numerals, text or both; you might specify, for example, units of distance, weight or monetary value, or a percentage. The value is displayed in the top left corner of the Timeline as the

	Unit.
Timeline Start	In the blank field, type the start value for the scale. For example, any wait period at the start of the process, or minimum balance or brought-forward balance for accounting scenarios. The Timeline then increments from that value. If you do not specify a value, the Timeline starts at 0.
Marker offset	Type in the number of units that each *major* segment of the scale represents. You set this value in combination with the 'Scale' field; you might, for example, set the scale to '$US 1000' and the offset to '1', or the scale to simply '$US' and the offset to '1000'. The offset can also represent the natural unit of progression, so if one output delivers two units you might set the offset to 2 and the scale reads '2, 4, 6, 8' and so on, or if the delivery is 3 units set an offset of 3 and the scale reads '3, 6, 9, 12' and so on.
Ticks	Type in the number of separators (or 'ticks') you want to display to subdivide each major segment of the Timeline. The number of ticks is 1 less than the number

	of subdivisions. For example, in the 'Year' unit there are 11 ticks giving 12 subdivisions, one for each month of the year.

Alternative Views of Diagram Content

By default, a diagram always opens in graphical view. Enterprise Architect supports several alternative ways of viewing the content of the diagram after it has been opened. From the graphical view, you can switch the diagram content to display in:

- List view
- Gantt view
- Specification view
- Relation Matrix view or
- **Construct view**

It is also possible to change the default view on opening of a specific diagram, to List View, Specification View or **Gantt View**, through the diagram's 'Properties' dialog.

Access

You can switch an open diagram to an alternative view using any of these methods:

Ribbon	Design > Diagram > View As > <*type*> View
Context menu	Right-click on diagram background | Switch View | Switch to <*type*> View

	or Right-click on diagram tab | Switch to <*type*> View In **Browser window**, right-click on the diagram name | Switch View | Switch to <*type*> View
Properties window	Diagram > Appearance > Display As : Select <type> from drop down.

Diagram View Types

View Type	Description
Graphical View	The traditional view of a diagram. Model elements are depicted as shapes, with relationships between elements represented as lines drawn between the elements. New elements and connectors can be created by dragging the appropriate type from the **Diagram Toolbox** onto the diagram. After you switch from the graphical view to another view, you can immediately return to the graphical view by clicking on the black back-arrow in the diagram

	name tab, even if you have worked through a chain of views.
List View	The **Diagram List** is a tabular, editable view of elements in a selected diagram. It can be used to streamline the process of creating and updating elements in a diagram.
Gantt View	The Gantt view presents the elements of the selected diagram, in the form of a Gantt Chart. This allows you to review the allocation of work to elements in just the selected diagram, focusing on either the elements that require work or the resources required to perform the work.
Specification View	The Specification View displays the contents of the selected diagram, in the form of a document. It is ideal for creating and updating Requirements elements, or any elements that involve extended textual descriptions.
Relation Matrix View	The Relation Matrix view is a grid that identifies the relationships between the diagram elements. There is both a row and a column corresponding to each diagram element - the cell at the

	intersection of a row and a column shows the relationship details between the corresponding diagram elements. This view provides a means to quickly find elements that are not yet connected to other elements, such as Requirements that are not yet realized. You can also create new relationships directly in the matrix.
Construct View	The Construct View is an aid to Project Management, that facilitates easy review of the Resources and Maintenance items associated with elements appearing on the selected diagram. You can filter the view to show resources, or a single category or all categories of Maintenance items.

Learn more

- Diagram View (check Inline Specification)
- Configure Diagram Display

Custom Diagram Styles

Enterprise Architect provides a diagram drawing style that helps you to create new diagrams or cast existing diagrams as simple, colorful and direct illustrations of modeling and project management concepts, similar to the style of drawings created in Visio or Powerpoint. Elements are rendered with a border color, fill color, no gradients and a simplified appearance. They can also be rendered in a range of different shapes.

This minimalist drawing style is much used by architects, business users, CEOs and many others as a preferred means of conveying ad-hoc information concerning a business capability, architecture, system interaction or any of several other scenarios. In providing this capability, Enterprise Architect dramatically increases the reach and audience for its range of diagrams. Coupled with WebEA and Prolaborate, the facility offers end users instant access to attractive and familiar diagrams that avoid the formal, technical appearance and complexity of UML and technology diagrams.

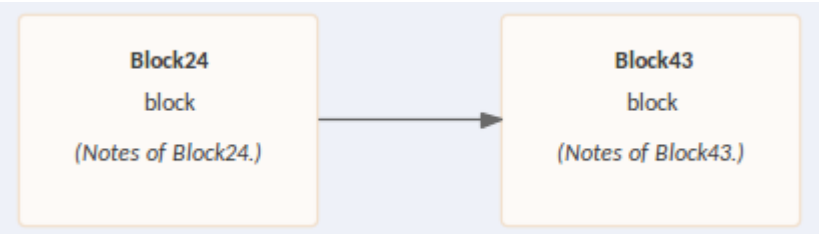
The custom drawing style can be applied to any UML diagram, so that a user can still use the correct modeling element types (and can toggle back to the formal rendering of these elements) but they can give them a completely novel rendering style and appearance.

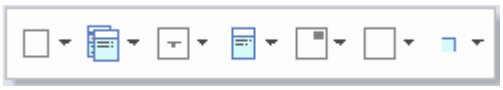
Custom Diagram Style is available in the Corporate, Unified and Ultimate Editions of Enterprise Architect from

release 15.0 onwards.

Access

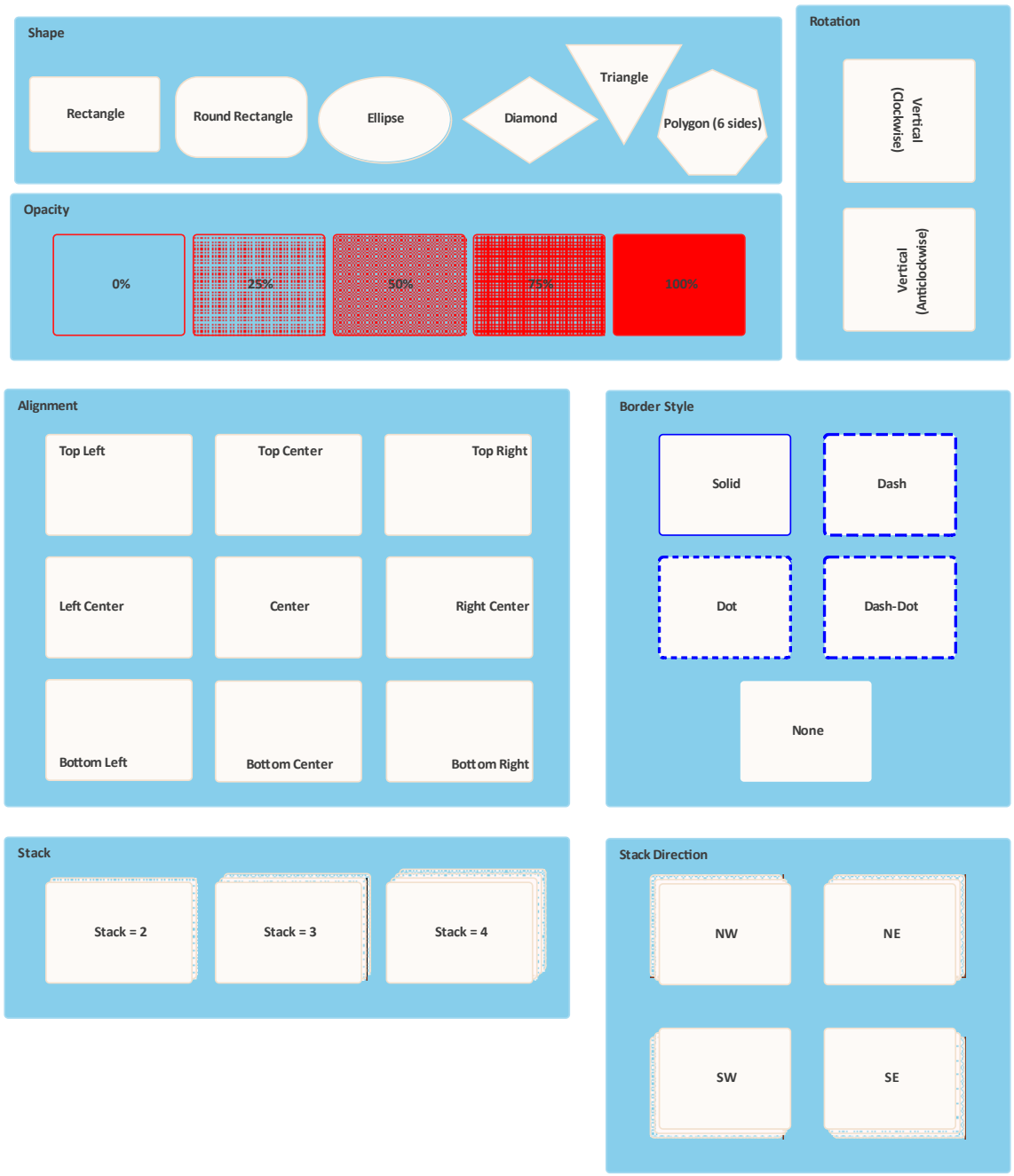
Working from a template or Pattern	Display the **Model Wizard** (right-click on a Package and select the 'Add a Model using Wizard' option) and in the 'Model Patterns' tab click on the 'Perspective' **drop-down arrow** and select 'Analysis > **Custom Diagram** Style'. Select one of the three templates or six examples, and work on those to develop your own diagrams. Note that these templates are intended to illustrate the feature rather than provide a framework for modeling - customizing is, after all, doing things your way! We recommend generating a model from the Custom Drawing Styles template (the diagram is shown in the *Examples of Style Rendering* section of this topic) and experimenting with the shapes and features to help you develop your own rendering of elements.
Apply the style to an existing	Open the **Properties window** (**Ctrl+2**) and the required diagram, and click on the diagram background. On the

diagram	'Diagram' tab of the Properties window, expand the 'Appearance' segment and select the 'Custom Style' checkbox. Alternatively, double-click on the diagram background to display the 'Properties' dialog, select the 'Elements' tab and select the 'Custom Draw' checkbox. All elements on the diagram are rendered as white rectangles with the element name and stereotype in the center. However, structural elements (such as a Ports) are not rendered differently in Custom Style.  If the element has Notes, these are also displayed in parentheses. No other element properties or characteristics are shown. Connectors on the diagram are simplified to a solid line and basic arrowhead, except for stereotyped connectors which are also not rendered differently in Custom Style. You now click on each element in turn and click on the icon to define the

	rendering as described in the rest of this topic. You can equally apply each feature to a selection of multiple elements.
Enable the style for an individual element	If the 'Custom Style' option on the diagram is not selected, you can apply the style to an individual element on the diagram. Right-click on the element and select the 'Appearance | Enable Custom Draw Style' context menu option. The element - alone on the diagram - is shown as a white rectangle as shown in the earlier example. When either of the 'Enable Custom Draw Style' or diagram 'Custom Style' options are selected, when you click on the element and on the  this Format toolbar displays next to the element: 

Examples of Style Rendering

In the descriptions provided in this topic, refer to this diagram as an illustration of the options and their effects.



Apply Styles

Style	Options
Set the Shape	On the Format toolbar click on the

	icon at the right-hand end of the row of icons. In the drop-down menu, click on the appropriate shape option to render the element as a: • Rectangle (the default) • Rounded-corner rectangle • Ellipse (which you can drag into the shape of a circle) • Diamond • Polygon, with a submenu to define the shape as having 5, 6, 7, 8, 9 or 10 sides, or • Triangle See the 'Shape' panel of the example diagram. The 'None' option here turns custom styles off for the element and returns it to 'normal' model notation rendering. Regardless of its visible shape, each element has a rectangular operation boundary and the positioning options described in this table work within that rectangle. You might find, therefore, that some of the position options on non-rectangular shapes can place the element text and icons outside the visible shape. Note that the icon in the toolbar updates

	to reflect the current shape of the element.
Set the Opacity of the Element Fill	You can set the element shape to be transparent (so that the diagram background and any overlapped elements show through) or various degrees of opacity that overshadow the overlapped elements. If you set 100% opacity, the element fill is solid and totally hides the background and any overlapped elements. To set the opacity, on the Format toolbar click on the  icon and select from: • 0% • 25% • 50% • 75% and • 100% See the 'Opacity' panel of the example diagram. Note that the element boundary, text and icon (if set) are not affected when setting the Opacity.
Set the Text Position	On the element, display of the name, stereotype and notes defaults to the center of the element. You can reposition the

	text to eight other points in the element shape, or place the text in a custom position. To position the text, on the Format toolbar click on the icon and select from these options: • Top Left • Top Center • Top Right • Left Center • Center • Right Center • Bottom Left • Bottom Center • Bottom Right • Custom If you select the 'Custom' option, the element text is displayed as a label just beneath the element, and you can drag it to whatever position inside or outside the element you prefer. You can also use any of the standard label formatting facilities. See the 'Alignment' panel of the example diagram. Note that the icon in the toolbar reflects the current position of the text in the selected element.

Set the Text Orientation	The text in the element defaults to horizontal, reading left to right. If you prefer, you can set the element name to a vertical orientation with characters in the same plane, reading either top to bottom or bottom to top. Stereotype and Notes text are hidden in these vertical settings. To set the orientation, on the Format toolbar click on the icon and select from these options: • None (leave horizontal) • Vertical (clockwise) • Vertical (anticlockwise) See the 'Rotation' panel of the example diagram. Note that the icon in the toolbar reflects the current orientation of the name of the selected element.
Add an Icon to an Element	While the diagram has Custom Style enabled, you can add icons to either the existing elements or to new elements generated as part of the process. The default position of the icon is in the top right corner of the element boundary, but you can move the icon to other points. To set the icon on an element in the diagram, select an Image Asset in the **Browser window** and drag it onto the diagram, either onto the existing element

	or into a space in which to create a new element. A short menu displays: • If you are adding the image to an existing element, select the 'Set as Icon' option • If you are creating an element that contains the icon, select the 'Add as element with icon' option After adding the icon, click on the element and on the , then in the Format toolbar click on the  icon and on 'Position', and select from these options: • Top Left • Top Center • Top Right • Bottom Left • Bottom Center • Bottom Right Note that the toolbar icon reflects the current position of the icon in the selected element. Any size of image can be set into the Image Asset when it is used as an icon, but you can control its display size in the element. Click again on the icon and on 'Size', and select from these options: • 16x16 pixels

	• 24x24 pixels • 32x32 pixels (the default) • Image Size (the size of the image in the Image Asset; do not select this option unless the image is already small enough to act as an icon)
Apply Border Style	To change the border line style, on the Format toolbar click on the  icon (second from the right) and select a line style of: • Solid • Dashed • Dotted • Dashed-and-Dotted • None See the 'Border Style' panel of the example diagram.
Apply Stacked Image	On the diagram or element with Custom Style enabled, you can make an element represent several iterations of its object by adding a set of between 1 and 4 'stacked' element edges off one of the corners of the element. To add 'stacking', click on the icon and select 'Stacks' and the number of edges to add.

	Click on the icon again (notice that it now represents the number of 'stacks' you set) and select 'Direction' and one of these options: • NW (top left corner) • NE (top right corner; the default) • SW (bottom left corner) • SE (bottom right corner) See the 'Stack' and 'Stack Direction' panels of the example diagram. Note that the icon in the toolbar also reflects the direction of stacking in the selected element.
Set the Font, Border Width and Colors	These are standard options on the Diagram and Element floating toolbars, and apply to the Custom Styles as well as to normally rendered elements. Click on the element and on the icon to the right of the element to display the Element toolbar, then: • To show the element text in a different font, click on the icon; the 'Font' dialog displays, on which you can set the font type, style, size, color, effects and script type from the lists in each field • To apply different colors, click on one

	or more of the  icons to set the color of the text, element fill and/or element border respectively; select the appropriate color from the color palette in each case or, if necessary, click on the **More Colors button** to define a custom color to use • To change the width of the element borders, click on the 'spinner' arrows to set the border width to a value between 1 (the thinnest, default width) and 5 (the thickest width)

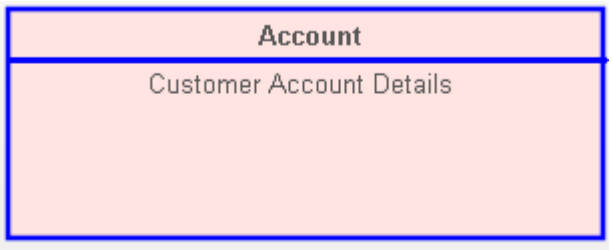
Subordinate Text

In **Custom Diagram** Style, if the element name does not provide a sufficiently specific visual reference, you can use the 'Description' Tagged Value to display a secondary text string on the element. Apply these simple steps:

1. Click on the element and, if necessary, press **Ctrl+2** to display the **Properties window** for the element.
2. Click on the 'Tags' tab in the Properties window, and click on the  icon in the toolbar to create a new Tagged Value.
3. In the 'Tagged Value' dialog, in the 'Tag' field type Description, and in the 'Value' field type <memo>. Click

on the **OK button**.

4. On the 'Tags' tab, click on the ... icon at the right-hand end of the 'Description' field, and in the 'Tagged Value Note' dialog type the text string to display. Click on the OK button.
5. The element on the diagram now has a line across it underneath the name (depending on the other Custom Styles you have applied) with the text string below it.



Notes

- Having applied custom styles to a diagram, you can toggle between the custom format and the formal notation simply by enabling and disabling the 'Custom Style' option.
- Be aware that manual changes to colors, border width and element position and size are reflected in both formats, but the system can automatically resize elements to accommodate text and compartment content, and that will then be reflected in the custom appearance of the diagram when you switch to it; therefore diagram layout might be altered as you toggle between the formats
- Similarly, if you reduce an element to the minimum size in Custom Style, when you deselect the 'Custom Style'

option to turn it off, the element returns to its original size to display all of its visible content

- Custom Style and Info View Style are mutually exclusive; you do not apply both styles to the same element

Diagram List

The **Diagram List** is a tabular, editable view of elements in a selected diagram, which can be displayed in the main workspace. You can use the Diagram List to:

- Streamline the process of creating and updating elements in a diagram selected from the **Browser window**; this can be particularly useful for analysts to create and maintain formal requirement definitions within the model
- Print the list or generate a document report directly from the entries on the list

Access

Ribbon	Design > Diagram > View As > List View
Context Menu	Right-click on diagram background | Switch View | Switch to List View or Right-click on diagram tab | Switch to List View
Keyboard Shortcuts	**Ctrl+Alt+R** (opens a **new** view, as a list)

Aspects

Aspect	Description
The Diagram List	The **Diagram List** is related to the **Package Browser**, which lists the elements in a selected Package; however, the Package Browser has a wider range of options.
Formats	The **Diagram List** is displayed in 'User Defined' format, where you can change how the element information is structured on the screen using the value-grouping band below the toolbar.
Change display	• Sort the items by any column value in ascending or descending order, by clicking on the column header; initially the elements are listed in numerical order (if level numbering is turned on in the **Browser window**) or alphabetical order within type • Apply a diagram filter for elements (the Fade, Gray Scale and Hide modes reduce the number of elements listed; Select mode has no effect)

	• Change the sequence of columns, by dragging column headers left or right
Display Element Properties	Double-click on the element entry.
Select Items	Select: • an element by clicking on it • a specific value by clicking twice on it (not double-clicking); either the value becomes directly editable or the 'Properties' dialog displays in which you can edit the value • several individual elements by holding **Ctrl** as you click on them • a range of elements by holding **Shift** as you click on the first and last in the range
Add new items to the diagram	Create new elements on the **Diagram List**, using the toolbar or context menu options; these elements are automatically added to the diagram.
Delete elements from the list	Select the item and press **Ctrl+D**.

Include each element's notes (documentation)	Notes are shown underneath the element. To add or edit notes, click on the item and press **Ctrl+Space** to transfer control to the Quick **Notes window**, in which you create or edit the note text.
Review the element's custom (advanced) properties	Right-click on the item and select the 'Properties' option, then select the 'Advanced' page.
Further Options	You can do further work on the **Diagram List** using the same toolbar and context menu options as for the **Package Browser**, except that the Diagram List does not have: • The Model Hierarchy format and hence does not have the  button in the toolbar • The  toggle button • The  toggle button The Diagram List does have these additional context menu options: • Switch to **Diagram View** - show the elements of the selected diagram in graphical format instead of as the Diagram List

	• Switch to View as Gantt - list the diagram elements as bars of a Gantt chart, representing the elements' resource allocations • Switch to **Specification Manager** - list the diagram elements with their notes and various other properties in the Specification Manager • Switch to Traceability View - list the elements on the diagram as entries in the **Traceability window**, which you can expand to show the connectors and related elements of each element on the diagram • Diagram Properties - display the 'Properties' dialog for the diagram

Diagram Relation Matrix

The Diagram Relation Matrix View presents the contents of the current diagram in the form of a simple grid, identifying the relationships between the elements on that diagram.

Access

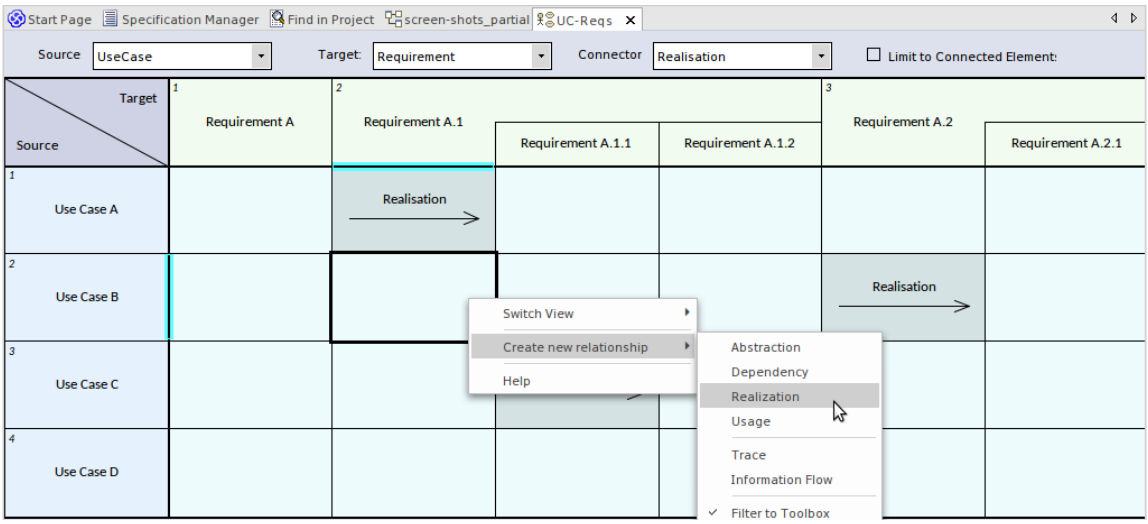
Ribbon	Design > Diagram > View As > Relation Matrix View
Context Menu	Right-click on diagram background | Switch View | Switch to Relation Matrix View or Right-click on diagram tab | Switch to Relation Matrix View In the **Browser window**, right-click on the name of the open diagram | Switch View | Switch to Relation Matrix View

The Relation Matrix View

The Relation Matrix view is similar to the project-level

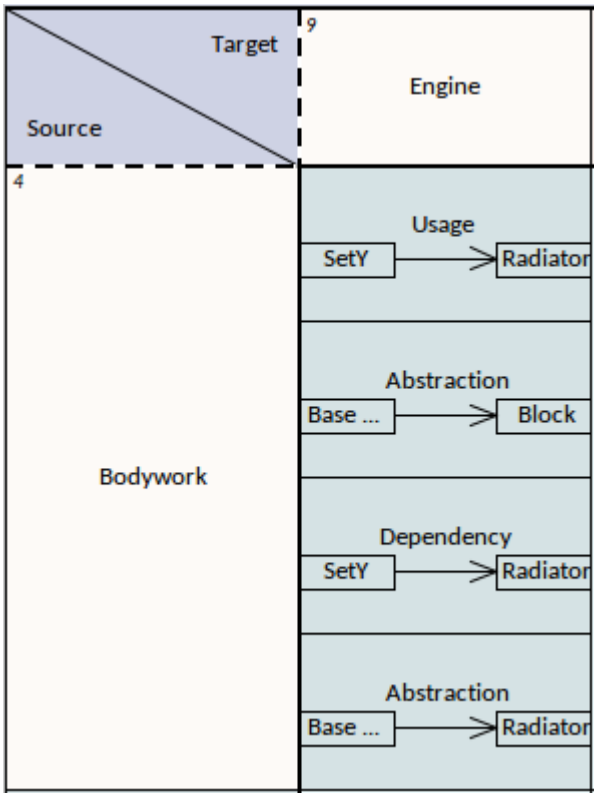
Relationship Matrix, but it is a diagram view and as such displays only those elements contained in the selected diagram and has fewer fields to define where those relationships are detected.

Each row and each column of the Relation Matrix view represents a diagram element. There is small italic number on the top-left corner of each row and column cell, which is the row/column index. The cell at the intersection of a row and a column shows the details of any relationships between the corresponding diagram elements.



The Relation Matrix view provides a means to quickly identify elements that are not yet connected to other elements, such as Requirements elements that are not yet realized. You can also create new relationships or delete existing relationships directly in the matrix.

Selecting a cell in the matrix shows additional relationship properties where they exist, such as cardinality values and roles. Where relationships exist between features of the source and target elements, this is represented on the matrix as well.



Viewing Options

You can refine the display to show only:

- Relationship connectors of a specific type
- Source elements of a specific type and/or
- Target elements of a specific type

Click on the **drop-down arrow** for the appropriate field at the top of the matrix, and select the required type. Note that the element and connector types in the lists are only for those objects that are already in the diagram.

You can further restrict the display to show only elements that already have connectors, by selecting the 'Limit to Connected Elements' checkbox.

Format

By default, the Relation Matrix View displays elements in a hierarchy, as for Requirement A1 in the earlier example. You can change this to display the elements in flat lists by right-clicking in the top left cell and deselecting the 'Show Element Hierarchy' option.

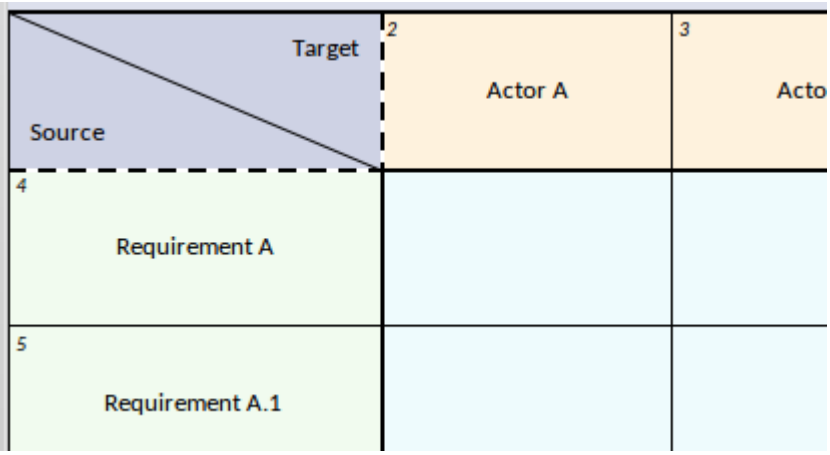
Navigate the Relation Matrix

You can navigate through the Relation Matrix using either the scroll bars or the arrow keys.

Scroll Bars:

- If the matrix is bigger than the display area of the screen, and some of the element/relation cells cannot be seen, a vertical and/or a horizontal scroll bar is displayed so that you can scroll to the hidden area of the matrix
- If you scroll the matrix up, the column headers remain visible whilst the rows appear to roll beneath them and are hidden; in this case, the top edge of the first visible row header becomes a dashed line to indicate there are hidden rows above it (and you will notice that the italic number in the top left corner of the cell will be a number greater than 1)
- Similarly, if you scroll the matrix left, the row headers

remain visible while the columns appear to roll beneath them and are hidden; the left edge of the first visible column header becomes a dashed line to indicate there are hidden columns to the left of it (and the italic number in the top left corner of the cell will be a number greater than 1)



Arrow Keys:

- From a selected cell of the matrix, you can press the arrow keys to move to a neighboring cell of the same type (that is, column header to column header, row header to row header or grid cell to grid cell)
- To move between cells of different types, such as from a grid cell to a column header cell or vice versa, press **Ctrl** as you press the arrow keys
- If the neighboring cell is hidden or outside the display area, pressing the appropriate arrow key will scroll the Relation Matrix to show the row or column containing that cell

Add / Delete Element

You can add elements to the Relation Matrix by:

- Dragging the appropriate element icon from the Toolbox onto the 'Target' triangle or 'Source' triangle (to add a peer element) or onto an element in the Target row or Source column (to add the new element as a child of the selected element)
- Dragging an element from the **Browser window** on to the Target row or Source column
- Right-clicking on an element name in the Target row or Source column, and selecting the 'New Child Element' option to add a new child element of a type listed in the submenu
- Right-clicking on an element name in the Target row or Source column, and selecting the **'Insert Related Elements**...' option to insert a related element of the selected element, using the Insert Related Elements dialog
- Right-clicking on the diagram background outside the Relation Matrix and choosing the 'Insert Other Element...' option to insert an element from any Package, located and selected using the 'Select Element' browser

You can delete an element from Relation Matrix by selecting the element-name cell and either:

- Pressing **Ctrl+Delete**, which deletes the element and its connectors from the model; you are prompted to confirm the deletion, or
- Right-clicking on the cell and selecting the 'Delete <element name>' option (the element is immediately

removed from the matrix and diagram), or
- Pressing the **Delete key**

Add / Delete Connector

The Diagram Relation Matrix greatly simplifies the process of creating and removing relationship connectors between elements.

To **add a connector**, click on the cell at the intersection of the source element row and target element column and:
- Right-click and select the 'Create new relationship' option, and then select the type of connector from the sub-menu, or
- If there is currently no connector between the source and target element, press the **Spacebar** and then select the type of connector from the submenu, or
- If there is a connector and you want to add another one, press the Spacebar, select the 'Create new relationship' option and then select the type of connector from the submenu

To **delete a connector**:

Click on the cell containing the connector to delete, and either:
- Press **Ctrl+Delete**, which prompts you to confirm the action before deleting the connector from model, or
- Right-click and select the 'Delete Connector' option,

which prompts you to specify whether to simply hide the connector or to delete the connector from the model, or
- Press the Delete Key, which again prompts you to select between hiding and deleting the connector

Display Element / Connector Properties

You can display the properties of any element or a connector in the matrix, either in the object's 'Properties' dialog or in the docked **Properties window**.

- To display the 'Properties' dialog, double-click on the name of the element or connector in a cell
- To display the docked Properties window, click on the name of the element or connector in a cell and press **Ctrl+Enter**; if the window is already displayed, simply click on the element or connector name to make it the focus of the window

Certain features are shown on the cell itself. For example, the cell for an Information Flow on a SysML diagram also shows the conveyed items. You can locate the conveyed items in the **Browser window** by right-clicking on the name and selecting the 'Find Conveyed Items' option.

In-Place Editing Element Names

If you should need to correct the name of an element in the Relation Matrix, you can easily do so using the in-place editor; click on the element cell and either press **F2** or click on the element name twice (not double click). Type in the correct text and press the **Enter key**.

Hide/Show Relationships

If you want to simplify your diagram and its various representations, you can hide connectors that are not immediately relevant to the view, and recall them when your purpose requires them. Hiding or showing a connector in one view of the diagram affects all the other views.

Before attempting to hide connectors, make sure the 'Prompt on connector deletes' checkbox is selected in the 'Links' page of the 'Preferences' dialog ('Start > Desktop > Preferences > Preferences > Links').

To hide a connector:

Click on the cell showing the connector you want to hide, then either:

- Right-click and select the 'Visibility | Hide Connector' option, or
- Right-click and select the 'Delete Connector' option, then on the 'Remove Connector' dialog select the 'Hide the connector' radio button and click on the **OK button**, or
- Press the **Delete key**, and again on the 'Remove Connector' dialog select the 'Hide the connector' radio

button and click on the OK button,

To show a hidden connector:

Click on the cell containing the connector you want to reveal, then:

- Right-click and, if the cell does contain any hidden connectors, click on the option 'Show Relation' (the option is not provided if there are no hidden connectors)
- From the sub-menu listing all the hidden connectors by type and (if set) name, select the connector to show

Navigate between Graphical view and Relation Matrix view

You can easily switch from the Relation Matrix View to the graphical representation or any of the other diagram views, using the right-click context menu option 'Switch View | Switch to Graphical View' (or 'Switch to <other> View').

If you select the option after clicking on a:

- General area of the matrix, the diagram displays from the top left corner, and other views display from the starting point
- Relation cell that shows a specific connector, the diagram or other view displays with that connector or its information visible and selected

If you are in the diagram in its graphical view, you can select a connector and specifically focus on it in the

Diagram Relation Matrix, by right-clicking on the selected connector and clicking on the 'Switch to Relation Matrix View' option. The matrix displays with the cell for that connector in the center of the display.

Publish the Relation Matrix

When you render the diagram as a Relation Matrix, you can capture the appearance of the matrix in a:

- Printed hard copy - 'Publish > Diagram Image > Print > Print'
- PDF file - 'Publish > Diagram Image > Print > Print to PDF
- Image file - 'Publish > Diagram Image > Save > Save to File
- Clipboard capture - 'Publish > Diagram Image > Save > Save to Clipboard

Layout Diagrams

As you develop a model diagram and add more elements and connectors to it, you can apply one of a number of formats to automatically lay out specific areas or sets of elements in the diagram in a structured arrangement. If the diagram is very simple, you could even use this facility to lay out the entire diagram.

Additionally, you can provide filters and parameters for two or three types of layout and then 'chain' the layouts so that they are executed in sequence to result in a more refined layout. You can select a system-defined chain, or one that you have created yourself.

Access

Ribbon	Layout > Tools > Diagram Layout > Open Diagram Layout Tools
Context Menu	Right-click a selected element on a diagram | Layout Selected Elements (available only when multiple elements are selected)
Other	Right-click on any toolbar | Diagram Layout Tool : Select a Layout | Apply

	Layout

Lay out elements on a diagram

Step	Action
1	Select the elements to lay out on the currently-active diagram - hold **Shift** or **Ctrl** while you click on each required element, or hold the mouse button down while you sweep over the area containing the required elements. If no elements are selected on the active diagram, then all elements on the diagram are laid out (except where otherwise documented).
2	Click on the **drop-down arrow** on the top left field of the **Layout Tools window**, and select the required layout type: • Circle/Ellipse • Box • Per Page • Digraph • Spring • Neaten

	• Converge/Diverge • Fan Relations • Auto Route The layout type determines the fields presented in the window, therefore the appropriate fields are described separately for each layout type. If you want to apply a sequence or chain of diagram layouts to a diagram, select either: • The appropriate system-defined chain name, or • The name of a chain you have created yourself You can create and modify a 'Layout Chain' by clicking on the  button in the dialog toolbar.
3	When you have completed the fields, click on the  button. The selected elements are reorganized into the pattern format you have selected and according to the options you have chosen.
4	If you do not want to work with the new layout, click on the **Undo button** in the toolbar ().

Notes

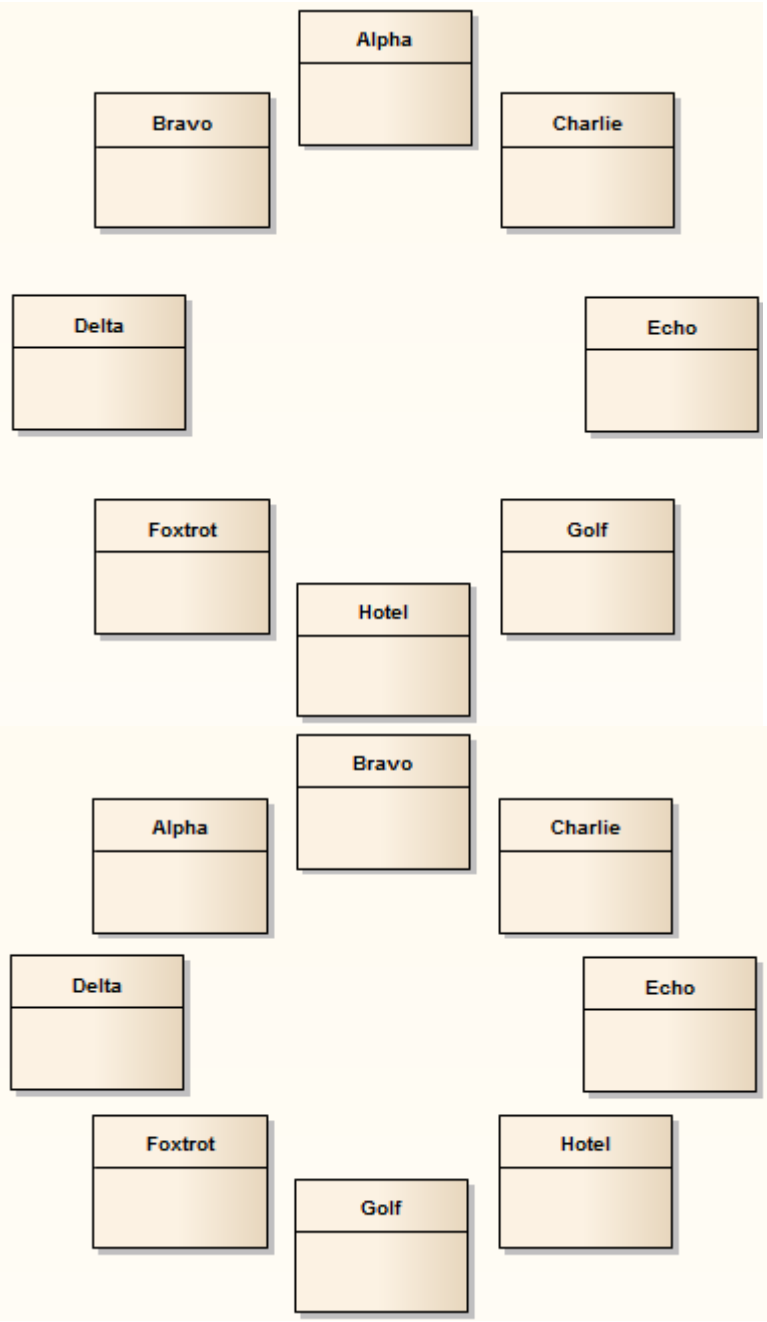
- If you have adjusted the settings for a layout, you can

automatically apply those settings to another diagram by selecting the 'Layout > Tools > Diagram Layout > <layout name>' ribbon option when you have opened the diagram

- You can also automatically lay out an entire diagram, without specifying any format or filters, using the alternative Layout Diagram facility
- Nested elements will remain within their parent element when applying a layout

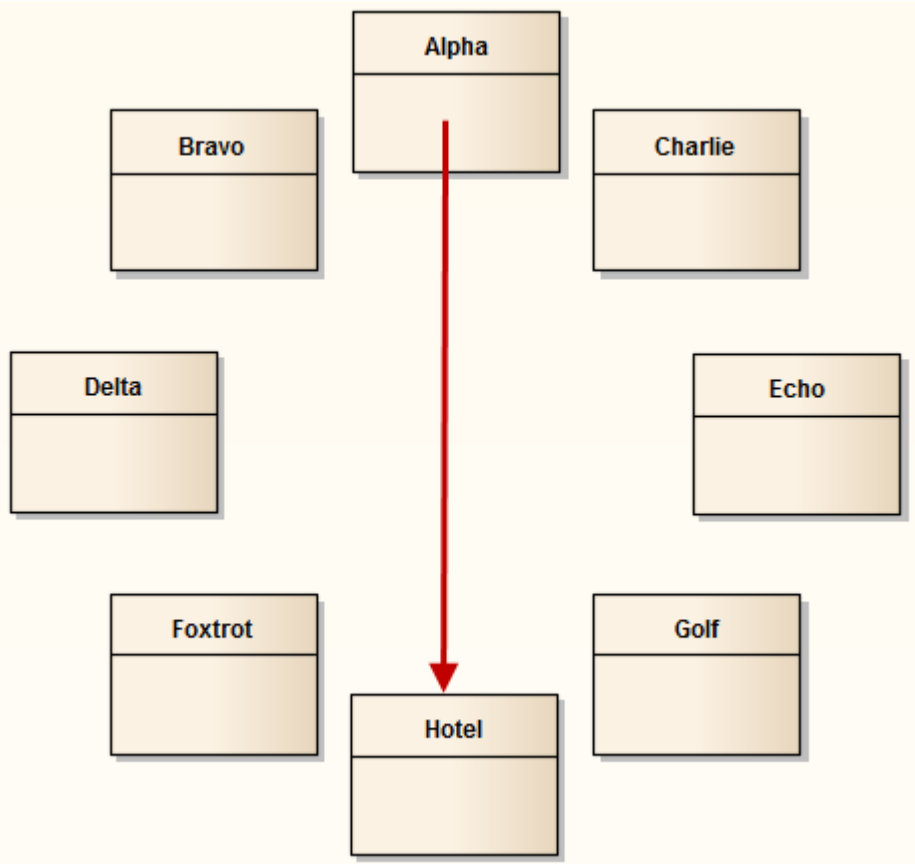
Circular/Elliptical Layout

The Circle and Ellipse layouts arrange the selected elements in a circle or elliptical pattern, using the largest horizontal and vertical element edge in the set of elements when calculating the radius of the layout arc.



Invoke the Circular or Ellipse layout

Diagram A - Top To Bottom Layout



Step	Action
1	Follow the general *Layout Diagrams* procedure, and at step 2 select either 'Circle' or 'Ellipse' as required.
2	Click on the **drop-down arrow** in the 'Sort By' field and select the required sort parameter: • None - elements are passed to the specified layout in the order in which they appear on the original

	diagram (left to right, top to bottom) • Area (Ascending) - elements are passed to the specified layout in order of the screen space they occupy, smallest to largest • Area (Descending) - elements are passed to the specified layout in order of the screen space they occupy, largest to smallest • Name (Ascending) - elements are passed to the specified layout in alphanumeric order, based on the element name • Name (Descending) - elements are passed to the specified layout in reverse alphanumeric order, based on the element name • Element Type - elements are grouped by type (for example, Class, Use Case) and in alphanumeric order within the group by name
3	Under the 'Placement' option, select either: • Top to Bottom - the elements are positioned in the required order, zig-zagged across the perimeter of the circle or ellipse, as in Diagram A • Circular - the elements are placed in the required order, clockwise around the perimeter of the circle or ellipse, as in Diagram B
4	Select the 'Center focused element' checkbox to put the last-selected element (the one with the hashed border) in the center of the circle or ellipse, as in

	Diagram C.

Diagram B - Circular Layout

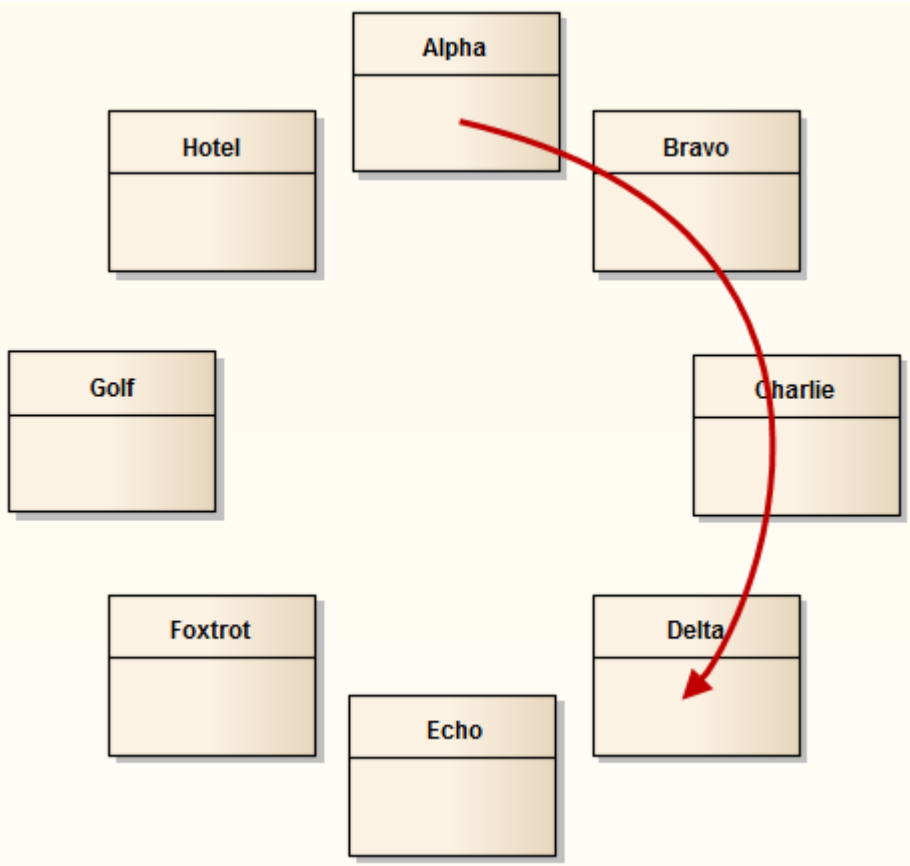
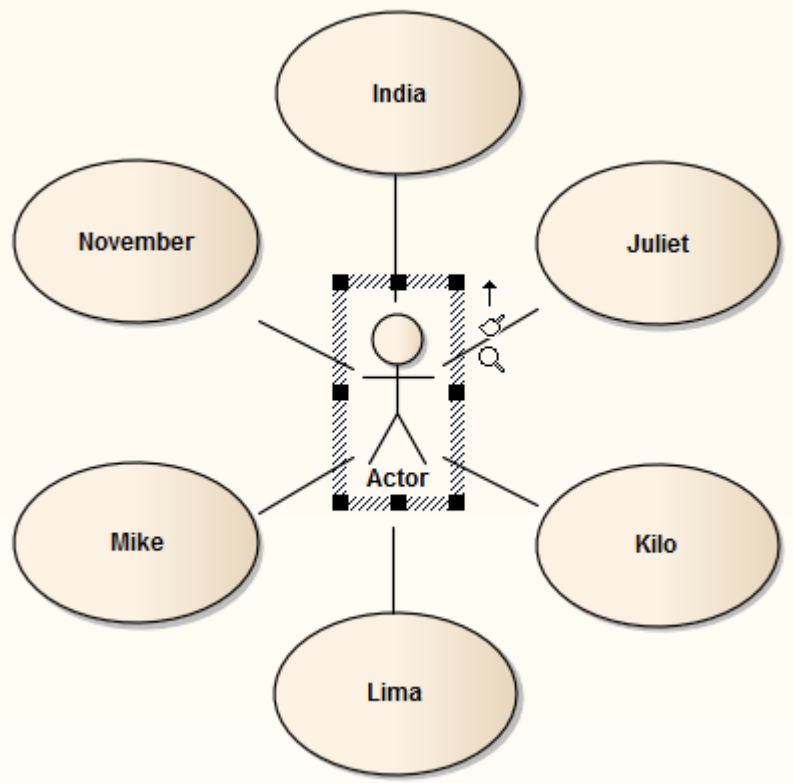


Diagram C - Center Focused Element


India
November
Juliet
Actor
Mike
Kilo
Lima

Box Layout

The Box layout arranges the set of selected elements into a square grid.



The dimensions of the box are determined by the number of columns that either:

- You set manually or
- The system automatically sets to a value that results in the same number of columns and rows (for example, 5, 6, 7, 8 or 9 elements would all be arranged in a three-column rectangle).

Invoke the Box layout

Step	Action

1	Follow the general *Layout Diagrams* procedure, and at step 2 select 'Box'.
2	Click on the **drop-down arrow** in the 'Sort By' field and select the required sort parameter: • None - elements are passed to the specified layout in the order in which they appear on the original diagram (left to right, top to bottom) • Area (Ascending) - elements are passed to the specified layout in order of the screen space they occupy, smallest to largest • Area (Descending) - elements are passed to the specified layout in order of the screen space they occupy, largest to smallest • Name (Ascending) - elements are passed to the specified layout in alphanumeric order, based on the element name • Name (Descending) - elements are passed to the specified layout in reverse alphanumeric order, based on the element name • Element Type - elements are grouped by type (for example, Class, Use Case) and in alphanumeric order within the group by name
3	In the 'Padding (px)' field, type the vertical and horizontal distance between elements, in pixels.
4	Select the appropriate element distribution option:

	• Automatically distribute: Automatically calculate the dimensions of the box (the square root of the number of selected elements; for example, 16 elements create a 4x4 box) • Specify distribution: Manually define the width of the box, in columns
5	If you selected 'Specify Distribution', in the 'Columns' field type the required number of columns.

Per Page Layout

The Per Page layout divides each diagram page into a number of cells, which house the selected elements. The number of cells per page is determined by the page distribution parameter.



Invoke the Per Page layout

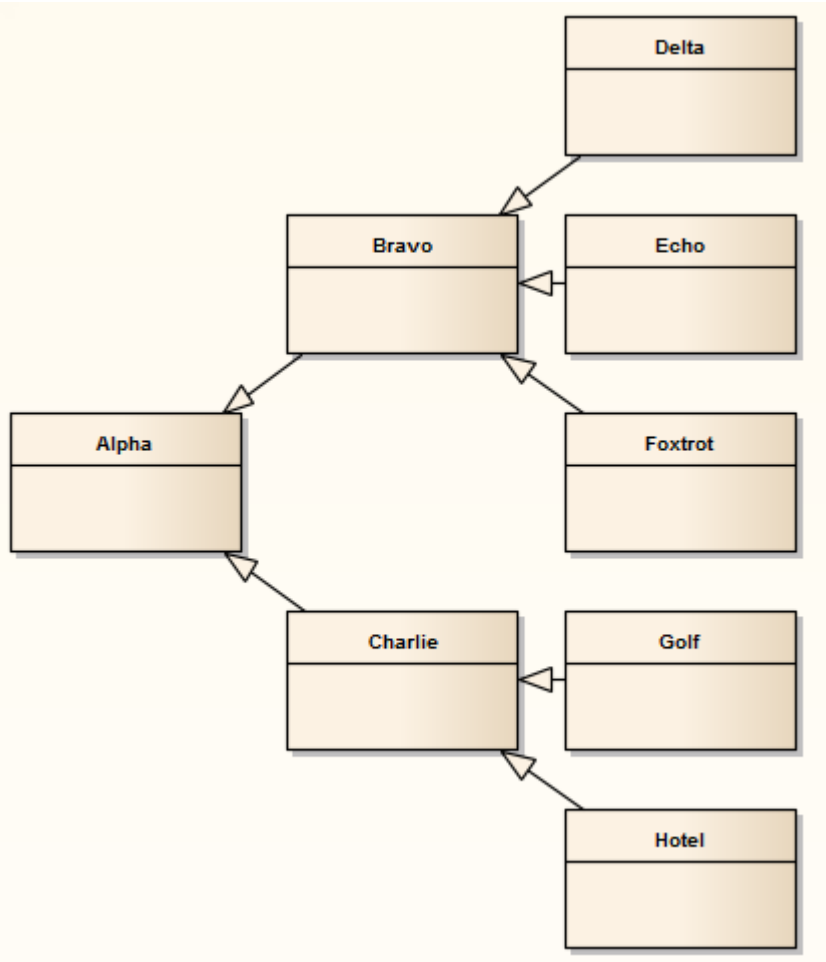
Step	Action

1	Follow the general *Layout Diagrams* procedure, and at step 2 select 'Per Page'.
2	Click on the **drop-down arrow** in the 'Sort By' field and select the required sort parameter: • None - elements are passed to the specified layout in the order in which they appear on the original diagram (left to right, top to bottom) • Area (Ascending) - elements are passed to the specified layout in order of the screen space they occupy, smallest to largest • Area (Descending) - elements are passed to the specified layout in order of the screen space they occupy, largest to smallest • Name (Ascending) - elements are passed to the specified layout in alphanumeric order, based on the element name • Name (Descending) - elements are passed to the specified layout in reverse alphanumeric order, based on the element name • Element Type - elements are grouped by type (for example, Class, Use Case) and in alphanumeric order within the group by name
3	In the 'Padding (px)' field, type the vertical and horizontal distance between cells, in pixels.
4	Select the appropriate page distribution option:

	• Automatically distribute: automatically calculate the optimum number of cells, taking into consideration the largest horizontal and vertical element edges • Specify distribution: manually enter the per page grid dimensions
5	If you selected 'Specify Distribution', in the 'Rows' and 'Columns' fields type the required number of rows and columns.
6	Select the 'Center Elements' checkbox to place each element in the center of its cell; otherwise the element placement defaults to the top left corner of the cell.
7	In the '**Start Page**' field, type the number from which to start the page numbering; pages begin at the top left and continue horizontally to the right.

Digraph Layout

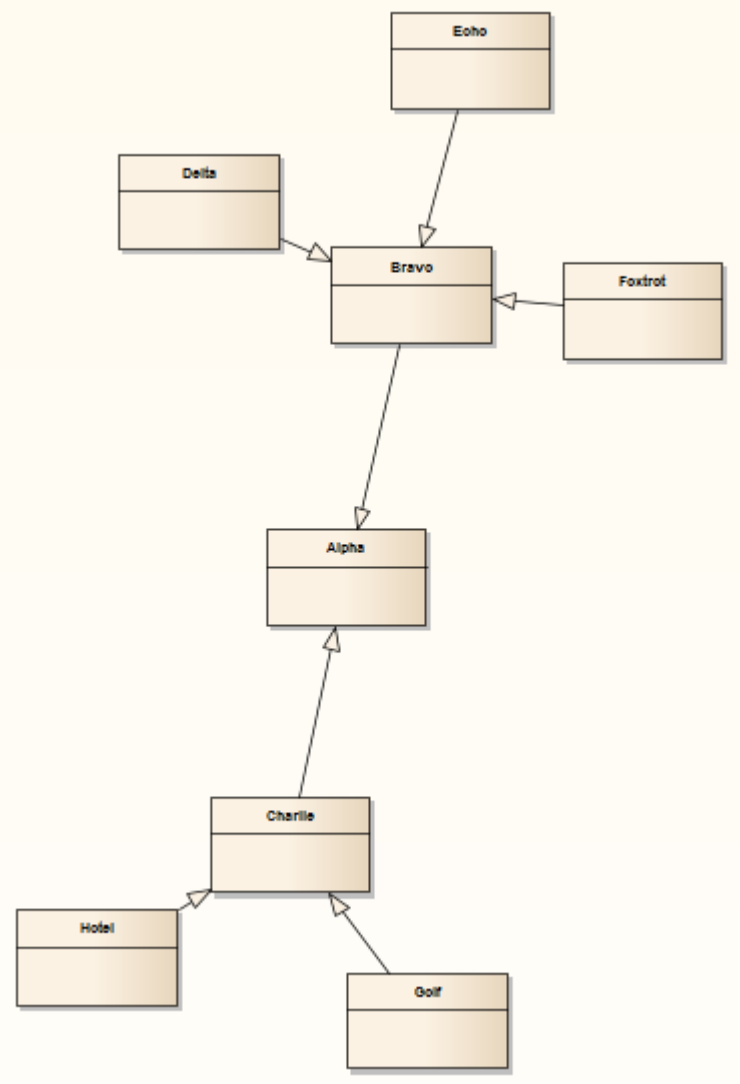
The Digraph layout arranges the selected elements into a directed graph ('digraph' for short). The Digraph attempts to highlight the hierarchy of the elements while keeping the direction of all connectors pointing to the same edge of the diagram.



The Digraph layout provides the same behavior as the Automatic Diagram Layout.

Spring Layout

The Spring layout uses a force-directed approach to arrange the selected elements organically. It employs a physical analogy to lay out elements; each element is treated as a particle with a like electrical charge that repels other elements. Connectors act as springs (hence the name Spring layout) that draw connected elements back together. The layout is good for highlighting clusters of related objects and identifying symmetry in the graph.

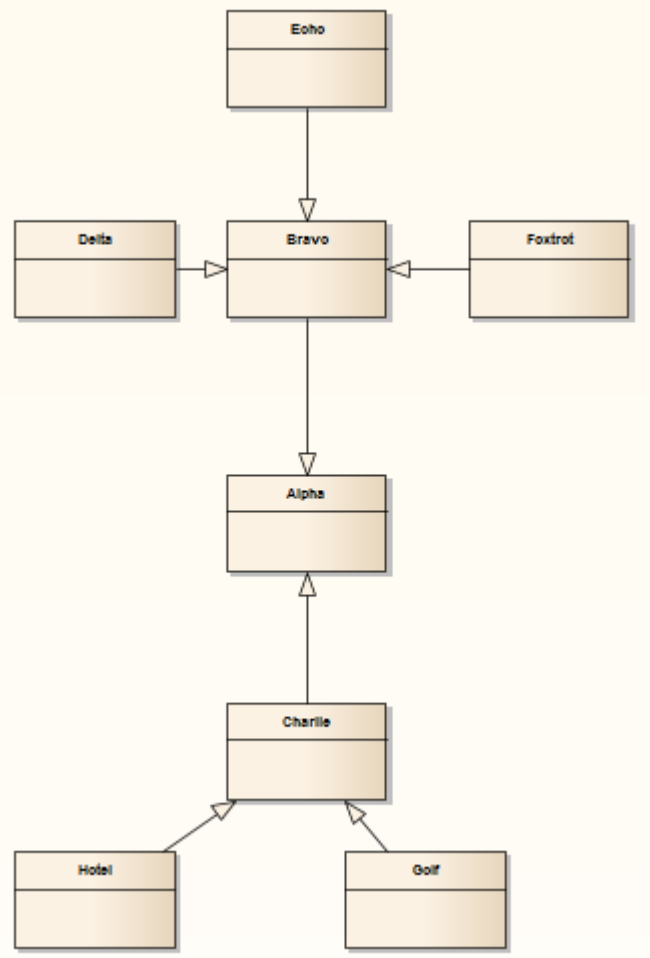


Invoke the Spring layout

Step	Action
1	Follow the general *Layout Diagrams* procedure, and at step 2 select 'Spring'.
2	In the 'Iterations' field, type the number of iterations, or rounds, to perform to reach the final layout. The layout is developed over several iterations; depending on the complexity of the graph, increasing the number of iterations produces a better result but takes longer to calculate.
3	If the diagram contains elements that significantly vary in size, and that might overlap in the final layout, select the 'Scale to prevent overlap' checkbox to scale up the positions of the selected elements (preserving size) until no elements overlap.

Neaten Layout

The Neaten layout attempts to pull the selected elements into a grid based on their horizontal and vertical proximity to each other. That is, the layout pulls elements that are roughly aligned into a neater arrangement. Elements that share the same row or column are aligned based on the 'Column' and 'Row Snap' parameters. The arrangement shown for the Spring layout, when the Neaten layout is applied, might resemble this:



Invoke the Neaten layout

Step	Action
1	Follow the general *Layout Diagrams* procedure, and at step 2 select 'Neaten'.
2	In the 'Threshold (px)' field type the separation, in pixels, up to which elements are considered to be in the same row or column. A higher threshold value produces a tighter result, pulling elements that are far distant into the same row or column. A lower threshold value provides for a larger number of rows and columns.
3	In the 'Column Snap' field, click on the **drop-down arrow** and select the appropriate alignment for elements in the same column: • Left - elements are aligned with the left edge of the left-most element in the column • Center - elements are aligned with the vertical center of the center-most element in the column • Right - elements are aligned with the right edge of the right-most element in the column
4	In the 'Row Snap' field, click on the **drop-down arrow** and select the appropriate alignment for elements in the same row:

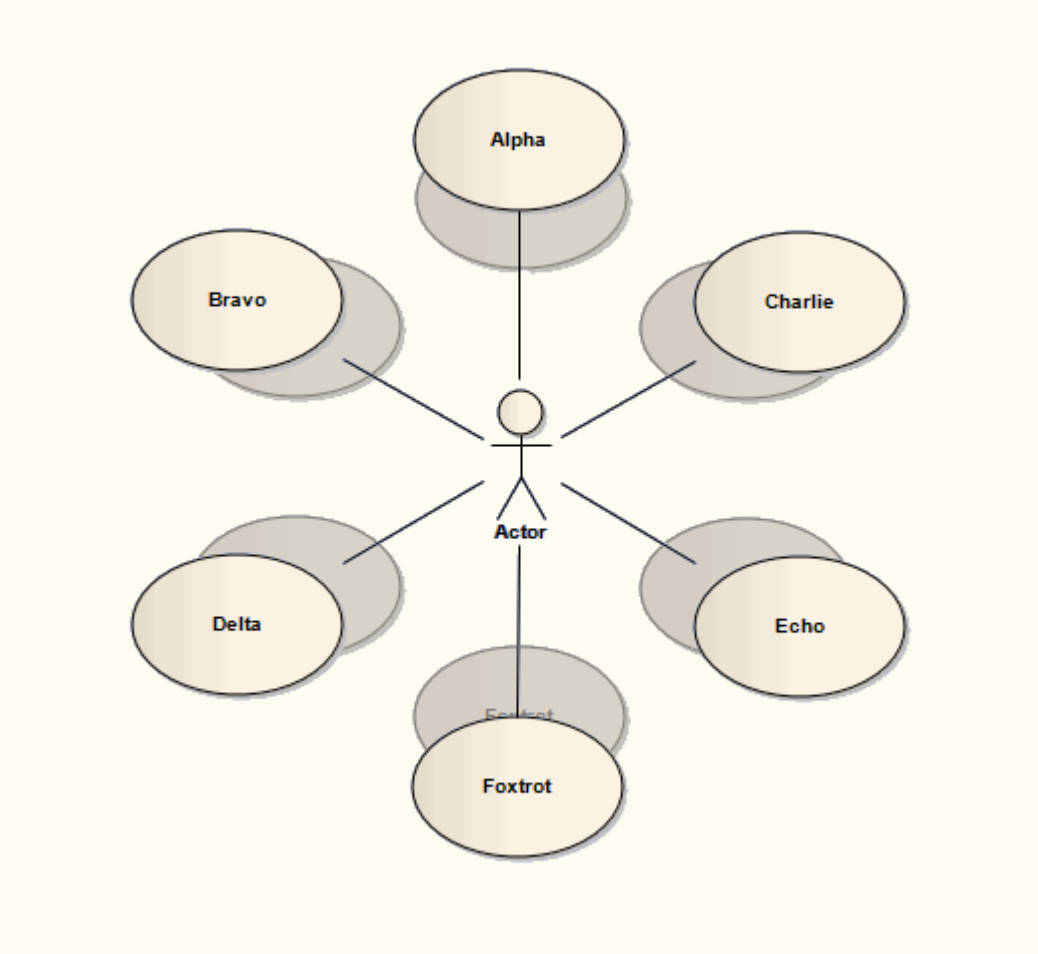
	• Top - elements are aligned with the top edge of the highest element in the row • Center - elements are aligned with the horizontal center of the center-most element in the row • Bottom - elements are aligned with the bottom edge of the lowest element in the column

Notes

- To prevent elements from overlapping in the neatened layout, check that the appropriate left, right, top, bottom, vertical center or horizontal center values of the elements (as dictated by the 'Column Snap' and 'Row Snap' options you select) are greater than the value in the 'Threshold' field

Converge/Diverge Layout

The Converge layout attracts the set of selected elements towards the center of their bounding rectangle. Conversely, the Diverge layout repels the set of selected elements away from the center of their bounding rectangle. The Converge/Diverge layout also tries to maintain connector angles if an element in the set contains a connector with waypoints.

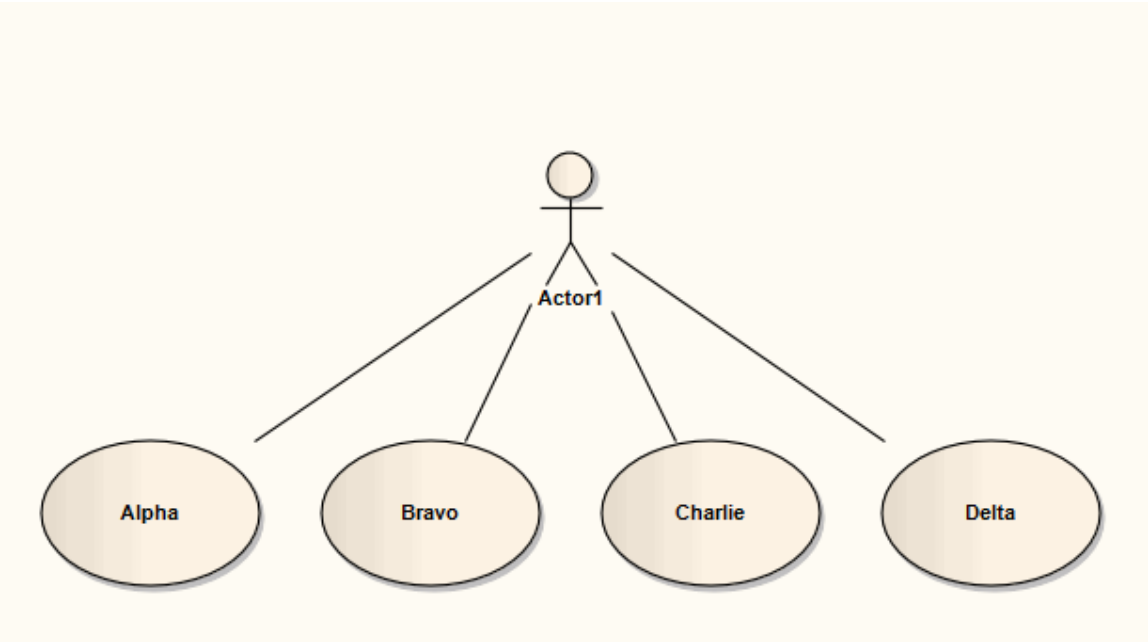


Invoke the Converge/Diverge layout

Step	Action
1	Follow the general *Layout Diagrams* procedure, and at step 2 select 'Converge/Diverge'.
2	Select the radio button for the required direction of the layout: • Converge - attracts the set of selected elements to the center point • Diverge - repels the set of selected elements from the center point
3	Set the 'Amount (%)' slider to the required percentage. A smaller percentage provides finer control of the change in layout. The slider determines how far the elements are moved towards or away from the center point; the movement is the element's current distance from the center point multiplied by the percentage value set on the slider. In the Converge layout, the element moves towards the center point; in the Diverge layout the element moves further away from the center point.

Fan Relations Layout

The Fan Relations layout arranges the immediate relations of an element around a specified edge. This layout requires a single element to be selected on the diagram, to be used as the context for the layout.



Invoke the Fan Relations layout

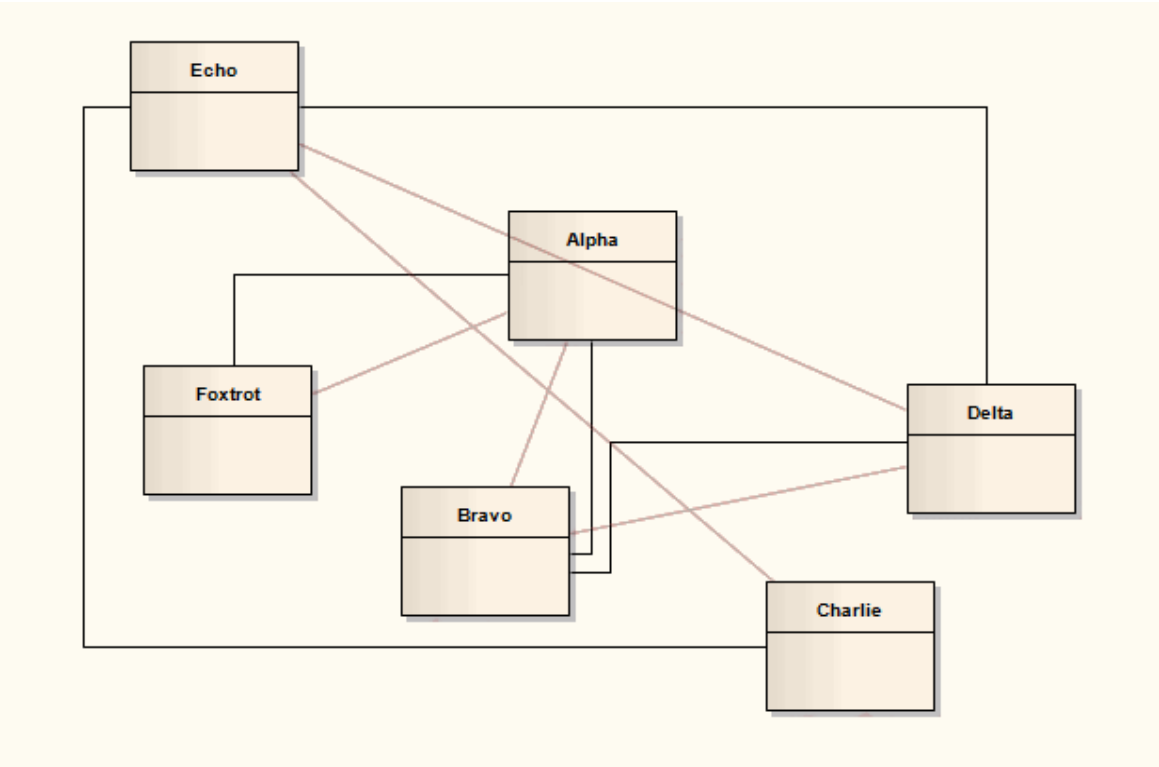
Step	Action
1	Open the **Layout Tools window**; either: • Select the 'Layout > Tools > Diagram Layout' ribbon option, or • Right-click on the main toolbar and select the

	'Diagram Layout Tools' option
2	Select the single element around which to lay out related elements on the currently-active diagram.
3	Click on the **drop-down arrow** on the top left button of the **Layout Tools window**, and select Fan 'Relations'.
4	Click on the **drop-down arrow** in the 'Sort By' field and select the required sort parameter. The options are: • 'None' - elements are passed to the specified layout in the order in which they appear on the original diagram (left to right, top to bottom) • 'Area (Ascending)' - elements are passed to the specified layout in order of the screen space they occupy, smallest to largest • 'Area (Descending)' - elements are passed to the specified layout in order of the screen space they occupy, largest to smallest • 'Name (Ascending)' - elements are passed to the specified layout in alphanumeric order, based on the element name • 'Name (Descending)' - elements are passed to the specified layout in reverse alphanumeric order, based on the element name • 'Element Type' - elements are grouped by type (for

	example, Class, Use Case) and in alphanumeric order within the group by name
5	In the 'Padding (px)' field, type the separation required between the selected element and its related elements, in pixels.
6	Select the connector direction to use in determining the related elements to lay out; either: • Incoming Nodes - to lay out related elements that have the selected element as the target • Outgoing Nodes - to lay out related elements that have the selected element as the source
7	In the 'Fan Edge' field, click on the **drop-down arrow** and specify the edge of the selected element from which to lay out the related elements: • Left - to arrange related elements to the left of the selected element • Right - to arrange related elements to the right of the selected element • Top - to arrange related elements from the top of the selected element • Bottom - to arrange related elements from the bottom of the selected element

Auto Route Layout

The Auto Route layout orthogonally routes connectors between the selected elements. The layout attempts to find the shortest path between the two connected elements while minimizing crossings. In this illustration, the original connectors are shown in red.



Invoke the Autoroute layout

Step	Action
1	Follow the general *Layout Diagrams* procedure, and at step 2 select 'Auto Route'.

2	In the 'Cell Size (px)' field, type the effective connector separation in pixels. When calculating connector routes, the algorithm divides the diagram into cells of a size determined by this field value; a smaller cell size results in connectors being placed closer together.
3	In the 'Element Margin' field, type the separation between connector segments and element borders, in pixels.

Lay Out a Diagram Automatically

As you develop a diagram, it can become difficult to position the elements and connectors so that the layout and organization remain clear. Rather than continually moving structures around manually, you can simply select a 'Layout Diagram' option to automatically reposition all the structures on the diagram in a logical, tree-based structure. If your diagram is complex, you can then do some manual 'tweaking' to draw out particular elements and relationships.

Generally the default layout parameters provide adequate layouts for a wide range of diagrams, but for a fine degree of control you can also set layout parameters using the 'Diagram Layout Options' dialog.

Access

Ribbon	To configure settings: • Design > Diagram > Manage > Properties > Diagram: Set Layout Style or • Layout > Diagram > Options > Properties > Diagram: Set Layout Style (on an open diagram)
Context	To configure settings:

Menu	• Right-click on diagram | Properties > Diagram: Set Layout Style
Other	To configure settings: • Double-click background of diagram > Diagram : Set Layout Style To apply layout: • diagram toolbar : Auto Layout

Apply Layout Configurations

Option	Action
Cycle Remove Options	These settings remove cycles in the element organization (where element X is the source of a path but also becomes the target of a branch of the path), by reversing the connectors that impose the cycling and then reorganizing the diagram and reinstating the reversed relationships; this identifies the primary source element in the diagram. Select: • Greedy - to use the Greedy Cycle Removal algorithm, which minimizes

	the number of connectors reversed • Depth First Search - to use the Depth First Search Cycle Removal algorithm, which establishes the longest linear sequence possible before establishing parallel sequences and branches; this algorithm is less effective in large and/or complex diagrams, but produces a more natural layout than the Greedy algorithm
Crossing Reduction Options	These options determine the length of time the routine searches for ways of reorganizing the layout to avoid crossed relationships: • Iterations - Type the number of iterations to be used during cycle removal (more than 8 does not usually provide any improvement) • Aggressive - Select this checkbox to use an aggressive (detailed and time-consuming) crossing reduction step
Layering Options	These settings determine how elements are organized in layers during layout. Select: • Longest Path Sink - to use the Longest Path Sink Layering algorithm, where

	the final target elements (sinks, which have no relationships issuing from them) are arranged in a layer at the top of the diagram, and the relationship paths built downwards from there in as many layers as there are nodes in the longest path • Longest Path Source - to use the Longest Path Source Layering algorithm, where the original source elements (those with no relationships entering them) are arranged in a layer at the bottom of the diagram and the relationship paths built up from there in as many layers as there are nodes in the longest path • Optimal Link Length - to use the Optimal Link Length Layering algorithm, which organizes the elements into the number of layers that minimizes the total source-to-sink relationship chain; in this layout you can have both source elements and sink elements at various levels of the diagram
Layout Options	These settings define how far apart the element layers and columns are in the layout.

	• Layer Spacing - Type the default number of logical units between layers of elements (vertical spacing) • Column Spacing - Type the default number of logical units between elements within a layer (horizontal spacing)
Initialize Options	The autolayout routine inserts line waypoints and connectors into relationship paths to help plot the direction of the relationships; the routine then assigns an index number to every node, such that nodes in the same layer are numbered left to right. These settings determine how those index numbers are assigned. Select: • Naive - to use the Naive Initialize Indices algorithm, which assigns index numbers to nodes as they are encountered in a sweep and tends to place all waypoints to the right of real nodes (and therefore long relationships between a small number of elements to the right of chains of short relationships between several elements) • Depth First Search Outward - to use the Depth First Out Initialize Indices algorithm, which assigns index

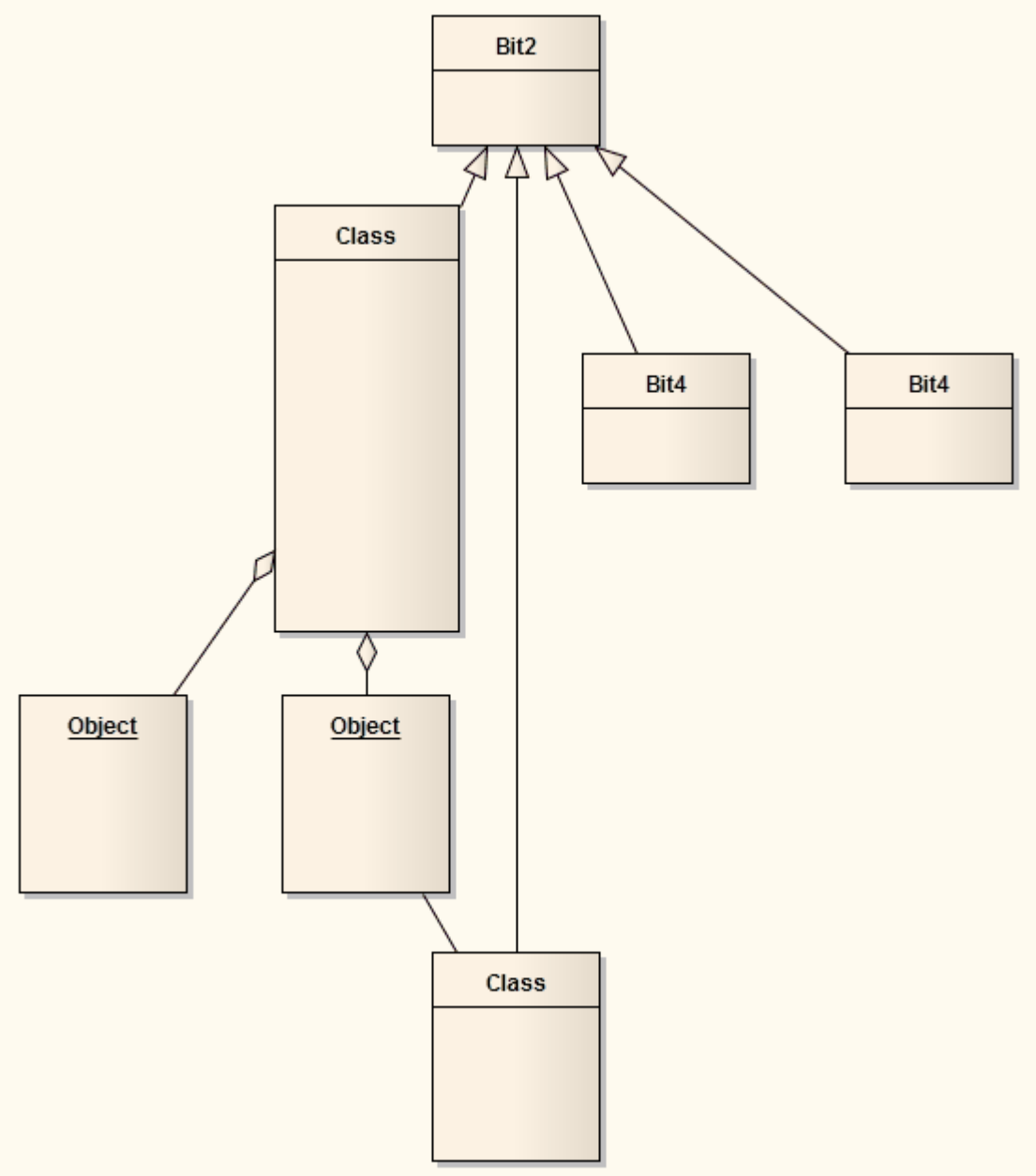
	numbers to nodes as they are encountered in a depth first search from source nodes outwards (and would therefore place longer relationship chains to the left of shorter chains, with the primary source node at the start of the diagram flow) • Depth First Search Inward - to use the Depth First In Initialize Indices algorithm, which also assigns index numbers to nodes as they are encountered in a depth first search, but from sink nodes inwards (and would therefore place longer relationship chains to the left of shorter chains, with the ultimate target node at the end of the diagram flow)
Direction	Select the direction in which all directed connectors should point, to set the position of the primary source element and the overall flow of the diagram. That is, Up, Down, Left, or Right.
Set as Project Default	Select this checkbox to apply the diagram layout settings to all diagrams in the project. If you later define different settings and select this checkbox, the new settings

	override all those saved previously.
OK	Click on this button to save your settings.

Example

This illustration shows an automatically laid out diagram with these options set:

- 'Depth First Search'
- 'Optimal Link Length'
- 'Depth First Search Outward'
- 'Direction - Up'



Notes

- This facility is available for all types of diagram other than Timing and Interaction Overview diagrams
- If you decide that the autolayout is not appropriate, you can reverse it before saving the diagram; click **Ctrl+Z**

Chain Diagram Layouts

Each of the diagram layout formats has a specific effect on the layout and appearance of a diagram. These effects can be combined by chaining certain layouts in a sequence, to further improve the final appearance of the diagram. Enterprise Architect provides a selection of standard 'chains' for your use, and you can quickly and easily set up chains of your own.

The system does not restrict the way in which you combine the layouts, but in practice some layouts complement each other better than others, or are more logically executed in a certain order. You therefore need to consider the effect of each layout on the diagram - or part of the diagram - as you develop the chain. You also provide parameters for each layout, so you would set the parameters for each format to complement those for the other formats in the chain, using the 'Layout Chains' dialog.

The available formats could be grouped by impact on the diagram:

- Circle, Ellipse, Box, Per Page, Digraph and Spring each adjust element positions completely, so would destroy the effects of any other layout if used after it in a chain; one of these would therefore be the first layout to apply in the chain
- Fan Relations operates on a specific element, so you might not want to further adjust the diagram layout; if you did, you would only use these next layouts

- Converge/Diverge could be used after some of the preceding layouts, to broaden or narrow the final layout
- Neaten is a logical successor to the previous types, adjusting positions to provide more uniform separation
- Auto-route is the best final layout, to adjust connectors to the clearest routes without changing element positions

In creating a chain of layouts, you might consider these suggestions in selecting which layouts to use and in which sequence.

Access

Ribbon	Layout > Tools > Diagram Layout > Open Diagram Layout Tools: 
Other	Right-click on any toolbar | Diagram Layout Tools: 

Set up a chain

On the 'Layout Chains' dialog:

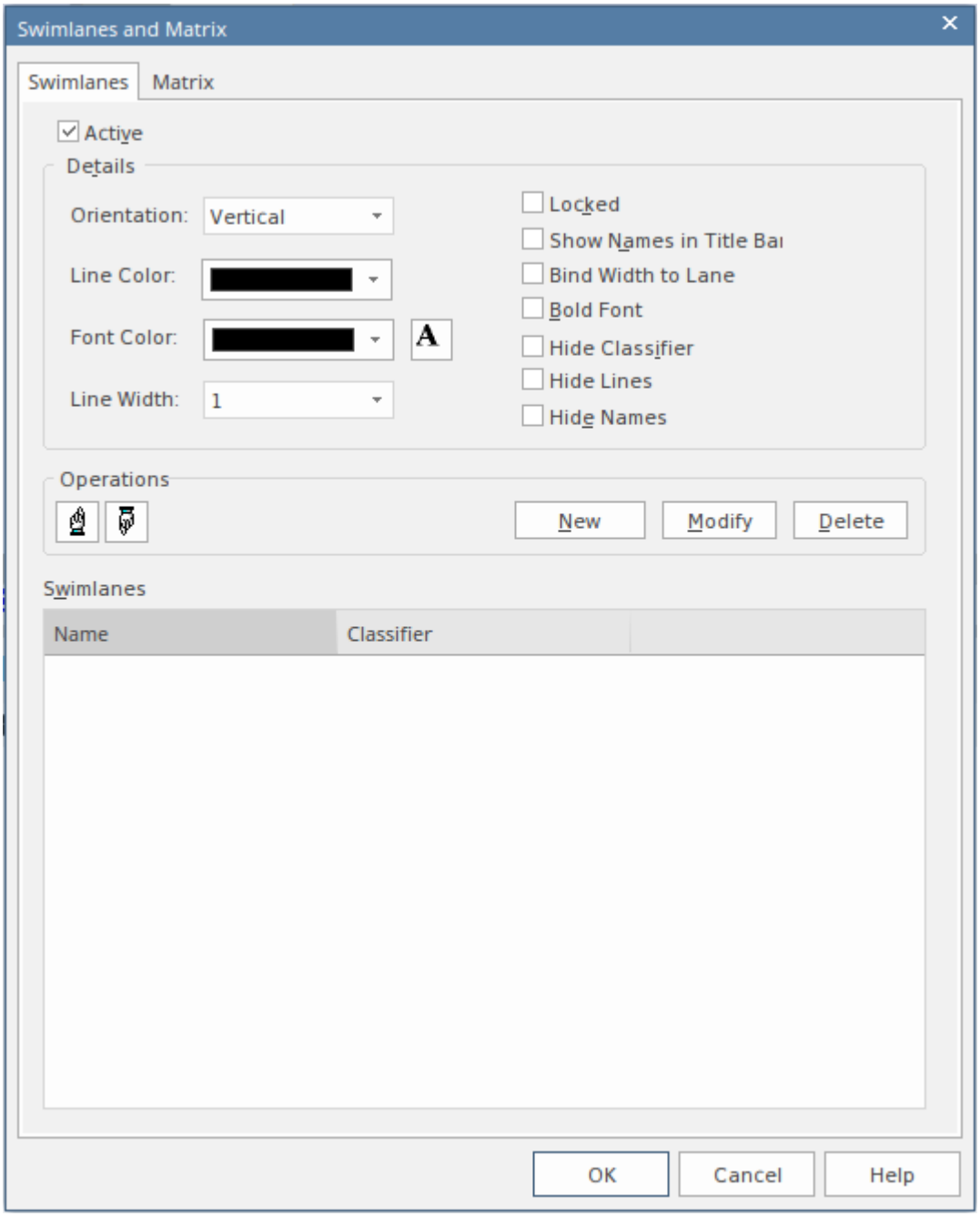
Step	Action

1	Either: • Click on the **New Chain button** and type in a new chain name (and click on the **OK button**) or • Click on the **drop-down arrow** and select the name of an existing chain to edit If you want to delete the existing chain you have selected, click on the **Delete Chain** button. If you want to rename the existing chain, click on the  button and overtype the existing name with the new name (and click on the OK button).
2	In the 'Existing Layouts' field, click on the first layout to execute in the chain, then click on the  button to add it to the chain. Repeat this step to add further layouts to the chain.
3	If you do not want to include a layout that is currently in the chain, click on it and click on the  button. If you want to move a layout in the chain to a different point in the sequence, click on it and click on the  or  button as appropriate.
4	If you want to change the name of a layout, click once on the name in the chain list and overtype it. To set the parameters of each layout, double-click on the layout name in the chain list. The appropriate parameter dialog for the layout displays; complete

	the fields as appropriate and click on the **OK button**. These are the parameters that will be applied whenever you execute this layout chain, regardless of the settings in any other use of the layout.
5	Click on the Save Chains button to save your changes, then click on the **OK button**. (If you have not saved your changes, an error message displays; click on the **Yes button**.)

Swimlanes

Swimlanes are vertical or horizontal bands in a diagram that divide the diagram into logical areas or partitions. You can apply them to all Enterprise Architect diagram types. Activities relating to particular entities within the model (such as the User, or the back end Repository) can be placed within the same Swimlane to indicate their association. You set up the Swimlanes for a diagram using the 'Swimlanes and Matrix' dialog .



Having created a Swimlane, you can divide it into sub-lanes using context menu options.

Access

Ribbon	Design > Diagram > Manage >

	Swimlanes > Swimlanes Layout > Diagram > Swimlanes > Swimlanes
Context Menu	Right-click on diagram background | Swimlanes and Matrix > Swimlanes

Options

Option	Action
Active	Select this checkbox to make the Swimlane facilities active on the diagram, as opposed to the Matrix facilities.
New	Click on this button to begin defining a new Swimlane for the diagram. The 'Swimlane Details' dialog displays, on which you provide the name, classifier and background color of the Swimlane.
Orientation	Click on the **drop-down arrow** and select the orientation of the Swimlanes: Vertical or Horizontal.
	Click on the **drop-down arrow** and

Line Color	select the color in which to display all Swimlane borders. If the color you require is not shown, click on the **More Colors button** and either select from a wider range of standard colors or define a custom color.
Font Color	Click on the **drop-down arrow** and select the color in which to display all Swimlane text. If the color you require is not shown, click on the **More Colors button** and either select from a wider range of standard colors or define a custom color.
A	Click on this button to display the 'Font' dialog, on which you can define the type, style, size and effects of the font used for text on all Swimlanes in the diagram. If you also change the text color here, it overrides the setting of the 'Font Color' field.
Line Width	Click on the **drop-down arrow** and select the line width of all Swimlane borders - either 1 (thinnest), 2 or 3 (thickest).
Locked	Select this checkbox to prevent the

	Swimlanes in the diagram from being made narrower or wider.
Show Names in Title Bar	(If the 'Orientation' field is set to 'Vertical'.) Select this checkbox to display each Swimlane name in the title bar, above the Swimlane.
Bind Width to Lane	Select this checkbox to bind the width of the elements in the diagram to the width of the swimlane or sub-lane holding them, so that if you change the width of any lane you do not have to manually adjust the width of each element it contains. If non-rectangular elements (such as Use Cases) are not bound to the lane width, make sure that the 'Allow elongated Use Cases' option is selected on the 'Preferences' dialog 'Objects' page.
Bold Font	Select this checkbox to display all Swimlane text in bold.
Hide Classifier	Select this checkbox to block all Swimlane classifier names from being shown on the diagram.
Hide Lines	If the 'Bind Width to Lane' checkbox is selected, you can select this checkbox to

	hide the body of each swimlane (and, if the Swimlane has them, sub-lane), so that only the header cell is shown on the diagram. The element width and lane width remain bound
Hide Names	Select this checkbox to block all Swimlanes names from being displayed on the diagram.
Swimlanes	This panel lists the currently defined Swimlanes, in the sequence (top to bottom) in which they are displayed on the diagram (left to right, or top to bottom). To create sub-lanes within a Swimlane, right-click on the Swimlane name and select the 'Create sub lane' option. You can also copy sub-lanes from another Swimlane and paste them into the current Swimlane. The context menu also provides options to: • Edit the Swimlane properties - displays the 'Swimlane Details' dialog, on which you can change the Swimlane name, Classifier and fill color • Delete the Swimlane - prompts you to confirm deletion of the Swimlane

	before removing it from the list
Modify	Click on this button to change the name, classifier or background color of a selected Swimlane. The 'Swimlane Details' dialog displays.
Hand (Up)	Click on this button to move a selected Swimlane one position up in the Swimlanes list.
Hand (Down)	Click on this button to move a selected Swimlane one position down in the Swimlanes list.
Delete	Click on this button to delete a selected Swimlane from the Swimlanes list and from the diagram. A prompt displays for you to confirm the deletion.

Notes

- All changes you make on or through the 'Swimlanes and Matrix' dialog must be saved by clicking on the **OK button** in order to render those changes on the diagram
- If you set a background color for a Swimlane, it takes on

the same shading profile as the main diagram background

- You can adjust the width or height of a Swimlane by dragging the border, whilst sub-lanes are automatically adjusted to take up the appropriate fraction of the Swimlane; for example, two sub-lanes take up half of the Swimlane each, three take up a third of the Swimlane each, and so on

Creating Sub-lanes

When you add elements to a diagram, you can position them in horizontal or vertical Swimlanes to indicate the presence or absence of a particular feature or property.

Within each Swimlane you can further group or separate the elements into sub-lanes, which are a useful device for defining another level in the organization of the diagram. For example, you might want to divide a 'Process' lane into two sub-lanes representing input and output, or 'In-Progress' and 'Complete'. The 'Sub-lanes' page helps you to quickly and easily create any number of new sub-lanes for a Swimlane on a diagram.

Access

Ribbon	Design > Diagram > Manage > Swimlanes > Swimlanes > Right-click on a Swimlane Layout > Diagram > Swimlanes > Swimlanes > Right-click on a Swimlane
Context Menu	Right-click on diagram background | Swimlanes and Matrix > Swimlanes > Right-click on a Swimlane

Swimlane Context Menu Options

Right-click on the name of a Swimlane in the 'Swimlanes' panel.

Create sub lane	Displays the 'Create sub lane' dialog, on which you enter the title of the sub-lane. Click on the **OK button** to save the name and add it to the 'Swimlanes' panel.
Copy sub lanes	Copies all the sub-lanes underneath the selected Swimlane.
Paste lane(s)	Adds the sub-lanes held in the clipboard to the currently-selected Swimlane.

Sub-lane Context Menu Options

Right-click on the name of a sub-lane in the 'Swimlanes' panel.

Edit name	Displays the 'Edit sub lane name' dialog, on which you overtype the existing name with a new name. Click on the **OK button** to effect the change and close the dialog. The **Modify button** on the 'Swimlanes' tab has the same effect.
Delete lane	Removes the sub-lane from the list. There is no confirmatory prompt. The **Delete button** on the 'Swimlanes' tab has the same effect.
Copy Lane	Copies the sub-lane to the clipboard. Use the 'Paste lane(s)' option on the Swimlane context menu to add the copied lane to another Swimlane

Notes

- If you want to re-organize the sub-lanes, click on a sub-lane name and use the 'Hand Up' and 'Hand Down' buttons, as for the Swimlanes
- Whilst you can adjust the width or height of a Swimlane by dragging the border, sub-lanes are automatically adjusted to take up the appropriate fraction of the

Swimlane; for example, two sub-lanes take up half of the Swimlane each, three take up a third of the Swimlane each, and so on

Swimlane Details

To define a vertical or horizontal Swimlane on a diagram, you use the 'Swimlane Details' dialog.

Access

Ribbon	Design > Diagram > Manage > Swimlanes > Swimlanes : New or Modify Layout > Diagram > Swimlanes > Swimlanes : New or Modify
Context Menu	Right-click on diagram background | Swimlanes and Matrix > Swimlanes : New or Modify

Options

Options	Action
Name	Type a name for the Swimlane.
Classifier	(Optional) Click on the  button to

	browse for and select a classifier for the Swimlane. To delete a previously-assigned classifier, click on the ... button and select the '<none>' option.
Back Color	Click on the **drop-down arrow** and select the color in which to display the Swimlane background. If the color you require is not shown, click on the **More Colors button** and either select from a wider range of standard colors or define a custom color.
OK	Click on this button to save and apply your changes, and close the dialog.
Cancel	Click on this button to abort your changes, and close the dialog.

Swimlanes Matrix

On any type of Enterprise Architect diagram, you can develop a Swimlanes Matrix to divide your diagram into cells at the intersections of columns and rows. This Matrix is based on the Zachman Framework. The top left cell of the Matrix contains the heading text, the cell at the top of each column contains the column title text and the cell at the left of each row contains the row title text.

You can define only one Matrix Heading cell, but you can create as many row and column headings as you need. You can also leave the column width and row height adjustable on the diagram, or fix the positions so that the cell borders cannot be moved.

The Matrix is defined on the 'Swimlanes and Matrix' dialog.

Access

Ribbon	Design > Diagram > Manage > Swimlanes > Matrix Layout > Diagram > Swimlanes > Matrix
Context Menu	Right-click on diagram background | Swimlanes and Matrix > Matrix

Options

Option	Action
Active	Click on this checkbox to set the diagram to use the defined Matrix facilities, as opposed to any Swimlanes that have also been defined.
New	Click on this button to clear the dialog fields so that you can add a new column or row item to the Matrix.
Title #	Type in a title name. You can provide one, two or three title names per heading to, for example, group a set of columns or rows. There is no effective limit on the length of the text string but it does not wrap, so to display the full text you might have to drag the cell borders out to create a wide cell. Alternatively, you can divide the text string between the 'Title' fields to reduce the overall cell width.
Color	Click on the **drop-down arrow** and select the color in which to display the

	text in the heading, row or column title. If the color you require is not shown, click on the **More Colors button** and either select from a wider range of standard colors or define a custom color.
Font	Click on this button to display the 'Font' dialog, through which you define the font and style, size and effects of the text in the Matrix header, column and row titles. If you also change the text color here, it overrides the setting of the 'Color' field.
Hidden	Select this checkbox to hide the corresponding Matrix header, row or column Title text on the diagram.
Type	Click on the **drop-down arrow** and select 'Heading', 'Column' or 'Row' to apply your field settings to the Matrix heading cell, a column heading or a row title, respectively.
Back Color	Click on the **drop-down arrow** and select the color in which to display the heading cell, row or column background. If the color you require is not shown, click on the **More Colors button** and either select from a wider range of

	standard colors or define a custom color.
Hide Item	Select this checkbox to hide the Matrix heading cell, row or column on the diagram.
Model Profiles	Click on the **drop-down arrow** and select: • An existing Profile to override the current contents of the dialog • 'Empty Profile' to clear the fields so that you can define a matrix to save as a new Profile (see *Model Profiles: Save*)
Model Profiles: Save	Click on this button to save the current dialog contents as a new Profile. A prompt displays for you to assign a name to the Profile.
Model Profiles: Delete	Click on this button to delete the currently-displayed user-defined Matrix Profile from the drop-down list.
Line Widths	Click on the **drop-down arrow** and select the line width of all row and column borders - either 1 (thinnest), 2 or 3 (thickest).

Line Color	Click on the **drop-down arrow** and select the color in which to display all lines in the matrix.
Lock	Select this checkbox to prevent the Matrix rows and columns in the diagram from being resized.
Matrix list	Lists the components of the current Matrix Profile, starting with the Heading and followed by the columns and then the rows. For each item, the list shows the first title (Title 1) whether it is visible on the diagram, and what type it is. The columns are listed in the order in which they are displayed, left to right, on the diagram. The rows are listed in the order in which they are displayed, top to bottom, on the diagram.
Hand (Up)	Click on this button to move a selected column or row one position up in the Matrix list. You cannot move a Column item above the Heading item, or a Row item above a Column item. When you save the changes, on the diagram the selected column or row is moved left or up one place.

Hand (Down)	Click on this button to move a selected column or row one position down in the Matrix list. You cannot move the Heading item below a Column item, or a Column item below a Row item. When you save the changes, on the diagram the selected column or row is moved right or down one place.
Save	Click on this button to save the contents of the dialog, but not close the dialog, so that you can define or edit columns and rows individually and save them before defining the next item.
Copy	Click on this button to copy a selected item from the list so that you can give it a new Title 1 and edit it as a new item. If you change the item, it is added to the list when you click on the **Save button**.
Delete	Click on this button to delete a selected item from the list. The column or row is removed from the list and diagram, which both close up.
OK	Click on this button to save and apply your changes, and close the dialog.

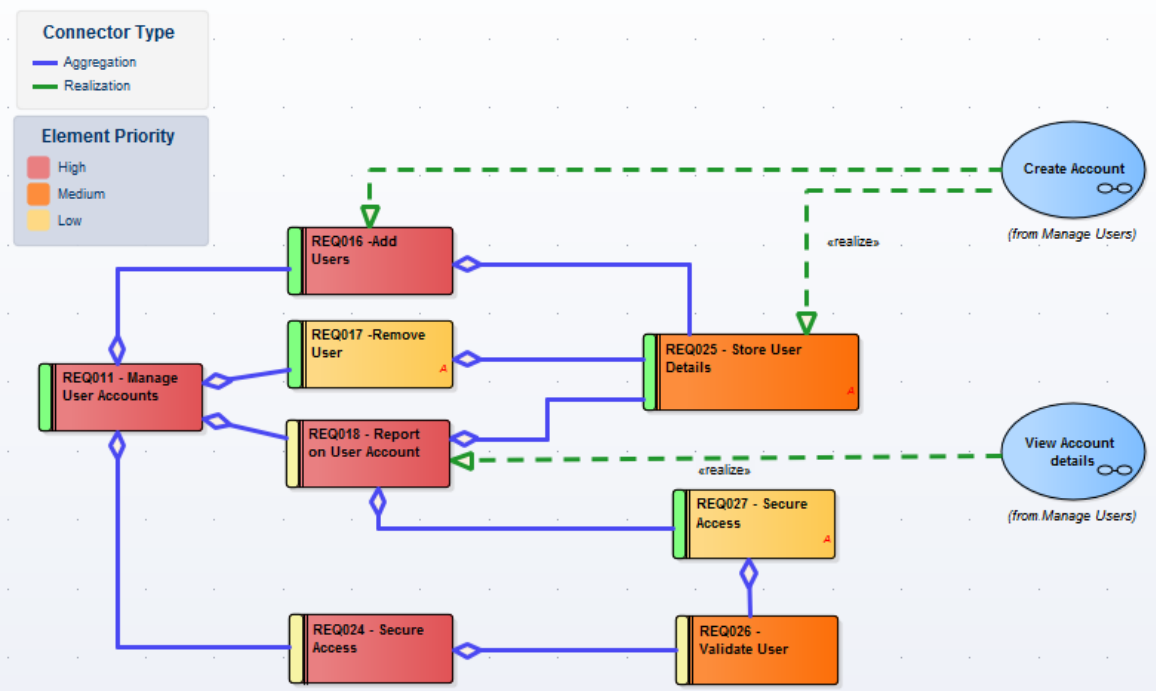
Cancel	Click on this button to abort your changes, and close the dialog.

Notes

- When you define columns and rows, you define the header or title cells; the properties of these cells do not reflect on the matrix cells themselves - for example, the intersection cell of a column and row has a transparent background and therefore takes the color and shading effect of the diagram background
- You can transport the Swimlanes Matrix Profiles between models (as Diagram Matrix Profiles), using the 'Configure > Model > Transfer > Export Reference Data' and 'Import Reference Data' ribbon options
- By applying a Matrix Profile to a diagram, you replace the current profile; save the current profile to avoid losing it
- To size the rows and columns, drag the row and column borders on the diagram - elements placed inside each cell are shifted when sizing; to prevent the elements shifting, press and hold **Ctrl** while sizing

Diagram Legends

A Diagram Legend is an element that you can add to your diagram to provide information about the colors and/or line thicknesses and styles that have been used in the current diagram, where those colors and other styles have some particular meaning. For example, it is common to have a Legend that indicates a particular color represents a particular element status or version. Connectors might be colored according to whether they are of a particular type or direction. Element borders might be thicker or thinner according to some other property or condition.



Legends have additional capabilities, including the ability to auto color elements in different ways and according to different rules and filters. Legends are classified as elements and will be listed in the **Browser window**; however, they are not shown in contents of a Package displayed on a

diagram.

The Help topics *Create Legends*, *Legend Properties* and *Legend Key* detail the mechanics of setting up your Legend, but first a quick overview.

Simple Legend

Simple Legends provide a manually configured key set that references the various styles used in the diagram. For example, an element might be manually set to fill with the color red, and the Legend can be configured to indicate that red means 'Overdue'. This is a very useful and powerful way of providing information about the conventions and styles used and the meanings that they represent. You can create and add as many Simple Legends as you need to your diagram.

Auto Legend

An Auto Legend is one that has the 'Auto Color' checkbox ticked. This puts the Legend into a more 'active' mode, and will automatically adjust the diagram to apply a color or characteristic according to the object's defined feature or status.

For example, it is possible to set up a Legend that will set all Requirement elements that have a Status of 'Validated' on a diagram to a specific fill color. The color will be applied

automatically to the filtered element set with no manual intervention. This is a very powerful mechanism for providing a dynamic view of a diagram and exposing inner attributes, properties or statuses in real-time. This technique can be applied to element fill, element border color, element line thickness, connector line thickness and connector color.

It is important to remember that when the auto-color property is set, the change in element appearance is only dynamically applied on the Legend's diagram, and is not a permanent change. If you de-activate the Legend, all elements affected will return to their base appearance.

Stacked (Multiple) Legend

What is even more powerful is the ability to 'Stack' multiple auto-color Legends on a diagram and let Enterprise Architect dynamically color according to the union of all the different Legend conditions. For example, this approach lets you dynamically color or affect the appearance of Requirements according to Status, Components according to Phase, Use Cases according to Version, and so on. By stacking multiple Legends you have the ability to create a very rich and detailed diagram that conveys a huge amount of information in its dynamically applied styles.

Getting Started with Legends

These topics provide the necessary information for creating and configuring Legends on diagrams. Keep in mind that you can use Legends at any level, from the Simple type to the more dynamic Auto-Coloring and Stacked styles.

Create Legends

A Legend element on a diagram provides a visual key to the colors and line thicknesses you have used to identify elements and/or connectors that have particular meaning. The Legend can reflect a simple, manually-applied convention such as all elements concerned with a management system being shaded in blue, or all outgoing connectors colored red. However, the Auto-Color Legends can also automatically apply the style to elements or connectors having a chosen property, such as a specific phase, stereotype or type.

The Legend lists the element appearance conventions first, and the connector appearance conventions underneath.



You work on a Legend element in two stages: first create and define the Legend element itself, then define the appearance styles as displayed on the diagram.

Access

Toolbox	Drag the Diagram Legend icon () from the 'Common' page of the Toolbox onto the diagram
Toolbar	Click the 'New Diagram Legend' icon () on the UML Elements toolbar

Multiple Legends

In many cases a single Legend will be sufficient to define the styles and their meanings within the current diagram. In some situations though, it is much more interesting and powerful to use multiple Legends, especially if the Legends are Auto-Coloring. Situations where multiple Legends are useful include:

- If you want to use more than one automatically-applied style (Stacked Legends)
- If you have used several manually-applied styles, and you want to identify them in small groups
- Where the diagram is large, and you want to reproduce the same key where it can be referred to in different sections of the diagram

Because a single Legend is limited to a single filter per element type (or all types), such as a range of Status values for Requirements, multiple Legends are a good way of addressing different filters on different element types. A

second Legend, for example, might indicate that all Components are colored according to a Version or Phase number.

You can have conditions that operate on different properties, by defining those conditions in separate Legend elements. However, check that the conventions in the two Legends operate on different display characteristics; for example, one Legend setting Class fill color whilst the other sets Class border width. They cannot both act on the same property, such as Class fill color. If they do, the most recently-created Legend (or the one with the highest Z-order) over-rides the previous Legend.

Legend Properties

The 'Legend Properties' dialog defines the appearance of the Legend element itself, such as its background color, title text color and size, and border color. If you choose to use default colors, these are derived from the 'Preferences' dialog, 'Standard Colors' page.

Access

The 'Style Options' dialog for a Legend element can be displayed using any of the methods outlined here.

Ribbon	Design > Element > Editors > Properties Dialog : Style Options Design > Element > Editors > Properties > Legend : Style Options
Other	Double-click Legend element: Style Options

Define properties of a Legend

Option	Action

Heading Size	Either: • Overtype the font size of the Legend Title text with a different value, or • Click on the 'spinner' arrows to increase or decrease the font size
Font Color	Click on the **drop-down arrow** and select one of the standard font colors for the Legend Title text. If you want to use a non-standard color, click on the **More Colors button** and either select from the larger pallet or define a custom color.
Background	Click on the down arrow and select one of the standard colors as the background fill color of the Legend element. If you want to use a non-standard color, click on the **More Colors button** and either select from the larger pallet or define a custom color.
Border Color	Click on the down arrow and select one of the standard colors as the color of the border lines of the Legend element. If you want to use a non-standard color, click on the **More Colors button** and either select from the larger pallet or

	define a custom color.
OK button	Click on this button to save your changes and close the dialog.
Cancel button	Click on this button to abandon any changes and close the dialog.

Notes

- As you define the properties of the element, the changes are reflected in the preview window to the right of the value fields

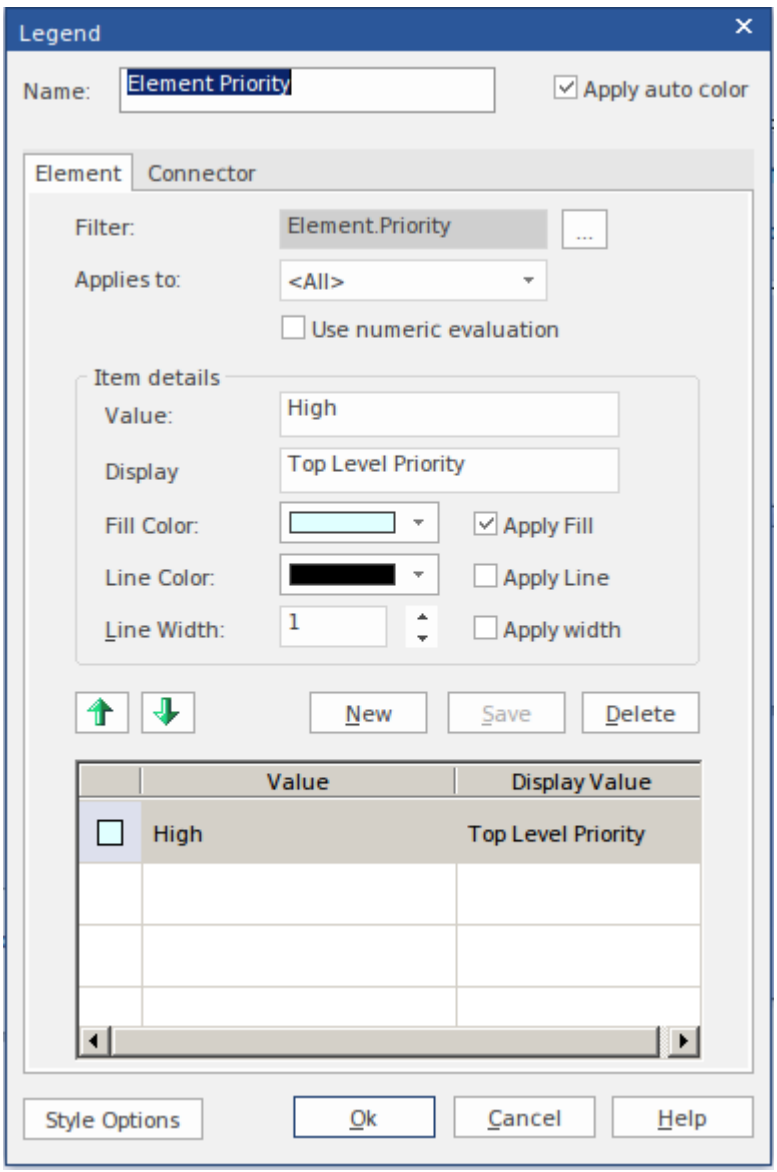
Legend Key

A Legend element on a diagram provides a key to the element and connector appearance conventions used on that diagram. Each element or connector convention is separately defined within the Legend element, using the 'Legend' dialog and the 'Element' and 'Connector' tabs. If you want to present the Legend items in a specific sequence, you can adjust the order in which the items are listed on the element.

You can create more than one Legend on a diagram, to represent particular combinations of conditions.

Access

The 'Properties' dialog for a selected Legend element can be displayed using any of the methods outlined here.



Ribbon	Design > Element > Editors > Element > Properties Dialog Design > Element > Editors > Element > Properties > Legend
Context Menu	Right-click on Legend element | Properties
Other	Double-click on the Legend element

Add a Legend to a diagram

Option	Action
Name	This field defaults to the name 'Legend'; overtype or edit the name if necessary. If you are using the 'Apply auto color' facility, you might use the Legend title to state which object property you are filtering for.
Apply auto color	Select this checkbox if you intend to apply an appearance convention automatically, according to a property of the objects as identified in the '**Filter**' field.
Filter	Click on the  button and, firstly, select whether the convention is to apply to an element (or connector) property or to a Tagged Value. For an element or connector, a list of properties displays from which you select the appropriate type. For a Tagged Value, select whether to use

	a customized tag or select a standard one. In either case, the 'Select Tagged Value' dialog displays. This dialog has a drop-down field from which you select the tag to apply the appearance convention to. The drop-down list is populated according to the options you select: • Global Tagged Values - populates the drop-down list with all global tags in the project, including profile Tagged Values; you can therefore select a tag that is applicable to a large number of elements • Tagged Values from the selected element - click on the **Select Element button** and locate and select the required element; this populates the drop-down list with the Tagged Values from that element, so you can select from a specific set of tags Note that the tag does not have to exist already; you can type in the name of a new tag if necessary. Click on the **OK button** to apply your selection.
Applies to	Click on the **drop-down arrow** and select the type of element or connector to

	apply the filter and, hence, appearance convention to. If you want to apply the convention to all types of element or connector, select <All>.
Use numeric evaluation	Select this checkbox if automatic application of the convention has to evaluate the numeric value of the property. For example, if a color is to be applied to elements with a Phase of 3.0, the value can be simply matched; no evaluation is necessary. If a color is to be applied to elements with a Phase value of less than 4, the Phase values have to be evaluated to see if they are less than 4 (and not equal to 4). The 'Apply auto color' checkbox must be selected for this checkbox to take effect.
Value	Type the actual value of the tag or property that must be satisfied for the appearance convention to be applied. You can use any of these operators with the value: • .. (inclusive range); for example, 3..6 colors objects with the property having a value of 3, 4, 5 or 6 • < (less than); for example, <4 colors objects with the property having a

	value of 1, 2 or 3 • > (greater than); for example, >4 colors objects with the property having a value of 5 or greater • = (equal to); for example, =5 colors objects with the property having a value of 5 and only 5 • n (single number on its own, same as equal to) • n:y:x:z (matches on any number equal to one of the values); for example, 2:4:6:8 colors objects with the property having a value of 2, 4, 6 or 8 The value that you enter becomes the name of the convention item in the Legend, unless overridden by the 'Display' value.
Display	Whilst the Legend will operate on the property value you have specified, you might prefer a different text string to actually display on the Legend element to provide a clearer indication of what is being indicated. In this case, type in the text string to show on the Legend element. For example, the Legend will auto-color elements on the basis of high, medium or low priority, but you might want to put

	this into the context of the diagram and use text such as 'Daily Reporting', 'Weekly Reporting' and 'Monthly Reporting'.
Fill Color	Click on the down arrow and select the standard color used as the fill or background color of the elements that match the selection criteria. If you have manually applied a non-standard color on the diagram, it should be available from the bottom of the pallet. If not, click on the **More Colors button** and either select from the larger pallet or define it as a custom color.
Apply Fill	(Defaults to selected; disabled if 'Apply auto color' is not selected.) Deselect the checkbox if you do not want the fill color to be automatically applied (that is, you only want the line color and/or line width automatically applied). This setting applies to the Legend as a whole, not just to a key on the Legend.
Line Color	Click on the down arrow and select the standard color used for the connector line or element border.

	If you have manually applied a non-standard color on the diagram, it should be available from the bottom of the pallet. If not, click on the **More Colors button** and either select from the larger pallet or define it as a custom color.
Apply Line	(Defaults to selected; disabled if 'Apply auto color' is not selected.) Deselect the checkbox if you do not want the line color to be automatically applied (that is, you only want the fill color and/or line width automatically applied). This setting applies to the Legend as a whole, not just to a key on the Legend.
Line Width	Either: • Overtype the line width value with a different value (between 1 for thinnest and 5 for thickest), or • Click on the 'spinner' arrows to increase or decrease the thickness
Apply width	(Defaults to selected; disabled if 'Apply auto color' is not selected.) Deselect the checkbox if you do not want the line width to be automatically applied (that is, you only want the fill color

	and/or line color automatically applied). This setting applies to the Legend as a whole, not just to a key on the Legend.
New	Click on this button to clear the fields in preparation for defining a new appearance convention in the Legend. Take into account the points concerning multiple conventions and multiple Legend elements.
Save	Click on this button to save any changes you have made to an appearance convention.
Delete	Click on this button to delete the appearance convention you have selected in the current list.
Value | Display Value	Shows the appearance conventions defined for objects in the diagram.
Hand (Up)	If more than one definition is listed, click on this button to move the selected item closer to the start of the list.
Hand (Down)	If more than one definition is listed, click on this button to move the selected item

	closer to the end of the list.
Style Options	Click on this button to define or edit the appearance of the Legend element itself.
OK	Click on this button to save any current changes and close the dialog.
Cancel	Click on this button to abort any unsaved changes you have made, and close the dialog.

Notes

- When you close the dialog, the Legend element is displayed showing all the appearance conventions defined; element conventions are listed first with connector conventions underneath, separated by a line across the Legend element

Image Assets

Image Assets are model elements that are used to store images in the model.

To create an Image Asset element, simply drag an 'Image Asset' icon onto a diagram from the 'Artifact' page of the **Diagram Toolbox**. A prompt displays to choose an image file.

Alternatively, you can drag an image file from your file system straight onto a diagram. Enterprise Architect creates a new Image Asset Artifact, then stores the image from the file in the Artifact, as the 'owned image'.

The Image Asset images can then be used as alternative images in place of the standard UML notation for elements on diagrams. They can also be used in documentation by inserting hyperlinks to the Image Asset element. When a report is generated, the hyperlinked Image Asset element is rendered using its 'owned image'.

Access

Diagram Toolbox	Select the 'Artifacts' page | select 'Image Asset' | click on the diagram, or Drag an 'Image Asset' Artifact from the toolbox onto a diagram.

Other	Select an image file in your file system (say, on the desktop) then drag and drop it onto a diagram in Enterprise Architect. A context menu will display; select the option 'Image Asset'.

Using Image Assets in Documentation

Step	Action
1	While editing the Notes of an element, or editing a Linked Document, and if you have located the Image Asset in the **Browser window**, you can drag the Image Asset element into the document. The 'Add Content to Document' dialog displays with the 'Insert As' field set to 'Insert as Hyperlink(s)'. Click on the **OK button** to insert the element as a hyperlink that will be rendered as the image. If you need to search for the Image Asset, go to step 2.
2	Right-click in the document and choose 'Create | Hyperlink'. The 'Hyperlink

	Details' dialog displays. Select 'Element Image' from the drop down list. The 'Select Element' dialog displays, showing only Image Assets.
3	Browse through the model and select the required Image Asset.
4	Click on the **OK button**, and on the second OK button.

Select an Image Asset as an element's Alternative Image

You can use one of two methods for adding an Image Asset to an element as an alternative image.

Step	Action
1	1. Right-click an element on a diagram and choose the option 'Appearance | Select an Image Asset' from the context menu. The 'Select Element' dialog displays, showing only Image Asset elements in Packages. 2. Browse through the model and select

	the required Image Asset. 3. Click on the **OK button**.
2	1. Display the diagram containing the model element. 2. Locate the Image Asset in the **Browser window**. 3. Drag the Image Asset over the top of the model element. 4. Select the 'Set as Alternate Image' option.

Viewing the Image

When initially placed on the diagram the Image Asset can be rendered either as a simple Artifact element, or as the owned image. The display can be toggled from one to the other, by right-clicking the element and selecting 'Show Owned Image' from the context menu.

When the Image Asset is displayed on a diagram as a **UML Artifact** element, either:

- Click on the  icon above the top left corner of the element - the linked image is shown in a floating Diagram Pop-up window; click off the diagram to close the window, or

- Double-click on the Image Asset to launch the default external viewer for images and load the Artifact's owned image

You can also press **Ctrl+click** on a hyperlink to an Image Asset to display the image in the default external viewer.

When hovering over the hyperlink, the standard hyperlink element buttons will also be displayed, allowing you to display the 'Properties' dialog, find the element in diagrams or find the element in the **Browser window**.

Properties

To display the **Properties window** for the Image Asset:

- Select the element and press **Ctrl+Enter**, or
- If the Image Asset is displayed on a diagram as the image, double-click on it, or
- If the Image Asset is referenced by a hyperlink, hover the mouse over the hyperlink to display a floating toolbar and click on the **View Properties button**

Using the Image Manager

When you add an element to a diagram, it is rendered according to the standard UML notation. However, you can replace that representation with an image. For example, you could add a custom background image to a diagram, or display an image of a Router or PC on a UML element. You import, store and select these alternative images using the **Image Manager**. You can apply the image either as a:

- Default image, which displays on all instances of the element in diagrams across the model, or
- An alternative image, which displays only for the specific instance of the element to which it is applied, and which overrides the default image for that instance

To locate and display images within the Image Manager, click on individual image filenames, or press the Up arrow and **Down arrow** keys to scroll through the list of images. As you highlight each image filename, the 'Preview' panel changes to reflect the image. Double-click on the required image filename to display the image in full size.

Access

Ribbon	Configure > Reference Data > Images
Context	Right-click on an element within a

Menu	diagram | Appearance | Select Alternate Image or Right-click on an element within a diagram | Appearance | Select Default Image
Keyboard Shortcuts	Click on an element within a diagram : **Ctrl+Shift+W**

Image Manager Options

On the **Image Manager**, these buttons are available:

Button	Action
View	Click on this button to display the selected image in full size. Shortcut: **Alt+V**
Usage	Click on this button to display the 'Element Usage' dialog, which lists the diagrams in which the selected image is used.
Rename	Click on this button to change the filename of the selected image.

	The option first warns you that the change would impact the other elements that use this image, and prompts you to confirm that you want to go ahead with the name change. If you continue, a prompt displays for you to enter the new filename.
Add New	Click on this button to display options for importing images from a file system or from the clipboard. • From File - select this option to display a browser through which you can search appropriate directories to locate and import new images You can import images in .bmp, .png, .emf, .wmf, .tga, .pcx or .jpg format • From Clipboard - select this option to download the image from the clipboard into the **Image Manager** (not via a diagram) Internally, the images are stored in .png or metafile format to conserve space. You can also add images by: • Importing a library of alternative images from the Sparx Systems website • Copying the Image Library from

	another model using the 'Export Reference Data' and 'Import Reference Data' facilities, and • Capturing images from other sources into the clipboard and applying them to an element in a diagram, which automatically adds the image as an autonamed file to the Image Library If necessary, you can change the file name using the 'Rename' option. Shortcut: **Alt+A**
Update Selected	Click on this button to refresh the selected image; for example, after it has been modified. A browser screen displays for you to select the updated image file from its parent directory. Shortcut: **Alt+U**
Add Description	Displays the 'Image Description' dialog, in which you enter a title for the image and a brief description to identify any significant facts about the image, such as its purpose, of the version it represents.
Convert to Image Asset	Displays a message warning that the image will be converted to an Image Asset Artifact in the currently-selected

	Package. The image will be removed from the **Image Manager** and can no longer be applied to another element, but the Image Asset element itself can be added to diagrams and called into documentation via a hyperlink.
Delete	(Not available for an image from a deployed MDG Technology.) Click on this button to delete the selected image. A message displays to indicate how many elements use the image. Click on the **Yes button** to delete information about the image from those elements, which then revert to their previous appearance. Shortcut: **Alt+D**
Cancel	Click on this button to close the **Image Manager**.
OK	Click on this button to confirm selection of the alternative image for the element selected in the diagram. Shortcut: **Alt+O**

Notes

- If you do not want an element to continue to have a default image or an alternative image, assign it the '--NONE--' option in the image list
- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Configure Images' permission to configure alternative element images
- If you are connected to a SQL Server repository, you require ALTER permission on the t_image table in Enterprise Architect, to be able to import model images
- For elements with Lifelines, such as those used on Sequence diagrams, the Lifeline must remain intact so that messages can be created between the elements; therefore such elements cannot have alternative images
- There are two categories of image available through the **Image Manager**:
  - Images that have been imported into the model and are stored in the model
  - Images that are incorporated into a deployed MDG Technology, which are not copied into the current model but are held in memory; the technology images can be identified by the Technology name followed by the image file name, such as 'MDGFrame::ovalshape.emf', but can also be accessed by their short form (the name minus the technology name)

- If you are creating many elements of the same type that have a particular image, you should use a custom stereotype with an associated metafile
- If an element has an image, the element name is likely to be hidden; you can display the name underneath the image by right-clicking on the element and selecting 'Appearance | Show Name Under Image', and hide it again by selecting 'Appearance | Hide Name Under Image'
- You can transport image files between models, using the 'Configure > Model > Transfer > Export Reference Data' and 'Import Reference Data' ribbon options

Create Custom Diagram Background

Enterprise Architect provides a number of options for setting the background of a diagram - a Theme, a system-defined tile background, a single-color flat background or a fading color gradient down the screen.

Alternatively, using the **Image Manager**, you can create a customized tiled or non-tiled background for your diagrams.

Create a customized background

Step	Action
1	Check that a suitable image is available in the **Image Manager**. If the image you require is held elsewhere, import the file or the library containing the file.
2	Open a diagram and create a Boundary object from the 'Use Case Elements' page of the Toolbox (do not use the Boundary element from any other section of the Toolbox).
3	Stretch the Boundary to a size that can contain all of the elements you intend to place on the diagram, and drag it to the edges of the diagram workspace.

4	Right-click on the Boundary element and select the 'Z-Order | Send to Bottom' option. This places the Boundary behind all other elements on the diagram.
5	Either: • Press **Ctrl+Shift+W**, or • Right-click on the Boundary and select the 'Appearance | Alternate Image' option
6	On the **Image Manager** window, select the required image for the diagram background and check that the image size is large enough to span the required size of the diagram background.
7	Click on the **OK button**.

Notes

- As an alternative method: after you have added the Boundary element to the diagram, copy an image from another source onto the Windows clipboard, right-click on the Boundary element, and select the 'Appearance \| Apply Image From Clipboard' option

Import Image Library

Using the **Image Manager**, you can create attractive diagrams with custom images. You can quickly extend the range of images available through the Image Manager, by importing a bundled clip art collection of UML-based images as an Image Library file downloaded from the Sparx Systems website.

Import the Image Library file

Step	Action
1	Download the Image Library from the Sparx Systems website onto your system.
2	In Enterprise Architect, open the project into which to import the Image Library.
3	Select the ribbon option 'Configure > Model > Transfer > Import Reference Data'. The 'Import Reference Data' dialog displays.
4	Click on the **Select File** button and locate the ImageLibrary.xml file to import, in the directory to which you downloaded the file.

	Click on the **Open button**.
5	On the 'Import Reference Data' dialog, select the 'Model Images' data set that now contains the Image Library. Click on the **Import button** and, when the import is complete, the **OK button**.

Use the images contained within the Image Library

Step	Action
1	Create and/or open a diagram in which to use images from the Image Library.
2	Click on the element to which to apply one of the images contained within the library.
3	Either: • Press **Ctrl+Shift+W**, or • Right-click on the selected element and select the 'Appearance | Select Alternate Image' option

4	On the '**Image Manager**' dialog, in the 'Loaded Images' panel, click on the appropriate image name and then on the **OK button**. The element appearance changes to the selected image.

Notes

- Images contained within the Image Library are the copyright of Sparx Systems, are only available for use in conjunction with Enterprise Architect, and are supplied on the understanding that they are not used under any other circumstances
- If you are connected to a SQL Server repository, you require ALTER permission on the t_image table in Enterprise Architect, to be able to import model images

Print Preview

Before you print an Enterprise Architect diagram or document, you can display a preview of its output appearance.

Access

Ribbon	> Print Preview Publish > Diagram Image > Print > Preview Document-Edit > File > Print Preview

Notes

- The display initially shows the first two pages on one screen, with no scroll bar
- To toggle between the two-page display and a single-page display, click on the button in the preview screen toolbar; in either mode, you can use the and buttons in the toolbar to scroll through the pages of the diagram or document
- To display more than two pages on one screen, up to a

maximum of ten pages, click on the button in the Preview screen toolbar; the screen now includes the vertical scroll bar, which you can also use to scroll through the pages of the diagram

- Having checked the preview, you can immediately print the diagram or document by clicking on the Print button; otherwise click on the **Close button**

Elements



Elements are the building blocks of models and, together with Connectors, they help a modeler to describe an enterprise, business engineering, real-time or software system. They can be found in the **Browser window** and will typically appear on one or more diagrams, where a modeler will describe what role they play in the model. They also appear in a wide range of dialog windows that show other aspects of the elements, such as testing and resource allocation.

The element types are defined by the modeling languages or profiles they belong to; for example, Classes and Use Cases are part of the grammar of UML, Activities and Gateways are part of the grammar of BPMN, and Blocks and Requirements are part of the grammar of SysML. Each element type has a notation that helps modelers recognize the element and understand its purpose.

In a diagram, when you create or select an element, a small toolbar of options also displays off the top right corner of the element. The first of these is the Quick Linker arrow for creating connectors and target elements, and the others are Element Icons for performing specific operations on the element's appearance in the diagram.

Elements typically have a name, description and a series of

properties and features that describe them, including project properties such as status, phase and author.

Element Facilities

Enterprise Architect provides a wide range of facilities for creating, editing and working with the elements that represent aspects of your models.

Facilities

Facility	Description
Create Elements	Creating elements is extremely versatile. You can create entirely new elements or elements derived from existing ones, on diagrams or directly into Packages, from the standard system-provided definitions or from your own definitions in templates, Patterns or MDG Technologies.
Customize Elements	If the standard elements provided do not serve the purposes of your model, you can give some elements different appearances and/or define a set of properties for them, or create completely new types of element, and use these as the bases for creating the elements in your model.

Name Elements	As you create an element, you can either provide the name yourself, manually, or leave it for the system to provide from a simple standard or a more advanced automatic naming and numbering system set up by your department.
Set Element Parents	Once you have created an element, you can assign it to a parent element or to an interface that it realizes.
Trace Element Use	As you develop your models and use elements in several diagrams to represent different views of the model, you can track and list where the element is in use.
Move Elements	You can easily move individual elements or element structures around the model to other Packages and/or diagrams, either changing the parent Package or diagram, or duplicating the elements in another Package or diagram. You also have a number of different ways in which to change the position of an element or a group of elements within a diagram, either in relation to the diagram or in relation to each other.

Cross Referencing Elements	It is possible to set up a cross reference (or Custom Reference) from one element in Enterprise Architect to another. You can also view existing cross references on an element, using the 'Context References' dialog or the **Traceability window**.
Change Element Type	Sometimes, you might find that an object that you have represented as one type of element would be better represented as another type. You can change the type very quickly and simply.
Delete Elements	Elements can be created in error, or used on the wrong diagrams, or have a temporary function that becomes redundant. In such case you can easily and safely delete the elements from the diagram only or from both the diagram and the model.
Change Element Visibility	Some elements are not shown in Packages and in report documents, by default. These include Events, Decisions, Sequence elements and Associations. You have the option of making these elements visible in the documentation.

Write External Descriptions for Elements	One aspect of modeling is to describe and document the purpose and use of an element in the context of a particular diagram. You can provide such documentation in the form of Note or Text elements displayed with and connected to the elements they describe. The Note text can be extra to anything contained within the element, or can expose the internal description of a feature or property of the element.
Customize Element Appearance	You can set a number of standard default features that are applied globally to all elements, but you can also define a different default appearance for one element wherever it might be used.
Set Context Element	Sometimes, when you are working on a diagram, you might want to identify the element against which you are comparing or standardizing some or all of the other elements on the diagram. You can highlight the selected element as the context element.
Use Element Multiple Times	When you are using an element in more than one diagram, you can either create a representation of the element linked to

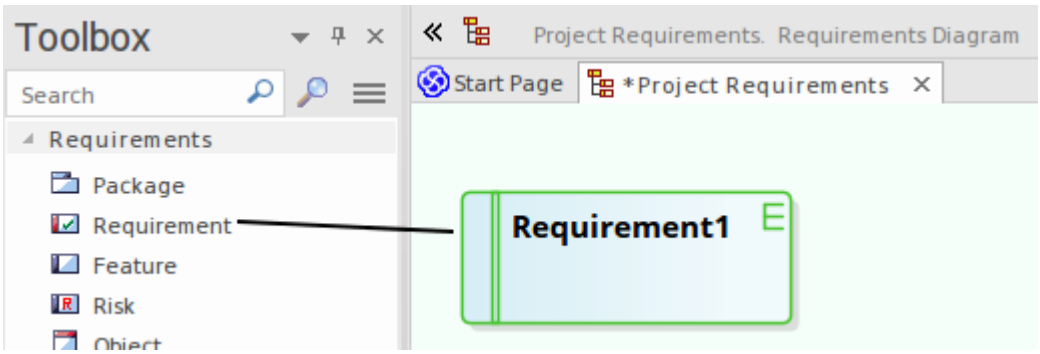
	the original, or a copy of the element as a separate object. If you create a link, you can subsequently convert it to a separate object.
Reuse Element Features	Many types of element have Features (attributes and operations) that define the properties and actions of the element. You can duplicate selected Features of one element in another, or take a Feature out of one element and place it in another.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Update Element' permission to update element properties or delete an element
- If you select an element in a diagram, you can press the **T key** to display the **Testing window** for that element

Create Elements

Enterprise Architect provides a number of ways to create completely new elements and those derived from existing elements. The simplest of the methods for creating a new element is to drag the icon for the required type of element from the **Diagram Toolbox** onto a diagram, as shown.



This method creates the element according to the system standard for that element type. You can also provide alternative element definitions that the Toolbox icons reference (using the system 'Preferences' dialog, Patterns or element Templates) and add further element definitions using Profiles and MDG Technologies (either supplied with the system or developed by your project team).

Notes

- A quick way to apply the main facilities of the Toolbox is to press the **Spacebar** key or **Insert key**, displaying the 'Toolbox Shortcut' menu; using the mouse, you can also display this menu by holding the left button and clicking the right button

- If you are creating several elements of one type, after creating the first just press **Shift+F3** or **Ctrl+click** to create the next element of that type
- Once you have created an element, you can re-use it by dragging it from the **Browser window** and dropping it onto your diagrams
- Sometimes it is useful to add elements directly to a Package, without adding them to a diagram; you can do this within the Browser window

Add Elements Directly To Packages

You can quickly add new elements to a Package without necessarily adding the element to a diagram at the same time. This is particularly useful in defining a group of Requirements, Changes, Issues, base Classes or other element types that you might not need to represent on diagrams in the model. You do, however, still have the option of adding the element to an open diagram.

Access

Ribbon	Design > Element > Add > Element
Context Menu	Right-click on Package | Add Element
Keyboard Shortcuts	With a Package selected in the **Browser window**: **Ctrl+M** In a diagram, press the **M key**
Other	**Browser window** header bar menu | New Element

Add an element to a Package

Option	Action
Toolset	In the first field, click on the **drop-down arrow** and select a Perspective to filter the types of element offered for selection to those available through the Perspective. In the second field, click on the drop-down arrow and select the UML diagram type, Profile, **Add-In** or MDG Technology to further filter the element types to that diagram type, technology, Profile or Add-In within the Perspective.
Name	Type the name of the element.
Auto	As an alternative to typing in the name, click on this button to insert predefined auto-counter text. If you already have some text in the 'Name' field, it is over-written by the auto-counter text.
Type	Click on the **drop-down arrow** and select the required element type from the list.

	The list of element types is derived from the diagram or technology shown in the 'Toolset' field.
Stereotype	If required, either type the stereotype name or click on the **drop-down arrow** and select the stereotype. This field is not available if the element you are creating is an extended element that already has a stereotype.
Add element to diagram	This checkbox is available if you have a diagram open and you are working from the **Browser window**. The checkbox defaults to selected to add the new element to the diagram also; if you do not want the element in that diagram, deselect the checkbox. If you accessed this dialog by pressing the **M key** on the open diagram, this checkbox is not available. The element is automatically added to the diagram, in the center.
Save	Click on this button to create the element and close the dialog. If you accessed this dialog by pressing the **M key** in an open diagram • the element is created in the center of

	the diagram, and • the dialog remains open If you accessed the dialog by selecting the 'New Element' option from the **Browser window** header bar ('Hamburger' icon), clicking on this button also leaves the dialog open.
Save and Exit	Available if you have accessed this dialog by pressing the **M key** on an open diagram, or by selecting the 'New Element' option from the **Browser window** header bar ('Hamburger' icon). Click on this button to create the element and close the dialog.
Cancel	Click on this button to abort the changes and close the dialog without creating an element.

Notes

- The 'New Element' dialog also displays when you create an element in the **Specification Manager**, if the Specification Type is <Any>

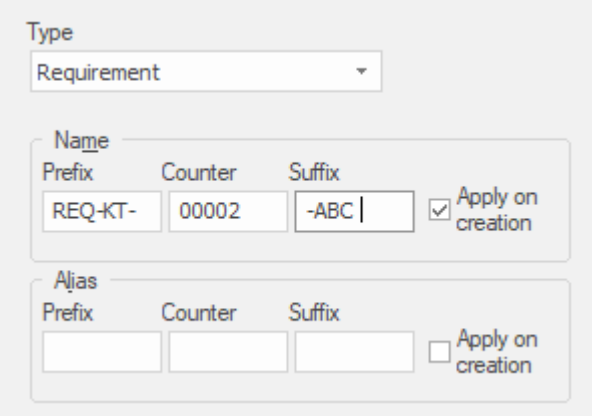
Auto Names and Counters

When you create a new element in your model, you have different options for naming the element depending on how you are creating it. If you create the element:

- On a diagram, the system applies a default naming convention of the element type plus the increment of the number of elements of that type in the same Package - for example, Actor4; you can change this to any other name by editing the 'Name' field on the element's 'Properties' dialog
- Within the **Browser window**, the system prompts you to type the element name into the 'New Element' dialog

You can also set up your own, automatic, naming and numbering convention for elements of the same type, so that:

- On a diagram, it is your naming/numbering convention that is automatically applied to the new element (which you can still change if you need to, as before)
- Within the Browser window, the 'New Element' dialog **Auto button** applies the naming convention to your new element



Auto Name and Counter window showing an example name and counter for new Requirements.

If you have existing elements in a Package, and you want to apply the new naming convention to them, you can make this change very easily to all elements of the same type in the Package at once.

You define a naming convention for the element type as a model setting. At the same time, you can also optionally define a naming/numbering convention for the 'Alias' field for elements of that type.

Access

Ribbon	Configure > Reference Data > Settings > **Auto Names and Counters**

Set up auto naming for an element type

Option	Action
Type	Click on the **drop-down arrow** and select the element type to which to apply auto naming/auto numbering.
Name Prefix	Type a prefix for the new names (optional).
Name Counter	Type the counter value; use as many 0's as required to pad the number.
Name Suffix	Type a suffix for the new names (optional).
Name Apply on creation	Select the checkbox to apply auto naming to each new element of the specified type, on creation. If you do not select the checkbox (but click on Save), the autonaming details for the specified element type remain defined in the dialog, but are not applied to new elements of that type. The default element naming convention takes effect (<element type><n>).

Alias Prefix	Type a prefix for the new Aliases (optional).
Alias Counter	Type the counter value; use as many 0's as required to pad the number.
Alias Suffix	Type a suffix for the new Aliases (optional).
Alias Apply on creation	Select the checkbox to apply Alias auto naming to each new element of the specified type, on creation. If you do not select the checkbox (but click on the **Save button**), the Alias autonaming details for the specified element type remain defined in the dialog, but are not applied to new elements of that type. The default element naming convention takes effect (<element type><n>).
Save	Click on this button to preserve the values you have entered. New elements of this type now have an automatically-generated name and/or Alias with an incrementing counter value. • If the user creates an element on a diagram, such as from the **Diagram Toolbox** or Quick Linker, the element

	is automatically assigned the defined name and/or Alias • If the user creates an element outside a diagram (such as in the **Browser window**) using the 'New Element' dialog, they can click on the **Auto button** next to the 'Name' and/or 'Alias' field on the appropriate dialog to apply the auto-generated text • If the user already has some text in the 'Name' or 'Alias' field, it is over-written by the auto-counter text If an Alias is active, to view the Alias in a diagram requires that the option 'Use Alias if Available' is selected in the 'Properties' dialog for the diagram.

Notes

- Automatic numbering - whether system default or user-defined - does not increment across Package levels; if you have an element called Actor1 in Package A, and you create an Actor element in a child Package of Package A, that Actor will also be Actor1

Apply Auto Naming to Existing Elements

If you have set up auto-naming conventions for the names and/or Aliases of specific types of element, you can apply those conventions to all of the existing elements of those types in a selected Package, in one operation.

You apply auto-naming through the 'Apply Auto Naming to Elements' dialog. This groups the elements that have auto-naming conventions by type, and shows the effects of applying the conventions to the element names and/or Aliases. You can change all the element names in the Package, or select only certain elements to update.

Access

Ribbon	Click on Package: Design > Model > Manage > Auto Naming

Apply Auto-naming to elements

Option	Action

Current Name	Initially displays a contracted group for each element type that has auto-naming conventions, showing the number of elements of that type in the selected Package. Click on the expansion arrow to expand the type group and list the elements within it by their current name, with the most recently created element first. Select the checkbox against each element to be renamed, or against the group name to select all elements in the group. Deselect the checkbox to leave the element name and Alias at their current values.
Name Preview	Initially shows the current name of each element. When you select the checkbox against an element, the name changes to show the effect of applying the auto-naming conventions to it.
Alias Preview	Initially shows the current Alias of each element. When you select the checkbox against an element, the Alias changes to show the effect of applying the auto-naming conventions to it.

All	Click on this button to select all elements listed on the dialog.
Clear	Click on this button to clear the checkboxes of all selected elements.
Update Name Panel	
Prefix Auto Name to Current Name	Click on this radio button to set the new element names to the auto-name text followed by the current name. That is, of this structure: MyPrefix00001MySuffix Original Name
Overwrite current Name with Auto Name	Click on this radio button to set the new element names to the auto-name text only. That is, of this structure: MyPrefix00001MySuffix
Move current Name to Notes Apply Auto Name	Click on this radio button to show the current name in the 'Notes' field in the element 'Properties' dialog (in front of any existing notes) and overwrite the element 'Name' field with the auto-name.
	Click on this radio button to leave the

No change	current names unchanged. That is, review what the auto-naming would look like but do not apply it.
Update Alias Panel	
Prefix Auto Alias to Current Alias	Click on this radio button to set the new element Aliases to the auto-Alias text followed by the current Alias. That is, of this structure: MyPrefix00001MySuffix Original Alias
Overwrite current Alias with Auto Alias	Click on this radio button to set the new element Aliases to the auto-Alias text only. That is, of this structure: MyPrefix00001MySuffix
Move current Alias to Notes Apply Auto Alias	Click on this radio button to show the current Alias in the 'Notes' field in the element 'Properties' dialog (after any replaced element name text, but in front of any existing notes) and overwrite the 'Alias' field with the auto-Alias.
No change	Click on this radio button to leave the current Aliases unchanged. That is, review what the auto-Aliases would look

	like but do not apply them.
Include sub packages	Select this checkbox to include elements in sub-Packages in this run of applying auto-naming (the checkbox reverts to deselected when the dialog is closed).
Configure Auto Naming	Click on this button to immediately define automatic naming conventions for an element type if: • You want to change the conventions for the element type, or • The element type that you want to apply auto-naming to has no conventions (and is therefore not listed on the dialog) The 'Auto Name Counters' dialog displays, on which you define your automatic element and/or Alias naming convention. When you click on the **Save button** on that dialog, any elements of that type in the Package are listed on the 'Apply Auto Naming to Elements' dialog.
OK	Click on this button to close the dialog and put the naming changes into effect.
Cancel	Click on this button to close the dialog and cancel any naming changes you have

	defined.

Notes

- If you select this facility and there have never been any auto-naming conventions defined in the model, the message *There are no configured auto naming elements contained in the selected package* is displayed; click on the **Configure Auto Naming button** to define any conventions for any element type you need
- The contents of Packages that are locked under **Version Control** will not be auto-named
- Because you are applying auto-naming to existing elements, the auto-naming set up 'Apply on Creation' setting has no impact on this operation
- The 'Apply Auto Naming to Elements' dialog is resizable; if you want to expand or reduce the dialog, drag its edges to the size you want

Set Up Templates Package

In building up a model, you might want to represent or emphasize certain characteristics of elements in the appearance of those elements on a diagram, or select particular display options as standard. For example, you could make new Interface elements a different default color to new Class elements, ensure all new Activity Partitions are vertical rather than horizontal, or set a specific group of display options for new Use Case diagrams.

To do this, you create an element or a diagram with all the characteristics you require, and store it in a **Templates Package**; the system then checks this Package:

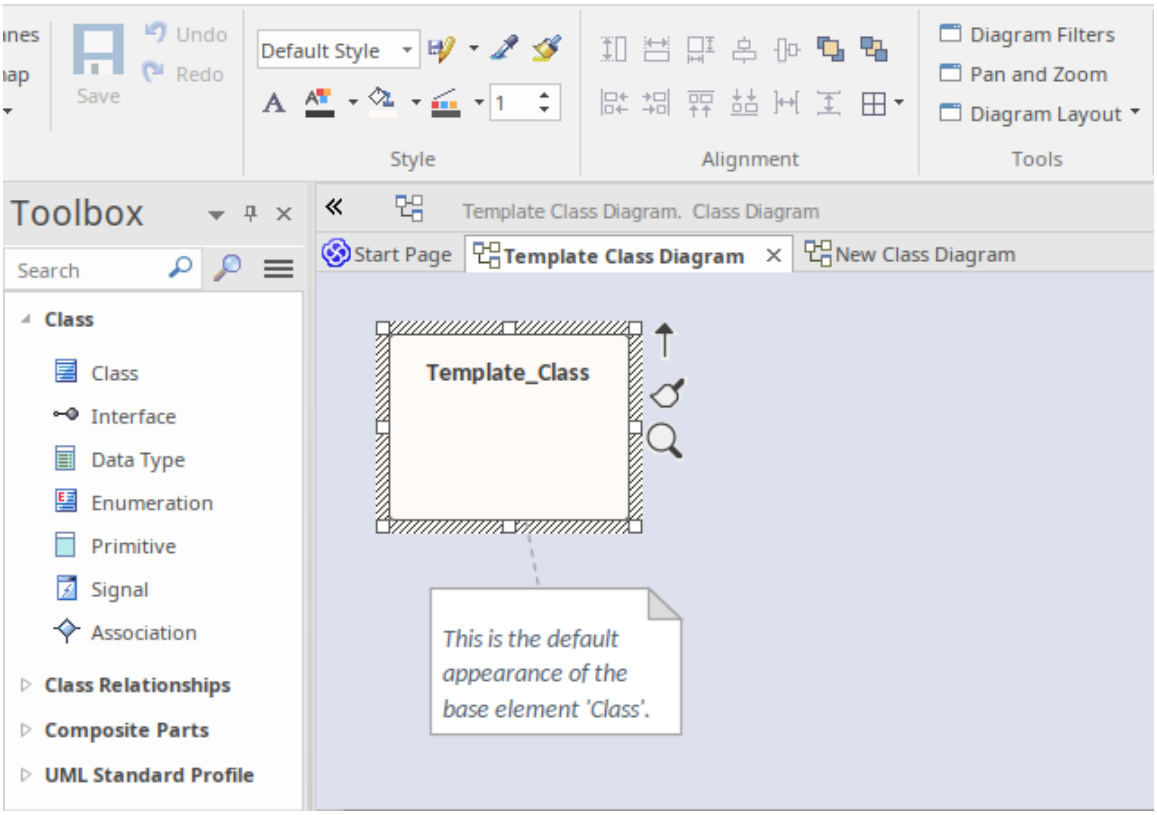
- Whenever you create a new diagram, or
- Whenever you start to create an element using the **Diagram Toolbox**

When you are creating a new diagram, the system checks for the diagram type in the Templates Package and, if it finds that diagram type, will copy the display options of the template diagram into the new diagram.

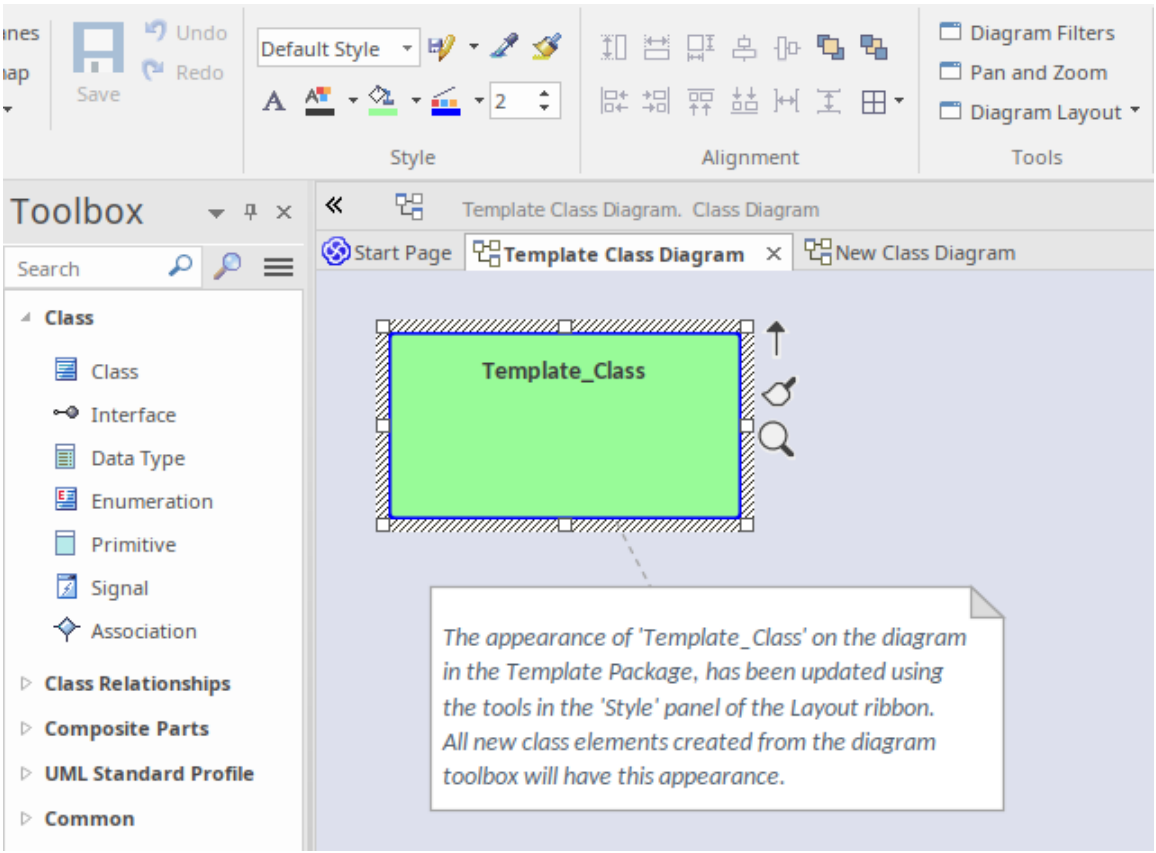
When you are creating a new element, the system checks for that element type in the Templates Package and, if it finds that element type, will copy the template element as defined. The definition includes any default display options of the template element, so you can apply the template definition and switch to the default appearance for the new element, if you prefer.

In this image, a 'Class' element has been dropped onto the

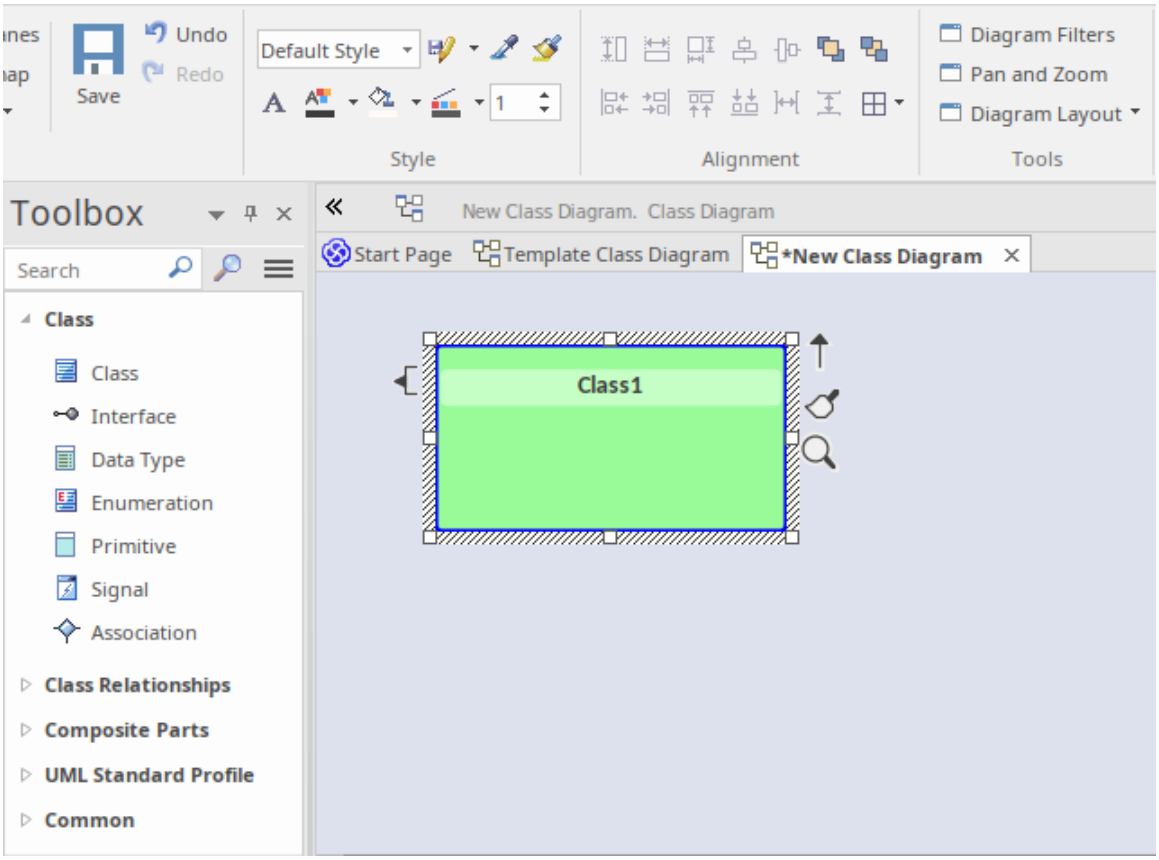
diagram in the Templates Package. It is created with the default appearance of the base element.



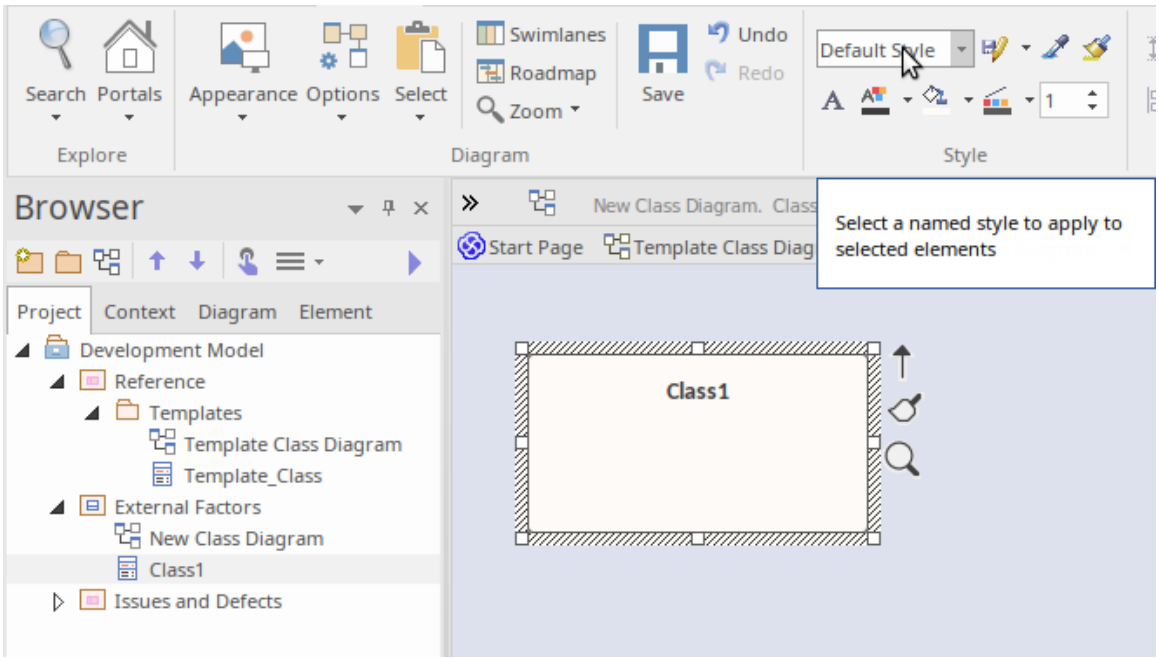
In the next image, the appearance of the element 'Template_Class' on the diagram 'Template **Class Diagram**' has been updated, using the tools from the Style panel of the Layout ribbon. Note however, that the *default* appearance of the element 'Template_Class' remains unchanged.



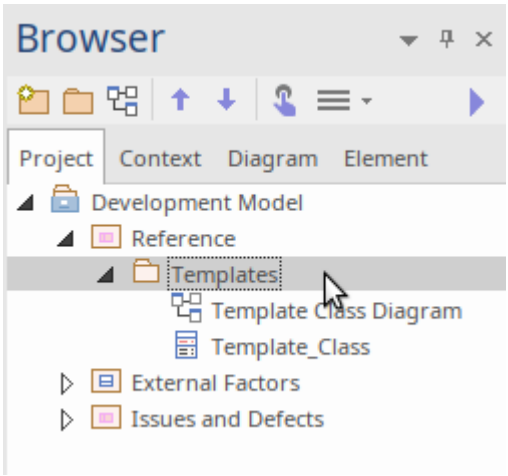
When a new 'Class' element is created from the toolbox, it is created with the same *default* appearance properties as the underlying template element, however its appearance on the diagram where it is created, replicates the appearance of the template element on the template diagram.



You can revert the element's appearance back to the default, by selecting the element and applying the 'Default Style' from the Layout ribbon, or by choosing the ribbon option 'Layout > Diagram > Appearance > Reset Local Element Appearance'.



Similarly, if 'Class1' was deleted from 'New Class Diagram' (but not from the model) and then dropped back onto the diagram from the **Browser window**, it would be created using the *default* appearance copied from Template_Class, **not** the appearance displayed on the template diagram.



You can create the Templates Package anywhere in your model; however, it is better to create it in a location that is not likely to be accidentally changed or lost in any project development work.

Set up the Element Templates Package

Step	Action
1	Create a new Package. 'Templates' is used as the Package name in the illustration, but you can give the Package any name you prefer.
2	Within the template Package create new diagrams,

	one for each type of diagram to template. Give the diagrams easily recognized names; for example Class Template for the template for Class diagrams.
3	Add elements to the template Package (each element must also appear on one, and only one, diagram), and configure the size, appearance, notes, version and other properties that you want new elements to have. You can use a standard UML element or a stereotyped element as the base for your template definition.
4	To specify the Package to use as the **Templates Package**, select the ribbon option 'Configure > Reference Data > Settings > Project Template Package'. The **Find Package window** displays.
5	Locate and click on the Package you wish to set as the **Templates Package**, then click on the **OK button**. (You can set only one Package at a time as the Templates Package.) Now each new element or diagram you add to your project is created with the settings from the appropriate template element or diagram.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Manage Reference Data - Update' permission to set up or access the **Templates Package**
- The fill color for an element derived from the template can be overridden by the element fill color defined by a Shape Script applied to the element via a stereotype, or you can switch to or change the default appearance in the 'Default Appearance' dialog
- If you decide not to use any templates, set the Templates Package to '<none>' in the **Find Package window**; the '<none>' Package is at the bottom of the hierarchy shown in the window
- An alternative way in which you can modify the immediate appearance of elements as you create them in diagrams is to redefine them, either under the same type name or as new element types, in a UML Profile

Set Element Font

When you display an element on a diagram, the text font defaults to a global setting defined from the 'Diagram Appearance' page of the 'Preferences' dialog. You can change this global default setting if you need to. On the diagram, however, you might want to change the font only on a specific element or group of elements, to distinguish them from other elements. You have several options for doing this.

Access

Select the element in a diagram, then use one of these options.

Ribbon	Layout > Style > (Set Font)
Diagram	Click on an element | (Format Toolbar) | (Set Font) or Right-click an element | click (Set Font) in the toolbar above the context menu

Font Dialog Options

Option	Action
Font	Scroll through the list of font types and click on the name of the appropriate font, which is then displayed in the field at the top of the list. This setting affects all text in the selected element except for the Note compartment text.
Font Style	In the list of font styles click on the name of the appropriate style, which is then displayed in the field at the top of the list. This setting affects all text in the selected element except for the Note compartment text.
Size	Scroll through the list of font sizes and click on the appropriate size, which is displayed in the field at the top of the list. Alternatively, type the font size directly into the field. This setting affects all text in the selected element.
Strikeout	(This checkbox is not currently

	available.) Select this checkbox to show the element text with a line through it.
Underline	Select this checkbox to show the element text with an underline.
Color	Simply click on the **drop-down arrow** and click on a color in the list. Notes: • If you access the 'Font' dialog through the 'Font Style' field of the 'Default Appearance' dialog, the 'Color' field will be inactive • The color option at the top of the drop-down list is the 'Default' color set on the 'Preferences' dialog (or, if this has been overridden for this element, the color set in the 'Default Appearance' dialog) • If the current font color is a custom color applied through, for example, the Format Toolbar in the diagram, that color is second in the list, identified by the 'Custom' option
Script	If Western script is not appropriate for the element text, click on the drop down arrow and select a different script type.

Sample	Review the combined effects of the settings you have selected.
OK	Click on this button to save your changes.
Cancel	Click on this button to close the dialog without saving any changes.

Notes

- If you set the element font through the 'Default Appearance' dialog (**F4**) the changes can be overridden by any different values set through the other two access paths
- The 'Font' dialog overrides the 'Default Appearance' dialog for all selected elements when the font is applied.

Move Elements Between Packages

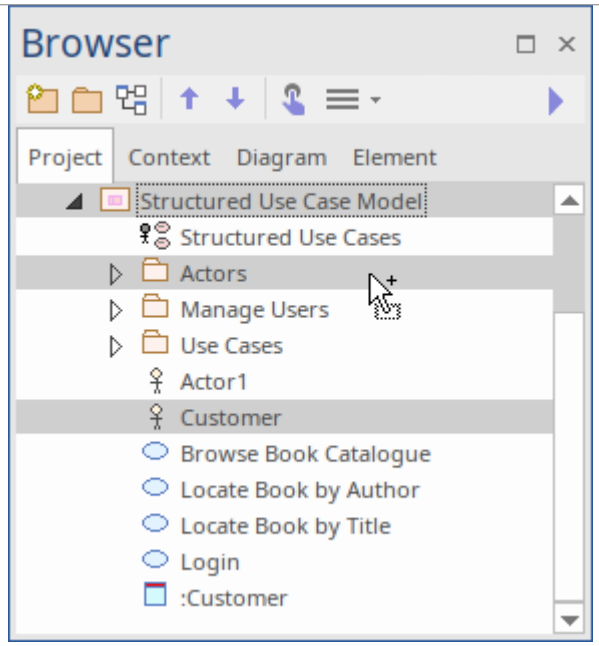
If an element or Package is not in the most appropriate part of the model structure, you can move it to a different location in the **Browser window**, either by:

- Dragging and dropping the element to a target destination, or
- Cutting and pasting the element or Package

If you move a Package, all the subordinate Packages and their contents are moved to the new location also.

Drag an element between Packages

Step	Action
1	Click on the element in the **Browser window**. See 'Customer' in the example diagram.
2	Drag the cursor so that it is over the target Package icon. The 'drop element' cursor is displayed while dragging.

	
3	Release the mouse button. The element is moved into the target Package.

Cut and Paste the Element

Step	Action
1	In the **Browser window**, right-click on the element to be moved and select the 'Copy / Paste | Cut' option. The selected element is highlighted.
2	Right-click on the Package or element under which

	to move the cut element, and select the 'Copy / Paste | Paste' option. The cut element is listed as a child of the selected element or Package, in the **Browser window**.

Notes

- You can also drag the element under a host element in the new Package; for example, drag an element under a Class
- Moving an element has no effect on any relationships that the element might have
- Moving an element in the **Browser window** has no effect on the use of that element in any diagram
- Moving a diagram generally does not affect the location of elements in Packages - if you move a diagram out of one Package into another, all the elements in the diagram remain in the original Package; however, certain elements (such as Decision, Initial and Final elements) are used only within one diagram, have no meaning outside that diagram, and are never re-used in any other diagram, therefore, if you move a diagram containing these elements they are moved to the new parent Package with the diagram
- In a multi-user environment, if one person moves or updates the Browser window structure, other users must reload their project to see the latest changes in the

Browser window; although this is true of any addition or modification to the tree, it is most important when big changes are made, such as dragging a Package to a different location

Copy Elements

You can quickly and easily duplicate one or more elements, with their child elements and diagrams, under other elements or Packages. You can insert a copy of an element under one or more other elements or Packages, in the same project file or any other project file.

It is not possible to duplicate an element on the *same* diagram, but you can generate representations of the element at the ends of connectors, called virtual connector ends. See the *Virtual Connector Ends - Represent One Element Several Times on a Diagram* Help topic.

Operations

Operation	Actions
Copy the Elements	In the **Browser window**, select the elements to copy, right-click on one and select: 'Copy / Paste | Copy to Clipboard | Full Structure for Duplication' Alternatively, click on a selected element and press **Ctrl+Shift+C**. The 'Copying Selected Element(s) to Clipboard' dialog briefly displays while the copy operation completes.

Paste the Elements	In the **Browser window**, right-click on the element or Package into which to paste the copied elements, and select the 'Copy / Paste | Paste Element(s) from Clipboard' option. Alternatively, click on the Package and press **Ctrl+V**. The 'Pasting Element(s) from Clipboard' dialog briefly displays while the paste operation completes. The target element or Package is expanded and the pasted elements are exposed in the Browser window. If you are pasting the elements within the same model as the copied source, the source parent Package is also collapsed. If the target element or Package already contains: • An element of the same type with the same name as a pasted element, the pasted element name has the suffix - Copy • An element with the same type and name as the pasted element including the - Copy suffix, the suffix becomes - Copy1 (or - Copy2, - Copy3 and so on, as copies of the element accumulate in the target element or Package)

	You can keep the same element names as the source, or you can rename each element either by clicking twice on it and editing the name in the Browser window, or by double-clicking on it and editing the name in the 'Properties' dialog.

Notes

- If you want to copy any elements to paste under another element, the target element must be capable of receiving the child elements; for example, you cannot paste a Class element as a child of a Port
- A copy of an element does not have the external cross references of the source element; that is:
  - if one element is copied it has no connectors
  - if more than one element is copied, only the connectors between the copied elements are retained
  - however, if those elements come from a Sequence or Communication diagram and the diagram itself is not copied, the message connectors between the copied elements are not retained
- You cannot paste an element into an element or Package that is locked by another user or that is checked in; the 'Paste...' option is grayed out in the context menu

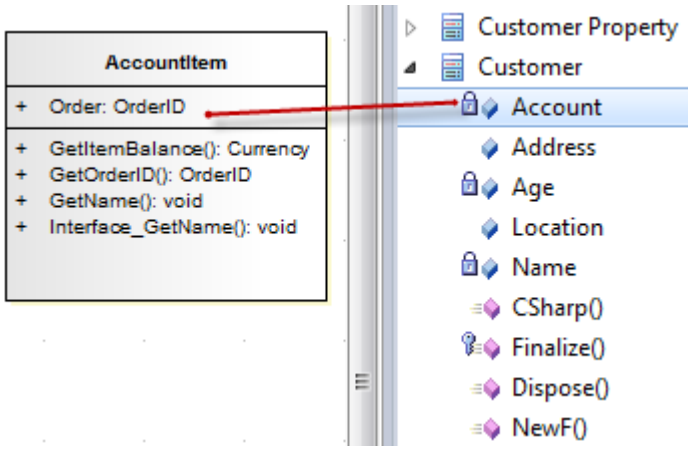
Copy Features Between Elements

As well as copying elements between Packages using a diagram, you can also copy features - attributes and/or operations - between elements in a similar way, dragging the features from an element in the 'Project' tab of the **Browser window** or 'Details' tab of the **Inspector window** and dropping them onto another element in a diagram.

Copy a single element feature

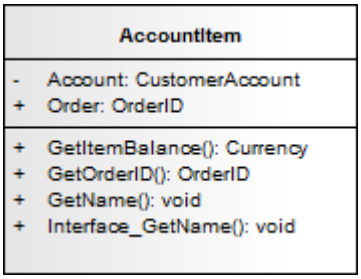
Open a diagram containing the target element. In the 'Project' tab of the **Browser window** or 'Details' tab of the **Inspector window**, click on the attribute or operation and drag it onto the element in the diagram.

In this example, the attribute Account is being dragged and copied from the Customer element on the 'Project' tab into the AccountItem element in a diagram. The process from the 'Details' tab is, visually, almost identical.



This image shows AccountItem after the attribute Account

has been dropped on to it.

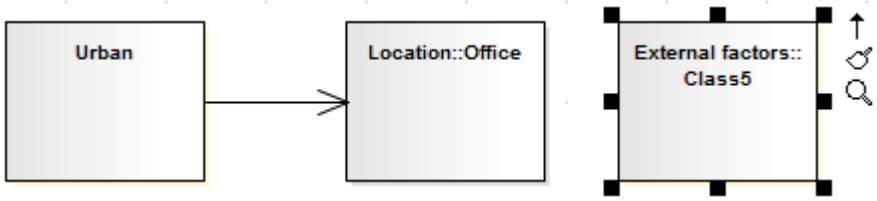


Notes

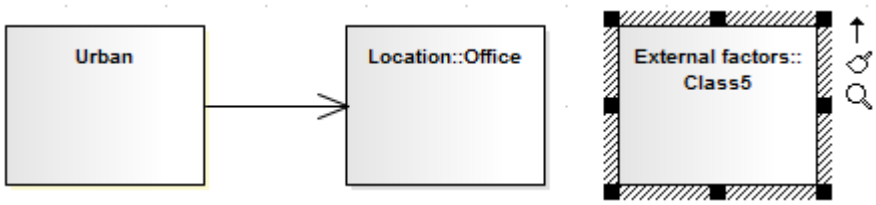
- You can also select and copy multiple features at the same time; you simply press **Ctrl** or **Shift** as you select the features in the element in the 'Project' tab of the **Browser window**, drag them onto the diagram and drop them into the target element (you cannot copy multiple features from the 'Details' tab of the **Inspector window**)

Highlight Context Element

When you click on an element on a diagram, it becomes the context element; that is, all actions take effect on that element. The context element has black rectangles on its border, firstly to indicate that the element is selected and secondly to act as 'handles' that you can click on and drag to enlarge or shrink the element.



Many actions that you can take on an element involve selecting menu options or working on windows and dialogs that are separate from the element, and on a large or complex diagram you can lose track of the context element. To make every context element more visible, you can configure the system to add a hatched border to the element.



Access

To add a hatched border to the context element, open the 'Preferences' dialog using one of the methods outlined here, then select the 'Always Highlight Context Element' checkbox on the 'Diagram Behavior' page.

Ribbon	Start > Desktop > Preferences > Preferences > Diagram > Behavior: Always Highlight Context Element

Multiple Selection

If you select multiple elements to work on at the same time, the context element has a hatched border by default, regardless of whether the 'Always Highlight Context Element' checkbox is selected or not. The context element here is the element against which other selected elements are aligned, or through which the changes to properties are made.



Notes

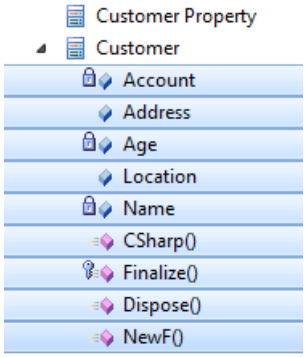
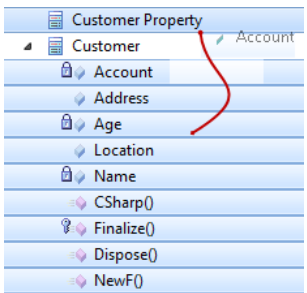
- If you have selected multiple elements and you want to change which element is in context, simply click once on the element that is to become the context element

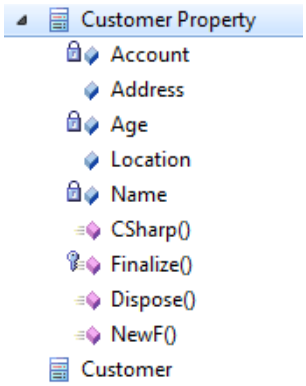
Move Features Between Elements

As well as moving elements between Packages in the **Browser window**, you can also drag and drop features - attributes and operations - between elements to move them out of the source element and into the target element.

Move element features

Perform these actions in the order in which they are listed.

Images	Action
	In the **Browser window**, click on the attribute or operation to move from the source element. If you are moving several features at once, while you click on the features hold down: • **Ctrl** (several individual features) or • **Shift** (the first and last features in a range)
	Holding down the mouse button, drag the attributes and/or operations to the target element. A single feature symbol (and, under some operating systems, the first feature name)

	displays under the cursor during the move; however all of the selected features are moved.
	Release the mouse button. The features that you selected and drag/dropped are now features of the target element, as seen in the **Browser window**.

Insert Related Elements

Elements can be used more than once in a model, either individually or as a group. If you want to reproduce an existing set of elements that have one element as the focus, without copying and linking the elements individually in the new diagram, you can use the **Insert Related Elements** facility. With this facility, you drag the context element from the **Browser window** onto your diagram, right-click on it and select to add related elements. The 'Insert Related Elements' dialog displays, on which you can specify:

- Which types of relationship to filter on, and what direction these relationships have
- Which types of element to filter on
- Which Package the related elements exist in
- How many levels of relationship to bring in; that is, just the elements immediately related to the focus element, or also elements related through those elements
- Whether to add all elements that satisfy the criteria you have specified, or just those you select
- Whether or not to automatically re-organize the diagram when the related elements have been added

Access

First, select an element on the diagram, then:

Ribbon	Design > Element > Add > Related Element
Context Menu	Right-click on element | **Insert Related Elements**

Define selection criteria to insert related elements

Field/Button	Action
Connector types	Displays the types of relationship in which the selected element and, if more than one level of relationship is selected, its related elements are currently involved. To limit the inserted elements to those connected by specific relationship types, select the checkbox against each of those types of connector. To deselect a selected checkbox, click on it again.
Element types	Display the types of element to which the selected element and, if more than one

	level of relationship is selected, its related elements are connected. To limit the inserted elements to those of specific types, select the checkbox against each of those types. To deselect a selected checkbox, click on it again.
Link Direction	Limit the inserted elements to those in incoming or outgoing relationships with the selected element; click on the **drop-down arrow** and select the appropriate direction, or <All> for either direction.
Limit to Namespace	Restrict the inserted elements to those from a specific Package; select the namespace from which the elements are to come. Select <None> for elements in any namespace.
Find relationships to: levels	Click on the **drop-down arrow** and select the level down to which to insert connected elements, between levels 1 (immediately related elements) and 5 (elements 5th in a chain from the focus element). You can select levels 4 or 5 to see how far the element/relationship hierarchy

	extends, but as this can produce a complicated and tangled diagram, it is better to use level 1 or 2 on selected elements in turn.
Refresh	Click on this button to locate and list all elements that satisfy the criteria you have specified. Each list item shows the depth at which the related element exists in relation to the focus element, the name of the element, its parent Package, and whether it is currently in the diagram. If there are many entries, you can re-organize them for clarity using the 'Drag a column header...' panel. If you want to add an element to your diagram, select the checkbox against that element. Alternatively, to select all elements, click on the **All button**. To deselect all selected checkboxes, click on the small **Clear button**. To empty the list panel altogether, click on the large Clear button.
Layout Diagram when complete	Select the checkbox if you want the system to layout the diagram after the elements have been inserted; the layout applied is the Digraph layout.

	If no elements have been added, this option has no effect; elements have to be added for the system to adjust the layout.
OK	Click on this button to add the selected elements to the diagram and close the dialog.

Notes

- If the selected element has a relationship to an edge-mounted structural element such as a Port or Exposed Interface, adding the Port or Interface to the diagram using the '**Insert Related Elements**' dialog will also add the associated parent elements onto the diagram, if they are not already shown

Change Element Type

You might find that an object that you have represented as one type of element would be better represented as another type. The 'Select Element Type' dialog allows you to change the type very quickly and simply.

Access

Ribbon	Design > Element > Manage > Change Type Explore > Portals > Windows > Properties > Properties : In the **Type field** of the **Properties window**, click on the ... button Start > Desktop > Design > Properties : In the Type field of the Properties window, click on the ... button

Change Type

On the 'Select Element Type' dialog, click on the 'Element Type' **drop-down arrow** and select the new element type from the list.

Click on the **OK button**.

The target element is transformed into the required type.

Notes

- This operation is effective on basic UML elements, but has limited use for profile-stereotyped elements such as those used in BPMN or ArchiMate modeling

Make Linked Element a Local Copy

When you use an element on more than one diagram, you drag the element from the **Browser window** and drop it onto the diagram either as a link to the original element or as a separate instance or copy of the original element. Subsequently, you might decide to change a link to the element into a new object, as a local copy of the element in the same Package as the diagram. You can do this very quickly and simply by selecting a menu option.

Access

Context Menu	On diagram, right-click element | Advanced | Convert Linked Element to Local Copy

Notes

- 'Convert Linked Element to Local Copy' will only be available if the element being converted and the diagram it is on are in different Packages.

Set an Element's Default Appearance

All elements that you use have global default appearance settings for:

- The fill, border and font colors
- Font styles, including font face and size
- The border thickness

You define these settings on the 'Preferences' dialog. However, you can change the default appearance for a specific element on all diagrams on which it is found, using the 'Default Appearance' dialog.

Access

Context Menu	Right-click on element | Appearance | Default Appearance
Keyboard Shortcuts	**F4** or **Ctrl+Shift+E**

Options

Option	Action
Background Color	Click on the **drop-down arrow** and select the fill - or background - color of the element. If you want to use a color that is not available, click on the **More Colors button** and define the required color.
Border Color	Click on the **drop-down arrow** and select the border color for the element. If you want to use a color that is not available, click on the **More Colors button** and define the required color.
Border Width	Type in the width of the border surrounding the element, or use the increment/decrement arrows to the right of the field. The minimum width setting is 1, the maximum is 5. If you set this value to the current model default value, any updates to the default value are immediately applied to this local 'Border Width' field, until you specifically reset the local field to a non-default value. (The current model default border width is set in the 'Default Element Border Width' field; select the

	'Start> Desktop > Preferences > Preferences' ribbon option and the 'Diagram > Appearance' page.)
Font Style	Displays the current font typeface for the element text. To change this, click on the ... button. The 'Font' dialog displays, on which you can select a different typeface, style (such as bold/italic) and font size. You can also select to use or cancel underlines, and (if necessary) select a different script classification.
Font Color	Click on the **drop-down arrow** and select the font color to apply to the text of the element. If you want to use a color that is not available, click on the **More Colors button** and define the required color.
Reset to defaults	(Optional) Click on this button to reset all appearance settings to the system default values.
Preview	Displays a representation of the colors, border width and font styles, which updates as you choose the new settings.

OK	Click on this button to close the dialog and apply the appearance settings you have defined.
Cancel	Click on this button to close the dialog and abort all the changes you have made within the dialog.

Notes

- You can adjust several elements at the same time; select all of the required elements, right-click on one of them and select the 'Appearance | Default Appearance' option
- You can also define for the element a default image that displays for all instances of the element in diagrams across the model
- If the 'Show Project Custom Colors in Color Combo Boxes' checkbox is selected on the 'Standard Colors' page of the 'Preferences' dialog, the last 16 color squares in the color selection palettes contain the project colors set on that page
- The 'Font Color' field affects only the element name text; it does not override the feature text colors as defined on the 'Standard Colors' page of the 'Preferences' dialog
- When called from the 'Default Appearance' dialog, the 'Color' field on the 'Font' dialog is not available; font color

is set in the 'Font Color' field on the 'Default Appearance' dialog

- The 'Font' and 'Font Style' fields on the 'Font' dialog affect all text except for the Note compartment text
- The 'Size' field on the 'Font' dialog affects all text
- An alternative option for changing an element's appearance is to define a stereotype that has different fill, border and font settings, or that has either a Shape Script or an image file associated with it; you can then assign the stereotype to the element to change the element's appearance to that defined by the stereotype
- The 'Default Appearance' options override all other styles except those set via a Shape Script (such as fill color and line width) or those applied locally on a diagram (using options in the Layout | Style panel of the ribbon, for example)

Feature Visibility

When you set up the characteristics and features of an element, you can set a collection of options to display or hide the features of that element on a specific diagram. You can also filter the attributes and operations that are shown by scope - such as hiding all protected attributes - or select to hide or show specific attributes and operations. The visibility you set applies only to the current diagram, so a Class can appear in one diagram with all features displayed, and in another with features hidden.

It is possible to hide or show inherited attributes, operations, responsibilities, constraints and Tagged Values for elements that support those features. When the system displays inherited features, it creates a merged list from all generalized parents and from all realized interfaces. If a child Class redefines something found in a parent, the parent feature is omitted from the list.

Access

Context Menu	Right-click element on diagram | Compartment Visibility
Keyboard Shortcuts	**Ctrl+Shift+Y**

Customize Feature Visibility

Field/Button	Action
Attribute Visibility	Select the checkbox against each scope that should be visible, and clear the checkbox against each scope that should not be visible.
Operation Visibility	Select the checkbox against each scope that should be visible, and clear the checkbox against each scope that should not be visible.
Custom	Click on this button to show or hide specific operations or attributes. The 'Show Features in Diagram' dialog displays, on which you select the features to show. On the right of the dialog is a 'Show' field with a **drop-down arrow**; if you click on this and select the 'Hide' option, the dialog alters slightly to become the 'Suppress Features in Diagram' dialog, on which you select the features to hide.

	The two dialogs are identical. Select the checkboxes of specific features to show or hide on the element in the diagram. You can specify both attributes and operations on the same dialog, by selecting the appropriate radio button for the type of feature to work on. You can also use the: • '**Filter** by' drop-down arrow to filter the list to show only features that have a specific scope • **All button** to select all operations or attributes in the list • **None button** to clear the checkboxes against all selected operations or attributes in the list
When Resizing Elements	Select the appropriate option for resizing the Class, Object or Table to manage very wide diagram objects. Select the: • 'Resize to longest Feature' radio button, so that the minimum width for a diagram object is determined by its longest displayed attribute, operation or other compartment value • 'Wrap Features' radio button (so that any long features are wrapped onto multiple lines) or

	• 'Truncate Features' radio button (the default - long features are not displayed in full)
Runstate	Select the checkbox if you want to hide the object runstate of the element on the diagram.
Hide Stereotyped Features	If you do not want to show attributes or operations that have a particular stereotype, type that stereotype name - exactly as defined - in this field; the field is case-sensitive. If you want to specify more than one stereotype, separate the stereotype names with a comma.
Show Element Compartments	Select the checkbox against each compartment to display in the element on the diagram. If you want to display inherited attributes, operations, tags, requirements and/or constraints as well as directly owned ones, select the checkbox against each inherited feature as well as against the general feature. See also the *Notes* section later in this topic.
Element	Select the 'Notes' checkbox in the 'Show

Notes	Element Compartments' list to display, in a compartment on the element in the diagram, the text that has been typed into the 'Notes' field of the element 'Properties' dialog. This compartment does not have a 'Notes' heading. You can display full notes for the selected element whilst the other elements on the diagram have no notes text. This checkbox also enables the 'Maximum' field, which defaults to 1000 as the number of characters of Notes text that can be displayed. Overtype this value to display less text or more text, as you need.
OK	Click on this button to save your settings. The diagram redisplays with the appropriate level of feature visibility.

Notes

- To show features for element types that - by default - do not have visible compartments, such as Use Cases and Actors, right-click on the diagram object to display the

context menu and select the 'Advanced | Use Rectangle Notation' option

- You can configure Enterprise Architect to display the text in all Notes compartments in italics - select the 'Start > Preferences > Preferences' ribbon option and on the 'Diagram > Appearance' page select the 'Italic Note Element text' checkbox; this has an immediate effect, as does clearing the checkbox to show the text in normal font
- If you select to display the Resources compartment, note that this shows both currently-active and complete resource allocations
- The **Discussions** and Reviews compartments display the first two lines of each open topic on the element; they do not include closed discussions or reviews
- Some technologies such as SysML define additional compartments in the element, such as for Ports, Parts and Flow Ports; visibility of these compartments will also be controlled by a checkbox matching the name of the compartment
- The Tags compartment lists all Tagged Values for an element as entered in the 'Tags' tab of the element **Properties window** that do not have an empty value
- If you select the 'Fully Qualified Tags' checkbox, the Tags compartment will contain the full provenance of each Tagged Value (if created in Enterprise Architect release 7.1 or later) where the same Tagged Value is used several times in different contexts with different values; the description in the Tags compartment reads:

<Profile>::<Stereotype>::<Tagged Value

name>=<Value>
For example:
BPMN::Activity::Activity Type = Task

- A Structure Compartment displays on the element by default when you add child elements such as Parts and Classes; the Structure Compartment acts as a container for the child elements, which are normally fixed within the compartment
  To move child elements out of the compartment, press the **Ctrl** or **Shift key** while dragging the child element; Parts/Properties cannot be dragged out of the parent element
  Any element that supports Rectangular Notation can support a Structure Compartment
  An option on the 'Manage Project Options' dialog enables and disables Structure Compartments for the whole model
- Ports and other edge-mounted elements normally bind to any part of the parent element border, but can be confined to the borders of the Structure Compartment by right-clicking on the parent element and selecting the 'Behavior > Bind Port to Compartment' option
- If you want to apply a structure and formal relationships to the child elements, create a proper **Composite Structure** diagram containing the elements and select the 'Show Composite Diagram in Compartment' context menu option

Align Elements

When you have created a number of elements on a diagram, you might want to organize them in groups so that they form a column or row with a uniform edge. You can do this quickly and easily by selecting the group of elements and aligning them all against the left, right, top or bottom edge or center of one element in the group. You can also space three or more elements evenly in a row or column, at an average of their previous separations.

The selected elements are aligned with respect to the 'context' element, which is the element that has a hatched border drawn around it. You can set a given element as the 'context' element by clicking on it or when you add it to the current selection group using 'Ctrl+Click'.

Access

Ribbon	Select a set of elements, then • Layout > Alignment > <alignment button>
Context Menu	Select a set of elements, then right-click on a selected element and choose: • Align Left • Align Right

	• Align Top • Align Bottom • Align Centers |Vertically • Align Centers | Horizontally • Align Centers | Left to Center (left edge of elements align with center of last-selected element) • Align Centers | Right to Center (right edge of elements align with center of last-selected element) • Align Centers | Top to Center (top edge of elements align with center of last-selected element) • Align Centers | Bottom to Center (bottom edge of elements align with center of last-selected element) • Space Evenly | Across • Space Evenly | Down
Keyboard Shortcuts	Select a set of elements (ensuring that the 'context' element is correctly set), then • **Ctrl+Alt+Left Arrow** (align left) • **Ctrl+Alt+Right Arrow** (align right) • **Ctrl+Alt+Up Arrow** (align top) • **Ctrl+Alt+Down Arrow** (align bottom) • **Alt+**'-' (space evenly across) • Alt+'=' (space evenly down)

Other	Click on the context element in the selection and on the icon, then select the appropriate alignment icon from the toolbar. 

Align multiple elements

Step	Action
1	Select a group of elements.
2	Right-click on the element in the group to align others to. The context menu displays.
3	Select the alignment function you require. All selected elements are aligned with the one beneath the cursor.

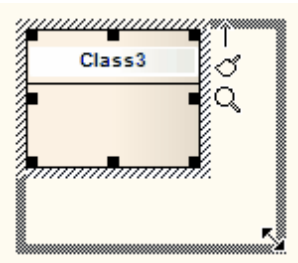
Notes

- You can also use the first four buttons of the Diagram toolbar to align elements; these are made available when more than one element is selected in a diagram
- If you have a single element that you want to move into alignment with another, an alternative method is to use the 'smart placement guides' which indicate where the navigation points (edges and center points of edges) on the element are in relation to the adjacent element

Resize Elements

You can change the size of an element, or of several elements in a group, using the cursor or various menu options.

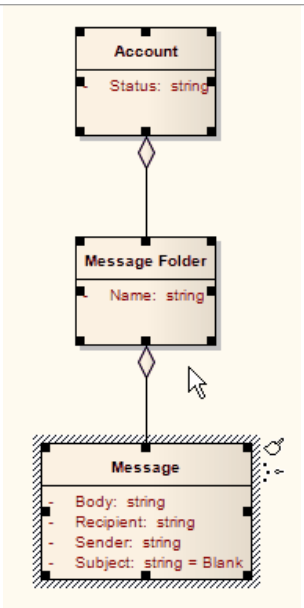
Resize using handles

Image	Detail
	Select an element or group of elements in the diagram, then: • (Single element) With the mouse, drag the resize handles that appear at each corner and side, to resize the element (the cursor switches to the double-ended arrow as shown in the image) If you have enabled the 'Layout > Alignment > <grid options> Smart Placement' and 'Show smart placement guides' options, as you move the resize handles the guide lines display to show where the resizing top, bottom, sides or edge center points are in relation to an adjacent element, but note that the objects must be contemporary - not at

	different hierarchical levels or in different partitions of the diagram • Press and hold **Ctrl** and use the Arrow keys to resize elements by increments; to make elements: - Wider - press **Ctrl+Right Arrow** - Narrower - press **Ctrl+Left Arrow** - Taller - press **Ctrl+Down Arrow** - Shorter - press **Ctrl+Up Arrow** • Autosize selected element(s) to their default size using 'Layout > Diagram > Select > Autosize Selected Elements', or by pressing **Alt+Z** If you select multiple elements, 'Autosize' is also available in the right-click context menu for the elements.

Resize a Set of Objects to a Specific Size

Image	Detail
	If you right-click a selected set of objects, you can resize them to the same dimensions (height, width or both) using context menu options.



When you select multiple elements using **Ctrl+click**, you can right-click and select options that use the dimensions of the last-selected (hatched) object to set the dimensions of the other selected objects.

For example, in this diagram, the Message Class height and width are used to set the height and width of the Account and Message Folder Classes.

The steps are:

1. Set one element to the required size (for example, Message).
2. Select that element and the elements to resize (for example, Account and Message Folder).
3. Right-click on the pre-sized element (Message).
4. Select the appropriate resizing option ('Same Height', 'Same Width', or 'Same Height and Width').

Element Grouping

There are several situations in which you might want to operate on a number of elements at the same time, such as to align them in a certain orientation or to move them whilst maintaining that orientation, or to reformat the elements with the same characteristics. To group the elements you can:

- Click on specific elements while pressing the **Ctrl key** or **Shift key**, or
- Click on a point on the diagram and drag diagonally across a number of adjacent elements to select all elements within the dragged boundary

These two methods set a temporary grouping. You can also fix the selection to group the elements permanently during a sequence of work sessions, until such time as you specifically ungroup them again.

Grouping Elements

With multiple elements selected on a diagram, right-click on any of the elements and select the 'Group Elements' option. Whenever you click on one of the grouped elements, the others in the group are selected as well.

Ungrouping Elements

Right-click on any of the grouped elements and select 'Ungroup Elements' to make all the elements in that group individually selectable again

Notes

In a permanent grouping:

- Right-click on an unselected group element to display context menu options for working on that element alone; select the element and then right-click to display the context menu for working on multiple elements
- You can select another element either within the group or outside it using the keyboard arrow keys
- You can temporarily remove an element from the group for an operation, by pressing the **Ctrl key** as you click on it; when you click on the diagram background and back on the group, the excluded element is again part of the group
- You can update the appropriate windows with the properties and features of different elements in the group by double-clicking on the next element to investigate
- The feature complements the facility for setting bookmark values, either to add bookmarks to every element at once, or to set the same value to the bookmarks on the elements

Create Notes and Text

One aspect of modeling is to describe and document the purpose and use of an element in the context of a particular diagram. You can provide such documentation in the form of Note or Text elements displayed with and connected to the elements they describe.

Both Note and Text elements display text on the diagram; a Note element contains the text within a border with a background color and a turned-down corner image, whilst a Text element has no border or background color. Otherwise they behave in the same way.

Access

Context Menu	Right-click on element | New Child Element | Attach Note
Other	• **Diagram Toolbox** : from the 'Common' page, drag the Note or Text icon onto diagram - drag the Quick Linker arrow from the Note element to connect to the element being annotated • Drag the Quick Linker arrow from an element into an empty space on the diagram > Common > Note

Complete a Note or Text element

The element displays on the diagram.

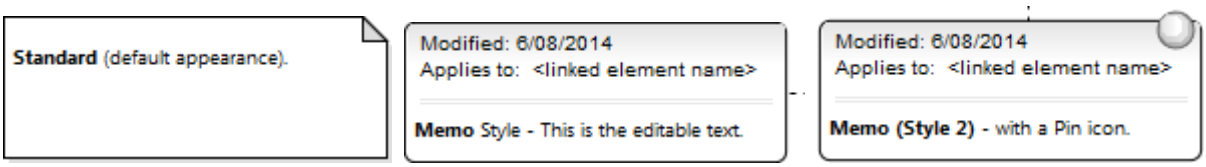
If, on the 'Objects' page of the 'Preferences' dialog, the 'Edit Object On New' checkbox is deselected, the **Notes window** displays, and you can type the element text within it. To display the text in the element, click on the element.

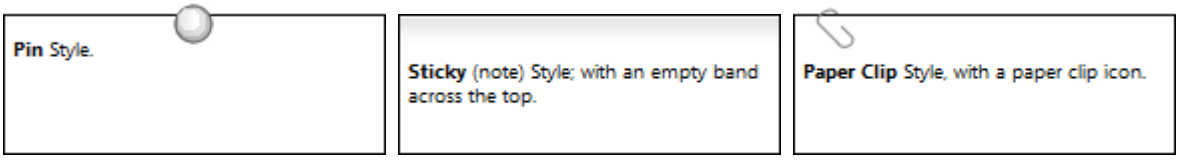
If the checkbox is selected, the 'Notes Properties' dialog immediately displays; type your text in the dialog, and click on the **OK button** to display the text in the element.

In either case, if you want to display the text in a more readable layout, you can resize the Notes window or dialog, and you can also format the text using the Notes toolbar.

Note element appearance

It is possible to change the appearance of a Note element, by right-clicking on the element and selecting one of the 'Appearance' menu sub-options. The available images are:





The two Memo-style images list all the elements that the Note is linked to, in the 'Applies to:' field. You can hide the actual Notelink connectors, so that the Note identifies the elements it refers to without complicating the diagram appearance by having the connectors visible. To hide (and reveal) the connectors, click on the element and select the 'Advanced | Hide (Show) attached links' option.

You can also configure Enterprise Architect to display the text in all Notes and Text elements in italics. Select the 'Start > Preferences > Preferences' ribbon option and on the 'Diagram > Appearance' page select the 'Italic Note Element text' checkbox. This has an immediate effect, as does clearing the checkbox to show the text in normal font.

Notes

- You can also create a Note or Text element by clicking on the **New Note** or **New Text Element** icon on the UML Elements toolbar and clicking on the diagram
- When you have created your Note or Text element, you can leave it free-standing to display information on the diagram, or you can connect it to the specific modeling element or elements it describes using a Notelink connector, which you also drag from the Common toolbox

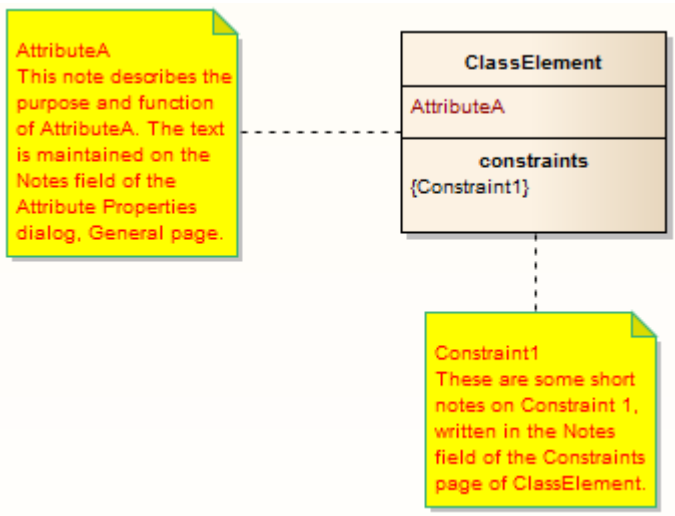
- Instead of typing in text for the element, you can reflect an element's internal documentation, such as the value of a constraint or feature

Link Note to Internal Documentation

Whilst a Note often contains information in addition to that contained within other elements, you can also expose the internal description of a feature or property of an element. In this way you can externalize model documentation at the diagram level, and as the system keeps the Note and the internal text in synch, you do not have to update the Note; in fact, you are blocked from editing the Note text, because it is maintained automatically.

Similarly, it is also possible to expose the Notes text of the diagram properties in a Note element.

In this example, two Notes are connected to an element's internal structures. One Note is connected to an attribute and displays the attribute name and notes. The other is connected to a constraint, showing the constraint name and documentation.



Connect a Note element to another

element's feature

Step	Action
1	Click on the target element and then click on the feature itself, so that it is highlighted for inline editing.
2	Right-click on the feature and select the menu option 'Create Linked Note'. This creates a Note element linked to the selected feature, reflecting the content of that feature.

Alternatively

Step	Action
1	Insert or identify the target element in a diagram.
2	Drag the 'Note' icon from the 'Common' page of the **Diagram Toolbox** onto the diagram, next to the target element. The 'Notes' dialog displays. Do not type any text,

	simply click on the **OK button**.
3	Click on the 'Note Link' icon from the 'Common' page of the Toolbox, and drag the cursor from the Note to the target element to create the connector.
4	Right-click on the Note Link to display the context menu, and select 'Link this Note to an Element Feature'. The 'Link note to element feature' dialog displays.
5	In the 'Feature Type' field, click on the **drop-down arrow** and select the type of feature to link to. The 'Feature' list now shows the features of the selected type in the element.
6	In the Feature list, click on the specific feature to link to, and click on the **OK button**. The Note now automatically shows the contents of the feature's Notes or Description field, and is automatically updated with any changes to this field.

Connect a Note element to the diagram Notes text

Step	Action
1	Open the diagram and right-click on the background.
2	Select the 'Properties' menu option, type an appropriate description in the 'Notes' field, then click on the **OK button**.
3	Drag the 'Note' icon onto the diagram, from the 'Common' page of the Toolbox. The 'Notes' dialog displays. Simply click on the **OK button**.
4	Right-click on the Note element and select 'Advanced | Link to Diagram Note'. The Note now automatically shows the contents of the diagram's 'Notes' field, and is automatically updated with any changes to this field.

Notes

- You can unlink a Note linked to an element feature, leaving the Note text, which can be edited manually and directly as normal; to unlink the Note from an element feature, either:

- Right-click on the Note and select the 'Advanced | Unlink from Element Feature' option, or
- Right-click on the Notelink connector, select the 'Link this Note to an Element Feature' option and, on the 'Link note to element feature' dialog, set the 'Feature Type' field to 'None'

Delete Elements from Diagram and Model

An element might become inappropriate in a certain context, so you would want to remove it from the diagram in which that context is represented. It is also possible that the element becomes unnecessary in the model as a whole, so you would want to delete it altogether. You therefore have a number of situations under which you would 'delete' an element:

- Just from a particular diagram
- As a member of a group of elements to be removed from a diagram
- From a diagram and from the model at the same time
- Directly from the model, through the **Browser window**

Delete an element just from a diagram

Step	Action
1	In the diagram, click on the element to delete.
2	Either: • Press the **Delete key** or **Ctrl+D**, or

	• Right-click and select 'Delete <element name>' The element is immediately deleted from the diagram, but not from the model. There is no prompt to confirm the deletion.

Delete a group of elements from a diagram

Step	Action
1	In the diagram, press **Ctrl** while you click on each element to delete.
2	Either: • Press the **Delete key** or **Ctrl+D**, or • Right-click and select 'Delete selected elements' The elements are immediately deleted from the diagram, but not from the model. There is no prompt to confirm the deletion.

Delete an element from the model

Step	Action
1	Either: • In the **Browser window**, right-click on the element to delete and select 'Delete <element name>', or • In the diagram or Browser window, click on the element to delete and press **Ctrl+Delete** A confirmation prompt displays, also offering an option to show the **Traceability window** so that you can check the impact of deleting the element.
2	Click on the **Yes button**. The element is completely removed from all diagrams in which it has been used, and from the model. If you delete an element in this way, you delete all its properties, child objects and connectors as well.

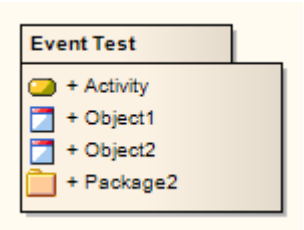
Delete multiple elements from the model

Step	Action

1	On the diagram or in the **Browser window**, press **Ctrl** as you click on the elements to remove from the model, to select them.
2	Press **Ctrl+Delete** to completely remove the elements from the model. Alternatively, in the **Browser window**, right-click on one of the selected items and select the 'Delete selected item(s)' option. In either case, a confirmation prompt displays.
3	In the diagram, the prompt is to confirm deletion of all elements from the model and all diagrams, at once. Click on the **Yes button**. In the **Browser window**, the prompt offers options to confirm and delete: • Each element individually (click on the Yes button), or • All the elements together (click on the Yes to all button) The elements are completely removed from all diagrams in which they have been used, and from the model. If you delete elements in this way, you delete all their properties, child objects and connectors as well.

Customize Visibility of Elements

Some modeling objects are, by default, not listed in Packages shown on diagrams, or in report documents. These include Events, Decisions, Sequence elements, Activity Endpoints and Association Classes. For example, in this Event Test Package, the Events and Decisions contained in the Package are not shown on the Package diagram.



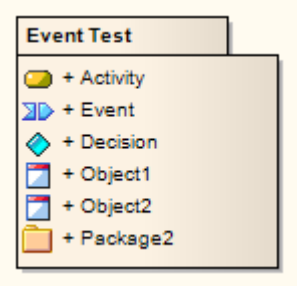
You have the option of turning on display of the hidden elements.

Access

Ribbon	Start > Desktop > Preferences > Preferences > Objects: Advanced

Display Hidden Elements

Ste	Action

p	
1	On the 'Advanced Settings' dialog, select the checkbox against each type of element to show in Package diagrams and in report documents.
2	Click on the **Close button** on each dialog in turn.
3	Reload the current diagram if required. The Package from the earlier example now shows the Event and Decision elements it contains. 

Set Up Cross References

It is possible to set up a cross reference (or Custom Reference) from one or more elements in a diagram to another element selected in the **Browser window**. You can also review the existing cross references on an element, using the 'Context References' dialog or the **Traceability window**.

Set up a cross reference

Step	Action
1	Open the diagram that contains the elements that will reference the target element.
2	In the **Browser window**, right-click on the target element (the object of the cross reference) and select: • 'Add | Add Custom Reference' (for a target element) The 'Set up references' dialog displays.
3	Click on the checkbox against each element that is to refer to the target element.
4	Optionally, in the 'Comment' field, type the purpose

	of the references.
5	Click on the **OK button** to set the references and close the dialog.

Use the cross reference

Step	Action
1	Click on the required element in the opened diagram.
2	Either: • Right-click on the element and select 'Find | Custom References' or • Press **Ctrl+J** The 'Custom References' dialog displays, showing a list of elements that have been set as cross references for the selected element.
3	Optionally, open the 'Properties' dialog for a referenced element by clicking on it and clicking on the **Open button**. Similarly, open a referenced diagram by clicking on

	it and clicking on the Open button.
4	If you have opened a string of diagram links, click on the **Home button** to return to the original diagram.

Notes

- You can create cross references from an element on the diagram to a number of elements in the **Browser window**, and from another element on the diagram to different elements in the Browser window
- You cannot create a commented cross reference from one element on the diagram to an element in the Browser window, and a separate commented cross reference from a different element on the diagram to the same element in the Browser window
- You can delete a cross reference by selecting it on the 'Custom References' dialog and clicking on the **Delete button**; cross references are also automatically deleted if the source or target element in the reference is deleted
- You can also add, review and delete cross references on the 'Cross References' tab of the 'Scenarios' page in an element's 'Properties' dialog

Show Element Use

An object can be used several times in a model; for example, an image might be used for different elements on different diagrams, or an element might be represented on several diagrams depicting different concepts. You can quickly locate where the object is used in the model, by selecting a 'Find' menu option that displays the 'Element Usage' dialog. This lists the occurrences of the object and, when you select one, the diagram containing that occurrence opens with the object selected.

You can locate occurrences of:

- A Package
- An element
- An image

You can also list the:

- Extension Points of the target Use Case in an <<extend>> relationship
- Triggers associated with a Transition
- Items conveyed on an Information Flow connector
- Objects derived from an Operation

If the object:

- Occurs once only (such as in one diagram only), the object is immediately highlighted in the diagram or **Browser window**
- Is not used in any diagram, the 'Element Usage' dialog

displays with no entries; click on the **Close button** to close the dialog

- Is used in more than one diagram, the 'Element Usage' dialog lists those diagrams; either:
  - Double-click on a diagram name to open that diagram (the 'Element Usage' dialog remains open), or
  - Click on the diagram name and click on the **Open button** to open that diagram (the 'Element Usage' dialog closes)

The 'Element Usage' dialog defaults to showing, in order, the 'Usage Type' of the object, 'Diagram Type' and 'Diagram' columns. If you float the cursor over the right edge of the 'Diagram' column header, so that it changes to ⇹, you can drag the column border right to expose the hidden columns 'Diagram ID', 'Object ID' and 'Kind' (do this in separate passes for each hidden column).

To make the display of information easier to read, you can resize the 'Element Usage' dialog and drag the borders of the column headers to the appropriate width for the listed items. You can also click on a column header and re-sort the items in the forward or reverse alphanumeric order of the selected column content.

Locate Objects

This table provides the instructions for locating occurrences - uses - of different types of object.

Object Type	Action

Element	In the **Browser window**, right-click on the element and select the 'Properties | Find in all Diagrams' option. On a diagram, right-click on the element and select the 'Find | Find in all Diagrams' option. Alternatively, click on the element and press **Ctrl+U**.
Package	In the **Browser window**, right-click on the Package and select the 'Properties | Find in all Diagrams' option. On a diagram, right-click on the Package and select the 'Find | Find in all Diagrams' option. Alternatively, click on the Package and press **Ctrl+U**.
Image	On a diagram, right-click on the element to which you want to assign an image and select either the 'Appearance | Select Default Image' option or the 'Appearance | Select Alternate Image' option. In either case, the **Image Manager** screen displays. Click on the required image name and on the **Usage button**. The 'Element Usage' dialog displays showing, in this case:

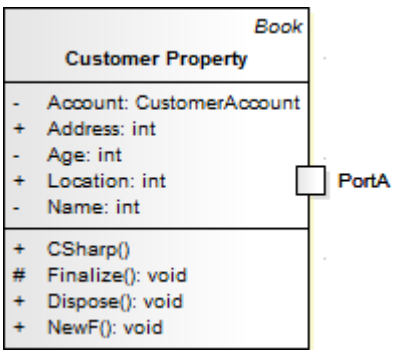
	• The names of the elements to which the image has already been applied • The name of the diagram on which each instance of the image has been used • The Image Manager image ID for the image (a hidden column) • The Diagram ID (DID) for each diagram (a hidden column) • The Object ID for each element on which the image has been used (a hidden column) Click on an element name and on the **Open button** to display the diagram on which the image has been used, with that instance of the image highlighted.
Use Case Extension Point	On a diagram, right-click on the <<extend>> connector and select the 'Advanced | Extension Point | Set Extension Point' option. The 'Element Usage' dialog displays, listing the Extension Points currently assigned to the target Use Case element. Click on the required Extension Point and on the **Open button**; the dialog closes, and the <<extend>> connector shows a small circle attached to a Note element

	that identifies which extension point it represents. If the target Use Case has no extension points, you are prompted to create them.
Objects derived from an operation	In the **Browser window**, right-click on the operation and select the 'Properties | Find in all Diagrams' option. The 'Element Usage' dialog displays, listing the Action elements and/or Sequence Message types derived from the operation in the model. For a Sequence Message, in the 'Kind' column, you can see the value of the 'Kind' property of the message. Double-click on an object to open its parent diagram and show the location of the object in the diagram.
Triggers Associated with a Transition	On a **StateMachine diagram**, right-click on the Transition connector between two States and select the 'Find Triggers Associated' option. The 'Element Usage' dialog displays, listing the Triggers assigned to the Transition. The 'hidden' column in this instance is 'GUID', showing the GUID of each Trigger element. If you double-click on a Trigger name, the system locates and highlights

	the Trigger element in the **Browser window**.
(Information) Items Conveyed	You can also use the 'Element Usage' dialog to identify and select items conveyed and/or realized on an Information Flow connector. On the diagram, right-click on the connector and select the 'Find Items Conveyed' menu option. The 'Element Usage' dialog displays, listing the items conveyed on the connector. The 'hidden' column in this instance is 'GUID', showing the GUID of each conveyed element. If you double-click on an element name, the system locates and highlights the element in the **Browser window**.

Manage Structural Elements

In UML Modeling, you can define certain constructs and events with structural elements (also called Parts, Properties, interaction points or - in the case of Entry and Exit Points on a State element, connection points) that are added on to a parent element. For example, you can add Ports to a Class (as shown), Action Pins to an Action, or Activity Parameters to an Activity. Structural elements become a component of the parent element; certain structural elements (such as Parts and Properties) can exist independent of a parent, but do not have an independent role.



You manage structural elements through the **Features window**, managing Parts and Properties on the 'Parts / Properties' tab and Ports on the 'Interaction Points' tab. If the parent element is a State, its connection points are shown on the 'Connection Points' tab. All three tabs have the same options, described here.

Access

Ribbon	Start > Desktop > Design > Features > Interaction Points Start > Desktop > Design > Features > Parts / Properties (For a State element, select one of the other options and then click on the 'Connection Points' tab)
Context Menu	Right-click on element in diagram | Features | Interaction Points Right-click on element in diagram | Features | Parts / Properties (For a State element, select one of the other options and then click on the 'Connection Points' tab)
Keyboard Shortcuts	**Ctrl+5** > Interaction Points (for Ports) Ctrl+5 > Parts / Properties (for Parts and Properties) Ctrl+5 > Connection Points (for State elements)

Review Structural Elements

Option	Action

list of elements	Review the definition of each structural element currently associated with the selected parent element. If you select the 'Show Owned/Inherited' checkbox, the list will also include any structural elements from any classifiers that the parent element has. If you want any structural element to be visible on the parent element on the current diagram, select the checkbox next to that element's name. Notice that the 'Visible' column in this panel then shows the value **True** against the selected element. To hide the structural element on the diagram, clear the checkbox. The structural element still exists on the parent element, but is just not visible in the diagram. In the 'Type' field, you can change the assigned type if necessary. Click on the ... icon and browse or search for and select the required type from the 'Select Type' dialog.
All None	Click on these buttons to select (All) or clear (None) the checkboxes against all listed elements.

Show Owned/Inherited	The tab lists the structural elements on the selected parent element. If you want to include inherited or owner properties from any classifier that the parent element might have, select this checkbox.

Context Menu options

The 'Parts/Properties' and 'Interaction Points' tabs have a context menu providing options that help you to further manage the structural elements on the parent element.

Option	Description
Add New	Select this option to add a new structure element of the same kind (Port, Part or Property) to the parent element. The 'Insert New Embedded Element' dialog displays. In the: • Element Type field (if necessary) click on the **drop-down arrow** and select the appropriate type of element (Port or Property, for example) • Name field, type in an appropriate name for the element or, alternatively, click on the **Auto button** to apply the

	automatic naming/numbering system defined for the project • Stereotype field (if required) click on the drop-down arrow and select the required stereotype from the list • **Type field**, click on the ... icon and browse or search for and select the required type from the 'Select Type' dialog Click on the **OK button** to add the structural element to the parent.
Redefine	Click on this option to create a clone of the structure element, that you can change the properties of.
Modify	Click on this option to edit the properties of the selected structure element in the 'Modify Embedded Element' dialog, which has the same fields as the 'Insert New Embedded Element' dialog described in the earlier **Add New** table entry.
Delete	Click on this option to immediately remove the structure element from the model.

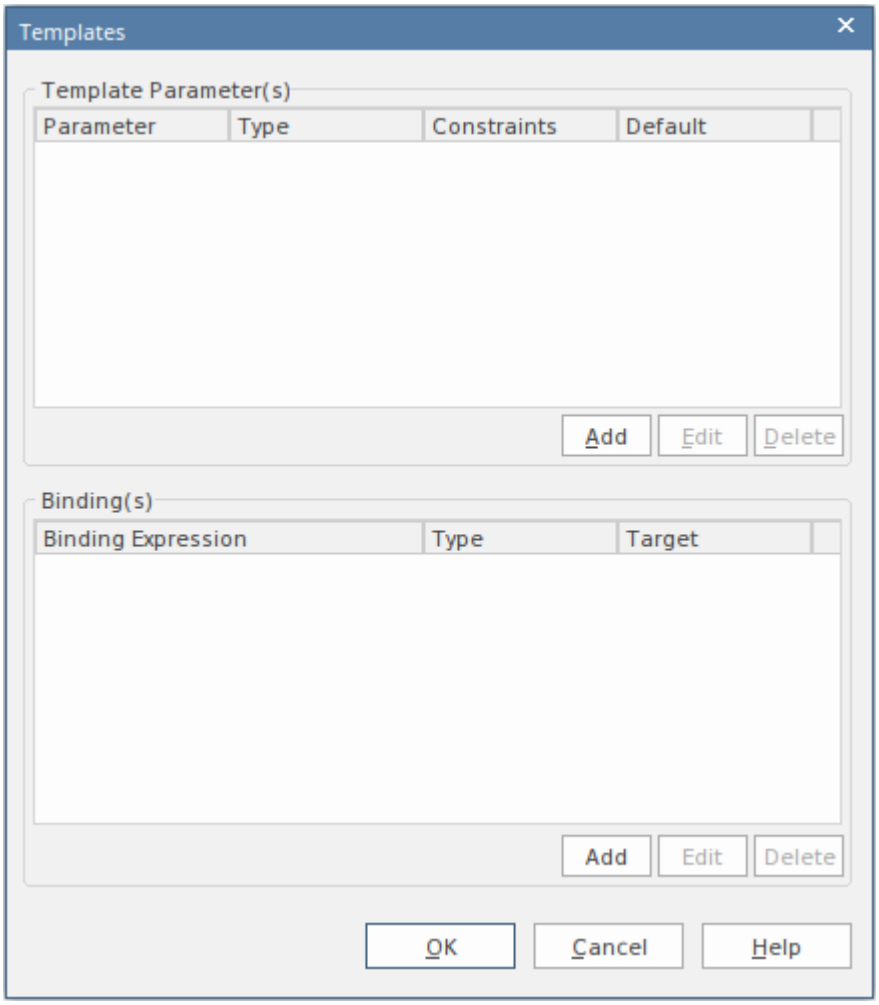
Notes

- The name of a structural element displays on the diagram as a label, which you can edit using the 'Labels' context menu

Template Classes

If you are working with Parameterized Classes or Binding Classes, you can use the 'Templates' dialog to define:

- The Parameterized Class template parameters and
- The Binding expressions on a Binding Class



Access

Click on the appropriate Class element in the **Browser window** or in a diagram.

Ribbon	Design > Element > Manage > Template Parameters
Keyboard Shortcuts	**Alt+5** | Template Parameters

Use

In the 'Template Parameter(s)' panel, click on the **Add button** to add a new parameter, or click on an existing parameter and on the **Edit button** to edit the parameter; in either case, the 'Template Parameter' dialog displays.

In the 'Binding(s)' panel, click on the Add button to add a new binding expression or click on an existing expression and on the Edit button to edit the expression. When you click on the Add button, a short context menu displays from which you select the type of relationship to generate, and then you define the binding expressions.

If either a template parameter or a binding expression is no longer required, click on it and then click on the corresponding **Delete button**.

Set Element Parent

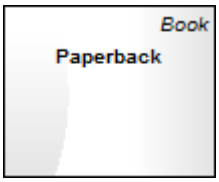
In the context of one element being generalized by one or more other elements, those other elements are referred to as the parent elements. You can define the parent element(s) for a generalizable element, or an interface it realizes (implements), using the 'Set Parents and Interfaces' dialog. The parent elements do not necessarily have to exist in the model; you can specify an element that you intend to create later. You can also delete an existing parent/child relationship using the dialog.

Access

Ribbon	Design > Element > Manage > Parents and Interfaces
Context Menu	Right-click on element in diagram | Advanced | Parent
Keyboard Shortcuts	**Ctrl+I**

Set an element parent

Option	Action
Type	Click on the **drop-down arrow** and select the type of relationship to set (Implements or Generalizes) from the list. You select the relationship type first because, if you use the **Choose button**, the 'Select Classifier' dialog actually creates the relationship based on this field value, immediately when you select the parent or interface element.
Class Name	Either: • Type in the parent or interface name, or • Click on the **Choose button** to browse or search for the element within the current model (the relationship is created immediately when you select the classifier)
Accept classifier even if not in model	If the parent element does not currently exist in the model, select this checkbox to protect the reference to a non-existent element.
Add	If you do not use the **Choose button**, click on this button to add the

	relationship to the 'Type Details' list, to the selected child element and to the model.  Prior to this: • If the parent element does not exist in the model and you have not selected the 'Accept classifier even if not in model' checkbox, an *Unknown Classifier* error message displays • If you have specified an existing element with the same name as other elements in the model, a dialog displays listing the elements and their parent Packages, prompting you to select the correct classifier
Delete selected	If you no longer want to keep the relationship between a parent and child element, click on it in the Type Details panel and click on this button to remove it.

Operations on the parent element

If the parent name is shown in the element, you can select it (click on the child element, then click on the parent element name) and right-click to display a context menu of further operations:

- Apply the facilities of any relevant technology enabled in Enterprise Architect
- Redisplay the 'Set Parents and Interfaces' dialog to, for example, delete the parent or add further parents
- Display the parent element 'Properties' dialog
- Find the parent element in the **Browser window**
- Find the parent element in any diagram in which it exists

If the parent element does not currently exist in the model, but is shown on the child element in the diagram, you can still access the first two of the context menu options for it.

Notes

On a diagram, the parent element name is displayed in the top right corner of the child element if:

- The parent element is not on the same diagram as the child element, and
- The 'Show Hidden Parents' option is selected on the 'Diagram > Behavior' page of the 'Preferences' dialog

Composite Elements

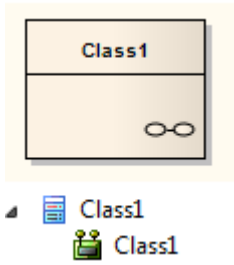
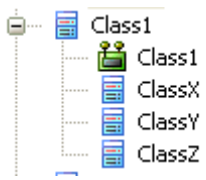
You might want to use one element to represent a structure composed of other elements; for example, a general Use Case representing a collection of more specific Use Cases. To achieve this, you can make the 'general' element a composite element, as a pointer to a child diagram containing the 'detail' elements. The elements that you can turn into composites include Classes, Objects, Activities and Use Cases.

Access

Ribbon	With an element selected in the **Browser window**: Design > Diagram > Add : Type - UML | Structural | UML Structural | **Composite Structure** | <one of the two diagram types> There are several Perspective groups and **Perspectives** that lead you to the UML Structural group; the one provided is an example.
Context Menu	Right-click element in diagram | New Child Diagram | **Composite Structure**

	Diagram or Right-click element in **Browser window** | Add | Composite Structure Diagram

Make an element composite

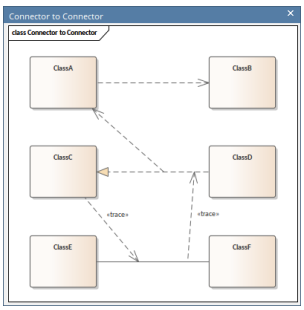
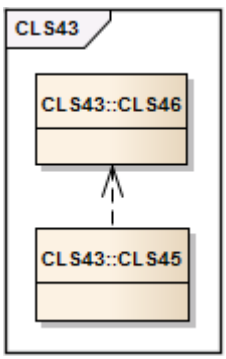
Images	Step / Action
	When you select to make an element composite, it displays in the diagram and in the **Browser window** as illustrated on the left. Note: • The small icon in the bottom right hand corner of the element shape, indicating that this is now a composite element • The icon against the child diagram name in the Browser window, indicating that this diagram was created as a child of the composite element
	To access the child diagram that the composite element points to, either: • Double-click on the composite element in the diagram, or

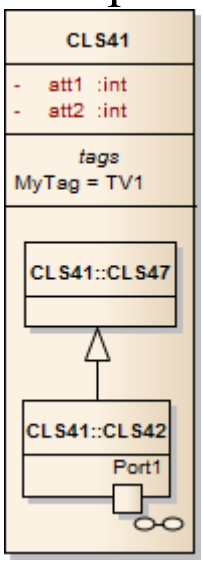
	• Click on the composite element and press the **= key** If you have selected the 'Enable Concise Diagram Navigation' checkbox on the 'Application Look' (Visual Style) dialog, the child diagram replaces the parent in the **Diagram View**. Otherwise the child diagram opens in a separate tab. You can populate the child diagram with elements and connectors to represent the internal structure of the (parent) composite element. In this process, structural (embedded) elements cannot be directly added to the child diagram. However, you can add them using a different, modified procedure. If you have selected the 'Enable Concise Diagram Navigation' checkbox, to return to the parent diagram containing the composite element click on the arrow in the right hand end of the diagram tab. If you accessed the child diagram by: • Double-clicking on the composite element, the parent diagram displays • Pressing the = key, the parent diagram displays with the composite element selected The composite element and its child diagram are now represented in the

	Browser window as shown. ClassX, ClassY and ClassZ are elements added to the child diagram.
	If you already have, or subsequently create, another diagram that better represents the content of your composite element, you can select that diagram as the child of the composite. Right-click on the composite element in its diagram and select the 'New Child Diagram | Select Composite Diagram' option. The 'Select Classifier' browser displays, through which you can browse the entire project to locate the alternative diagram. Click on the diagram and on the **OK button** to apply it as the child of the composite element. Neither the original nor the alternative child diagram move location or change icons in the **Browser window** (unless you specifically make these changes as a separate operation).

Alternative Notation

You can display the contents (the child diagram) of a Composite element in a number of other ways.

Display Format	Detail
Display Composite Diagram in Popup window 	On the parent diagram, click on the composite element and then on the 'eye' icon ( ) above the top left corner of the element, or press the Backslash (\) key. The child composite diagram displays in a floating Popup window. To close the pop-up window, press the Backslash key again or click on a different point in the work area.
Display Composite Element as Frame 	Composite elements can show their contents in place of their usual notation. 1. Right-click on the composite element in the diagram; the context menu displays. 2. Select the 'New Child Diagram | Show Composite Diagram in Frame' option. The composite element is replaced by a frame containing the child diagram. The frame label shows the composite element name. The element is resized to contain the diagram; whilst it can be enlarged, it cannot be reduced to less than the diagram size.

	Some technologies, such as SysML, qualify the frame label to show the diagram type, element type, element name and child diagram name. If you design custom diagram profiles, you can also qualify the frame label as required.
Display Composite Element Content In Compartment 	Composite elements can also show their contents in addition to their usual notation, in a separate compartment of the element. 1. Right-click on the composite element in the diagram to open the context menu. 2. Select the 'New Child Diagram | Show Composite Diagram in Compartment' option. A compartment is added to the element, containing the child diagram. The element is resized to contain the diagram; whilst it can be enlarged, it cannot be reduced to less than the diagram size. You can also display a Composite diagram inside its parent element using a Shape Script. The diagram is displayed in a custom compartment in the center of the element and not necessarily with the standard compartments (such as attributes, tags).

Notes

- If the 'Composite' option is not listed in the context menu, the option is not available for the type of element you have selected
- If you select either the frame or compartment options to display the child diagram on the composite element, and then you select a different child diagram, the display settings are cleared; reselect the appropriate option to display the new diagram on the composite element
- Automation support is available for Composite elements - Element has an Elements collection and a Diagrams collection; additionally you can set the Composite diagram with SetCompositeDiagram

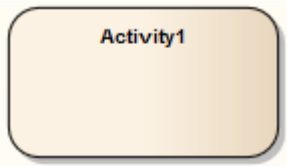
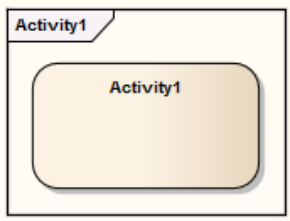
Show Structural Elements In Composite Diagram

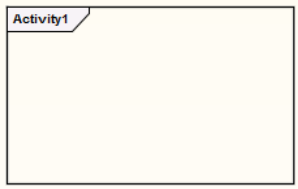
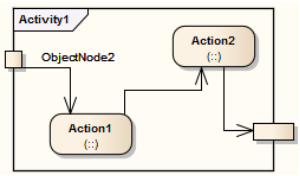
A Composite element shows the external relationships of the element with other components of the model and, via a child diagram, its own internal structure. You cannot normally add structural elements to the representation of this internal structure; however, this procedure describes a modified process through which you can add structural elements to the child diagram.

Structural elements include:

- ActivityParameter
- RequiredInterface
- ActionPin
- Port
- EntryPoint
- ExpansionNode
- ObjectNode
- ProvidedInterface
- ExitPoint
- Part

Include embedded elements in a child composite diagram

Images	Step / Action
	Create the element to set as a Composite element. For example, a Class, Activity, or **SysML Block**.
	Right-click on the element in the diagram and select the 'New Child Diagram | **Composite Structure** Diagram' option. The element redisplays with a small icon in the bottom right hand corner, indicating that this is now a Composite element.
	Double-click on the Composite element to access the child diagram that it points to.
	From the **Browser window**, drag the Composite element itself onto the child Composite diagram, and paste it in as a Link.
	Right-click on the element in the diagram, and select the 'New Child Diagram | Show Composite Diagram in Frame' option. The element redisplays with a labeled frame around it.

	Press **Ctrl+S** to save the diagram. Right-click on the diagram tab and select the 'Reload <diagram name>' option. The diagram redisplays with just the frame showing. This frame represents the original composite element.
	Populate the frame with the appropriate internal elements, including the structured elements that attach to the frame itself.

Visual Representation

Each UML element has a default representation. However, you can:

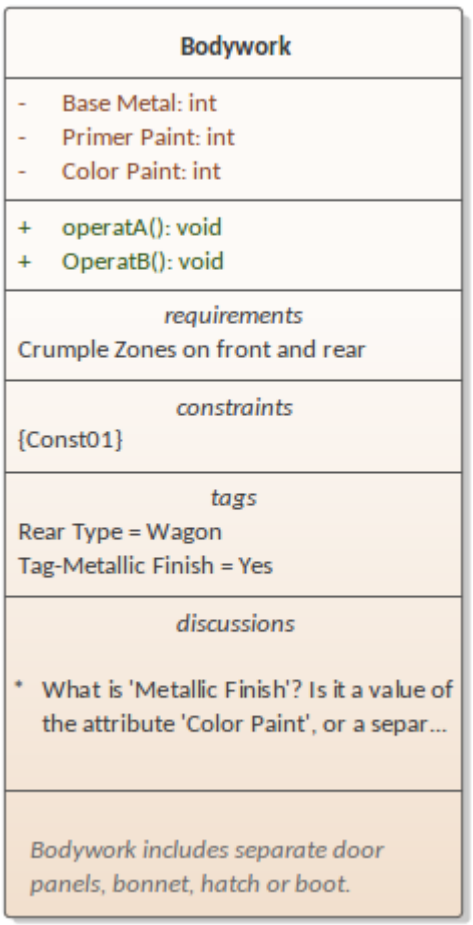
- Change the shape of the element
- Display or hide various types of information held in the element, in compartments
- Display the element in a simpler format, showing basic properties and notes but hiding features

You can also customize the appearance of single elements or all elements on a diagram to a simpler, colorful drawing style.

Compartments

When you place an element on a diagram, you can display it with a number of compartments that reveal not only the attributes and operations of the element, but also several other properties such as tags, requirements, constraints, allocated resources, discussions and reviews.

This diagram shows some of the types of compartment that you can show on an element in a diagram, as an illustration of how compartments are displayed. For a full list of standard compartments, and information on custom compartments, see the *Feature Visibility* and *Define Element Characteristics* topics.

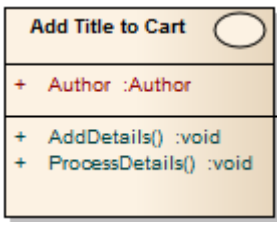


Notes

- To set the display of each of the various compartments, see the *Feature Visibility* topic; the display of the compartments is also controlled through the diagram properties, on the 'Elements' tab - the specific element settings take precedence over the more general diagram settings
- Kanban diagrams do not automatically show element compartments, which contain useful and important information; however, you can use the Kanban 'Native Element Draw Style' option to show compartments on a Kanban diagram and display the information they contain

Rectangle Notation

You can display various 'shaped' elements, such as an Interface, Use Case or Actor, using rectangle notation. This notation shows on the diagram any attributes, operations or constraints belonging to the element, in the same style as for a Class.



To show an element using rectangle notation, either:

- Click on the element in the diagram and on the ⊟ icon that displays on the right of the element, or
- Right-click on the element on the diagram and select the 'Advanced | Use Rectangle Notation' context menu option

This displays the element as a rectangle, by default displaying a UML keyword identifying the element type in guillemets (« ») above the element name. However, certain elements such as Activities and Use Cases by default define an icon of the 'normal' shape instead of the keyword, and display the icon in the top right-hand corner of the element.

The setting only applies to the selected element, and can be toggled on and off either by:

- Clicking on the ⊟ icon again, or
- Deselecting the context menu option or
- Selecting the reciprocal context menu option such as 'Use

Circle Notation' or 'Use Actor Notation'

Info view Style

Info view is an alternative notation to display a simplified view of an element that allows the name, description and selected other properties to be displayed for an element instead of the normal notation showing child features. This view allows a diagram to be constructed for a non-technical audience or any purpose where display of descriptions is more important than the notations defined by the modeling language.

For example, a database engineer will normally need to see the columns and indexes of a Table, while a manager might be more interested in seeing a high level description relating to each table.

Access

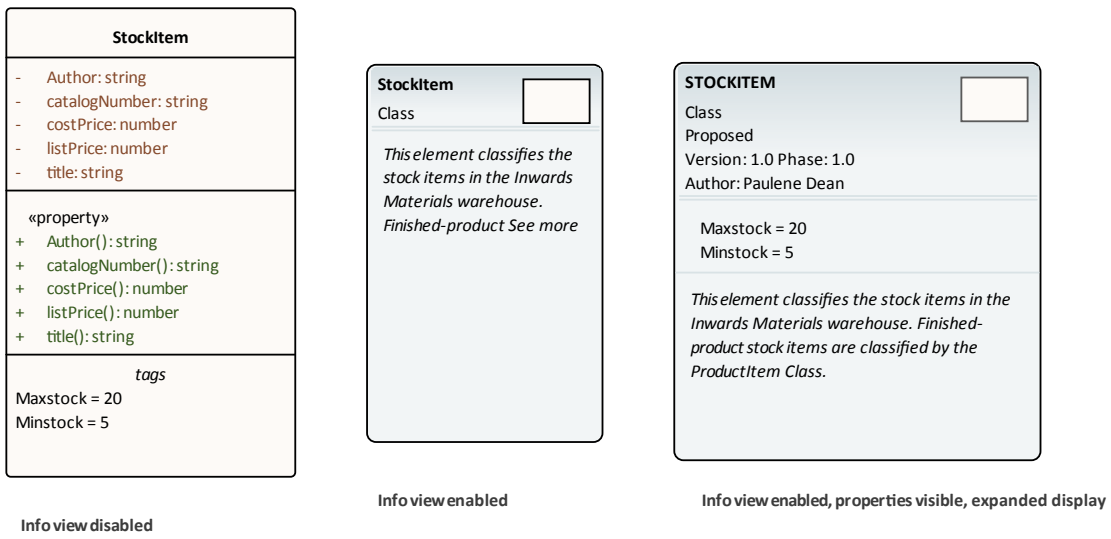
Context Menu	On diagram, right-click element | Appearance | Enable Info View On diagram, right-click element | Appearance | Info View Properties

Description

When you enable Info view on an element, the element is rendered as a rounded rectangle, divided into two. In the:

- Top half, on the left, the element name, type and stereotype display; on the right a small icon of the element's native shape displays
- Bottom half, at least some of the element's notes display

If there are more notes than can show in the available space, the text *See more* displays at the bottom, in which case you can expose more of the notes text by dragging the 'expansion handles' to resize the element. (Under Linux, the Notes text displays outside the element boundary.)



Notes might not be shown on the original rendering (as in the illustration), but automatically show when Info view is enabled. They display in italics but otherwise reflect any formatting applied to the Notes in the element.

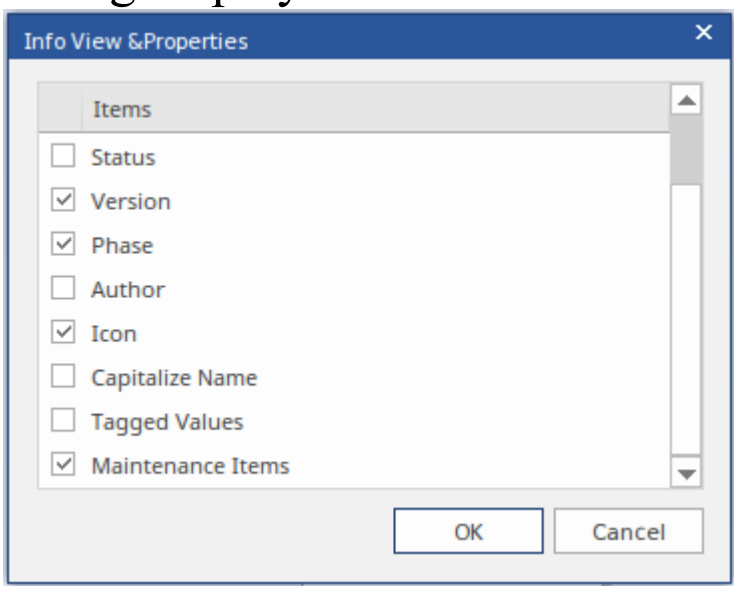
The element has a minimum size; you cannot drag the element any smaller than that. However, if you reduce the element to the minimum size in Info view, when you select the 'Enable Info View' option again to turn off Info view, the

element returns to its original size to display all of its visible content.

The properties listed in the top left of the element are customizable. The list defaults to show the element type and stereotype (where a stereotype exists) but you can chose to hide one or both of those properties, and to show any or all of the element Phase, Version, Status, Author and (for an element in the Requirement group) Priority. Those five properties are not shown on the element when Info view is disabled. You can also hide the native-shape icon on the element, display the element name in capitals, and display the element's Tagged Values and/or Maintenance compartments while in Info view (each compartment must also be enabled in either the diagram 'Properties > Elements' page or the element 'Compartment Visibility' dialog).

To customize the properties shown:

1. Right-click on the element and select the 'Appearance | Info View Properties' option; the 'Visible Properties' dialog displays.



2. Select the checkbox against each property to display, and

clear the checkbox against each property to hide.

3. Click on the **OK button**.

Notes

- The 'Info view' element icons reflect the fill and line colors of the original elements; if the 'Use Element Group Style' option is selected on the 'Diagram > Appearances' page of the 'Preferences' dialog (select the 'Start > Desktop > Preferences > Preferences' ribbon option) these will be the colors assigned to each element type, otherwise they will be the standard element fill and line colors, but not any default appearance colors assigned to the individual element
- The Info view style is not compatible with the **Custom Diagram** Style; you don't apply both styles to the same element

Element Property Displays

Enterprise Architect provides a number of ways to define, assign and review the properties and features of elements, each offering different facilities more suited to one aspect or another of model development.

User interface screens for accessing element properties

Screen
'Properties' dialog - the element 'Properties' dialog defines both the general properties of an element such as its name, phase, version and status, and properties specific to the element type such as Table columns, Activity behaviors and Chart format.
Element Properties Window - this window displays the general properties of the currently-selected element in a single view. You can dock the window within the Enterprise Architect workspace or have it free-floating within or outside the workspace.
Details tab of the **Inspector window** - the 'Details' tab presents all of the existing add-on properties of an element in a folder structure, through which you can

create further property objects, operate on them, and delete them.
Responsibilities window - this window provides a convenient method of quickly adding, viewing, editing and deleting rules applied to an element. The window shows details of the requirements, constraints, scenarios and files that impose such rules or restrictions on the element.
'Select <Item>' dialog - This dialog is a multi-purpose browser and search tool for locating model items such as Classifier elements, properties, attributes and behaviors. The '<Item>' in the dialog title changes to represent the type of object the original operation is working on.

Properties Dialog

The element 'Properties' dialog helps you to define and review a wide range of properties of a selected element. For a Class, these properties include:

- General settings, such as name, notes, alias, stereotype (if any), version, scope, dates created and modified, and status
- Details such as cardinality, concurrency and features (attributes and operations) owned
- Advanced, or custom, properties that you can edit
- Tagged Values assigned to the element
- Technology-specific Tagged Values grouped on a separate tab
- Requirements associated with the element, both internal (responsibilities) and external
- Constraints on the element's actions
- Scenarios under which the element operates
- External files associated with the element
- Links (relationships or connectors) in which the element is the source or target

These properties are presented on either a main tab of the 'Properties' dialog or a secondary tab in the panel at the right of the dialog.

Access

On a diagram or in the **Browser window**, select an element and:

Ribbon	Design > Element > Editors > Properties Dialog
Context Menu	Right-click on element | Properties | Properties
Keyboard Shortcuts	**Alt+Enter** **Shift+Enter**
Other	On the **Properties window** for an element, click on the  icon

Buttons

On any tab of the 'Properties' dialog, at any time, you can click on the buttons at the foot of the dialog and save or clear your changes.

Button	Action
OK	Click on this button to save your changes and close the 'Properties' dialog.

Cancel	Click on this button to abort your changes and close the 'Properties' dialog.
Apply	Click on this button to save your changes and keep the 'Properties' dialog open, so that you can continue working. It is a good idea to click on this button when you have finished working on a tab and are just about to move on to another tab.
Help	Click on this button to display the Help topic for the tab you are currently working on.

Notes

- There are several variations of the 'Properties' dialog:
  - The dialog for a Table or Stored Procedure element has slight differences on the 'General' tab, and a 'Table Details' (or 'Stored Procedure Details') tab instead of a 'Details' tab
  - The dialog for a Class element of a stereotype other than Table is as shown in the *General Settings* topic
  - The dialog for an element of any type other than

Class does not have a 'Details' tab
- System Boundaries have a single 'Properties' tab on which you define the element appearance
- The 'Properties' dialog for Wireframe elements automatically opens to either a main Wireframe' tab on which you can edit the element rendering directly, or a second-level Wireframing Tagged Values' tab (from the General tab) if you define the element rendering by editing the XML for the properties of that element type

- In all cases, the 'Properties' dialog is expandable; you can enlarge it for adding longer entries and clearer reading of the text field values
- The 'Responsibilities' tabs - 'Requirements', 'Constraints', 'Scenarios' and 'Files' - are the detailed definition screens for the **Responsibilities window** and can be accessed from it
- The 'Tags' tab of the 'Properties' dialog provides facilities to create and edit Tagged Values on the object
- If Tagged Values have been derived from a stereotyped element in a Profile, they are listed on a separate tab having the Profile name
- An Object element will show the properties of its classifier, some of which are changed to represent this specific instance of the classifier

General Settings

The 'General' tab of the element 'Properties' dialog provides the name of the element and any notes that are recorded on it. To the right of the tab are subordinate tabs, the number and type of which depend on the type of element selected. For a Class element, those tabs are:

- 'Main' - defining additional identification and status properties, as described here
- 'Details' - defining the cardinality, concurrency and features (attributes and operations) of the element
- 'Advanced' - defining any high-level properties of the element that might exist; the properties are a function of the element type, and you do not add or remove them but just reset their values
- 'Tags' - defines the Tagged Values of the element; any Technology-specific Tagged Values are grouped on a separate tab

Access

On a diagram or in the **Browser window**, select an element and:

Ribbon	Design > Element > Editors > Properties Dialog

Context Menu	Right-click on the element and select the 'Properties | Properties' option
Keyboard Shortcuts	**Shift+Enter** **Alt+Enter**

General Options & Main tab

Different types of element might have these fields in different sequences.

Option	Action
Name	This field displays the element's name which, for a new element, defaults to either: • <element type><number of elements of this type already in the Package> (for example, Class3) or • A name conforming to the auto-naming/numbering convention you have defined If necessary, overtype the default name with a different name.
Notes	Type in or edit any notes text associated

	with the element, applying any notes facilities required such as hyperlinks or Glossary terms. You can format the notes text using the Notes toolbar at the top of the field.
Stereotype	(Optional) Type the name of a stereotype for the element, or click on the ... button to the right of the field and use the 'Stereotypes for <object name>' dialog to select one.
Alias	(Optional, for elements other than an Object element) Type in an alias or alternative display name for the element.
Status	Click on the **drop-down arrow** and select the appropriate element management status (such as Approved or Proposed).
Type	For a Requirement element, defines the requirement type. You can change the type by clicking on the **drop-down arrow** and selecting a new type from the list.
Role	(Optional, for an Object element) Type in the role played by the object represented

	by the element.
Keywords	(Optional) Type in any significant terms that the element might be associated with and that might be filtered on to identify the element in Use Case Metrics and Searches.
Author	This field defaults to the user ID of the person who created the element. If necessary, you can type in a different user ID, or click on the **drop-down arrow** and select one.
Complexity	Click on the **drop-down arrow** and select the appropriate development complexity (used for project estimation). You normally select from three levels: • Easy • Medium • Difficult You can change your user defaults to add 'Extreme' and 'Unknown' to this list of options.
Difficulty	An estimate of the difficulty in meeting the Requirement, Feature, Change or Issue defined by the element; select from:

	• Low • Medium • High
Priority	The relative importance of meeting this Requirement, Change, Issue or Feature compared to other elements of the same type; select from: • Low • Medium • High
Language	Defaults to the programming language defined for the model (in the 'Default Language for Code Generation' field on the 'Source Code Engineering' page of the 'Preferences' dialog). If this element is required to have a different language, click on the **drop-down arrow** and select it. If the element is not language-specific, select '<none>'.
Version	Defaults to the value defined in the 'Object Display' options, for the version of the current element. If necessary, type over the field with a different version number or code.

Phase	Defaults to the value defined in the 'Object Display' options, for the phase this element is to be implemented in (for example: 1, 1.1, 2.0, ...). If necessary, type over the field with a different phase number or code.
Package	Identifies the parent Package of the selected element.
Created	Displays the date and time the element was created.
Modified	Displays the date and time the element was most recently modified.

Details

The 'Details' tab of a Class element 'Properties' dialog helps you to define the structural and processing details for the selected element, and provides direct access to the **Features window** for defining attributes and operations in the element.

Access

On a diagram or in the **Browser window**, select an element and:

Ribbon	Design > Element > Editors > Properties Dialog > General > Details
Keyboard Shortcuts	**Alt+Enter** > General > Details
Other	Double-click on element : General > Details

Set element details

Option	Action
Persistence	Click on the **drop-down arrow** and select the appropriate value (blank, persistent or transient).
Cardinality	Click on the **drop-down arrow** and select the number of instances of the element that can exist - the value displays on the element in a diagram, in the Name compartment. The format of the options in the selection list is defined in the 'Cardinality' tab of the 'UML Types' dialog.
Scope	Click on the **drop-down arrow** and select the element's scope ('Public', 'Private', 'Protected', 'Package').
Abstract	Select the checkbox to identify the element as being abstract.
Is Root	Select the checkbox to identify the element as being a root element that cannot be descended from another element.
Is Leaf	Select the checkbox to identify the element as being final, so it cannot be a

	parent for other elements.
Is Specification	Select the checkbox to identify the element as being a specification.
Is Active	Select the checkbox to identify the element as being an Active Class.
Concurrency	Select the appropriate radio button to identify how concurrent Activities should be processed: Sequentially, Guarded, Active or Synchronous.
Collection Classes	Click on this button to define the Collection Classes (for generating code from Association relationships) that apply to this Class only, as the source in an Association relationship where the target role has a multiplicity of 1 or more. This setting overrides the default for the programming language of the Class, set in the 'Preferences' dialog. The 'Collection Classes for Association Roles' dialog displays.
Attributes	Click on this button to define the attributes for the Class. The **Features window** displays, showing the 'Attributes' tab.

Operations	Click on this button to define the operations for the Class. The **Features window** displays, showing the 'Operations' tab.
Classifier Behavior	(For a Class, **SysML Block** or SysML Internal Block element, this field is enabled if the element has a child Interaction, StateMachine or Activity element.) Click on the ... icon and select the child element, to indicate that the execution of the element and its diagram define the behavior of the classifier. On the element on a diagram, note that the classifier behavior is indicated by its own compartment of the element.

Notes

- When launched from an MDG Technology, the **Attributes button** and **Operations button** are not available

Advanced Properties

The 'Advanced' tab displays the advanced properties of the element (where they exist). You can reset the values of these properties.

Access

On a diagram or in the **Browser window**, select an element and:

Ribbon	Design > Element > Editors > Properties Dialog > General > Advanced
Keyboard Shortcuts	**Alt+Enter** > General > Advanced
Other	Double-click on element : General > Advanced

Set a value for an advanced (or custom) property

Ste	Action

p	
1	Click on the data field to the right of the property name.
2	Depending on the property, either: • Type the value in free text • Click on the **drop-down arrow** and select the value from the list, or • Click on the ... button and search for the required value
3	Click on the **Apply button**.

Links

The 'Links' tab of the element 'Properties' dialog provides a list of all relationships that the current element is a partner in.

Access

On a diagram or in the **Browser window**, select an element and:

Ribbon	Design > Element > Editors > Properties Dialog > Links
Keyboard Shortcuts	**Alt+Enter** > Links **Shift+Alt+L**
Context Menu	Right-click on the element > Properties > Special Action

Links Facilities

Facility	Detail

Relationship Features	The 'Relationships' panel lists the relationships this element has, showing the: • Elements that this element is related to • Stereotype (if any) of each related element • Type of each related element • Type of each connection or relationship • Stereotype (if any) of the connector
Relationship Editing	On the 'Relationships' panel you can right-click on a relationship to display the context menu and select to perform these operations: • Display the 'Properties' dialog for a relationship - click on the 'Relationship Properties' option • Highlight the related element in the **Browser window** - click on the 'Locate Related Element' option • Delete the relationship from the model and all diagrams - click on the 'Delete relationship' option; when the system prompts you to confirm the deletion, click on the **Yes button** to do so If you have selected the element from an open diagram, another pair of context menu operations are supported:

	• Hide the relationship on the open diagram - click on the 'Hide Relation' option • Show a relationship that is hidden on the open diagram - click on the 'Show Relation' option

The Features Window

The **Features window** is a versatile and seamless tool for creating and editing the features of the selected element. The window has a number of tabs that help you to view, create, delete and manage:

- Attributes
- Operations and, for State elements, operation behaviors
- Reception elements
- On a State element, Internal Triggers
- Structural elements, such as the Parts and Properties added to elements
- Edge-mounted elements (Interaction Points) such as ActionPins and Ports that form the primary interaction points of complex, composite elements
- Entry Points and Exit Points (Connection Points) on a State element

The Features window can be used in combination with the **Properties window** and **Notes window** to define some or all of the properties of a feature and, depending on the parent element type, a range of other windows such as the 'Details' tab of the **Inspector window** and the **Responsibilities window**. All these windows automatically refresh to show the information for the object you have just clicked on, and you can flow between them without opening and closing them. You can very quickly define a range of properties, features and characteristics for an element, and

equally quickly work through a number of elements to define a structure in the model.

Responsibilities

The **Responsibilities window** provides a convenient method of quickly identifying, creating and deleting rules applied to an element. The window shows the name and main properties of the entities that impose such rules or restrictions on the element, namely the element's:

- Internal and external requirements
- Internal constraints (not external Constraint notes)
- Scenarios
- Files

Each entity type is listed on a separate tab of the window.

The Responsibilities window is typically used to examine Use Case and Test Case elements, and any other elements that realize an internal Requirement.

Access

Select the element in the **Browser window** or diagram and select one of these options to display the **Responsibilities window**:

Ribbon	Design > Element > Editors > Responsibilities > <entity type> Start > Desktop > Design > Responsibilities

Context Menu	In the **Browser window** or on a diagram: Right-click on the required element | Properties | Responsibilities
Keyboard Shortcuts	**Ctrl+4** > <entity type> **Alt+1** | Responsibilities **Alt+5** | Responsibilities

The Requirements Tab

On the 'Requirements' tab you initially create the internal requirements of the selected element. If an internal requirement later proves to have broader scope, you can select a context menu option to convert it to an external Requirement element.

To add a requirement to the element, overtype the *Add Requirement* text with the name of the requirement, and then tab across the 'Status' and 'Priority' fields. These fields immediately default to 'Proposed' and 'Medium'; if you want to change either value immediately, click on the **drop-down arrow** at the right of the field and select the required value.

If you right-click on an internal requirement name, a context menu displays providing these options:

- Add New - to open the 'Requirements' page of the element's 'Properties' dialog, where you can define the

requirement

- Modify Selected - to again open the 'Requirements' page of the element's 'Properties' dialog, where you can add or change the details of the requirement
- Move External - to display the 'Find Package' dialog, on which you locate a Package to hold the new external Requirement element
- Delete - to delete the requirement from the element; a prompt displays to confirm the deletion

If, however, you click on an external Requirement name, only two options are enabled, to locate the element either in the **Browser window** or in diagrams.

The Constraints Tab

On the 'Constraints' tab you can create the constraints of the selected element and set them in a required sequence.

To add a constraint to the element, overtype the *Add Constraint* text with the name of the constraint, and then tab across the 'Type and 'Status' fields. These fields immediately default to 'Invariant' and 'Approved'; if you want to change either value immediately, click on the **drop-down arrow** at the right of the field and select the required value.

If you right-click on a constraint name, a context menu displays providing these options:

- Add New - to open the 'Constraints' page of the element's 'Properties' dialog, where you can define the constraint

- Modify Selected - to again open the 'Constraints' page of the element's 'Properties' dialog, where you can add or change the details of the constraint
- Move Up and Move Down - to move the selected constraint into a different point in the list of constraints
- Delete - to delete the constraint from the element; a prompt displays to confirm the deletion

Moving Requirements and Constraints between elements

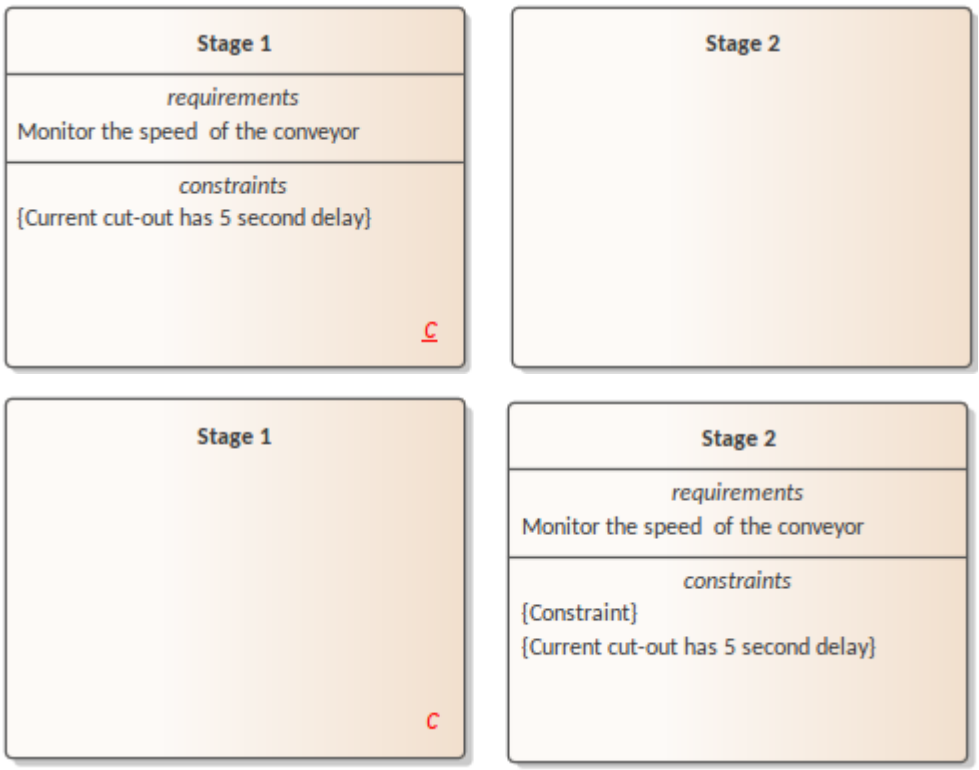
A requirement or constraint you define for one element might be usefully moved to another if, for example, you are moving your model through stages in a lifecycle or, indeed, modeling a lifecycle. It is possible to simply drag the requirement or constraint from either the appropriate tab of the **Responsibilities window** or the 'Details' tab of the **Inspector window**, onto a different element on a diagram.

From the **Browser window**, open the diagram containing the target element, then click on the element from which to move the requirement or constraint. It is convenient to have both source and target elements on the same diagram, but it is possible to select the source element in the Browser window or on a different open diagram.

It is also convenient to have compartments enabled on the target element, with the 'requirement ' and/or 'constraints' compartments selected, so that you can observe the addition

of the moved item. (Right-click on the element and select 'Compartment Visibility', then select the 'Requirements' and 'Constraints' checkboxes.)

Click on the item that you intend to move, and simply drag it onto the target element. The item name will display in the appropriate compartment of that element. What you would observe might resemble this illustration.



The Scenarios Tab

On the 'Scenarios' tab you can create the scenarios of the selected element. The first scenario you create here defaults to the Basic Path, and subsequent scenarios default to Alternate Paths. You cannot change the path type here, but if you edit the scenario elsewhere the tab reflects any

changes you have made.

To add a scenario to the element, overtype the *Add Scenario* text with the name of the scenario. When you click off the name, the 'Type' field is automatically set, and the 'Structured Scenario' field is populated with an **Edit button**. To add details of the scenario steps, click on the Edit button to display the **Scenarios view** for the element - this is identical to the 'Scenarios' page of the 'Properties' dialog for the element.

You can add a description of the scenario using the **Notes window**; the 'Notes' field for the scenario is then updated with that text.

If you right-click on a scenario name, a context menu displays providing the option to delete the scenario. If you select this option, a prompt displays to confirm the deletion.

The Files Tab

On the 'Files' tab you can link to one or more files external to the repository. To link a file to an element, use the 'Add New' context menu.

If you right-click on a file name, a context menu displays providing these options:

- Add New - to open the 'Files' page of the element's 'Properties' dialog, where you can create a link to the file
- Modify Selected - to again open the 'Files' page of the element's 'Properties' dialog, where you can add or change

the details of the file

- Launch File - to open the file and read its content
- Delete - to delete the file from the element; a prompt displays to confirm the deletion

Requirements

Requirements are of two types:

- Internal requirements (responsibilities) and
- External requirements (system requirements, elements connected to the current element by - for example - Realize connectors)

This topic focuses on internal, responsibility requirements, although once you have created a responsibility you can convert it to an external Requirement element.

To create the requirements that an element is being designed to meet, you can use either the 'Requirements' tab of the **Responsibilities window** or the different 'Requirements' tab of the element's 'Properties' dialog. The Responsibilities window helps you to sketch out the element's internal requirements, and you can switch from there to the 'Properties' dialog to add detail to the requirement. Alternatively, you can create new internal requirements directly in the 'Properties' dialog.

You can show the internal requirements for an element on a diagram, using the element 'Compartment Visibility' function; it is also possible to show inherited requirements in this way.

Information on using the Responsibilities window is provided in the *Responsibilities* Help topic. This *Requirements* topic goes on to discuss the 'Requirements' tab of the element' Properties' dialog.

Access

On a diagram or in the **Browser window**, select an element and:

Ribbon	Design > Element > Editors > Requirements | Right-click on a requirement > Add New or Modify Selected Design > Element > Editors > Properties Dialog > Requirements
Context Menu	Right-click on element | Properties | Responsibilities > Requirements | Right-click on a requirement > Add New or Modify Selected Right-click on element | Properties | Properties > Requirements
Keyboard Shortcuts	**Ctrl+4** > Requirements (tab of the **Responsibilities window**) **Shift+Enter** > Requirements ('Properties' dialog) **Shift+Alt+R** ('Properties' dialog)

Define internal Requirements

Field/Button	Action
Requirement	Type in the name and/or short definition of the requirement. This text will display on the element on a diagram, if the visibility is set to show internal requirements.
Properties	In this panel, click on the value field against each property, then click on the **drop-down arrow** and select the appropriate setting: • Status - select the current status of the requirement • Difficulty - select the value that most closely reflects the difficulty of implementing the current requirement • Priority - select the value that best indicates how urgent the requirement is • Stability - select the value that provides the best indication of the probability of the requirement - or understanding of the requirement - changing; high stability indicates a low probability of the requirement changing • Type - select the value that most

	accurately reflects the type or function of the requirement; Functional requirements are things that the system must do, such as identify franked, unfranked and total credit for a dividend; Non-functional requirements are things that the system must be, such as reliable or cost effective The 'Last Updated' field shows the date on which the requirement was last changed and saved.
Notes	Type in any additional details or comments on the internal requirement. You can format the notes text using the Notes toolbar at the top of the field.
New	Click on this button to clear the fields or set them to default values, so that you can create a new internal requirement.
Save	Click on this button to save your changes to the currently-selected requirement.
Delete	Click on this button to delete the requirement currently selected in the 'Requirements' list. A prompt displays to confirm the deletion.

Requirements	Lists the names of the requirements associated with the current element. Both internal and external requirements are listed on the right of the dialog; the external elements are identified by the word 'Yes' in the 'External' column. If you want to convert an internal requirement to an external Requirement element, right-click on the requirement in the list and select the 'Move External' menu option. Right-clicking on an external Requirement element name provides the options to locate the element in the **Browser window** or in any diagrams that contain it.

External Requirements

External Requirements are those Requirement elements that have been connected to the current element using a Realization connector. By creating the connector from the element to the Requirement, you create an expectation that the element must implement the requirement as part of the system solution.

In Enterprise Architect, linked Requirement elements are listed in the **Responsibilities window** and on the 'Requirements' tab of the source element's 'Properties' dialog, and from there they can be located by right-clicking on the name and selecting either the 'Find in Project Browser' option or 'Find in Diagrams' option.

External Requirements are also shown in the 'Links' tab of the 'Properties' dialog for the element, and again can be located in the **Browser window** by right-clicking on the external Requirement in the list and selecting the 'Locate Related Element' option.

When an external Requirement is highlighted in the Browser window or in a diagram, its properties are displayed in the **Properties window** (press **Ctrl+2** to display this window if it is not open).

Constraints

If you need to define the conditions and rules under which an element operates and exists, you can do this by setting Constraints on the element, in conjunction with its responsibilities (internal requirements). Typical constraints are pre- and post-conditions, which indicate things that must be true before the element is created or accessed and things that must be true after the element is destroyed or its action is complete.

To create the constraints on an element, you can use either the 'Constraints' tab of the **Responsibilities window** or the different 'Constraints' tab of the element's 'Properties' dialog. The Responsibilities window helps you to sketch out the element's constraints, and you can switch from there to the 'Properties' dialog to add detail to the constraint. Alternatively, you can create new constraints directly in the 'Properties' dialog.

You can show the constraints for an element directly on the diagram, using the element 'Compartment Visibility' function; this also reveals any constraints inherited from parent elements.

Information on using the Responsibilities window is provided in the *Responsibilities* Help topic. This *Constraints* topic goes on to discuss the 'Constraints' tab of the element's 'Properties' dialog.

Access

On a diagram or in the Browser, select an element and:

Ribbon	Design > Element > Editors > Constraints | Right-click on a constraint > Add New or Modify Selected Design > Element > Editors > Properties Dialog > Constraints
Context Menu	Right-click on element | Properties | Responsibilities > Constraints | Right-click on a constraint > Add New or Modify Selected Right-click on element | Properties | Properties > Constraints
Keyboard Shortcuts	**Ctrl+4** > Constraints (tab of the **Responsibilities window**) **Shift+Enter** > Constraints ('Properties' dialog) **Shift+Alt+C** ('Properties' dialog) **Alt+9** > Constraints : Shift+Enter

Define constraints for an element

Option	Description
Constraint (field)	Type the name or value of the constraint.
Type	Click on the **drop-down arrow** and select the appropriate type (Pre-condition, Post-condition, Process, OCL or Invariant).
Status	Click on the **drop-down arrow** and select the appropriate status.
Notes	Type in any additional details or comments on the constraint. You can format the notes text using the Notes toolbar at the top of the field.
New	Click on this button to clear the fields ready to create a new constraint.
Save	Click on this button to save the constraint data.
Constraint (panel)	This field lists the constraints defined in the element, by name.
Delete	Click on a constraint in the 'Constraint' list and click on this button to

	immediately remove the constraint from the element.
(Up and Down Hands) 	(If you have two or more constraints in the element.) Click on a constraint in the 'Constraints' list and click on one of these buttons to move the constraint one position up or down in the list.

Scenarios

A scenario is a real-world sequence of operations that describes how the process represented by an element works in real-time. Scenarios can be created for any element - although they principally apply to Use Cases - to describe functional behavior, business workflows and end-to-end business processes.

You define scenarios in detail in the Scenarios View, creating new scenarios or editing existing scenarios; for each scenario you can then:

- Create a series of steps for each part of the scenario
- Structure the scenario to show how the basic path diverges into alternate paths and exception paths
- Generate a number of types of diagram from the structure
- Generate the structured scenario from an Activity diagram
- Generate the structured scenario from text on the clipboard

You can also create and review scenarios at two less-detailed levels, using:

- The 'Scenarios' tab of the **Responsibilities window** to create an empty basic or alternate scenario, or to simply list the scenarios for an element
- The 'Scenarios' tab of the element 'Properties' dialog to create scenarios, add, edit and format Notes, change the path type or change the sequence

Locating Scenarios

To help you locate the elements for which scenarios have already been defined, you can run the predefined 'Find Scenarios' **Model Search**.

Select the 'Design > Element > Editors > Find Scenarios' ribbon option to automatically execute the search on the model, which displays a list of the elements that contain scenarios.

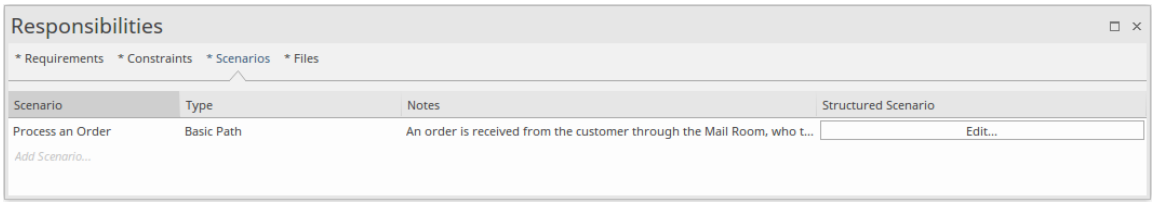
You can either double-click on an element or right-click on it and select the 'Properties' option, to display the 'Properties' dialog for that element. Select the 'Scenarios' tab of the dialog.

Notes

- The Scenarios displays do not prevent you from creating more than one basic path for the scenario on an element, but it would be unusual to define more than one

Scenarios Tab - Responsibilities Window

The 'Scenarios' tab of the **Responsibilities window** is the simplest of the three screens on which you can create and manage scenarios for an element.



You use this tab to create a Basic Path scenario or, if a Basic Path already exists, an Alternate Path scenario. The tab also simply lists the existing scenarios on an element, and provides options to edit or delete any of these scenarios.

Access

On a diagram or in the **Browser window**, click on the element and:

Ribbon	Design > Element > Editors > Responsibilities > Scenarios
Context Menu	Right-click on element | Properties | Responsibilities > Scenarios **Inspector window** > Details | Scenarios (right click) | Scenario List

Keyboard Shortcuts	**Ctrl+4** > Scenarios **Alt+5** | Scenarios

Create a Scenario

In the 'Scenario' column, click on the *Add Scenario* text and type in a name or title, then click away from the item line.

If this is the first scenario on the element, it is automatically created as the Basic Path; subsequent scenarios are automatically created as Alternate paths. You cannot change these allocations on this tab.

Alternatively, right-click on the *Add Scenario* text and select the 'Add New' option. The 'Scenarios' tab of the element 'Properties' dialog opens. See the *Scenarios Tab - Properties Dialog* Help topic.

Review Scenarios

Where there are existing scenarios, the 'Scenarios' tab lists them in the order in which they were created (or in the order they have been reorganized into on a different screen). You can see any notes that have been written elsewhere for each scenario, and the type of each scenario. To display the full

text of the notes, hover the cursor over the 'Notes' field. Alternatively, if the **Notes window** is open you can read and edit the note text there.

You can edit the scenarios in one of two ways.

- Right-click on the scenario line and click on the 'Modify Selection' option to display the 'Scenarios' tab of the **Properties window**, if you want to:
  - Put the scenarios in a different sequence
  - Add or edit Notes text
  - Change the scenario name and/or path type
- Click on the **Edit button** in the 'Structured Scenario' column to display the Scenarios View, if you want to:
  - Put the scenarios in a different sequence
  - Change the scenario name and/or path type
  - Add or delete steps in the scenario, or re-sequence them
  - Link the Alternate and Exception paths to specific steps of the Basic path
  - Manage the elements that the scenario uses at various steps
  - Generate diagrams or Test Cases from the scenario

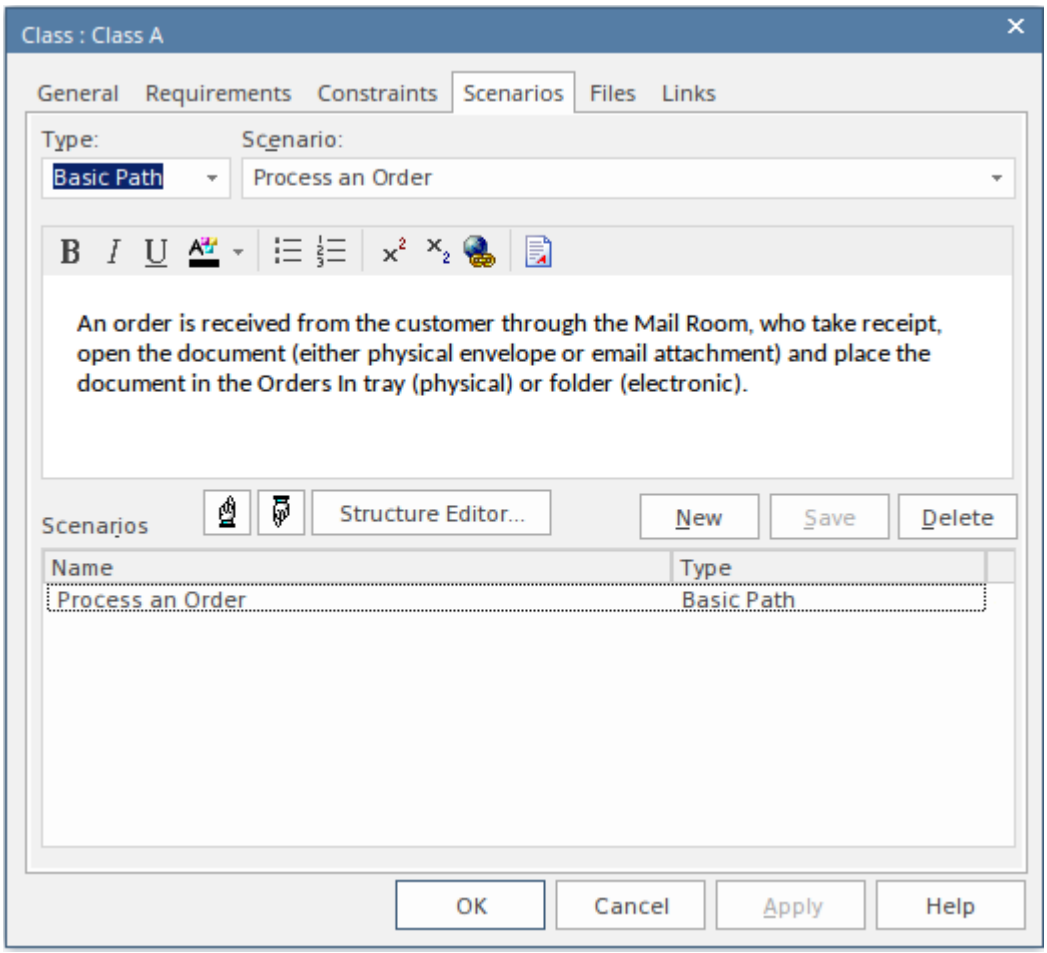
Delete Scenarios

If you no longer want to keep a scenario for an element, click on the scenario name and either select the 'Delete' option or press **Ctrl+Delete**. A prompt displays to confirm

the deletion.

Scenarios Tab - Properties Dialog

The 'Scenarios' tab of the element 'Properties' dialog enables you to create and delete basic definitions of scenarios for the selected element, add descriptions in the 'Notes' field, and re-arrange the Basic, Alternate and Exception Scenario paths in a list.



Access

On a diagram or in the **Browser window**, click on the element.

Ribbon	Design > Element > Editors > Properties Dialog > Scenarios
Context Menu	Right-click on element | Properties | Properties > Scenarios On the 'Scenarios' tab of the **Responsibilities window**, right-click on the: • Body of the tab and select the 'Add New' option, or • A scenario name and select the 'Modify Selected' option
Keyboard Shortcuts	**Alt+5** | Properties Dialog > Scenarios **Shift+Enter** > Scenarios **Shift+Alt+S**
Other	Double-click on the element > Scenarios

Create a Scenario

If the element does not yet have a Basic Path defined, the 'Type' field defaults to 'Basic Path'.

If the element already has a Basic Path (and/or other paths),

click on the **New button**; the 'Type' field defaults to 'Alternate'. If appropriate you can click on the **drop-down arrow** and select 'Exception' (or, if necessary, 'Basic Path').

Click on the 'Scenario' field and type in an appropriate scenario name or title.

Click on the large field under the Toolbar and type in any notes, comments, description or explanation of the scenario you are creating. You can use the Notes Toolbar and context menu to format the text and perform other text processing; see the *Notes* Help topic.

Click on the **Save button**; the new scenario is added to the 'Scenarios' panel at the bottom of the dialog.

Edit a Scenario

Click on the name of the scenario in the 'Scenarios' panel; the details are displayed in the fields in the top of the screen.

You can change the type, name, and/or notes as required.

Note that the Basic Path can have a great deal of structural specification work attached to it (via the Scenario View), which will be deleted if the path is changed from Basic to something else. If you attempt to make this change, a warning message is displayed. Always make sure that you understand the implications of changing the type of, or deleting, a Basic Path before continuing with the operation.

When you have edited the scenario, click on the **Save button**.

Reorganize Scenarios

If you want to change the sequence of the scenario paths for the element, check the list in the 'Scenarios' panel and click on the first scenario to move. Then click on the 'Up Hand' icon or the 'Down Hand' icon to move the scenario up one position or down one position in the list. Do the same for any other scenarios that are not in the right sequence.

Delete Scenarios

If you no longer want to use a particular scenario, click on the scenario name in the 'Scenarios' panel and click on the **Delete button**. The scenario is immediately removed from the element. You cannot delete the last remaining scenario if it is the Basic Path.

Add a Specification Structure

If you want to create a scenario specification structure from the scenarios, click on the **Structure Editor button** to display the Scenarios View. This enables you to:

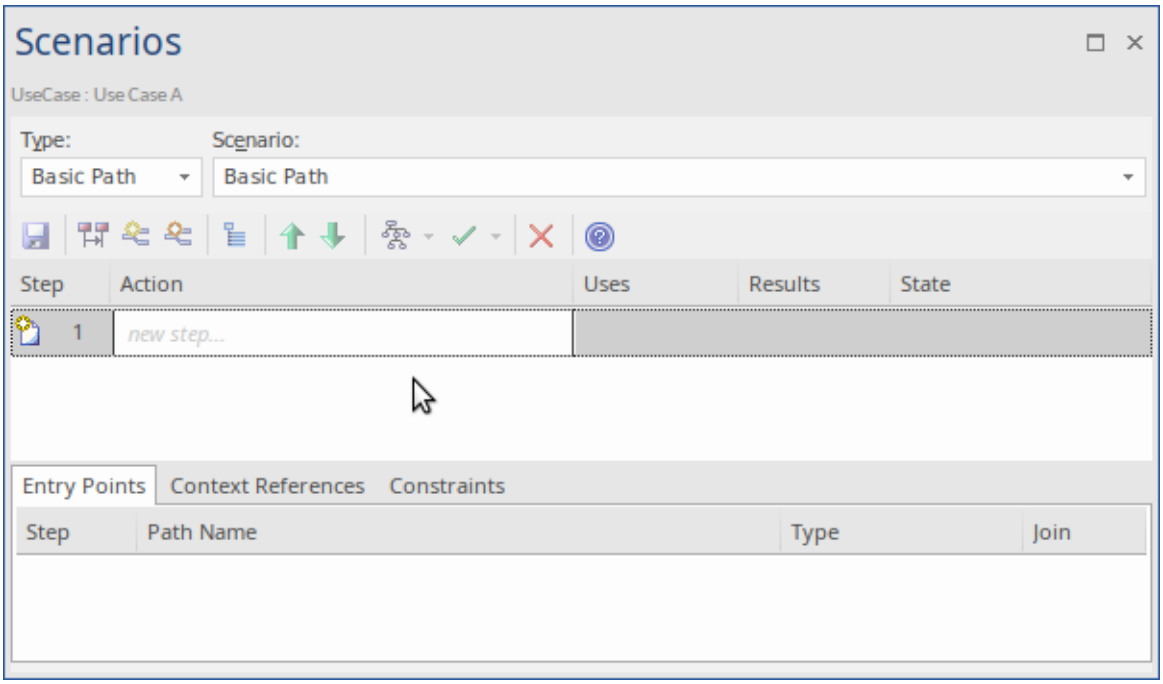
- Add or delete steps in the scenario, or re-sequence them

- Link the Alternate and Exception paths to specific steps of the Basic path
- Manage the elements that the scenario uses at various steps
- Generate diagrams or Test Cases from the scenario
- Add constraints or context references

Scenarios View

The Scenarios View can be displayed in a number of ways, such as directly through the 'Desktop' panel of the Start ribbon, or through the 'Scenarios' tab on either the element 'Properties' dialog or the **Responsibilities window**. It offers a wide range of facilities for generating and modifying scenarios, which you can use to quickly and easily define the structure, actions and interactions of the scenarios defined for an element such as a Use Case. These scenarios can be the main (basic) path, alternate paths or exception paths.

When you open the Scenarios View it defaults to the basic path so that if it does not already exist, you can create it. You can create alternate paths and exception paths by adding them to steps of the basic path.



Within the Scenarios View you can:

- Construct the scenario step-by step, or
- Import a text file that describes a scenario, or
- Generate a scenario from an Activity diagram that was itself generated from a scenario (thus regenerating the scenario or importing it from another element)

Access

On a diagram or in the **Browser window**, click on the element and:

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic)

	On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Next Step

In the 'Scenario' field, type the name of the basic path of the scenario.

To familiarize yourself with the facilities of the Scenarios View, start with the *Scenarios View Toolbar* Help topic.

If you want to:

- Construct the scenario step-by step, see the *Set Up a Scenario Specification* Help topic
- Complete the scenario based on an imported text file, see the *Import a Scenario File* Help topic
- Generate a scenario from an Activity diagram created from a scenario, see the *Generate Scenario from **Activity Diagram*** Help topic

Scenarios View Toolbar

In developing a scenario specification, you can perform a wide range of operations using the icons on the Scenarios View toolbar underneath the 'Type' and 'Scenario' fields on the Scenarios View.



Access

On a diagram or in the **Browser window**, select an element and:

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the

	Edit button against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Toolbar options

Icon	Action
	Click on this icon to save changes to the scenario specification.
	Click on this icon to return to the basic path specification (if another path specification is currently displayed).
	(Enabled when the basic path is displayed - you cannot add an alternate path to another alternate path or to an exception path.) Click on this icon to create a branch from the selected step to an alternate path scenario; select the path from the

	displayed list. If the appropriate scenario does not yet exist, double-click on the *new path* line and type the scenario name, then click off the line and back on to it. Click on the **OK button**. • An entry for this alternate path displays in the 'Entry Points' tab, as step 'a' of the basic path step it branches from; in the 'Join' column, click on the **drop-down arrow** and select the number of the step at which action flows back to the basic path, or select 'End' if the path terminates separately from the basic path • You cannot join the end of the alternate branch to more than one step of the basic path; if you change the join point of the branch, any duplicates of that branch are updated to remain in synchrony with the join point 
	(Only enabled when the basic path is displayed - you cannot add an exception path to another exception path or an alternate path.)

Entry Points | Context References | Constraints

Step	Path Name	Type	Join
0	In-house Account Processing	Basic Path	-
2a	Access 1	Alternate	6
4a	ATM Path	Alternate	End
6a	Data Not Found	Exception	End

	Click on this icon to create a branch from the selected step to an exception path scenario - select the path from the displayed list. If the appropriate scenario does not yet exist, double-click on the new path line and type the scenario name, then click off the line and back on to it. Click on the **OK button**. • An entry for this exception path displays in the 'Entry Points' tab, as step 'a' of the basic path step it branches from; in the 'Join' column, click on the **drop-down arrow** and select the number of the step at which action flows back to the basic path, or select 'End' if the path terminates separately from the basic path • You cannot join the end of the exception branch to more than one step of the basic path; if you change the join point of the branch, any duplicates of that branch are updated to remain in synchrony with the join point
	Click on this icon to display the 'Manage Uses Context List' dialog, which you use to set the 'Uses' column entries to linked context reference lists.

	Click on this icon to move the currently-selected step one place up (including any *new step* ... line).
	Click on this icon to move the currently-selected step one place down (including any *new step* ... line).
	Click on this icon to display a list of diagrams that you can generate from the scenario; click on the type of diagram that you want to generate.
	Click on this icon to display a list of Test Suites and Test Cases you can generate, based on this Use Case scenario. Click on the test structure you want to generate.
	Click on this icon to delete the selected step from the scenario.
	Click on this icon to display the Help topic for this tab.

Scenarios View Item Context Menu

You can perform a wide range of operations in creating and managing your scenarios, using the Scenarios View item context menu.

Access

On a diagram or in the **Browser window**, select an element and use one of these methods to display the Scenarios View. Then right-click on an item in the Step/Action list.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Right-click on 'Scenarios' | New Scenario Browser window > Element | Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the

	Scenarios Tab - Responsibilities Window Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Item menu options

Option	Action
Create Structure From Clipboard Text	Click on this option to display two sub-options to generate a set of steps from a text description or list captured on the clipboard; a new step is generated: • After each carriage return in the captured text ('New Line Delimited'), or • For each sentence in the text; that is, after each full stop/space/capital letter combination ('Sentence Delimited') If a set of steps is already displayed, it is overwritten by the generated steps.
Create Structure	Click on this option to generate a set of steps from an Activity diagram generated

From Generated Activity Diagram	from a scenario for a Use Case. If a set of steps is already displayed, it is overwritten by the generated steps.
Add Alternate Path	Click on this option to create a branch from the selected step of the basic path to an alternative path. Shortcut: **Ctrl+Shift+N**
Add Exception Path	Click on this option to create a branch from the selected step of the basic path to an exception path. Shortcut: **Ctrl+Shift+E**
Insert Step	Click on this option to display three sub-options, to insert a *new step...* line: • Above the currently-selected step (press **Esc** to return this new line to the end of the scenario) • Below the currently-selected step (press Esc to return this new line to the end of the scenario) • At the end of the scenario Shortcut: **Shift+Insert**, Insert or **Ctrl+N**, respectively
Set Step As	Click on the appropriate option to switch

'User' Set Step As 'System'	the entity responsible for performing the action of the selected step between user and system.
Link Step to Use Case	Click on this option to display sub-options to: • Extend an existing Use Case element • Include the actions of an existing Use Case element, or • Invoke a Use Case as the action of the selected step Selecting the appropriate sub-option displays the 'Select Use Case' dialog, which you use to browse for and select the required Use Case element. The appropriate 'includes', 'extends' or 'invokes' stereotyped connector is created between the current element and the selected Use Case. For the include and extend actions, any text in the 'Action' column is overwritten by the link to the Use Case; for the invoke action, this link is added to the end of the 'Action' text: (Invokes: <Use Case Name>)
Merge With Step	Click on this option to merge the selected step with another.

	A list of the other steps in the scenario displays; click on the step to merge with the selected step.
Move After Step	Click on this option to move the selected step to another position in the scenario. A list of the other steps in the scenario displays; click on the step after which to position the selected step.
Delete	Click on this option to delete the selected step; any subsequent steps are moved up one place. A prompt displays to confirm the deletion. Click on the **Yes button**.

Scenarios View Selected Text Context Menu

In the Scenarios View, further facilities are available to work with the user-editable text of any part of a specification step. You access these facilities through the item selected-text context menu.

Access

On a diagram or in the **Browser window**, select an element and use one of these methods to access the Scenarios View. In the Scenarios View, highlight the text string and right-click on it.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor

Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Text menu options

Option	Action
Create	Click on this option to display two sub-options that you can select to use the highlighted text as the base for either: • A glossary definition or • A new element
Link Step to Use Case	Click on this option to display sub-options to define the actions of the selected step by: • Including the actions of an existing Use Case element

	• Extending an existing Use Case element, or • Invoking a Use Case Selecting the appropriate sub-option displays the 'Select Use Case' dialog, which you use to browse for and select the required Use Case element. The appropriate includes, extends or invokes stereotyped connector is created between the current element and the selected Use Case. For the include and extend actions, any text in the 'Action' field is overwritten by the link to the Use Case; for the invoke action, this link is added to the end of the 'Action' text: (Invokes: <Use Case Name>)
Link to existing Element	('Uses' and 'Results' field text only.) Click on this option to create a Realization or Dependency relationship to a Requirement, Feature, Activity, BPMN Task, DMN Decision or other element elsewhere in the model. You select the element and connector types from submenu options that then display the 'Select Element' dialog, which you use to browse for and select the

	required element.
Insert context reference	Click on this option to add a reference to an element stored elsewhere in the model, and create an entry for the element in the 'Context References' tab. Selecting this option displays the 'Select Element' dialog, which you use to browse for and select the required reference element.
Insert glossary definition	Click on this option to insert an existing glossary term at the cursor position. To select the term, double-click on it in the displayed list. When you select the term it is inserted into the field as highlighted and underlined text, which displays the definition when you move the cursor over it. If you highlighted part of the original text, the term overwrites that text.
Manage Uses Context List	(On highlighted text or a specific cursor position in the 'Uses' column.) Click on this option to display the 'Manage Uses Context List' dialog, which you can use to: • Browse to or type in a context reference item

	• Re-sort the list with up and down arrow keys • Remove an entry from the list • Enable or disable the 'Uses Context List' facility across the model You can resize the dialog to show the full details of context reference items. If you enable the 'Uses Context List' facility, you do not necessarily have to use the dialog to add context list items; you can type or insert an element name from the 'Context References' tab in the 'Uses' column, and that name is added to the 'Uses Context List'. If you disable the 'Uses Context List' facility, the context list items in the 'Uses' column are hidden.
Split Step	Click on this option to split the selected step into two consecutive steps. The option is available only if you highlight a portion of the text in the selected field. The new step takes the highlighted text as its 'Action' text.
Search for <text>	Click on this option to display the Code Editor menu of options for locating the selected text in a number of locations.

Undo	Click on this option to undo any unsaved changes you have just made in the step.
Cut	Select this option to cut the selected text to the clipboard.
Copy	Select this option to copy the selected text to the clipboard.
Paste	Select this option to paste the current contents of the clipboard.
Delete	Select this option to delete the selected text string.
Select All	Select this option to select all text in the current field.

Scenarios View Entry Points Context Menu

In the lower section of the **Scenarios view**, the 'Entry Points' tab shows how the basic path, alternate path and exception path scenarios for the element are organized and interrelated. If an alternate path or exception path has been defined but has not yet been added to the basic path, it is not listed on this tab. You can perform certain operations on the items of the 'Entry Points' tab, using the context menu.

Access

On a diagram or in the **Browser window**, select an element use one of the options here to display the Scenarios View. Then click on the appropriate entry in the 'Entry Points' tab.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard	**Alt+1** > Scenario Editor

Shortcuts	
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Entry Points menu options

Option	Action
Edit Path	Click on this option to display the steps of the scenario in the **Scenarios view**, with the first step highlighted.
Join with Step	(Available only if the basic path scenario is displayed in the **Scenarios view**, to join the selected alternate or exception path with the basic path. Not available to change the basic path scenario itself.) Click on this option to highlight the 'Join'

	field and its **drop-down arrow**. Click on the drop-down to define or change the step number at which the alternate or exception path rejoins the basic path. Select 'End' if the path does not rejoin the basic path steps.
Remove Entry Point	(Available only if the basic path scenario is displayed in the **Scenarios view**, to delete a junction with the basic path. Not available to delete any part of the basic path scenario itself.) Click on this option to delete the relationship between the selected path and the basic path, and remove the entry from the 'Entry Points' tab. A prompt displays to confirm the deletion. Click on the **Yes button** to delete the junction.

Notes

- You can switch focus between the 'Entry Points' tab and the sequence of steps by pressing **Alt+Q**

Scenarios View Floating Toolbar

Wherever a reference to another element exists in the 'Uses' column of the **Scenarios view** (that is, where the text is highlighted and underlined), if you move the cursor over the element name a short floating toolbar displays. You can select the icons on this toolbar to:

- Display the element's 'Properties' dialog
- Locate the element in its parent diagram
- Locate the element in the **Browser window**

Import a Scenario File

Scenarios are often created as text descriptions in document files. These might be simple paragraph descriptions or more complex constructions with numbered and bulleted lists. As a valuable time-saving facility, you can use the text of these files as the source for new structured scenarios for elements within the model. You might write a draft description in a text file and then import it into the model as a template for the structured scenario.

To create a scenario in this way, firstly access the Scenarios View as described in the *Scenarios View* Help topic (for instance, Start > Desktop > Design > Scenario Editor). Then:

1. In the 'Scenario' field, type a name for the new scenario.
2. Switch to the text or document file, and select and copy the required text. (The text is stored on the clipboard.)
3. Switch back to the Scenarios View, right-click in the center panel (below the first row of fields) and select the 'Create Structure From Clipboard Text' option. This displays two sub-options:
   - 'New Line Delimited', which creates a new step after each carriage return in the captured text
   - 'Sentence Delimited', which creates a new step after each sentence in the text; that is, after each full stop/space combination
4. Select the appropriate option for your requirements. The Scenarios View organizes the copied text into a series of

numbered steps, alternating between non-system actor and system actor roles.

5. Edit and add to the scenario as suggested by the *Set Up Scenario Specification* Help topic, and using the facilities described in the *Scenarios View* subtopics.

Notes

- If the Scenarios View already contains scenario steps when you import text from a file, those steps are overwritten, not merged or appended
- By default, the steps begin with a user step (indicated by an 'Actor' icon) and alternate between user and system (indicated by a 'Screen' icon) steps; however, the responsible entity assigned to a new step might be different if the new line or sentence contains a keyword - 'User' or 'Actor' for a user step, or 'System' for a system step - within the first 15 characters of text
- Once a step has been saved, you can change the responsible entity by either double-clicking on the icon or right-clicking on the step, and selecting 'Set Step as 'System'' or 'Set Step as 'User'' as required

Set Up Scenario Specification

You can create a specification for a scenario in one of a number of ways:

- Build the specification yourself, as described here, perhaps starting from a scenario created on the 'Scenarios' tab of either the **Responsibilities window** or the 'Properties' dialog for the element
- Generate a specification from an Activity diagram generated itself from a scenario - see the *Generate Scenario From **Activity Diagram*** Help topic
- Generate a specification from text held on the clipboard - see the *Import a Scenario File* Help topic

Access

On a diagram or in the **Browser window**, select an element and open the Scenario View using one of these methods:

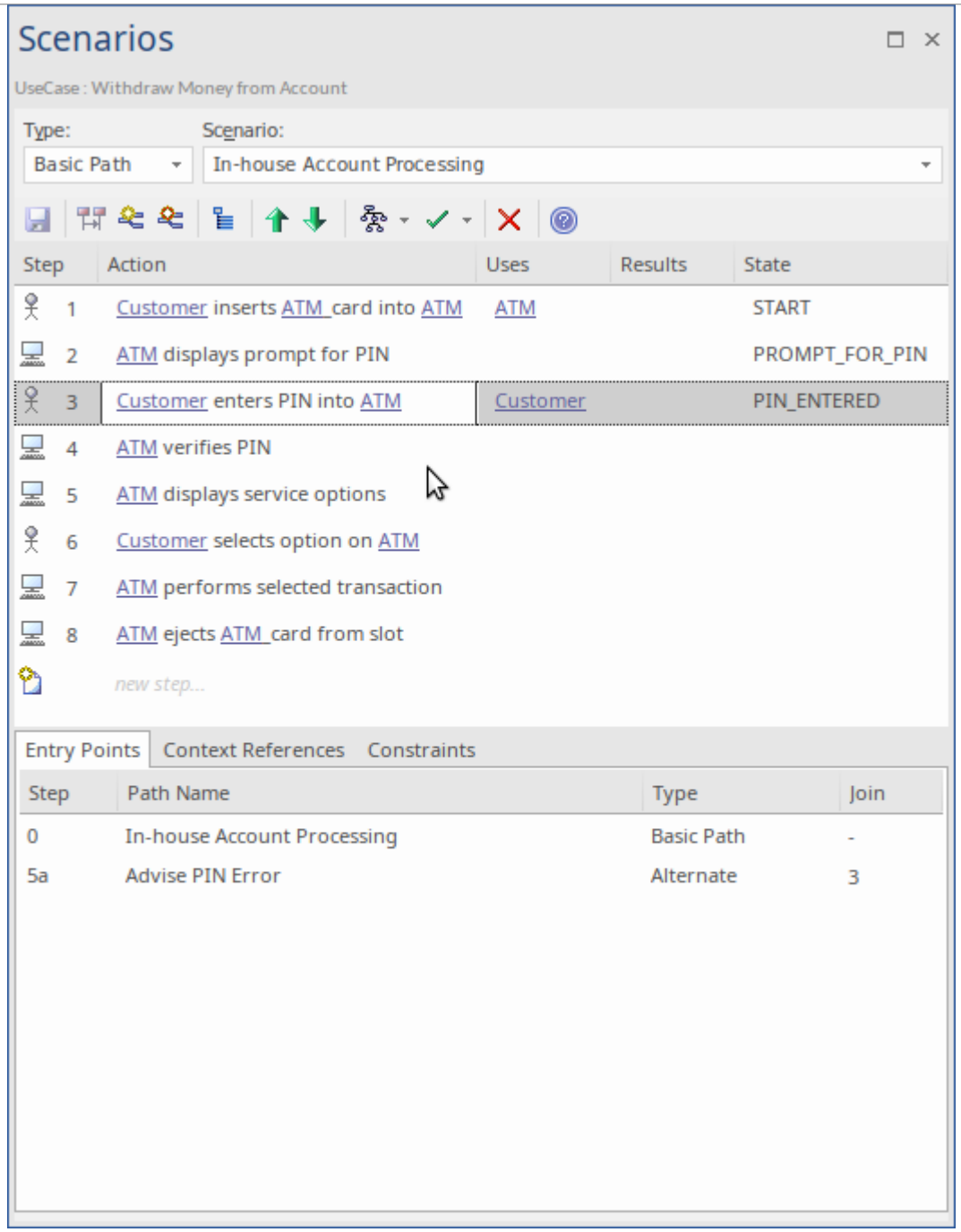
Ribbon	Start > Desktop > Design > Details > Scenario Editor
Context Menu	**Inspector window** > Details | Scenarios (right click) | New Scenario > Scenario View Inspector window > Details | Scenarios | right-click on existing Scenario |

	Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Enter the specification basic path

Step	Action
1	In the 'Type' field, click on the **drop-down arrow** and select 'Basic Path' (the system will generally default to this value). In the 'Scenario' field type the name of the scenario basic path. (These fields will be completed already if you have

	selected to work on a scenario created on the 'Scenarios' tab of the **Responsibilities window** or 'Properties' dialog.)
2	In the 'Action' column, overtype the *new step* text with the name of the first step or action.
3	Tab to the 'Uses' column and, if appropriate, type the name of each element used in this step. If the elements are highlighted in blue and underlined, it indicates that they are already listed in the 'Context References' tab. You can also manage the list of elements as context references, and add to the list directly; see the *Notes*.
4	Tab to the 'Results' column and, if appropriate, type the outcome of completing this step.
5	Tab to the 'State' column and, if appropriate, type the name of the state into which the step moves the action.
6	When you move out of the 'Action' column, the next new step field displays underneath. Repeat steps 2 to 5 as many times as is necessary. The **Scenarios view** should now resemble this:



7	Click on the icon in the Scenarios View toolbar.

Notes

- By default, the steps begin with a user step (indicated by an 'Actor' icon) and alternate between user and system (indicated by a 'Screen' icon) steps; however, you can control the responsible entity assigned to a new step by typing a keyword within the first 15 characters of the text in the 'Action' column - either 'User' or 'Actor' for a user step, or 'System' for a system step
  Once a step has been saved, you can change the responsible entity by either double-clicking on the icon or right-clicking on the step, and selecting 'Set Step as 'System'' or 'Set Step as 'User'' as required
- An entry for the basic path displays in the 'Entry Points' tab, as Step 0 with no value in the 'Join' column (the basic path does not rejoin itself)
- The values in the 'Uses', 'Results' and 'State' columns, whilst optional, are significant if you want to generate a diagram from the specification; if you type the name of an element linked to the current element (and listed in the 'Context References' tab), the element name is highlighted and underlined
- In the 'Uses' column, in edit mode, use the 'Manage Uses Context List' context menu option to enable and disable 'Uses' cells as linked element lists as well as text fields, across the whole model; when the feature is enabled, the column shows both context-linked elements and manually-entered text, and when disabled only text entries are listed (the context-linked entries are hidden and deactivated, but not deleted - they are re-activated when

the feature is enabled)

- As you develop the scenario, you can move steps to different positions in the scenario, and insert new step lines within the body of the scenario
- You can also create constraints on the element that have an impact on the scenarios
- Repeat this *Set Up Scenario Specification* procedure for each scenario you have created; you can now adapt, enhance and interrelate the scenario specifications using the facilities of the Scenarios View:
    - Scenarios View Toolbar
    - Item context menu
    - Selected Text context menu
    - Entry Points context menu
    - Floating Toolbar

Generate Diagrams

When you have created a structured scenario, you can generate diagrams of any of these types from it:

- Activity
  - Basic
  - With ActivityParameter
  - With Action
  - With Action Pin
- Rule Flow
- State
- Sequence
- Robustness

Access

On a diagram or in the **Browser window**, click on the element and:

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario |

	Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Generate the required diagram

Step	Action
1	Create the scenario structure in the **Scenarios view**.
2	Click on the  ('Generate Diagram') icon in the toolbar on the tab.

3	Click on the type of diagram to generate. Enterprise Architect generates the diagram and notifies you that generation is complete. Click on the **OK button** and then close the 'Properties' dialog to review the diagram. If the diagram being generated already exists under the selected element, a prompt displays to overwrite or synchronize with that diagram. Select the appropriate radio button to: • Overwrite the existing diagram (delete the existing diagram and elements, and create a new diagram and elements) or • Synchronize the elements in the existing diagram with the scenario steps (however, Sequence and Robustness diagrams cannot be synchronized)

Notes

- The 'Synchronize elements in existing diagram' option enables the 'Preserve Diagram Layout' checkbox, which you can select to preserve the existing arrangement of elements and connectors on the diagram; any new elements are added to the diagram in the default position, and you manually position them in the diagram as required; if you do not select the checkbox, the diagram is recast in the default layout

It is recommended that you uncheck the 'Preserve Diagram Layout' checkbox if you are synchronizing elements with scenario steps:

- When new steps have been added or existing steps have been deleted or moved within the Use Case
- For the first time in a Use Case that has been imported from XMI with the 'Strip GUIDs' option selected
- For the first time in a Use Case that has been copied and pasted in the **Browser window**, or
- For the first time in a Use Case whose containing Package has been copied and pasted in the Browser window

Generate Activity Diagram

When you create a scenario on an element, and then generate an Activity diagram from the scenario, an Activity is generated as a child of the selected element to act as a container for the diagram.

- Each scenario step is modeled as a CallBehaviorAction that will have an Activity behavior
- The values of the 'Uses', 'Results' and 'State' columns for each step are added as memo Tagged Values of the corresponding Activity

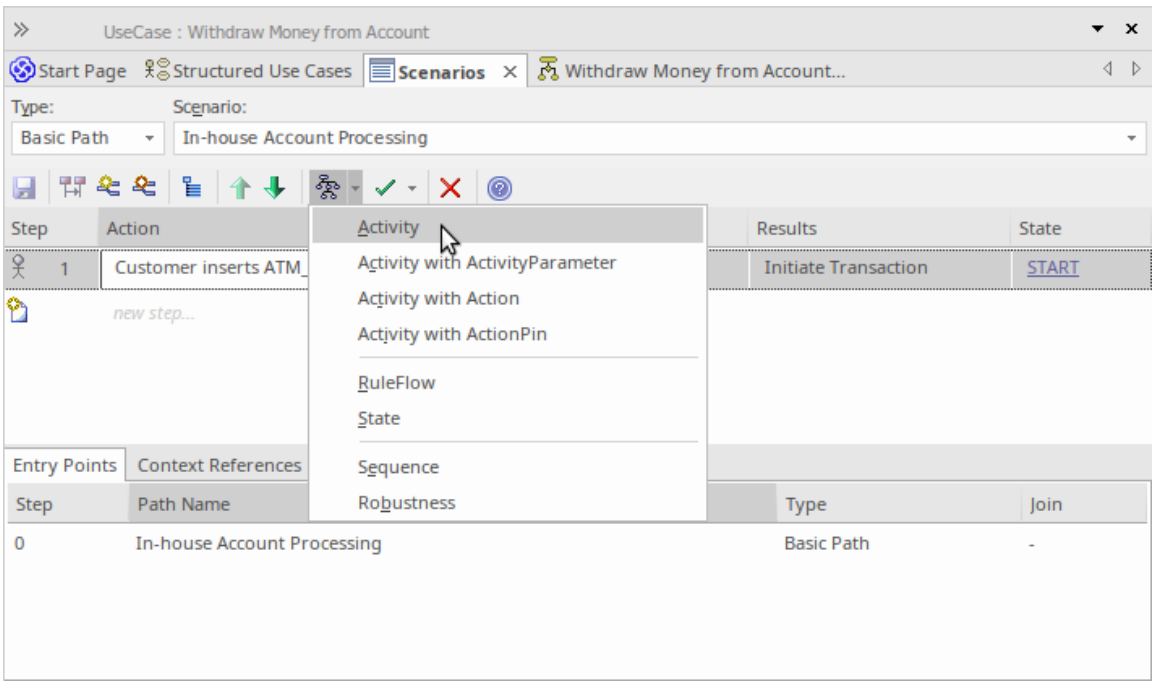
Access

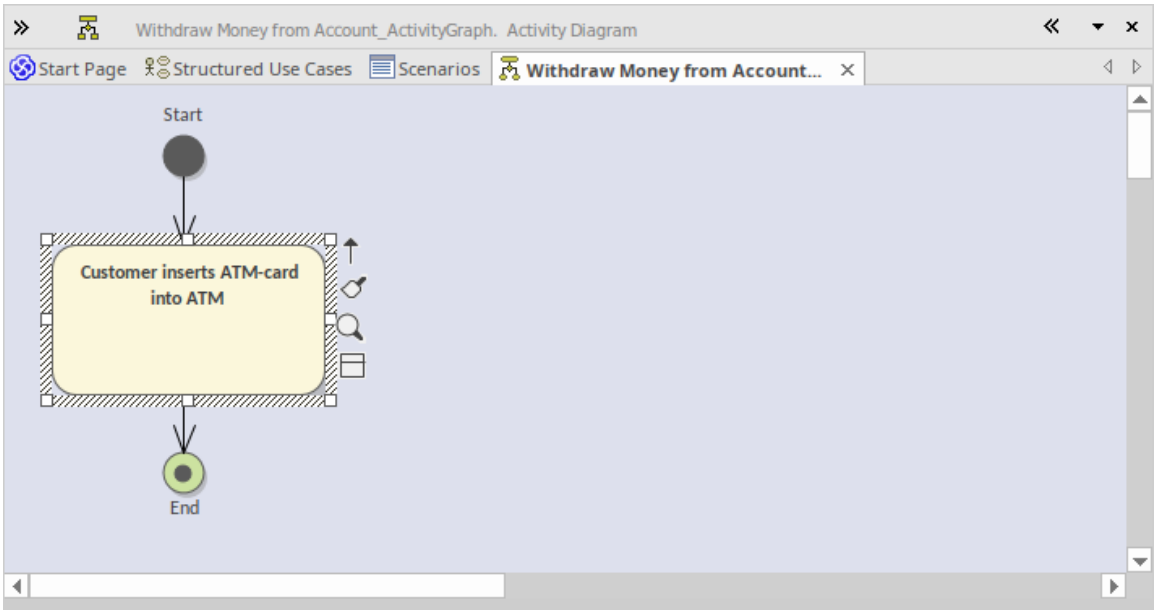
On a diagram or in the **Browser window**, click on the element and select one of these access methods to display the **Scenarios view**, then click on  and select 'Activity'.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor

Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Example




Withdraw Money from Account_ActivityGraph. Activity Diagram
Start Page
Structured Use Cases
Scenarios
Withdraw Money from Account...
Start
Customer inserts ATM-card into ATM
End

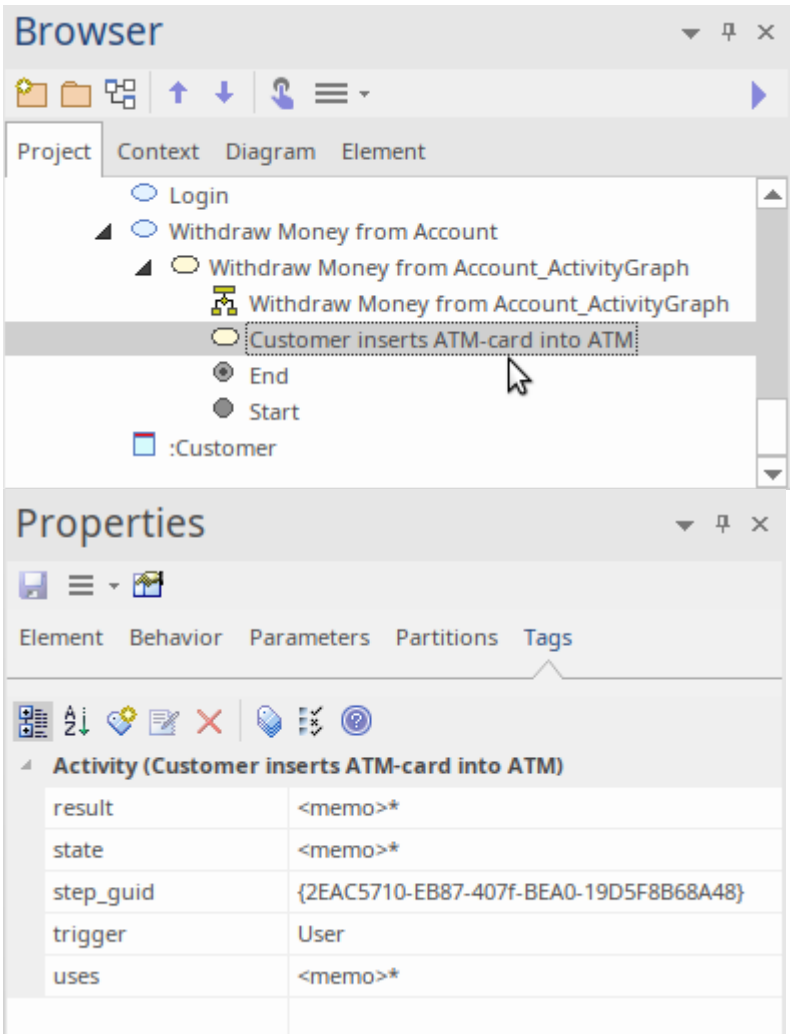

Browser
Project
Context
Diagram
Element
Login
Withdraw Money from Account
Withdraw Money from Account_ActivityGraph
Withdraw Money from Account_ActivityGraph
Customer inserts ATM-card into ATM
End
Start
:Customer
Properties
Element
Behavior
Parameters
Partitions
Tags
Activity (Customer inserts ATM-card into ATM)
result
<memo>*
state
<memo>*
step_guid
{2EAC5710-EB87-407f-BEA0-19D5F8B68A48}
trigger
User
uses
<memo>*

Diagram Types

There are three additional variations of the Activity diagram that you can generate.

Diagram	Detail
Activity with ActivityParameter	• The values of the 'Uses' and 'Results' columns are modeled as ActionPins bound to ActivityParameters • The ActionPins and ActivityParameters are added to the **Browser window** and not to the diagram • The value of the 'State' column is added as a Tagged Value of each Action only • The parent of the Activity will be the context element, not the container element
Activity with Action	• The scenario steps are modeled as Actions • The values of the 'Uses', 'Results' and 'State' columns are added as Tagged Values of each Action
Activity with ActionPin	• The scenario steps are modeled as Actions

	• The values of the 'Uses' and 'Results' columns are modeled as Input Pins and Output Pins respectively • ActionPins are added to the **Browser window** and not to the diagram • The value of the 'State' column is added as a Tagged Value of each Action

Generate RuleFlow Diagram

When you create a scenario on an element and then generate a RuleFlow diagram, a Rule Flow Activity is created as a child of the selected element, to act as a container for the diagram.

- The scenario steps are modeled as RuleTasks
- The values of the 'Uses', 'Results' and 'State' columns are added as Tagged Values of the RuleTasks

Access

On a diagram or in the **Browser window**, select an element and use one of these access paths to display the **Scenarios view**, then click on  and select 'RuleFlow'.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor

Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Generate StateMachine Diagram

When you create a scenario on an element and then generate a **StateMachine diagram**, a StateMachine is created as a child of the selected element to act as a container for the diagram.

- Each value in the 'State' column is modeled as a State
- The scenario steps become the Transition connectors between the States
- The values of the 'Uses' and 'Results' columns are added as Tagged Values of the Transition connectors

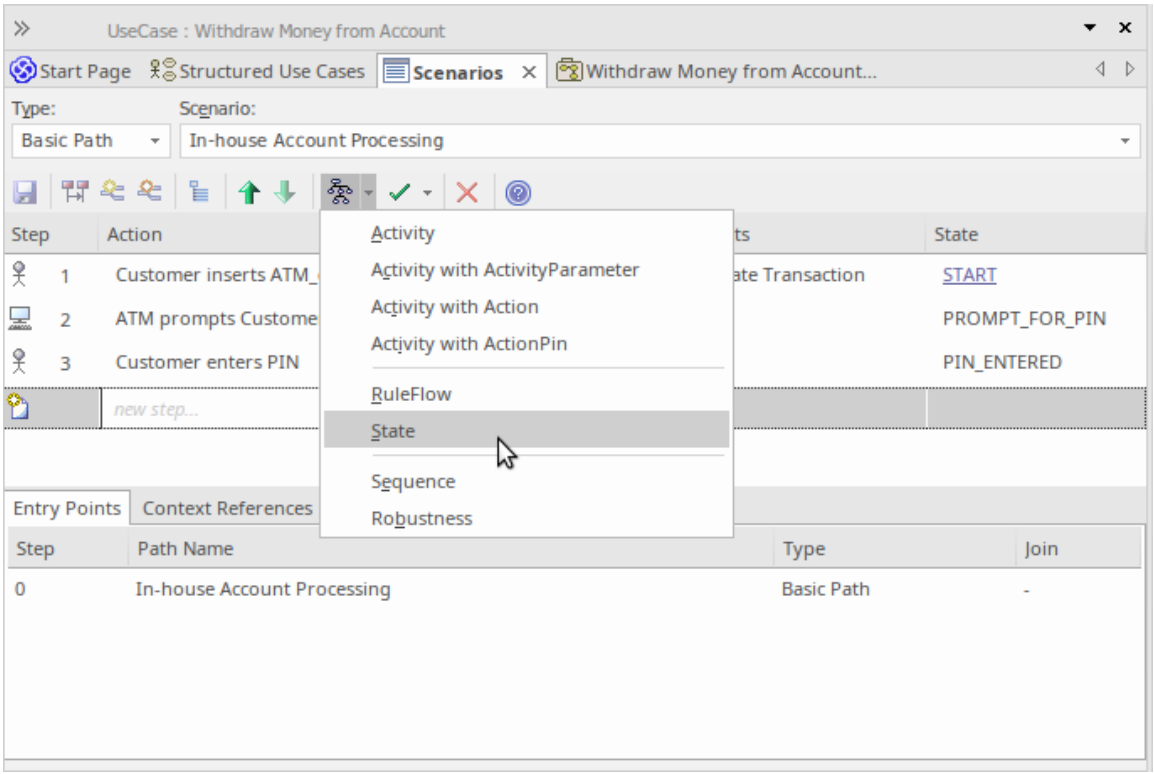
Access

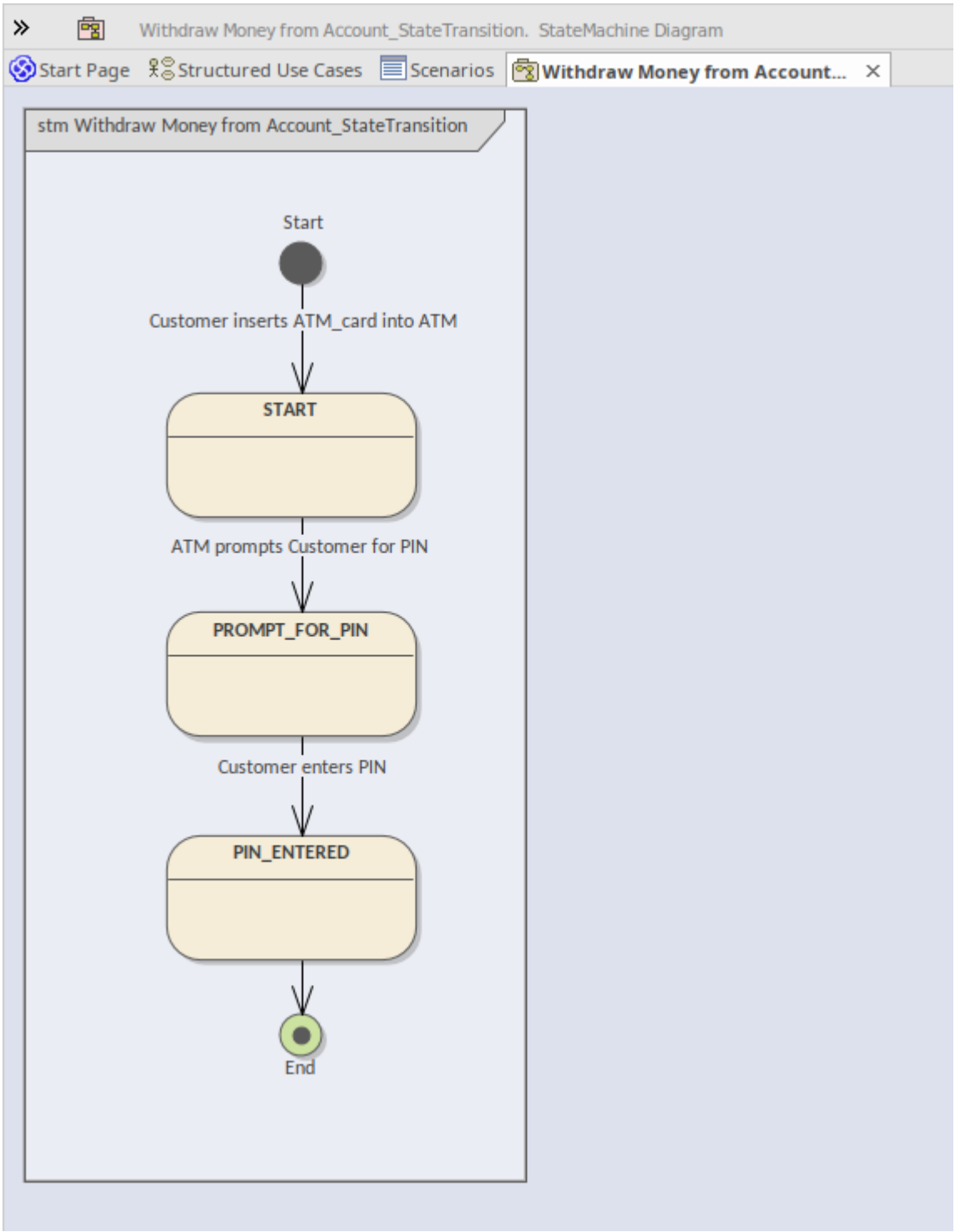
On a diagram or in the **Browser window**, click on the element and select one of these access methods to display the **Scenarios view**, then click on  and select 'State'.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor

Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Example


UseCase : Withdraw Money from Account
Start Page
Structured Use Cases
Scenarios
Withdraw Money from Account...
Type:
Basic Path
Scenario:
In-house Account Processing
Step
Action
State
1
Customer inserts ATM_
START
2
ATM prompts Custome
PROMPT_FOR_PIN
3
Customer enters PIN
PIN_ENTERED
new step...
Activity
Activity with ActivityParameter
Activity with Action
Activity with ActionPin
RuleFlow
State
Sequence
Robustness
Entry Points
Context References
Step
Path Name
Type
Join
0
In-house Account Processing
Basic Path
-


Withdraw Money from Account_StateTransition. StateMachine Diagram
Start Page
Structured Use Cases
Scenarios
Withdraw Money from Account...
stm Withdraw Money from Account_StateTransition
Start
Customer inserts ATM_card into ATM
START
ATM prompts Customer for PIN
PROMPT_FOR_PIN
Customer enters PIN
PIN_ENTERED
End

Generate Sequence Diagram

When you create a scenario on an element and then generate a Sequence diagram, an Interaction is created as a child of the selected element to act as a container for the diagrams - the Basic, Alternate and Exception paths are each modeled as a separate Sequence diagram under the Interaction. There are a number of points to note in this process:

- All the elements involved in the scenario must be identified in the 'Context Reference' tab; that is, relationships must already exist between the scenario parent element and the other elements named in the scenario (the Scenario is a Process, and the Sequence diagram is showing the flow of messaging between different Lifelines; for that to happen the lifeline/object has to be defined, which is achieved using a Context Reference)
- So, each Context Reference element named in a scenario step is modeled as a Lifeline
- The step itself becomes the Message between an originator and its destination(s)
- The first Context Reference element in a step is treated as the originator
- The subsequent Context Reference element(s) become the destination(s)
- Because the diagram generator acts on element names in the step, you must not use the element names as normal text; for example, in step 1 in the example dialog, the term

ATM-Card is interpreted as a reference to the ATM element, and two 'Customer inserts ATM-Card into ATM' messages are generated for the step (to avoid confusion, in the diagram the first Message has been deleted)

- If you have not selected the 'Show Sequence Numbering' checkbox on the 'Diagram Sequence' page of the 'Preferences' dialog, the Message name on the Sequence diagram is prefixed by the step number, as shown in the example diagram in this topic; if you have selected the checkbox, the message sequence number is shown instead of the step number
- The values of the 'Uses', 'Results' and 'State' columns are added as Tagged Values of the Message

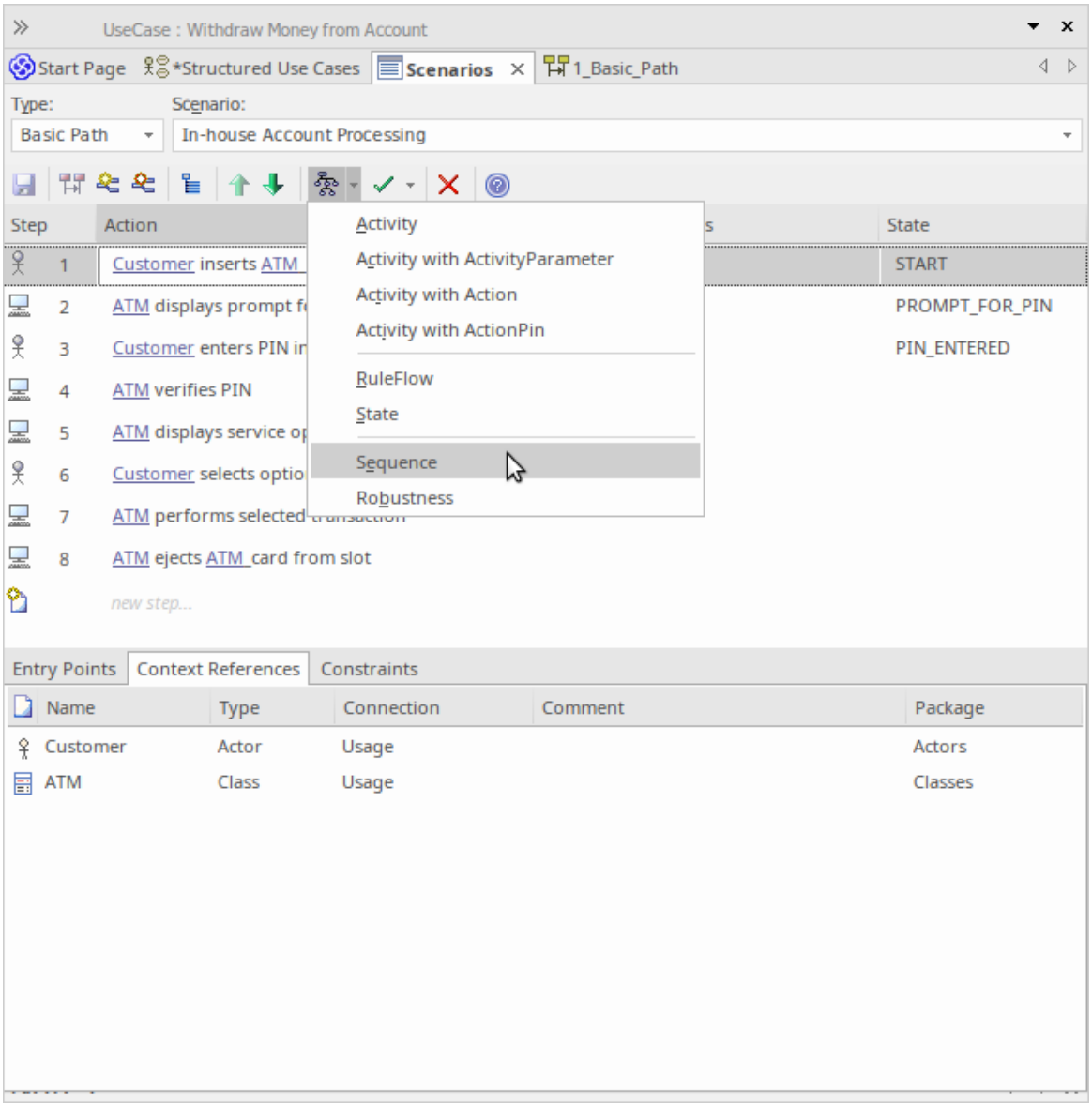
Access

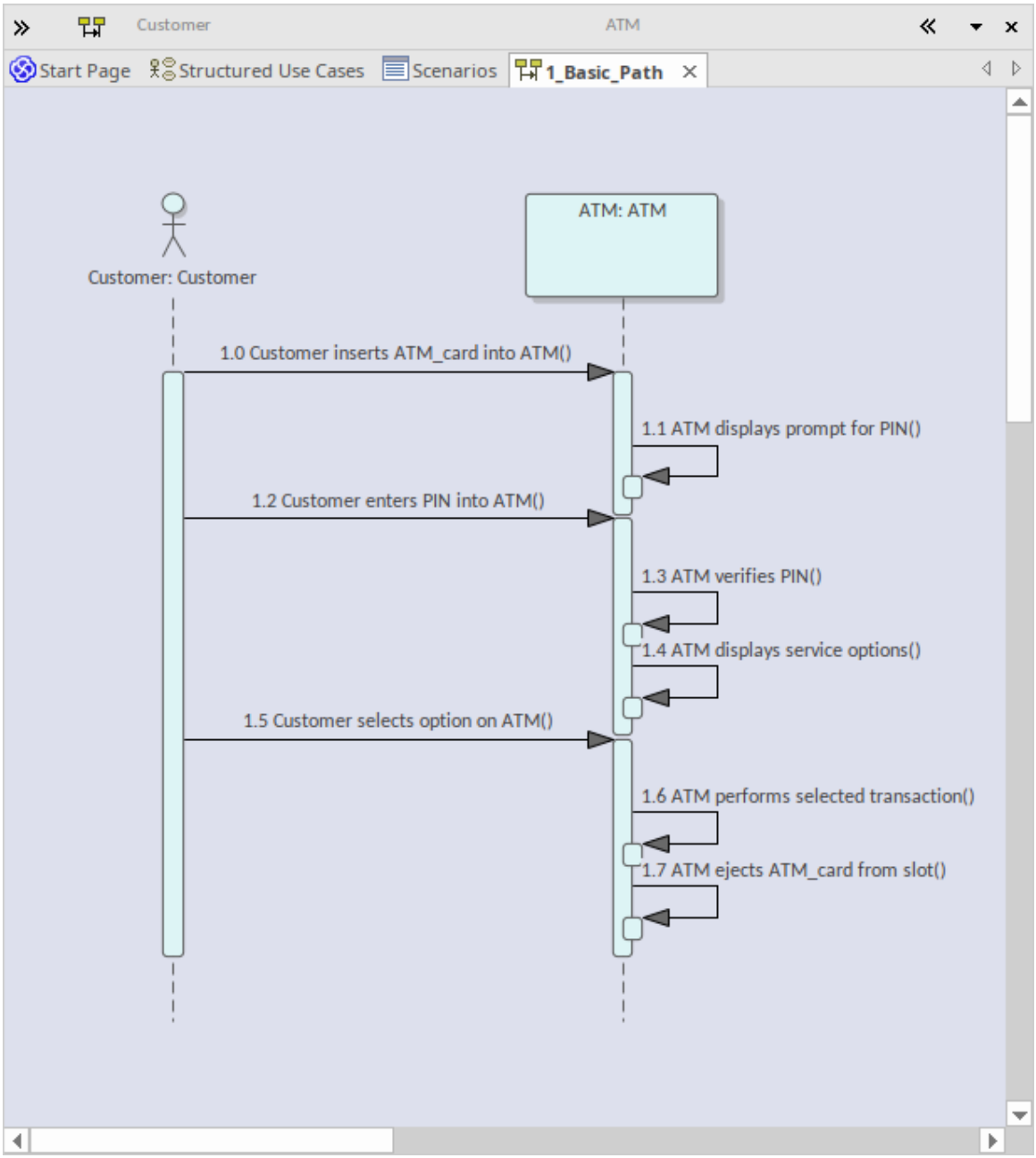
On a diagram or in the **Browser window**, click on the element and select one of these access methods to display the Scenarios View, then click on  and select 'Sequence'.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor

Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Example


UseCase : Withdraw Money from Account
Start Page
*Structured Use Cases
Scenarios
1_Basic_Path
Type:
Basic Path
Scenario:
In-house Account Processing
Step
Action
State
1 Customer inserts ATM
START
2 ATM displays prompt f
PROMPT_FOR_PIN
3 Customer enters PIN in
PIN_ENTERED
4 ATM verifies PIN
5 ATM displays service op
6 Customer selects optio
7 ATM performs selected transaction
8 ATM ejects ATM card from slot
new step...
Activity
Activity with ActivityParameter
Activity with Action
Activity with ActionPin
RuleFlow
State
Sequence
Robustness
Entry Points
Context References
Constraints
Name
Type
Connection
Comment
Package
Customer
Actor
Usage
Actors
ATM
Class
Usage
Classes


Customer
ATM
Start Page
Structured Use Cases
Scenarios
1_Basic_Path
Customer: Customer
ATM: ATM
1.0 Customer inserts ATM_card into ATM()
1.1 ATM displays prompt for PIN()
1.2 Customer enters PIN into ATM()
1.3 ATM verifies PIN()
1.4 ATM displays service options()
1.5 Customer selects option on ATM()
1.6 ATM performs selected transaction()
1.7 ATM ejects ATM_card from slot()

Generate Robustness Diagram

When you create a scenario on an element and then generate a Robustness diagram, a Collaboration is created as a child of the selected element to act as a container for the Robustness diagram.

Access

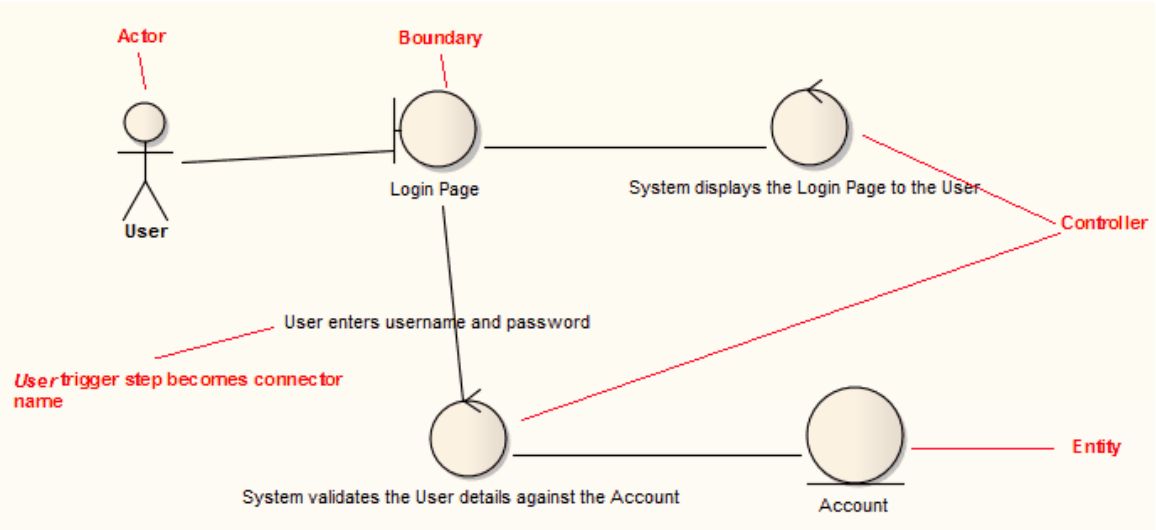
On a diagram or in the **Browser window**, click on the element and select one of these access methods to display the **Scenarios view**, then click on  and select 'Robustness'.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the

	Responsibilities window, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Example

Step	Action
1	System displays the Login Page to the User
2	User enters username and password
3	System validates the User details against the Account



Notes

- All the elements involved in the scenario should be identified in the 'Context Reference' tab; that is, relationships must already exist between the scenario parent element and the other elements named in the scenario
- Any values in the 'Uses', 'Results' and 'State' columns are ignored and not represented in the diagram
- Each UI element in a step becomes a Boundary element; a Dependency relationship is created from this Boundary element to the UI element (this connector is not shown on the diagram)
- Each Actor referenced in a step is dropped into the Robustness diagram as a simple link
- Each Class referenced in a step is dropped into the Robustness diagram as a simple link, and is given the stereotype entity
- Each step with a System trigger becomes a Controller; alternate/exception path Controllers are displayed with a red background color
- Each step with a User trigger becomes the name of the Association between Controllers

Generate Scenario From Activity Diagram

You can generate a range of diagrams from a scenario in an element. Conversely, you can also generate a structured scenario within an element from an Activity diagram that was previously generated from a scenario, effectively either regenerating the scenario within the Use Case, or transferring a scenario into another Use Case.

Access

On a diagram or in the **Browser window**, click on the element and select one of these access methods to display the Scenarios View, then right-click on a space and select the 'Create Structure From Generated **Activity Diagram**' option.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor

Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Generate a scenario from an Activity diagram

Step	Action
1	On the 'Select an Activity (generated from a UseCase Scenario) containing the Diagram' dialog, search for and select the Activity containing the required diagram.
2	Click on the **OK button**.

	A prompt displays to remind you that any existing scenario steps will be deleted.
3	Click on the **Yes button**. The system validates the diagram (displaying the results in the 'Scenario Generation' tab of the **System Output** window) and, if the diagram is valid, generates the scenario steps in the **Scenarios view**.

Notes

- The source Activity diagram must be generated from another Use Case scenario
- This facility operates on the simple Activity diagrams generated from a Use Case, but not on enhanced Activity diagrams - those generated with ActivityParameters, Actions and Action Pins

Generate Test Cases

When you have defined a scenario, you can generate one of a number of Test Cases from it, including:

- A Test Suite - Horizontal Layout
- A Test Suite - Vertical Layout
- An Internal Test Case or
- An External Test Case

Access

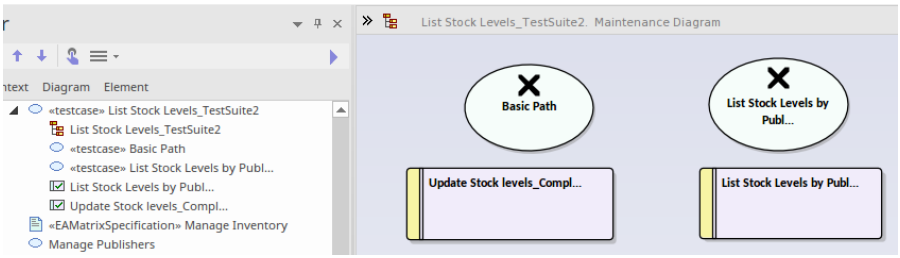
On a diagram or in the **Browser window**, click on the element and select one of these access methods to display the **Scenarios view**, then click on  and select the TestCase type.

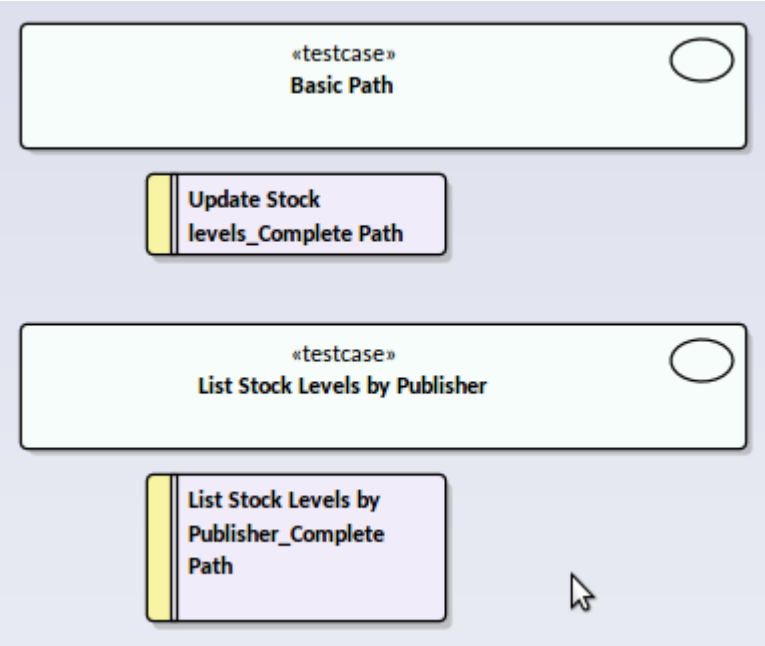
Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard	**Alt+1** > Scenario Editor

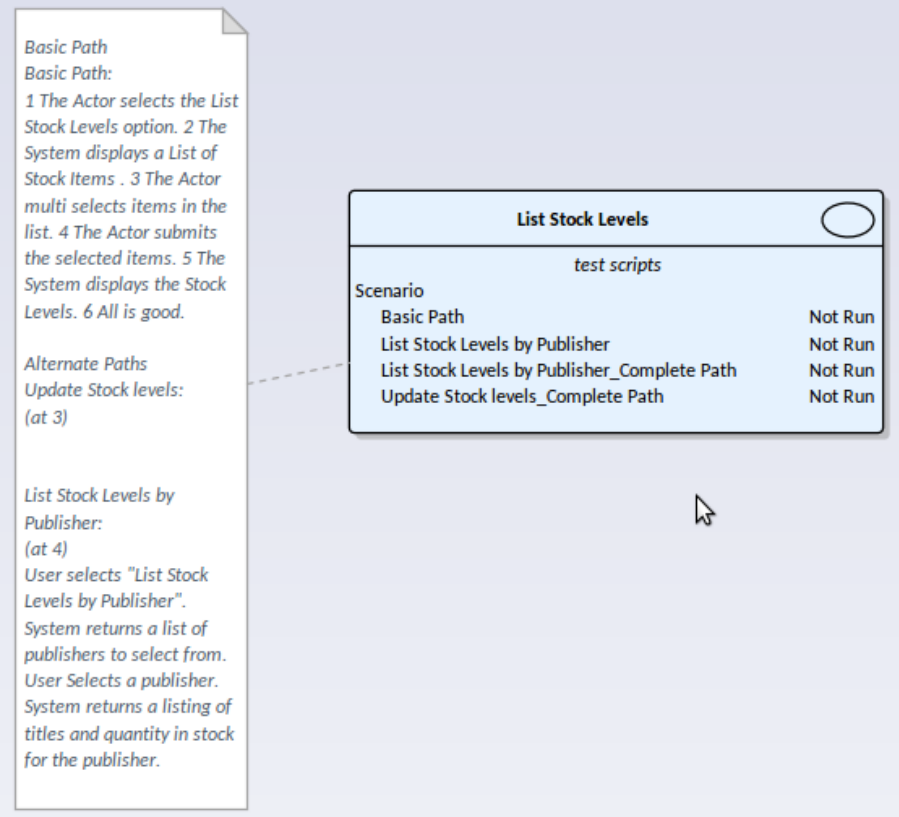
Shortcuts	
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Test Cases Generated

Test Case	Detail
Test Suite - Horizontal Layout	A Test Case element is created, which acts as a container for the created Test Suite diagram and Test Case elements. The basic path and each alternate and exception path is represented by a Test Case element. Each step in the basic, alternate and exception paths is represented by a Test element. A diagram is created under the container Test Case element, to which the Test

	Case and Test elements are added. The elements are displayed on the diagram in a matrix format, with the basic path and its steps forming the first column followed by the alternate and exception paths as subsequent columns.  Note that the name of each created Test Case and Test element is truncated to 25 characters.
Test Suite - Vertical Layout	A Test Case element is created, which acts as a container for the created diagram and Test Suite elements. The basic path and each alternate and exception path is represented using a Test Case element. Each step in the basic, alternate and exception paths is represented by a Test element. A diagram is created under the container Test Case element, to which the Test Case and Test elements are added. The elements are displayed on the diagram in a single column with the basic path and its steps at the top followed by each alternate and/or exception path and

	its steps. 
Internal Test Case	A test is generated for the basic path and each alternate and exception path in the scenario, and added to the selected element. In addition, for each step in the basic, alternate and exception paths that has a value in the 'Results' column, a test is generated and added to the selected element. A diagram is created under the selected element, to which that element and a Note (showing the element's scenario specification) is added. The created tests are displayed in the Test Scripts compartment of the selected element on the diagram. Another way to

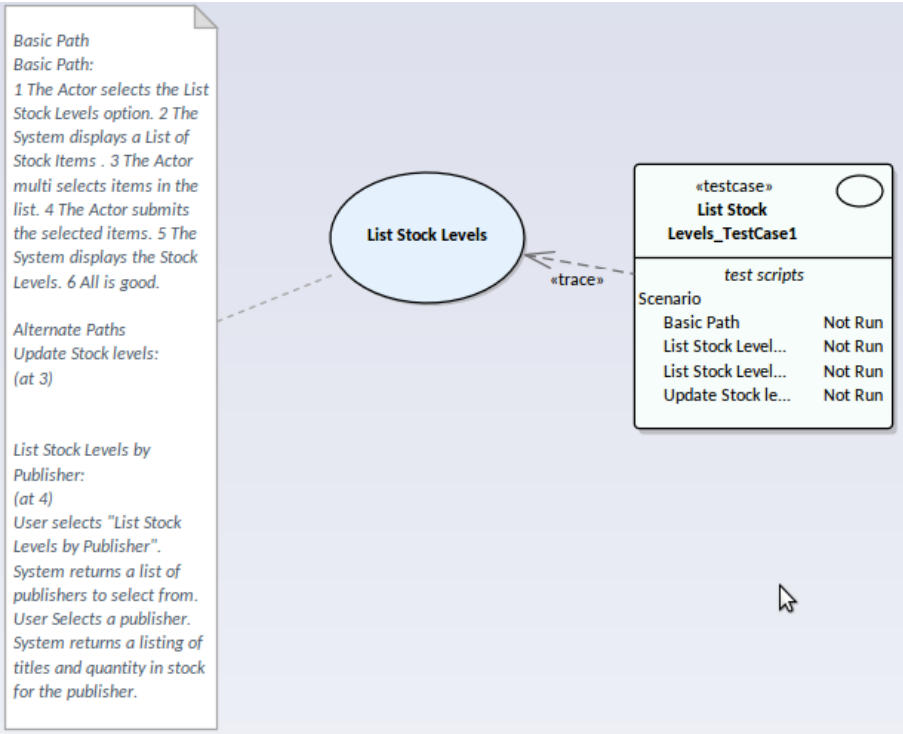
	view these tests is to click on the element and display the **Testing window**. These generated tests are written to the Scenario Class Type of the Testing window; you can change the tests to another test-type if required. 
External Test Case	A Test Case element is created, linked to the selected element using the Trace connector. A diagram is created under this Test Case element, to which the selected element, the Test Case element and a Note (showing the element's scenario specification) is added. The created tests are displayed in the Test

Scripts compartment of the Test Case element on the diagram.

A test case is generated and added to the Test Case element for the basic path, and for each alternate and exception path.

In addition, for each step in the basic, alternate and exception paths that has a value in the 'Results' column, a test is generated and added to the Test Case element.

You can review the tests within the Test Case element using the **Testing window**, as for Internal Test Cases.



Context References Tab

As you create a structured specification in the Scenarios View for the element, you can use the 'Context References' tab to create and display a list of all elements that are either:

- Connected to the current element by any connector, on the current diagram or another, or
- Defined as a cross reference (or custom reference) on the current element

Access

On a diagram or in the **Browser window**, select an element, then use any of the methods outlined here to display the 'Select Element' dialog. Use the 'Select Element' dialog to locate and select the required cross reference element or elements. For each cross reference added through the 'Select Element' dialog, you can also use context menu options to delete the entry in the list, or to open the 'Comment' field so that you can add or edit comment text. Those options are grayed out for cross references added through the diagram.

For each element in the 'Context References' list, wherever the name of that element appears in the structured specification, the name is highlighted and underlined; press the **Ctrl key** and click twice on the highlighted name to view the 'Properties' dialog for that element.

Ribbon	Start > Desktop > Design | Scenario Editor > Context References | Right-click in panel | Add Context Reference
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View > Context References | Right-click in panel | Add Context Reference Browser window > Element | Scenarios | right-click on existing scenario | Structured Scenario Editor > Context References | Right-click in panel | Add Context Reference
Keyboard Shortcuts	**Alt+1** > Scenario Editor > Context References | Right-click in panel | Add Context Reference
Other	On the 'Scenarios' tab of the **Responsibilities window**, click on the **Edit button** against a scenario > Context References | Right-click in panel | Add Context Reference (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** > Context References | Right-click in panel | Add Context Reference (see the *Scenarios Tab -*

	Properties Dialog Help topic)

Scenario Constraints Tab

The Scenarios View 'Constraints' tab is a simple link to the 'Constraints' tab of the element's 'Properties' dialog. It lists existing constraints; if you select the toolbar icons or context menu options to add or edit a constraint, control switches to the 'Properties' dialog 'Constraints' page.

Access

On a diagram or in the **Browser window**, click on the element and select one of these access methods to display the Scenarios View, then click on the 'Constraints' tab.

Ribbon	Start > Desktop > Design > Scenario Editor
Context Menu	**Browser window** > Element | Scenarios | New Scenario > Scenario View Browser window > Element > Scenarios | right-click on existing scenario | Structured Scenario Editor
Keyboard Shortcuts	**Alt+1** > Scenario Editor
Other	On the 'Scenarios' tab of the

	Responsibilities window, click on the **Edit button** against a scenario (see the *Scenarios Tab - Responsibilities Window* Help topic) On the 'Scenarios' tab of the element 'Properties' dialog, click on the **Structure Editor button** (see the *Scenarios Tab - Properties Dialog* Help topic)

Associated Files

An element can be linked to one or more files external to the repository, using the 'Responsibilities > Files' tab of the element's 'Properties' dialog. Having created the link, you can open the file and read its content from this tab.

Access

On a diagram or in the Browser, select an element and:

Ribbon	Design > Element > Editors > Properties Dialog > Files
Context Menu	Right-click on the element > Properties > Properties > Files (In the 'Details' tab of the **Inspector window**) Right-click on Files | New 'File'
Keyboard Shortcuts	**Ctrl+4** > Files (tab of the Responsibilities Window) **Shift+Enter** > Files ('Properties' dialog) **Shift+Alt+F** ('Properties' dialog) **Alt+9** > Files : Shift+Enter

Manage File Links

Option	Action
Path/URL	Displays the URL or the directory path and name of the file currently selected in the 'Files' list. To add a link to a file, click on the ... button to display the 'Locate Files' browser and locate and click on the appropriate file name. Then click on the **Open button**.
Type	Click on the **drop-down arrow** and select the appropriate value to identify the file path as a local directory path or a web address.
Size	Displays the size of the file.
Last Write	Displays the date and time the file was last updated.
Notes	Type in any comments or notes on the link to the file.
New	Click on this button to clear the data entry fields so that you can add a new file link.

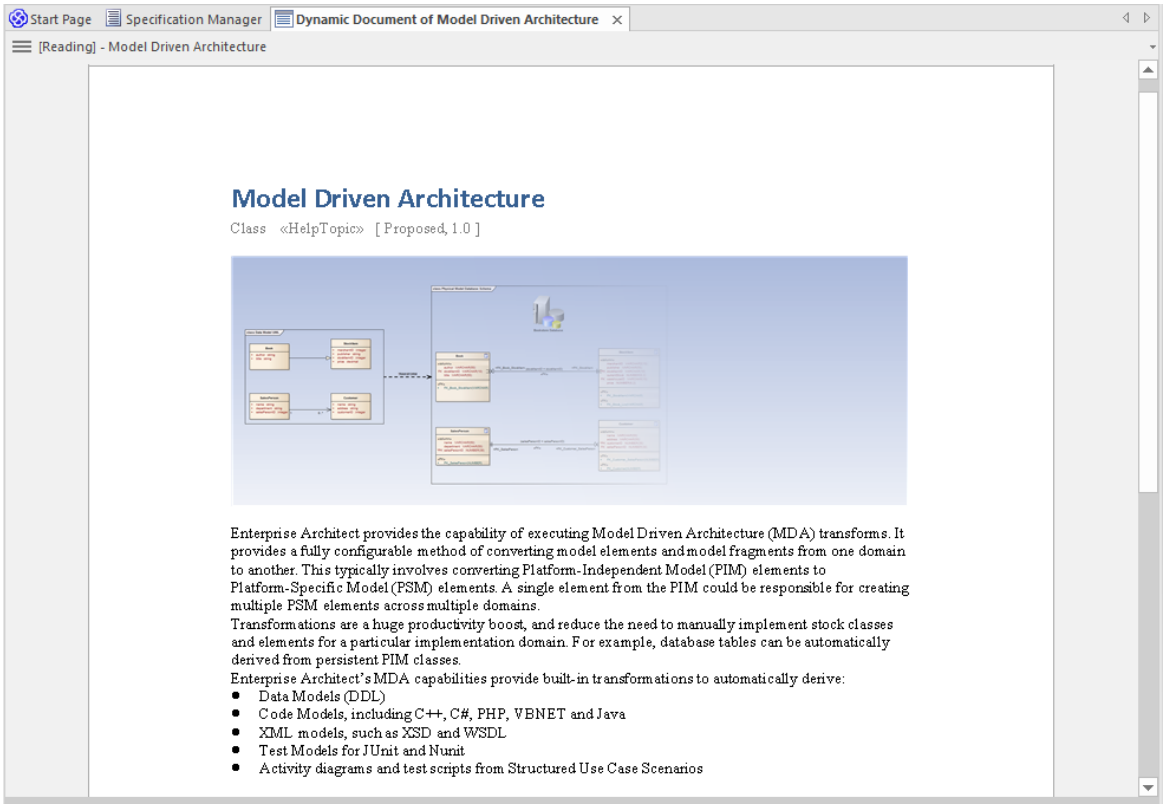
Save	Click on this button to save any new or changed details on a linked file.
Files	Displays the list of linked files. Click on a file to select it.
Launch	Click on this button to open the selected file. Local files open in their default application and web files open in the default browser.
Delete	Click on this button to remove the link to the associated file. The link is deleted from the list immediately.

Notes

- Linked files are a good way to link elements to additional documentation and/or source code
- You can also insert hyperlinks to other files, in diagrams, and launch them directly from the diagram

Dynamic Document View

The 'Dynamic Document' view in the main work area helps you to instantly generate a document on a selected element, using one of a range of templates to immediately display the information you require in the most appropriate structure and format. The document can be printed, but is not stored electronically - it is dynamically generated for the current element whenever you select the view and when you change the template. You cannot edit the document contents in the view.



The 'Dynamic Document' view is also the display screen for Reading List Artifacts. These Artifacts define a list of elements containing information that you should read consecutively. When you open the 'Dynamic Document'

view and select a Reading List Artifact, the view displays the text of the first element in the list. You can then select a 'Next' (and 'Previous') option to work through the Reading List of elements, displaying the text of each element in the defined sequence.

Access

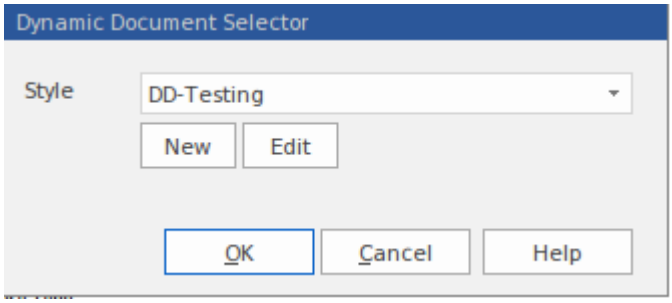
Ribbon	Publish > Model Reports > Preview Mode

Using the Dynamic Document View

Initially, when you open the 'Dynamic Document' View, it displays the Notes text from the currently-selected element, using the default Dynamic Document style sheet.

If you want to display information for a different aspect of the element:

1. Click on the '[Reading] - <element name>' header
2. Click on the 'Select Dynamic Style' option. The 'Dynamic Document Selector' dialog displays.



3. Click on the **drop-down arrow** in the 'Style' field and select one of the system-provided styles. These are designed to display information for specific aspects of relevant elements, such as Testing or Development.
4. Click on the **OK button**. The document is refreshed to show the required information in an appropriate format.

If the system-provided style templates do not support your requirements, you can quickly create your own style templates. A style template consists of one or more command lines, each of which defines an element type (or all element types) and the document template to apply to the generated document. The document template can be:

- A system-provided template, or
- A system-provided fragment, or
- A user-defined template, or
- A user-defined fragment

Information on setting up a style template is provided in the *Manage Dynamic Documents* section.

Manage Dynamic Documents

Task	Description
Create Document Templates	Document templates are held in the 'Resources' tab of the **Browser window** (Start > Desktop > Share > Resources) in the *Dynamic Documents* folder. Whilst you can select existing system or user templates and template fragments for your dynamic document style template, you can also create new document templates or fragments specifically for dynamic documents. You could create these in the *Templates* or *Fragments* sub-folders of the *Document Publishing* > *Custom Templates* folder, or you could create a separate sub-folder just for the dynamic document templates. Whether you select existing templates or create new ones, you must enable the *Elements* section in each template or fragment you use. You would start to create the new document templates by either: • Right-clicking on the *Templates* sub-folder (or other sub-folder) name in the *Custom Templates* folder and selecting the 'Create Template' option, or • Opening the 'Generate Documentation '

	dialog, clicking on the 'Templates' tab, and then clicking on the **New button** In either case, the 'New Document Template' dialog displays, on which you specify the template name, type, source and group before going on to define the template contents.
Create Style Templates	Style templates are also held in the 'Resources' tab of the **Browser window**, in the *Dynamic Documents* folder. You can create a new style template: • Via the 'Dynamic Document Selector' dialog - click on the **New button** • Via the 'Resources' tab of the Browser window - right-click on the *Dynamic Documents* folder name and select the 'Create Dynamic Document Style' option A prompt displays to enter the style template name; type the name in and click on the **OK button**. The 'Dynamic Style' dialog displays, in which you type the style definitions, in the format: <element name>:<stereotype>:<document template name> If there is no stereotype, the format is:

	<element name>::<document template name> The <element name> is an IF argument, to state that if the 'Dynamic Document' view is opened for an element of the defined type, the specified document template (or fragment) is used to format its documentation. If you want to use a specific template for information from an element of unspecified type (that is, a *defined* default) you would type: Default::<document template name> You could also apply the *system* default template for displaying information from an element of unspecified type, by just having the specified element statements with no 'Default' statement at the end. In this example, one template is defined to display information when the selected element is a Use Case, another for information from elements used by Project Support, a third for information from elements used in Database Engineering, and a fourth (a defined default) for information from any other kind of element. UseCase::DD-UseCase

	Change::DD-Support Feature::DD-Support Issue::DD-Support Requirement::DD-Support Risk::DD-Support Task::DD-Support Class:Table:DD-DB Table Class:view:DD-DB SQL Element Class:dbsequence:DD-DB SQL Element Class:function:DD-DB SQL Element Class:procedure:DD-DB SQL Element Class:stored procedure:DD-DB SQL Element Class:trigger function:DD-DB SQL Element Class:functions:DD-DB SQL Element as Ops Class:sequences:DD-DB SQL Element as Ops Class:stored procedures:DD-DB SQL Element as Ops Class:procedures:DD-DB SQL

	Element as Ops Class:package:DD-DB SQL Element as Ops Artifact:sqlquery:DD-DB SQL Query Default::DD-Basic
Apply Style Templates	Having created a style template in the 'Resources' tab of the **Browser window**, you can immediately apply it to the information you display in the 'Dynamic Document' view. As explained in the *Using the Dynamic Document View* section, you click on the [Reading] header and on the 'Select Dynamic Style' option, and then click on the **drop-down arrow** in the 'Style' field. Your new style template will be listed with the system templates and other user-defined templates. Click on the style template to apply in the 'Dynamic Document' view, and then on the **OK button**. The selected style will be applied to all documents shown in the 'Dynamic Document' view until you specifically change it again.

Increase or reduce magnification	By default, the 'Dynamic Document' view displays text as if it were printed on an A4 sheet. This is 100% zoom. If you want to change the display magnification, click on the [Reading] header and select the 'Fixed Zoom' option. This provides a small set of magnification options - '75%', '100%', '125%', '150%' and '200%'. It also provides a 'Custom' option; if you select this, a small dialog displays in which you type the percentage magnification you prefer, between 10% and 500%. When you click on the option, or the **OK button** on the small dialog, the selected magnification is applied to the display. The zoom factor remains set after you close the 'Dynamic Document' view, and is applied when you re-open the view until you specifically change the zoom.
Display or hide page outline	The 'Dynamic Document' view defaults to displaying information within the framework of a page, but you can toggle to a full-screen display by clicking on the [Reading] header and selecting the 'Toggle Page Border' option.
Scroll	In the 'Dynamic Document' view, you can

through elements	display the information from a set of elements in sequence, using the 'Next' and 'Previous' options from the [Reading] header context menu. If you have selected a: • Reading List Artifact element, the 'Next' and 'Previous' options display the information from the next or previous element in the *reading list,* wherever they might be in the model • Other type of element, the 'Next' and 'Previous' options display the information from the next or previous element in the parent element or Package, as listed in the **Browser window**; the options cannot scroll outside the containing object
Edit Style Templates	You can edit a style template: • In the 'Resources' tab of the **Browser window** by right-clicking on the template name and selecting the 'Edit Dynamic style' option, or • In the 'Dynamic Document' view by displaying the 'Dynamic Document Selector' dialog, selecting the style and clicking on the **Edit button** In either case, the 'Dynamic Style' dialog displays, and you can delete or change

	the statements as necessary. Right-click on a line of text to display a context menu providing basic editing options.
Refresh the Display	To update the display with any changes made to the information within the selected element, click on the [Reading] header and select the 'Refresh' option. The 'Dynamic Document' view with the 'Refresh' option is a useful tool for developing a document. You review the element's information in the view, make any changes you think appropriate within the element, then select the 'Refresh' option to immediately update the 'Dynamic Document' view to show the changes. You can therefore check how a document generated from the element would look, as you develop it.
Print the document	If you want to print a hard copy of the element's information, simply click on the [Reading] header and select the 'Print' option. The contents of the 'Dynamic Document' view are sent to the system default printer

Select <Item> Dialog

The 'Select <Item>' dialog is a multi-purpose browser and search tool for locating model items such as Classifier elements, properties, attributes and behaviors. The <Item> in the dialog title changes to represent the type of item the original operation is working on.

The dialog is called in a range of operations; for example, setting:

- The base type or classifier for an Object, Swimlane or Lifeline
- Classifiers for the return types for operations
- Classifiers for generalization sets
- The Composite diagram for an element
- The Information Item or classifier elements conveyed or realized on an Information Flow
- The associated behavior for a behavior call
- The type and return type for operation parameters
- Activities for State transitions
- Use Case Scenarios
- Pattern element defaults
- Activities from which to generate code
- The values of Tagged Values

Multiple Selection

Where an operation permits the selection of multiple items, the 'Select <Item>' dialog is automatically enabled to support this; to select the items, press the **Ctrl key** as you click on each item.

If you want to cancel a selected item, press the Ctrl key and click on the item. If you want to cancel selection of all items, just click on any item without pressing the Ctrl key

Having selected an item, you can continue to expand and browse the hierarchy, and/or search for items; the dialog retains the existing selections until you click on the **OK button**.

Select a required item

Step	Action
1	During an operation, when it is necessary to locate an element or feature, click on the  button. The 'Select <Item>' dialog displays.
2	If required, in the 'Go To Namespace' field select a namespace to reduce the scope of the displayed hierarchy. The dialog opens the section of the hierarchy associated with that namespace, and closes all

	previously-open sections associated with other namespaces.
3	You can either: • Expand the selected area of the hierarchy on the 'Browse' tab, or any other Package, and locate the required item (go to step 5) or • Click on the 'Search' tab and, in the 'Find' field, type a partial or complete text string to search for the item
4	On the 'Search' tab, you can filter the search further by selecting the 'Whole Word' and 'Match Case' checkboxes. Each list entry shows the name of the item, the type, any stereotype the item has, the immediate Package in which the item is held, and any successive parent Packages (the Package path). You can either: • Select the item immediately on the 'Search' tab or • Right-click on one item or a group of items and select the 'Locate item(s) in tree' option; this redisplays the 'Browse' tab and highlights each selected item in the <namespace> hierarchy
5	Click on the required item.
6	Click on the **OK button**.

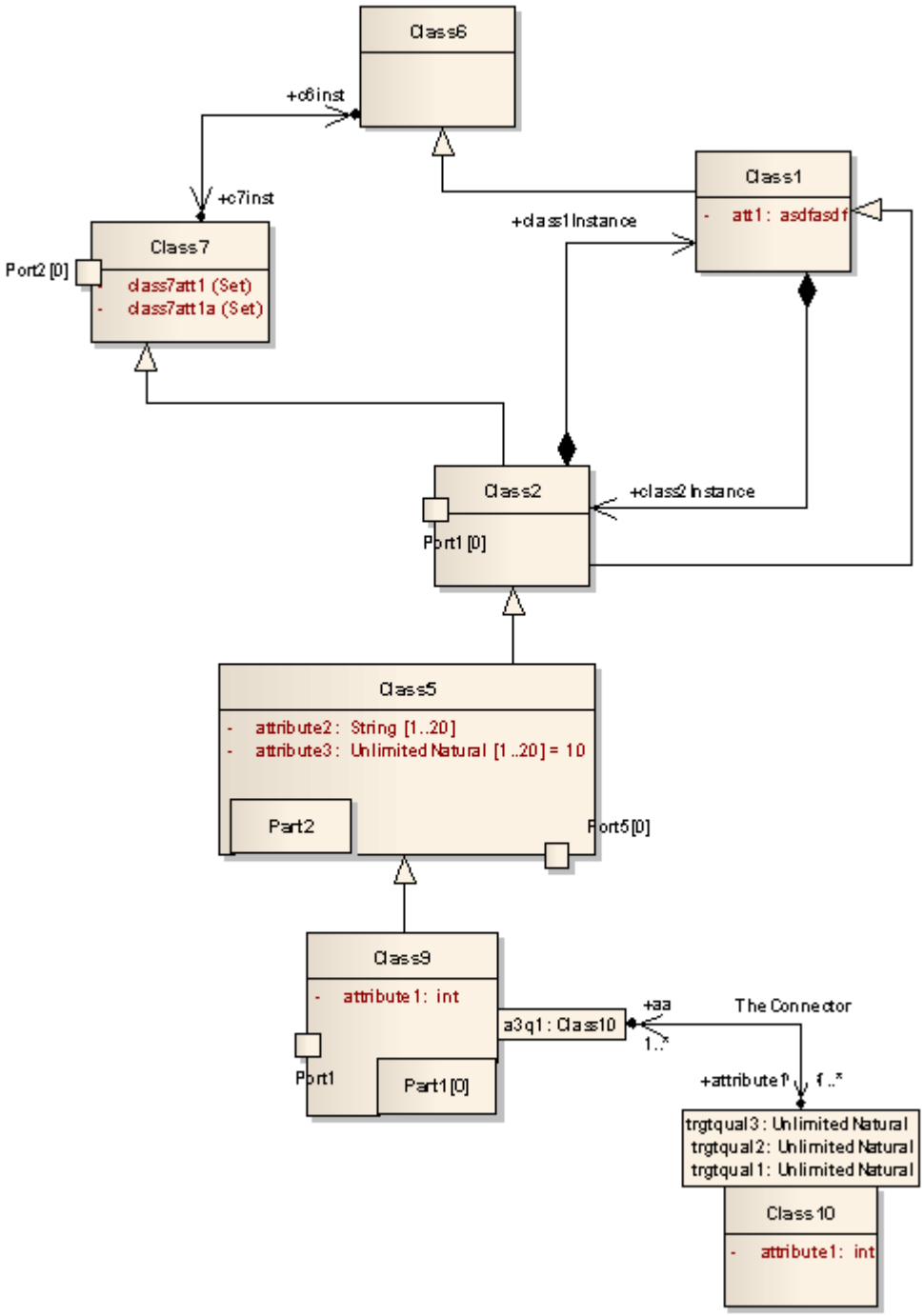
Notes

- When you have selected an item, the 'Select <Item>' dialog retains the context and item; next time you display the dialog, if the context is similar the dialog opens to the same Namespace and item - for example, if you have selected an activity for a State transition and you start to do the same for another transition, the dialog opens to the activity you previously selected
- If the context is totally dissimilar, the dialog opens with the Namespace < any > and a collapsed model hierarchy
- If the available items do not meet your requirements, you can create a new item and define the appropriate properties - click on the **Add New button**; the appropriate 'Add <Item>' dialog displays, on which you define the required item
- The Add New button is not always available, depending on the context and the type of item being searched for
- Elements can be searched by name or by alias on the 'Search' tab

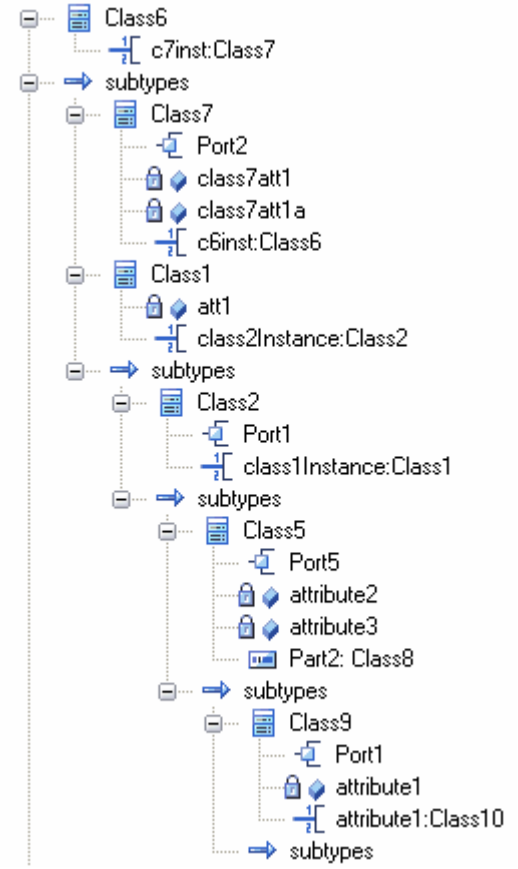
Select Property Dialog

The 'Select Property' dialog is a specific instance of the 'Select <Item>' dialog; it is used to select Ports, Parts, attributes and Association Ends as redefined or subsetted properties, from a hierarchical list of Classes and their contained properties in the model. As an example, consider this section of the model:

Example



This would be represented in the dialog as shown:



Locate and click on the required object to select it, then click on the **OK button** (to select several objects at once, press and hold **Ctrl** while you click on each object).

Notes

- AssociationEnds should be owned by the Class to be listed in the dialog

Set Feature Dialog

The 'Set Feature' dialog is the 'Set Operation' dialog used to change the operation represented by an Action on a diagram.

As the 'Set Operation' or 'Set Attribute' dialog, it is also used to set the 'Value' operation or attribute for Tagged Values of type RefGUID or for the target of a hyperlink in a diagram.

Locate and select a value operation or attribute

Step	Action
1	The 'Set Operation' (or 'Set Attribute') dialog displays, with the model hierarchy opened at the point at which you selected the original operation or attribute.
2	If required, in the 'In Namespace' field, click on the **drop-down arrow** and select another model that contains the required operation or attribute. The Package hierarchy for that model displays.
3	Browse through the hierarchy, or use the 'Search' tab to locate the required operation or attribute, then

	double-click on the item to select it.

Element Context Menu Operations

You can perform a wide range of operations on element objects on a diagram, such as displaying an element's structural components, displaying or hiding its features on the diagram, and changing the element's appearance. You access these operations through the element context menu. If you are working under a technology such as SysML or BPMN, the menu can also provide options that are specific to that technology.

Access

Context Menu	Right-click on element on diagram

Element Context Menu Options

Option	Action
Specialize	Select this option to access a submenu of enabled Technologies on the system (for example, ArcGIS or TOGAF), each of

	which provides options for performing technology-specific operations on the element.
Collaborate	Select this option to display a short menu of options to exchange electronic notes with team colleagues, in the form of formal Reviews, informal **Discussions**, element Comments and, if User Security is enabled, Chats and **Model Mail** messages on the selected element.
Properties	Select this option to display a submenu of options for displaying different aspects of the properties and features of the element, including the: • **Properties window** • A special dialog to define unique aspects of certain types of element (the 'Special Action' option); for State Lifeline and Value Lifeline elements, the 'Configure Timeline' dialog displays, and for a Required Interface element, the 'Exposed Interface' dialog displays; if there is no special dialog, the 'Properties' dialog displays • **Notes window** • **Responsibilities window** (for Requirements, Scenarios, Constraints

	and Files) • The Properties window, select the 'Tags' tab to add or edit Tagged Values in the element • **Summary window** • **Document window** (for Linked Documents and Dynamic Documents)
Features	Select this option to: • Display the appropriate page of the **Features window** to add attributes, operations or interaction points (structural elements such as Ports and Parts) to the element; for a Classifier that is the target of a Signal element, you can also add Receptions • Override any inherited attribute values set on the element • For an Object or State element, add a new instance variable to the element using the 'Define Run State' dialog • For elements that can have interfaces, show realized and/or dependent interfaces • For Database Table elements, define columns and constraints/indexes
Appearance	Select this option to display a short menu

	of options to change and reproduce the appearance of the element.
Linked Document	(Corporate, Unified and Ultimate Editions) Select this option to create a document linked to the element. Shortcut: **Ctrl+Alt+D**
Compartment Visibility	Select this option to define the visibility of features and compartments on all selected elements. Shortcut: **Ctrl+Shift+Y**
Set Bookmark Value	Select this option to assign a bookmark to the selected element, to be displayed on the diagram. The 'Set Bookmark' dialog displays. Select the 'Enable Bookmark' checkbox and type in a numerical or text value for the bookmark, then click on the **OK button**. The value is displayed in a red circle or ellipse (depending on the length of the bookmark value) just above the element on the diagram. If you decide that you do not want the bookmark for a specific element to display on the diagram, return to the dialog and clear the 'Enable Bookmark' checkbox. You can hide (and redisplay)

	all bookmarks on a diagram using the 'Hide All Bookmark Values' (and 'Show all Bookmark Values') option on the Diagram Context menu.
Insert Related Elements	Select this option to display the '**Insert Related Elements**' dialog, to add elements related to the selected element to the current diagram.
Clone Element as New Version	Select this option to copy the structure of the selected element and paste it into the **Browser window** as a new element and contents; a prompt displays for you to enter a version number for the new element, followed by a browser on which you select its parent Package or element.
Advanced	Select this option to open the 'Advanced' sub-menu, which provides options for performing more complex or specialized operations on the element.
New Child Diagram	Select this option to display a submenu, listing - in order: • Options for creating and displaying the child diagram for a Composite element • For classifier elements, options to create Activity, Interaction,

	StateMachine or Rule Flow elements that encompass the appropriate type of child diagram • Individual types of child diagram (often technology-specific) that you might usually create for this type of element • An option to display the 'New Diagram' dialog to add any other type of diagram as the child diagram of this element
New Child Element	Select this option to attach: • One of a number of types of structural element, such as a Port, Part or Activity Parameter, to the selected element, or • A text element to the selected element, documenting a Note, Constraint, Rationale or Problem
Simple Decision Table	This option displays for a selected Activity or Action element. Select it to display a sub-menu providing these options: • **Decision Table** - Display, set up and edit the Decision Table for the element • Draw as Decision Table (Rules as Columns) - Replace the element shape on the diagram with its Decision Table,

	showing the decision rules as columns • Draw as Decision Table (Rules as Rows) - Replace the element shape on the diagram with its Decision Table, showing the decision rules as rows • Draw as Activity / Action - Where an element is rendered as a Decision Table on the diagram, re-display it as the normal element shape The element is automatically sized to display the rule text; you cannot change the element size manually. If the selected element is a Rule Task element, the submenu option is '**Rule Composer**', which invokes the Rule Composer in Business Rule Modeling.
Create Document to Artifact	(On an Artifact element linked to a Report Package or Model Document element). Select this option to generate a virtual document as the Linked Document of the Artifact element. The 'Generate Documentation' dialog displays.
Clear Checklist	Select this option to clear any selected checkboxes in the current Checklist Artifact element.

Checklist Spacing	Select this option to change the spacing between the items in the Checklist Artifact. A short list of spacing options displays, from which you select the required spacing.
Find	Select this option to display the 'Find' submenu, which provides options for: • Locating the selected element in other diagrams and in the **Browser window**, and • Setting up cross references (Custom References) to other elements
Copy/Paste	Select this option to display a list offering these options for copying the selected element: • Copy - copy the element; you can select the 'Paste' option on the diagram context menu to paste the element into the diagram in a number of ways • Copy Image to Clipboard - copy the element image to the clipboard; you can use the 'Apply Image from Clipboard' option to recover and use the image elsewhere • Apply Image from Clipboard - paste the element image current held in the clipboard into the diagram as the image

	of the currently-selected element; the image is shown as a labeled frame
Behavior	Select this option to display a short submenu, from which you: • Switch the element between Info View display style and 'normal' UML style • Set the element characteristics that are shown in Info View style • Toggle the Dockable, Selectable and Printable settings on the element • (Where an element has a structured element - such as a Port - shown in an element compartment) bind the Port to the compartment border rather than allowing it to move to any point on the parent element outline
Lock Element	Select this option to lock the element so it cannot be edited; to unlock the element, select 'Lock Element' again. This does not apply in the Corporate, Unified and Ultimate Editions when security is enabled; in that situation, use the 'Lock' option for model elements.
Z-Order	Select this option to display a short submenu providing options to:

	• Move the element further back in the diagram • Move the element further forward in the diagram • Put the element at the back of the diagram • Put the element at the front of the diagram
Type Information	Select this option to display the Help topic describing the type of element you have selected.
Delete <element name>	Select this option to delete the element from the diagram. The element still exists within the model and can be accessed from the **Browser window**. Shortcut: **Ctrl+D**

Notes

- If you select two or more elements at the same time, you can perform an operation on all of the selected elements at once; the operations available for multiple selection are provided on a separate context menu

Selectable, Dockable and Printable Options

The 'Selectable', 'Dockable' and 'Printable' options on the element context menu control several aspects of an element's behavior on a diagram.

The 'Behavior' option also provides access to the element Info view facility.

Access

Context menu	On a diagram, right-click on an element and select the 'Behavior' option.

Behavior Options

Option	Description
Selectable	Select or deselect this option to toggle whether the element is selectable or not: • If an element is selectable, you can move it around the diagram and

	perform right-click context menu operations • If an element is unselectable, you cannot move it around the diagram and the only right-click operation available is to make the element selectable This option has no effect on double-click operations on the element, such as displaying child diagrams or 'Properties' dialogs. An element on a locked diagram is also unselectable - if you click on it, the element outline displays in red. In a diagram, you can filter the display to show selectable or non-selectable elements only.
Dockable	Select this option to align and join two elements either vertically or horizontally, on the current diagram only. Both elements must have the 'Dockable' option selected, and must have the joining edges parallel. As the distance between the elements narrows, the moving element snaps to the edge of the other element. For Activity Partitions, the option is selected by default.

	Deselecting the 'Dockable' option does not separate the elements; if necessary, you can simply move the elements apart again.
Printable	Defaults to selected, so that the element is depicted in any diagrams in reports generated on its parent Package. If you click on the option to deselect it, the element and its connectors will **not** be visible in any diagrams in reports. You can, however, deselect a report option for an instance of a report to force the display of non-printable elements. Deselecting this option also hides the element and its connectors in the 'Print Diagrams', 'Print to PDF' and 'Save Diagram as Image' operations.

Advanced Operations on Elements

You can perform a wide range of more specialized functions on an element, specific to the element type and its relationship to other modeling objects.

Access

Context Menu	Right-click on element on diagram | Advanced

Advanced Options

Option	Action
Instance Classifier	(For an instance or Object element) Select this option to set the instance classifier for the element, on the 'Select <Item>' dialog. Shortcut: **Ctrl+L**
Parent	(For a classifier element that can be generalized) Select this option to set the

	element's parent. Shortcut: **Ctrl+I**
Show element classifier	Shows or hides the classifier names on Port elements.
Classifier Properties	(For an instance or Object element) Select this option to open the 'Properties' dialog for the classifier of the selected element. Shortcut: **Ctrl+Alt+Enter**
Change to State (Value) Lifeline	(For a State Lifeline or Value Lifeline element) Select this option to switch one type of Lifeline element to the other.
Set Property Type	(For a Part element) Select this option to browse for and select the element that defines the Part type, using the 'Select <Item>' dialog.
Multiplicity	Select this option to define the multiplicity for the element, using the format defined on the 'Cardinality Values' tab of the 'UML Types' dialog ('Configure > Reference Data > UML Types'). This is the number of instances of the

	element that can exist in a set; the value displays on the element in a diagram, in the 'Name' compartment.
Port Size Customizable	(For a Port element) Select this option to allow users to resize the Port from the default size. If the option is not set, the element size cannot be changed.
Show Element Type	(For a Port or Part element) Select this option to toggle between displaying and hiding the element type, as set using the 'Set Property Type' option or on the 'Property' tab of the element's 'Properties' dialog.
Set Property Values	(For a Part element) Select this option to set the property value for the Part, using the 'Set Property Values' dialog. Shortcut: **Ctrl+Shift+R**
Edit Extension Points	(For a Use Case element) Select this option to display the 'Use Case Extension Points' dialog, which you use to insert the point at which the behavior should be inserted.
Association Class	(For a Class element) Select this option to connect the Class to a new Association.

Use Rectangle (Circle, Actor) Notation	(For an element that uses non-rectangular notation) Select this option to apply rectangle notation to the element (and switch back again).
Partition Activity	(For an Activity element) Select this option to define an Activity Partition in the element.
Set Object State	(For an Object or instance element) Select this option to set the state of the element based on the child states of its classifier. Shortcut: **Ctrl+Shift+S**
Override Attribute Initializers	(For a Class element with attributes) Select this option to pre-define initial values for attributes that can be used to override existing defaults. Shortcut: **Ctrl+Shift+R**
Convert to Instance (Property/Invocation)	Select this option to convert a classifier to an instance, property or invocation, depending on the type of classifier selected (for example, SysML classifiers are always converted to properties).

Convert Linked Element To Local Copy	Select this option to convert the occurrence of the element on the current diagram from a link to the original element to a local copy of the element. A copy of the element is also added to the diagram's parent Package in the **Browser window**.
Make Sender/Receiver	(For Send and Receive Event elements) Select this option to toggle the element from a sender to a receiver and vice versa.
Accept Time Event	(For a Receive element) Select this option to change the notation from an Accept Event action to an Accept Time Event action.
Define Concurrent Substates	(For a State element) Select this option to define the set of substates that can be held simultaneously within that composite State.
Use State Label Notation	(For a State object) Select this option to switch to State Label Notation (the element name is displayed on a box on top of the element rather than inside it).
Deep History	(For a History pseudostate) Select this

	option to change the type of a shallow History pseudostate to a deep History pseudostate.
Transform	Select this option to transform the selected element from one domain to another. Shortcut: **Ctrl+H**
Set Attached Links	(For a Note element) Select this option to attach the element to a connector, or several connectors on the diagram.
Link to Connector Constraints	(For a Note element) Select this option to display the connector type and to list the constraints of the associated connector in the Note element.
Link to Connector Notes	(For a Note element) Select this option to display or hide the text assigned to a connector's 'Notes' field.
Link to Connector Tagged Values	(For a Note element) Select this option to display the connector type and to list the Tagged Values of the associated connector in the Note element.
Link to Diagram	(For a Note element) Select this option to display the diagram notes as the text of

Notes	the Note element. Any current text is deleted and the Note is blocked from being edited other than through the 'Notes' field in the diagram 'Properties' dialog.
Hide (Show) attached links	(For a 'Memo' style or 'Memo2' style Note element) Select this option to hide or show the Notelink connectors to the elements to which the Note refers.
Vertical Partition	(For an Activity Partition element) Select this option to switch a horizontal Partition to a vertical Partition.

Notes

- Context menus vary between element types, and few of the menu options shown here are present on all element context menus; 'Tagged Value' is often the only option available
- If an element appearance is overridden by a Shape Script, several of the appearance options are disabled; for example, 'Use Rectangle (Circle) Notation'

Finding Elements

When you have selected an element on a diagram, you might want to find out where it is held in the model structure, where else it is used in the model, and how to locate it easily in the future. For these operations, you can select the 'Find' submenu.

Access

Ribbon	Design > Element > Manage > Find in Diagrams Design > Element > Manage > Find in Project Browser
Context Menu	Right-click on element | Find (see *Find Options* for a description of the sub-menu).
Keyboard Shortcuts	**Alt+G** (find in **Browser window**) **Ctrl+U** (find in all diagrams)

Find Options

When 'Find' is selected from the context menu, a sub-menu is displayed, providing options as described here.

Option	Action
Locate in State Table Locate in State Chart	For a State element, select this option to switch from one diagram display format to the other, and highlight the element.
In Project Browser	Select this option to highlight the currently selected element in the **Browser window**. Shortcut: **Alt+G**
Locate Classifier In Project Browser	For an instance or Object, select this option to highlight the classifier for that element in the **Browser window**. Shortcut: **Ctrl+Alt+G**
Locate Operation in Project Browser	For an Action element, select this option to highlight the call operation for that element in the **Browser window**. Shortcut: **Ctrl+Alt+G**
Find in all Diagrams	Select this option to list the other diagrams in which the element is also used, on the 'Element Usage' dialog.

	Shortcut: **Ctrl+U**
Custom References	Select this option to identify and, if necessary, open the 'Properties' dialog for any elements that are the target of a cross reference from the selected element. Shortcut: **Ctrl+J**
Add to Favorites	Select this option to add the selected element to the *Favorites* folder in the 'Resources' tab of the **Browser window**.

Changing Element Appearance

If you want to modify the appearance of a specific element on a diagram, you can use a range of facilities available through the element context menu on the diagram.

Some of these facilities are also available via the Layout ribbon's Style panel, or through the Format toolbar.

Access

Ribbon	Layout > Style (changes the appearance of the selected element on the current diagram only)
Context Menu	Right-click on the element on the diagram and select the 'Appearance' option; this displays the 'Element Appearance' sub-menu, described here.
Keyboard Shortcuts	**F4** (displays the 'Default Appearance' dialog, described here)
Other	Right-click on the element on a diagram - the Format toolbar is displayed above the context menu. (The Format toolbar changes the

	appearance of the selected element on the current diagram only.)

Element Appearance Options

Option	Action
Default Appearance	Click on this option to override the global default appearance of all elements (which you set on the 'Standard Colors' and 'Diagram Appearance' pages of the 'Preferences' dialog) with a different default for just the selected element on all diagrams in which it is used. To change the appearance of the selected element on the current diagram only, use the tools available in the 'Style' panel of the 'Layout' ribbon. Shortcut: **F4**
Apply Image From Clipboard	Click on this option to paste the image held on the clipboard onto the selected element, as an alternative image. This image is added to the Image Library under an automatically-assigned name. The image can be accessed from and

	renamed in the **Image Manager**.
Select Default Image	Click on this option to change the element's appearance to an alternative image, using the **Image Manager**. This appearance applies to the element on all diagrams in which it is used.
Select Alternate Image	Click on this option to change the element's appearance to an alternative image, using the **Image Manager**. This appearance applies to the element on the current diagram only. Shortcut: **Ctrl+Shift+W**
Select Image Asset as Alternate Image	Click on this option to display the 'Select Element' browser, and locate an Image Asset element containing the image to use for the selected element.
Hide/Show Name Under Image	For an element that has an alternative image, click on this option to hide or redisplay the name label under the element.
Set Font	Click on this option to change the font type, size, color and effects for the text in the element.

Diagram Frame Appearance	For Diagram Frame elements; click on this option to set the appearance of the frame.
Show Labels	For embedded elements, or those with an alternative image that show element properties as labels, click on this option to reveal the hidden labels on the element. (The option is not listed if there are no hidden labels.)
Standard Memo Memo (Style 2) Pin Sticky Paperclip	For a Note element, click on one of these options to apply the corresponding image to the element.
Copy Appearance to Painter	Click on this option to copy the default element appearance (set using the 'Default Appearance' option) to the painter. You then paste the default appearance using the 'Paste Appearance' option on the Diagram toolbar.

Copy Image to Clipboard	Click on this option to copy the element image to the clipboard. You can use the 'Apply Image from Clipboard' option to recover and use the image elsewhere.

Notes

- You can also change the appearance (and other aspects) of several selected elements at once
- Context menus vary between element types, and not all menu options shown here are present on all element context menus; for example, the 'Select Alternate Image' option does not display for a Lifeline element

Operations on Multiple Elements

It is possible to perform various operations on two or more elements on a diagram at once, either to add the same feature or to standardize the size or orientation of the selected elements. This makes it much faster to update the diagram than if you had to modify each element separately.

To select the required elements, either click and drag the cursor over the group to highlight them, or press **Ctrl** or **Shift** as you click on each element separately. You can 'fix' this selection permanently using the 'Group' elements option on the context menu.

The selected element that is drawn with a hatched border is the context element. The context element is used as the 'master' element when aligning or resizing elements as a set.

The Shift and Ctrl keys toggle selection, so if you want to exclude a selected element from a group, again press the key as you click on the element. The two keys have a slightly different effect when you click on the intersection between two overlapping elements:

- **Shift+click** toggles selection of the element with the lower Z-order (the element behind or further back than the others)
- **Ctrl+click** toggles selection of the element with the higher Z-order (the element in front of or further forward than the others)

Access

Select a set of elements on a diagram, then right-click on one of the selected elements to display a context menu (for format/layout operations, right-click on the element against which to standardize the others - this sets the right-clicked element as the context element). Just note that if you click (not right-click) on an individual element, that element becomes the only selected element; the multiple selection is cleared and you are no longer working on multiple elements.

The 'Layout' ribbon's 'Style' panel also provides options for changing appearance related properties for a set of selected elements, while the 'Alignment' panel provides numerous options for aligning and resizing elements.

Ribbon	Layout > Style (changes the appearance of the selected elements on the current diagram only) Layout > Alignment (changes the size or position of the selected elements on the current diagram only)
Context Menu	Right-click on a selected element on a diagram. The context menu for multiple selections displays; this is described here.
Keyboard Shortcuts	**F4** (displays the 'Default Appearance' dialog, described here)

Other	Right-click on a selected element on diagram - the Format toolbar is displayed above the context menu (Changes the appearance of the selected elements on the current diagram only)

Options

Option	Detail
Specialize	Select this option to access a submenu of enabled Technologies on the system (for example, ArcGIS or TOGAF), each of which provides options for performing technology-specific operations on the elements. This option is available in the Professional, Corporate, Unified and Ultimate Editions of Enterprise Architect.
Collaborate	This option displays if User Security is enabled. It offers the sub-options of: • 'Send Message', which opens the 'Create Message' dialog to create and send a model message containing a

	hyperlink to each of the selected objects • 'Monitor **Discussions**', which sets a flag on the selected elements to notify you if any of the selected elements are the subject of a new discussion or a new reply to an existing discussion
Align	Select one of these 'Align <point>' options to align elements against the 'master' element's: • left edge • right edge • top edge • bottom edge • center, vertically or • center, horizontally You can also edge-align groups of elements using the Diagram Toolbar; the four alignment buttons are made available when more than one element is selected in a diagram. Shortcut: **Ctrl+Alt+Left Arrow** **Ctrl+Alt+Right Arrow** **Ctrl+Alt+Up Arrow** **Ctrl+Alt+Down Arrow**

Space Evenly	(For three or more selected elements.) Select this option to automatically even out the spacing between the selected elements, either horizontally or vertically. Shortcut: **Alt+-** **Alt+=**
Same Height/Width	Select one of these options to make all the selected elements match the 'master' element's height or width, or both. In Use Case diagrams, these options are blocked if the 'Allow elongated Use Cases' option is turned off on the 'Preferences' dialog 'Objects' page.
Group/UnGroup Elements	Select these items to either combine the selected elements into a group for common formatting, for a number of work sessions, or to cancel an existing group.
Compartment Visibility	Select this option to define the visibility of features and compartments on all elements selected on a diagram. Shortcut: **Ctrl+Shift+Y**
Set Bookmark Value	Displays the 'Set Bookmark' dialog, on which you enable the display of Bookmark icons above the selected

	elements, and set any value to display in those bookmarks.
Show Elements Matrix	Displays a Relation Matrix for two selected elements, identifying relationships between the features of the elements in the selected group.
Clone Element(s) as New Version	Select this option to copy the structure of the selected elements and paste them into the **Browser window** as new elements and contents; a prompt displays for you to enter a version number for the new elements, followed by a browser on which you select the parent Package or element.
Add Tagged Value	Select this option to add the same Tagged Value to all selected elements.
Autosize	Select this option to automatically resize the selected elements to their default minimum size (element content permitting). Shortcut: **Alt+Z**
Appearance	Select this option to set the same default appearance and font for all of the selected elements at once.

	Shortcut: **F4** You can also enable the **Custom Diagram** Style on the grouped elements, enable Info View style, and define the Info View display options.
Behavior	Select this option to display a short submenu, from which you toggle the Dockable, Selectable and Printable settings on the elements
Copy	Select this option to copy the selected elements to the clipboard.
Save Selected Elements as Pattern	Save the selected elements in a DiagramPattern Artifact, to act as a Pattern to reproduce those elements in other diagrams.
Layout Selected Elements	Select this option to automatically adjust the layout of the selected elements on the diagram.
Delete Selected Elements	Select this option to delete the selected elements from the diagram only. Shortcut: **Ctrl+D**

Linked Documents

When you are developing elements in your model, you might want to provide extensive documentation on an element, to provide more structured text than you can create in the element 'Notes' field. In this case, you can create a formatted document that is linked to the element. You can create a Linked Document from scratch, or from one of a range of Linked Document Templates that you define with the **Linked Document Template Editor**. The Linked Documents are held within the model.

Working with Linked Documents

Task	Detail
Create Linked Documents	You can create a Linked Document either: • Within a Document Artifact element attached to your model element, or • Directly on the model element The advantages of using a Document Artifact to host the Linked Document include: • Visibility of the Document Artifact and hence Linked Document in the **Browser window**

	• As you can only have one Linked Document in an element, hosting each of several documents in its own Document Artifact and connecting the several Document Artifacts to one model element means that you have broader scope for providing information • Similarly, associating several elements with one document by connecting them to the host Document Artifact element means that you can share information rather than duplicating it The advantages of using a Linked Document directly on an element include: • More tightly binding the content of the document to the element, so there is less ambiguity in what the information refers to • More tightly binding the document itself to the element, so there is less risk of the document being changed, moved or deleted without reference to the element it belongs to
Create Linked Document templates	You can base your Linked Document on one of a range of system-provided templates, each of which represents a project document type.

	You can also create and use your own Linked Document templates in the 'Resources' tab of the **Browser window**, within the *Linked Documents* folder.
Edit Linked Documents	You can define the style, format and layout of your Linked Document both in the template from which you create the document and in the document itself. You can edit the Linked Document from a selected element in the Document Window and in the Linked Document Editor.
Create hyperlinks in Linked Documents	Linked Documents are intimately associated with specific elements, but you can also create hyperlinks in the document directly to other elements in the model. Having followed the link, you can perform any normal operation on that element. Similarly, you can create new elements or diagrams to link to. You can also create hyperlinks to other forms of documentation.
Include Linked Documents	Linked Documents, however they are created, are rendered into document reports when you select the 'Linked

in RTF reports	Document' checkbox in the **Document Template Designer**.
Locate Linked Documents	In diagrams, any element that has a Linked Document is marked with an 'A' symbol in the bottom right corner. You can also use the **Model Search** facility to search for elements that have Linked Documents, by creating a custom search containing this SQL Query: SELECT ea_guid AS CLASSGUID, Object_Type AS CLASSTYPE, Name AS Object, Object_Type AS [Type], Stereotype, Author, Scope, Status, Phase, CreatedDate, ModifiedDate FROM t_object WHERE t_object.Style LIKE '#WC#MDoc=1#WC#'
Delete Linked Documents	You can completely remove a Linked Document from an element, or you can remove the contents of the document and replace them with the contents of an external file.

Notes

- You can create a Document Artifact element to contain a Linked Document in all editions of Enterprise Architect
- You can create and link a document to any UML element in the model, in all editions of Enterprise Architect
- You can work on Linked Documents through the **Automation Interface**, using the methods GetLinkedDocument(), DeleteLinkedDocument(), SaveLinkedDocument(string Filename) and LoadLinkedDocument(string Filename)

Create Document Artifact

You can create a Document Artifact element to host a Linked Document for another model element. You can either create an appropriate connector between the Document Artifact and the documented element (to indicate how the document impacts the element), or drag the Document Artifact over the model element on the diagram or in the **Browser window** so that it becomes a child of the model element. Alternatively, if the document is not specific to a model element, you can leave the Document Artifact as an independent element in an appropriate location.

Create a Linked Document in a Document Artifact

Step	Action
1	Open the diagram containing the element for which to create the Linked Document.
2	Open the 'Common' page of the **Diagram Toolbox**. Drag and drop the Document Artifact element icon from the Toolbox into your diagram.
3	Double-click on the Document Artifact element. A

	default blank-page document opens in the Linked Document Editor, based on the Normal.rtf style template. Alternatively, click on the Artifact and select the 'Start > Desktop > Design > Document' ribbon option. A default blank-page document opens in the Document Window, based on the Normal.rtf style template.
4	Apply a template and/or continue to develop the Linked Document as described in the *Create Linked Document on an Element* topic, from step 2 onwards.

Notes

- As another alternative, you can create a File Artifact element containing a document file that you have dragged from a file browser onto an Enterprise Architect diagram; see the *Create File Artifacts* Help topic
- There is a limit of one Linked Document per Document Artifact element, but you can provide more than one Linked Document for a model element by linking it to more than one Document Artifact
- This operation is available in all editions of Enterprise Architect
- When you have saved the document, an A symbol

displays in the bottom right corner of the element

Create Linked Document on an Element

If you need to provide more extensive and structured documentation on an element, you can develop this as a formatted document directly linked to the element. You can develop the document from a blank page or using a system template or user-defined template, at several different points in the work area.

Access

Select an element in the **Browser window**, **Diagram List**, **Package Browser**, **Specification Manager**, **Model Search** or diagram, then use any of the methods outlined here to open the **Document window** or Linked Document Editor. Both features activate the 'Document - Edit' ribbon, which you use to enter and edit the text of the Linked Document.

Ribbon	Start > Desktop > Design > Document (**Document window**) Design > Element > Editors > Document (Document window) Design > Element > Manage > Edit Linked Document (Linked Document Editor)

Context Menu	Right-click on the element name | Properties | Linked Document (**Document window**)
Keyboard Shortcuts	**Ctrl+Alt+D** (Linked Document Editor) **Alt+1** > Document (**Document window**) **Alt+5** > Document (Document window)

Create a Linked Document

Step	Action
1	The Linked Document Editor automatically opens in edit mode. The 'Linked Document' tab opens in Read mode; click on the ≡ icon and select the 'Edit Mode' option. A default blank-page document opens, based on the *Normal.rtf* style template. The 'Document - Edit' ribbon also displays in the Ribbon Bar.
2	If you do not want to apply a system template or user-defined template, go to step 6. If you do want to base the document on a selected

	template, select the 'Document - Edit > File > File > New (Clear Document)' ribbon option. A prompt displays for you to confirm that you are clearing the current document; click on the **OK button**. The 'New Linked Document from Template' dialog displays.
3	In the 'Template' field, click on the **drop-down arrow** and select the template from which to create the document. This can be either a system-supplied template or a template that you have previously created yourself.
4	If you want to display the 'New Linked Document from Template' dialog by default whenever you start to create a Linked Document, select the 'Show this dialog on document creation' checkbox. If you no longer want to display the dialog by default, deselect the checkbox.
5	Click on the **OK button**. The new Linked Document opens. If you have based the document on a selected template, the document shows the content applied by the template.
6	Enter and format the text of the document, using the facilities of the 'Document - Edit' ribbon.

Notes

- You can create only one Linked Document on an element; if you need to create more, develop each document within its own Document Artifact element and link these to the model element
- This operation is available in all editions of Enterprise Architect
- When you have saved the document, an  symbol displays in the bottom right corner of the element

Edit Linked Documents

To develop the contents of a Linked Document, you use either the Document Window or the Linked Document Editor. These provide a frame for working on the document, using a wide range of convenient features from the Document - Edit ribbon. The features help you in formatting and editing the document, and adding links from and references to the content of the document.

In the Linked Document Editor some editor features are duplicated in a right-click context menu for convenience.

The Document Window has additional facilities, as described in the *Linked Documents in the Document Window* Help topic.

Access

Select an element in the **Browser window**, **Diagram List**, **Package Browser**, **Specification Manager**, **Model Search** or diagram, then use any of the methods outlined here to open the Linked Document.

Ribbon	Explore > Portals > Windows > Properties > Document Start > Desktop > Design > Document Design > Element > Editors > Document

Context Menu	Right-click | Properties | Linked Document
Keyboard Shortcuts	**Ctrl+Alt+D**
Other	From the **Notes window** or from the 'Notes' field of the element 'Properties' dialog, click on the  icon on the Notes toolbar.

Option Descriptions

The Linked Document Editor option descriptions are grouped according to the actions you are performing.

Action
Creating and importing documents
Configuring the editor page display and formatting tools shown
Incorporating stylesheets, special texts and Tables of Contents
Managing the base styles in the Normal.rtf style template

file
Moving through, searching and selecting text
Formatting characters and text strings
Formatting paragraphs and text blocks
Inserting tab points
Inserting sections, columns and page breaks, and repaginating
Inserting and editing page headers and footers, and footnotes and endnotes
Inserting tables
Inserting hyperlinks
Inserting images, OLE objects, frames and drawing objects
Printer set up and printing documents
Checking spelling and use of words
Tracking, accepting and rejecting changes to text

Protecting document text from accidental change
Create and refer to definitions of Glossary terms in the **Project Glossary** (using the 'Create | Glossary Definition' menu option)

Notes

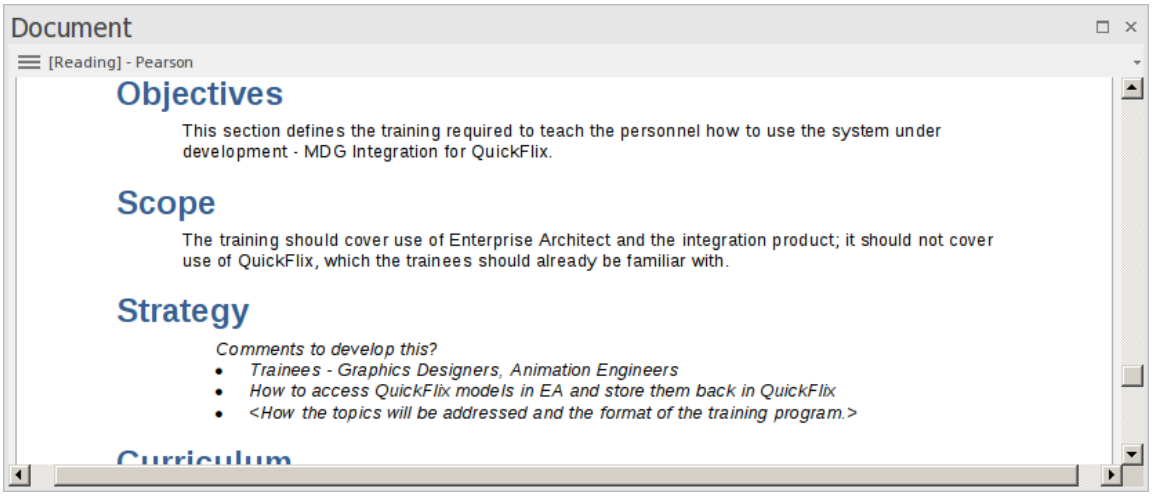
- Throughout your document editing:
  - To undo one or more immediately previous edits, press **Ctrl+Z**, or select the 'Undo' ribbon or context menu option; you can still undo a change even after you have saved the change
  - To redo one or more immediately previous undone edits, press **Ctrl+Y**, or select the 'Redo' ribbon or context menu option

Linked Documents in the Document Window

The **Document window** provides several quick methods of checking elements for Linked Documents, and for reviewing the documents that exist. It also provides searches to locate and list any elements with Linked Documents in the model, and any elements that have Linked Documents that have been recently modified.

When you click on an element in the **Browser window**, a diagram or an element list - such as the results of a search - the Document window displays the name of the selected element and, if it has a Linked Document, the content of that document. If the element does not have a Linked Document, the content panel is blank. If you click on another element, the window updates immediately to show the element name and Linked Document (if any) of that element. You can therefore quickly scan a number of elements to check whether they have Linked Documents, and/or review the documents you locate. The 'Linked Document' tab provides options for reviewing the Linked Document, including switching to an Edit mode so that you can create or update the document.

Note that there are also options for creating a Linked Document via the Linked Document Editor, which is an alternative method. See the *Edit Linked Documents* Help topic.



Access

Ribbon	Start > Desktop > Design > Document Design > Element > Editors > Document
Context Menu	Right-click on the element name | Properties | Linked Document

View Document

When you first open the **Document window**, it shows the selected element's Linked Document in Reading (View) mode. The element name displays in the menu button at the top of the window, with the prefix 'Reading'. Click on the menu button to access these options:

Option	Description
Edit Mode	Switches the document into 'Edit' mode and displays the 'Document - Edit' ribbon, which provides the facilities for updating the document. If the element does not currently have a Linked Document, you can immediately start typing in the display panel or import a file to create a Linked Document for the element. If the selected element is locked, the menu button displays the text '[Locked] - <element name>', and you cannot edit the Linked Document. Similarly, if you have edited the document but not yet saved the changes, the menu button displays an asterisk in front of the element name: for example, *PersonClass. While in edit mode, the **Document window** becomes locked to the parent element, and selecting another element or context will not switch the window to a different document. This helps you to move around the model, checking and gathering information without having to close and open the document several times. Once you quit edit mode, the window will again immediately refresh to show the document for whichever

	element you select. To switch out of 'Edit' mode, click on the menu button and deselect the option.
Lock Element	Locks the element against changes - including changes to the Linked Document. Deselect the option to unlock the element and allow changes.
Reload	Refreshes the content of the displayed document from the last-saved version.
Find in Project Browser	Expands the **Browser window** and highlights the Linked Document's parent element.
Find in Diagrams	Opens the diagram containing the Linked Document's parent element, with the element selected. If the element exists in more than one diagram, the 'Element Usage' dialog displays, from which you can select the diagram to open.
Fixed Zoom	Displays a short list of magnifications (as a percentage of 'normal' size) you can select to zoom the document display to, as well as a 'Custom' option that opens a dialog on which you can set any magnification between 10% and 500%.

	The zoom factor remains set after you close the document, and is applied when you re-open the document until you specifically change the zoom.
Toggle Page Border	Switches between full-screen display and page outline display (the default) where the information is shown within the framework of a page border.
Find Elements with Linked Documents	Opens the **Find in Project view** preloaded with an executed search for elements that have Linked Documents; as you click on an item in the search results, the **Document window** shows the corresponding Linked Document.
Find Elements with Linked Documents Modified Recently	Opens the **Find in Project view** preloaded with an executed search for elements that have Linked Documents that have been updated within the last seven days (you can re-execute the search with a different number of days); as you click on an item in the search results, the **Document window** shows the corresponding Linked Document.
Delete Linked	Deletes the Linked Document currently displayed in the window. A prompt

Document	displays for you to confirm the deletion.
Print	Displays the 'Print' dialog, which you use to configure the print job for printing the Linked Document.

Replace or Delete Linked Documents

If a Linked Document is out of date you can edit the text, or you can:

- Delete the content and replace it from another file, or
- Delete the document altogether

Access

Click on the element that contains the Linked Document.

Ribbon	Start > Desktop > Design > Document or Explore > Portals > Windows > Properties > Document The Document Window opens, showing the Linked Document on the element.

Delete the Linked Document

Step	Action
1	Click on the ≡ icon in the top left of the window, and select the 'Delete Linked Document' option at

	the end of the menu.
2	A prompt displays for you to confirm the deletion; click on the **Yes button**.
3	The **Document window** is cleared, and the  symbol on the element in any diagram is removed. You can now import or create content for another Linked Document on that element, select a different element, or close the Document window and/or move on to other work.

Create Linked Document Templates

To create a Linked Document, you can open an empty file and add the text and contents as you want. You can also base your Linked Document on a Linked Document template that you either:

- Select from a drop-down list of (initially) system-provided templates in the 'New Linked Document from Template' dialog or
- Create in the 'Linked Documents' folder of the 'Resources' tab of the **Browser window**

Linked Document templates that you create are added to the drop-down list on the 'New Linked Document from Template' dialog.

Access

Open the 'New Document Template' dialog using any of the methods outlined here.

When opened using one of these methods, the 'Template Type' field is set to 'Linked Document Template'.

Ribbon	Start > Desktop > Share > Resources > Linked Documents > right-click on a <template group> folder > Create Template Explore > Portals > Windows > Explore

	> Resources > Linked Documents > right-click on a <template group> folder > Create Template

Create a template

On the 'New Document Template' dialog:

Step	Detail
1	In the 'New template' field, type a name for your template.
2	In the 'Copy template' field, if you want to base the new template on an existing template, click on the **drop-down arrow** and select the name of the source template. Otherwise leave the field set to 'None'.
3	Click on the **OK button**. The template opens in the **Linked Document Template Editor** in the **Diagram View**. Create and edit the template contents as you need.
4	Save the template (File > Save) and close the editor (× in the top right corner of the editor window). The

	template is immediately available for use.
5	If you want to assign your template to another group, right-click on the template name in the 'Resources' tab of the **Browser window** and select the 'Move' option. The 'Enter the Linked Document Template Group name' dialog displays. In the 'Enter Value' field type a new or existing category name and click on the **OK button**. The template is immediately transferred to the named group.

Notes

- You can transport customized Linked Document templates between models, using the 'Configure > Model > Transfer > Export Reference Data' and 'Import Reference Data' ribbon options

Edit Linked Document Templates

To develop the contents of a Linked Document template, held in the 'Resources' tab of the **Browser window**, you use the **Linked Document Template Editor**. This opens the Document - Edit ribbon, which provides access to a wide range of convenient features for formatting and editing the template, and for adding links from and references to the content of the documents generated from the template. An in-text context menu also provides editing options for the template.

Access

Within the 'Resources' tab of the **Browser window**, click on 'Linked Documents > <template group> > Right-click on template name | Open'

Ribbon	Start > Desktop > Share > Resources Explore > Portals > Windows > Explore > Resources

Option Descriptions

The **Linked Document Template Editor** option

descriptions are grouped according to the actions you are performing.

Actions
Creating and importing template documents
Configuring the editor display
Incorporating stylesheets, special texts and Tables of Contents
Managing the base styles in the Normal.rtf style template file
Moving through, searching and selecting text
Formatting characters and text strings
Formatting paragraphs and text blocks
Inserting tab points
Inserting sections, columns and page breaks, and repaginating
Inserting and editing page headers and footers, and footnotes and endnotes

Inserting tables
Inserting hyperlinks
Checking spelling and use of terms
Tracking, accepting and rejecting changes to text
Protecting template text from accidental change
Inserting images, OLE objects, frames and drawing objects
Printer set up and printing documents

Notes

- Throughout your template editing:
  - To undo one or more immediately previous edits, press **Ctrl+Z**, or select the 'Undo' context menu option; you can still undo a change even after you have saved the change
  - To redo one or more immediately previous undone edits, press **Ctrl+Y**, or select the 'Redo' menu option

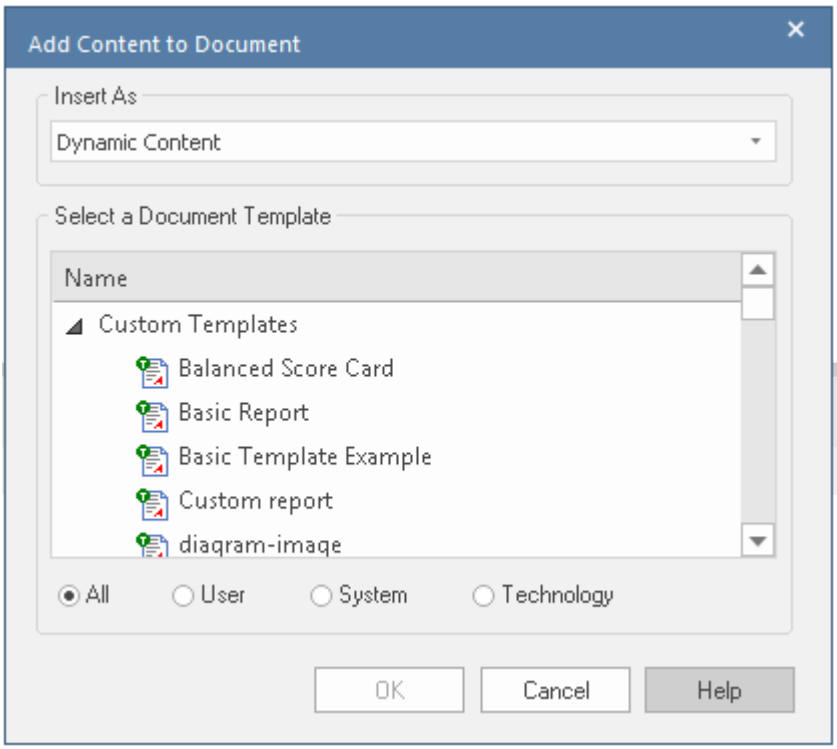
Hyperlink From Linked Document

Within the text of a Linked Document, you have several options for creating hyperlinks to other objects in the model, and to web pages, Help files, Model Searches and **Team Library** documents. You can also create links that generate RTF reports or diagram images, so that updates to the linked material can be quickly merged into the Linked Document as a **Custom Report**.

When you have saved the Linked Document, you can click on the hyperlink to open the linked files or to locate and highlight the object in the **Browser window**. You can perform all normal operations on the object, including opening any Linked Document that element might have. You can also, within the Linked Document, select a context menu option to update any linked-in reports and diagram images.

Using the Add Content to Document dialog

The 'Add Content to Document' dialog displays when you drag an object from the **Browser window** onto the Linked Document. This versatile dialog helps you add a number of features to your document, as explained in this table.



If you are creating a number of links of the same type, after you create the first link you can simply press the **Ctrl key** as you drag the next object onto the document without displaying the dialog. The system creates further links of the same type, until you display the dialog again and change the 'Insert as' option.

Task	Action
Create Hyperlinks to Model Objects	In the **Browser window**, click on the object (of any type, including a diagram or Package) and drag the object into the Linked Document to the position at which to create the hyperlink. On the 'Add Content to Document' dialog (if necessary) click on the 'Insert as' **drop-down arrow** and select 'Insert as Hyperlink(s)'.

	Click on the **OK button**. The system creates the hyperlink, using the object name as the hyperlink text. You can edit this text if you prefer.
Insert an RTF Report on a Model Object	In the **Browser window**, click on the required element, diagram or Package and drag the object into the Linked Document to the position at which to insert the report text. On the 'Add Content to Document' dialog, click on the 'Insert as' **drop-down arrow** and select 'Render as RTF'. Click on the appropriate radio button ('All', 'User', 'System' or 'Technology') to display the selection of RTF templates you want to choose from, and click on the required template. Click on the **OK button**. The system generates the RTF report according to the template, and inserts it at the cursor location. At any later point, you or another user can refresh the RTF reports in the Linked Document by right-clicking in the document and selecting the 'Update Dynamic Report elements' menu option. Note that this option will reinstate any text you might have deleted from the

	inserted reports.
Insert a Diagram Image	In the **Browser window**, click on the required diagram and drag the diagram into the Linked Document to the position at which to insert the diagram image. On the 'Add Content to Document' dialog, click on the 'Insert as' **drop-down arrow** and select 'Insert as Diagram Image'. Click on the **OK button**. The system generates the diagram image and inserts it at the cursor location. At any later point, you or another user can refresh the image in the Linked Document by right-clicking in the document and selecting the 'Update Dynamic Report elements' menu option.

Using the Linked Document Context Menu

You can also create hyperlinks to model objects within a Linked Document using the Linked Document Editor context menu. You first select a text string in the document to act as the link text and, in the case of a new object, to act as the name of the element.

Option	Action
Link to an Existing Element	Highlight the link text in the Linked Document, right-click on it and select the 'Create | Link to Existing Element' option. The 'Select Element' dialog displays, through which you browse or search for and select the element to link to.
Link to a New Element or Diagram	Highlight the link text in the Linked Document, right-click on it and select the 'Create | New' option. A short submenu displays from which to select a specific type of element to create, or a diagram. When you click on an element type, a new element of that type is created. If you select the 'Create | New | Diagram' option, the 'New Diagram' dialog displays and you can select the type of diagram to create. If the element type you require is not presented in the short list, click on the 'Other' option to display the 'New Element' dialog, from which you can select the toolset containing the element type to create, and the element type itself. In each case, the new element or diagram is added to the Package that contains the parent element of this Linked Document.

	The link text becomes the name of the new object, and in the Linked Document is the hyperlink to that new object.
Link to an Object or Document in the Model	Highlight an appropriate text string to act as the link text, right-click on it and select the 'Create | Hyperlink' context menu option. The 'Hyperlink Details' dialog displays, through which you specify the type of document or object to link to. Depending on what object or document type you select in the 'Type' field, a small dialog displays to help you locate and select the target. For the location, you can use either full paths or local (path substitution) paths. In some cases you might not want to have normal text as the hyperlink, but the text of the link itself. In this case, do not highlight any text or, in the 'Hyperlink Details' dialog, type any link text in. The system then inserts the address path or the provided text as the link text.

Using the Ribbon Option

You can also insert a Hyperlink in your document to link to a web page, Help topic or external file.

Click on the point in the document to insert the hyperlink and select the 'Document-Edit > Edit > Insert Hyperlink' ribbon option.

The simple 'Insert Hyperlink' dialog displays, in which you specify the type of document to link to, and the location of the document file. See the *Insert Hyperlinks* Help topic.

Create Element From Document

Whilst you can set up hyperlinks from the Linked Document to existing elements and diagrams in the **Browser window**, you can also create new elements to illustrate and support information written in the Linked Document. You can create and link to any type of element or diagram, but the facility has specific options for these element types:

- Class
- Requirement
- Issue

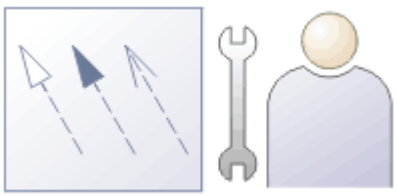
The element or diagram is created in the same Package as the element for which the Linked Document was created. A hyperlink is automatically created in the document to the new object. When you click on the hyperlink, the element or diagram is highlighted in the Browser window.

Create element or diagram

Step	Action
1	Open the Linked Document in the model element or Document Artifact element.
2	Enter or select the appropriate text to act as the hyperlink text (such as the element or diagram

	name). Highlight this text and select the Document - Edit > File > Model Link > New Model Element > <element type> ribbon option.
3	If you select the: • 'Class', 'Requirement' or 'Issue' option, the corresponding element is immediately created in the **Browser window** • 'Other' option, the 'New Element' dialog displays; specify the element type and - if appropriate - stereotype, and click on the **Create button** • 'Diagram' option, the 'New Diagram' dialog displays; specify the diagram type and click on the **OK button**
4	The highlighted text is now a hyperlink to the new object in the **Browser window**. Click on the link to highlight the object. You can now edit or expand the element or diagram as required.

Connectors



Relationships in any context can be hard to understand, and relationships between model elements are no exception. In modeling, the elements are only part of the model; relationships are like a glue that binds the elements together or, making a comparison with natural languages, if the elements are nouns the relationships are verbs that describe how the nouns relate to each other.

Relationships are represented in modeling diagrams by different types of line, or connector, each line indicating the kind of relationship and interaction there is between the elements. The connector types are defined by the modeling languages or profiles they belong to. For example, Associations and Generalizations are part of the grammar of UML; Sequence Flows and Message Flows are part of the grammar of BPMN; and Allocates and Item Flows are part of the grammar of SysML. Each connector type has a notation that helps modelers recognize the connector and understand its purpose; the types also inform tools such as the Code Templates Framework how to generate resulting models, schemas or programming code.

There are many different types and styles of connectors. They can have arrows (indicating direction) or other markers that express the semantics of the relationship; they

can have names, stereotypes and Tagged Values, and a wide range of other properties. Some connectors are like conduits that allow material and tokens to flow; some are about family, others tell an element to change its state, while still more are about signals and structure. It is important to remember that a diagram is just a projection (or view) of an underlying model and just because a connector isn't visible on the diagram it doesn't mean that it doesn't exist. Perhaps the best way to think about a diagram is as a narrative or story that is trying to reveal a plot to an audience. The connectors play an important role in this story telling, and hiding them or leaving them out is sometimes as important as putting them in.

Connectors can also 'reach' inside the perimeter of the element and be attached to an element's features (attributes, operations and receptions). This is particularly useful when doing data matching, for example, between two different data sources.

There are a number of places where you can review connectors in Enterprise Architect - other than in diagrams - including the **Traceability window**, the simple Feature and Gap matrixes, the **Relationships Window**, the **Hierarchy Window**, the **Relationship Matrix**, the 'Details' tab of the **Inspector window** and the 'Properties' dialog for an element. They are, however, most expressive in diagrams, where their characteristics and properties are easily observable.

Factors in Modeling Connectors

Operation	Discussion
Routing and Bending	Connector lines require geometry to be able to navigate around the elements on the diagram as they emerge from one element and connect to another. Thoughtful placement of related elements can limit the need to route connectors, but it is often the case that connectors have to be bent and directed. Some line styles - such as the Auto Routing style - can manage this automatically, but using the Custom Style is the most flexible method, allowing any number of way-points to be added to a connector, at each of which the line can be bent to direct it in a complex path through the diagram. The Diagram Layout tool also provides ways of automatically laying out a diagram to organize it neatly with a minimum of crossed lines. When lines do have to cross you can select an option to add jump symbols to reduce the ambiguity of the line direction.
Changing Style	Connectors have default line styles that you can change to create more appealing and meaningful representations of the

	relationships; for example, a relationship of family can be represented by a Tree style. This shows the parent element at the top and the child elements in a row underneath (or in a column to the side) with the connectors between each child and the parent having a common 'trunk' at the parent, in a tree format. The same relationships could also be viewed as a collected set in an Orthogonal or Lateral style. All connectors of a similar type can be conveniently changed to the same type on a diagram. Other line styles, such as Auto Routing, will themselves change the bends in a connector as an attached element is moved in the diagram. The Custom style is the most flexible, allowing you to bend the connector at any point to create any number of way points and route the connector around the diagram layout.
Using Color and Line Thickness	The color and thickness of lines can be changed to create meaning and appeal in diagrams. These changes are local to the selected connector(s) on any diagram, but using the style picker and painter of - for example - the Layout ribbon you can apply the selected line style to multiple connectors. While the tool offers great

	flexibility to assign styles manually, it is worth considering the use of Diagram Legends, which can automatically change the style of the connectors (and also elements) based on connector metadata such as the connector's stereotype. Connector labels can also be changed at a granular level. Each label reflects a property of the connector, although you can also edit the text in a label. You can hide or show the labels, change their text color and bold them, add direction arrows, display the text horizontally or vertically, and return the moved label to its original position.
Connector Direction and Ends	In our natural languages verbs have direction; for example 'The cat likes Juliet.' is not the same as 'Juliet likes the cat.' So too with connectors, direction often reveals important semantics, and the ends of the connector can be labeled with a variety of markers that express the details of the meaning. It easy to make mistakes when creating diagrams, and to draw the connectors in the wrong direction. Fortunately there are some powerful features for working with connector direction, including being able to reverse the direction of a connector

	without the need to recreate it. Connector ends can also be pinned so that the connector stays bound to its attachment point on the connected element.
Showing and Hiding Connectors	As mentioned earlier, a diagram is a narrative and the choice to include, show, hide or remove connectors is an important decision in telling the right story. When elements are placed on a diagram Enterprise Architect will, by default, add the existing connectors (remembering that elements can have reflexive connectors). A modeler can choose a variety of options to either completely hide specific connectors in this diagram and/or other diagrams, hide all the labels, or selectively hide parts of the labels such as role names and multiplicities. Hiding parts of the labels can be a useful option when presenting to non-technical audiences, who tend to be distracted by all the detail. Connectors that have been hidden can easily be made visible again from the 'Diagram' panel of the 'Layout' ribbon. You can also 'freeze' a diagram so that it shows all the connectors you require at that point, but will not update with any other connectors subsequently created between the

	elements.
Types and Markers	Enterprise Architect is a standards-based tool, and many of the diagrams and their constituent elements and connectors are intentionally defined as part of a standard. Thus a Business Process diagram will contain Activities and Tasks sequenced with Control Flow connectors, and a Domain diagram will have Associations to express structural relationships such as whole-part. The modeler is thus aided and at the same time straight-jacketed by what the chosen modeling language defines as the allowable connectors. We of course face the same thing in our natural languages, where we must choose the right form of a verb or the meaning of the sentence will be lost. So in English 'Jonathon went fishing with Wendy' is a good sentence, but 'Jonathon went Wendy with fishing' is not. So too with the connectors, which have markers, labels and annotations that must be used to express meaning in the models. For example, a Composite Association in the Unified Modeling Language has a solid black marker at the whole end of the relationship with an important multiplicity label at the other.

	If you reverse the direction, the meaning of the 'sentence' will be changed.

Connector Management Options

If you right-click on a connector in a diagram, one of two connector context menus can display. These provide quick access to some important functions.

Menus

Menu	Description
Context Menu	The menu is split into up to seven distinct sections: • Specialize - displays in the first section only if you have **Add-Ins** installed and registered • Properties, including Advanced features • Type Specific • Style and Appearance • Position • Type Information - Displays the Enterprise Architect Help topic for this connector type • Delete - deletes the connector
Connector	For connectors with Roles, right-clicking

Role Context Menu	a connector within 60 pixels of an end point displays a role-specific context menu that offers three additional menu options: • 'Source/Target Role...' - opens the connector 'Properties' dialog with the respective role page selected • 'Multiplicity' - opens a submenu through which you can set the multiplicity for the role • 'Link to Element Feature' - displays a dialog through which you can attach the end of the connector to a specific attribute or operation

Notes

- Context menus vary slightly between connector types, and not all menu options are present on all connector context menus; the type-specific menu options are not always included

Connector Type-Specific Options

The 'Type-Specific' section of the connector context menu is specific to the object, and only appears for a few different connectors. Some examples are described here.

Connector Options

Connector	Menu Option
Transition	Locate in State Table Action: Switch a **StateMachine diagram** to a State Table, with the selected Transition cell highlighted on the table.
Transition	Message Action: Set the value of the Message.
Transition	Find Triggers Associated Action: Identify hidden triggers, and locate a trigger in the **Browser window**; if there: • Is one trigger, it is immediately highlighted in the Browser window • Are two or more triggers the 'Element Usage' dialog displays, listing the

	triggers; double-click on the required trigger to highlight it in the Browser window
Transition	Queue Triggers in Simulation Action: (Available when a simulation is being executed.) Adds the Trigger to the end of the list in the '**Simulation Events**' tab of the Breakpoints & **Events window**, without signalling it.
Transition	Signal Triggers in Simulation Action: (Available when a simulation is being executed.) Adds the Trigger to the '**Simulation Events**' tab of the Breakpoints & **Events window** and signals it at the current step of the simulation, leaving it with the status signaled.
Association	Find Association Class Action: Locate and highlight the Association Class element in the **Browser window**.
Aggregation	Set Aggregation to Composite Action: Change the Aggregation to

	Composite.
Aggregation	Set Aggregation to Shared Action: Set the Aggregation to shared; this appears after 'Set Aggregation to Composite' has been selected.
InformationFlow	Find Items Conveyed Action: (Listed only if there are Information Items on the connector.) Locate the Information Item in the **Browser window**; if there: • Is one item, it is immediately highlighted in the Browser window • Are two or more items the 'Element Usage' dialog displays, listing the items; double-click on the required item to highlight it in the Browser window

Notes

- Context menus vary slightly between connector types, and not all menu options are present on all connector context menus; the type-specific menu options are not always included

Manage Connector Properties

The 'Properties' section of the connector context menu provides a small set of options.

Menu options

Option	Action
<Connector type> Properties	Open the **Properties window** for the selected connector.
Advanced	Display the Advanced menu.
Attach Note or Constraint	Attach a note or constraint to the connector.

Notes

- Context menus vary slightly between connector types, and not all menu options are present on all connector context menus; the type-specific menu options are not always included

Advanced Connector Management Options

The 'Advanced' section of the connector context menu provides a number of options.

Menu Options

Option	Action
Change Type	Change the connector type.
Change Direction	Keep the ends of the connector the same but change the direction setting. There are four options: • Unspecified • Source -> Destination • Destination -> Source • Bi-Directional
Reverse Direction	Reverse the ends of the connector; for example, if the connector is an arrow, the arrowhead swaps to the other end. This command maintains the direction of the connector (such as Source -> Destination).

Set Source and Target	Change the source and/or target of the connector.
Specialize Associations	Specify how the properties of this Association specialize the properties of other Associations.
Information Items Conveyed	Add information items to an Information Flow connector.
Information Flows Realized	Realize any information items conveyed on an Information Flow connector between two elements.
Generalization Set	Click on the 'New' option to create a Generalization Set, which enables you to specify the relationship of a group of Generalizations. Each Generalization is a binary relationship that relates a specific Classifier to a more general Classifier (for example, from a Class to its Superclasses). Each Generalization Set defines a particular set of Generalization relationships that describe the way in which a general Classifier (or superclass) can be divided using specific subtypes.

Dependency Stereotypes	Select a stereotype for the Dependency (or Trace, Role Binding, Occurrence or Represents connector).
Extension Points	On an Extend connector between two Use Cases, provides options to: • Specify which Extension Point (if any) in the target Use Case the connector and its source Use Case relate to • Show or hide the Note element that identifies the defined Extension Point

Notes

- Context menus vary slightly between connector types, and not all menu options are present on all connector context menus; the type-specific menu options are not always included

Connector Style Options

The 'Style' section of the connector context menu provides a number of options.

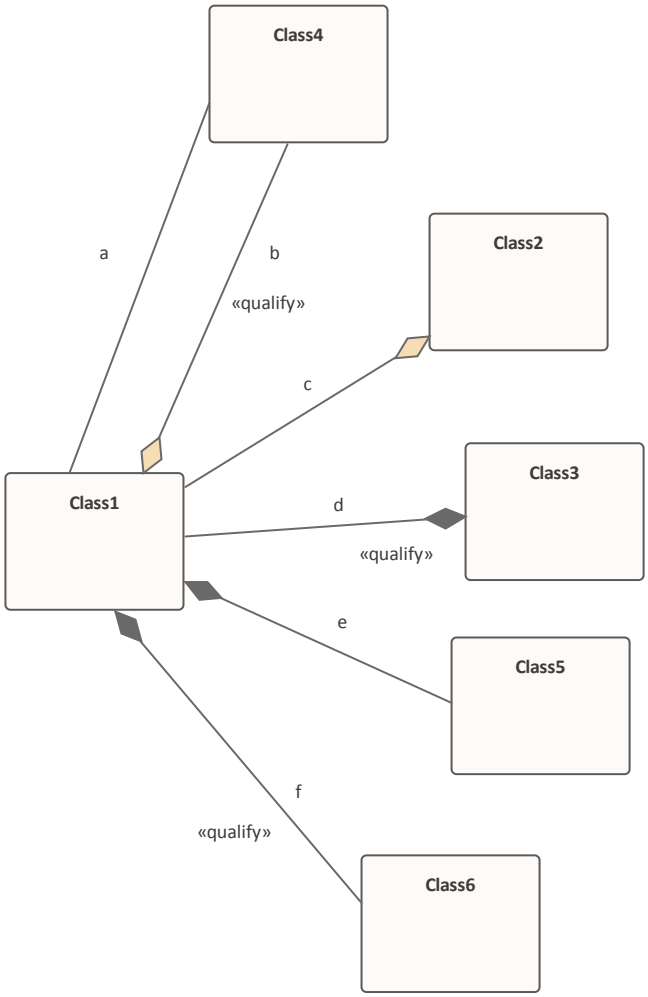
Style Options

Option	Action
Line Style	Set the connector line style; the options are: • Direct • Auto Routing • Custom Line • Bezier (not on all diagram types) • Tree Style Horizontal or Tree Style Vertical • Lateral Horizontal or Lateral Vertical • Orthogonal (with Square or Rounded corners)
Apply Line Style on Diagram	Apply the line style of the selected connector to all other connectors on the diagram of the same: • Type • Subtype (including Type) or

- Stereotype (including Type and Subtype)

This helps you apply a style change to one connector to many other connectors on the diagram, in one go.

On this section of a diagram there are six connectors.



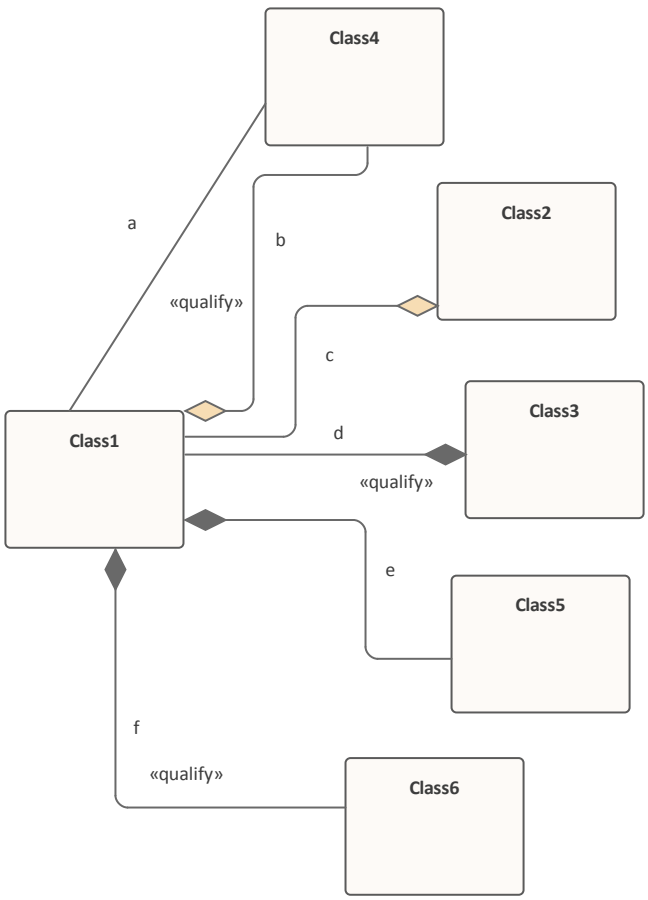
- All connectors except **a** are Aggregation connectors (**a** is an Association)
- Connectors **b** and **c** are the subtype 'weak' Aggregations; connectors **d**, **e**

and **f** are 'strong' Aggregations

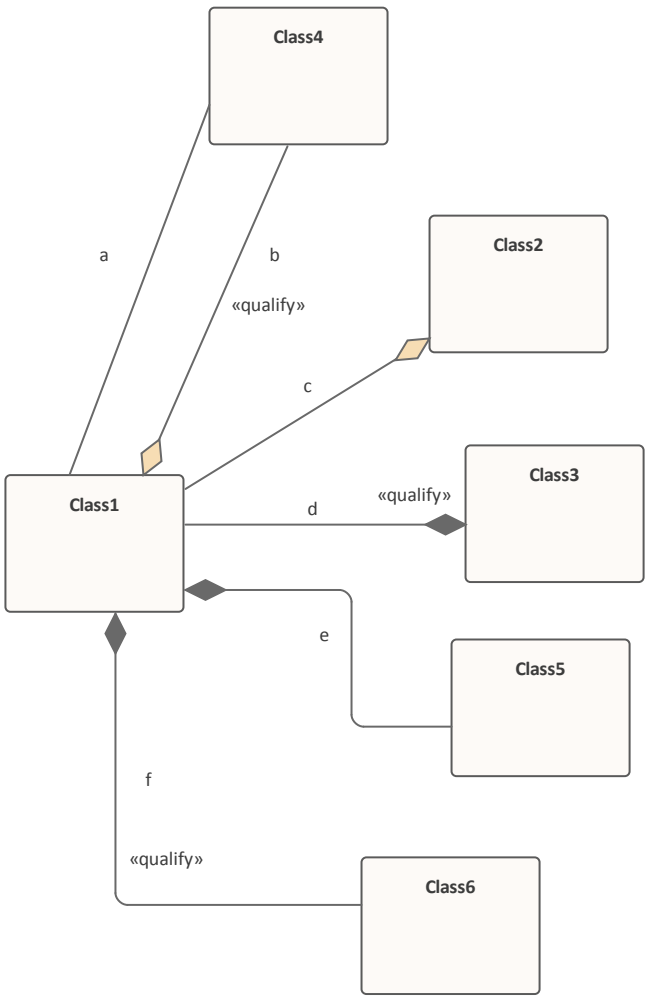
- All connectors are Direct line style
- Connectors **b**, **d** and **f** have the stereotype <<qualify>>

Suppose you change connector **d** to the line style Orthogonal Rounded.

If you right-click on connector **d** and select the 'Apply Line Style on Diagram | Connectors of the same Type' option, you should see these changes to the connectors (all connectors, being Aggregations, are now Orthogonal Rounded style except for **a**, which is not the same *type* as the others):

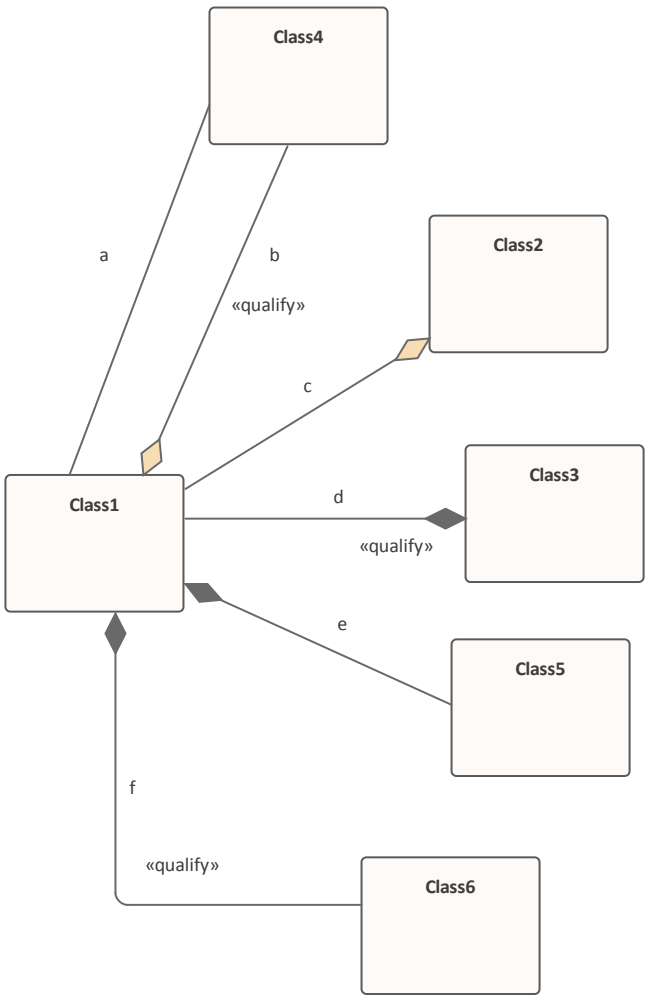


OR, if you right-click on connector **d** and select the 'Apply Line Style on Diagram | Connectors of the same SubType' option, you should see these changes to the connectors (only connectors **e** and **f** change because only those two are the same *type* and *subtype* as **d**, being strong Aggregations):



OR, if you right-click on Connector **d** and select the 'Apply Line Style on Diagram | Connectors of the same Stereotype' option, you should see these changes to the connectors (connector **f** changes

because it has the same type, subtype and stereotype as **d**; connector **b** is unaffected because it is not the same subtype, and **e** is unaffected because it is not the same stereotype):



Note that the 'Connectors of the same Subtype' option is of value for the small group of connector types that support subtypes, such as Aggregations (Shared or 'weak' and Composite or 'strong') and Dependencies (Trace, Abstraction).

The option only applies if the subtype is set from the context menu as part of the

	process of creating the connector. If the subtype was derived from the nature of the source element, target element and/or base connector, the option does not function.
Pin End(s)	Pin the connector start and/or end to the current position on the target element; a sub-menu displays to offer the options of pinning the start point only, the end point only, or both. Once one or both ends are pinned, a fourth option is available to UNPIN both ends. Some connector line styles (such as the Tree styles) are not compatible with pinning the connector ends; if a pinned connector is changed to one of these styles, the connector ends will be unpinned.
Bend Line at Cursor	Insert an anchor point on the line at the point of the cursor so you can change the shape of the line. Shortcut: **Ctrl+Q**
Suppress Line Segment	Hide a segment of a connector so that you can view a part of the diagram that it crosses.

	To reverse the change, right-click on the connector and select the 'Show All Line Segments' option.
Straighten Line at Cursor	Remove an anchor point on the line at the point of the cursor. (This is the exact opposite of 'Bend Line at Cursor', and **Ctrl+Q** toggles the connector point between the options). Shortcut: Ctrl+Q

Notes

- Context menus vary slightly between connector types, and not all menu options are present on all connector context menus; the type-specific menu options are not always included
- If two connectors cross, the later connector has a 'hoop' at the intersection, indicating that the connectors are crossing

Connector Appearance Options

The 'Appearance' section of the connector context menu provides a number of options.

Appearance Options

Option	Action
Appearance	Set the line color and line thickness of the connector. Select one or more relationships, then right-click and select 'Appearance'. On the 'Connector Appearance' dialog, click on the **drop-down arrow** in the: • 'Line Color' field, and select the color to apply to the connector lines • 'Line Thickness' field, and select the line thickness of the connector lines Click on the **OK button** to apply the settings to all the selected connectors on the element. For the selected connectors, you can also right-click and select 'Line Style', and one of the listed styles. The style is immediately applied to the connectors on

	the diagram.
Visibility	Set connector visibility; see the *Visibility Sub-Menu* table for sub-menu options.
Tidy Line Angles	Tidy the line angles of a custom connector.

Visibility Sub-Menu

Option	Action
Hide Connector	Hide the connector. To show the connector again, see the *Hide/Show Connectors* Help topic.
Hide Connector in Other Diagrams	Hide or show the connector in other diagrams.
Hide All Labels	Hide or show all labels attached to the connector.
Set Label	Hide or show labels attached to the

Visibility	connector, individually.

Notes

- Context menus vary slightly between connector types, and not all menu options are present on all connector context menus; the type-specific menu options are not always included

Connector Tasks

This topic identifies the commoner tasks associated with managing model connectors, including:

- Connect Elements
- Connect to Element Feature
- Connect to a Connector
- Connector Styles
- Arrange Connectors
- Change Connector Type
- Create Connector in Browser Window
- Reverse Connector
- Delete Connectors
- Freeze Visible Connectors
- Hide/Show Connectors
- Creating Generalization Sets
- Change the Source or Target Element
- Relationship Visibility
- Add a Note to a Connector
- Tree Style Hierarchy
- Show Uses Arrow Head
- Set Association Specializations
- Change Sequence Message Scope

Notes

- In the Corporate, Unified and Ultimate Editions, if security is enabled, you must have 'Update Element' permission to update or delete a connector

Connect Elements

This topic explains how to connect elements using the appropriate connector types on a diagram.

Actions

Action	Detail
Connect Elements on a Diagram	The fastest and simplest ways to create connectors are using the Quick Linker and using the Toolbox. To create another connector of the same type as the last connector you used, click on the appropriate source element and press **F3**.
Selecting Connectors	To select a connector, simply click on it; drag handles display, indicating that the connector is selected. This gives the connector focus for keyboard commands such as 'Delete', and displays connector properties in docked windows such as the **Properties window**. If there is more than one connector on a diagram, you can cycle through them using the arrow keys.

Drag Connectors	You can drag a connector to position it; click on the connector and drag it to where it is to appear - note that there are some limitations on how far or to where you can drag a connector. You can also reattach the end of a connector to a different source or target element.
Connector Properties and Commands	You can double-click on a connector to change properties in the 'Properties' dialog, or press **Ctrl+2** and click on the connector to access the properties in the **Properties window**. You can also right-click on a connector to display the context menu containing commands to change connector type and direction.
Highlighting Connectors	You can highlight the connectors on a specific element by selecting the element and then pressing and holding the **L key** - all the connectors issuing from or terminating at that element are highlighted in separate colors. This is a useful feature to apply in conjunction with the context filtering facility on an element on a diagram.

Create Connectors Without a Diagram	Sometimes it is useful to create relationships between elements without a diagrammatic representation; you can do this using the **Browser window** and the **Relationship Matrix**.

Notes

- You can reposition a connector by selecting and dragging the connectors as required
- If a connector has source and target roles, you can attach either end of the connector to a specific attribute or operation in the source or target element
- If required, you can also create a connector between another connector and an element, or between two connectors

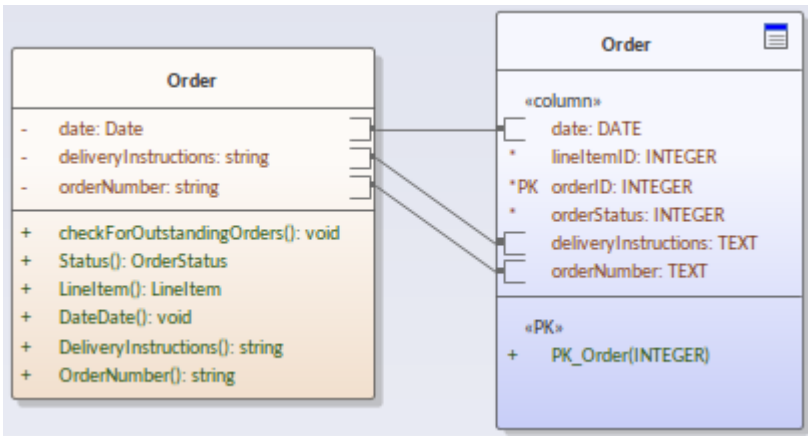
Connect to Element Feature

If a connector has source and target roles, you can connect either end of the connector to a specific operation or attribute in the source or target element. This is entirely a visual aid, to indicate which features are significant in the relationship. In code generation or transformation, the link is interpreted as a normal source-element to target-element relationship.

Enterprise Architect provides an alternative method of connecting element features, similar to the Quick Linker facility. See the *Feature Quick Linker* Help topic. In that facility, the connector does not have to exist first - you can create the connector as part of the process.

Connect the end of the connector to a specific operation or attribute

Step	Action
1	Right-click on the end of the connector joined to the element containing the required feature.
2	Select the 'Link to Element Feature' context menu option. The 'Link to Element Feature' dialog displays.

3	In the 'Feature Type' field, click on the **drop-down arrow** and select the required feature type - 'Attribute' or 'Operation'. The attributes or operations from the element are listed in the 'Feature' field.
4	Click on the required attribute, operation or maintenance item, and click on the **OK button**. The end of the connector changes to a bracket next to the selected feature.  You might create a number of feature-to-feature relationships between two elements (such as a Class and a Table that represents the Class data) to produce a diagram similar to this:  You can change the feature to which the connector is attached by following the procedure and selecting the new feature. You can break the link to the selected feature in any of these ways: • Work through the procedure, setting the 'Feature

	Type' to 'None' • Delete the attribute or operation from the element • Change the connector type to a type that does not have source and target roles • Change the connector to a different source or target element that does not contain the feature Note that reversing the direction of the connector does not break the connector's attachment to the feature.

Notes

- The 'Link to Element Feature' option is not supported for reflexive/self connectors
- If you have created, or intend to create, multiple relationships between the features of two elements, you can manage those relationships using the **Feature Matrix**

Feature Quick Linker

When developing a model structure on a diagram, you can either create connectors by clicking on a Toolbox icon and dragging the cursor between two elements, or by using the Quick Linker arrow to generate both a connector of an appropriate type and a target element.

If a connector is to have source and target roles, you can connect one or both of the ends of the connector to an operation, attribute or Reception in the source or target element to indicate which specific features are significant in the relationship. You can create the connector first and then configure it (as described in the *Connect to Element Feature* Help topic) or you can use a facility similar to the Quick Linker to generate an appropriate connector between the source element or feature and the target element or feature.

Prerequisites

In order to display and use the Feature Quick Linker, you must first:

- Create or open the diagram in which to generate the feature connectors
- Create the appropriate elements and features
- Display the **Properties window** for the diagram, expand the 'Connectors' segment and select the 'Show Feature Linker' checkbox

Connect Features

In the appropriate element on the diagram, click on and highlight the required source feature. The Feature Quick Linker icon displays against that feature.



Click on the icon and drag the cursor across to either the element to link the feature to, or the feature within the element for a feature-to-feature link. When you release the left mouse button, a short menu displays listing the types of relationship that are appropriate for the link. Click on the required relationship type.

The diagram now shows the connector between the two elements, with the end or ends that specify a feature having a square bracket and anchor point, as illustrated here:



If appropriate, you can continue to create relationships between features of the same pair of elements or those elements and other elements.

The Feature Matrix

If you have created - or if you intend to create - a number of relationships between a pair of elements and their features, you can create and/or manage those relationships using the **Feature Matrix**. This is very similar to the main **Relationship Matrix** in Enterprise Architect, except that it is focused on two selected elements and shows the relationships for which the source and/or target is an element attribute, operation or reception.

Prerequisites

In order to use this facility, you select two elements on an open diagram in Graphical view

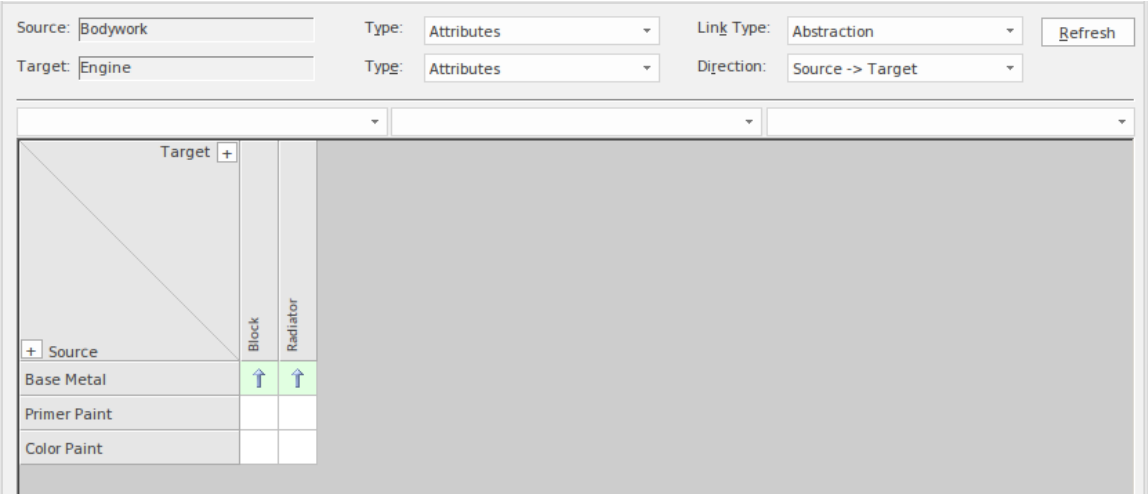
At least one of the elements in the pair that you select must have attributes, operations and/or Receptions (for relationships between an element and another element's features).

You cannot use this facility for more than two elements at a time; if you select more elements, only the first two selected are shown in the Matrix

Access

On the diagram, select (for example, **Ctrl+click**) the two

elements and select the **Feature Matrix** using one of the methods in this table:



Ribbon	Design > Element > **Feature Matrix**
Context menu	Right-click on one of the selected elements and select the 'Show Elements Matrix' context menu option

Adjust Display

On the **Feature Matrix**, the 'Source' and 'Target' fields default to the names of the selected elements. You cannot change these two fields. However, you can modify which aspects of the relationship information are shown in the Matrix, by changing the settings on other fields.

Field/Option	Description

Type	These two fields identify the type of feature to display relationships for, in the Source and Target elements. In the illustration in the *Access* section, both fields are set to 'Attribute', so the matrix shows relationships between the attributes of the two elements. To include or switch to the required type of feature, click on the **drop-down arrow** and click on '<All>', 'Attributes', 'Operations' or 'Receptions'.
Link Type	The 'Link Type' field indicates what kind of relationship is shown in the Matrix. To select the type of relationship to show, click on the **drop-down arrow** and click on the type. You can display relationships of all types (with the default <All> option) or a specific type - in the illustration, this is 'Abstraction'.
Direction	This field indicates the direction of the relationships shown on the Matrix. In the illustration, the field is set to 'Source -> Target and the matrix cells indicating a relationship show arrows pointing to the target feature. If you want to change the setting to show relationships created from the target to the source, or relationships

	that are in any direction, click on the **drop-down arrow** and select the 'Target -> Source' or 'Both' value. The relationship indicator arrows pointed towards the source and in both directions, respectively.
Refresh	If you have changed the diagram whilst displaying the matrix, click on this button to ensure that the changes are reflected in the matrix, where appropriate.
Options	Click on this button to display a short menu of options to capture the matrix settings as a profile, capture the matrix data as a file to export, or refine the information displayed in the matrix. See the *Matrix Options* table.

Create a new relationship

Step	Action
1	In the 'Link Type' field, select the type of relationship you want to create, and in the 'Direction'

	field select the direction of the relationship(s) to create. You can also refine the display to show only features of a specific type between which to create relationships, by setting the source and target types in the 'Types' fields.
2	Right-click on the empty square at the intersection of the appropriate source row and target column. You can select and operate on several squares (creating several relationships) at once. Either: • Press **Ctrl** as you click on each intersecting square, then right-click on one of the selected squares, or • Click on the first square in the required row, column or block, then press **Shift** as you click on the final square in the required row, column or block; right-click on one of the selected squares Note that if you click on a cell representing an existing connector, you can go through these steps to replace that connector with a different connector.
3	Select the 'Create new relationship' option. If the 'Link Type' field is set to '<All>', the option is 'Create <direction>' and a further submenu displays listing the type of relationship you can create; in this case, click on the required type of relationship. If, in addition, the 'Direction' field is set to 'Both',

	you have two options: • 'Create Source To Target' and • 'Create Target to Source' Each option again displays a submenu of connector types.
4	A connector of the selected type is created between the two elements, and the appropriate indicator displays in the matrix cell.

Manage Relationships

If you right-click on a cell representing an existing connector, two additional options display:

- 'View Relationship' - which displays the 'Properties' dialog for the connector, and
- 'Delete Relationship', which prompts you to confirm the deletion; if you click on the **Yes button** the relationship is immediately removed from the model (not available if the 'Direction' field is set to 'Both')

Matrix Options

Click on the **Options button** to display the menu providing

the options in this table.

Option	Description
Matrix | Scale Setting	When you print the **Feature Matrix**, by default it prints on as many pages wide and long as the Matrix requires. You can scale the printout into a fixed number of pages wide; the row height is automatically adjusted to maintain the proportions of the Matrix. This reduces the overall size of the printout and improves appearance, especially when used in conjunction with the 'Landscape' option in the printer properties. For example, a 16-page printout without scaling can, with a scaling of 2 pages wide, be reduced to 6 pages. To set the page scaling: 1. Click on the 'Matrix | Scale Setting' option. The 'Scale Matrix' dialog displays. 2. Select the 'Scale Matrix Width into Pages' checkbox, and type or select the number of pages in width to scale to. 3. Click on the **OK button** to apply the setting.
Matrix | Print	Select this option to display the 'Print'

	dialog, on which you select the output printer and specify the printer properties, the range of pages to print, and the number of copies. The output is a WYSIWYG representation of the **Feature Matrix** contents.
Matrix | Save as Metafile	Select this option to save the matrix contents as a .emf graphics file. A browser dialog displays on which you select the target file location and specify the filename in which to save the output. You can incorporate this file in a document or web report, as either a hyperlinked file or an included file.
Matrix | Save as PNG	Select this option to save the matrix contents as a .png graphics file. A browser dialog displays on which you select the target file location and specify the filename in which to save the output. You can incorporate this file in a document or web report, as either a hyperlinked file or an included file.
Matrix | Export to CSV	Select this option to export the contents of the **Feature Matrix** to a CSV file, which is a convenient mechanism for

	moving the matrix data to a spreadsheet environment such as Microsoft Excel. The Windows 'Browser' dialog displays; browse to the required file location and type in a .csv filename to export to, then click on the **Save button** to export the data.
Profiles | Save as New Profile	If you use a particular combination of field values often, you can save that combination as a profile to make it easier to recall it for use. Select this option to save the current field settings as a new profile in a Feature Mapping Artifact. A dialog displays to prompt you for the Artifact element name; enter the name and click on the **OK button**. The profile is added to the diagram's parent Package as an <<EAFeatureMapping>> Artifact, and the profile name displays at the end of the 'Profiles' sub-menu.
Profiles | Update Current Profile	If you are using a profile and need to change one or more fields to a value you will continue to apply, you can update the profile with the change(s). When you select the option, the system displays a

	prompt to confirm that the profile has been changed.
Profiles | Delete Current	If you no longer want to keep a profile, select it and then select this option. Alternatively, right-click on the <<EAFeatureMapping>> Artifact in the **Browser window** and select the 'Delete <element name>' option.
Options	Click on this option to display the '**Feature Matrix** Options' dialog, and select from these options: • Sort Axes - select the checkbox to display the feature names in each axis in alphabetical order • Highlight source features without relationships - select this checkbox to display, in pale blue, all cells in each row belonging to a source feature that has no relationships • Highlight target features without relationships - select this checkbox to display, in pale pink, all cells in each column belonging to a target feature that has no relationships Click on the **OK button** to action the selected options.

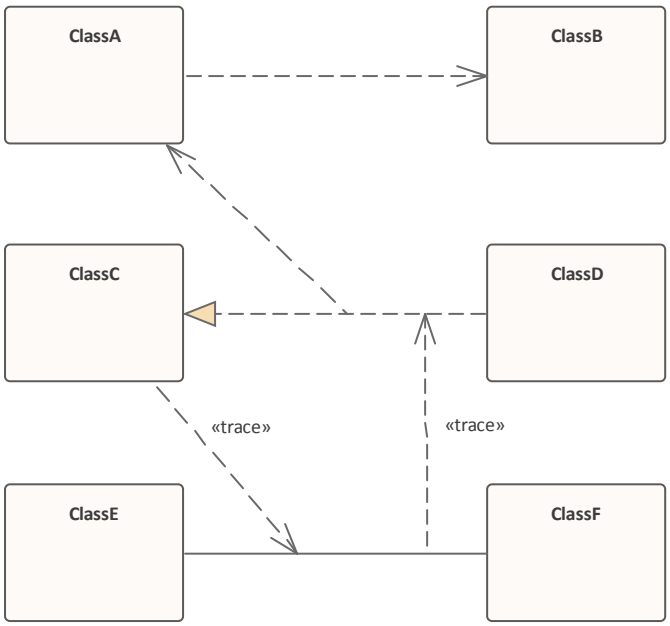
Connect to a Connector

Under certain circumstances, it can be useful to create a connector that issues or terminates (or both) on another connector. For example, you might create a connector between two elements, and then create a link between that connector and a Requirement element to show that the relationship between the two elements was a predefined specification of the design.

In releases of Enterprise Architect from 13.0 onwards, you can add connectors to other connectors. The linking connector can connect as source and target:

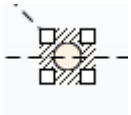
- Two other connectors
- An element and a connector
- A connector and an element

The appearance of each configuration of a connector/connector link is illustrated here:



As you create the connector on another connector, the connector end displays with this circle symbol to indicate that it is on another connector, and to help you position the end accurately.

(Select connector) 

(Move connector end) 

There is effectively no limit to the number of connectors that can issue from or terminate on another connector.

Once you have anchored one connector on another, if you move either end or the whole connector and you have selected the 'Layout > Align >  > Smart Placement' and 'Show smart placement guidelines' options, colored guidelines appear on the diagram. These indicate where the selected end of the connector is relative to potential anchor points on the currently-anchored connector and others that you might drag past. Note that the objects must be contemporary - not at different hierarchical levels or in different partitions of the diagram.

Create a connector on another connector

You can create a connector that issues from or terminates on another connector in the same two ways as you create one on an element; that is:

- Using the Quick Linker arrow or
- Using a connector icon from the Toolbox

Method	Action
Quick Linker	1. Click on the source connector (or element). A Quick Linker arrow displays at the center point of the line. 2. Drag the arrow onto another connector or onto an element, to display a short menu of possible connector types; select the appropriate type. You can also drag the Quick Linker arrow into empty space; a short menu of element types displays and you can select to generate an element of one of those types whilst the system automatically creates an appropriate type of connector to it.
Toolbox	1. Click on the icon for the required connector type. 2. Click-and-drag from the source connector or element to the target connector or element. Certain connector types are not UML-compliant for linking to another connector, and if you select such types you might get an error message. You can continue to create this type of connector by de-selecting the 'Strict Connector Syntax' option on the 'Links' page of the

	'Preferences' dialog (the 'Start > Desktop > Preferences > Preferences' ribbon option).

Add a Note to a Connector

This topic describes how you can connect notes and constraints to graphical relationships.

Notes enable you to provide explanations and further detail for one or more connectors on a diagram, with a visible Note element.

Add a note or constraint to a connector

Step	Action
1	Right-click on one of the connectors to attach a note to. The context menu displays.
2	Select the 'Attach Note or Constraint' menu option. The 'Link Relations' dialog displays.
3	Select the appropriate radio button in the Link Type panel.
4	Check all the connectors that participate in the set.
5	Click on the **OK button** to complete the note or

	constraint creation.
6	Use the normal 'Note' dialog to enter the appropriate text for the note or constraint.

Notes

- The constraint note is drawn slightly differently to a regular note, and has { and } automatically added to visually indicate the constraint form
- As an alternative to the procedure, you can drag the Quick Linker arrow on an existing Note or Constraint, and drag it to the required connector; a Notelink is automatically created to attach the Note or Constraint to the connector

Arrange Connectors

Connectors between two elements can be moved around the element borders to create a good layout. There is a limit to how much a connector can be moved around, but generally it is very easy to find an acceptable layout. For the best layouts, use the custom line style; this enables you to add as many line points and bends as you require to create a clean and readable diagram.

Move and arrange connectors on a diagram

Step	Action
1	Click once on the connector to select it.
2	Holding the mouse button down, move the connector in the required direction.
3	To refine the movement, click and hold very near to one end of the connector; this enables a slightly different movement range.
4	To further refine the movement and range, select either a routed, direct or custom line style; each behaves slightly differently.

Change Connector Type

This topic explains how to change the type of a connector. Note that not all connector types are available, depending on the types of the source and target elements.

Access

Context Menu	Diagram | Right-click on Connector | Advanced | Change Type

Change a connector type

Step	Action
1	In the 'Connector Type' field, click on the **drop-down arrow** and select the required connector type.
2	Click on the **OK button** to apply changes.

Change the Source or Target Element

After you have created a connector between two elements, you might later want to change either the source or target. Instead of deleting and re-creating the connector, Enterprise Architect enables you to change the source or target. There are two ways of doing this: using the 'Set Source and Target' dialog or using the mouse.

Using the 'Set Source and Target' dialog

Step	Action
1	Right-click on the connector to open the context menu.
2	Select the 'Advanced | Set Source and Target' menu option. The 'Set Source and Target' dialog displays.
3	Click on the drop-down arrows on the 'From Element' and 'To Element' fields, and select the source and target elements.
4	Click on the **OK button** to apply changes.

Using the mouse

Step	Action
1	Click on the connector and position the cursor over the 'handle' at one end.
2	When the cursor changes, click the right mouse button and drag the handle to the new element.

Notes

- The connector does not actually move until you release the mouse button over the new source or target element; however:
- A dotted line shows where the connector would be during the move
- The solid outline of the nearest element or extension changes to a hatched outline as you move the cursor onto it; this helps you identify where the connector should connect to, if there are many closely-arranged elements, Parts, Ports and other extensions

Connector Styles

Connectors come in a number of different routing styles. Additionally, if one solid-line connector crosses another, the second one 'jumps' over the first (unless the 'Enable Connector line jumps' option is deselected on the 'Diagram' page of the 'Preferences' dialog). You can also bend a connector to quickly and easily route connectors in the required layout.

Styles

Style	Description
Direct	A straight line from element A to element B. You can move the line (back and forward, up and down) to a limited degree.
Auto Routing	A vertical and horizontal route from A to B with 90-degree bends. You can move the line to improve the route, but the location and number of bends are not configurable.
Bezier	A smooth curved line from A to B.

	Bezier style is directly available for Data Flow diagram connectors, Mind Mapping connectors, State Flows, State Transitions, Object Flows, and Control Flows.
Custom Line	The most flexible option; you can add one or more line points and bend and push the line into virtually any shape, using the 'Toggle Line Point at Cursor' option.
Tree Style - Vertical Tree Style - Horizontal	A line from element A to B with two right-angle bends, and the end points fixed to selected locations on the elements (Vertical or Horizontal).
Lateral - Vertical Lateral - Horizontal	A line from element A to B with a single right-angle bend, and the end points fixed to selected locations on the elements (Vertical or Horizontal).
Orthogonal - Square Orthogonal - Rounded	You can add one or more line points and bend and push the line into a variety of shapes, using the 'Toggle Line Point at Cursor' option. All line segments thus created are either vertical or horizontal.

Set the Connector Style

Step	Action
1	Right-click on the connector to change. The context menu displays.
2	Select the 'Line Style' option.
3	From the submenu, select the required style: • Direct • Auto Routing • Custom • Tree • Lateral, or • Orthogonal • (or Bezier, where appropriate)

Set the Connector Style (alternative method)

Ste	Action

p	
1	Select the connector to change.
2	Press these keys to change the style: • **Ctrl+Shift+D** for Direct • **Ctrl+Shift+A** for Auto Routing • **Ctrl+Shift+C** for Custom • **Ctrl+Shift+Z** for Bezier (where appropriate)

Bend a connector

Step	Action
1	Right-click on the connector. The context menu displays.
2	Set the line style to 'Custom Line' (**Ctrl+Shift+C**); this enables the 'Bend Line at Cursor' option in the context menu.
3	Click on the 'Bend Line at Cursor' option to add a line point. Right-clicking a line point displays the 'Straighten

	Line at Cursor' option, which you can use to remove the line point.
4	Using the mouse, drag the line point to the required position.

Bend a connector (alternative method)

Step	Action
1	Hold down **Ctrl** or **Shift** and click on a point on the connector to create a line point. **Ctrl+click** also removes a line point.
2	Using the mouse, drag the line point to the required position.

Tidy line angles (custom connector)

Step	Action

1	Right-click on the connector. The context menu displays.
2	Click on the 'Tidy Line Angles' menu option; this nudges the custom line in horizontal and vertical increments, saving you the time of trying to get a good layout manually. You can set the 'Tidy Line Angles' option to operate by default; click on the 'Start > Desktop > Preferences > Preferences' ribbon option to display the 'Preferences' dialog, and select the 'Diagram Behavior' page.

Suppress individual line segments

Step	Action
1	Right-click on the connector. The context menu displays.
2	Set the line style to 'Custom Line' - press **Ctrl+Shift+C**. This enables the 'Suppress Line Segment' option in the context menu.

3	Click on the 'Suppress Line Segment' option to suppress a line between two bend points. The segment you right-clicked on is suppressed.
4	To show the segment again, right-click on the line and click on the 'Show All Line Segments' option. One application for this is to represent the continuation of flow when your diagram crosses the page boundary marker in the **Diagram View**. When you suppress the line segment that crosses the boundary, the link name (connector properties) displays at both ends of the hidden segment; when you print the diagram on multiple pages, the link name identifies the connection apparently broken by the page boundary.

Create Connector in Browser Window

You can create a connector from one element to another directly in the **Browser window**.

Connect elements from the Browser Window

Step	Action
1	In the **Browser window**, either: • Right-click on the element to create a connector for, and select the 'Add | Create Link' option, or • Select the element, press the **Insert key** and select the 'Create Link' option The 'Create Link' dialog displays.
2	In the 'Direction' field, click on the **drop-down arrow** and select the direction of the new connector ('Outgoing' means the selected element is the source).
3	In the 'Link Type' field, click on the **drop-down arrow** and select the type of connector.

4	In the 'Choose target(s)' list, click on the name of the target. (If necessary, in the 'Select Target Type' field click on the **drop-down arrow** and select a feature to list only elements having that feature).
5	Click on the **OK button** to create the connector.

Notes

- You can also reproduce an existing connector between two elements when you paste those elements from the **Browser window** into a diagram as instances; an option enables you to copy just the elements, or the relationship as well

Relationship Visibility

You can change the visibility of individual connectors or relationships on an open diagram.

Access

Display the 'Set Visible Relations' dialog, using one of the methods outlined here.

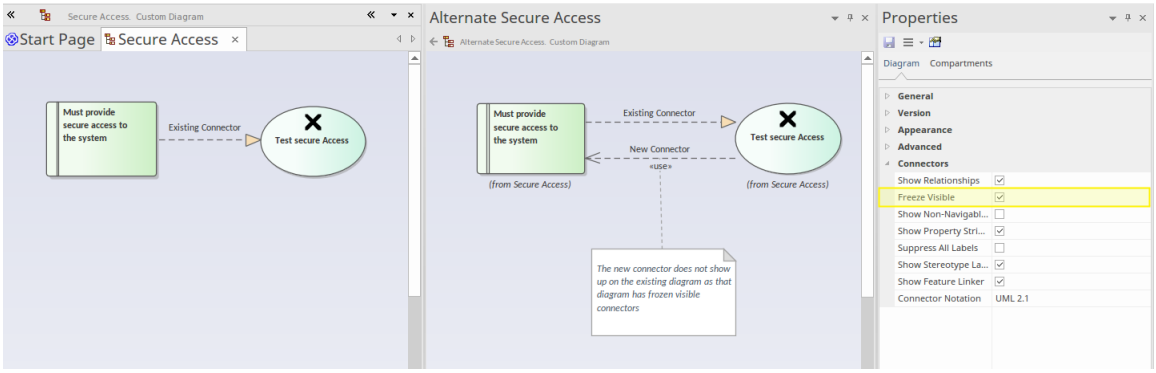
Ribbon	Layout > Diagram > Appearance > Set Visible Relationships
Keyboard Shortcuts	**Ctrl+Shift+I**

Set relationship visibility

Step	Action
1	On the 'Set Visible Relations' dialog, select the checkbox against each list item to show, and clear the checkbox against each item to hide.

	If you want to display the information in a more readable layout, you can resize the dialog.
2	Click on the **OK button** to apply the changes.

Freeze Visible Connectors



Working in a collaborative platform brings with it challenges of working with models and diagrams that are often in flux, and where a number of modelers contribute to related diagrams and models. For example a diagram could have been defined for a project iteration (sprint) and during the sprint an architect could be working on the same objects on another diagram for the next iteration, adding new relationships. Enterprise Architect's default behavior is to add these to any existing diagrams that contain the related objects. This might not be a welcomed outcome for the owner of the original diagram.

The Freeze Visible connectors feature is a useful way of ensuring that a diagram set up at a certain point is not automatically updated when new relationships are added to the repository that connect two or more objects on the diagram. By setting the diagram connectors' Freeze Visible property the diagram owner is telling the tool not to update this diagram when connectors are added somewhere else in the model.

A modeler can, of course, continue to add additional

connectors to the diagram or 'unfreeze' the connectors and reload the diagram to see the changes. This feature facilitates collaborative model creation and helps teams work together without getting in each other's way. If this situation occurs frequently it might be worth considering using the Time Aware Modeling feature, which allows new versions of existing elements to be created to model future states.

You can hide or show connectors on the current diagram or on other diagrams using the 'Links' tab of the Properties dialog; see the *Hide/Show Connectors* Help topic.

Access

Design your diagram, and ensure that it shows the relationships that you require. Then fix the diagram as at this point in time by selecting one of these options:

Ribbon	Start > Desktop > Design > Properties > Connectors : Freeze Visible (**Properties window**) Design > Diagram > Manage > Properties > Connectors : Freeze Visible (Properties dialog)
Context Menu options	In **Browser window**: Right-click on diagram name > Properties > Connectors : Freeze Visible (Properties dialog)

	On diagram: Right-click on background > Properties > Connectors : Freeze Visible (Properties dialog)
Keyboard Shortcuts	**Ctrl+2** > Connectors : Freeze Visible (**Properties window**) **Alt+1** > Properties > Connectors : Freeze Visible (Properties window)

Hide/Show Connectors

Connectors or relationships that appear in multiple diagrams can be selectively shown or hidden. This makes it easier to read diagrams where elements might have many connectors, but not all are relevant in the context of the current diagram.

Hide or show a connector in the current diagram

Step	Action
1	Double-click on the required diagram element in the Diagram view. The element 'Properties' dialog displays.
2	Select the 'Links' tab. This lists the connectors linked to the element, whether or not they are hidden on the diagram.
3	Right-click on the connector to hide or show. The context menu displays.
4	Select the 'Show Relation' option to show the hidden connector on the diagram, or the 'Hide Relation'

	option to hide the visible connector. Alternatively, hide a connector by right-clicking on it on the diagram and selecting the 'Visibility | Hide Connector' option; however, you must use the 'Links' tab of the element 'Properties' dialog to show the relationship again.

Hide or show a connector in other diagrams

Step	Action
1	Right-click on the connector in the diagram. The context menu displays.
2	Select the 'Visibility | Hide Connector in Other Diagrams' menu option. The 'Set Connector Visibility' dialog displays.
3	If the two connected elements have been included in other diagrams, these diagrams are listed here. In the list, all diagrams for which the checkbox is selected show the connector; deselect the checkbox for any diagrams in which to hide the connector. If you want to display the information in a more

	readable layout, you can resize the dialog. To hide the connector in all of the diagrams listed, click on the **Suppress All button**.
4	Click on the **OK button** to save the changes.

Notes

- Certain elements, such as Requirements, do not have a 'Links' tab in the 'Properties' dialog
  In these cases, open the Relationships window ('Start > Desktop > Design > Relationships') for the element, right-click on the relationship in the list and select the context menu option to hide or show that relationship in the diagram
  Be aware that, in the Corporate, Unified and Ultimate Editions with security on, **locks** on the diagram and elements can make the required option unavailable
- It is also possible to select an option that prevents relationships created on other diagrams from appearing on your current diagram - that is, you freeze your current diagram against that particular change; see the *Freeze Visible Connectors* Help topic.

Delete Connectors

This topic explains how to delete a connector from the model. Note that is possible to either hide the connector in one or more diagrams and still retain it in the model, or remove it completely (deletion).

Delete a Connector

Step	Action
1	Right-click on the connector and select the 'Delete Connector' option. The 'Remove Connector' dialog displays; this dialog provides the options to hide the connector so that it remains functional, or remove the connector completely.
2	Click on the appropriate radio button and click on the **OK button**. If you select the 'Hide' option, it has the same effect as hiding the connector on the 'Links' tab of the source element 'Properties' dialog, or using the 'Visibility | Hide Connector' context menu option. It also hides the connector on the Relationships window.

Notes

- The dialog does not display if:
  - You have previously selected the 'Don't ask again' checkbox or
  - On the 'Links' page of the 'Preferences' dialog ('Start > Desktop > Preferences > Preferences > Links') the 'Prompt on connector deletes' checkbox is not selected
- Selecting the 'Don't ask again' checkbox also deselects the 'Prompt on connector deletes' checkbox
- Selecting the 'Prompt on connector deletes' checkbox restores the dialog if you have used the 'Don't ask again' checkbox
- If you hide the dialog, the 'Delete Connector' context menu option defaults to the setting you last used on the dialog; make sure that you have selected the right option to default to

Creating Generalization Sets

A Generalization Set enables you to specify the relationship of a group of Generalizations. Each Generalization is a binary relationship that relates a specific Classifier to a more general Classifier (for example, from a Class to its Superclasses). Each Generalization Set defines a particular set of Generalization relationships that describe the way in which a general Classifier (or superclass) can be divided using specific subtypes.

Access

Context Menu	Right-click on connector | Advanced | Generalization Set | New

Create a Generalization Set

Step	Action
1	Select the 'New' menu option. The 'Generalization Set' dialog displays.

2	In the 'Name' field, type the name of the Generalization set; for example, 'Gender'.
3	In the 'Power Type' field, either: • Type a new power type, or • Click on the **drop-down arrow** or ... and select an existing one from the 'Select <Item>' dialog
4	Consider the 'Is Covering' checkbox. If you select this, on a diagram the constraint {complete} will be added to the label of each generalization that is a member of the set. (If you do not select the checkbox, the constraint is regarded as {incomplete} although this is not displayed in the label).
5	Consider the 'Is Disjoint' checkbox. If you select this, on a diagram the constraint {disjoint} will be added to the label of each generalization that is a member of the set. (If you do not select the checkbox, the constraint is regarded as {overlapping} although this is not displayed in the label).
6	In the 'Is Member' column, select the checkbox against each child subtype that is part of this Generalization set.
7	Click on the **OK button** to save and apply the

	Generalization Set, and to close the dialog.

Connector In-place Editing Options

You can edit many of the Enterprise Architect connector labels directly on the diagram. Each label can be bound to a single connector field.

Put a label in Edit mode

To put a label into Edit mode, either:

- Select the 'Edit Label' option from the context menu, or
- Select a label and press **F2**

To save the current text to the field, either press the **Enter key** or deactivate the **Edit window**.

To cancel edit mode without saving any changes, press **Esc**.

Reverse Connector

You can reverse the direction of a connector without having to delete and re-create it. This is helpful if your design changes or you add the connector wrongly to begin with.

Reverse the direction of a connector

Step	Action
1	Right-click on the incorrect connector.
2	Select the 'Connection Detail | Reverse Direction' context menu option.

Set Association Specializations

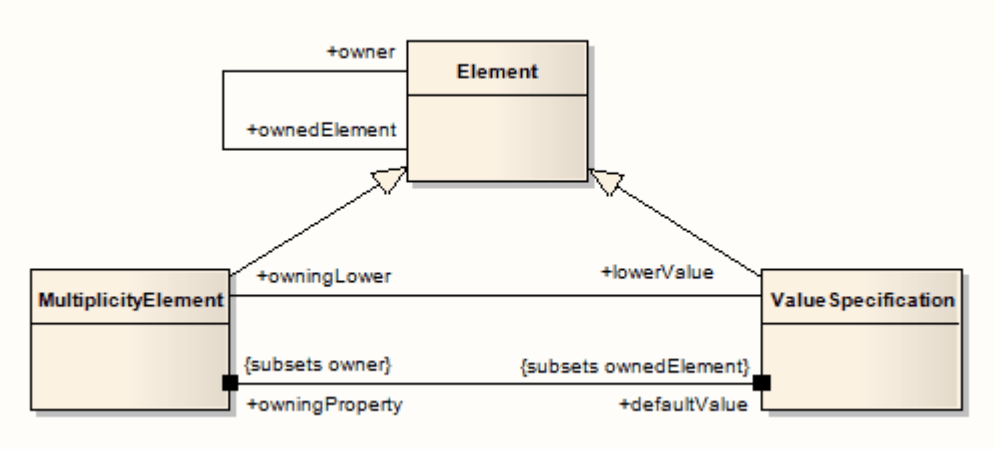
UML enables specialization of properties defined by Associations. Enterprise Architect enables this through the 'Specialize Associations' option in the 'Advanced' section of the context menu for an Association.

A dialog displays, showing all Associations between the two Classes connected by the current Association and their parents.

The left two columns define the source role of the current Association, while the right two define the target role. With this you are able to select the relationships of each end of the properties listed. When a relationship is set then this is drawn at the corresponding end of the connector on any diagram it appears on.

The dialog displays when you select the 'Advanced | Specialize Associations' context menu option on the lowest Association connector in this diagram.

Example


+owner
Element
+ownedElement
+owningLower
+lowerValue
MultiplicityElement
Value Specification
{subsets owner}
{subsets ownedElement}
+owningProperty
+defaultValue

Change Sequence Message Scope

A message in a Sequence diagram represents a dynamic interaction from one element to another. Sometimes when you are designing your model you might have to change either the start or end point of a message as the responsibilities of elements change during design. For this reason, Enterprise Architect enables you to change the message scope by setting a new start or end element.

Change Message Scope

Step	Action
1	Select the message in the Sequence diagram.
2	Right-click on the message to open the context menu.
3	Select 'Advanced | Set Source and Target'.
4	In the pop up dialog, in the 'From Element' and 'To Element' fields, click on the drop-down arrows and select the required elements.
5	Click on the **OK button** to save changes.

	The message is re-routed to meet your changed requirements.

Show Uses Arrow Head

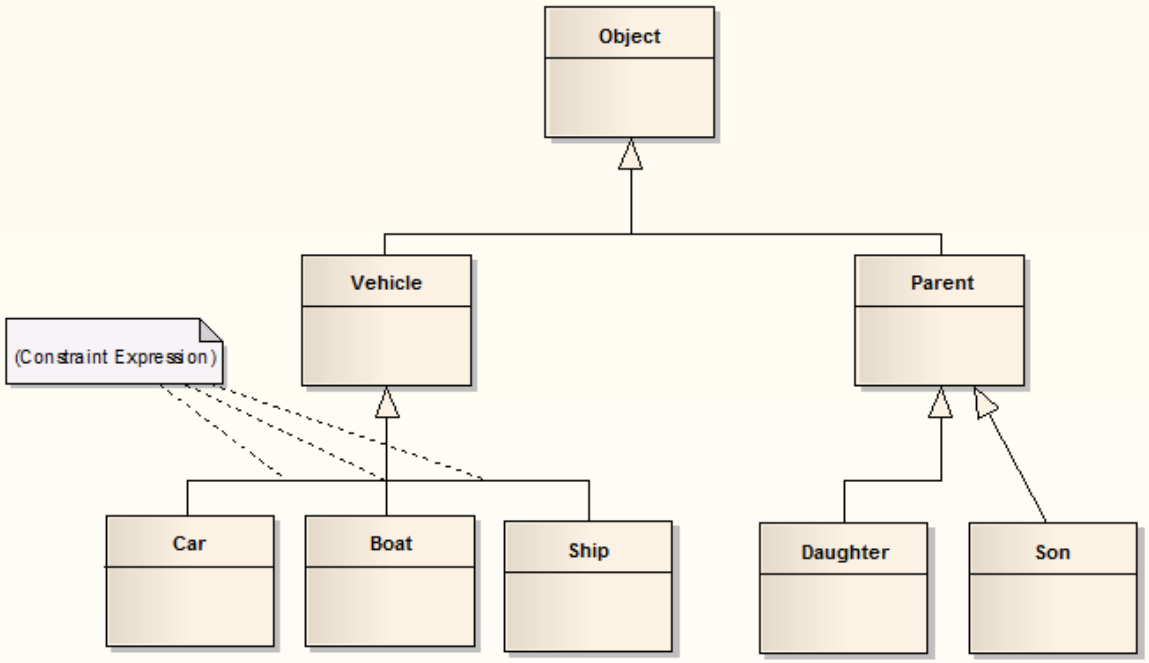
By default the Use connector in Use Cases has no arrow head.

Generate arrow heads on Use connectors

Step	Action
1	• Select the 'Start > Desktop > Preferences > Preferences > Links' option. The 'Links' page of the **Preferences window** displays.
2	In the 'General' panel, select the 'Show Uses arrowheads' checkbox.
3	Click on the **Close button**. When you save the Use Case diagram, the Use connectors change to display arrowheads.

Tree Style Hierarchy

In Enterprise Architect you can create a tree style inheritance diagram using a special form of the Generalization connector, as shown.



Create a tree style connector

Step	Action
1	Create a normal Generalization between two elements.
2	Right-click on the connector to open the context menu.

3	Select the 'Line Style | Tree Style - Vertical' or the 'Line Style | Tree Style - Horizontal' menu option.
4	Enterprise Architect automatically makes the Generalization layout conform to a specific shape. By adding more Generalization connectors, and checking their Tree Style options, you can achieve the appearance of the example diagram. You can slide the root and child Classes left and right to achieve the required result; Enterprise Architect maintains the conformity of the branch connectors.

Set this style of connector as default

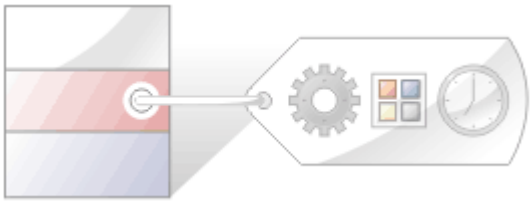
Notes

- In the example diagram, the Son -> Parent connector has not yet been put in Tree Style - Vertical style
- This style of diagram provides a clearer layout for inheritance hierarchies and is easy to work with

Step	Action
1	Select the 'Start > Desktop > Preferences >

	Preferences > Links' option. The 'Links' page of the **Preferences window** displays.
2	Select the 'Generalization link style Default = Tree' checkbox to make this branching style the default style for inheritance connectors.

Tagged Values



Tagged Values are additional properties that can be assigned to UML elements and connectors. The UML defines properties such as name and description for elements and connectors, and Enterprise Architect adds a number of additional properties such as status, phase and author, but Tagged Values provide a means of defining your own properties (tags) and their values.

For example, a requirements modeler might want to record the owner of a set of Requirements. The UML doesn't specify this property, but it can be easily added as a tag. A tag named Requirement Owner could be created and then each Requirement element could be assigned a value for the owner. This information would also be available in documentation.

Enterprise Architect has enriched the basic concept of Tagged Values with its powerful structured Tagged Value facility. To assist you when entering data, the values can be restricted using user interface controls such as drop down lists, spin controls, date selectors and many more.

Tagged Values are widely used in profiles and technologies to add information that helps guide the presentation of elements or metadata for code or schema generation.

The Tagged Values tab

The 'Properties' dialog and **Properties window** both have 'Tag' tabs that you can use to view and modify Tagged Values for a modeling item selected either from the current diagram or in the **Browser window**. On the tab you can:

- Assign a Tagged Value to an Item
- Modify Tagged Values
- Assign Notes to a Tagged Value
- Perform advanced tag management

Note that Tagged Values from stereotypes are not displayed on the 'Tags' tab, but in the:

- Properties window, in a section of the main page underneath the 'General' page and
- 'Properties' dialog, on a separate <extension name> tab

Model Elements and Features with Tagged Values

These model components can use the 'Tagged Values' tab as a convenient way to quickly view and modify Tagged Values:

- Elements - display their own tags, along with any inherited values

- Object Instances - display their own tags and those obtained from their classifier
- Ports and Parts - display similar information to objects but show the Port/Part 'Type' instead of a classifier; tags are included for all parents and other structures of the Ports type
- Attributes - display their own tags and those received from attribute type classifiers, with the inclusion of any inherited tags
- Operations - display their own tags
- Connectors - display their own tags

When over-riding an inherited property, the system copies the tag from the parent down to the child element and sets the new value, leaving the original tag unchanged.

Tagged Values Toolbar Buttons

Using the buttons from the toolbar at the top of the 'Tags' tab in the **Properties window** or dialog, you can add, edit, sort, delete and re-arrange the Tagged Values of model features.



From left to right, the button functions are:

- Show in compartments - displays the Tagged Values in element compartments on diagrams
- Sort and Show Alphabetically - sorts the current Tagged

Values alphabetically for the element

- New Tagged Value - adds a new tag, to which you assign a value
- Edit Tagged Value Notes - opens a note in which you type an explanation of the purpose of the Tagged Value
- Delete Tagged Value - removes the currently selected Tagged Value
- Default **Tagged Value Types** - provides quick access to tag definitions created using the 'Configure > Reference Data > UML Types > Tagged Value Types' ribbon option
- Tagged Value Options - provides options to show or hide the fully qualified paths for the Tagged Values in the window, and to show duplicate Tagged Values
- Help - displays information on the use of Tagged Values

Quick Start - Add Tagged Value To Elements

You can quickly add a single Tagged Value to one or more elements within a diagram, using a context menu option.

Access

Context Menu	On a diagram, select one or more elements, and right-click on one; select the 'Add Tagged Values' context menu option
Other	On a diagram, select one or more elements, and click on the  icon at right end of the Element toolbar

Add a Tagged Value to elements

Step	Action
	On the 'Tagged Values' dialog, in the 'Tag' field, type

1	in the tag name. (Do not use the **drop-down arrow** to select an existing tag type.)
2	In the 'Value' field, type in the value for the tag.
3	Click on the **OK button** to add your new Tagged Value to the currently selected elements.

Notes

- To delete the Tagged Value, open the **Properties window** for the element, click on the 'Tag' tab and the tag name, and click on the 'Delete' icon
- To add notes to the Tagged Value, in the 'Tag' tab click on the Tagged Value name, and click on the  button in the tab toolbar; the 'Notes' dialog displays
- The notes are displayed in the lower portion of the Properties window (only if the 'Hide Properties Info Section' checkbox is not selected in the 'Window Behavior' tab of the 'Preferences' dialog - select the 'Start > Desktop > Preferences > Preferences > General > Window Behavior' ribbon option; if you change the setting of this option, you might have to restart Enterprise Architect to make the change take effect)

Assign a Tagged Value to an Item

You can assign Tagged Values to a range of model objects, including elements, object instances, connectors, attributes and operations, using the 'Tags' tab of the **Properties window**. You would probably have the window open already as a docked window, and any object you select becomes the focus of the window; you can then review and add or delete Tagged Values for that object.

Access

Ribbon	Start > Desktop > Design > Properties > Tags Design > Element > Editors > Tagged Values

Assign a Tagged Value to an item

Step	Action
1	Select the model feature to which to assign a Tagged

	Value. This feature becomes the focus of the window.
2	In the 'Tags' tab of the **Properties window**, either click on the  icon or press **Ctrl+N**. The 'Tagged Value' dialog displays.
3	In the 'Tag' field type the tag name, or click on the **drop-down arrow** and select the appropriate tag to assign to the item. The list of tags to select from is filtered by the Perspective that is currently set for the model.
4	If appropriate, type a specific value for the tag in the 'Value' field.
5	To confirm selection of the Tagged Value, click on the **OK button**.

Assign Notes to a Tagged Value

Once a Tagged Value has been assigned to a model feature, you can add information and notes describing the Tagged Value to the information property of the Tagged Value.

Access

Ribbon	Start > Desktop > Design > Properties > Tags Design > Element > Editors > Tagged Values

Assign a note to a Tagged Value

Step	Action
1	Click on the model feature for which to edit the Tagged Values. Its Tagged Values display in the 'Tags' tab of the **Properties window**.

2	Click on the Tagged Value to add information to.
3	Click on the button or press **Ctrl+E**. The 'Tagged Value Note' dialog displays.
4	In the 'Note' field, type the information relating to the Tagged Value. Click on the **OK button**.
5	The information is displayed in the lower portion of the **Properties window** whenever the Tagged Value is selected.

Notes

- The notes are displayed in the lower portion of the **Properties window** only if the 'Hide Properties Info Section' checkbox is not selected in the 'Window Behavior' tab of the 'Preferences' dialog (select the 'Start > Desktop > Preferences > Preferences ribbon option and the 'General > Window Behavior' tab); if you change the setting of this option, you might have to restart Enterprise Architect to make the change take effect

Modify Tagged Values

Once a Tagged Value has been assigned to a model feature (such as an element or connector), it is possible to edit the values in the 'Tags' tab of the **Properties window**.

Access

Ribbon	Start > Desktop > Design > Properties > Tags Design > Element > Editors > Tagged Values

Edit Tagged Values

Step	Action
1	Click on the model feature for which to edit the Tagged Values. The 'Tags' tab shows all of the tags for the selected feature, each with their current value.

2	Edit the fields as appropriate; the information entered can only reflect the value types that have been defined by the tag's **Tagged Value Type**. There are six types of value field for a Tagged Value: • 'Open' fields, in which you can type any appropriate value • Structured Tags, where you do not directly edit the composite value but expand the tag to show the component tags and edit the component values in 'open' fields; the composite value updates as you click off the component field • 'Drop-down list' fields, where you click on the **drop-down arrow** to select from a discrete list of possible values such as 'M' or 'F', or 'Win', 'Lose' or 'Draw' • 'Spin' fields, where you click on up or down arrows in the field to increase or decrease the value within certain limits • Checklist fields, where you click on the ... button in the field to display the 'Check List' dialog, which lists a set of items that can be selected by ticking the checkbox against each item; if any checkboxes are not selected the value of the tag is 'Incomplete', and when all checkboxes are selected the tag value is 'Complete' • 'Further detail' fields, where you click on the ... button in the field to display a dialog in which you enter information (such as notes) or indicate a

	source of further information (such as a classifier)

Notes

- To override a Tagged Value defined in a parent element, edit the value in the 'from <parentname>' compartment of the 'Tags' tab; once this has been done the tag is moved into the selected element's Tagged Values - this does not affect the Tagged Values defined in the parent element

Show Duplicate Tags

Tagged Values are by default set to hide duplicate values. This setting is used to facilitate inherited and overridden tag names.

Access

Ribbon	Start > Desktop > Design > Properties > Tags Design > Element > Editors > Properties > Tags

Set the Tags tab to show duplicate values

Step	Action
1	On the 'Tags' tab toolbar, click on the  (Options) icon.
2	Select the 'Show Duplicate Tags' option.

Alternatively

Step	Action
1	Select the 'Start > Desktop > Preferences > Preferences' option. The **Preferences window** displays.
2	From the hierarchical tree, select the 'Objects' item.
3	Select the 'Show Duplicate Tags' checkbox.

Notes

- In either procedure, to hide duplicate values again deselect the option or checkbox

Advanced Tag Management

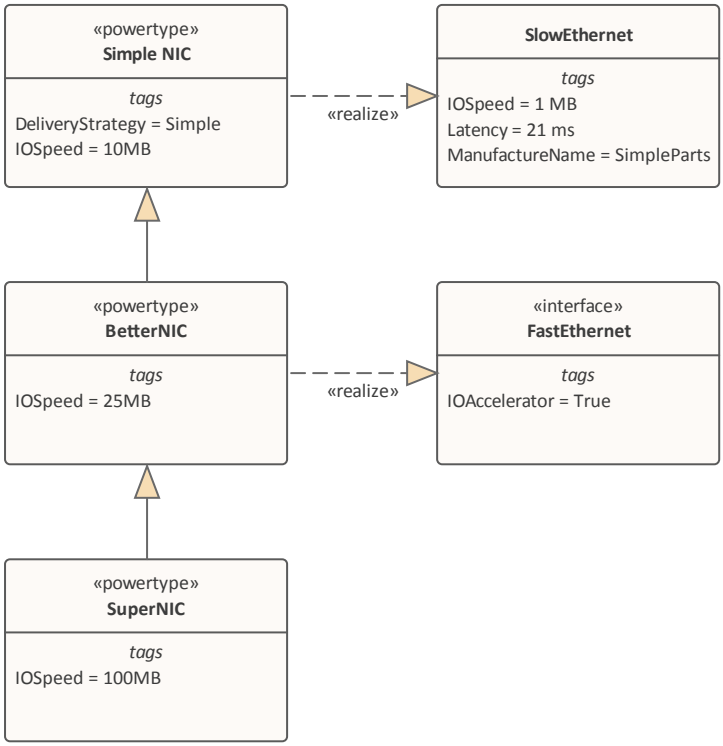
Tagged Values can also be managed within a type hierarchy and with respect to element instances, using the 'Tags' tab of the **Properties window**. It is possible to:

- View Tagged Values inherited from parent Classes or realized interfaces or applied stereotypes
- Override Tagged Values derived from parents or applied stereotypes with a unique value for the current element
- Delete Tagged Values from the current element (if a parent version of the Tagged Value exists, it re-appears in the list after the override is deleted)

For a reference Tagged Value (of type RefGUID), it is also possible to locate and select the object that the Tagged Value refers to, in the **Browser window**. Simply right-click on the Tagged Value name in the 'Tags' tab and select the 'Find in Project Browser' option.

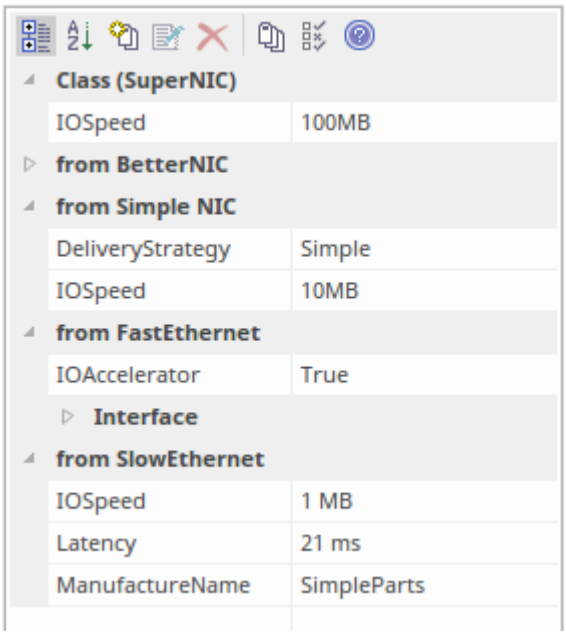
Tag Hierarchy

This diagram illustrates a complex tag hierarchy and the way Tagged Values can be either inherited or overridden in specialized Classes to create the final tagged property set for an element. A similar concept applies to instances, where the full tag set is created from the directly owned tags, plus all of those merged in from the classifier's type hierarchy, additional stereotypes and realized interfaces.



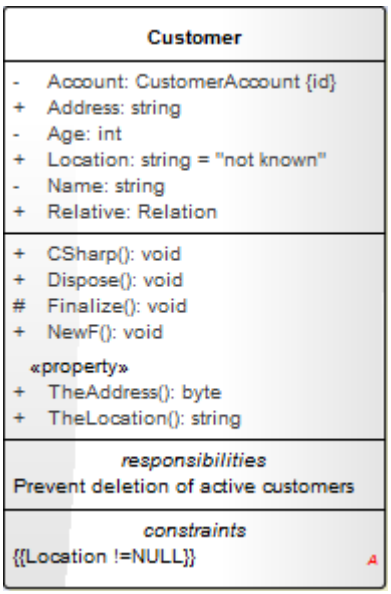


ea-favicon-016.png



Attributes

Attributes define the properties or internal data elements of an element. Not all element types support attributes, and others have restrictions; for example, attributes of Interfaces must have Public scope. In the **Browser window**, elements with attributes (typically Classes) have their attributes listed under the element name, each preceded by a blue box ( ). When depicted in diagrams, the attributes are listed in the first properties compartment of the element, as shown in this Customer Class example.



Attributes themselves have several important characteristics, such as type, visibility (scope), derivation and notes.

Access

Ribbon	Design > Element > Features > Attributes

	(**Features window**) (Click on an attribute) Design > Element > Features > Features Dialog ('Attribute' dialog)
Context Menu	These options display the 'Attribute' dialog • Right-click on the attribute in the 'Project' tab of the **Browser window** | Properties | Properties • Right-click on the attribute in the 'Details' tab of the **Inspector window** | Edit <attribute name> • Right-click on the attribute in a diagram | View Properties These options display the **Features window**: • Right-click element in Browser window or diagram | Features | Attributes or • Right-click attribute in Browser window | Properties | All Features
Keyboard Shortcuts	These options display the **Features window** when you click on an element in the **Browser window** or a diagram: • **F9** or • **Ctrl+5**

	This option displays the Features window when you click on an attribute in the Browser window or a diagram: • Ctrl+5 This option displays the 'Attribute' dialog when you click on an attribute in the Browser window or a diagram: • F9
Other	• In the 'Details' tab of the **Inspector window**, double-click on an attribute to display the 'Attribute' dialog • In the 'Project' tab of the **Browser window**, double-click on an attribute to display the parent element on a diagram

Maintain Attributes

Action	Detail
Create and Modify Attributes	On the 'Attributes' page of the **Features window**, you can create and modify attributes.

Move and Copy Attributes	You can copy or move existing attributes between elements, if the target element also supports attributes.
Define Properties	You can create property implementations specific to your coding languages for each attribute.
Identify Inherited Attributes	The attributes of an element can be inherited from one or more successive parent elements in the model. On a diagram, you can show which attributes are inherited from which 'owning' element in the hierarchy.

Notes

- Attributes, with Operations, Receptions, Interaction Points and Connection Points, are collectively referred to as Features of an element
- If you are creating many attributes, go to the 'Attribute/Operations' page of the 'Preferences' dialog ('Start > Desktop > Preferences > Preferences > Source Code Engineering > Attribute/Operations') and de-select the 'After save, re-select edited item' checkbox; now, when you create an attribute and click on the **Save**

button, the 'Attribute' page fields clear ready for you to enter the details of the next attribute - this helps you when you want to create attributes quickly and might not necessarily want to fully define each one as you create it

- If the parent element provides source or target roles for a connector, the connector can be attached to a specific attribute (as a feature)
- An alternative method of creating relationships between elements and attributes is to drag an attribute onto an Activity diagram, which generates an Object element named after the attribute; you then create relationships to and from this Object element

Create and Manage Attributes

The **Features window** presents a tab displaying the attributes that you create in an element. When you display the 'Attributes' tab, you can create and manage attributes using the page itself and a context menu of options.

Access

Ribbon	Start > Design > Features > Attributes (**Features window**) (Click on an attribute) Design > Element > Features > Features Dialog ('Attributes' dialog)
Context Menu	These options display the 'Attribute' dialog • Right-click on the attribute in the **Browser window** | Properties | Properties • Right-click on the attribute in a diagram | View Properties These options display the **Features window**: • Right-click element in Browser window or diagram | Features |

	Attributes or • Right-click attribute in Browser window | Properties | All Features
Keyboard Shortcuts	These options display the **Features window** when you click on an element in the **Browser window** or a diagram: • **F9** or • **Ctrl+5** This option displays the Features window when you click on an attribute in the Browser window or a diagram: • Ctrl+5 This option displays the 'Attribute' dialog when you click on an attribute in the Browser window or a diagram: • F9
Other	In the **Browser window**, double-click on an attribute to display the parent element on a diagram.

Create a New Attribute

Either:

- Click on the *New Attribute...* text and type a name for the new attribute
- Right-click on the panel and select 'Add New' (or press **Ctrl+N**) or
- Right-click on an existing attribute and select 'Copy as New' (or press **Ctrl+C**), provide a new name for the attribute and click on the **OK button**

A new attribute entry displays in the list.

Edit Attribute Properties

Option	Action
Name	If you want to change the attribute name, click on the field and overtype it with the new name.
Type	Defaults to 'int'. To change this, overtype the field or click on the **drop-down arrow** and click on: • The required type or • '<none>' for no type, or • 'Select Type' and browse for the appropriate attribute classifier (you can add a new one if there are no classifiers that suit)

	The type can be defined by the code language (data type) or by a classifier element; when you click on the drop-down arrow, the set of values in the list provides the data types, and the 'Select Type' browser provides the possible classifiers. To add new code language data types that can be displayed in this list, see the *Data Types* topic.
Scope	Define the attribute as Public, Protected, Private or Package; if necessary, click on the **drop-down arrow** and select a different scope.
Stereotype	(Optional) Define one or more stereotypes for the attribute; either: • Type a stereotype name, or • Click on the ... button and select the stereotype from the 'Stereotypes for <object name>' dialog
Alias	(Optional) Type an alternative name or reference for the attribute.
Initial Value	(Optional) Either: • Type in a simple initial value, or

	• Click on the ... button and construct a more complex value on the **Default Initial Value window**

Context Menu options

Right-click on the panel, or on a specific attribute name.

Option	Action
Add New	Add a new attribute to the list, with default values in the dialog fields. Shortcut: **Ctrl+N**
Copy as New	Copy a selected attribute as a new attribute. Provide a new name for the attribute and click on the **OK button**. Shortcut: **Ctrl+C**
Properties Window	Display the **Properties window**, showing the details for the selected attribute and enabling you to add more-advanced properties and Constraints.
Qualifiers	Add Qualifiers to the selected attribute. The 'Qualifiers' dialog displays.

Restore Sort Order	If you have used the column header arrows to reorganize the sequence in which the attributes are displayed, click on this option to redisplay them in the default sequence (alphabetical by name).
Move up	Move the selected attribute one row up the list. Shortcut: **Ctrl+Up Arrow**
Move down	Move the selected attribute one row down the list. Shortcut: **Ctrl+Down Arrow**
Field Chooser	Display the 'Field Chooser' dialog, which contains any column headings not currently applied to the page. Drag a column heading from the 'Field Chooser' into the preferred position in the row of column headings. You can also drag the column headings into a different sequence. To return a column heading to the 'Field Chooser', drag it out of the heading row.
Enable Group Box	Show or hide the Group Box, in which you reorganize the list sequence of the attributes according to one or more

	characteristics.
Toggle Filter Bar	Show or hide the **Filter** Bar, in which you type text strings that the data in the corresponding column must match in order to be listed.
Delete	Immediately delete the selected attribute from the element. Shortcut: **Ctrl+Del**

Notes

- By default, the attributes are listed in alphabetical order; before being able to change this sequence with the 'Move Up' and 'Move Down' options, you must deselect the 'Sort Features Alphabetically' checkbox on the 'Objects' page of the 'Preferences' dialog ('Start > Desktop > Preferences > Preferences > Objects') - the system prompts you to allow it to make this change for you
- You can add Notes on the attribute through the **Notes window**, which has focus on the attribute while it is selected in the **Features window**; similarly, you can assign Tagged Values to the attribute through the 'Tags' tab of the **Properties window**

Attribute Tagged Values

Tagged Values are a convenient means of extending the properties a model element supports, including attributes. Such extensions can then be used by code generators and other utilities to transform UML models into other forms.

Access

Ribbon	Design > Element > Editors > Properties > Tags, click on an attribute Start > Desktop > Design > Properties > Tags, click on an attribute
Keyboard Shortcuts	**Ctrl+2** > Tags

Add a Tagged Value to an attribute

Step	Action
1	Click on the  button in the window toolbar.

	The 'Tagged Value' dialog displays.
2	In the 'Tag' field, type the tag name or click on the **drop-down arrow** and select a defined tag.
3	In the 'Value' field type a specific value for the tag. (For some types of Tagged Value, the 'Value' field is grayed out. In this case, continue to step 4 and enter the value against the tag name in the 'Tags' tab of the **Properties window** or 'Properties' dialog.)
4	Click on the **OK button** to confirm the operation. The tag name and value are displayed under the attribute name in the 'Tags' tab of the **Properties window**.

Notes

- Tagged Values are supported for attributes, operations, objects and connectors
- You can define custom tags by creating a Custom **Tagged Value Type**

Display Inherited Attributes

When displaying a Class with attributes in a diagram, you can also show the inherited attributes from all parents in the element's type hierarchy (that is, the element's ancestors).

Access

Context Menu	Right-click element on diagram | Compartment Visibility
Keyboard Shortcuts	**Ctrl+Shift+Y**

Enable Display of Inherited Attributes

In the 'Show Element Compartments' panel, select the 'Inherited Attributes' checkbox.

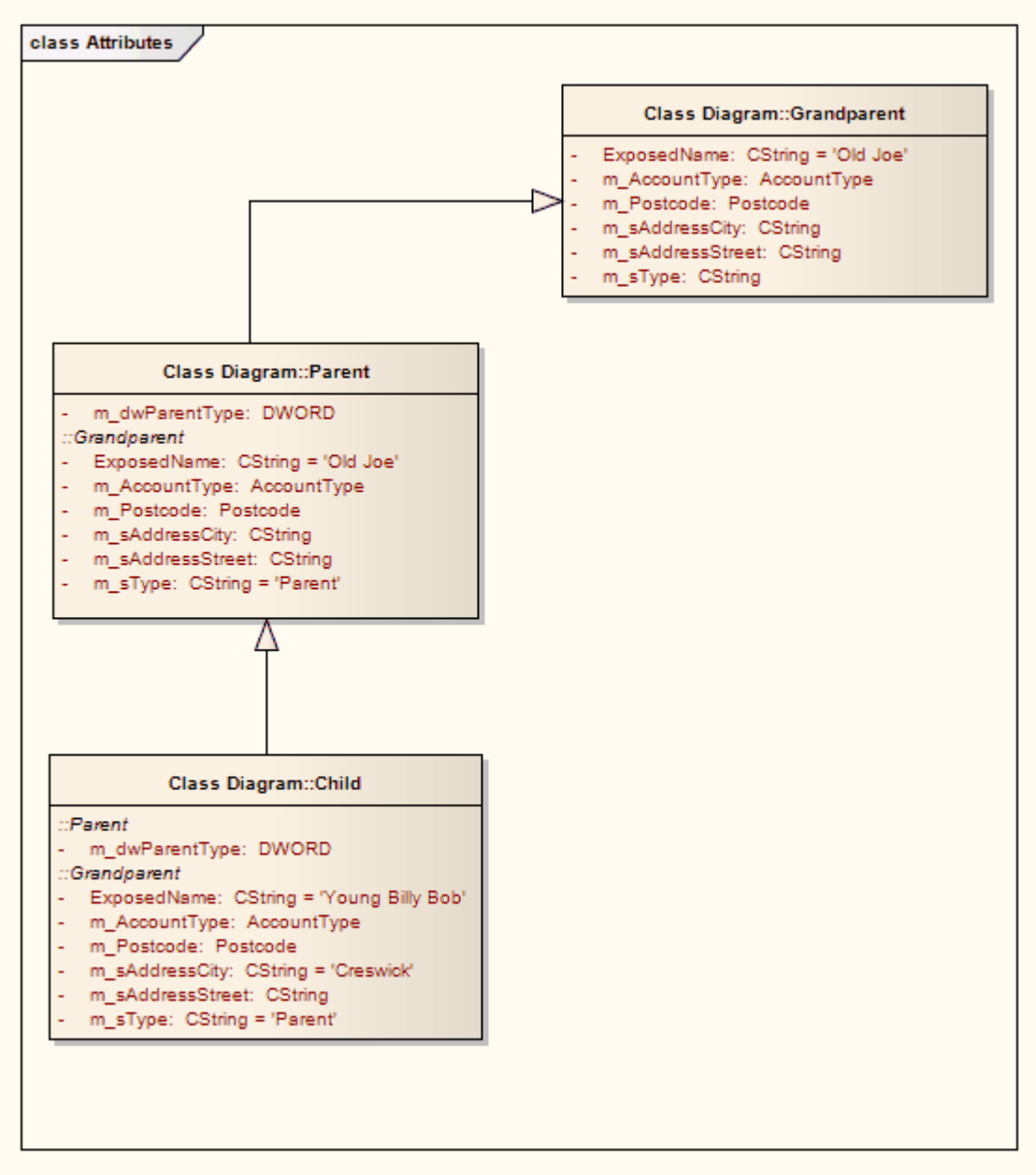
You can also override an inherited attribute's initial value, selecting the 'Features | Override Attribute Initializers' option to display the 'Override Attribute Initializers' dialog.

When you view the inherited attributes, the system merges the list of attributes from all ancestors and applies the

attribute initializers, so that the final child Class displays the correct attribute set and initial values.

Option	Action
Variable	Click on the **drop-down arrow** and select the variable name.
Operator	Click on the **drop-down arrow** and select the appropriate operator.
Value	Type a new initial value.
Note	Type in any comments or notes concerning the variable.
OK	Click on this button to save the variable and close the dialog.

Example


class Attributes
Class Diagram::Grandparent
- ExposedName: CString = 'Old Joe'
- m_AccountType: AccountType
- m_Postcode: Postcode
- m_sAddressCity: CString
- m_sAddressStreet: CString
- m_sType: CString
Class Diagram::Parent
- m_dwParentType: DWORD
::Grandparent
- ExposedName: CString = 'Old Joe'
- m_AccountType: AccountType
- m_Postcode: Postcode
- m_sAddressCity: CString
- m_sAddressStreet: CString
- m_sType: CString = 'Parent'
Class Diagram::Child
::Parent
- m_dwParentType: DWORD
::Grandparent
- ExposedName: CString = 'Young Billy Bob'
- m_AccountType: AccountType
- m_Postcode: Postcode
- m_sAddressCity: CString = 'Creswick'
- m_sAddressStreet: CString
- m_sType: CString = 'Parent'

Create Object From Attribute

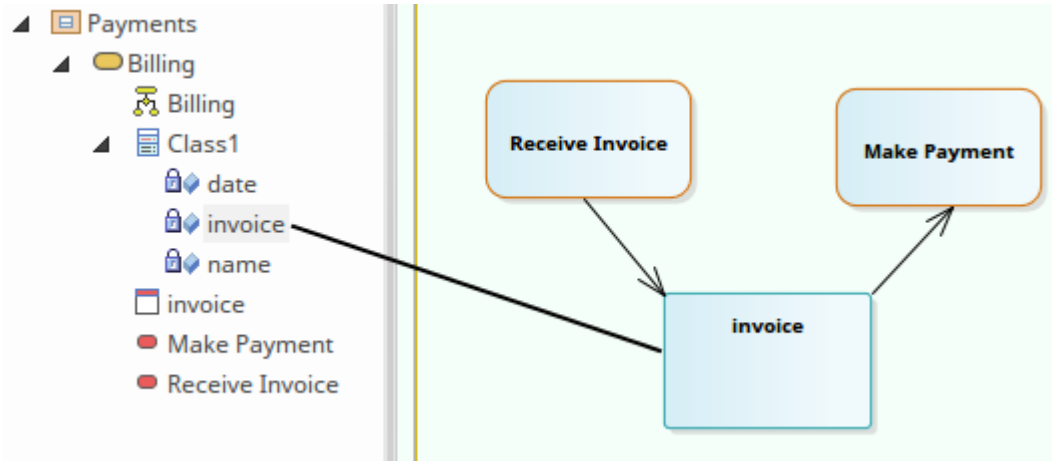
If you drag an attribute from the **Browser window** onto an Activity diagram, the attribute generates an Object element of the same name.

This is very useful for creating connectors between elements and specific attributes. For example, a Class element of stereotype <<table>> defines its fields as attributes; Action elements that define the use or update of those fields can then be linked to the appropriate table fields via the attribute Object elements.

Example

In this example diagram, the invoice Object was generated by dragging the invoice attribute from the Billing Details Class in the **Browser window** onto the diagram.

The user then created Object Flow relationships between the Receive Invoice Action element and the invoice element, and between the invoice element and the Make Payment Action element.



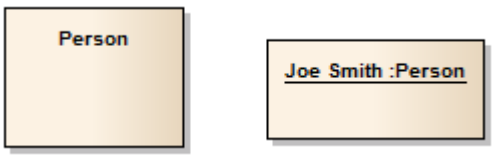
Notes

- You can also create this relationship more directly by linking an attribute in an element to another element, or linking two attributes in different elements

Classifiers and Instances

Some types of element (such as Classes) model classifications, which provide a specification of an abstract concept. For example, the concept of a Building can be represented by a set of Classes that define types of building such as Bungalow, Miner's Cottage, Office Block, Shop and so on. Other types of element (such as Objects) model instances of such classifications, such as 23 High Street Shop or 45 Village Green Cottage. The instance elements represent actual objects in a run-time scenario, based on the specification of the classifier element. For example:

- An Object element represents a man called Joe Smith, as a specific instance of the concept of 'a person' defined by the Class element Person; the object is rendered as a rectangle showing the name of the classifier - if you name the object it becomes <ObjectName>:<ClassifierName> or, in this example, Joe Smith:Person



If you develop a Person Class with attributes such as Age, Name, Address and Sex, and functions such as GetAge and GetName, then when you derive an object from that Class the object takes on all the Person Class behavior and state (as well as inherited state and behavior from the parent elements of the Person Class, if any).

Associating an instance with a classifier greatly increases the descriptive power of the model in capturing the functionality and responsibility of objects and their associated state at run-time. This is a powerful means of moving your model from the analysis phase into detailed design.

Notes

- An object is an instance of a classifier at runtime, so the object's features are actually those of the classifier; in the context menu for a classified object, if you select the 'Features | Attributes' or 'Operations' menu options, the **Features window** displays for the classifier, not the object
- Similarly, if you have set the classifier for an object in a Sequence diagram, when you add a message and display the **Properties window** for the Message, the 'Message' drop-down list is drawn from the operations of the target object's classifier, not from the object itself
  In this way you can associate Sequence diagram objects with Classes and use the defined behavior of the Class to model actual behavior at run time; the same concept applies to Messages for a State Flow connector
- In the Properties window, you can also select to include messages defined in the inheritance hierarchy of the classifier for the target object

Classify an Object

Objects can be created and classified in a number of ways. You can define a classifier first and then create instances of that classifier. Alternatively, you might develop several separate objects that turn out to have a similar specification, which you then formally define as a classifier. You would then classify the existing objects as instances of that new classifier.

Methods of Classifying an object

Method	Detail
Drop Classifier Onto Diagram	Drag an existing classifier element from the **Browser window** onto a diagram. Depending on how you configure the 'Drop <element> from Project Browser' dialog, you can create an associated object as an instance, or the instance is automatically generated. If your classifier contains Property elements, you also have the option of adding some or all of these properties to the instance as 'slots'.
Classify	(Where both object and classifier already

Existing Object	exist, separately.) On a diagram, right-click on the object and select the 'Advanced | Instance Classifier' option. (Or click on the object and press **Ctrl+L**.) You can also click on the object in the **Browser window** and press Ctrl+L. The 'Select Classifier' dialog displays. Browse or search through the model for the classifier element to associate with the object, and double-click on it. The object is associated with the classifier and displays the naming convention as described.
Classify new or existing object from classifier Associations	A classifier is usually a component of a model structure, and can have Associations with other classifiers. If an object is classified, any other objects related to that object can be classified by the related elements of the classifier. For example: • Class A is associated with Class B and Class C • Object 1 is classified by Class A • If you create an Association between Object 1 and Object 2, the 'Choose an Association Connector' dialog offers

	the option of setting either Class B or Class C as the classifier of Object 2

Add Property Slots to Instance

A classifier element can have a range of characteristics that are automatically applied to an instance based on that classifier. You can also, optionally, add any Property elements (Ports, Parts and Expose Interfaces) on the classifier to the instance, as 'slots' for the definition of each Property. This provides some flexibility in creating variations of the design defined in the classifier. For example, models of car might have doors of the same specification, but in a two-door or four-door configuration.

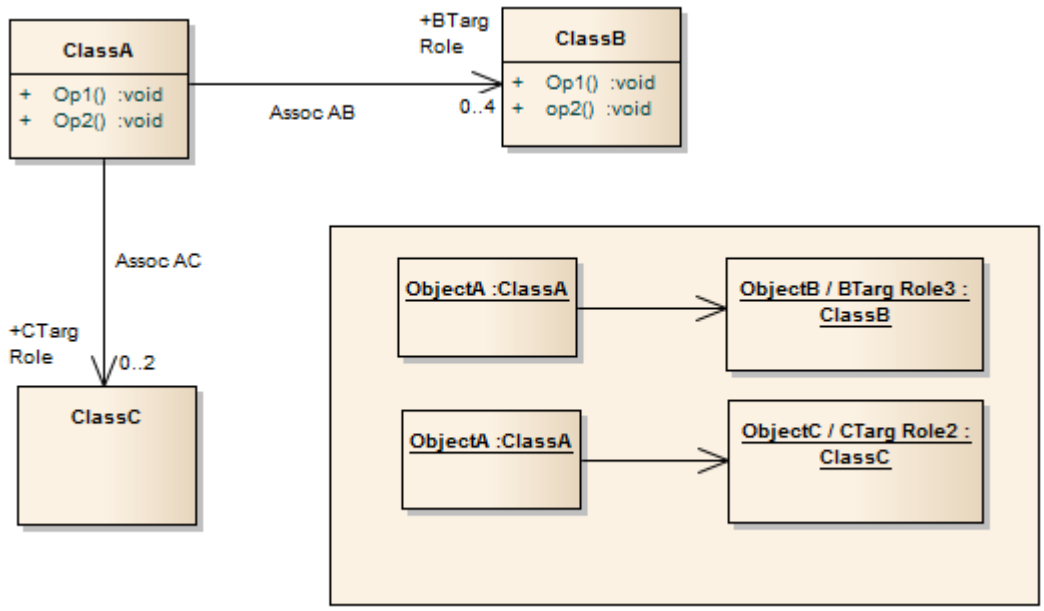
Add classifier Property elements to an instance

Step	Action
1	Create and save the classifier element with the configuration of Property elements you need.
2	Create or assign an instance of the classifier on your work diagram.
3	Right-click on the instance and select the 'Features' option. The **Features window** displays at the 'Parts /

	Properties' tab, listing the Property elements defined for the classifier.
4	Select the checkbox against each Property to reproduce in the instance element, and click on the **Close button**. Each Property element is shown in the top left of the instance; drag the elements into the arrangement you want. The Property element name within the instance is prefixed with a / character.

Classify Object Via Classifier Associations

When building an instance model from a predefined Class model, Enterprise Architect can assist in setting classifiers and role names for objects involved in a relationship. For example, if ClassA has association relationships with ClassB and ClassC, you can create an instance of ClassA (ObjectA), then draw an association to a new unclassified object and have the choice of selecting ClassB or ClassC as the classifiers of the new object.



Access

Where you have an existing association between a classified object and an unclassified object, use either method outlined here, to display the 'Choose an Association' dialog.

Context Menu	Right-click on existing Association | Advanced | Instance Classifier
Keyboard Shortcuts	Select the existing Association : **Ctrl+L**

Choose an Association Connector dialog

Field/Button	Action
Classifier Name	Displays the name (if defined) of each Association connector issuing from the source object's classifier. If the connector has no name, the value <anonymous> displays.
Association	Represents the source and target classifier elements in each Association connector issuing from the source object's classifier. If you select one of these, the target classifier becomes the classifier for the target object element. Select <none> if you want to create the Association, but not based on the classifier relationships.

<Source Object Name> Role	Identifies any Roles defined in the Association for the source classifier element, according to the source role multiplicity setting; if you select one of these roles, this will become the specific Role for the source object, as shown on the name of the element on the diagram. If the multiplicity is not set, or the upper bound is * (asterisk), just the role name displays in the list.
<Target Object Name> Role	Identifies any Roles defined in the Association for the target classifier, according to the target role multiplicity setting; if you select one of these roles, it will become the specific Role for the target object as shown on the name of the element in the diagram (and on the 'Binding' page of the Association connector 'Properties' dialog). If the multiplicity is not set, or the upper bound is * (asterisk), just the role name displays in the list.
OK	Click on the Association and source and target roles, then click on this button to: • Create the Association between the two objects based on the relationship

	between the two classifiers, and • Make the target classifier the classifier for the target object If you selected the <none> entry, a simple Association is created and the target object is unclassified.
Cancel	Cancel the dialog without changing any classifier settings.

Notes

- When creating a new association or object, the 'Properties' dialog might appear before the 'Choose an Association Connector' dialog; complete any 'Properties' fields as required, and click on the **OK button**

Behavior

Enterprise Architect enables you to define an element's behavior through the element's operations and parameters. You can also define the behavior of more specific behavioral elements such as Activities, Interactions, Actions and Interaction Occurrences, through the 'Behavior' tab of the **Properties window**.

Operations

Operations are features of a Class or other element that represent the behavior or services an element supports. For example, in a Customer Class, 'UpdateCustomerName' and 'GetCustomerAddress' can be operations. Operations have several important characteristics, such as type, visibility (scope), static, abstract and notes.

Access

Ribbon	Design > Element > Editors > Features > Operations
Context Menu	Right-click element in diagram or **Browser window** | Features | Operations or Right-click operation in Browser window | Properties | Properties ('Operation' dialog)
Keyboard Shortcuts	**F10**
Other	On a diagram, double-click on an operation ('Operation' dialog)

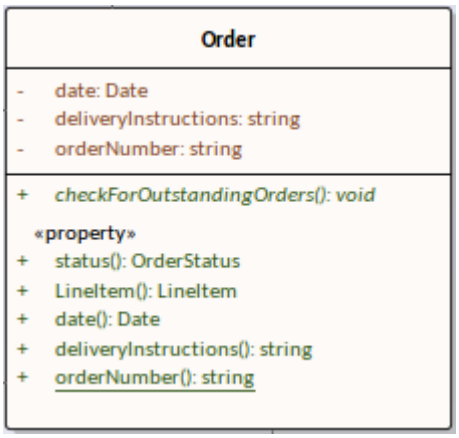
	In the 'Project' tab of the **Browser window**, double-click on an operation to locate and highlight the parent element in a diagram

Create and Modify Operations

You can create the operations of an element on the 'Operations' tab of the **Features window**, and modify the basic properties. You use the **Properties window** or 'Properties' dialog for operations to provide more detailed properties of the operations you need for an element.

Appearance on diagram

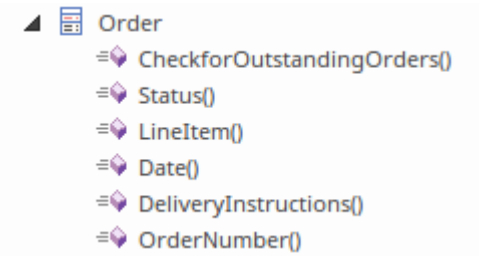
In diagrams, elements with operations (typically Classes) list the operations in a properties compartment, in colored text, as shown.



The text color can be defined on the 'Standard Colors' page of the 'Preferences' dialog. Some characteristics modify the display; for example, static operations display underlined, whilst abstract operations are italicized.

Appearance in Browser Window

In the **Browser window**, operations are listed underneath their parent element name, each preceded by a pink box.



Notes

- If the parent element provides source or target roles for a connector, the connector can be attached to a specific operation
- You can also drag, copy or move existing operations between elements; this facility is only available if the target element supports operations

Define Properties of Operations

You create operations for an element on the 'Operations' page of the **Features window**, and provide a basic set of properties. You can simply create a number of operation names if you want to create operations quickly and not necessarily fully define them as you create them. You provide the more detailed properties of the operations using the operation 'Properties' dialog.

Operations of State elements are managed differently - there are three operations (Enter, Do and Exit) that are defined on the 'Behavior' tab of the Features window. This tab displays only when the selected element is a State. Similarly, if the element is a Database Table, the 'Operations' tab is replaced by a 'Constraints/Indexes' tab.

Access

Click on an operation in the **Browser window** or a diagram.

Ribbon	Design > Element > Editors > Features > Operations Design > Element > Editors > Element > Properties Dialog
Context Menu	Right-click on the parent element | Features | Operations or

	(**Browser window**) Right-click on the operation| Properties | Properties (Diagram) Right-click on the operation | View Properties
Keyboard Shortcuts	**F10**

Create and define Operations ('Operations' tab, Features window)

Field/Button	Action
Name	Overtype the *New Operation...* text to create a new operation, or click on the name to edit an existing operation.
Parameters	Lists the parameters that have been defined for this operation on the 'Parameters' tab of the 'Properties' dialog for the operation.
Return Type	Defaults to 'void'. To change this, overtype the field or click on the **drop-down arrow** and click on:

	• The required data type returned by the operation, as defined by the code language (data type), or • '<none>' for no type (or you can type in a value manually if you prefer), or • 'Select Type' and browse for the appropriate operation classifier (you can add a new one if there are no classifiers that suit) To add new code language data types that can be displayed in this list, see the *Data Types* topic.
Scope	Click on the **drop-down arrow** and select one of: • Public • Protected • Private • Package
Stereotype	(Optional) Define one or more stereotypes for the operation; either: • Type a stereotype name, or • Click on the ... button and select the stereotype from the 'Stereotypes for <object name>' dialog If you select multiple stereotypes, they are listed on separate lines of the

	'Stereotype' field.
Alias	(Optional) Type an alternative name or reference for the operation.

Context Menu options

Right-click on the 'Operations' tab of the **Features window**.

Option	Action
Add New	Add a new operation to the list, with default values in the dialog fields. Shortcut: **Ctrl+N**
Operation	On the 'Behavior' tab for a State element, opens the 'Operation' dialog to add the details of the selected behavior operation.
Copy as New	Copy a selected operation as a new operation. Provide a new name for the operation and click on the **OK button**. Shortcut: **Ctrl+C**
Properties	Display the 'Properties' dialog for a selected operation.

	The 'Operation' tab of the 'Properties' dialog has the same fields as the **Properties window** for operations.
Properties Window	Display the **Properties window** for a selected operation. Shortcut: **Ctrl+2**
Restore Sort Order	If you have used the column header arrows to reorganize the sequence in which the operations are displayed, click on this option to redisplay them in the default sequence (alphabetical by name).
Move up	Move the selected operation one row up the list. Shortcut: **Ctrl+Up Arrow**
Move down	Move the selected operation one row down the list. Shortcut: **Ctrl+Down Arrow**
Field Chooser	Display the 'Field Chooser' dialog, which contains any column headings not currently applied to the page. Drag a column heading from the 'Field Chooser' into the preferred position in the row of column headings. You can also drag the column headings into a different

	sequence. To return a column heading to the 'Field Chooser', drag it out of the heading row.
Enable Group Box	Show or hide the Group Box, in which you reorganize the list sequence of the operations according to one or more characteristics.
Toggle Filter Bar	Show or hide the **Filter** Bar, in which you type text strings that the data in the corresponding column must match in order to be listed.
Delete	Immediately delete the selected operation from the element. Shortcut: **Ctrl+Del**
Help	Display the Help topic pertinent to the current tab.

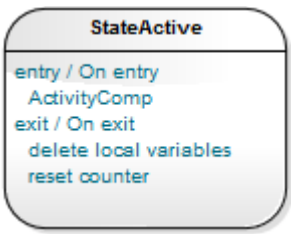
Operation Behavior

You can define the behavior of an operation in one of two ways:

- As behavior code to be inserted into an operation Body when that operation is generated to file
- As a reference to a behavior element, such as an Activity or Interaction, or to another operation

Creation of the behavior code is discussed in the *Behavior Code* Help topic.

You can also provide a text description consisting of pseudo-code, structured text or just abbreviated notes, which is used as a comment on the behavior code. You have the option of displaying either this text or the reference on each depiction of the parent element on a diagram. In this State element example, the entry operation applies the behavior of the ActivityComp Activity, whilst the exit behavior is described in simple text.



The operation Behavior is also applied during Interpreted Simulation and Executable StateMachine code generation and simulation, to provide 'entry/do/exit' behavior for States. In this case you create a short script in the 'Behavior' field, using JavaScript, to enact the operation behavior. For an example, access the EAExample Model and open 'Model

Simulation > StateMachine Models > Nested Traces > Example Class > Nested Traces', then open the 'Nested Traces' **StateMachine diagram**. Note the entry and exit scripts for each State. If you double-click on the 'entry' or 'exit' operations, the operation 'Properties' dialog opens and you will see the scripts in the 'Behavior' tab.

Access

In a diagram or the **Browser window**, click on an operation and then select one of the access methods identified here:

Ribbon	Design > Element > Editors | Properties Dialog > Behavior
Context Menu	Properties | Properties > Behavior
Keyboard Shortcuts	**F10** > Behavior

Set Behavior

Either:

- In the 'Behavior' field, type the text or pseudo code

description of the behavior, or

- Click on the **Element button** to display the 'Select Behavior' dialog, then browse for and select the appropriate element or operation; when you click on the **OK button**, the fully qualified object name displays in the 'Behavior' field

If you want the behavior text or reference to be shown on any diagram that the operation appears in, select the 'Show Behavior in Diagram' checkbox.

If you want to use behavior code, click on the 'Code' tab and enter the code in the field on that tab.

When you have defined the operation behavior, click on the **Save button**.

Delete behavior

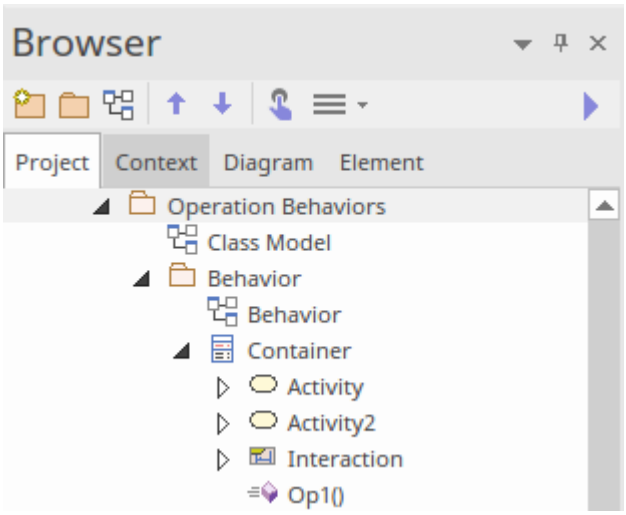
If you have typed in a behavior description in free text, simply select and delete the text.

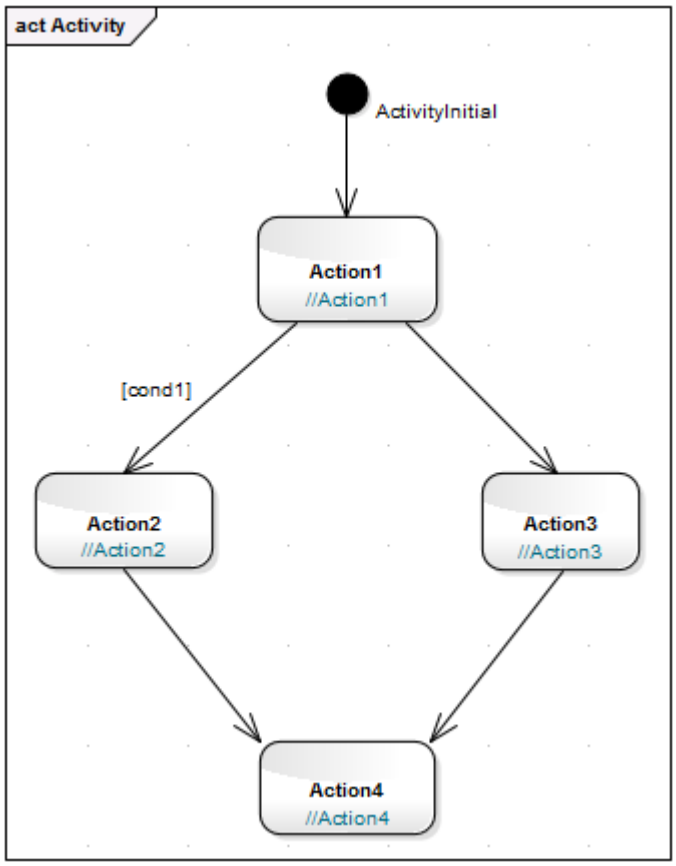
If you have selected another behavioral object, click on the **Element button** and select the '<none>' option at the foot of the 'Select Element' hierarchy.

Example of Associated Behavior

An operation of, for example, a Class is being associated

with a behavior elsewhere in the model. The operation is then set as the specification of that associated behavior. In code generation, the behavior of the associated behavioral element is generated as the operation's code; in this illustration, *op1* is associated with the Activity 'Activity'.





The generated code for *op1* is as shown:

```
package Behavior;
public class Container {
    public Container() {
    }
    public void finalize() throws Throwable {
    }
    public void op1() {
    /*Activity element(Activity)'s behavior rendered as
        operation(op1)'s code*/
        //Action1;
        if (cond1)
        {
            //Action2;
        }
        else
        {
             //Action3;
        }
        //Action4;
    }
    /*Activity element (Activity) not rendered*/
    public void Activity2()
    {
        // behavior is an Activity
    }
```

```
        public void Interaction()
        {
            // behavior is an Interaction
        }
    } //end Container
```

Behavior Code

Behavior code is inserted into an operation Body when that operation is generated to file. This code is most useful when combined with Design Patterns; elements within a Pattern often require the same stub code. The behavior code is also useful for ensuring that the generated code can be directly compiled. The language-specific Patterns available from the web site resources include behavior code for some of the defined operations; this helps speed up the process of applying Patterns from model to implementation.

By default, the behavior code is not imported into the model during reverse engineering, but you can select to import the code by ticking the 'Include method bodies in model when reverse engineering' checkbox on the 'Source Code Engineering > Attribute/Operations' page of the 'Preferences' dialog.

You enter the behavior code through the Code Editor, which lists the operations within an element or within an Activity or **StateMachine diagram** and enables you to enter the behavior code for each operation individually. See the *Editing Source Code* Help topic.

On the Operation 'Properties' dialog, there is a 'Code' tab on which you can also enter the behavior code for the operation. The code editing facilities are more streamlined but you can use context menu options to paste copied code in from elsewhere. You can also click on the **Code Editor button** to, again, create the code in the Code Editor. Bear in

mind that switching to the Code Editor closes the operation 'Properties' dialog and does not transfer incompletely saved code, so you should save any code you create in the 'Properties' dialog before making the switch.

The 'Properties' dialog also has a 'Behavior' tab on which you can type pseudo-code or plain text to state what the operation does. This text is added to the element code as a comment on the behavior code, and can be displayed on the parent element in a diagram. See the *Operation Behavior* Help topic.

Access

Before displaying the Behavior code, click on the required operation in the **Browser window** or a diagram.

Ribbon	Develop > Source Code > Behavior Design > Element > Behavior
Context menu	Right-click on operation | Properties | Properties > Code (if preferred, then : Code Editor)

Options

When selecting from the ribbon, you have three options for developing code:

- Edit Behavior
- Edit Internal Code
- Edit (or View) Source Code

All three options display the **Code Editor window**, but show the appropriate features, code and editing options for the type of code identified by the option. Within the Code Editor you can right-click on the Operation and select to switch from whichever aspect you are working on to one of the other two.

Redefine Operation and Check for Exceptions

If the parent element of a selected operation is the source element for a Generalize connector, you can configure the operation to redefine an operation in the target element. Also, you can create code in your application to check for an exception and, if one occurs, to switch to the code defined by a Classifier element. You can identify the target operation and/or the classifier element on the 'Redefines' tab of the Operation 'Properties' dialog.

It is also possible to add or change these properties in the 'Raised Exceptions' and 'Redefined Operation' fields of the **Properties window** for an operation.

Access

Context Menu	On an open diagram, click on an operation and then right-click | View Properties > Redefines In the **Browser window**, right-click on an operation | Properties | Properties > Redefines

Tasks

Task	Action
Redefine a target element Operation	1. Click on the **Add button** beneath the 'Redefined Operation' panel. The 'Select Operation' dialog displays, showing the operations in the target element. 2. Click on the appropriate operation; if you want to redefine more than one operation in the target element, press **Ctrl** as you click on each one. 3. Click on the **OK button**. A statement displays in the 'Redefined Operation' panel, of the format: <Package>::<Target Element>.<Operation> 4. On the parent element in a diagram, the Operation compartment shows the complete statement, of the format: <Operation>:{redefines <Package>::<Target Element>.<Operation> If you want to change the redefined operation(s) at any point, return to the 'Redefines' tab and again click on the Add

	button, and repeat the process. The original selection is replaced by the new selection. You can also add or change a redefined operation (with a little more knowledge of your element structures) in the 'Redefined Operation' field of the **Properties window** for the operation. 1. Click on the operation in a diagram or the **Browser window**, and press **Ctrl+2**. 2. In the Properties window, click on the ... icon at the end of the 'Redefined Operation' field. The 'Redefined Operation' browser displays. 3. Locate and double-click on the required redefined operation. 4. In the Properties window, click off the 'Redefined Operation' field; the name of the selected operation displays in the field.
Identify Exception Classifier	1. Click on the **Add button** beneath the 'Raised Exception' panel. The 'Select Classifier' dialog displays; locate and double-click on the appropriate Classifier. 2. The name of the parent Package and

	the Classifier displays in the 'Raised Exception' panel. If you want to change the Classifier at any point, return to the 'Redefines' tab and 'Raised Exception' panel and again click on the Add button, repeating the process. The original selection is replaced by the new selection. You can also add or change the Exception Classifier through the **Properties window** for the operation. 1. Click on the operation in a diagram or the **Browser window**, and press **Ctrl+2**. 2. In the Properties window, click on the ... icon at the end of the 'Raised Exceptions' field. The 'Raised Exceptions' browser displays. 3. Locate and double-click on the required classifier. 4. In the Properties window, click off the 'Raised Exceptions' field; the name of the selected classifier displays in the field.

Operation Constraints

Constraints define the contractual behavior of an operation, what must be true before they are called (pre-conditions) and what is true after they are called (post-conditions). In this respect they are related to the State model of a Class and can also relate to the guard conditions that apply to a transition. You can define both pre- and post- conditions for an operation.

Access

Before displaying the 'Properties' dialog, click on the required operation in a diagram or the **Browser window**.

Keyboard Shortcuts	(From the diagram) Enter > Pre or Post (From the **Browser window**) Enter | Properties > Pre or Post

Define Constraints

The fields and options on the 'Pre' and 'Post' tabs of the **Properties window** are identical. Click on the appropriate tab to define the conditions prior to and following on from

the operation behavior.

Option	Action
Pre-Condition: Post-Condition:	Type in the name or effect of the condition.
Type	Click on the **drop-down arrow** and click on the appropriate condition type.
<notes>	Type in any further explanation or description that is necessary for the condition.
New	Click on this button to clear the fields to define another condition.
Save	Click on this button to save the new or updated condition and to add the changes to the 'Pre-Condition' or 'Post-Condition' list. This button also clears the data fields so that you can create another condition.
Pre-Condition Post-Condition	Lists the pre-conditions or post-conditions that have been defined for this operation.

n	Click on an item in this list to re-populate the dialog fields with the details, to edit or delete the condition.
Delete	Click on an item in the 'Pre-Condition' or 'Post-Condition' list and click on this button to delete that condition from the operation.

Operation Tagged Values

Both operations and the parameters assigned to operations can have Tagged Values associated with them. Tagged Values offer a convenient extension mechanism for UML objects, so you can define any tags you need and then assign values to them using this form.

Tagged Values are written to the XMI output, and can be input to other third party tools for code generation or other activities.

You can add and edit Tagged Values on an operation or parameter using either the:

- 'Tags' tab of the **Properties window** for the operation or
- 'Tagged Values' tab of the 'Properties' dialog for the operation

If the operation has any parameters, the parameter names and Tagged Values are listed on the 'Tagged Values' or 'Tags' tab underneath the Operation name and Tagged Values.

Access

Click on the operation in either a diagram or the **Browser window**.

Ribbon	Design > Element > Editors > Properties > Tags (**Properties window**)

	Start > Desktop > Design > Properties > Tags (Properties window)
Keyboard Shortcuts	**Ctrl+2** > Tags (**Properties window**) (On a diagram) Enter > Tagged Values ('Properties' dialog) (In the **Browser window**) Enter | Properties > Tagged Values ('Properties' dialog)

Add a Tagged Value for an operation or parameter

Step	Action
1	Click on the operation or parameter to which to assign the Tagged Value.
2	Click on the  button in the Toolbar at the top of the panel. The 'Tagged Value' dialog displays.
3	In the 'Tag' field, type the tag name (or select a defined tag from the drop-down list).

	In the 'Value' field type the initial tag value. (For some types of Tagged Value, the 'Value' field is grayed out. In this case, continue to step 4 and then enter the value against the tag value on either the 'Tags' tab of the **Properties window** or the 'Tagged Values' tab of the 'Properties' dialog.)
4	Click on the **OK button** to confirm the operation.

Notes

- Tagged Values are supported for attributes, operations, objects and connectors
- You can define custom tags using a predefined **Tagged Value Type**

Override Parent Operations

You can automatically override methods from parent Classes and from realized Interfaces, using the 'Override Operations/Interfaces' dialog. You can configure the system to display this dialog each time you add a Generalization or Realization connector between Classes, and review their possible operations/interfaces to override/implement.

Access

Use any of the methods outlined here to display the 'Overrides & Implementations' dialog.

On the dialog, you simply:

- Select the checkbox against each operation or interface to automatically override (or click on the **Select All** button) and click on the **OK button**; Enterprise Architect generates the equivalent function definitions in your child Class

To display the dialog automatically, from the Start ribbon, select 'Desktop > Preferences > Preferences : Links' and select the 'Show Override Operation dialog on new connector' checkbox.

Ribbon	Design > Element > Manage > Overrides and Implementations

Keyboard Shortcuts	**Ctrl+Shift+O**

Display Inherited Operations

You can configure a selected element in a diagram to display the complete operation set obtained from all ancestors in the element's type hierarchy, as well as those directly owned.

Access

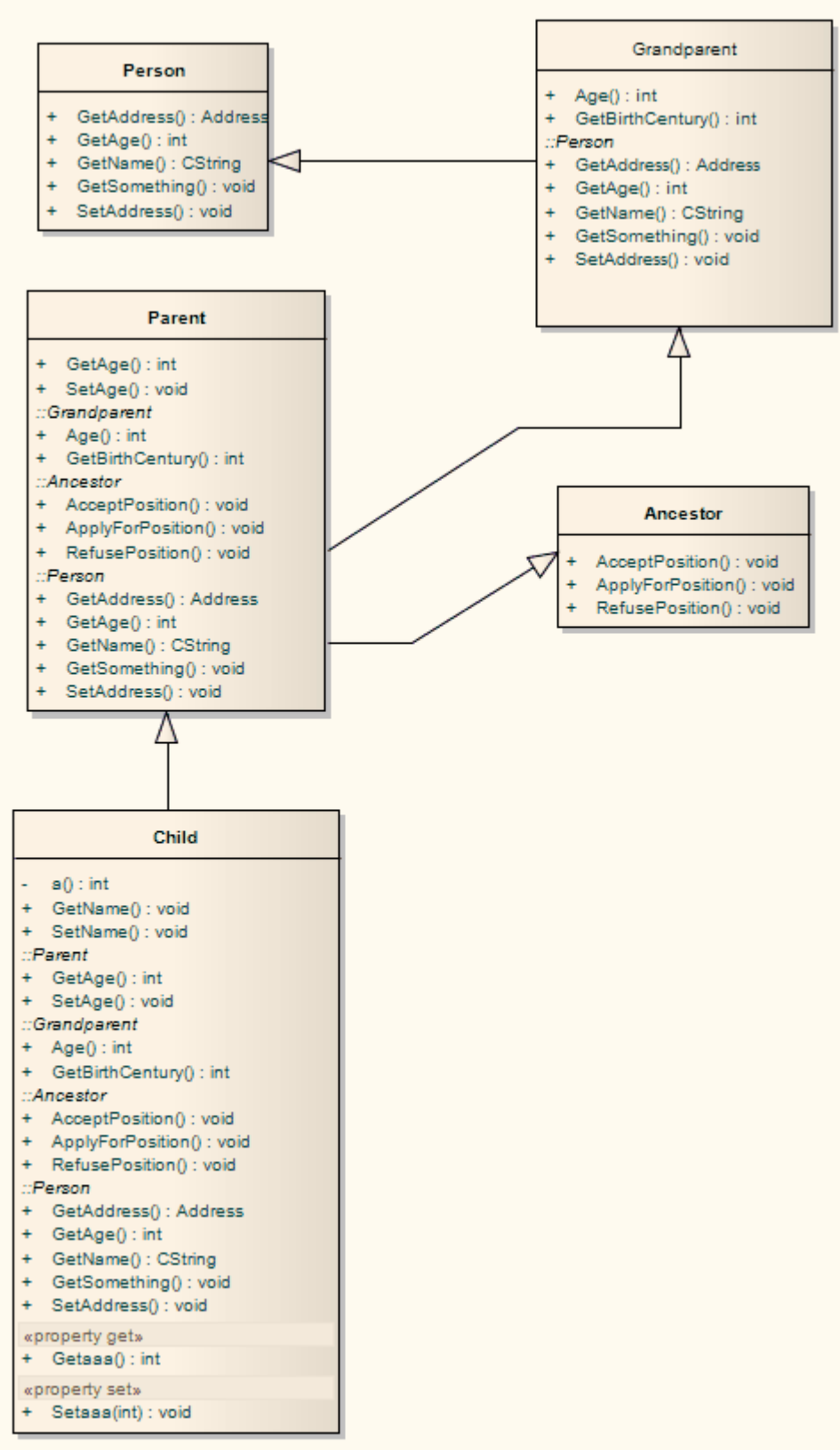
Context Menu	Right-click element on diagram | Compartment Visibility
Keyboard Shortcuts	**Ctrl+Shift+Y**

Enable Behavior

On the 'Compartment Visibility' dialog, in the 'Show Element Compartments' panel, select the 'Inherited Operations' checkbox.

Example

This diagram illustrates the behavior, where it has been enabled for each element in a simple hierarchy. The Child element inherits from all other levels of the hierarchy.


Person
+ GetAddress() : Address
+ GetAge() : int
+ GetName() : CString
+ GetSomething() : void
+ SetAddress() : void
Grandparent
+ Age() : int
+ GetBirthCentury() : int
::Person
+ GetAddress() : Address
+ GetAge() : int
+ GetName() : CString
+ GetSomething() : void
+ SetAddress() : void
Parent
+ GetAge() : int
+ SetAge() : void
::Grandparent
+ Age() : int
+ GetBirthCentury() : int
::Ancestor
+ AcceptPosition() : void
+ ApplyForPosition() : void
+ RefusePosition() : void
::Person
+ GetAddress() : Address
+ GetAge() : int
+ GetName() : CString
+ GetSomething() : void
+ SetAddress() : void
Ancestor
+ AcceptPosition() : void
+ ApplyForPosition() : void
+ RefusePosition() : void
Child
- a() : int
+ GetName() : void
+ SetName() : void
::Parent
+ GetAge() : int
+ SetAge() : void
::Grandparent
+ Age() : int
+ GetBirthCentury() : int
::Ancestor
+ AcceptPosition() : void
+ ApplyForPosition() : void
+ RefusePosition() : void
::Person
+ GetAddress() : Address
+ GetAge() : int
+ GetName() : CString
+ GetSomething() : void
+ SetAddress() : void
«property get»
+ Getaaa() : int
«property set»
+ Setaaa(int) : void

Behavior Parameters

The 'Parameters' tab of the 'Properties' dialog for an operation provides the facilities for defining, editing and extending the parameters of behavioral operations, Activities and Interactions.

Access

Ribbon	Design > Element > Editors > Properties > Click on the operation (diagram or **Browser window**) : > Parameters
Context Menu	Right-click on operation (in diagram) | View Properties > Parameters Right-click on operation (in **Browser window**) | Properties | Properties > Parameters

Define Parameters

Within the properties of an operation, Activity or Interaction, you can define parameters to control how that object and its subordinate objects behave.

The order or sequence of the parameters in the object properties is reproduced in code. You can set and manage the order using facilities available within the 'Parameters' tab of the 'Properties' dialog for an operation.

Access

Click on an operation in the **Browser window** or in a diagram.

Ribbon	Design > Element > Editors > Properties Dialog > [select or create an operation] > Parameters
Keyboard Shortcuts	**F10** > Parameters

Define the Parameters

The first two fields are in the left-hand panel of the tab, and

the remaining fields are in the right-hand panel.

Option	Action
Parameter	In the 'Parameter' list, overtype the *New Parameter* text with the new parameter name.
Type	Click on the **drop-down arrow** and click on: • The required data type of the operation, as defined by the code language (data type) or • <none> for no type (or you can type in a value manually if you prefer), or • 'Select Type' and browse for the appropriate operation classifier (you can add a new one if there are no classifiers that suit) To add new code language data types that can be displayed in this list, see the *Data Types* Help topic.
Default Value	(Optional) Type a default value for the parameter.
Stereotype	(Optional) Type in the appropriate stereotype name, or click on the ... button and select one using the 'Stereotypes for

	<object name>'. You can select multiple stereotypes, in which case each stereotype is shown on a separate line of the 'Stereotype' field.
Alias	(Optional) Type an alternative name or reference for the parameter.
Direction	Click on the **drop-down arrow** and select the way the parameter is passed to a function: • In = By Value • InOut = By Reference • Out = Passed By Reference, but only the return value is significant • Return = The parameter is a returned value
Fixed Value	Click on the **drop-down arrow** and select **True**, even if the parameter is passed by reference.
Multiplicity	Click on the  button to display the 'Multiplicity' dialog, and define the multiplicity of the parameter. • Lower bound - Type the lower limit to the number of elements that must be in the collection

	• Upper bound - Type the upper limit to the number of elements allowed in the collection • Allow Duplicates - Select the checkbox to indicate that duplicate values are allowed; this field maps to the UML property isUnique, with a value **False** • Multiplicity is Ordered - Select the checkbox to indicate that the collection is ordered • OK - Click on this button to save the information and close the dialog
Notes	Click on the ... button and type any additional notes on the parameter. These notes are unformatted.

Notes

- To organize parameters into the required sequence, and reorganize the display of information, right-click on the background of the 'Parameter' tab or on a specific parameter and select from the same context menu options as for the 'Operations' tab
- Set the amount of parameter detail to display in a specific diagram using the 'Show Parameter Detail' drop-down list

on the 'Features' tab of the 'Properties' dialog for the diagram; the setting applies only to the current diagram, and the default is to show the type only

- You can set Tagged Values on a parameter, as well as on the parent operation

Parameter Tagged Values

Behavioral parameters of operations, Activities and Interactions can have Tagged Values associated with them. Tagged Values offer a convenient extension mechanism for UML elements; you can define any tags you need and then assign values to them.

Tagged Values are written to the XMI output, and can be input to other third party tools for code generation or other activities.

Access

Display the 'Tags' tab of the **Properties window**, using any of the methods outlined here. Then, in the **Browser window** or a diagram, select the object containing the parameter.

Ribbon	Start > Desktop > Design > Properties > Tags Design > Element > Editors > Tagged Values > Tags Explore > Portals > Windows > Properties > Tagged Values
Keyboard Shortcuts	**Ctrl+2** > Tags

Add a Tagged Value for a parameter

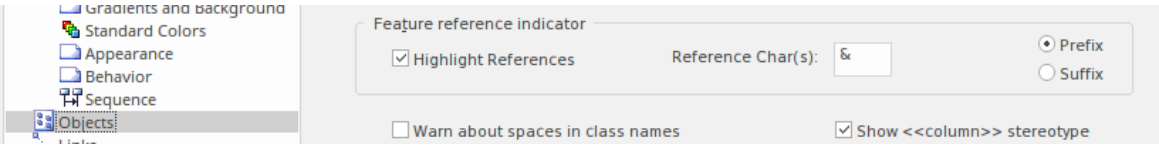
Step	Action
1	The 'Tags' tab shows the Tagged Values for the selected object and its parameters, under separate headings. Click on the required parameter in the 'Parameters' section, and click on the **New Tags button**. The 'Tagged Value' dialog displays.
2	In the 'Tag' field, type the tag name (or select a defined tag from the drop-down list). In the 'Value' field type the initial value of the tag. (Extended tags might not allow you to set a value through the 'Tagged Value' dialog; for such tags, enter the value on the 'Tags' panel of the **Properties window**.)
3	Click on the **OK button** to confirm the Tagged Value.

Notes

- Tagged Values are supported for attributes, operations, objects and connectors
- Custom tags can be created using a predefined **Tagged Value Type**

Operation Parameters by Reference

In your project, you can set operational parameters to be passed 'By Reference', as a global setting.



Access

Ribbon	Start > Desktop > Preferences > Preferences > Objects > Feature reference indicator

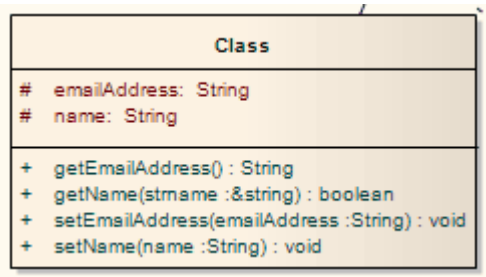
Define Parameters

You can select to highlight parameters declared as 'Kind: inout' or 'Kind: out' with an additional user-defined prefix or suffix.

If you select the 'Highlight References' checkbox, you can also indicate whether a prefix or suffix should be used, and the actual reference character to use. In the example image, the '&' character has been set as a prefix.

When you declare a parameter of type 'inout', it is assumed

you are passing the parameter by reference rather than by value. If you have elected to highlight references, then this is displayed in the **Diagram View**.



The example shows that, in the getName operation, the parameter 'strName' is a string reference, and is highlighted using the chosen character and position.

Notes

- This facility applies to operations only

Interactions and Activities

The behavioral aspects of Interactions and Activities are modeled using the 'Behavior' tab of the **Properties window** for the element, on which you assign parameters and return types to the elements.

Access

Select an Interaction or Activity element on a diagram or in the **Browser window**, then display the 'Behavior' tab of the **Properties window**, using any of the methods outlined here.

On the 'Behavior' tab, click on the ... button of the 'Parameters' field to edit the element's parameters on the 'Parameters tab'. When you create a new parameter using the 'Parameters' tab, it internally creates an Activity Parameter Node for an Activity or an Interaction Parameter for an Interaction.

In the 'Return' field, click on the **drop-down arrow** and select the return type of the element. Alternatively, click on the ... button and use the 'Select Type' dialog to locate the appropriate classifier.

The 'Specification' field is populated automatically when an operation is associated with the Activity or Interaction as a behavior.

Ribbon	Design > Element > Editors > Properties

	> Behavior
Keyboard Shortcuts	**Ctrl+2** > Behavior

Behavior Calls

A behavior call is the invocation of a behavior, which you can represent with a CallOperation Action (Operation), CallBehavior Action (Activity) or Interaction Occurrence (Interaction) element. You model the properties of the behavior call using the 'Behavior' tab of the **Properties window** for the Action or Interaction Occurrence element. You use behavior calls to:

- Edit Arguments
- Re-associate the call with a different behavior
- Synchronize the arguments with the parameters in the associated behavior

Access

Ribbon	Design > Element > Editors > Properties > Behavior Start > Desktop > Design > Properties > Behavior
Keyboard Shortcuts	**Ctrl+2** > Behavior **Alt+1** | Properties > Behavior

Editing a Behavior Call

Click on the ... button at the end of the 'Argument' field to display the 'Arguments' tab and create and delete arguments, relating each one to a corresponding parameter in the associated behavior.

Click on the ... button on the 'Behavior' field to re-associate the invocation with a different behavior or to remove any association with the current behavior.

For Interaction Occurrence elements, an 'Interaction Occurrence' panel is displayed as well. It enables you to enter the return value and attribute of the behavior call.

Associate with Different Behaviors

On the 'Behavior' tab of the **Properties window** for the Behavior Call element, when you click on the 'Behavior' field  button the 'Select Element' or 'Select Operation' dialog displays, listing all available behaviors in the model.

Select '<none>' to remove any existing association between an invocation and a behavior, or select another classifier to re-associate the invocation with a different behavior.

When a valid behavior is identified in the 'Behavior' field, the **Synchronize with Parameters button** is enabled for synchronizing the arguments with the parameters.

Access

Ribbon	Design > Element > Editors > Properties > Behavior Start > Desktop > Design > Properties > Behavior
Keyboard Shortcuts	**Ctrl+2** > Behavior **Alt+1** | Properties > Behavior

Behavior Call Arguments

You define the arguments of a Behavior Call using the 'Arguments' tab of the **Properties window** for the element.

Access

Ribbon	Design > Element > Editors > Properties > Arguments Start > Desktop > Design > Properties > Arguments
Keyboard Shortcuts	**Ctrl+2** > Arguments **Alt+1** | Properties > Arguments

Define the arguments of a Behavior Call

Step	Action
1	In the 'Name' field, type the name of an argument to map to the behavior.

2	In the 'Param' field, click on the **drop-down arrow** and select a behaviors parameter from the list of parameters associated with the behavior.
3	In the 'Default' field, set any required default value. Optionally, you can also: • Assign a stereotype from the 'Stereotype' field drop-down list, or by browsing for one using the ... button • Provide an alternative name or reference for the argument, in the 'Alias' field, and/or • Type in some notes to describe or explain the argument
4	If a diagram is displayed, and if required, select the 'Show in current diagram' checkbox to add an Action Pin on the diagram to represent the argument.
5	Click on the **Save button**.
6	If appropriate, click on the **New button** and repeat steps 1 to 5 for another argument:parameter mapping.

Notes

- If you attempt to map a newly created argument to a parameter that is already associated with a different argument, Enterprise Architect identifies the mapping and prompts you to confirm that you intend to change the association

Synchronize Arguments

In your project, you can synchronize the parameters and arguments in a behavioral invocation.

On the 'Behavior' tab of the **Properties window** for the element, click on the **Synchronize with Parameters button** to synchronize the number of arguments in the invocation element with the number of parameters in the associated behavior.

This automatically creates or deletes arguments based on the number of parameters in the behavior.

If any arguments are to be deleted, Enterprise Architect prompts you to confirm the operation. Click on the **Yes button** to confirm.

Access

Ribbon	Start > Desktop > Design > Properties > Behavior Design > Element > Editors > Properties > Behavior
Keyboard Shortcuts	**Ctrl+2** > Behavior **Alt+1** | Properties > Behavior

Notes

- The **Synchronize with Parameters button** is enabled only if the invocation is associated with a valid behavior, identified in the 'Behavior' field

Hyperlinks

Hyperlinks are very simple structures, but they add an incredible versatility to both navigation of your model and the provision of information through the various methods of communication within your project. You can create hyperlinks:

- As elements or references in diagrams
- In the text of notes and descriptions in the properties of modeling objects and project management objects
- In the element specifications in the **Specification Manager**
- In the text of Linked Documents or generated reports, through the document and template editors
- In Model Mails and **Team Library** postings

In each case, the targets of these hyperlinks might be:

- Packages, elements, diagrams, attributes or operations in the model
- Specific topics in the Enterprise Architect Help
- External files
- Web sites
- Team Library postings
- Diagram images and other graphics
- Commands to initiate operations and processes in Enterprise Architect
- Model Searches to run

- Matrix profiles to display
- **Learning Center** topics

Between any two contexts, the way in which you create the hyperlink and the range of objects you can link to might differ, but the common benefit is that you are providing a wealth of information on a specific point without overburdening:

- The object with a lot of text in one volume
- Yourself in having to re-create and maintain the information in every instance of its use
- Your readers with too much information at once

Table of Methods

Create a Hyperlink	Description
As an element on a diagram	To create a Hyperlink element on a diagram and assign a target object to it, either: • Drag the 'Hyperlink' icon onto the diagram from the 'Common' page of the **Diagram Toolbox**, or • Click on the icon in the 'UML Elements' Toolbar and then click on the diagram You provide the text of the link directly

	on the diagram, then double-click on the element to display the element 'Hyperlink Details' dialog on which you identify the type of target object, the target itself and any other necessary properties of the link. Note that initially the link text is held in the 'Alias' field and can be edited there, but if you select certain types of target object (such as another diagram) the link text is read from the 'Notes' field and the 'Alias' field is disabled. After you have defined the target object, double-clicking on the element executes the link; to edit the element's properties, right-click on it and select the 'Properties' option. For most type of link, the element displays as shown here:  Certain types of link, however, have their own icon; for example, a Hyperlink element linking to a diagram or a link to a Help topic ().
On a diagram to another diagram	To create a link to another diagram on the current diagram: 1. Drag the target diagram on to the current (host) diagram. The 'Select Type' dialog displays. 2. Select the 'Hyperlink' option and click

	on the **OK button**. The final hyperlinked diagram should now have a link referencing the target diagram, resembling this:  Location : Location The link will open (in this case) the 'Location' diagram in the 'Location' Package. The target diagram name is written to the element 'Notes' field, and you can edit this field in the element properties to an alternative link text. A hyperlink to a diagram, whether created by this method or by dragging the 'Hyperlink' icon onto the diagram, has a different icon to the standard Hyperlink element icon, although in all other respects it is the same type of element. (If the hyperlink displays as a Sub Activity, select the 'Start > Desktop > Preferences > Preferences > Diagram > Behavior' ribbon option and deselect the 'Use Automatic SubActivities' checkbox.)
On a diagram to a file	To create a hyperlink on a diagram to an external file, simply click on the file in a file list (such as Windows Explorer) or on your Desktop and drag it onto the diagram. A short context menu displays with two

	options - 'Hyperlink' and 'Artifact'. Click on the 'Hyperlink' option to create the hyperlink on the diagram. The link is effective immediately, and you can right-click on it to add or change properties as necessary. Files of most types - including .sql and .ddl - are opened within the appropriate Enterprise Architect code editor.
On a diagram to a Script	You can create a hyperlink on a diagram to execute a script. Simply drag the required script from the **Execution Analyzer window** onto the diagram. A context menu displays, from which you select whether the script to be executed is a Build, Test, Run, Debug or Deploy script. The hyperlink is effective immediately; when you click on it, the script executes.
As an Action element on a diagram	Drag an Action element from the 'Activity' page of the Toolbox onto the diagram; a context menu displays (if not, hold **Ctrl** as you drag the Action onto the diagram). Select the 'Other' option; the 'New Action' dialog displays, with the 'Other' radio button selected.

	Click on the drop down arrow on the text field in the 'Select Kind' panel, and click on the 'Hyperlink' option. Click on the **OK button**; the Hyperlink Action element displays on the diagram. Right-click on the element and select the 'Advanced | Set Hyperlink' menu option; the 'Hyperlink Details' dialog displays. Set the hyperlink's properties.
From Notes to a specific element	Within the text of the 'Notes' field of an object's 'Properties' dialog, or in the **Notes window**, you have three options for creating a hyperlink to another element: • Right-click on a highlighted text string and select the 'Create | Link to Existing Element' option, to link to an element anywhere in the model • Right-click on a highlighted text string and select the 'Create | New Element from Selection' option, to create a new element in the same Package and link to it; the name of the element is the highlighted text • Click on the 'Hyperlink' icon in the 'Notes' toolbar to display the in-text 'Hyperlink Details' dialog, select 'Element' in the 'Type' field, and select

	the existing element to link to; the element name forms the link text in the 'Notes' text, at the cursor position
In Notes/Description text	In a 'Notes', 'Description' or similar text field, you can also click on the 'Hyperlink' icon in the 'Notes' toolbar to create links to a range of types of object other than 'Element'. You can use full paths or local (path substitution) paths, and you can either select or type the link text, or leave the text blank to use the link address as the text.
Within the Specification Manager	As you build the specification of an element and create Notes text to describe it, you can add hyperlinks to a wide range of target objects to support and enhance the specification. Highlight the link text, right-click on it and select the 'Create | Hyperlink' option. The 'Hyperlink Details' dialog displays, on which you specify the target object type and the object itself.
In a report document	When you generate a report on a section of your model, the **Document Generator** either: • Activates any hyperlink in that part of the model and includes the linked

	object (generally a diagram image) in the report, or • Displays the hyperlink as a reference to the linked object (most other links) You can, however, add other hyperlinks directly to either the generated report or the report template, to display material external to the model; namely a web page, Enterprise Architect Help topic, or a document file. To do this, you right-click on the appropriate point in the report and select the 'Insert | Hyperlink' option; then specify the access path of the object to link to.
Within a Linked Document	When you have created a Linked Document for an element, you can add hyperlinks in the text of that document to other elements in the model, and to web pages, Help files, Model Searches and **Team Library** Forums. When you next open the Linked Document you can double-click on the hyperlink to open the linked files or to locate and highlight the object in the **Browser window**. To create a link to an element, you can simply drag the element from the Browser window into the document. Alternatively, right-click in the text and,

	for an element, select the 'Create| Link to Existing Element' option or, for links to other objects, select the 'Create | Hyperlink' option.
In a Team Library post	The **Team Library** facility provides a number of options for creating links out of dragged objects or specifically providing link text and a link address within a document or post. The 'Resources' folder underneath a Team Library Post consists entirely of links you create to objects of relevance to the post.
In a Model Mail	When you are using **Model Mail** to discuss a modeling object or supporting information, you can add a hyperlink to your text to open the object that you are discussing. A quick way to create a hyperlink is to select the modeling object in the **Browser window**, place the cursor at the appropriate position in your message text, click on the **Insert Quick Link button** and select the name of the modeling object. The hyperlink to the object is immediately created at the cursor position. If you need to search for the modeling

	object, or you want to link to a different type of target such as a file, **Model Search** or **Team Library** message, click on: • The 'Hyperlink' icon in the toolbar or • The Insert Quick Link button and select the 'Other' option The 'Hyperlink Details' dialog displays. Use this to create the required link.

Hyperlink Target Objects

Some of the hyperlink facilities in Enterprise Architect are filtered to create a link between two specific types of object. Other facilities, however, give you a choice of types of target object with minor variations in the information you provide to identify the target. The widest variety of target types is available from the:

- Element 'Hyperlink Details' dialog displayed when you create a Hyperlink element on a diagram, and
- In-text 'Hyperlink Details' dialog displayed when you create a hyperlink in the element Notes, either from the Notes Toolbar or in the **Specification Manager**

The in-text 'Hyperlink Details' dialog does not prompt for the link text, so you either highlight a word or phrase in the text to act as the link text before you create the hyperlink, or you allow the name or path of the linked object to become the link text.

Most hyperlinks can only be actioned within the diagram or element in which they are created, but links to diagram images and **Image Manager** images are also actioned within a generated report and actually show the linked image.

Identify Target Objects

This table provides instructions for specifying the target

object of a hyperlink, for each of the available types of object, using either of the two 'Hyperlink Details' dialogs.

Link to	Action
An attribute	In the 'Type' field, click on the **drop-down arrow** and click on 'Attribute'. The 'Set Attribute' browser displays, in which you locate and click on the required attribute. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the attribute is highlighted in the **Browser window**.
A source path	In the 'Type' field click on the **drop-down arrow** and click on 'Browse for File'. A file browser opens, from which you select the source directory containing a number of files that the user might want to open. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If a user activates the link, a 'Locate File' dialog displays at the specified source directory, and the user can select any of the files in that directory to open within Enterprise Architect or a registered

	external application.
An element image	In the 'Type' field, click on the **drop-down arrow** and click on 'Element Image'. The 'Select an Element' browser displays, in which you locate and click on the required image-stereotyped Artifact element. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the element 'Properties' dialog opens. In a generated report, the element image displays instead of the link.
A diagram	In the 'Type' field, click on the **drop-down arrow** and click on 'Diagram'. The 'Select Classifier' browser displays, in which you locate and click on the required diagram. You can search for the diagram by name in a specific namespace in the model, or across the whole model. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the diagram opens. In a generated report, an in-text

	link acts as a simple reference to the diagram.
A diagram image	In the 'Type' field, click on the **drop-down arrow** and click on 'Diagram Image'. The 'Select Classifier' browser displays, in which you locate and click on the required diagram. You can search for the diagram by name in a specific namespace in the model, or across the whole model. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the diagram opens. In a generated report, an image of the diagram displays instead of the link.
An Enterprise Architect command	In the 'Type' field, click on the **drop-down arrow** and click on 'EA Command'. In the unlabelled 'Address' field, click on the drop-down arrow and select the required command from the list. If the command is not part of the default set, click on the drop-down arrow in the second field and select the technology that provides the command. For some commands you might have to provide further parameters, in which case

	the  button displays; click on this button and complete the resulting dialog. Click on the **OK button** to create the hyperlink. If you activate the link, the system actions the command and displays the resulting screen, dialog or message.
An element	In the 'Type' field, click on the **drop-down arrow** and click on 'Element'. The 'Select Element' browser displays, in which you locate and click on the required element. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link on a diagram, the element is highlighted in the **Browser window**. If you activate an in-text hyperlink, the system will act on the element according to its type, with the same result as if you double-click on the element in the Browser window. For example, if you click on the hyperlink to a Document Artifact element, the document, specification or matrix that the Artifact represents opens; if you click on a hyperlink to a Chart element, its

	'Properties' dialog opens at the chart 'Source' page.
A file	'File' is the default setting for the 'Type' field. In the 'Address' field, type or paste the file path and file name to access, or click on the ... button to browse for the file. (If you click on the 'Type' **drop-down arrow** and select 'File', the browser displays automatically.) Click on the **OK button** to create the hyperlink. If you click on a link created through the in-text 'Hyperlink Details' dialog, the file opens in an editor. In the element 'Hyperlink Details' dialog you can specify whether the file will be opened for editing or just for viewing.
A Help topic	In the 'Type' field, click on the **drop-down arrow** and click on 'Help'. In the 'Address' field, type or copy the **.htm** file name of the Enterprise Architect Help topic to link to; for example, *add_a_legend.htm*. You can get this address by displaying the Help topic and copying the contents of the address field at the top of the screen.

	Click on the **OK button** to create the hyperlink. If you activate the link, the Help topic opens from the Sparx Systems website.
An Image Manager Image	In the 'Type' field, click on the **drop-down arrow** and click on '**Image Manager**'. The 'Image Manager' dialog displays, in which you locate and click on the required image name. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the **View Image window** displays, showing the selected image. In a generated report, the image is also displayed instead of the link.
A Learning Center topic	In the 'Type' field, click on the **drop-down arrow** and click on '**Learning Center**'. The path of the default Learning Center topic (*Use the Learning Center*) displays in the 'Address' field. Click on the 'arrow-head' symbols in the path to display the contents of each child section and browse to the topic you want to link to. Click on the **OK button** to create the hyperlink.

	If you activate the link, the **Learning Center view** opens, displaying the topic.
A Relationship Matrix profile	In the 'Type' field, click on the **drop-down arrow** and click on 'Matrix'. The 'Select a Matrix Profile' dialog displays; click on the drop-down arrow and on the required profile name. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the **Relationship Matrix** displays with all fields set according to the selected profile.
An Operation	In the 'Type' field, click on the **drop-down arrow** and click on 'Operation'. The 'Set Operation' browser displays, in which you locate and click on the required operation. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the operation is highlighted in the **Browser window**.
A Package	In the 'Type' field, click on the **drop-down arrow** and click on 'Package'. The 'Find Package' browser

	displays, in which you locate and click on the required Package. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the Package is highlighted in the **Browser window**.
A Model Search	In the 'Type' field, click on the **drop-down arrow** and click on 'Search'. The 'Select a Search' dialog displays, in which you specify the search term, the search category that contains the search, and the name of the search itself. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the **Find in Project view** displays with the results of the executed search.
A Simulation	In the 'Type' field, click on the **drop-down arrow** and click on 'SimRun'. Click on the **OK button** to create the hyperlink. If you activate the link, a suite of Simulation windows display, and a simulation is executed on the current

	diagram.
A Team Library Posting	In the 'Type' field, click on the **drop-down arrow** and click on 'Team Document'. The 'Select a Topic to Link' browser displays, in which you locate and click on the required review document. Click on the **OK button** to return to the 'Hyperlink Details' dialog, and again to create the hyperlink. If you activate the link, the Team Document view displays, showing the Linked Document. The **Team Library window** also displays, showing where the document came from and providing the opportunity to select and display related documents.
A web site	In the 'Type' field, click on the **drop-down arrow** and click on 'Web Site'. In the 'Address' field, type or paste the web address of the site. Click on the **OK button** to create the hyperlink. If you activate the link, the selected web page displays in a separate window.

Notes

- To activate a Hyperlink element, double-click on it; to activate an in-text link, press **Ctrl** as you click on it
- When creating a hyperlink, for most target objects the system automatically opens a browser to populate the 'Address' field; when you edit the hyperlink, use the ... icon at the end of the field to display the browser and change the target object

In-place Editing Options

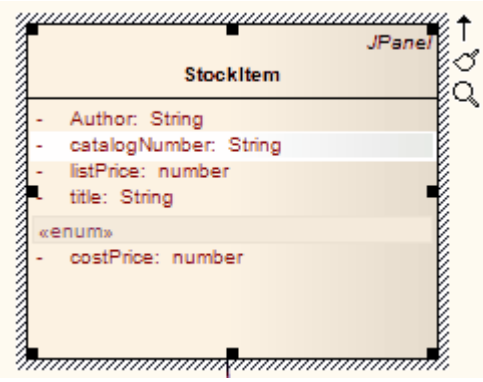
This topic explores the tasks that can be performed using in-place editing of elements on a diagram in Enterprise Architect. The tasks include:

- In-place Editing Tasks
- Edit Element Item Name
- Edit Feature Stereotype
- Edit Feature Scope
- Edit Attribute Keyword
- Edit Operation Parameter Keyword
- Insert Operation Parameter
- Edit Parameter Kind
- Edit Custom Compartment
- Insert New Feature (Attribute or Operation)
- Insert Maintenance Feature
- Insert Project Features
- Insert Testing Features
- In-place Editing Tasks

In-place Editing Tasks

This topic explains how to edit and work with some properties of an element directly in the diagram.

Use In-place Editing Options

Step	Action
	Open the diagram containing the element.
	Click on the element, and on the item to manipulate within the element. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Edit and manipulate the items in the element, either by pressing the appropriate keyboard keys or by right-clicking on the highlighted item and

	choosing a task from the 'Element Items' context menu. The available commands are listed in this table. Not all options are available for every type of item.

Options

Menu option...	Action
Extensions	Display a submenu of extension products; click on one to display a further menu of operations to perform within the selected product.
Edit Selected	Change the name, scope or stereotype of the element or element item. Shortcut: **F2**
Insert New After Selected	Insert a new item in the element. Shortcut: **Insert key**
View	Display the dialog containing details of

Properties	the element. Shortcut: **Enter key**
Find in Project Browser	Locate the item in the **Browser window**.
Open in Specification Manager	If the element is a Package element, and the selected item is a subPackage, you can select this option to open and edit the subPackage in the **Specification Manager**.
Add Attribute	Add an attribute to the element. Shortcut: **Ctrl+Shift+F9**
Add Operation	Add an operation to the element. Shortcut: **Ctrl+Shift+F10**
Add Other	Insert a feature on the specific element item, such as Maintenance features and Testing features. Shortcut: **Ctrl+F11**
Delete Selected from Model	Delete the selected item from the model. Shortcut: **Delete key**

View Source code	Display the source code for the element, in the default external editor. Shortcut: **F12**
Visual Analyzer	Set a breakpoint on a highlighted operation (including a breakpoint, start recording marker, end recording marker or stack auto-capture marker.)
Set Type	Set a classifier type for the selected item. Shortcut: **Ctrl+L**
Navigate Diagram Selection	Navigate the diagram between elements without having to use the mouse. Shortcut: **Ctrl+Shift+arrow**
Highlight Element	Toggle element highlight option on and off. Shortcut: **Shift+Enter**

Keys

Other keyboard options that are available while editing element attributes or operations in a diagram include:

Shortcut	Description

Enter key	Accept current changes.
Ctrl+Enter	Accept current changes and open a new slot to add a new item.
Esc	Abort the edit, without save.
Tab key or Shift+Tab	Move the cursor between segments of a feature definition.
Shift+F10	Display the context menu for in-place editing.
Ctrl+Shift+Space	Invoke the 'Select <Item>' dialog.
Ctrl+Space	Display an autocompletion list for a feature classifier.

Notes

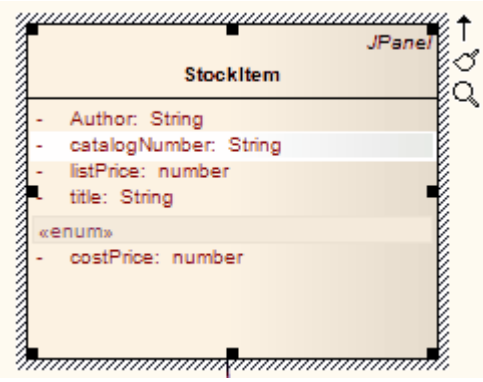
- Where an in-place editing menu command has a keyboard alternative, if the selected item happens to be off-screen when you press the keys, the diagram automatically scrolls to show the whole element, so that you can see

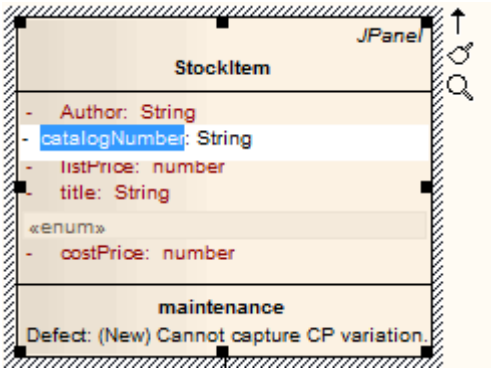
what you are changing

Edit Element Item Name

You can edit the name of an element, operation or attribute directly on the diagram using in-place editing.

Edit element or feature name

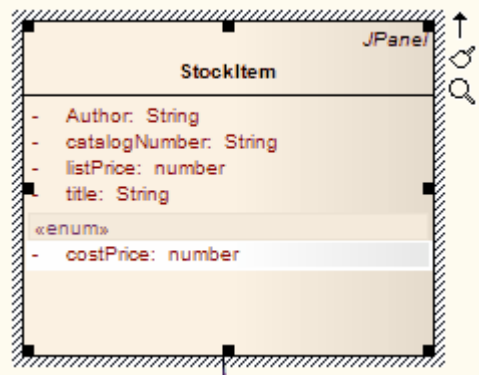
Step	Action
1	Open the diagram containing the element.
2	Click on the element and on the name to change within the element. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
3	Right-click on the item. The context menu displays.
	Select the 'Edit Selected' menu option, or

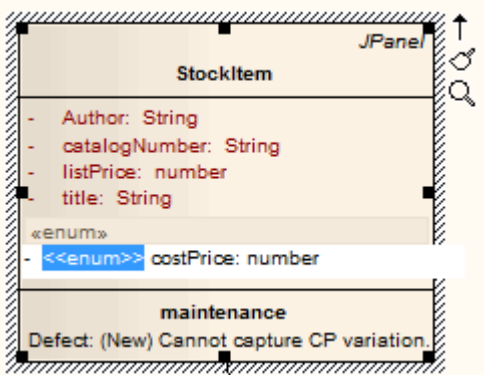
4	press **F2** to enable you to edit the item directly from the diagram. The name of the attribute or operation is highlighted.
5	Delete or type over the name. 
6	Press the **Enter key** to accept the change, or **Esc** to cancel the change.

Edit Feature Stereotype

You can use in-place editing to edit a feature stereotype directly on a diagram.

Change the stereotype of an operation or attribute

Step	Action
	Open the diagram containing the element.
	Click on the element, and on the item to edit within the element. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Right-click on the item. The context menu displays.

	Select the 'Edit Selected' menu option (or press **F2**) to enable you to edit the attribute or operation directly from the diagram. The name of the item is highlighted.
	Move the cursor to the position before the name or within the existing attribute or operation stereotype (denoted by «stereotype name»). 
	Delete or type over the previous name to change the stereotype name of the attribute or operation.
	Press the **Enter key** to accept the change or **Esc** to cancel the change.

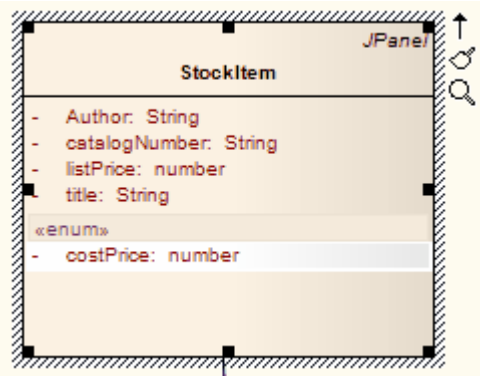
Notes

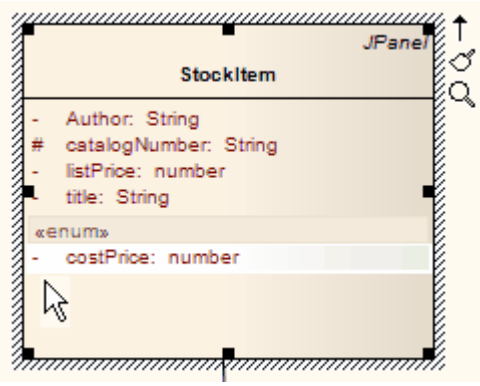
- You can assign multiple stereotypes by including a comma-separated list inside the stereotype markers

Edit Feature Scope

You can rapidly edit the scope of an attribute or operation directly on a diagram, using in-place editing.

Change the scope of a feature

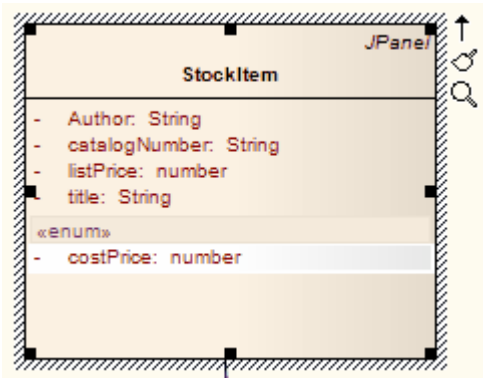
Step	Action
	Open the diagram containing the element.
	Click on the element and on the item to edit within the element. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Right-click on the item. The context menu displays.
	Select the 'Edit Selected' menu option (or

	press **F2**) to enable you to edit the attribute or operation directly from the diagram. The name of the item is highlighted.
	Move the cursor to the scope of the item and delete the previous entry. 
	Reassign the entry by typing in one of these symbols: • + indicates that the scope is Public • - indicates that the scope is Private • ~ indicates that the scope is Package • # indicates that the scope is Protected
	Press the **Enter key** to save the change, or **Esc** to cancel the change. The diagram is updated to reflect the changes (also see the catalogNumber attribute in the screen illustrations).

Edit Attribute Keyword

You can add features such as attribute keywords and classifiers directly to an element, using the Element Keywords and Classifiers menu. This enables you to rapidly assign details element item by element item, directly from a diagram.

Add Features directly to an element

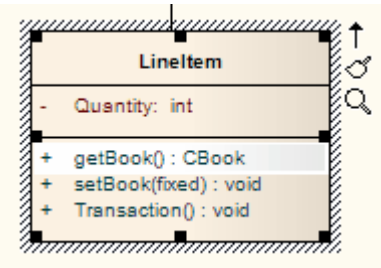
Step	Action
	In Enterprise Architect, open the diagram containing the element.
	Click on the element, and on the attribute to edit within the element. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 

	Right-click on the item. The context menu displays.
	Select the 'Edit Selected' menu option (or press **F2**) to enable you to edit the attribute directly from the diagram. The name of the attribute is highlighted.
	Right-click on the attribute name to display the context menu.
	From the context menu, you can: • Change the attribute classifier to static or fixed - select the 'static' or 'fixed' menu options as appropriate; the diagram is updated to reflect the changes • Display the Class properties - click on the 'Goto Definition' menu option; Enterprise Architect locates the Class in the **Browser window** and opens its 'Properties' dialog If the data type is a raw data type, Enterprise Architect displays the message: *The data type is a raw data type*.

Edit Operation Parameter Keyword

You can directly edit operation classifiers by element, using the in-place editing menu. This enables you to rapidly assign parameter keywords.

Directly edit operation classifiers by element

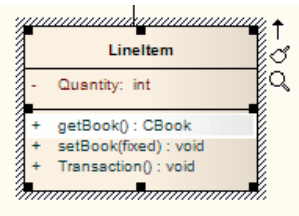
Step	Action
	Open the diagram containing the element.
	Click on the element, and on the operation to edit within the element. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Right-click on the item. The context menu displays.
	Select the 'Edit Selected' menu option (or

	press **F2**) to enable you to edit the operation directly from the diagram. The name of the operation is highlighted.
	Right-click on the data type of a parameter to display the context menu.
	From the context menu you can: • Change the operation classifier by clicking on the appropriate menu option - 'static', 'isquery', 'abstract' or 'fixed'; the diagram is updated to reflect the changes • Display the Class properties - click on the 'Goto Definition' menu option If the data type is 'Class', Enterprise Architect locates the Class in the **Browser window** and opens its 'Properties' dialog If the data type is a raw data type, Enterprise Architect displays the message *This data type is a raw data type* If the data type is not defined in the model, the message is: *The data type is not defined in the model*

Edit Parameter Kind

You can edit operation parameter kinds such as (in), (inout) and (out) directly from a diagram, element by element, using the Element Keywords and Classifiers menu. This enables you to rapidly assign the parameter directly from a diagram.

Edit operation parameter kinds directly from a diagram

Images	Action
	1. In Enterprise Architect, open the diagram containing the element.
	2. Click on the element, and on the operation to edit within the element. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected.
	3. Right-click on the item. The context menu displays.
	4. Select the 'Edit Selected' menu option

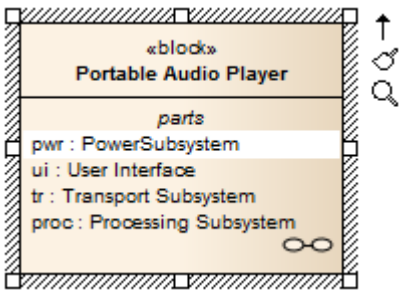
	(or press **F2**) to enable you to edit the item directly from the diagram. The name of the item is highlighted.
	5. Right-click on the item name to display the context menu.
	6. Select the appropriate menu option for the parameter kind value: (in), (inout) and (out). The diagram is updated to reflect the change.

Edit Custom Compartment

Items listed within a Custom Compartment can also be in-place edited. They have a similar in-place editing menu as other compartment items such as Operations and Attributes within a Class.

For example: a **SysML Block** element can have a Parts custom compartment. In-place editing can be performed upon the Parts listed within this compartment.

In-place edit an item in a Custom Compartment

Step	Action
1	Open the diagram containing the element.
2	Click on the element and on the item to change within the custom compartment. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 

3	Right-click on the item. The context menu displays.
4	Select the 'Edit Selected' menu option, or press **F2** to enable you to edit the item directly from the diagram. The name of the item is highlighted.
5	Delete or type over the name.
6	Press the **Enter key** to accept the change, or **Esc** to cancel the change.

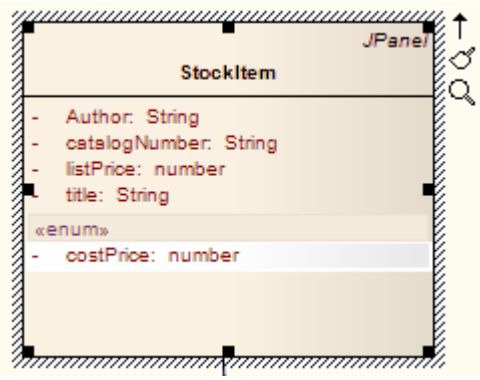
Notes

- Custom Compartments such as Parts and Ports within a **SysML Block** also provide a Set Type command on the right-click menu to set the classifier type of the selected item.

Insert New Feature

You can insert a new element feature directly on a diagram, using in-place editing.

Add attributes and operations to a Class diagram element

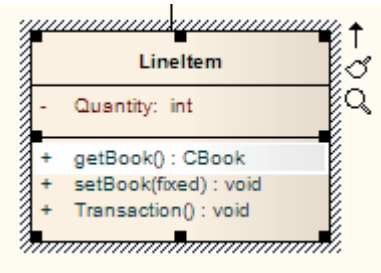
Step	Action
	In Enterprise Architect, open the diagram containing the element.
	Click on the element and, within the element, on the item after which to insert the operation or attribute. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Either press the **Insert key** or right-click

	on the selected element item to display the context menu, and select the 'Insert New After Selected' menu option Enterprise Architect inserts a new data line in the diagram, underneath the selected item.
	Type in the relevant information for the attribute or operation. Use the **Tab key** and **Tab+Shift** keys to move the cursor through the segments of the attribute or operation, and select the classifier from either the: • Autocompletion list (press the **Ctrl+Space** keys) or • Select <Item> dialog (press the **Ctrl+Shift+Space** keys)
	Press the **Enter key** to accept the change or **Esc** to cancel the change. The diagram is updated to reflect the changes.

Insert Operation Parameter

You can add operation parameters to an operation through the in-place editing options, using hotkey commands or menu shortcuts.

Add parameters to operations in a Class diagram element

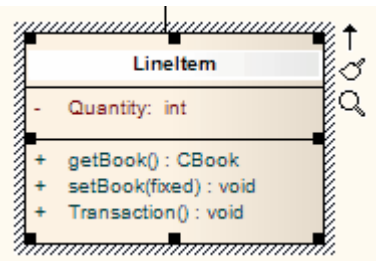
Step	Action
	Open the diagram containing the element.
	Click on the element, and on the operation to update within the element. The item line is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Press **F2**, or right-click on the selected item and select the 'Edit Selected' option.

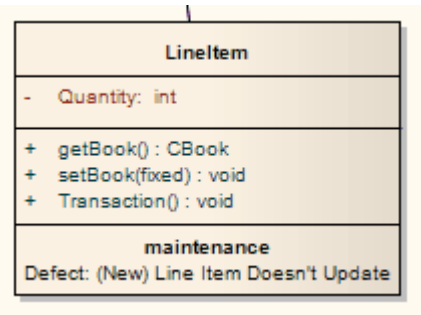
	Move the cursor inside the parameter brackets and type the parameter name, followed by a colon (for example, bks: for a vector containing books).
	Give the parameter a type. Place the cursor after the colon at the end of the name and add the classifier; either: • Press **Ctrl+Space** to invoke the classifier autocompletion list • Press **Ctrl+Shift+Space** to select a classifier from the 'Select <Item>' dialog or • Click the right mouse button to display the inline editing options context menu and select the 'Insert Classifier' option The 'Select <Item>' dialog displays.
	Press the **Enter key** to accept the change or **Esc** to cancel the change. The diagram is updated to reflect the changes.

Insert Maintenance Feature

You can quickly insert a new maintenance item directly on a diagram, using in-place editing.

Assign maintenance details directly to an element from a diagram

Step	Action
	Open the diagram containing the element.
	Click on the element name. The name is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Either press **Ctrl+F11** or right-click on the highlighted name and select the 'Add Other' option. The 'Insert Feature' dialog displays.

	Click on the appropriate radio button option to associate the required maintenance feature with the element item.
	Click on the **OK button**. The '<Maintenance Feature> details for <element>' dialog displays.
	Complete the fields to define the maintenance activity, and then click on the **Apply button**. To create a subsequent maintenance activity of this type, click on the **New button**.
	When you have defined all of the maintenance activities of this type, click on the **OK button**. The maintenance details are added to the element. 

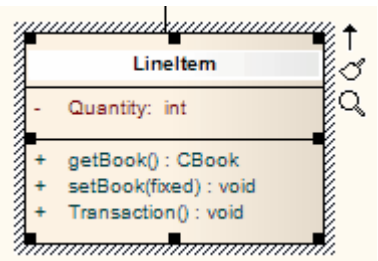
Notes

- To ensure that the maintenance items are visible in the diagram element, as shown in step 7, select the 'Maintenance' checkbox on the 'Elements' tab of the 'Properties' dialog for the diagram

Insert Project Features

You can quickly insert a new project item directly into a diagram, using in-place editing.

Assign project details directly to an element from a diagram

Step	Action
	Open the diagram containing the element.
	Click on the element name. The name is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Either press **Ctrl+F11** or right-click on the highlighted name and select the 'Add Other' option. The 'Insert Feature' dialog displays.

	Click on the appropriate radio button to associate the required project feature with the element item.
	Click on the **OK button**. The '<Project Feature> details for <element>' dialog displays for a Decision or Event item. The '<Project Feature>' dialog displays for a Risk, Metric or Effort item.
	For Decision and Event items: • Complete the fields to define the project activity, and then click on the **Apply button** • If creating a subsequent project activity of this type, click on the **New button**
	When you have defined all of the project activities of this type, click on the **OK button**. The project details are added to the element.

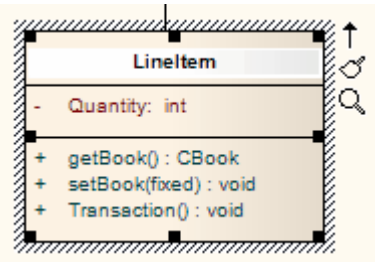
Notes

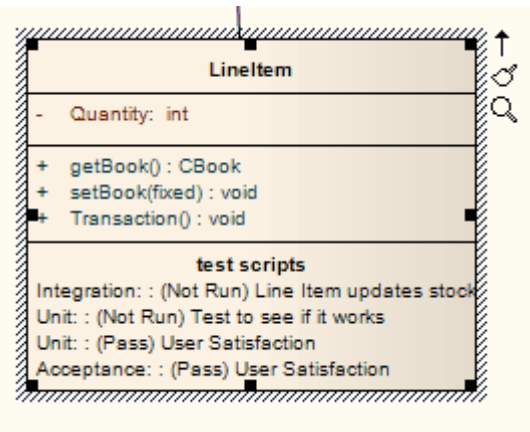
- To ensure that the project items are visible in the diagram element, as shown in step 7, select the 'Project' checkbox on the 'Elements' tab of the 'Properties' dialog for the diagram

Insert Testing Features

You can add test records such as Unit, Integration, System, Acceptance, Inspection and Scenario tests directly to an element displayed on a diagram.

Add testing features to an element directly from a diagram

Step	Action
	Open the diagram containing the element.
	Click on the element. The element name is highlighted in a lighter shade (the default is white), to indicate that it has been selected. 
	Either press **Ctrl+F11** or right-click on the highlighted name and select the 'Add Other' option The 'Insert Feature' dialog displays.

	Click on the appropriate radio button option to associate the required testing feature with the element.
	Click on the **OK button**. The 'Test Details' dialog opens.
	Complete the fields to define the test activity, and then click on the **Apply button**. The test is added to the element.
	To create a subsequent test activity of this type, click on the **New button**. 

Notes

- To ensure that the test items are visible in the diagram

element, as shown in step 7, select the 'Testing' checkbox on the 'Elements' tab of the 'Properties' dialog for the diagram

Non-printable Elements

When you intend to generate a report that depicts diagrams from your model, you might decide that you do not want to show certain elements on a diagram in the report. You might have, for example:

- Notes and Text elements containing short pieces of information or explanations
- Artifact elements containing standards or instructions in Linked Documents
- Any other element that is not relevant to the purpose or subject of the report

You can exclude such elements (with their connectors) from being printed in any depiction of the diagram in a report, by manipulating the 'Printable' status of each non-relevant element. Conversely, you can force the inclusion of these non-printable elements in the printed diagram, by turning off the 'Hide non-printable objects' option in report generation.

Configure the Printable Attribute

All elements added to a diagram have the status 'Printable' by default. To turn this off and make an element non-printable (or turn it back on again) right-click on the element and click on the 'Printable' option.

You can turn this option on or off for multiple elements, by

selecting the elements and right-clicking on one of them to display the context menu, then clicking on the option.

Activate Printable Option for Reports

You can control the printing of non-printable elements on depictions of diagrams in reports, through the 'Options' page of the 'Document Generation' dialog.

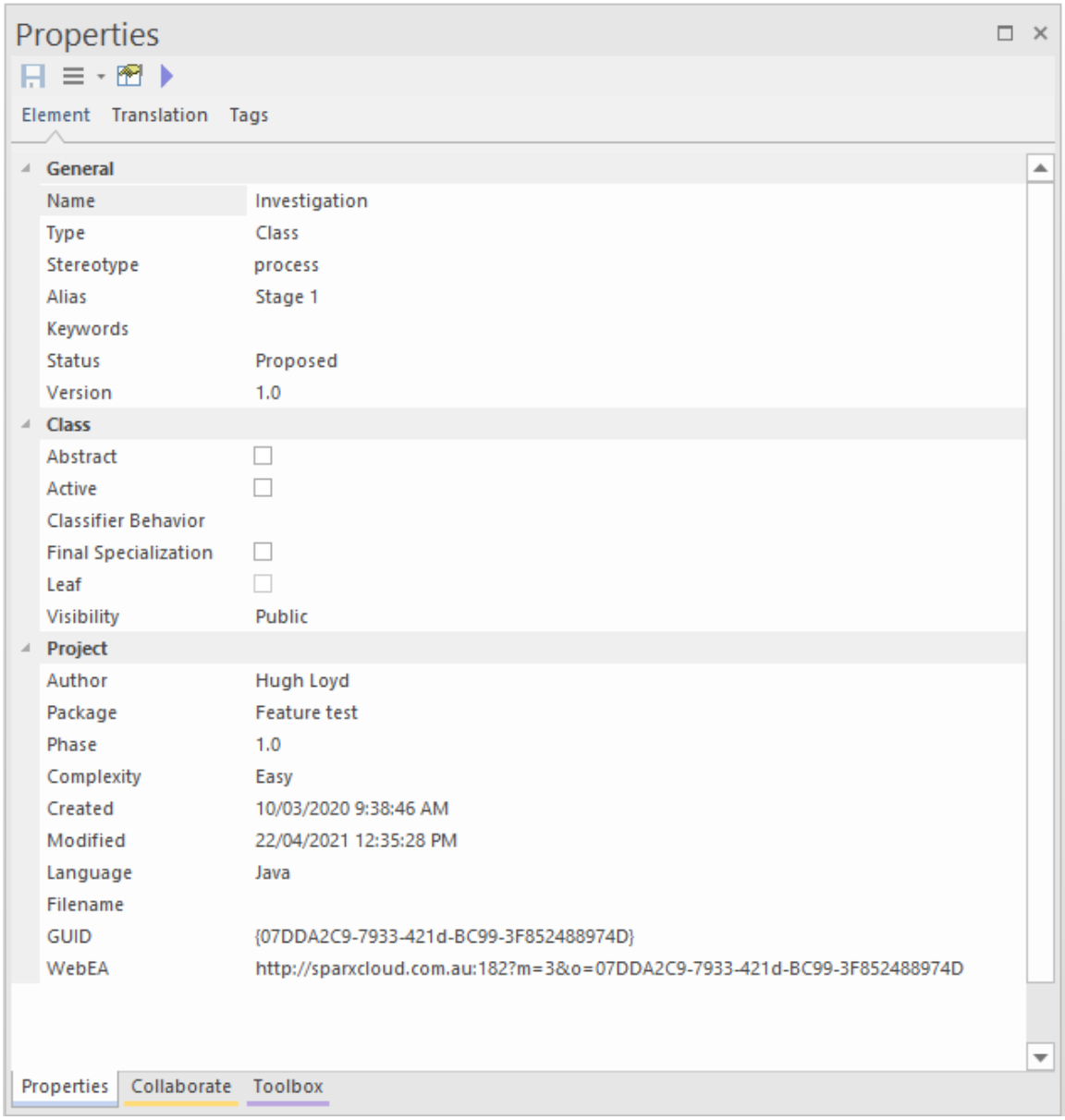
Option	Action
Using in Custom Reports	Select the parent Package or element for the diagram, and press **F8**; set up your report generation parameters as required. On the 'Options' page, the 'Hide non-printable objects' checkbox defaults to selected, to omit all elements that have the 'Printable' option turned off from depictions of diagrams in the report. If you want to include non-printable elements in the diagrams in the report, click on the checkbox to clear it.
Using in Document Templates	The 'Hide non-printable objects' option is a global, registry, setting and cannot be turned off in document templates or in document generation through the **Automation Interface**.

Notes

- Turning off the 'Printable' option for an element also hides the element and its connectors when you print the diagram, print to PDF and save an image of the diagram

Properties Window

The docked **Properties window** provides a convenient and immediate way to view and edit the properties of a wide range of modeling objects and features such as diagrams, elements, connectors, attributes, operations, receptions, responsibilities, maintenance items, project items and tests. The tabs and fields displayed depend on the selected object; this illustration shows the 'Element' tab of the window, which displays when you click on a Class element.



When you click on an object in the **Browser window** or a diagram, the Properties window immediately shows that object's properties, so you can swiftly display the properties of a sequence of objects of different types - element, then attribute, connector and diagram - on the same window without having to open and close separate dialogs.

Each iteration of the window shows the general properties, such as name, object type and status, and properties appropriate to the stereotype, technology, object type and project management. In many cases there is a series of

additional tabs appropriate to the specific type of object displayed. These are illustrated in the Help topic describing the window for each selected object type.

To complete fields you can select values from drop-down lists and work through short chains of property or parameter dialogs directly from the Properties window. Your work with modeling objects becomes quick, precise, comprehensive and convenient, through the use of a single area of your work space.

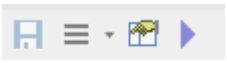
If you are working with an external data source in a Cloud-connected model, you can also view the details of an external data item on a variant of the Properties window, with an 'External' tab. See the *External Item Details* Help topic.

Access

Ribbon	Start > Desktop > Design | Properties Design > Element > Editors | Properties
Keyboard Shortcuts	**Ctrl+2** **Ctrl+Enter** **Alt+1** | Properties **Alt+5** | Properties

Properties Window Options

The **Properties window** has a toolbar providing a number of options for operating on the object you have displayed in the window, as described in this table.



Option	Description
Save	Click on this icon to save any changes you have made to the fields on any tab of the **Properties window**.
Hamburger	Lists several options for acting on the selected object; several of these options apply only when you are looking at element properties. • Find in Project Browser - Locates and highlights the current object in the **Browser window** • Element Properties - If you are displaying the properties of an element, displays the 'Properties' *dialog* for the element • Diagram Properties - If you are displaying the properties of a diagram, displays the 'Properties' *dialog* for the

	diagram • Operations - If the current element is capable of having operations, opens the **Features window** at the 'Operations' tab, to show the operations of the element. • Attributes - If the current element is capable of having attributes, opens the Features window at the 'Attributes' tab, to show the attributes of the element. • Receptions - If the current element is capable of having Receptions, opens the Features window at the 'Receptions' tab, to show the Receptions of the element • Set Parents - If the current element can have interfaces and parent elements, opens the 'Set Parents and Interfaces' dialog • Show Groups - Select or deselect this option to partition the element Properties into groups (such as 'General Settings', 'Project' and 'Advanced'), or present them all in one continuous list. • Help - Select this option to display the Help topic appropriate to the tab of the **Properties window** that you have selected

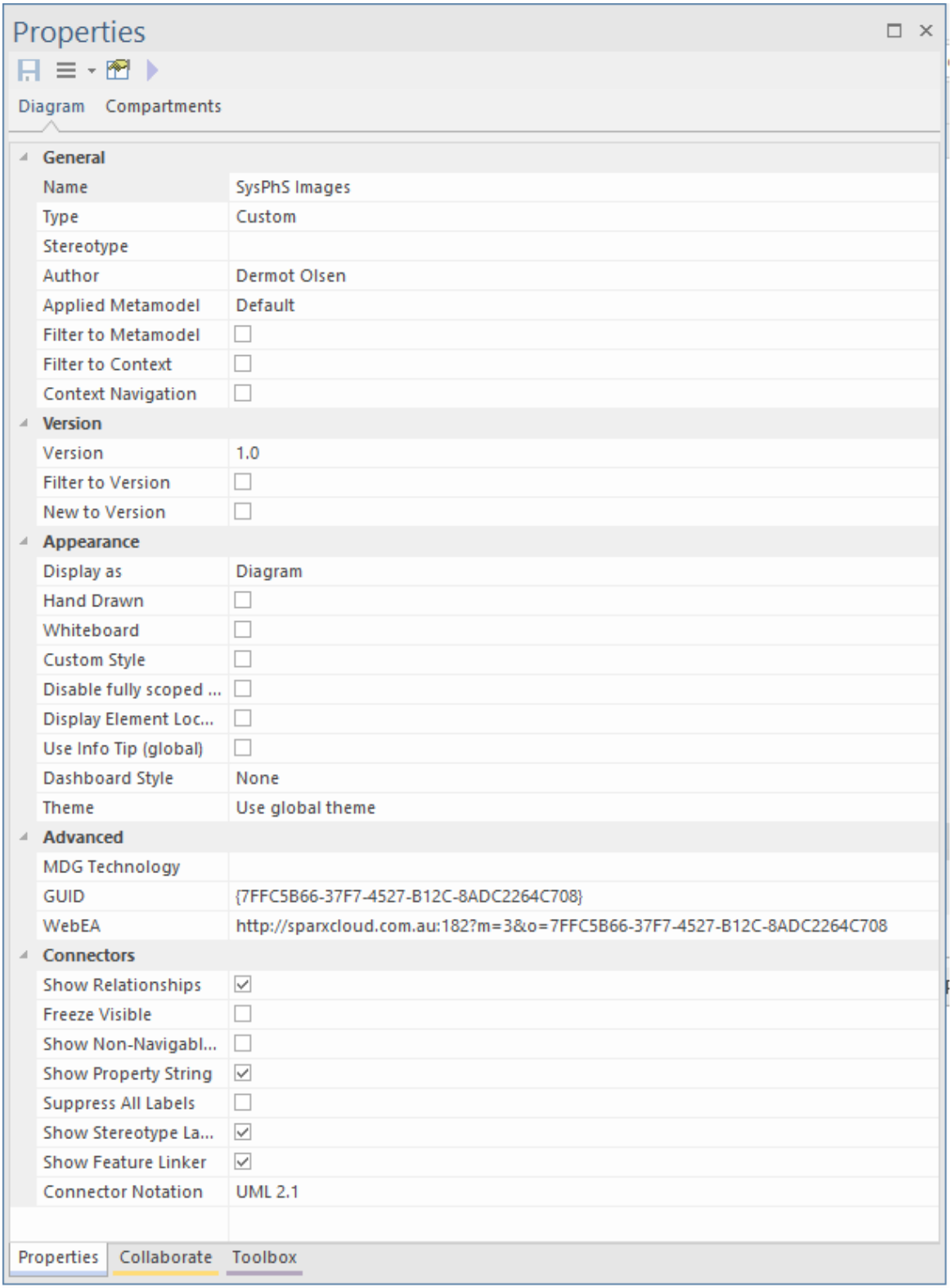
Switch Display	Click on this option to open the 'Properties' *dialog* for the selected object.
Special Action	Click on this icon to display the appropriate special action or special properties dialog for the selected object; if there is no special action display, the standard 'Properties' dialog displays.

Notes

- When you click on a field name, a brief summary of that field displays at the bottom of the **Properties window**, unless you have selected the 'Hide Properties Info Section' checkbox on the 'Window Behavior' page of the 'Preferences' dialog
- If you click on the field value for an editable field, either a **drop-down arrow** or a  button displays that enables you to select or browse for a different value; one of the values offered might display a more advanced list or a dialog for adding new objects or selecting multiple objects, as the 'Stereotype' field does

Properties Window for Diagrams

The docked **Properties window** provides a convenient and immediate way to view and edit properties of modeling objects, including diagrams. When the Properties window is open and you click on an open diagram, the window defines the diagram, displaying the common properties and providing an associated 'Compartments' tab.



As you review the properties for the diagram, you can edit the values by overtyping them, or by clicking on the **drop-down arrow** or browse button to select alternative values.

If you click on a diagram name in the **Browser window**, you can edit some of the common properties in the Properties window; however, most of the fields are available for editing only when the diagram is open and selected.

Access

Ribbon	After selecting the **Properties window** using one of these methods, click on the first required diagram. Start > Desktop > Design > Properties or Explore > Portals > Windows > Properties > Properties
Keyboard Shortcuts	**Ctrl+2** or **Ctrl+Enter** **Alt+1** > Properties

Properties Window Tabs

Tab	Description
Diagram Tab	The 'Diagram' tab provides a number of checkbox fields that make it simple to

	define what the diagram shows and how the objects are presented. You can also tailor certain fields that were assigned default values when the diagram was created. For further details, see the *Diagram Tab* Help topic. You can also define properties on the diagram's 'Properties' dialog.
Compartments Tab	This tab provides a list of the simple compartments that you can display in elements included in the current diagram. Some types of element are automatically displayed in rectangular notation, whilst others might have to be set manually in rectangular notation to show the compartments. Click the check box against each compartment to show in the elements on the diagram: • Attributes • Operations • Tags • Requirements • Constraints • Testing • Maintenance • **Discussions**

	• Reviews • Resources • Package Contents • Project • Notes • Receptions For further information on these compartments and others you might set on the diagram, see the *Compartments* and *Define Element Characteristics* Help topics.

Diagram Tab

The 'Diagram' tab of the **Properties window** provides a number of fields and options you can set to define what the diagram shows and how the objects are presented.

Access

Ribbon	Click on the required diagram and then display the **Properties window** using one of these methods: Start > Desktop > Design > Properties > Diagram Design > Element > Editors > Properties > Diagram
Keyboard Shortcuts	**Ctrl+2** > Diagram **Alt+1** > Properties > Diagram **Alt+5** > Properties > Diagram

Diagram Properties

Field	Description

Name	Defaults to the name of the parent Package as the name of the diagram. If necessary, you can edit the name or overtype it with a new name.
Type	Displays the diagram type. You cannot edit this field.
Stereotype	(Optional) Type in the name of a diagram stereotype to apply, or click on the **drop-down arrow** and select a stereotype from the list. You can define stereotypes to select here using the 'Configure > Reference Data > UML Types' ribbon option, selecting the 'Stereotypes' page and creating stereotypes with a 'Base Class' of 'Diagram'.
Author	Defaults to the name of the person who created the diagram. If necessary, you can overtype this or click on the **drop-down arrow** and select an alternative name from the list.
Applied Metamodel	Displays the name of the diagram View or specialization. If necessary, click on the **drop-down arrow** at the right of the

	field and select a different View.
Filter to Metamodel	Select this checkbox to filter the diagram to 'fade' all elements that are not derived from the same View as the selected element.
Filter to Context	Select this checkbox to filter the diagram to 'fade' all elements that have no relationships with the selected element (the context element), so that only those in the relationship group are apparent.
Context Navigation	This option operates on the 'Context' tab of the **Browser window**, and Package elements in the diagram. When you select the checkbox and click on a Package element, the Package becomes the focus of the 'Context' tab and you can click on and expand the Package contents in the tab. If you clear the checkbox, clicking on the diagram content has no effect on the 'Context' tab.
Version	Displays the version number of the diagram. This defaults to 1.0 when the diagram is created, and you update the version manually according to the

	conventions applied in your workplace.
Filter to Version	Select this checkbox to filter the elements on the diagram and mute those that do not have the same version number as the diagram. This is of particular value when you are working on the elements of a cloned diagram and want to distinguish between elements that have been cloned to match the diagram and Package structure, and elements that are still the same version as the source. You can use the facility to check more generally which elements are not of the same version as the diagram, such as when you drag elements from the **Browser window** as links to local or, more especially, external elements.
New to Version	Select this checkbox to set the version of every new element added to the diagram to the same version as the diagram. Elements dragged and dropped from the **Diagram Toolbox** or added using the 'New Element' dialog will have the same version as the diagram. The version value of elements dragged and dropped from the **Browser window** will not be updated.

Display as	Use this field to display an alternative view of the diagram. Click on the **drop-down arrow** and select: • Diagram - to show the default graphical view of the diagram • Specification - to show the elements on the current diagram in the **Specification Manager** • List - to show the diagram as a list of elements (**Diagram List**) • Gantt - to show the elements on the diagram and resource allocations against them in a Gantt chart • Relation Matrix - to show a graphical relationship matrix for the elements on the diagram • Construct View - to show the elements on the diagram and project management information attached to them in a grid view
Hand Drawn	Select this checkbox to display the diagram contents as if they had been roughly drawn by hand.
Whiteboard	Select this checkbox to display the diagram as if it had been drawn on a whiteboard, with white fill and

	background.
Custom Style	Select this checkbox to turn on diagram custom style. Clear the checkbox to revert to normal notation. Changes to this checkbox are reflected in the 'Custom Draw' checkbox in the diagram 'Properties' dialog, and vice versa.
Disable fully scoped object names	Select this checkbox to disable the use of fully scoped object names for elements in this diagram.
Display Element Lock Status	Select this checkbox to add a locking indicator (or) outside the top left corner of each locked element on the diagram. If the element is: • Fully locked or locked by another user, the indicator is red • Locked by you or by another user in the same user group as you, the indicator is blue • Not locked, no indicator displays
Use Info Tip (global)	For all diagrams in the model, display a tooltip containing element property information when you move the cursor over an element in the diagram. Setting or

	clearing this checkbox for one diagram sets or clears the checkbox in every other diagram in the model. If this checkbox is not selected, diagram tooltips are not displayed. The type of property information to display is defined in the 'Tooltips' panel at the bottom of the 'Diagram' tab of the 'Preferences' dialog.
Dashboard Style	Designed to operate on Dashboard (Chart) diagrams, to lay out Chart elements in a logical sequence. Click on the **drop-down arrow** and select the style to apply. This option will operate on diagrams of types other than Dashboard, but the effect might not be as useful.
Theme	Click on the **drop-down arrow** and select the theme to apply to the current diagram. The field defaults to the value 'Use global theme', which applies the theme selected on the 'Diagram > Theme' page of the model 'Preferences' dialog.
MDG Technology	If the diagram is part of a model created for an MDG Technology, this field displays the name of that technology

GUID	Read-only field, displaying the GUID of the selected diagram.
WebEA	If your organization uses WebEA on the Pro Cloud Server, it is likely that the 'Advanced' section of the 'Diagram' tab will have this field automatically filled with the https address of the diagram for access by WebEA; this field is enabled by the Project Administrator, setting the model's web address in the 'URL' field of the 'Cloud' page of the 'Manage Project Options' dialog. The WebEA diagram address is a composite of the model URL, the model number in WebEA, and the diagram's GUID.
Show Relationships	Defaults to selected to show relationships on the diagram. To hide all relationships on the diagram, click on the checkbox to clear it.
Freeze Visible	Click on the checkbox to select it, to freeze the diagram to show only the connectors that are visible on this diagram at this point. Connectors that are subsequently created on other diagrams

	between the same elements are not added to this diagram until the option is deselected and the diagram is refreshed.
Show Non-Navigable Ends	Click on the checkbox to select it, to indicate when Association Ends are not navigable; a cross is shown on each non-navigable end of an Association connector.
Show Property String	Click on this checkbox to select it, to show the property strings (constraint text) for connectors.
Suppress All Labels	Click on the checkbox to select it, to hide all connector labels on the diagram.
Show Stereotype Labels	Click on the checkbox to select it, to show a label on each connector indicating the connector's stereotype. Click on the checkbox again to clear it, to hide these stereotype labels.
Connector Notation	Click on the **drop-down arrow** and select the required connector notation: • UML 2.1 - use the standard UML 2.1 notation for connectors (the default) • Information Engineering - use the Information Engineering (IE)

	connection style • IDEFX1 - use the Integrated Definition Methods IDEFX1 connection style

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Update Diagrams' permission to update diagram properties

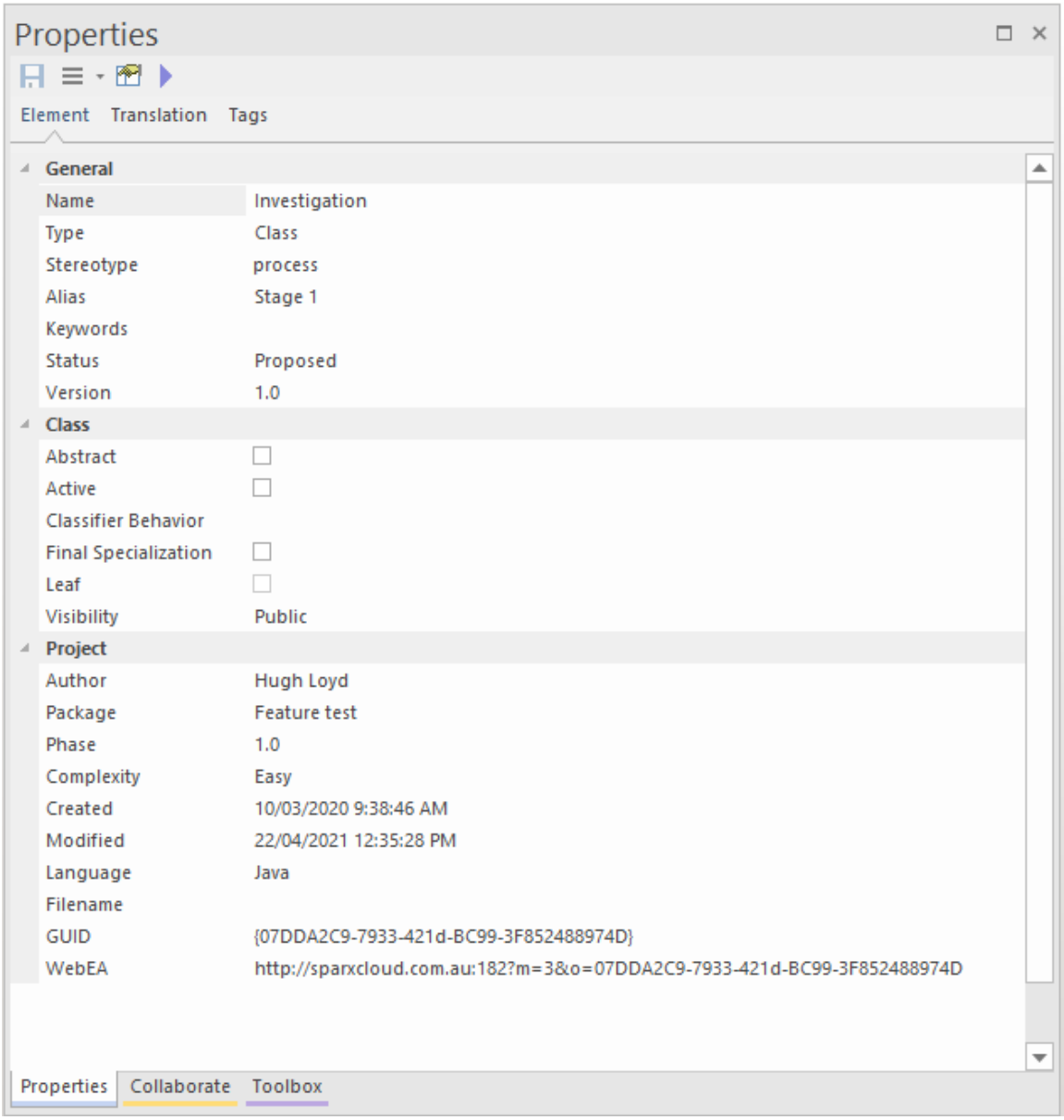
Properties Window for Elements

The docked **Properties window** provides a convenient and immediate way to view and edit properties of modeling objects such as elements. When the Properties window is open and you click on an element in a diagram or in the **Browser window**, the Properties window displays the general properties and usually provides specialized tabs appropriate to the particular type of element. For example:

- Port and Part elements have a 'Property' tab and a 'Redefined/Subsetted' tab
- Class and Signal elements simply have an 'Element' tab, a 'Translation' tab and a 'Tags' tab
- Objects have a 'Run States' tab
- Activity elements have 'Behavior', 'Parameters', and 'Partitions' tabs
- Action and Invocation elements (depending on their type) have 'Action', 'Trigger', 'Behavior', 'Arguments' and 'Call' tabs
- Action Pins have a 'Pin' tab
- Checklists have a 'Checklist' tab
- System Boundaries have a 'Boundary' tab on which you define the element appearance

The specialized tabs are described in the Help where each specific type of element is discussed. Not all tabs and fields on the Properties window are currently documented for all element types. The principal tab for elements is the

'Element' tab.



For information on this tab, please refer to the *Element Tab* Help topic. The 'Translation' tab is described in the *Translation Facilities* Help topic, and the 'Tags' tab is described in the *Tagged Values* Help topic.

As you review the properties for an element, you can edit the values by overtyping them, or by clicking on the **drop-down arrow** or browse button to select alternative values.

Access

Ribbon	After selecting the **Properties window** using one of these methods, click on the first required element. Start > Desktop > Design > Properties or Design > Element > Editors > Properties or Explore > Portals > Windows > Properties > Properties
Keyboard Shortcuts	**Ctrl+2** **Ctrl+Enter** **Alt+1** | Properties **Alt+5** | Properties

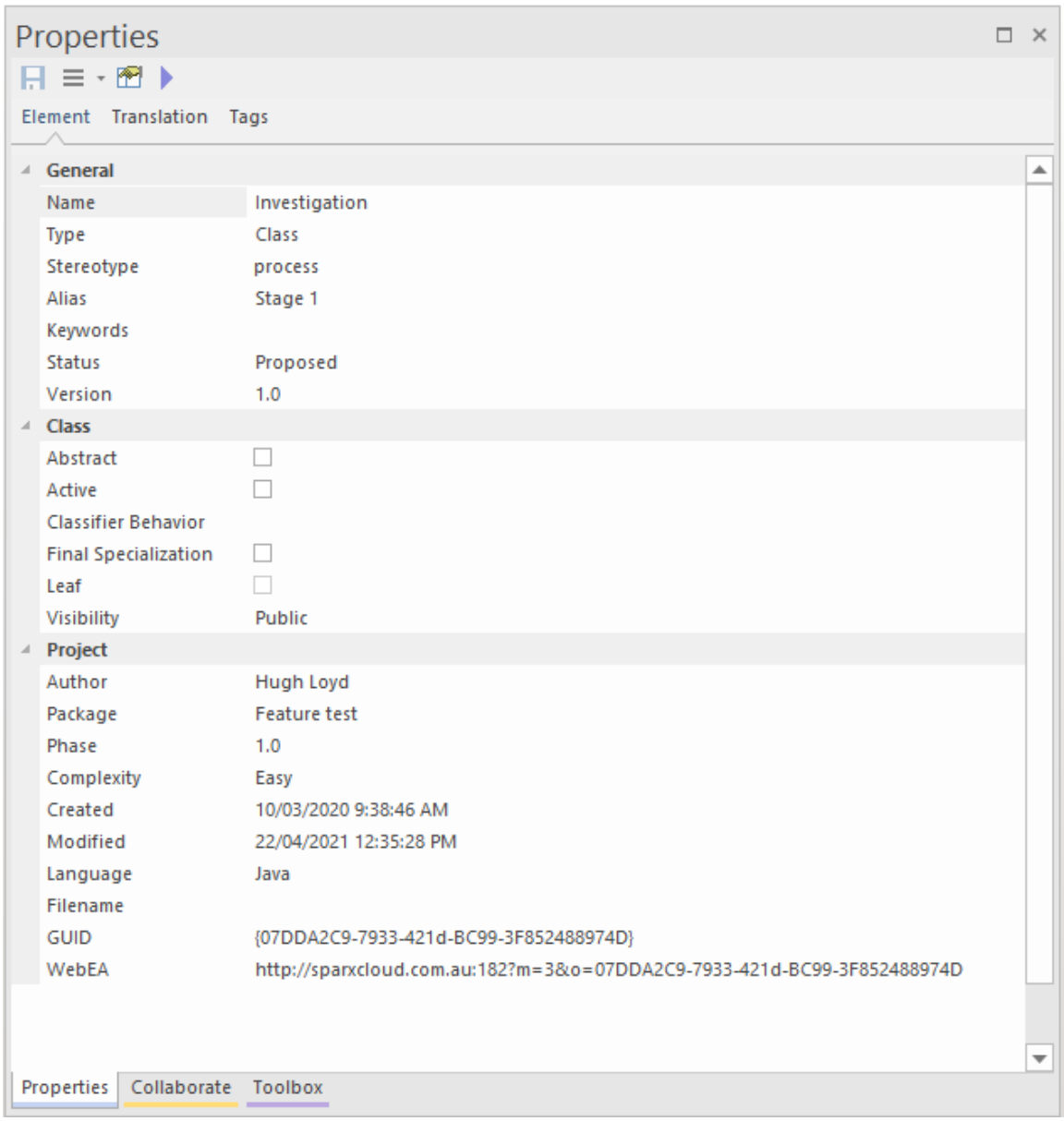
Notes

- If your organization uses WebEA on the Pro Cloud Server, it is likely that the 'Project' section of the 'Element' page will have a 'WebEA' field showing the https address of the element for access by WebEA; this field is enabled

by the Project Administrator, setting the model's web address in the 'URL' field of the 'Cloud' page of the 'Manage Project Options' dialog, and is automatically filled with a composite of the model URL, the model number in WebEA, and the diagram's GUID

Element Tab

The 'Element' tab of the **Properties window** displays the properties fields for the currently selected element of any type, with the properties grouped as General, Technology, Base Element Type and Project. For some element types it is the only page shown. If the fields are not displayed, click on the white arrow head next to each group name to expand the group.



To add or change the value of a field, you can either:

- Overtype the field with the required value
- Click on the **drop-down arrow** to select from a list of appropriate values or
- Click on the  button at the end of the field to search the model for an appropriate classifier

Access

Ribbon	Start > Desktop > Design > Properties Design > Element > Editors > Properties
Keyboard Shortcuts	**Ctrl+2** > Element

Element Properties

Option	Description
Name	This field displays the element's name that, for a new element, defaults to either: • <element type><number of elements of this type already in the Package> (for

	example, Class3) or • A name conforming to the auto-naming/numbering convention you have defined If necessary, overtype the default name with a different name.
Type	Displays the element type, such as Class or Use Case.
Stereotype	(Optional) Displays the stereotype (if any) assigned to the element. The stereotype name is prefixed by its parent profile name. If the element has multiple stereotypes, they are listed on separate lines of the field.
Role	(Optional, for an Object element) Displays the role played by the object represented by the element.
Alias	(Optional, for elements other than an Object element) Displays the alias or alternative display name for the element, if any.
Keywords	(Optional) Displays any significant terms that the element might be associated with

	and that might be filtered on to identify the element in Use Case Metrics and Searches.
Status	Displays the current management status of the element (such as Approved or Proposed).
Version	Displays the current version of the element (defaults to the value specified on the 'Objects' page of the **Preferences window**, such as 1.0 or 2.3, but you can type in any alphanumeric string that meets your requirements).
Priority	Displays the relative importance of meeting this Requirement, Change, Issue or Feature compared to other elements of the same type: • Low • Medium • High
Difficulty	Displays an estimate of the difficulty in meeting the Requirement, Feature, Change or Issue defined by the element: • Low • Medium

	• High
Multiplicity	Identifies the number of instances of the element that can exist in a set; the value displays on the element in a diagram, in the 'Name' compartment.
Visibility	Displays the element's exposure for access ('Public', 'Private', 'Protected' or 'Package').
Leaf	Identifies whether or not the element is final, so it cannot be a parent for other elements.
Abstract	Identifies whether or not the element is abstract.
Classifier	Displays the name of the element that acts as a classifier for the selected element.
Author	This field defaults to the user ID of the person who created the element. If necessary, you can type in a different user ID, or click on the **drop-down arrow** and select one.
Package	Identifies the parent Package of the

	selected element.
Phase	Displays the current phase of the element (defaults to the value specified on the 'Objects' page of the **Preferences window**, such as 1.0 or 2.3, but you can type in any alphanumeric string that meets your requirements).
Complexity	Displays the element's development complexity (used for project estimation). There are normally three levels: • Easy • Medium • Difficult However, you can change your user defaults to add 'Extreme' and 'Unknown' to this list of options.
Created	Displays the date and time the element was created.
Modified	Displays the date and time the element was most recently modified.
Language	Defaults to the programming language defined for the model (in the 'Default Language for Code Generation' field on the 'Source Code Engineering' page of the

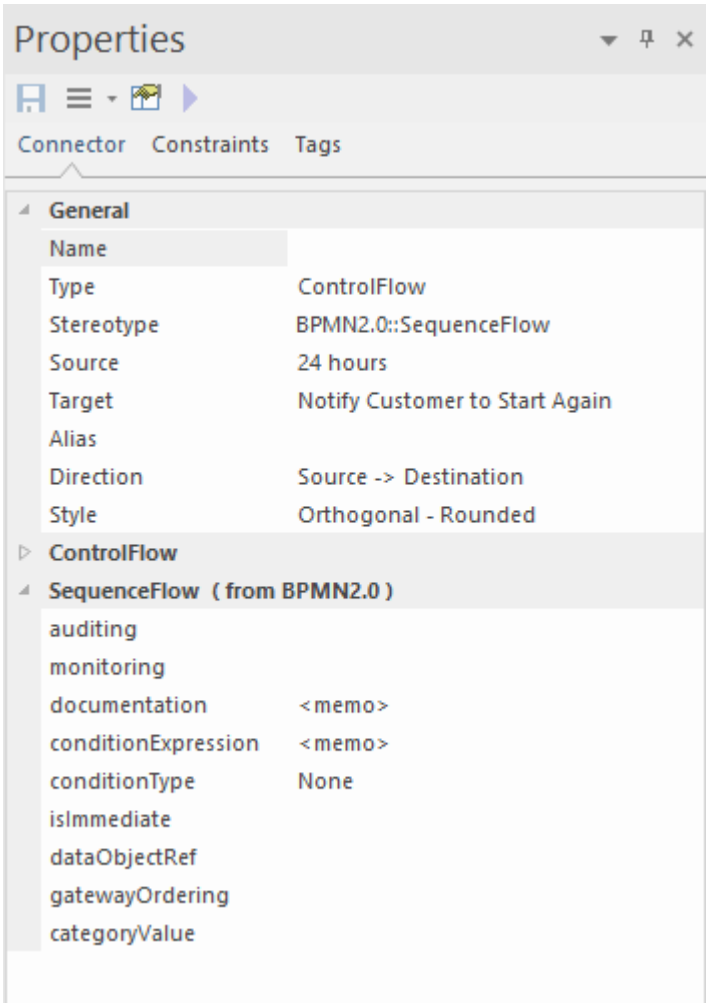
	'Preferences' dialog). If this element is required to have a different language, click on the **drop-down arrow** and select it. If the element is not language-specific, select '<none>'.
Filename	(Optional) If you intend to generate code from the element, click on the ... button to the right of the field and create or select the name and location of the file into which the code will be generated.
GUID	Displays the automatically-assigned Globally Unique Identifier of the element. You can check this GUID and copy it for reference in many of your modeling tasks.
WebEA	If your organization uses WebEA on the Pro Cloud Server, it is likely that the 'Element' tab will have this field automatically filled with the https address of the element for access by WebEA; it can be copied and used as a hyperlink to access the element. This field is enabled by the Project Administrator, setting the model's web address in the 'URL' field of the 'Cloud' page of the 'Manage Project

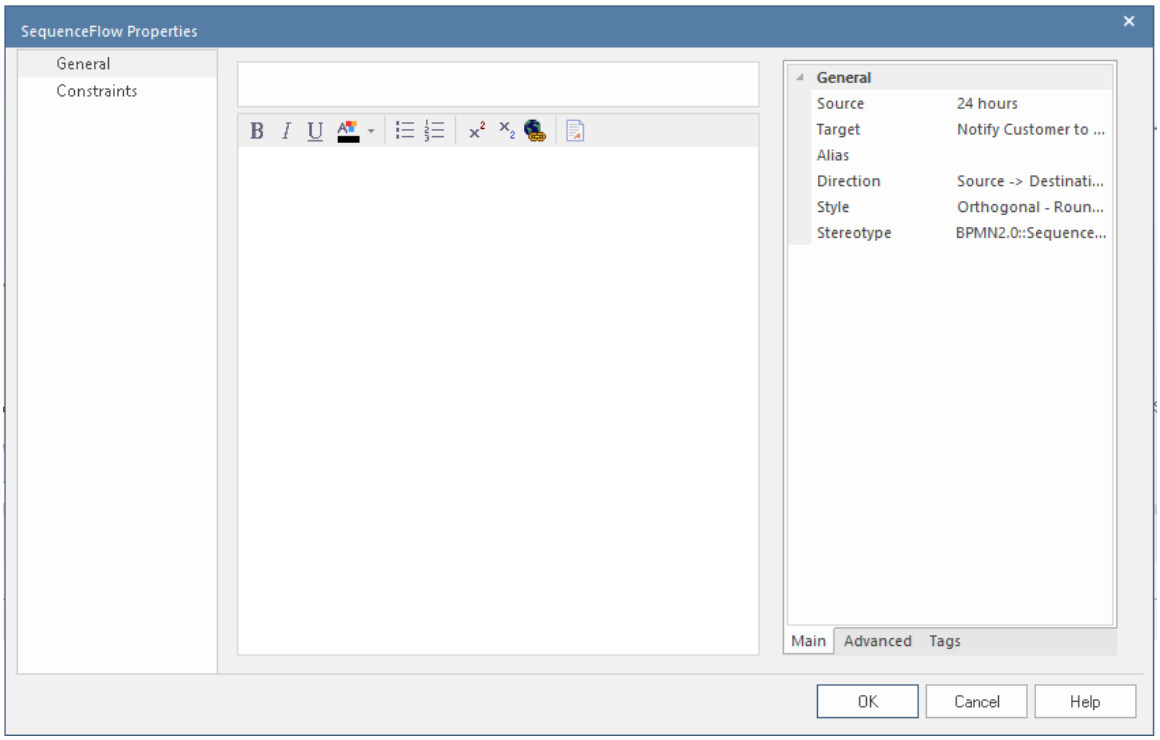
	Options' dialog. The WebEA element address is a composite of the model URL, the model number in WebEA, and the element's GUID.
Is Root	Identifies whether or not the element is a root element that cannot be descended from another element.
Is Specification	Identifies whether or not the element is a specification.
Persistence	Identifies whether the element is persistent or transient, or neither (blank).
Base Type	Displays the base type of element of which the selected element is an extension.
Exclude from Generated Reports	For a Package element, indicates whether or not the Package and its contents will be excluded from any reports generated on this Package's parent Package.

Properties Window and Dialog for Connectors

A connector can have a wide range of properties, with some connector types having fewer, simpler properties and others having more and more-complex properties. You edit these properties on either the:

- **Properties window** for the connector or the
- '<connector type> Properties' dialog





Some properties are visible on a diagram as text labels on or around the connector, and you can change these labels using the 'Label' context menu.

The connector properties are presented on these tabs:

- Connector - defining General and (in the Properties window) type-specific properties
- Advanced properties - type-specific properties on the 'Properties' dialog
- Source and Target Roles
- Constraints
- Template Bindings (where appropriate)
- Tags (Tagged Values) - On the Properties window, type-specific and metatype Tagged Values are shown on the 'Connector' tab; on the dialog all tags are shown on the 'Tags' tab

Access

Ribbon	Start > Desktop > Design > Common > Properties > click on connector in a diagram > Connector (**Properties window**) Design > Element > Editors > Element > Properties > click on connector in a diagram > Connector (Properties window)
Context Menu	Right-click on Connector | Properties ('Properties' dialog)
Keyboard Shortcuts	**Ctrl+2** > Connector (**Properties window**)
Other	Double-click on Connector ('Properties' dialog)

General Options

These options are available on the 'Connector' tab and 'General' grouping of the **Properties window**, or the 'General > Main' tab of the 'Properties' dialog.

Option	Action
Name	(Optional) Type a representative name for the connector; this name displays on the diagram.
Notes	('Properties' dialog, Optional) Type any comments you want to record on the connector. You can format the text using the Notes toolbar at the top of the field. These notes can be included in searches, reports and documentation, if required.
Type	(**Properties window**) Displays the connector type selected when creating the connector.
Stereotype	(Optional) Type the name of a stereotype for the connector, or click on the ... button and select the stereotype from the 'Stereotypes for <object name>' dialog. If specified, the stereotype is displayed on the diagram and it over-rides the connector type in the report documentation. If necessary, you can add multiple stereotypes, each in a separate line of the field.

Source	Displays the name of the source element for the connector.
Target	Displays the name of the target element for the connector.
Alias	(Optional) Type an alternative name or alias for the connector.
Direction	Displays the direction of the connector. For some connectors (such as an Association), you can change the direction: click on the **drop-down arrow** and select the appropriate direction details - from source to destination, destination to source, bi-directional, or unspecified. Some connectors have arrow heads that depend on this setting, and some connectors are logically dependent on it (such as Inheritance).
Style	Click on the **drop-down arrow** and select the appropriate connection style; choose from: • Direct • Auto-Routing • Custom

	• Tree (Vertical, Horizontal, Lateral Vertical or Lateral Horizontal), or • Orthogonal (Square Corners or Rounded Corners) Some connectors can also have the Bezier style, under which the connector follows a smooth curve.
Virtual Inheritance	(For Generalization connectors) Click on the **drop-down arrow** and select **True** or **False** to indicate if inheritance is virtual or not.
Scope	(For Generalization connectors where the child Class is C++.) Click on the **drop-down arrow** and select the appropriate value for the scope (used for inheritance).

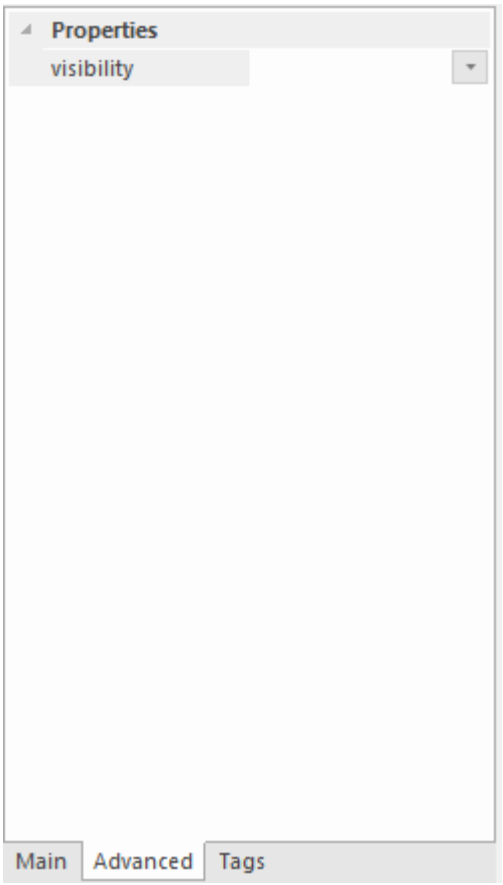
Notes

- Instead of displaying properties on tabs in the 'Properties' dialog, you can display the properties on screen pages selected through a hierarchical list; select the 'Property Sheets use Tree style' checkbox using the 'Start > Desktop > Visual Style' ribbon option

- The 'Binding' tab is displayed for Generalize, Realize, Associate and Template Binding connectors; use this tab to define binding expressions and parameter substitutions for the connector

Connector Advanced (Dialog)

The connector 'Properties' dialog has an 'Advanced' tab on the 'General' page, which you use to reset the values of any system-defined advanced properties that the connector has.



Access

Context Menu	Right-click on Connector | Properties > General > Advanced
Other	Double-click on Connector > General >

	Advanced

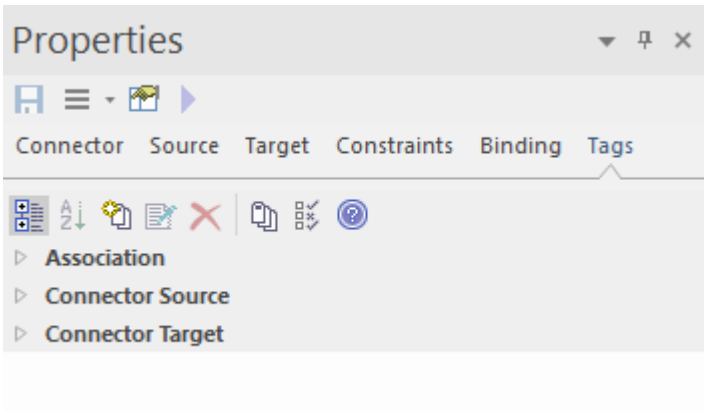
Set a value for a connector's advanced property

Step	Action
1	Click on the data field to the right of the property name.
2	Depending on the property, either: • Type the value in free text • Click on the **drop-down arrow** and select the value from the list • Click on the ... button and search for the required value
3	Click on the **OK button**.

Connector Tagged Values

You can define Tagged Values for a connector and, for Association and Aggregation connectors, set additional Tagged Values for the source role and/or target role.

You can set these Tagged Values separately on the 'Tags' tab of the **Properties window** or 'Properties' dialog.



Access

Ribbon	Start > Desktop > Design > Properties > Tags > click on the connector on the diagram (**Properties window**)
Context Menu	Right-click on Connector | Properties > General > Tags ('Properties' dialog)
Other	Double-click on Connector > General > Tags ('Properties' dialog)

Set Tagged Values for the connector

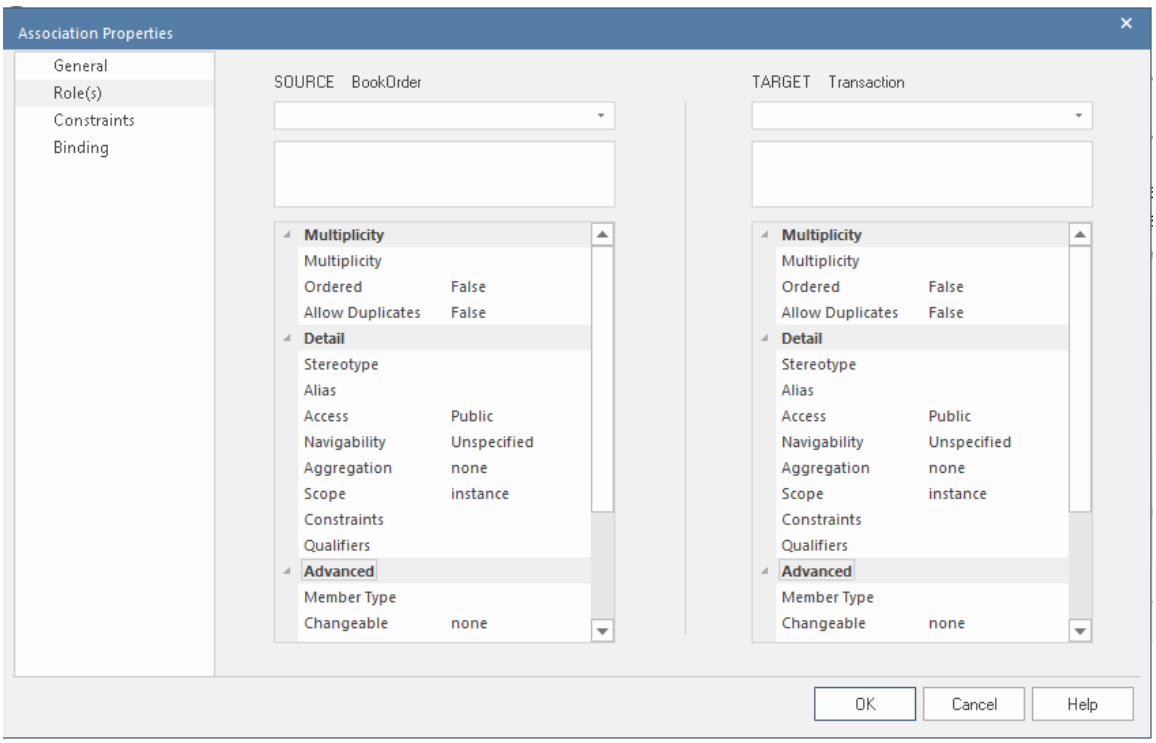
Step	Action
1	Click on the connector type name, Connector Source or Connector Target as required.
2	Either click on the  icon in the toolbar, or press **Ctrl+N**. The 'Tagged Value' dialog displays.
3	In the 'Tag' field type the tag name, or click on the **drop-down arrow** and select a predefined Tagged Value type.
4	In the 'Value' field, type the value for the tag.
5	Click on the **OK button** to save the changes and close the dialog. The Tagged Value is displayed under the object type you selected in step 1.

Source and Target Role

For certain types of connector, such as Association or Aggregation, the elements at either end of the connector can have defined roles. You define the roles in the:

- Connector 'Properties' dialog, on the 'Role(s)' tab, which has separate panels for the Source and Target role definitions, or
- The **Properties window** for the connector, on the 'Source' and 'Target' tabs

The field descriptions here are the same for both source and target roles. This illustration shows the panels from the 'Properties' dialog; the Properties window tabs are almost identical.



Access

Ribbon	Start > Desktop > Design > Properties > click on connector in a diagram > Source or Target (**Properties window**) Design > Element > Editors > Properties > click on connector in a diagram > Source or Target (Properties window)
Context Menu	Right-click on Connector | Properties > Role(s) (connector 'Properties' dialog)
Keyboard shortcuts	**Ctrl+2** > click on connector in a diagram > Source or Target (**Properties window**)
Other	Double-click on Connector > Role(s) (connector 'Properties' dialog)

Enter Role Definitions

Option	Action

<top field>	Type the name of the role assigned to the element. Alternatively, click on the **drop-down arrow** and select an attribute name from the opposite element (that is, select the source role name from the names of attributes on the target element, and vice versa).
<second field>	Type any notes required to describe the role.
MULTIPLICITY	
Multiplicity	Click on the **drop-down arrow** and select the required multiplicity for the role (you can edit the possible values of this field on the 'Cardinality' tab of the 'UML Types' dialog). Multiplicity is the range of instances of the role that can be active in the relationship - for example, one employee can be assigned to one or more tasks; for the target role you define the range of instances (such as tasks) that the employee could be assigned to. The values have these formats: • *, or 0..* - zero, one or many instances

	• 0..n - zero or up to n instances, but no more than n • n - exactly n instances • n..* - n, or more than n instances You can also define source and target role multiplicity in the corresponding element's attribute properties.
Ordered	Click on the drop-down list and select **True** or **False** to indicate whether or not the role is an ordered list.
Allow Duplicates	Click on the drop-down list and select **True** or **False** to indicate that the role can contain duplicate elements (relevant only if multiplicity is > 1). This field maps to the UML property 'isUnique' (selecting the checkbox maps to the 'isUnique' value of False).
DETAIL	
Stereotype	(Optional) Type the name of a stereotype that applies to this end of the connector, or click on the ... button at the end of the field and select a stereotype from the 'Stereotypes for <object name>' dialog.

Alias	(Optional) Type in an alias for the role.
(Level of) Access	Click on the **drop-down arrow** and select the appropriate access level for the role.
Navigability	Click on the **drop-down arrow** and select a value to indicate whether or not this role is navigable (whether non-navigable ends are shown on the diagram depends on the diagram properties).
Aggregation	Click on the **drop-down arrow** and select a value to indicate the type of aggregation that this role uses.
Scope	Click on the **drop-down arrow** and select a value to indicate the level (instance or classifier) at which this role applies.
Constraints	Type the names of any constraints on the role.
Qualifier(s)	Type the names of any qualifiers or restrictions on the role; separate multiple qualifiers with a semi-colon. Alternatively, click on the ... button at the

	end of the field, and define a new qualifier on the 'Qualifiers' dialog (qualifiers typed into the 'Qualifiers' field are also automatically added to this dialog).
ADVANCED	
Member Type	Type the name of a role-type that can be used when generating Collection Classes for multiplicity > 1.
Changeable	Click on the **drop-down arrow** and select a value to indicate whether this role is subject to change.
Containment	Click on the **drop-down arrow** and select a value to indicate the nature of the containment at the Destination (Reference or Value).
Derived	Click on the **drop-down arrow** and select **True** or **False** to indicate whether the role value or values can be computed from other information.
Derived Union	Click on the **drop-down arrow** and indicate whether the role is derived from

	the properties that subset it (that is, derived from a strict union of all properties that are constrained to subset it). To change this flag, type 'F' or 'T' in the field, as appropriate. As an example, you might set this field to **True** for a Class 'Schoolbus' with an attribute 'Passengers [0..48]' that is a derived union with these attributes subsetting it: • SeatedPassengers [0..36] • StandingPassengers [0..10] • WheelchairPassengers [0..2]
Owned	Click on the **drop-down arrow** and select **True** or **False** to indicate whether the role is owned by the opposite Class rather than the Association. Selecting True adds a 'dot' to the appropriate end of the connector ().

Notes

- Source role details are displayed at the start end of a connector on the diagram; if you have drawn the connector the wrong way, correct it by right-clicking on

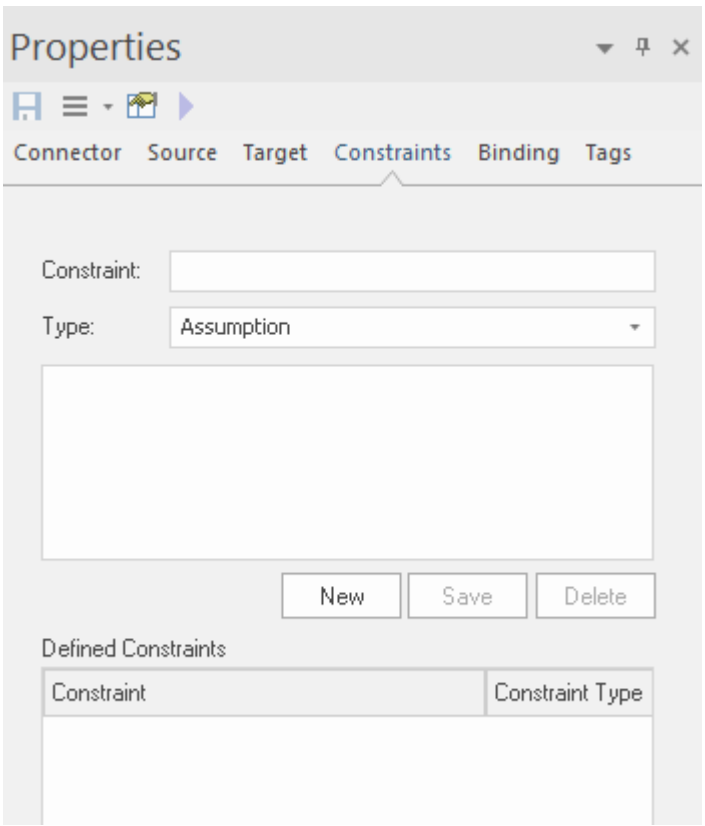
the connector and selecting the 'Reverse Direction' option

- Target role details are displayed at the terminating end of a connector on the diagram

Connector Constraints

A UML connector can have associated constraints placed on it. Constraints provide information on the rules and conditions under which a relationship operates. For example, it might be a pre-condition that a customer is of a certain type before an Association connector to an Account is allowed.

You can add the constraints using the 'Constraints' tab in either the connector 'Properties' dialog or the **Properties window**; the fields are the same.



Access

Ribbon	Start > Desktop > Design > Properties > click on connector in a diagram > Constraints (**Properties window**) Click on connector in a diagram Design > Element > Editors > Element > Properties Dialog (connector 'Properties' dialog)
Keyboard Shortcuts	**Ctrl+2** > click on connector in a diagram > Constraints (**Properties window**)
Context Menu	Right-click on Connector | Properties > Constraints (connector 'Properties' dialog)
Other	Double-click on Connector > Constraints (connector 'Properties' dialog)

Set constraints on a connector

Option	Action
Constraint	Type the name of the constraint.
	Click on the **drop-down arrow** and

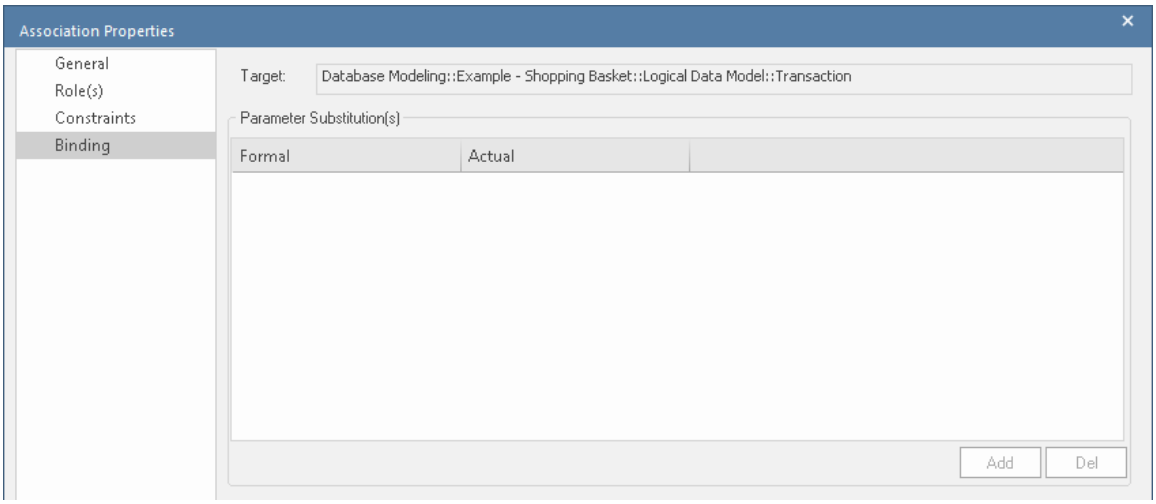
Type	select the appropriate type of the constraint (such as Pre-condition).
<notes>	Type any explanatory notes you might require on the constraint. You can insert line breaks in the text by pressing **Ctrl+Enter**.
Save	Click on this button to save the constraint definition. The constraint is added to the 'Defined Constraints' list.
New	Click on this button to clear the dialog fields so that you can enter details of a new constraint.
Defined Constraints	Displays a list of the constraints defined for this connector.
Delete	Click on this button to delete a constraint you have selected in the 'Defined Constraints' list. The constraint is immediately removed from the list.

Notes

- Constraints on an Association connector can be added to further refine the model; constraints detail the business and operational rules for the model

Binding

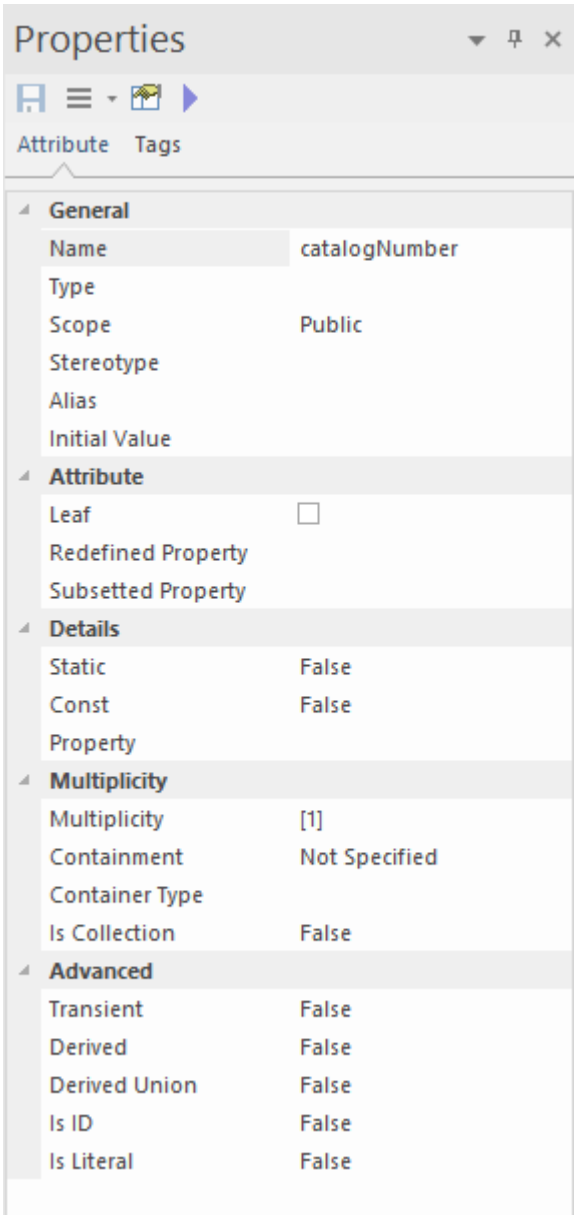
Template Binding connectors, and also Generalize, Realize and Associate connectors, have a 'Binding' tab on their 'Properties' dialog and in the **Properties window**. You use this tab to define binding expressions and parameter substitutions for the connector.



Properties Window for Attributes

The docked **Properties window** provides a convenient and immediate way to view and edit common properties of modeling objects, including attributes. When you click on an attribute in the **Browser window** or a diagram, the Properties window immediately shows the attribute's properties on the 'Attribute' tab.

You can also swiftly display the properties of other types of object, such as elements, connectors and diagrams on the same window without having to open and close separate dialogs.



Access

Ribbon	After selecting the **Properties window** using one of these methods, click on the first required attribute. Start > Desktop > Design > Properties or

	Design > Element > Editors > Attributes: right-click on an attribute | Properties window or Explore > Portals > Windows > Properties > Properties
Keyboard Shortcuts	**Ctrl+2** or **Ctrl+Enter**, then click on the required attribute

General Settings

Field	Description
Name	Displays the name of the selected attribute. If necessary (for example, if it is a place-holder name) overtype this name with a new name.
Type	Displays the assigned type of the attribute. If necessary, click on the **drop-down arrow** and select either a different type, or the 'Select Type' option to display the 'Select Type' browser to locate a classifier element as the type.
Stereotype	If the attribute has a stereotype, this field

	displays the stereotype name. To add or change the stereotype, click on the browse icon and use the 'Stereotype for <attributename>' dialog to select the stereotype from the appropriate profile. You can select multiple stereotypes; on the dialog, they are listed on separate lines of the 'Stereotype' field
Scope	Displays the scope of the attribute. If you need to change the scope, click on the **drop-down arrow** at the right of the field and select the appropriate value.
Alias	Displays any alternative name or reference for the attribute. If you need to add or change the alias, overtype the field.
Initial Value	Displays the initial value of the attribute. If you need to add or change the value, overtype the field.

Advanced Settings

Field	Description

Containment	Displays the type of containment specified for the attribute. If you need to change this setting, click on the **drop-down arrow** at the right of the field and select the appropriate value.
Static	The flag indicating if the attribute is a static member; to change this flag, type 'F' or 'T' in the field, as appropriate.
Property	If the attribute has automatic property creation, click on the ... button to define how it should be implemented for the programming language you are modeling for. The 'Create Property Implementation' dialog displays.
Const	The flag indicating if this attribute is constant (read-only, blocked from change). To change this flag, type 'F' or 'T' in the field, as appropriate.
Is Literal	(For Enumeration elements.) The flag indicating if the attribute is an enumeration literal. To change this flag, type 'F' or 'T' in the field, as appropriate.

Transient	(For Java code.) The flag indicating whether or not the attribute can change regardless of what the code is performing. To change this flag, type 'F' or 'T' in the field, as appropriate.
Derived	The flag indicating whether the attribute is derived from one or more other attributes; for example, full name can be derived from the last name and first name attributes. To change this flag, type 'F' or 'T' in the field, as appropriate.
Derived Union	The flag indicating if the attribute is a derived union (that is, derived from a strict union of all properties that are constrained to subset it). To change this flag, type 'F' or 'T' in the field, as appropriate. As an example, you might set this field to **True** for a Class 'Schoolbus' with an attribute 'Passengers [0..48]' that is a derived union with these attributes subsetting it: • SeatedPassengers [0..36] • StandingPassengers [0..10] • WheelchairPassengers [0..2]
Is ID	The flag indicating whether the attribute

	can be used to uniquely identify an instance of the containing Class. To change this flag, type 'F' or 'T' in the field, as appropriate.
Multiplicity	Click on the  button to display the 'Multiplicity' dialog, and define the multiplicity of the attribute. • Lower Bound - Type the lower limit to the number of attributes that must be in the collection • Upper bound - Type the upper limit to the number of attributes allowed in the collection • Allow Duplicates - Select the checkbox to indicate that duplicate values are allowed; this field maps to the UML property isUnique, with a value **False** • Multiplicity is Ordered - Select the checkbox to indicate that the collection is ordered • OK - Click on this button to save the information and close the dialog
Is Collection	The flag indicating whether the attribute is a collection (array), so that it can contain multiple concurrent values, or a single value. To change this flag, type 'F' or 'T' in the field, as appropriate.

Container Type	If the attribute is a collection, type the name of the container type for the collection.

Notes

- The 'Properties dialog' for attributes also has a 'Redefines' tab, which lists any Redefined Property or Subsetted Property added to the selected attribute; click on the appropriate **Add button** to add or change the properties in the lists, selecting each property from the 'Select Property' dialog
- The dialog also has a 'Constraints' tab on which you define the constraints on the attribute

Create Properties

You can configure Enterprise Architect to automatically create properties in the modeled code in any of the programming languages that the system supports. You control property creation from the **Properties window** for Attributes. Each language has slightly different syntax and generates slightly different results:

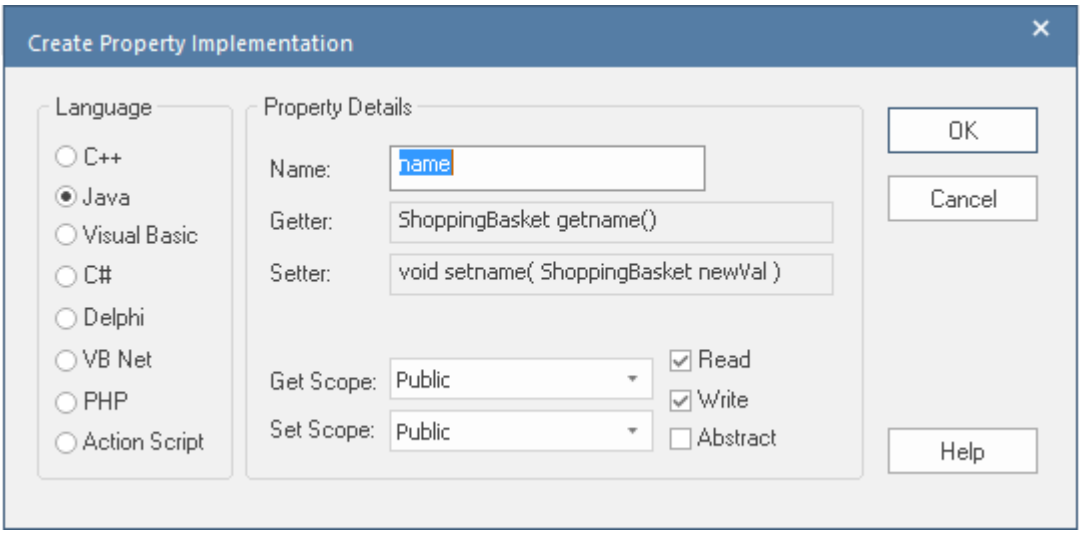
- Java and C++ generate get and set functions
- C# and VB.Net create property functions
- Delphi creates get and set functions as well as a specialized Delphi property Tagged Value

Note that the attribute must have a defined Type in order to create properties.

Access

Ribbon	Design > Element > Editors > Properties
Context Menu	Right-click element in **Browser window** or diagram | Properties | Properties
Keyboard Shortcuts	**Ctrl+2**

Configure Properties for an Attribute

Step	Action
1	In the **Browser window** or a diagram, click on the attribute for which to configure property creation. The attribute becomes the focus of the **Properties window**.
2	Expand the 'Details' section of the 'Attribute' tab, and click on the 'Property' field and on the ... button. The 'Create Property Implementation' dialog displays. 
3	The 'Language' panel defaults to the radio button for the language defined in the Class properties; however, you can click on any other radio button to

	select another language for which to configure property creation. Each language enables its own combination of fields in the 'Property Details' panel.
4	The 'Name' field defaults to the name of the attribute. If necessary, you can overtype this with a different name. Select the checkboxes or values from drop-down lists for these fields as required (and if available) to define the property for the selected programming language: • By Ref • Stereotype • Get Scope • Set Scope • Published • Read • Write • Abstract
5	Click on the **OK button** The system generates the required operations and properties to comply with the selected language.

Notes

- Get and Set functions have the stereotypes «property get» and «property set», making it easy to recognize property functions in the operations compartment of the element on a diagram; you can also hide these specialized functions on a specific diagram, by deselecting the 'Property Methods' checkbox on the 'Features' page of the 'Properties' dialog for the diagram, which then makes it easier to view the Classes uncluttered by many get and set methods
- For the Delphi programming language, enable the Tagged Values compartment to see the generated property Tagged Value

Attribute Constraints

Attributes can have constraints associated with them, which typically indicate such things as maximum value, minimum value and length of field. You define these constraints on the **Properties window** for attributes.

Access

Click on the required attribute in a diagram or the **Browser window**, and use one of these methods to display the attribute 'Constraints' tab.

Ribbon	Design > Element > Editors > Properties: > Constraints Start > Desktop > Design > Properties:  > Constraints
Context Menu	Right-click attribute in diagram or **Browser window** | Properties | Properties > Constraints

Define Constraints

Option	Action
Constraint	Type in the name or action of the constraint.
Type	Click on the **drop-down arrow** and select the appropriate constraint type.
(Notes)	Type in any comments or notes concerning the constraint.
New	Click on this button to clear any displayed data from the constraint fields, so that you can define a new constraint.
Save	Click on this button to save any new data in the fields, and to clear the fields in preparation for defining another constraint. The saved constraint is added to the top of list in the second 'Constraint' field.
Constraint	Lists the existing constraints on the attribute. If you click on an entry in the list, the constraint details display in the tab fields.
Delete	Click on a constraint in the list and click on this button to immediately remove the

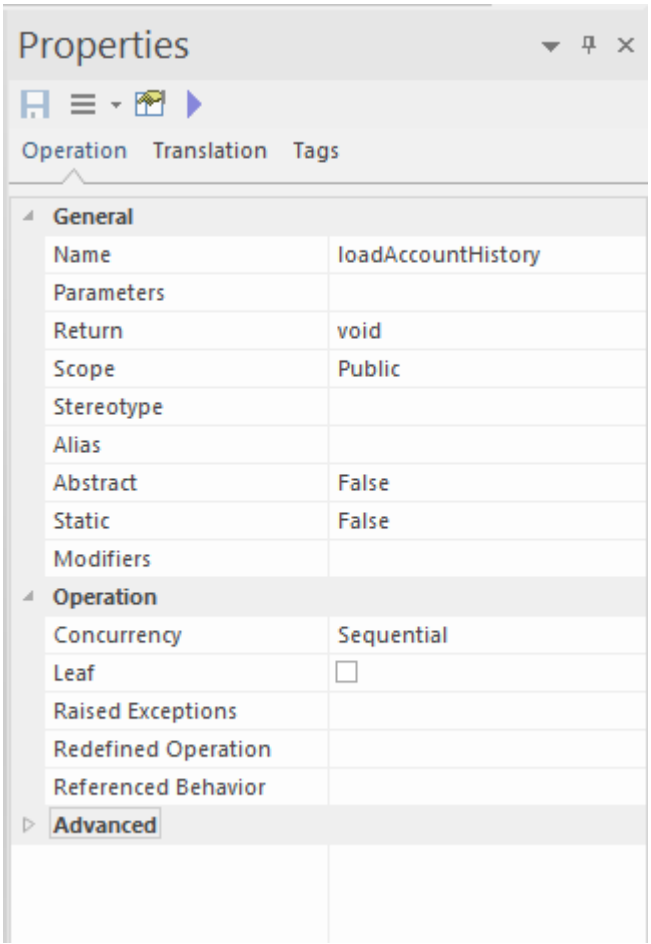
	constraint from the attribute.

Properties Window for Operations

The docked **Properties window** provides a convenient and immediate way to view and edit common properties of modeling objects, including operations. When you click on an operation in the **Browser window** or a diagram, the Properties window immediately shows the operation's properties on the 'Operation' tab. You can also swiftly display the properties of other types of object such as elements, connectors and diagrams on the same window without having to open and close separate dialogs.

The Properties window for operations also has a 'Tags' tab to create and display Tagged Values.

On the Properties window and the Properties dialog for an operation, the 'Operation' tabs have the same fields.



Access

After selecting the **Properties window** using one of these methods, click on the first required operation.

Ribbon	Start > Desktop > Design > Common > Properties Design > Element > Editors > Element > Properties Explore > Portals > Windows > Properties > Properties

Keyboard Shortcuts	Select operation in the Browser Window or a diagram. **Ctrl+2** or **Ctrl+Enter**

Properties

Property	Description
Name	Displays the name that has been allocated to the operation. If you want to change this, overtype the text in the field.
Parameters	Lists the parameters that have been defined for this operation on the 'Parameters' tab of the operation 'Properties' dialog. You can also type in simple parameter definitions in UML Test input; for example: age:int, max:int
Return	Displays the return type of the operation (defaulting to 'void'). To change this, overtype the field or click on the **drop-down arrow** and click on: • The required data type returned by the operation, as defined by the code

	language (data type) or • '<none>' for no type (or you can type in a value manually if you prefer), or • 'Select Type' and browse for the appropriate operation classifier (you can add a new one if there are no classifiers that suit) To add new code language data types that can be displayed in this list, see the *Data Types* topic.
Scope	Displays the scope currently set for the operation. If it is necessary to change this, click on the **drop-down arrow** and select one of: • Public • Protected • Private • Package
Stereotype	(Optional) Displays any stereotypes that have been defined for the operation; if you want to add others, either: • Type a stereotype name, or • Click on the ... button and select the stereotype from the 'Stereotypes for <object name>' dialog

Alias	(Optional) Displays any alias that has been defined as an alternative name or reference for the operation. If necessary, overtype this with a different alias.
Concurrency	Displays the concurrency of the operation - Sequential, Guarded or Synchronous. If necessary, click on the **drop-down arrow** and select a different setting.
Abstract	The flag indicating if this operation is an abstract function. If it is necessary to change this, type T or F in the field to change it to **True** or **False**, as appropriate.
Static	The flag indicating if this operation is a static member. If it is necessary to change this, type T or F in the field to change it to **True** or **False**, as appropriate.
Modifiers	Click on the  button to display the 'Select Modifiers' dialog, and select the appropriate checkboxes: • 'Pure' - indicates that the method statement is pure virtual syntax. For example: virtual void myFunction() = 0; • 'Const' - indicates that the return type

	of the method is constant • 'Is Query' - indicates that the method does not modify the object • 'Return Array' - indicates that the method's returned value is in the form of an array • 'Synchronized' - for Java, sets a code engineering flag that relates to multi threading
Concurrency	Reflects the setting of the earlier field.
Leaf	Indicates whether the operation is a Leaf and cannot be overwritten.
Raised Exceptions	You can create code in your application to check for an exception and, if one occurs, to switch to the code defined by a Classifier element that you identify in this field, or through the operation 'Properties' dialog.
Redefined Operation	If the parent element of the selected operation is the source element for a Generalize connector, you can configure the operation to redefine an operation in the target element. You can identify the target operation (and its parent element) in this field or in the operation 'Properties'

	dialog.
native	The flag indicating if this operation is a native operation. If it is necessary to change this, type T or F in the field to change it to **True** or **False**, as appropriate.

Notes

Notes are textual descriptions that can be added to an element, diagram, connector, feature or assigned item (such as Tests, Maintenance items, or allocated resources) in Enterprise Architect. They provide valuable information that describes the entity being modeled. Many newcomers to modeling are not aware that these textual descriptions are core to many of the modeling languages, including UML, BPMN and SysML; without them the model would be hard to understand and remain opaque. A well-formed note is unambiguous and doesn't contain redundant information that has been entered in other properties of the entity.

Using the Notes window

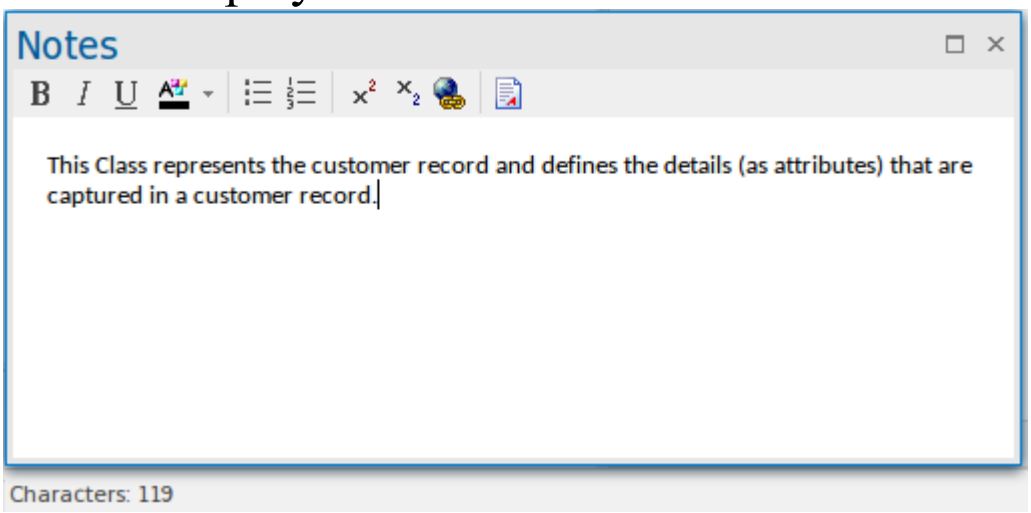
You can create and view notes in the Notes Window, which can be docked anywhere in the application, or through the 'Properties' dialog or editing dialog for a modeling object or feature. The notes can be formatted using the Notes Toolbar, conveniently located above the notes text field. This formatting is carried through to documentation generated from the model, and includes markup such as italics, bolding, bullets and hyperlinks. You can also reference Glossary Terms and model elements from the notes text. There are convenient keyboard shortcuts available for quickly editing the text.

Many experienced modelers have the **Notes window** docked

in the workspace, and when they select an entity in a diagram, the **Browser window** or another window, that object immediately becomes the focus of the window and they can view, create or edit the notes. Conversely, if you have limited screen space and do not want to keep the Notes window open all the time, you can display the **Quicknotes window**, which is a simpler version of the Notes window without the toolbar. You can still format the text using context menu options. The Quicknotes window closes when you click outside it.

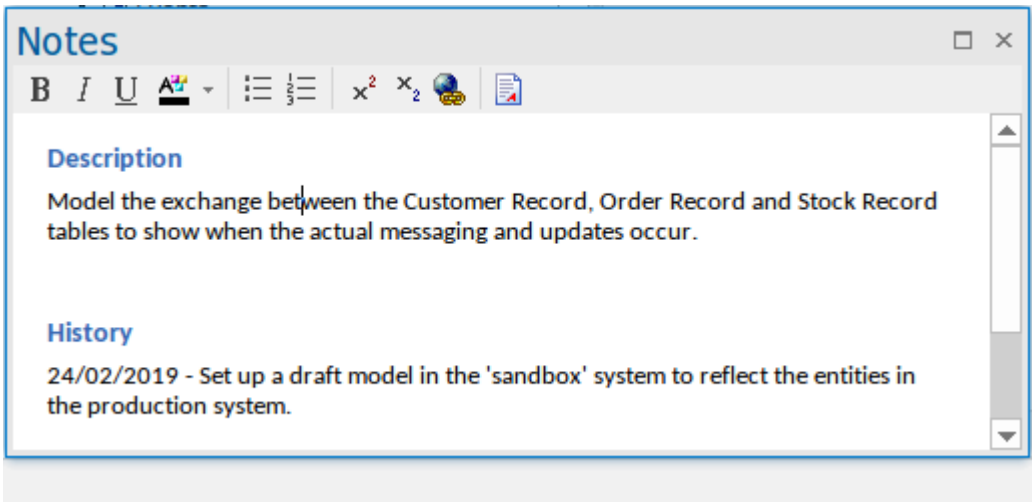
There are two variants of the Notes window or field:

- For standard modeling objects such as elements, connectors, diagrams, attributes and operations, where the text field contains only the text you type into it and the number of characters of text currently contained in the field is displayed in the left-hand end of the Status bar

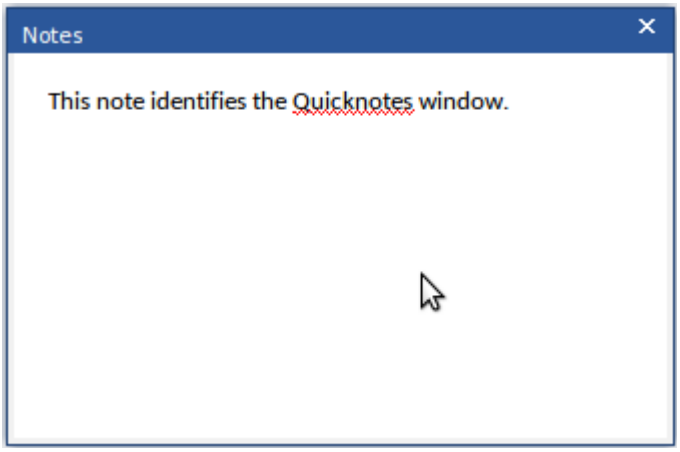


- For assigned items such as Tests, Maintenance Items, Project items and allocated resources, where the text field contains automatic headings - 'Description' and 'History' - that cannot be deleted, and that reflect the text typed into the corresponding tabs in the item's editing dialog; for

Test items, the headings are 'Description', 'Input', 'Acceptance Criteria' and 'Results'
This variant does not show a character count in the Status bar



This difference is reflected in the Quicknotes window as well, where **Ctrl+Space** displays the general Notes text or, for an assigned item, the 'Description' text.



For an assigned item, **Shift+Space** displays the 'Results' or 'History' text.

When text translation is enabled and configured on the 'Translations' page of the 'Manage Project Options' dialog, the Notes window has a 'Local' tab (to display Notes text in the original language) and a 'Translation' tab in which you select to translate and display the same Notes text in the

selected language. See the *Text Translation* Help topic.

If you are working in a Cloud-connected model and have also connected to an external data source, when you select an external data item a separate version of the Notes window displays to show the external item Notes text. See the *External Item Details* Help topic.

If the text in the Notes window or 'Notes' fields does not render as well as you would like, you can change the font using the 'Note Editor Font' option on the 'Application Look' dialog. You can also change the zoom level applied to all notes text, using the 'Default Note Zoom' field; this field is initially set to 110%. See the ***Visual Styles*** Help topic.

Access

Ribbon	Start > Desktop > Design > Notes Design > Element > Editors > Notes
Context Menu	Right-click on model element | Properties | Notes
Keyboard Shortcuts	**Ctrl+3** **Ctrl+Space** (Quicknotes) **Shift+Space** (Quicknotes History) **Alt+1** | Notes

	Alt+5 | Notes

Notes Context Menu options

Option	Action
Create | Glossary Definition	Click on this option to create a **Project Glossary** definition, with the Glossary term taken from the selected 'Notes' text. To create the Glossary entry: 1. If suitable Notes text is available, highlight the text to use as the Glossary definition and press **Ctrl+C** to copy it. 2. Highlight the text to use as the Glossary term, right-click on it and select the menu option; the 'Glossary Detail' dialog displays, with the selected text in the 'Term' field. 3. If you have copied some definition text, paste it into the 'Meaning' field; otherwise type a suitable definition of the term in this field. 4. In the 'Type' field, select the appropriate term type. 5. Click on the **Apply button** to save the

	new Glossary definition. The term displays in the 'Notes' text as a **Ctrl+click** hyperlink, which displays the Glossary definition of the term in the 'Glossary Detail' dialog. Once you have created a Glossary definition, here or elsewhere in the model, you can add the Glossary term anywhere in the text of the **Notes window** (or 'Notes' field of a dialog) where, again, it becomes a Ctrl+click hyperlink to the definition. Either: • Simply type the term in the text, or • If you are not certain of the term or have multiple definitions: 1. Move the cursor to the point in the text at which to insert the term. 2. Press **Ctrl+Space**; the **Glossary Term Selection window** displays. 3. Double-click on the term to insert it in the text.
Create | New Element from Selection	Click on this option to create a new element in the model, the name of which is taken from the selected Notes text. 1. Click on the option. 2. The 'New Element' dialog displays, with the 'Name' field pre-filled with the

	selected text. 3. Set the element type and other options as necessary, then click on the **Create button**. (You can also select an option on the dialog to add the element to the diagram.) 4. The system creates the element, adds it to the model (and diagram) and creates a hyperlink to it from the selected Notes text.
Create | Element on Diagram	Click on this option to create a new element in the model, and explicitly in the diagram also, with its name taken from the selected Notes text. This option does not make the selected text a hyperlink to the element. 1. Click on the option. 2. The 'Toolbox Shortcut' menu displays for the diagram type. If necessary, click on the 'Other' option and select from a different set of element types. 3. Click on the required element type and then click on the diagram. A new element is created at the cursor position, with the selected text as the element name.
Create | Link	Click on this option to create a hyperlink

to Existing Element	from the selected Notes text to an existing element in the model. 1. Click on the option. 2. The 'Select Classifier' dialog displays. Locate and select the required element, and click on the **OK button**. 3. The selected Notes text becomes a hyperlink to the element. The target element name and Notes text remain unchanged and do not necessarily mirror each other.
Translate | Mark for Translation	If Automatic Translation is enabled, highlight a term or word then click on this option to identify a specific translation for this instance of the selected text. A prompt displays in which you specify which Glossary Category the translation for that term is defined in, within the Translation section of the Glossary Model. This is of particular value where the sequence of a string of words is important, such as a breadcrumb trail, menu path or ribbon path, especially where the same or related terms are used in different sequences of words. A free translation might re-organize the sequence of words, or combine words,

	making it hard to follow instructions or recognize the context. You would therefore make sure that the translation of this specific combination of words exactly matched what the reader is intended to see.
Translate | Do not Translate	If Automatic Translation is enabled, highlight a term or word then click on this option to protect the selected instance of the text from the translation process. You might use this if a term has different meanings, some of which are appropriate for translation and some of which have a special application that should not be translated. For example, you might freely translate the words 'the wood' in the context of a material, but want to protect 'The Wood' as a reference to a location.
Search for <'selected'>	Click on this option to display a subset of the functions of the common Code Editor menu 'Search' option, to locate a text string outside the element. In a 'Notes' field (not in the **Notes window**) you can perform a search of the text for a text string: • Press **Ctrl+F** and specify the text string and the direction of search

	• Press **F3** to locate more instances of the word in a forward search, or **Ctrl+F3** in a backwards search
Undo Cut Copy Paste Delete Select All	These six options provide simple functions for editing the Notes text.
Print	Click on this option to send the Notes text directly to the configured printer.
Thesaurus	Highlight a word in the Notes text and click on this option to display the 'Thesaurus' dialog, which shows the meaning of the selected word, its synonyms and - if you select the 'Antonyms' checkbox - its antonyms. The antonyms are listed at the bottom of the Categories panel. If you want to replace the selected word with one of its synonyms, click on the synonym and on the **OK button**.

Keyboard Options For Notes

Option	Description
Switch text orientation	Hold **Ctrl**, press **Shift** Description: On a line of text, right-justifies or left-justifies the paragraph in which that line occurs. Use the keys on the left of the alphanumeric keyboard to left-justify the text; use the keys on the right of the keyboard to right-justify the text.
Insert Date and Time	**F5** Description: Inserts the current date and time at the cursor position, in the format: DD/MM/YYYY HH:MM:SS AM (or PM) For example: 22/12/2016 3:39:50 PM
Spell check Notes text	**F7** Description: Performs a simple spell check on the Notes text.
Undo changes	**Ctrl+Z** Description: Reverses the last change

	made to the Notes text.
Redo changes	**Ctrl+Y** or **Ctrl+Shift+Z** Description: Re-applies the last reversed change to the Notes text.
Copy	**Ctrl+C** Description: Copies a highlighted Notes text string to the Enterprise Architect buffer.
Paste	**Ctrl+V** Description: Pastes a copied or cut text string from the Enterprise Architect buffer into the Notes text.
Cut	**Ctrl+X** Description: Removes a highlighted Notes text string and places it in the Enterprise Architect buffer.

Notes Toolbar

Although it is not an independent toolbar that you can pin to the screen top or sides, or float in your work area, the Notes toolbar appears in many places across Enterprise Architect in the 'Notes', 'Description' and 'History' fields in, for example, the:

- Element and connector 'Properties' dialogs
- Feature 'Properties' dialog
- Diagram 'Properties' dialog
- 'Hyperlink Details' dialog
- **Testing window** descriptions
- **Notes window**
- 'Glossary Detail' dialog
- **Responsibilities window**



Options

The options of this toolbar operate on selected text and any new text continuing from the formatting. The options (with some keyboard shortcuts) are, from left to right:

- Make text bold (**Ctrl+B**)
- Make text italic (**Ctrl+I**)
- Underline text (**Ctrl+U**)

- Change the font color of the text
- Insert list bullet points (**Ctrl+.**) (full stop)
- Insert list numbering (**Ctrl+0**)
- Make text superscript
- Make text subscript
- Insert a hyperlink - this displays the 'Hyperlink Details' dialog, on which you specify the type of hyperlink and type in or browse for the location of the target of the hyperlink
- Create a new Linked Document for the element, or edit an existing one

Notes

- If the toolbar is displayed but grayed out, the text field is read-only and cannot be edited; other long text fields in Enterprise Architect might not have the toolbar, in which case the Notes facility is not available for those fields
- You can create a **Project Glossary** term and definition from text in any field that has the Notes toolbar

Text Translation

The translation facilities operate primarily on the text entered into the **Notes window**, so this is the principal interface between users and the translations. When the model administrator enables and configures translations on the 'Translations' page of the 'Manage Project Options' dialog, the Notes window has a 'Local' tab that displays note text in the natural language for the model, and the 'Translation' tab in which you select to translate and display the same note text in one of the selected languages.

Through the Notes window you can use the Enterprise Architect text translation feature to:

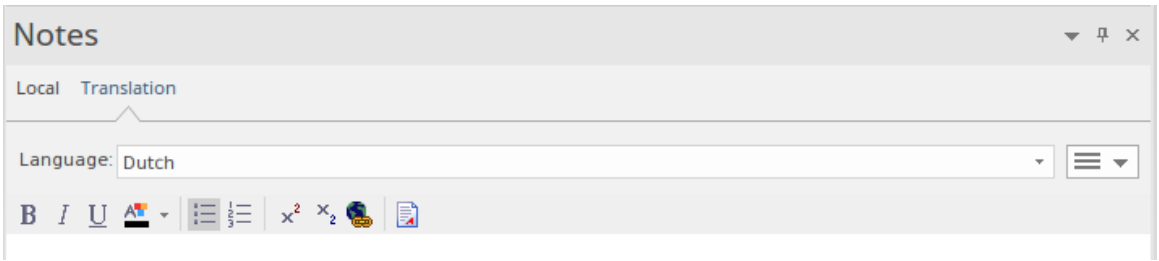
- Perform a manual translation of the notes text displayed in the 'Local' tab, by typing or pasting the translation into the 'Translation' tab; available in all editions of Enterprise Architect
- Automatically translate the Notes text into one of the selected languages (if using an internet translator application); available in any Cloud-connected repository
- Block automatic translation of a specific instance of text, or select an instance of text to be translated according to a category in the Glossary Model (on the 'Local' tab)
- Force a translation if the translator is not set to operate automatically
- Toggle automatic translation if you are editing either the original text or a Translated text and do not want the original text to be translated

- Reset the 'difference' flag on the 'Translation' tab, when the flag indicates that either the translation or the original text has been changed since the note text was translated

Manual Translation

In preparation for performing a manual translation, you first enable the Translation facilities and - if you have the Corporate or higher edition - specifically select the option of performing manual translations, on the 'Translations' page of the 'Manage Project Options' dialog. You also select the source and target languages; you can select more than one target language.

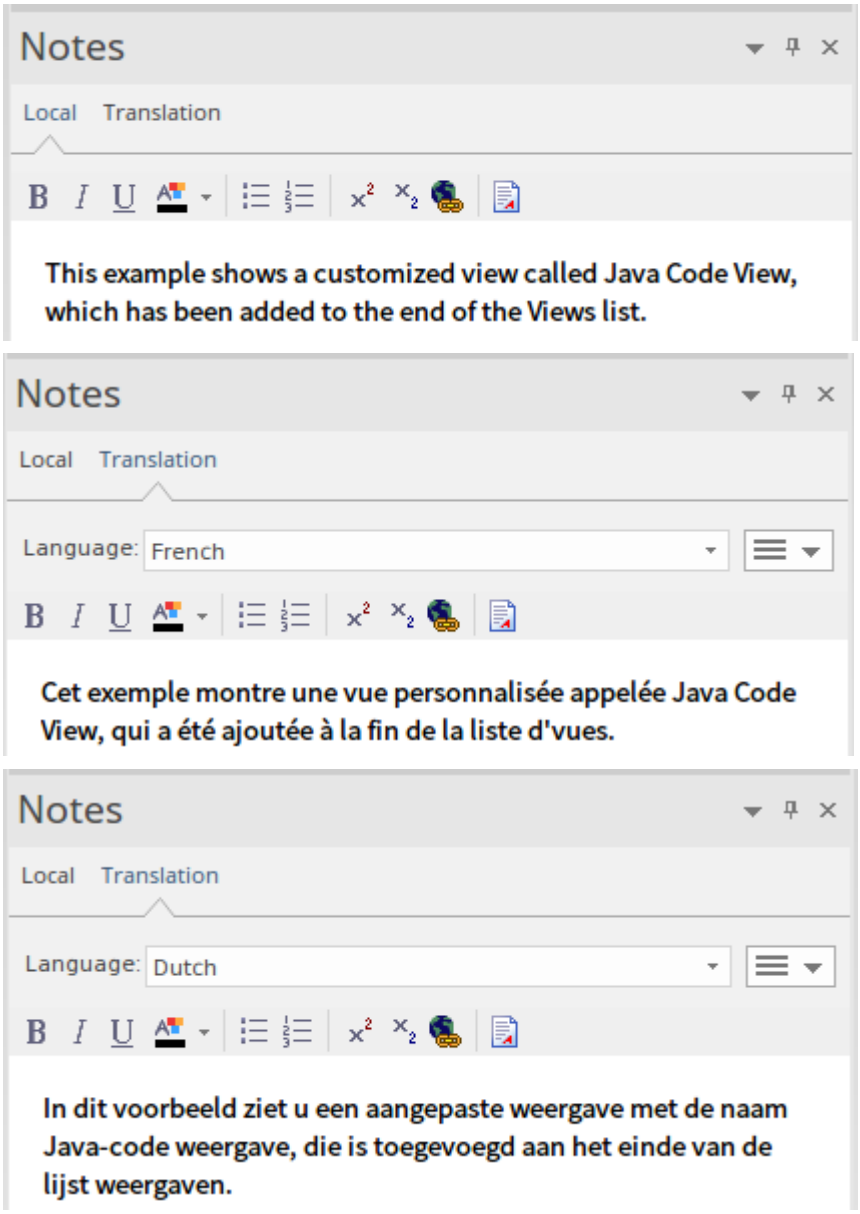
To enter a manual translation of the notes for a selected object, display the 'Translation' tab of the **Notes window** (**Ctrl+3** > Translation), click on the **drop-down arrow** in the 'Language' field and select the language in which to translate the notes shown in the 'Local' tab.



Now you either manually type or paste a translation of that text into the text field of the Notes window, in the selected language.

If you want to create translations of the Notes text in more than one language, simply select each language in the 'Language' field in turn and enter the translation in that

language. The translations are held in the model as different pages, each displayed when the appropriate language is selected.



You can edit the translated text at any time. Note that if you do edit the translation, or the text in the 'Local' tab - in the source language - is changed (that is, the modified date/time on the original text is later than on the translation text) an asterisk displays on the 'Translation' tab name to indicate that the translation(s) might not match the original text. The asterisk is removed when you select the 'Verify Translation'

Hamburger option on the 'Translation' tab.

Note that you can also manually translate the object name and alias into any or all of the enabled languages, using the **Properties window** for the objec.

Automatic Translation

In preparation for performing automatic translations, you first:

- Install and set up the Integration Plug-in for Google or Microsoft, or a customized Plug-in you have created for any other translator facility you want to use
- Enable the Translation facilities on the 'Translations' page of the 'Manage Project Options' dialog, register the translator and select the source and target languages; you can select more than one target language
- Prepare the Translation section of the Glossary Model to block the translation of specific terms (such as product names) or to provide your preferred translations of certain words either wherever they are used or when they are used in particular contexts, such as in menu paths

You can select the 'Auto translate notes' option on the 'Translations' page to perform translations automatically as soon as you open the 'Translation' tab of the **Notes window**, or as soon as you change the language into which to translate the text, in the 'Language' drop-down list on that tab.

If you do not have the 'Auto translate notes' option selected, the Notes text is not automatically translated until you select the 'Force Translate' option from the Hamburger menu icon on the 'Translation' tab. This translates the text just for the current object in the currently selected language.

When an automatic translation is initiated, the system first checks the Translation elements in the Glossary Model and, where appropriate, applies the defined translation to the flagged words in the text. You flag these words and any that should not be translated at all using the context menu options in the 'Local' tab of the Notes window; see the *Notes* Help topic. The system then protects these words from translation, and allows free translation of the rest of the text.

Modify Automatic Translation

Text in the 'Translation' tab is laid out in the same format as the original text. Different languages have different structures, and the format or emphasis of text in one language might not suit another language. The translation itself might also not quite convey the context of the original language. In these situations, you can manually edit the translation to better represent your purpose.

As you do this, the 'Translation' tab name displays an asterisk to indicate that the content of the tab has been changed after the text was translated. The asterisk also displays if you edit the original text without retranslating the text. You can clear the asterisk by clicking on the

'Hamburger' icon on the 'Translation' tab and selecting the 'Verify Translation' option to indicate that the translation is acceptable.

To protect the changes you make in the translated text in a language, further automatic translation of that text in that language is blocked. To revert to the literal translation of the local text, click on the 'Hamburger' icon and select the 'Force Translation' or 'Auto Translate' option.

Model Glossary

Glossaries can be modeled in a number of different ways depending on the formality of your modeling approach; each method allows you to create a lexicon of important project terms and their meanings. You can model the terms as a simple list with the terms, their categories and their meaning entered in rows in a table, using a dialog or window. Alternatively, the terms can be created as modeled elements, which provides more flexibility and a number of additional features. Both of these approaches has its uses and either will assist in reducing the ambiguity and uncertainty that arises in project work. Regardless of the method chosen, the defined terms will appear in the **Glossary View**. Importantly, when the terms are included in textual descriptions such as the notes of other elements, they can be de-referenced to clarify the meaning, with both the category and meaning being displayed in a tool-tip when you roll-over the term in the text.

Using the list approach, where terms are entered through the Glossary dialog, the important terms can be easily defined along with their meaning. A user can set up any number of *Types* that can be used to group the terms into lexical sets which can be defined for any purpose; for example, types could be defined for each project, program, department, discipline or any user defined group.

Using the modeled approach Glossary terms can be modeled as first class citizens, allowing rich models of terms and

their definitions to be created. Packages stereotyped as Glossary Category are used to group Glossary Entries into lexical sets. The glossary category Packages and the terms - like any other modeled element - will appear in the **Browser window** and can be included in diagrams.

Rich networks of interrelated terms can be created describing the semantic and lexical relationships between terms, and each term can have descriptive properties defined. These properties can be built-in or user defined using Tagged Values. For example, you might be working on projects in the health sector and define a term 'Admission Process' and relate it to another term 'Health Facility', each term could have a status (built-in) or a business owner or custodian (user-defined). When publications are generated from the repository, the terms that form part of a specific Glossary Category can be styled (marked up) allowing them to be identified in the publication as belonging to the same lexical set.

This method allows any number of glossaries and categories to be created for different purposes, such as the terms that belong to a particular discipline - say, 'Regional Health Care' terms - or that are part of a specific standard - say, 'Business Process Modeling terms - or are from a given business or technical domain such as 'Foreign Exchange', 'Agile Development' or 'Artificial Intelligence'.

The glossaries, their categories and the terms they contain can be conveniently shared or exchanged between any repositories.

Access

Ribbon	Publish > Dictionary > Glossary

Project Glossary functionality

Tasks
Add, delete and modify the **Project Glossary** entries through either the: • **Glossary View**, or • 'Glossary' dialog
Separate glossary items by type; for example, Business terms and Technical terms.
Create a Glossary as a Model Package Structure.
Define Markup Styles to apply to terms of specific types where they occur in generated document reports.
Save the glossary in Rich Text format for inclusion as part of a larger project document.

Create glossary terms and definitions from text in the **Notes window**, or from any 'Notes' or 'Description' fields that have the Notes toolbar.
Insert existing glossary terms into any other 'Notes' fields.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Manage Glossary' permission in order to create, update or delete Glossary items; if security is not enabled, you can manage Glossary items without any permissions
- You might include a Glossary Report in your project requirements or functional specifications documents
- You can transport glossary definitions and glossary style mark-ups between models, using the 'Configure > Model > Transfer > Export Reference Data' and 'Import Reference Data' ribbon options

Project Glossary View

The Model, or Project, Glossary consists of a list of defined terms for your project, as displayed in the **Project Glossary View**.

You can create Glossary items to define terms in two ways:

- Through the 'Glossary' dialog as text-based entries or
- As elements in a model structure, grouped under Glossary Category Packages

The Project Glossary View provides options to review the terms of different types already defined for a model. It identifies which Glossary items are defined as model elements, and therefore those that are not will be entries created in the 'Glossary' dialog. You can use the Project Glossary View to:

- Add glossary terms (via the 'Glossary Detail' dialog, not as a model element)
- Assign a Markup Style to a glossary term Type or Category, to print in a documentation report any terms of that Type/Category in that style
- Modify glossary terms
- **Filter** the display to show terms of a specific Type or Category only
- Change a definition Type for all terms of that Type
- Print the displayed list of terms
- Delete glossary terms (those defined via the 'Glossary'

dialog, not those created as model elements)

From the View you can also select, copy and paste (**Ctrl+C** and **Ctrl+V**) some or all of your Glossary entries to an external text editor or spreadsheet tool. The text is copied in CSV format.

Access

Use one of the methods described in the table, to display the Glossary view.

Ribbon	Publish > Dictionary > Glossary > **Glossary View**

Glossary View Options

Within the Glossary view, right-click on an entry and select the appropriate option for the operation you intend to perform (as listed); if you select the:

- 'Add New' option, the 'Glossary Detail' dialog displays; complete the fields as indicated in the *Glossary Detail Dialog Fields* table
- 'Assign Markup Styles' option, the 'Glossary Markup' dialog displays on which you assign display styles to terms of each existing term Type or Category; the style is

applied when you generate an RTF report containing the glossary terms (see the *Glossary Styles* Help topic)

- 'Modify Selected' option, either the element 'Properties' dialog (for model element terms) or 'Glossary Detail' dialog displays, in which you can edit the name and/or definition of the term
- 'Field Chooser' option, the 'Field Chooser' dialog displays, from which you can drag any column headings not currently displayed into position in the heading row; to return a header to the dialog, simply drag it out of the heading row (see the *List Header* Help topic)
- 'Enable Group Box' option, the Group Box is displayed above the header row, in which you reorganize the list to group the entries according to one or more properties (see the *List Header* Help topic)
- 'Toggle **Filter** Bar' - a row of fields displays below the header row, in which you can type values to display only those items that contain that value in the property shown in that column (see the *List Header* Help topic)
- 'Rename Type' option (not available for model element glossary terms), the 'Rename Glossary Type' dialog displays on which you type in or select the alternative Type name (either another of the existing Types or a new Type); when you click on the **OK button**, all entries of the original Type are changed to the new Type
- 'Set term filter' option, the 'Term Type Filter' dialog displays on which you enter the Type or Category of glossary term to list; when you click on the OK button, only items of that Type are shown on the Glossary view

- 'Remove term filter' option, the Glossary view refreshes to show glossary items of all Types
- 'Print List' option, the 'Print' dialog displays on which you define the printing parameters; when you click on the OK button, the currently-displayed list prints out
- 'Find in Project Browser' option (only for model element glossary terms) the system locates and highlights the element that defines the term in the **Browser window**
- 'Reload' option, the Glossary view refreshes to capture any new glossary elements that might have been created since the view was displayed
- 'Delete' option (not available for model element glossary entries), a prompt displays to confirm the deletion; click on the **Yes button** to remove the term from the Glossary

Glossary Detail Dialog Fields

Field	Action
Term	(Mandatory) Type the term to include in the glossary.
Type	(Mandatory) Select the required Type. If you require a different glossary Type, click on the ... button and specify the name of the new Type.

	This field applies the Type only to the selected term; you can rename a Type for all terms of that Type, using the context menu. Further discussion of the 'Type' field is provided in *The Glossary Dialog* Help topic.
Meaning	Type the definition or description of the term. If necessary, format the text of this description using the Notes toolbar at the top of the field.
New	Clear the dialog fields so that you can define a new Glossary term.
Apply	Save the new or updated glossary entry.
Delete	Delete the entry. A prompt displays to confirm the deletion; click on the **Yes button** to remove the term from the glossary.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Manage Glossary' permission in order to create, update or delete Glossary items; if security is not enabled, you can manage Glossary items without any permissions

Glossary Styles

When you are defining your Glossary terms, you can also define a documentation style to apply to terms of a specific Term Type. When you generate RTF, PDF or DOCX documents those terms are shown in the defined color, font and/or emphasis. This applies a visual key to the Glossary terms of each Type, and makes it easier for the reader to recognize all the terms for which they can obtain a definition or explanation.

You apply the glossary styles through the 'Generate Documentation' dialog (as described in the *Generate Documentation* Help topic). You should not set up glossary styles in a model from which you generate only HTML reports; the HTML report generator does not apply glossary styles.

Configure Glossary Styles

You configure Glossary styles within a Glossary Style Sheet, using the 'Glossary Markup' dialog; you display this dialog from the **Glossary View**. For each Glossary Term Type, you define one style in the Style Sheet, using the standard CSS style definition language. This is an example of two style definitions in a style sheet:

```
.paragraph {
```

```
    font-family: courier;
    font-size: 16px;
    font-weight: italic;
    color: #FF0000;
    background: none;
    text-transform: capitalize;
}
.language-term {
    font-family: arial;
    font-size: 14px;
    font-weight: bold;
    color: #800000;
    background: none;
    text-transform: capitalize;
}
```

Access

Ribbon	Publish > Dictionary > Glossary > **Glossary View** > Right-click > Assign Markup Styles

Define Styles

Assign one style to each of the Glossary Term Types, which have been defined on the 'Glossary' dialog.

Option	Action
Term	This column lists the existing Term Types in the Glossary.
Style Name	This column identifies the style assigned to each Term Type. If no style has been assigned, the field is blank. To assign or switch the style, double-click on the row, type the style name on the 'Input' prompt and click on the **OK button**. If the name contains more than one word, link the words with hyphens. The new style name is added to the top of the 'CSS' panel.
CSS	Between the parentheses under the style name, type in or copy/paste the new style definition, or edit an existing definition. The styles are created one after another within the single style sheet for the Glossary.

OK	Click on this button to save changes to the style definitions and close the dialog.

Using Glossary Styles

You use Glossary Styles to identify and highlight Glossary terms in your printable reports, and to indicate what kinds of term they might be. You can also use the terms as place-holders for more complex text strings in the term definitions, so that the report generator substitutes the text string for the place-holder term. Both text formatting and text substitution are enabled by selecting options on the 'Generate Documentation' dialog (click on a Package or element and press **F8**).

Configure Reporting for Glossary Styles

You can apply glossary styles to your RTF, PDF or DOCX documentation through the 'Generate Documentation' dialog (select 'Publish > Model Reports > Report Builder > Generate Documentation').

Task	Action
Using the	Select the **Markup Glossary Terms**

Markup Style	checkbox to apply, in the generated report, any styles applied to any Glossary terms through the 'Notes' text of an element. A style is applied to a Glossary term according to its Glossary Term Type.

Notes

- You can copy the Glossary Style Sheet between models as reference data, using the 'Configure > Model > Transfer > Export Reference Data' and 'Import Reference Data' ribbon options

The Glossary Dialog

Using the 'Glossary' dialog, you can create, maintain and delete definitions of terms used in your project, as a Glossary. When reviewing the Glossary terms, you can filter the list to display terms of a specific Type.

The term Type also acts as a key for substituting the description of any term of that Type for the term itself, so that in a report the terms 'Corp', 'Uni' and 'Ult' would be replaced by the descriptions 'Corporate', 'Unified' and 'Ultimate', respectively.

Access

Ribbon	Publish > Dictionary > Glossary > Edit

Maintain Glossary Terms

Field	Action
Glossary Term	Type the term to include in the glossary.

Glossary Type	(Mandatory) Every Glossary term must be assigned to a Type, so that you can: • **Filter** terms by Type • Search for terms of specific Type • Assign a format and style to terms of a Type to indicate that a glossary definition has been attached to a word in the text; terms of different Types would be distinguished by their respective styles • Replace all terms of a specific Type with the text string in their 'Description' field (see the *Substituting Descriptions for Terms* section later in this topic) When you first start to create a Glossary, there are no Types defined in your model. You create the Types that are most appropriate to your work environment, by clicking on the button and, on the 'New Glossary Type' prompt, entering the name of the new Type. The names that you invent for the Types would be whatever is meaningful to the people compiling and using the Glossary. In the simplest of Glossaries you might have just one Type, simply to assign a style to it so that terms are identified as being defined in the Glossary. In larger, more complex Glossaries you might have

	different Types to group - for example - Business terms, System terms and Project-Specific terms. When the Types you require have been created, and you are defining a term, click on the **drop-down arrow** and select the appropriate Type. This field applies the Type only to the selected term; you can rename a Type for *all* terms of that Type using the Glossary view.
Description	(Mandatory) Type the definition or description of the term. If necessary, format the text of this description using the Notes toolbar at the top of the field.
Limit Display To	Click on the **drop-down arrow** and select the appropriate glossary type to filter the 'Type | Term' list and show entries of that type only. Select the '<All>' option to display all glossary entries.
New	Click on this button to clear the dialog fields so that you can define a new Glossary term.

Type | Term	Review the list of defined glossary terms; click on an entry to edit it in the dialog fields.
Save	Click on this button to save the new or updated glossary entry.
Delete	Click on this button to delete the entry selected from the 'Type | Term' list.
Report	Click on this button to generate and print a Glossary Report.

Substituting Descriptions for Terms

You can use the Type of Glossary entries to replace all terms of that Type in a report with the text string in the 'Description' field for each term. For example, you might define a Type of 'Abbreviation' and use that Type for a number of terms such as Co, Bus and Corp, with the respective descriptions of Company, Business and Corporation; when you generate a report, the text Co, Bus and Corp will be replaced with the corresponding description.

You apply the glossary term substitution through the 'Generate Documentation' dialog - select the 'Publish >

Model Reports > Report Builder > Generate Documentation' ribbon option - as described in the *Generate Documentation* Help topic. (This is separate from generating a report on the Glossary itself.)

1. On the 'Generate' page, select the '**Markup Glossary Terms**' checkbox
2. In the 'Use Glossary Substitution' field, click on the **drop-down arrow** and select the term Type. (You can only substitute for terms of one Type at a time.)

When you generate the report, for all glossary terms of the specified Type, wherever a term occurs in the report it will be replaced by its description.

You should not set up term substitution in a model from which you generate only HTML reports; the HTML report generator does not substitute descriptions.

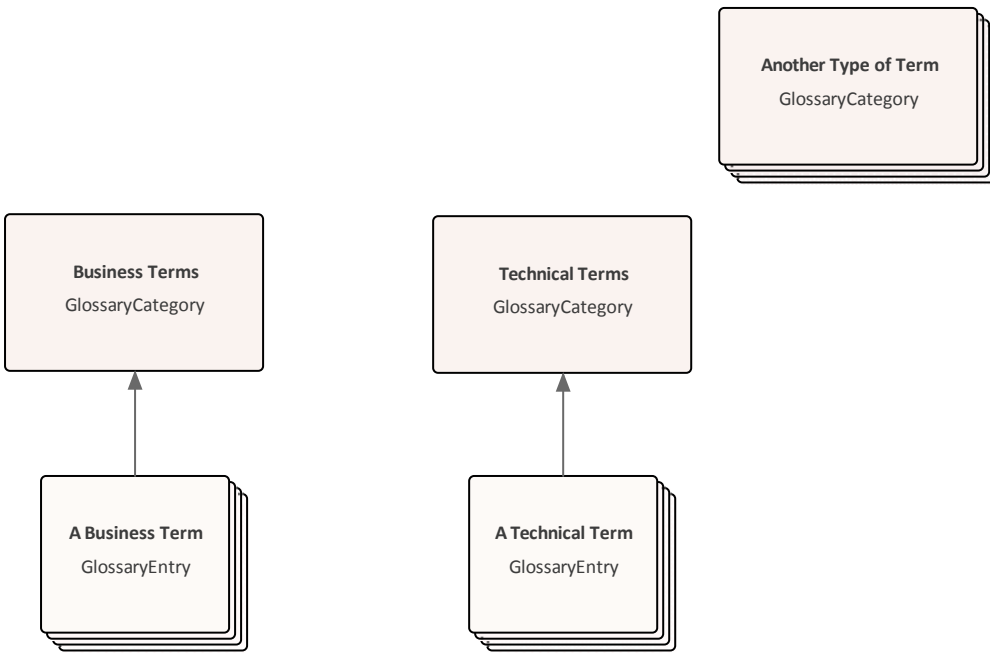
Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Manage Glossary' permission in order to create, update or delete Glossary items; if security is not enabled, you can manage Glossary items without any permissions

Create a Glossary as a Package Structure

Using the modeling approach to defining glossaries provides great flexibility and additional features not available in the dialog-list approach. In this approach the glossary, the categories and the terms themselves are modeled as first class citizens. This allows the categories and the terms to be located in the **Browser window**, visualized in diagrams, and for the terms to participate in relationships that model their semantic, and lexical connections. The terms can have additional properties defined such as an alias, status or any user-defined property such as Custodian. Hyperlinks can also be added that target an online resource used to define or clarify the term and discussions can be posted to facilitate the collaboration needed to ensure all stakeholders agree on the term's name and meaning. Governance and fine grained control of the creation and update of the Glossary content can be added down to a term level, using the Package and element locking feature in conjunction with model security.

You can define your **Project Glossary** using a model structure in which the Glossary itself is represented by a Package and each type of term (such as Business terms or Technical terms) is represented by a child Glossary Category Package containing Glossary Entry elements that define the terms. The structure resembles this illustration:



The Glossary Package is an optional convenience to collate Glossary content - the Glossary loader searches for and acts on the Category Packages which, with their Entry elements, can actually live anywhere in the model.

Anything you create or edit in the structure becomes active after you reload the Glossary. That is, a term defined in the Glossary is underlined and, when you move the cursor over it, the term, category and definition display in either a pop-up text box beside the term or at the bottom left of the screen in the Status Bar (depending on which location you have set in the 'Window Behavior' page of the 'Preferences' dialog).

The advantages of using this method are:

- You can set up the structure to create a functional Glossary very quickly
- It is extremely easy to add, change and remove categories of term, either on a diagram or in the Browser window

- You have great versatility in categorizing and changing the categories of defined terms
- The ease and speed with which you can add and edit term descriptions and definitions
- Glossary terms can be connected together to define semantic and lexical relationships
- Security can be set at any level to apply governance and federated control on the terms.
- **Discussions** can be posted to assist with definition and clarification of the terms' meanings
- Built-in or user-defined Properties can be added to the terms used to define meta-level information such as status, alias, the business or technical custodian and more

The same modeling principles are used to manage translation of the text you enter in Enterprise Architect; see the *Create a Translation Glossary Model* Help topic.

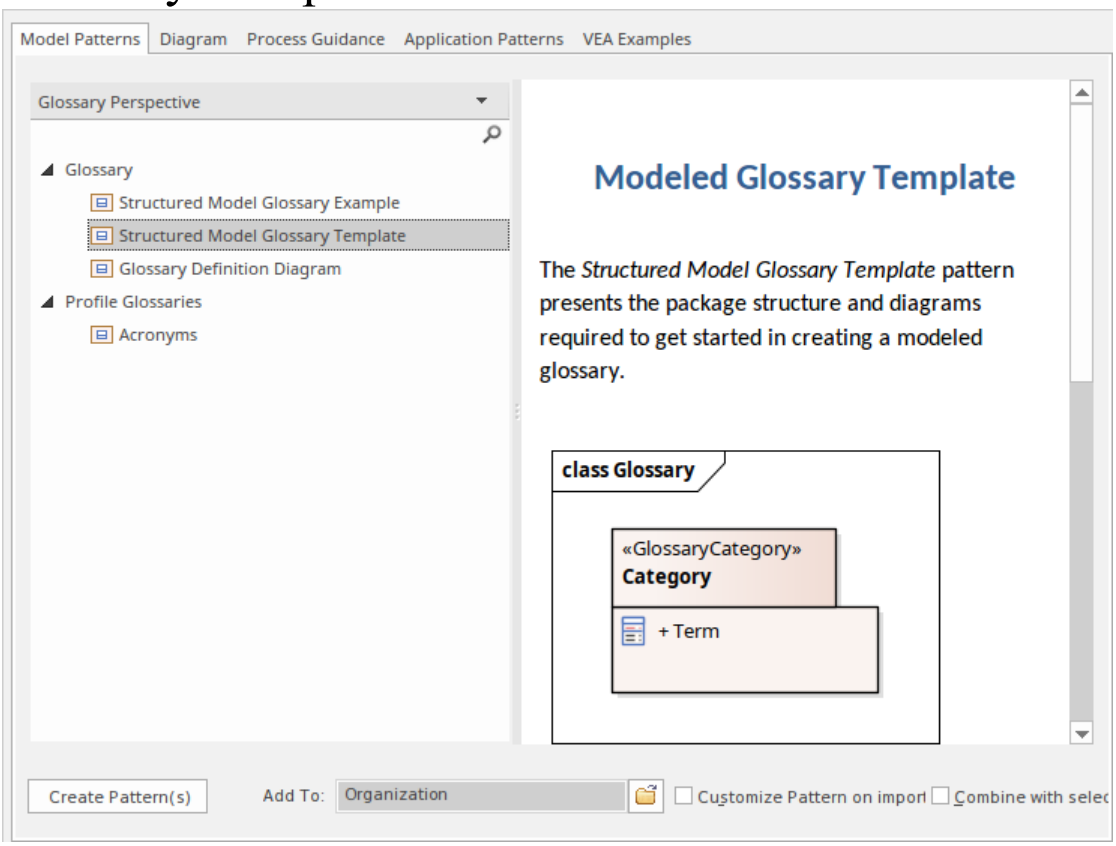
This feature is available in Enterprise Architect from Release 15.1 onwards.

Set up the Glossary Model

The first stage in setting up your Glossary model is to locate or create the parent Package for the Glossary. This could be directly as a Root Node, a View, a Model Package (created from the **Model Wizard**) or one or more simple Packages. Your choice depends on how you want the Glossary structure to sit within your overall Project.

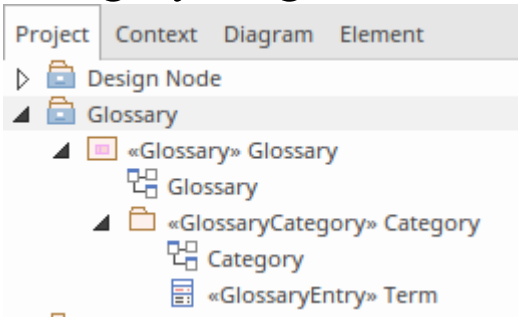
The simplest and most structured method is to create a model using the Model Wizard.

1. In the **Browser window**, click on the host Root Node, View or Package for the Glossary (perhaps within an Administration or Resources section of your project).
2. Click on the  icon in the Browser window toolbar. The Model Wizard displays at the 'Model Patterns' tab.
3. Click on the <name> Perspective button just underneath the 'Model Patterns' tab name, and select 'Management | Glossary'. The Glossary Perspective patterns list displays, providing a number of options that are described later in this topic; for this process click on 'Structured Model Glossary Template'.



4. Click on the **Create Pattern(s) button**. A Glossary Package is added to the Browser window under the host

Package, containing a Glossary diagram and a <<GlossaryCategory>> Package, which in turn contains a Category diagram and a <<GlossaryEntry>> element.



5. In the Browser window, click on the <<GlossaryCategory> Package and, using the **Properties window** (press **Ctrl+2** if it is not open), change the name to represent the first of your glossary categories, such as 'Business Terms'. Do the same thing with the name of the diagram in the <<GlossaryCategory>> Package.
6. In the Browser window, click on the <<GlossaryEntry>> element and change the name to the first of the glossary terms in the current Glossary Category; for example, 'BPMN'.
7. In the **Notes window** for the element (press **Ctrl+3** if the window is not open) type the description or definition of the term.

You now have the structure of the Glossary model with one term definition in one of the term categories.

Right-click on the name of any GlossaryCategory Package or GlossaryEntry element in the Browser window and select the 'Reload Glossary' option. Choose an object in the model and type your term in the Notes window, then move the cursor over that term. You will see the term description or definition in either a pop-up text box or the Status Bar, as

defined in the 'Preferences' dialog.

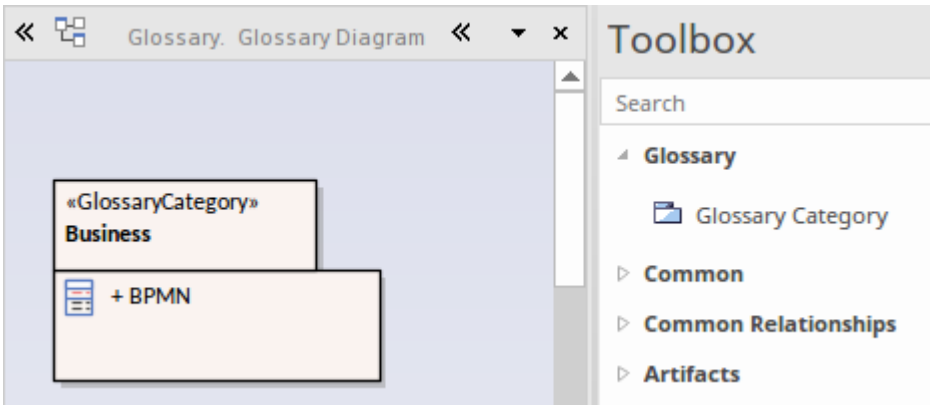
If the description is too long to display in the initial location, press **Ctrl** and click the left mouse button to display the **Project Glossary View**. This shows the details of all Glossary items, including the definition of each item.

If a term has more than one definition (as might occur with multiple technologies and/or pre-defined text translations) all definitions are shown in the tool-tip, although they are listed as separate items in the Project Glossary View.

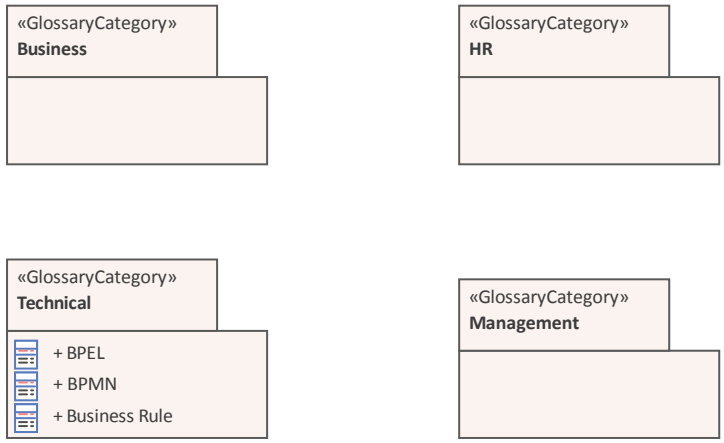
Add Categories and Terms to the Model

Having set up the basic structure of the Glossary model, you can create further categories and add terms to each category.

Your first step is to double-click on the Glossary diagram name in the **Browser window**, to open it. You will see that it contains the initial <<GlossaryCategory>> Package element, itself listing the first <<GlossaryEntry> element. The **Diagram Toolbox** will also open at the 'Glossary' page, containing the **Glossary Category icon**.



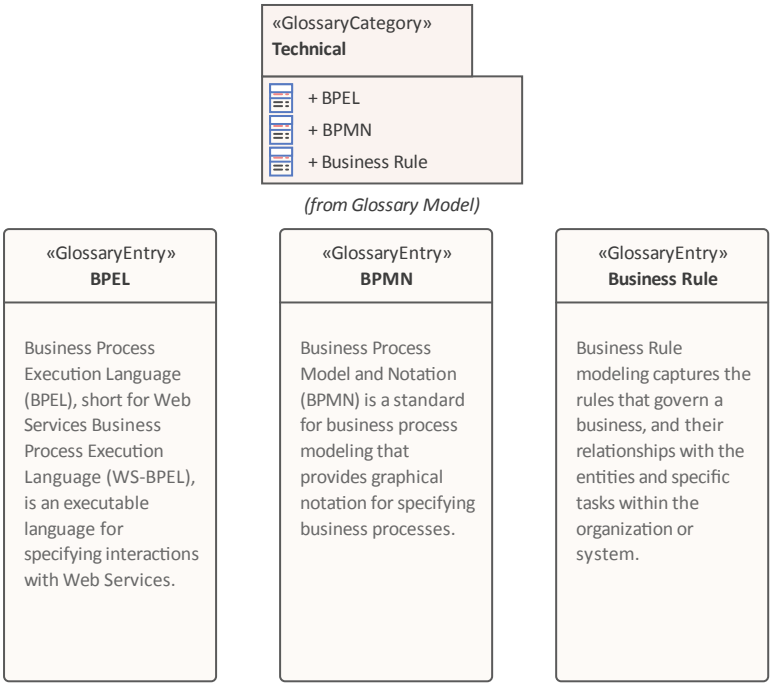
1. For each Glossary Category you want to group terms and definitions under, drag the Glossary Category icon from the Toolbox onto the diagram and provide a name for it, such as 'Technical', 'HR' or 'Management'. A <<GlossaryCategory>> Package is created on the diagram and in the model.
2. Save the diagram.



You can now add Glossary Terms to each of the categories. This is one method - you can also add the Glossary Entry elements via other windows and views, and directly through the Browser window. See the *Create Elements* Help topic.

1. Double-click on the first Category Package under which to define some terms. A new diagram opens with the same name as the Category, and the Toolbox displays the 'Category' page, containing the **Glossary Entry icon**.
2. For each term you want to define in this category, drag the Glossary Entry icon onto the diagram. A <<GlossaryEntry>> element is created on the diagram and in the model.
3. Double-click on the element and, in the 'Properties' dialog, type the term being defined in the 'Name' field and

the definition of the term in the 'Notes' panel. Click on the **OK button**. You begin to build up the set of Glossary terms relevant to the category.



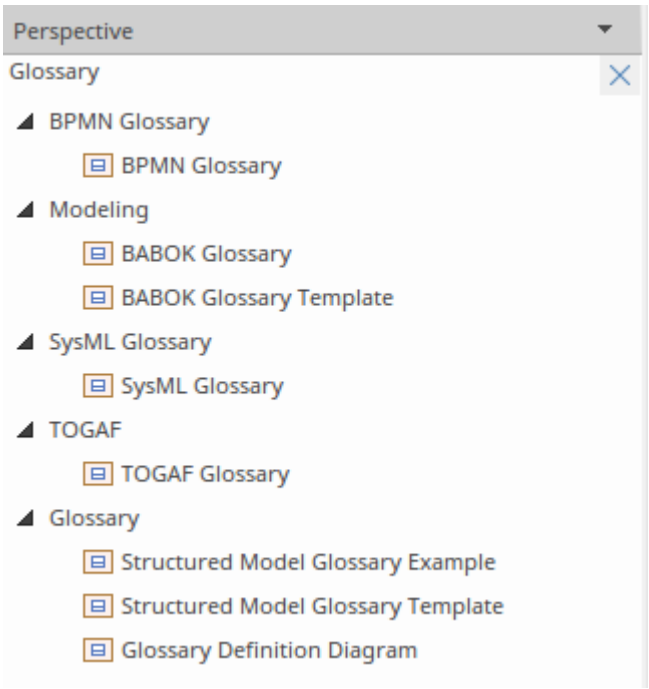
Again, save the diagrams, right-click on the name of any GlossaryCategory Package or GlossaryEntry element and select the 'Reload Glossary' option to activate the new terms in the Glossary of the model.

Create a Domain-Specific Glossary

You can create a number of types of Glossary to suit your requirements, either under one overall Glossary Package or dispersed under separate context-Glossary Packages, or even as individual GlossaryCategory Packages. One example of a glossary type is the natural language Translation model, which is discussed in the *Create a Translation Glossary Model* Help topic. Others include

Glossaries specific to, say, individual modeling languages or development domains.

You can create domain-specific glossaries from scratch. However, Enterprise Architect provides patterns to help you load a number of ready-made domain glossaries. To see those available, select 'All **Perspectives**' in the **Model Wizard** 'Perspectives' field and set the filter field directly underneath it to 'Glossary'.



Amongst the patterns listed you will see those for glossaries of BPMN terms, SysML terms, BABOK terms and TOGAF terms. You can simply create glossaries directly from these patterns and - if necessary - add to or edit the term definitions. If a pattern does not exist for your required modeling language or domain, you could use one of the listed patterns and more radically edit the resulting glossary to adapt it to your language or domain.

Create an Ad-Hoc Glossary

Whether you have a structured glossary model or not, you might find that you need to define or capture a set of terms quickly, or without any real consideration for what specific category they might belong to. For example, you might have a solid glossary for SysML but decide to define a number of more general MBSE terms or more localized company jargon terms.

In these contexts, you can use the Glossary Definition Diagram pattern to create an empty diagram in which you can create GlossaryEntry elements or into which you can drag any other type of existing element from the **Browser window**. The only things to consider are:

- The diagram name should indicate some relationship with the glossary, such as 'Unassigned Glossary Terms'
- The element name should represent the term and
- The element notes should provide an appropriate definition or description of the term

Once the elements are on the diagram, just right-click on the name of any GlossaryCategory Package or GlossaryEntry element and select the 'Reload Glossary' option. The element names and notes text are added to the glossary, and when you mouse-over the term in text, the definition displays preceded by the diagram name, identifying where the definition is held.

Notes

- In the Corporate, Unified and Ultimate Editions of Enterprise Architect, if security is enabled you must have 'Manage Glossary' permission in order to create, update or delete Glossary Categories and Entries; if security is not enabled, you can manage Glossary items without any permissions
- Glossary Categories defined as Packages in the model are not offered as 'Type' options in the 'Glossary Detail' dialog; to assign dialog items to the same category as model items, you have to specify the category as a new type in the dialog (click on the icon at the end of the 'Type' field)
- In the **Project Glossary View** the items created as model elements (Model Item = **True**) have different context menu options to those generated though the 'Glossary Detail' dialog; for example, you cannot add or delete Model Items in the Project Glossary View

Create a Translation Glossary Model

A Translation Glossary model is a variant of your overall Glossary model. If you are not yet familiar with the structure of a Glossary model, see the *Create a Glossary as a Package Structure* Help topic.

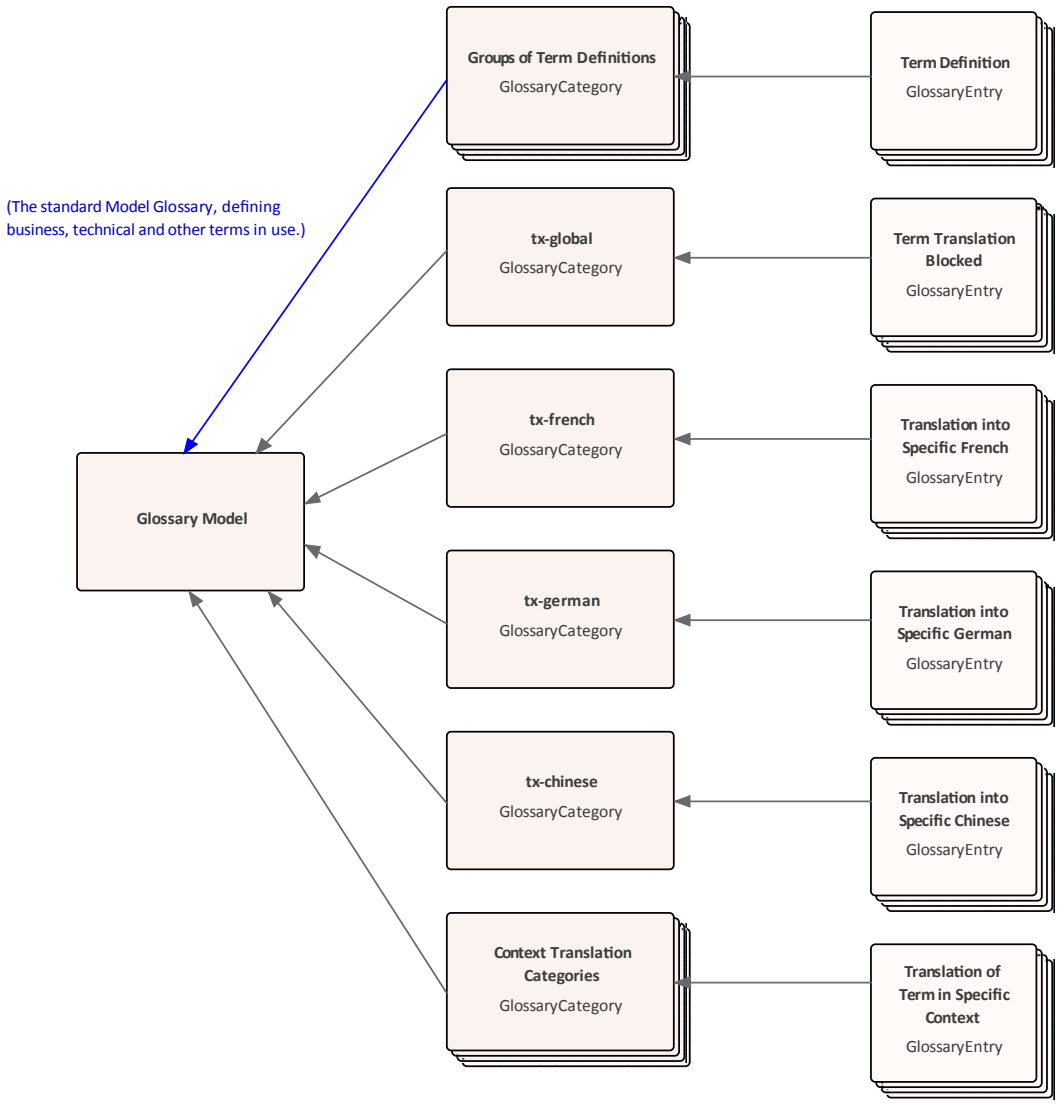
The Translation model is a reference for the automatic Translation facilities. The model defines terms that should not be translated (such as product names) or terms that should be translated to a specific word or phrase, either whenever it is encountered or when a specific instance of the term is flagged. The automatic Translation facilities check the model and substitute and protect the defined terms in the Notes text before calling the Google, Windows or custom translator to freely translate the rest of the Notes content.

Like the elements of the overall Glossary, the Translation model elements also show the 'meaning' of the term - any specific translation of the term in each configured language, or a block against translation - in the in-text pop-up messages, Status bar messages and **Project Glossary View** entries. You can therefore check what is defined for a term by moving the cursor over it.

The Translation GlossaryCategory Packages can be children of a top-level Glossary Package, their own <language>-Glossary Packages or any other convenient Package in the model. You would typically have a global translation category (primarily for terms that are not to be

translated), a category for each configured language, such as French, German and Chinese, and one or more categories for 'special use' terms that have defined translations only in certain contexts - such as when used in a menu path. The translation facilities are already configured to check the language-specific categories, but when you flag a 'special use' term a prompt displays for you to specify which category contains the translation to use.

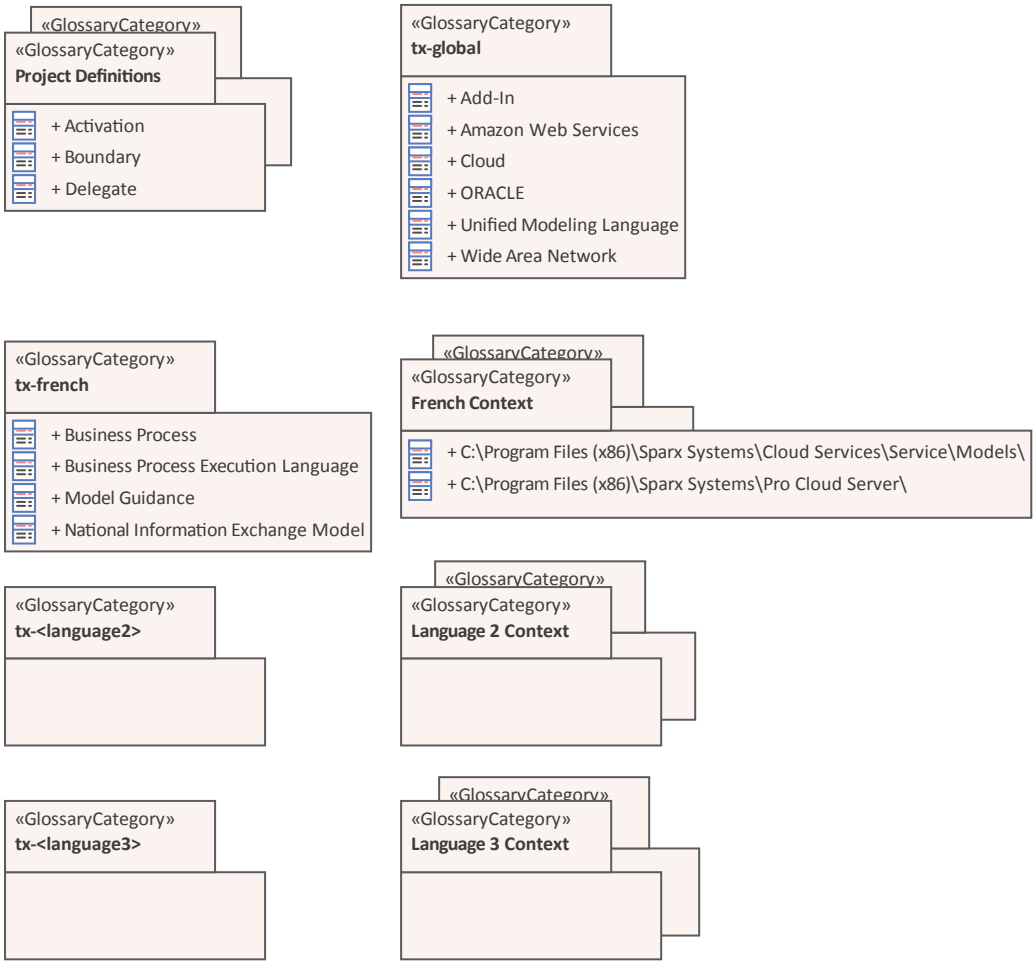
An overall Glossary model with translation categories might have this organization:



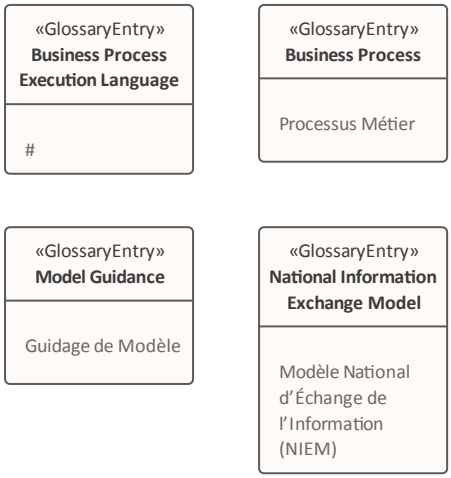
Set up the Translation Model

Locate or create the parent Package for the translation GlossaryCategory Packages (such as an overall Glossary Package - see the *Create a Glossary as a Package Structure* Help topic.)

The Glossary diagram for translations will contain GlossaryCategory elements for the global translation process, for each language your project team will translate text into, and at least one 'special case' where words in one context must be translated differently from the same words in a different context. You therefore need to plan what categories you require, especially the types of special case you might need to prepare for. For each language translation Package, give the Package the name *tx-<language>*; for example, *tx-french*. An overall Glossary model content, as it is being developed, might resemble this example:



Each GlossaryCategory Package will have its own GlossaryCategory diagram, to which you add GlossaryEntry elements. A GlossaryEntry element defines how a text string or term (the name of the element) is processed in translation - whether it is blocked against translation or whether it is pre-set with a specific translation in the corresponding language and/or under a certain condition. You therefore also need to consider what terms you will use that require special treatment in the translation process. A GlossaryCategory diagram might resemble this example:



If you want to block the translation of a term, type a hash (#) as the complete notes text for the element, as shown for the Business Process Execution Language element in the diagram. If you want to provide a specific translation of the term, type that translation into the notes text as shown for the other elements in the diagram.

Generate a Report

You can generate a rich text format (RTF) file of your model's glossary, which you can either print or attach to any other appropriate document file.

The file can contain all glossary entries, or just those of selected Types.

Access

Ribbon	Publish > Dictionary > Glossary > Edit : Report

Generate an RTF report of the Project Glossary

Step	Action
1	In the 'Filename' field, type or select a filename for the glossary.
2	In the 'Heading' field, type a suitable heading for the

	glossary.
3	In the 'Include Glossary Items' panel, select the checkbox for each type of glossary entry to include. To select all types of entry, click on the **Select All** button.
4	If necessary, to define the page setup for the report, click on the **Page Setup button** and complete the 'Page Setup' dialog.
5	If you want to substitute certain system-defined words for others that might be more meaningful to your readers, or print the whole report in another language, click on the **Language button** and define your output on the 'Customize RTF Language' dialog.
6	To include page breaks, select the 'Page break between sections' checkbox.
7	Click on the **Generate button** to generate the report.
8	Click on the **View button** to open the report.

Glossary Report Output Sample

An example of the output from a Glossary report is shown here:

Glossary

Business Terms

Accounting Periods

A defined period of time whereby performance reports can be extracted (normally 4 week periods).

Customer

A person or a company that requests an entity to transport goods on their behalf.

Technical Terms

Association

A relationship between two or more entities. Implies a connection of some type - for example, one entity uses the services of another, or one entity is connected to another over a network link.

Component Model

The component model provides a detailed view of the various hardware and software components that make up the proposed system. It shows both where these components reside and how they inter-relate with other components. Component requirements detail what responsibilities a component has to supply functionality or behavior within the system.

Deployment Model

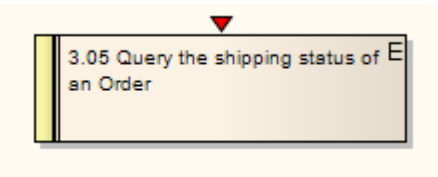
A model of the system as it is physically deployed.

Extends Relationship

A relationship between two Use Cases in which one Use Case 'extends' the behavior of another. Typically this represents optional behavior in a Use Case scenario - for example a user might optionally request a list or report at some point in a performing a business Use Case.

Bookmarks

A bookmark is a visual cue to monitor or pay particular attention to an element; it is represented by a small red triangle (or red Del symbol) that displays above the element in the diagram or **Model Search**.



You can attribute any meaning to the bookmark as is appropriate to your model.

You can bookmark:

- Single elements manually, or
- All elements in a Package automatically when they assume a defined status

Note that there is a separate bookmark facility to add an annotated bookmark (a red ellipse containing a number or short text string) to an element on a diagram. This is available through the element context menu on the diagram (see the *Element Context Menu Operations* Help topic).

Bookmark Options

Option	Action
Bookmark a	Either:

selected element in a diagram	• Press **Shift+Space**, or • Select the 'Design > Element > Manage > Bookmark' ribbon option
Clear a bookmark on a selected element	Use either of the two options again.
Bookmark Multiple Elements in a Package	**Browser window** | Right-click on Package | Contents | Bookmarks The 'Manage Bookmarks' dialog displays, which you can use to automatically bookmark any elements (and, if required, their children) in the Package that have: • New changes defined in the **Maintenance window** • New defects defined in the Maintenance window, and/or • Test scripts defined in the **Testing window** This is useful to highlight elements that have additional project information.
Clear all elements of bookmarks	To clear all bookmarks: • Throughout the current Package, click on the **Clear All button** on the 'Manage Bookmarks' dialog

	• In the current diagram, select the bookmarked elements and then press **Shift+Space**

Notes

- You should reload the project to update it with the new or cleared bookmarks
- The **Find in Project window** provides the facility to search based on bookmarked elements

Model Transformation

One of the great advantages of creating models is the ability to manipulate them to produce outputs, thus saving time and reducing the possibility of errors. Enterprise Architect implements Model Driven Architecture (MDA) transformations using a flexible and fully configurable template system. The templates act as instructions to a machine that takes a model as input and transforms it to a more resolved model as output. The input could be a large and complex model or a single element and one input model could be transformed to a variety of output models.

The transformations are commonly unidirectional and take a Platform Independent Model (PIM) and transform it to one or more Platform Specific Models (PSM). A good example of where this is useful is where a system must be implemented in a number of different relational database systems. A single platform independent conceptual model (the PIM) could be transformed to a number of platform specific models, say Oracle, MySQL and SQLite. As a further productivity boost, once the output models are produced they can also be converted to programming code, database definition language or schemas. Enterprise Architect automatically creates traceability that can be used to visualize how elements in the input model have been transformed to elements in the output model.

Facilities

Facility	Description
Transform Elements 	Discover how to transform elements on a diagram or from a **Browser window** Package.
Built-in Transformations 	Enterprise Architect provides a number of built-in transformations that support a wide range of target languages. Each is fully customizable to your specific needs.
Edit Transformation Templates 	Learn how to adjust the transformation templates to produce transformations specific to your system.
Write Transformations 	All the information you will need to create your own transformations.

Ready-built Transformations

The Enterprise Architect installer includes a number of basic built-in transformations, including:

- PIM to:
  - C#
  - C++
  - DDL table elements
  - EJB Entity Bean
  - EJB Session Bean
  - Java
  - PHP
  - VB.Net
  - **XSD**
- Data Model to **Entity Relationship diagram** (ERD)
- Entity Relationship diagram (ERD) to Data Model
- Sequence diagram to Communication diagram
- Communication diagram to Sequence diagram
- Java model to JUnit test model
- .NET model to NUnit test model
- WSDL interface model to WSDL

Further transformations will become available over time, either built in or as downloadable modules from the Sparx Systems website.

Customized Transformations

You can modify the built-in transformations or define your own, using Enterprise Architect's simple code generation template language. This involves little more than writing templates to create a simple intermediary source file; the system reads the source file and binds that to the new PSM.

Transformation Dependencies

When you execute a transformation, the system creates internal bindings (Transformation Dependencies) between each PSM created and the original PIM. This is essential, providing the ability to forward synchronize from the PIM to the PSM many times, adding or deleting features as you go; for example, adding a new attribute to a PIM Class can be forward synchronized to a new column in the Data Model.

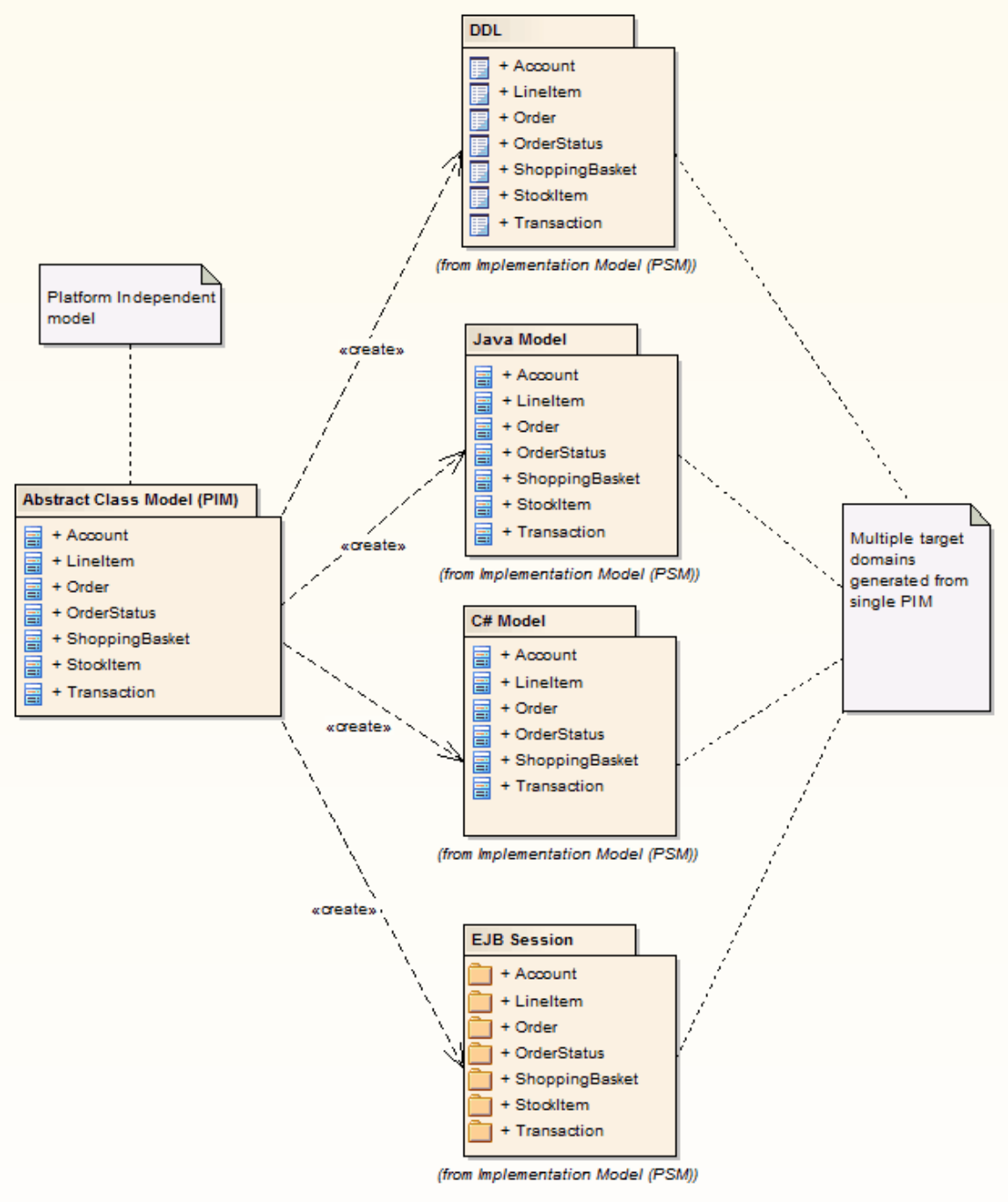
You can observe the Transformation Dependencies for a Package using the **Traceability window**, to check the impact of changes to a PIM element on the corresponding elements in each generated PSM, or to verify where a change required in a PSM should be initiated in the PIM (and also to reflect back in other PSMs). The Transformation Dependencies are a valuable tool in managing the traceability of your models.

Enterprise Architect does not delete or overwrite any element features that were not originally generated by the transform; therefore, you can add new methods to your elements, and Enterprise Architect does not act on them

during the forward generation process.

Example of a Transformation

This diagram highlights how transformations work and how they can significantly boost your productivity.



Notes

- If you are using the Corporate, Unified or Ultimate Edition, if security is enabled you must have 'Transform Package' access permission to perform an MDA

Transformation on the elements of a Package

Transform Elements

A model transformation is a user initiated function that starts the process of transforming one or more Platform Independent Model (PIM) elements into their corresponding Platform Specific Model (PSM) elements. This process takes place in accordance with the rules that have been codified in the Transformation Templates. The transformation can be initiated by selecting a Package in the **Browser window** or an element in a diagram.

Access

Ribbon	Design > Tools > Transform > Transform Selection
Keyboard Shortcuts	**Ctrl+H** (transform selected elements) **Ctrl+Shift+H** (transform selected Package)

Perform a Transformation

Option	Action

Elements	Lists all of the individual elements selected in the diagram or held in the Package. Either: • Click on an element to include just that element in the transformation • Hold **Ctrl** and click on several separate elements to include them in the transformation, or • Hold **Shift** and click on the first and last elements in a block to include those elements in the transformation
All	Click on this button to select all of the elements in the list to include them in the transformation.
None	Click on this button to deselect all of the elements in the list.
Include child packages	(If you have selected to transform elements in a Package.) Select this checkbox to include (in the 'Elements' list and potentially in the transformation) elements from the child Packages of the selected Package.
Transformations	Select the checkbox against each type of transformation to perform. When you

	select a checkbox, the 'Browse Project' dialog displays; locate and select the target Package into which to generate the transformed elements. If you want to change a selected target Package, click on the ... button to the right of the Package name and select the new Package from the dialog.
Generate Code on result	Select this checkbox to specify whether or not to automatically generate code for transformed Classes that target code languages. If you select this option, the first time you transform to the Class the system prompts you to select a filename to generate code into; subsequent transformations automatically generate code to that filename.
Perform Transformations on result	Select the checkbox to automatically execute transformations previously done on the target Class or Classes.
Intermediary File	If you want to capture the intermediary language file (for example, to debug it), either type in the file path and name or click on the ... button and locate and select the file.

Write Always	Select this checkbox to always write the intermediary file to disk.
Write Now	Click on this button to generate the intermediary file without performing the full transformation.
Do Transform	Click on this button to execute the transformation. When the transformation is complete, the 'Model Transformation' dialog closes.
Close	Click on this button to close the 'Model Transformation' dialog without performing the transformation.

Notes

- When the dialog displays, all elements are selected and all transformations previously performed from any of these Classes are checked
- This procedure does not apply to the Sequence diagram/Communication diagram transformation, or the Communication diagram/Sequence diagram transformation

Chaining Transformations

Chaining transformations provides an extra degree of flexibility and power to performing transformations. For example, if two transformations have a common element; you might separate this element out into its own transformation, and then perform the original transformations from the common point. The separated transform could even produce a useful model itself.

You can chain transformations by selecting the 'Perform Transformations on result' checkbox in the 'Model Transformation' dialog, so that transformations that have already been performed on target Classes are executed automatically next time that Class is transformed to.

Built-in Transformations

Enterprise Architect provides a rich set of built-in, commonly performed transformations. These will prove useful to a variety of disciplines from Domain Modeling to Code Engineering. The facility to transform models is a powerful productivity tool and it is expected that modelers will want to create their own custom transformations. The built-in transformations provide useful examples and are a valuable reference for the modeler.

Built-in Transformations

Transformation	Converts
C#	Platform-Independent Model (PIM) elements to language-specific C# Class elements.
C++	PIM elements to language-specific C++ Class elements.
Data Definition Language	A logical model to a data model targeted at the default database type, ready for DDL generation.

Entity Relationship Diagram to Data Model	An ERD logical model to a data model targeted at the default database type, ready for DDL generation.
Data Model to Entity Relationship Diagram	A data model to an ERD logical model.
EJB Session Bean	A single Class element to the elements of an EJB session.
EJB Entity Bean	A single Class element to the elements of an EJB entity.
Java	PIM elements to language-specific Java Class elements.
JUnit	An existing Java Class element with public methods to a Class with a test method for each public method, plus the methods required to appropriately set up the tests.
NUnit	An existing .NET compatible Class with public methods to a Class with a test method for each public method, plus the methods required to appropriately set up

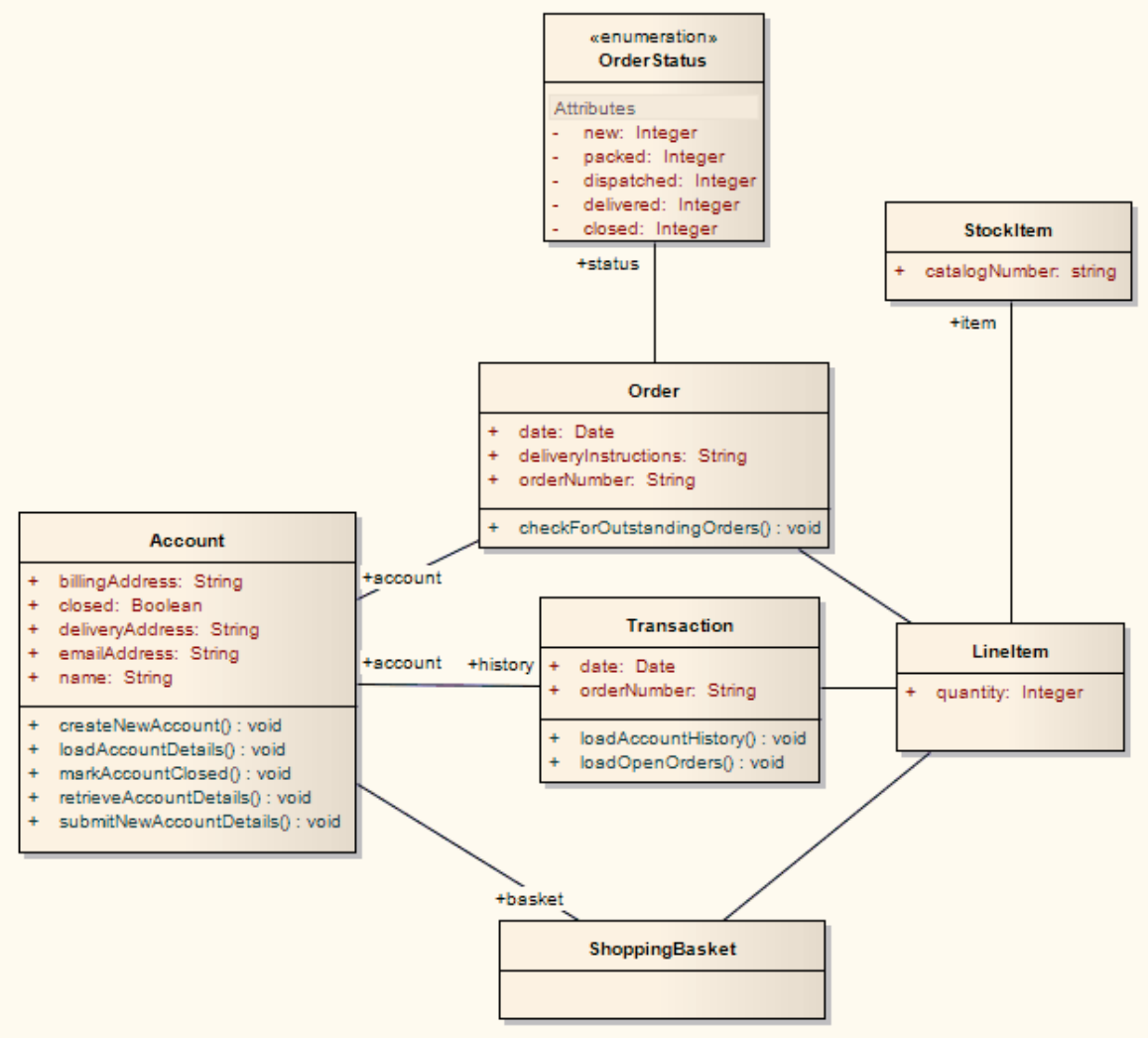
	the tests.
PHP	PIM elements to language-specific PHP Class elements.
Sequence/Communication Diagram	All elements and messages in an opened Sequence diagram into matching elements and messages in a Communication diagram, and vice versa.
VB.Net	PIM elements to language-specific VB.Net Class elements.
WSDL	A simple model to an expanded model of a WSDL interface, suitable for generation.
XSD	PIM elements to UML Profile for XML elements, as an intermediary step in creating an XML Schema.

C# Transformation

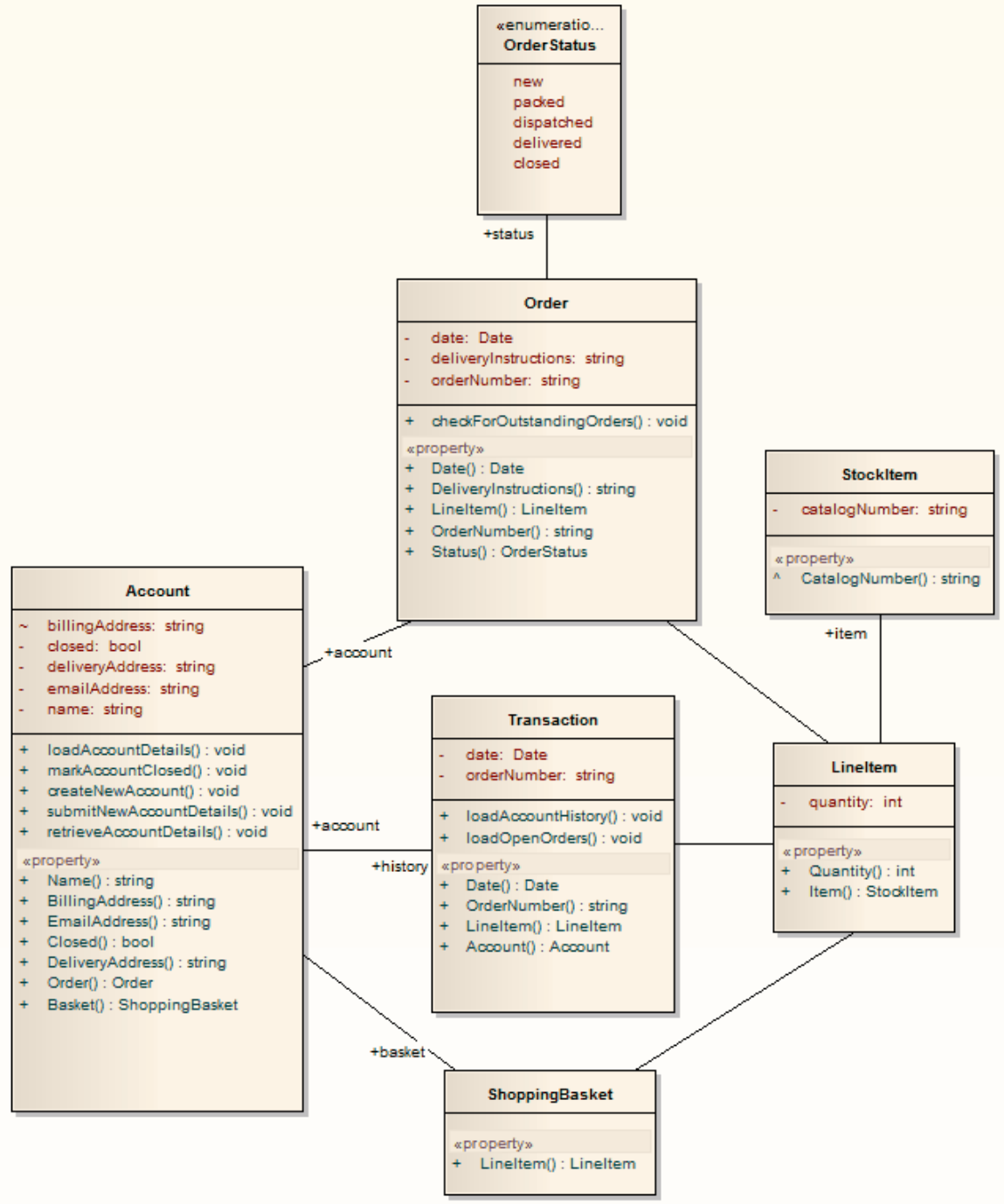
The C# transformation converts Platform-Independent Model (PIM) element types to C#-specific Class element types, and creates encapsulation according to the system options you have set for creating properties from C# attributes (on the 'C# Specifications' page of the 'Preferences' dialog).

Example

The PIM elements



After transformation, become the PSM elements

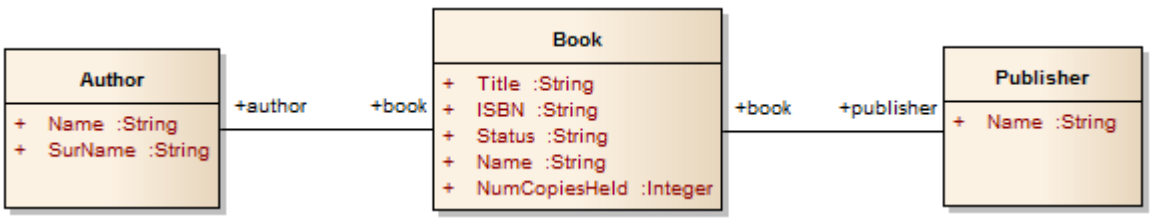

«enumeratio...
OrderStatus
new
packed
dispatched
delivered
closed
+status
Order
- date: Date
- deliveryInstructions: string
- orderNumber: string
+ checkForOutstandingOrders() : void
«property»
+ Date() : Date
+ DeliveryInstructions() : string
+ LineItem() : LineItem
+ OrderNumber() : string
+ Status() : OrderStatus
StockItem
- catalogNumber: string
«property»
^ CatalogNumber() : string
+item
Account
~ billingAddress: string
- closed: bool
- deliveryAddress: string
- emailAddress: string
- name: string
+ loadAccountDetails() : void
+ markAccountClosed() : void
+ createNewAccount() : void
+ submitNewAccountDetails() : void
+ retrieveAccountDetails() : void
«property»
+ Name() : string
+ BillingAddress() : string
+ EmailAddress() : string
+ Closed() : bool
+ DeliveryAddress() : string
+ Order() : Order
+ Basket() : ShoppingBasket
+account
+account
+history
Transaction
- date: Date
- orderNumber: string
+ loadAccountHistory() : void
+ loadOpenOrders() : void
«property»
+ Date() : Date
+ OrderNumber() : string
+ LineItem() : LineItem
+ Account() : Account
LineItem
- quantity: int
«property»
+ Quantity() : int
+ Item() : StockItem
+basket
ShoppingBasket
«property»
+ LineItem() : LineItem

C++ Transformation

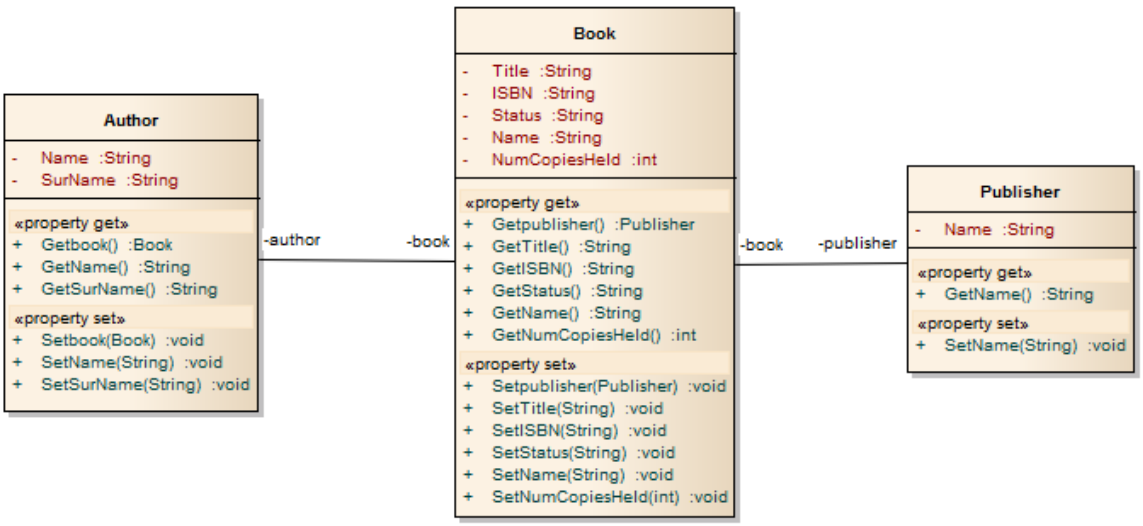
The C++ transformation converts Platform-Independent Model (PIM) element types to C++ specific Class element types and creates encapsulation (producing the getters and setters) according to the options you have set for creating properties from C++ attributes (on the 'C++ Specifications' page of the 'Preferences' dialog). Note that the public attributes in the PIM are converted to private attributes in the PSM. All operations on an interface are transformed into pure virtual methods on an equivalent class.

Example

The PIM elements



After transformation, become the PSM elements


Author
- Name :String
- SurName :String
«property get»
+ Getbook() :Book
+ GetName() :String
+ GetSurName() :String
«property set»
+ Setbook(Book) :void
+ SetName(String) :void
+ SetSurName(String) :void
-author
-book
Book
- Title :String
- ISBN :String
- Status :String
- Name :String
- NumCopiesHeld :int
«property get»
+ Getpublisher() :Publisher
+ GetTitle() :String
+ GetISBN() :String
+ GetStatus() :String
+ GetName() :String
+ GetNumCopiesHeld() :int
«property set»
+ Setpublisher(Publisher) :void
+ SetTitle(String) :void
+ SetISBN(String) :void
+ SetStatus(String) :void
+ SetName(String) :void
+ SetNumCopiesHeld(int) :void
-book
-publisher
Publisher
- Name :String
«property get»
+ GetName() :String
«property set»
+ SetName(String) :void

Data Model To ERD Transformation

The Data Model to **Entity Relationship diagram** (ERD) transformation creates an ERD logical model from a Data Model. It is the reverse of the ERD to Data Model transformation. This transformation uses and demonstrates support in the intermediary language for a number of database-specific concepts.

Supported Concepts

Concept	Effect
Entity	Mapped one-to-one onto Table elements.
Attribute	Mapped one-to-one onto Columns.
Primary Key	Derived from the PrimaryKey type of column.

Notes

- Sometimes you might want to limit the stretch of the diamond-shaped Relationship connectors; simply pick a

Relationship connector, right-click to display the context menu, and select the 'Bend Line at Cursor' option

DDL Transformation

The DDL transformation converts the logical model to a data model structured to conform to one of the supported DBMSs. The target database type is determined by which DBMS is set as the default database in the model (see the *Database Datatypes* Help topic, 'Set As Default' option). The data model can then be used to automatically generate DDL statements to run in one of the system-supported database products.

The DDL transformation uses and demonstrates support in the intermediary language for a number of database-specific concepts.

Concepts

Concept	Effect
Table	Mapped one-to-one onto Class elements. 'Many-to-many' relationships are supported by the transformation, creating Join tables.
Column	Mapped one-to-one onto attributes.
Primary Key	Lists all the columns involved so that they exist in the Class, and creates a

	Primary Key Method for them.
Foreign Key	A special sort of connector, in which the Source and Target sections list all of the columns involved so that: • The columns exist • A matching Primary Key exists in the destination Class, and • The transformation creates the appropriate Foreign Key

MDG Technology to customize default mappings

DDL transformations that target a new, user defined DBMS require an MDG Technology to map the PIM data types to the new target DBMS.

To do this, create an MDG Technology .xml file named 'UserDBMS Types.xml', replacing UserDBMS with the name of the added DBMS. Place the file in the EA\MDGTechnologies folder. The contents of the MDG Technology file should have this structure:

```
<MDG.Technology version="1.0">
    <Documentation id="UserdataTypes" name="Userdata
```

```
Types" version="1.0" notes="DB Type mapping for
UserDBMS"/>
    <CodeModules>
        <CodeModule language="Userdata" notes="">
            <CodeOptions>
                <CodeOption
name="DBTypeMapping-bigint">BIGINT</CodeOption>
                <CodeOption
name="DBTypeMapping-blob">BLOB</CodeOption>

                <CodeOption
name="DBTypeMapping-boolean">TINYINT</CodeOptio
n>
                <CodeOption
name="DBTypeMapping-text">CLOB</CodeOption>
                ...
            </CodeOptions>
        </CodeModule>
    </CodeModules>
</MDG.Technology>
```

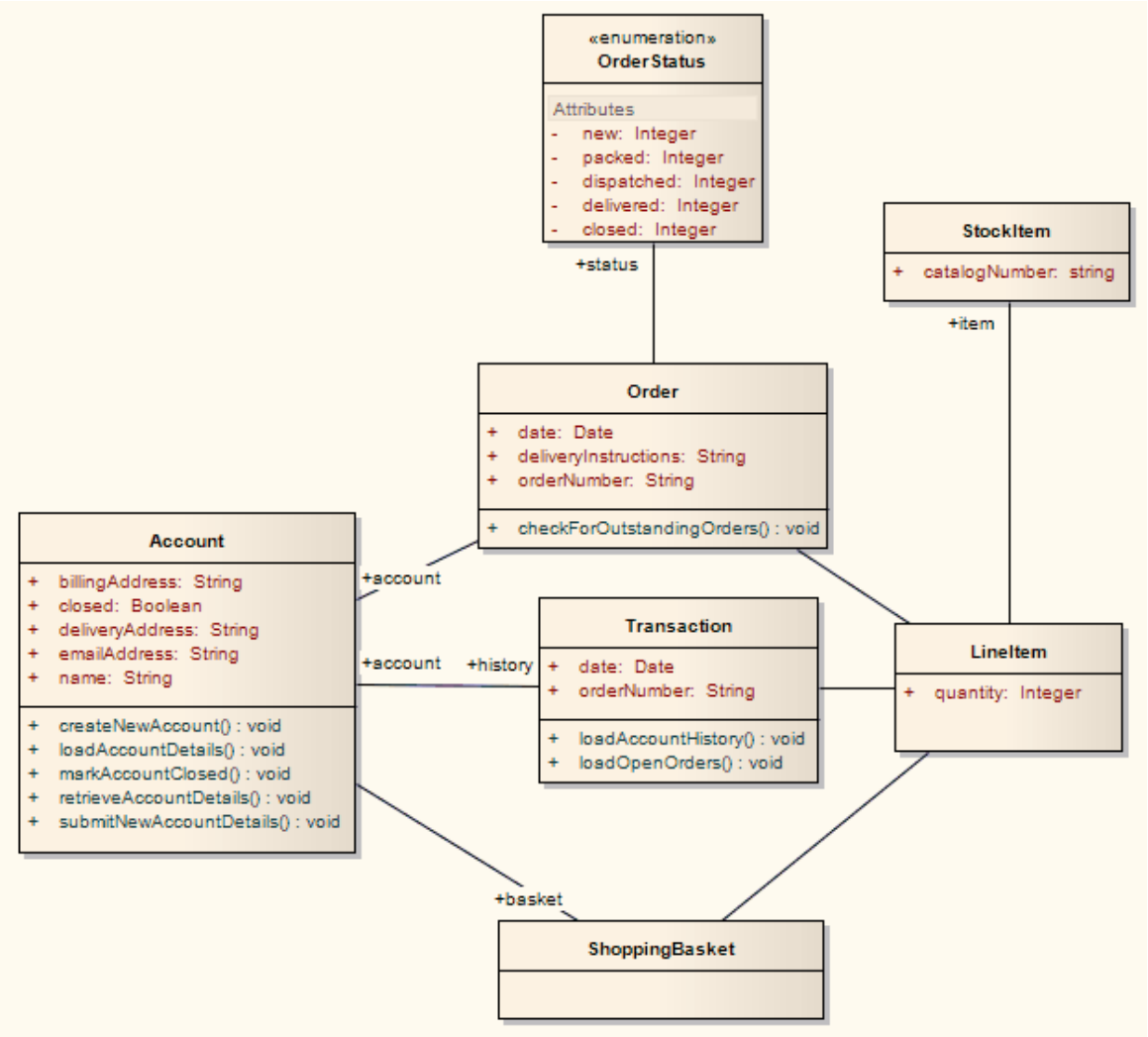
As an example, 'text' is a Common Type (as listed in the 'Database Datatypes' dialog) that maps to a new DBMS's 'CLOB' data type.

Notes

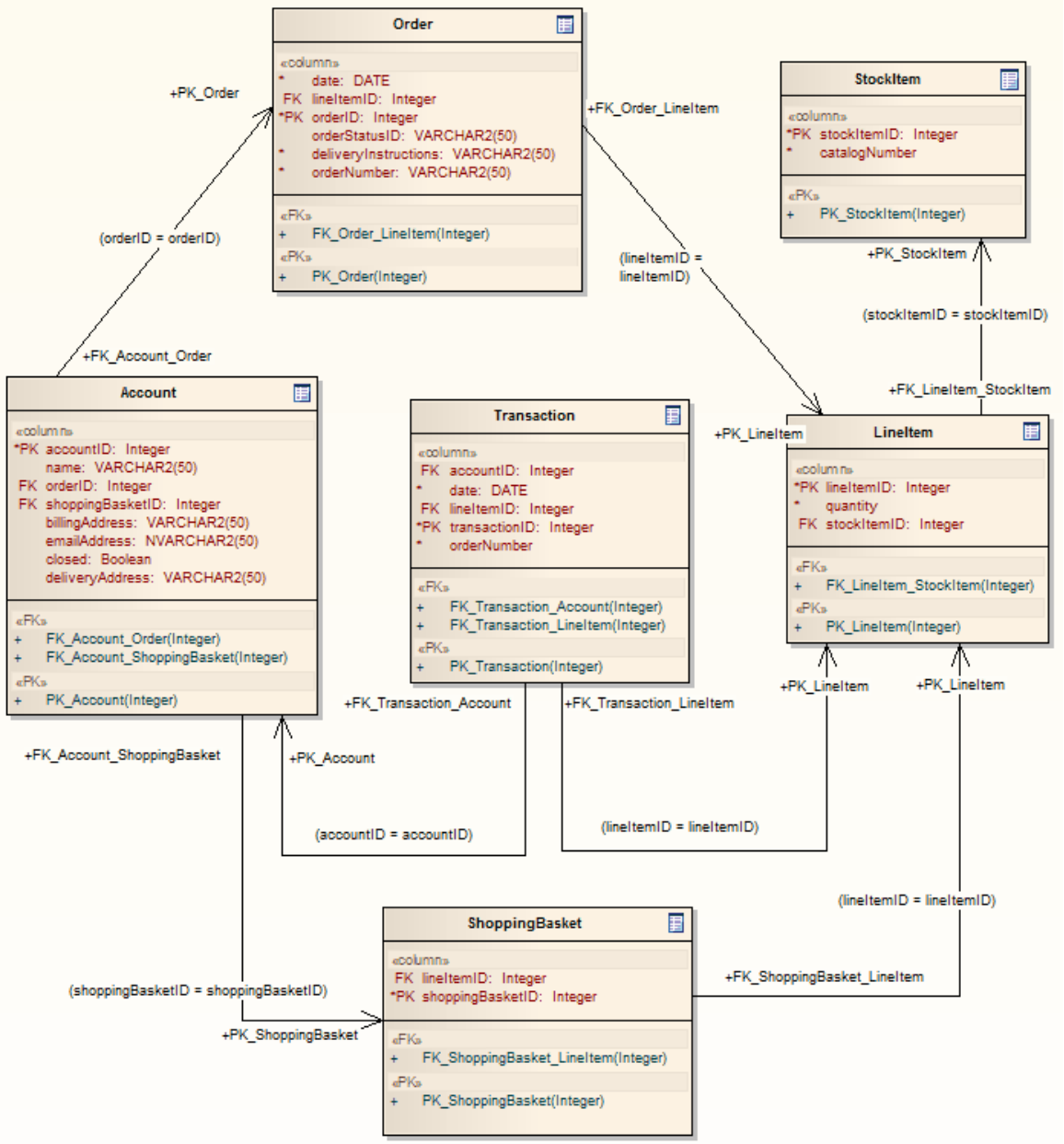
- You can define DBMS-specific aspects not depicted in a Logical model, such as Stored Procedures, Triggers, Views and Check Constraints, after the transformation; see the *Physical Data Model* Help topic

Example

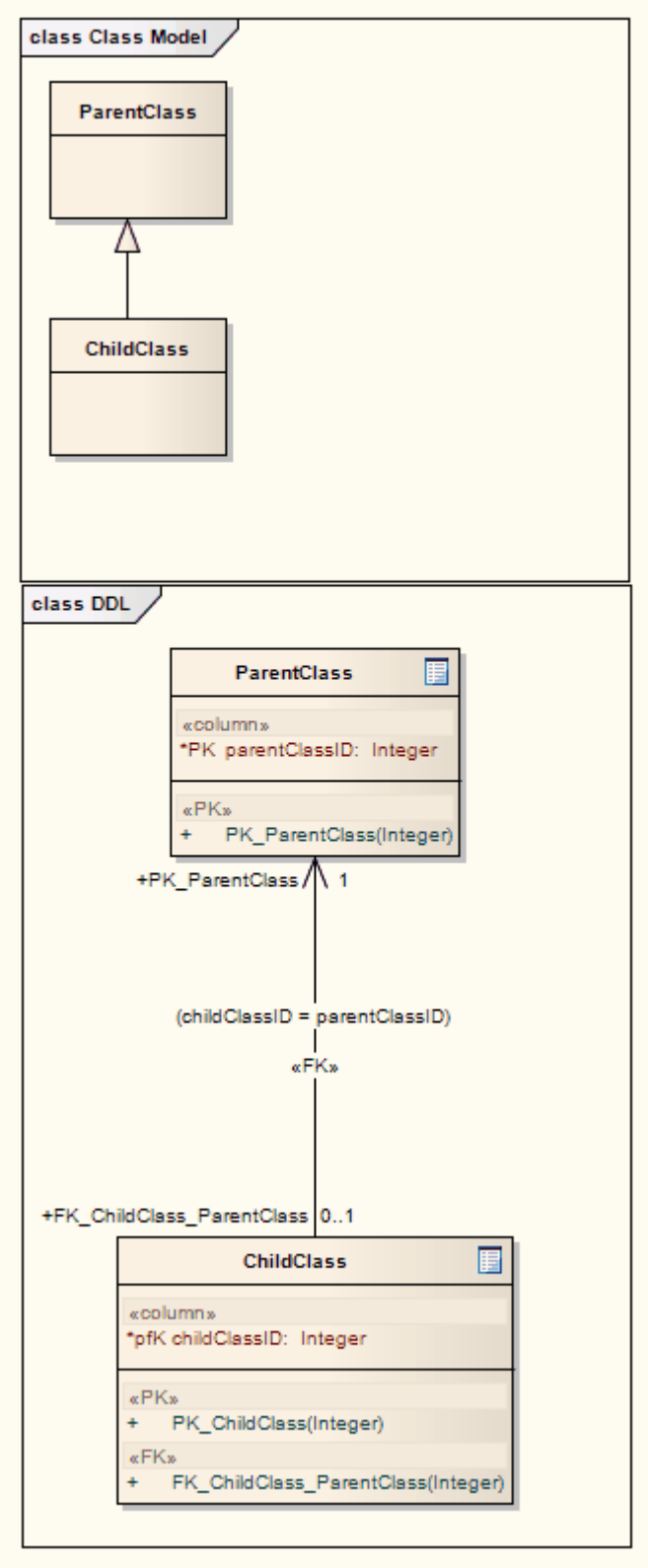
The PIM elements



After transformation, become the PSM elements



Generalizations are handled by providing the child element with a Foreign Key to the parent element, as shown. Copy-down inheritance is not supported.


class Class Model
ParentClass
ChildClass
class DDL
ParentClass
«column»
*PK parentClassID: Integer
«PK»
+ PK_ParentClass(Integer)
+PK_ParentClass
1
(childClassID = parentClassID)
«FK»
+FK_ChildClass_ParentClass
0..1
ChildClass
«column»
*pfK childClassID: Integer
«PK»
+ PK_ChildClass(Integer)
«FK»
+ FK_ChildClass_ParentClass(Integer)

EJB Transformations

The EJB Session Bean and EJB Entity Bean transformations reduce the work required to generate the internals of Enterprise Java Beans. You can therefore focus on modeling at a higher level of abstraction.

Transformations

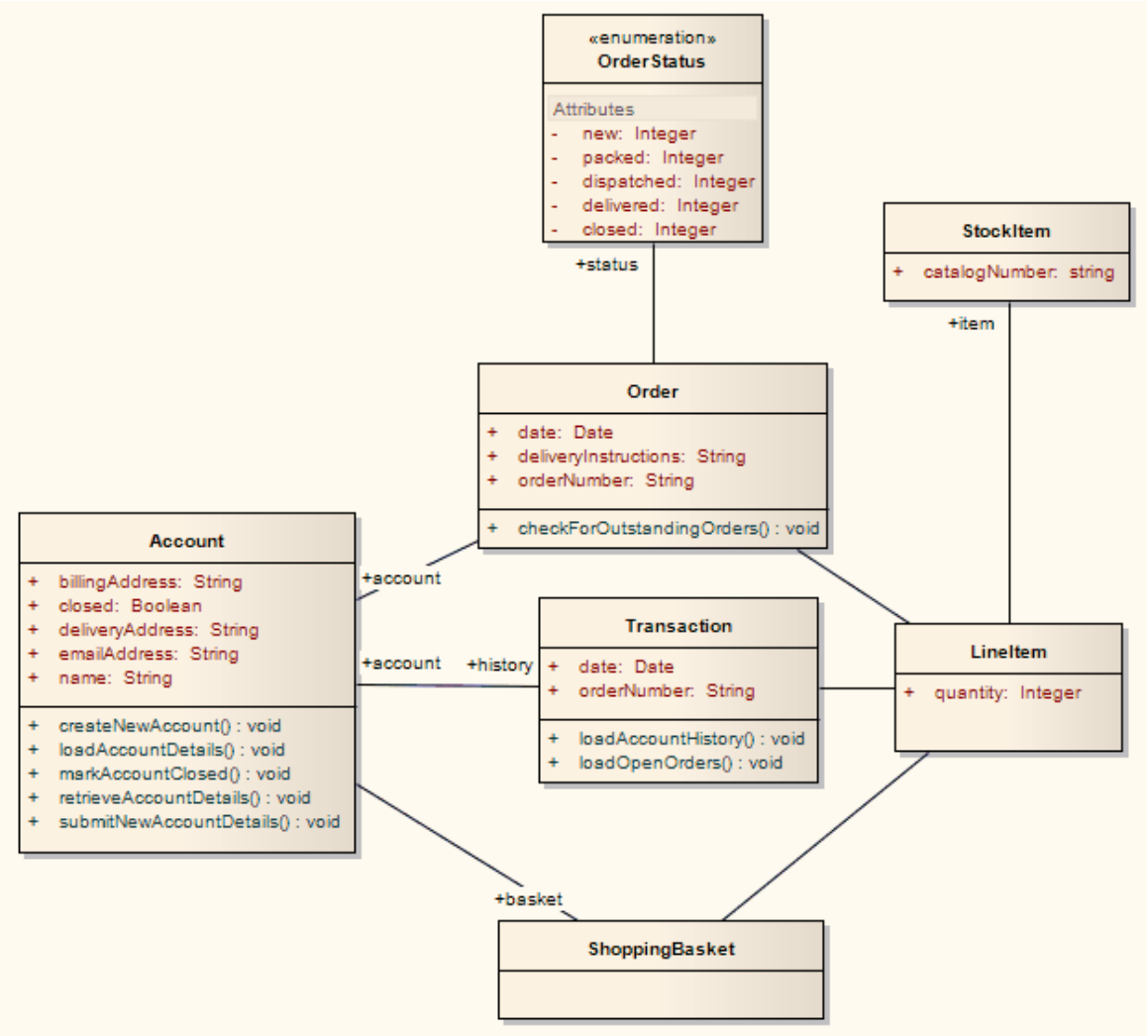
Both transformations also generate a META-INF Package containing a deployment descriptor element.

Transformation	Detail
EJB Session Bean	This transformation converts a single Class element (containing the attributes, operations and references required for code generation by the javax.ejb.* Package) to • An implementation Class element • A home interface element • A remote interface element
EJB Entity Bean	This transformation converts a single Class element (containing the attributes, operations and references required for code generation by the javax.ejb.*

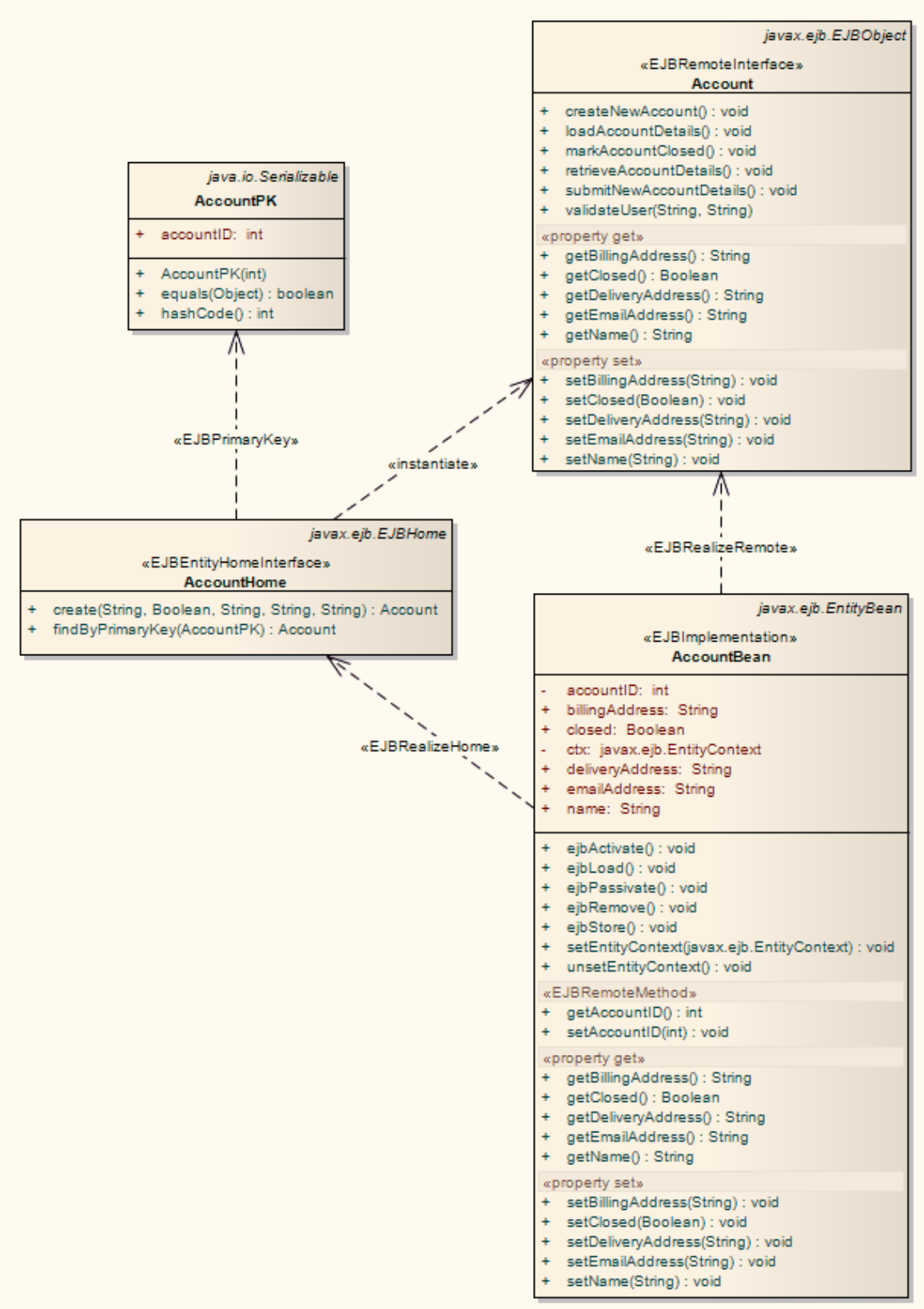
	Package) to: • An implementation Class element • A home interface element • A remote interface element • A Primary Key element

Example

The PIM elements



After transformation generate a set of Entity Beans, where each one takes this form (for the Account Class):



ERD To Data Model Transformation

The Entity Relationship Diagram (ERD) to Data Model transformation converts an ERD logical model to a data model targeted at the default database type, ready for generating DDL statements to run in one of the system-supported database products. Before doing the transformation, you define the common data type for each attribute and select a database type as the default database. You can then automatically generate the Data Modeling diagram.

The transformation uses and demonstrates support in the intermediary language for a number of database-specific concepts.

Concepts

Concept	Definition
Table	Mapped one-to-one onto Class elements.
Column	Mapped one-to-one onto attributes.
Primary Key	Lists all the columns involved so that they exist in the Class, and creates a Primary Key Method for them.

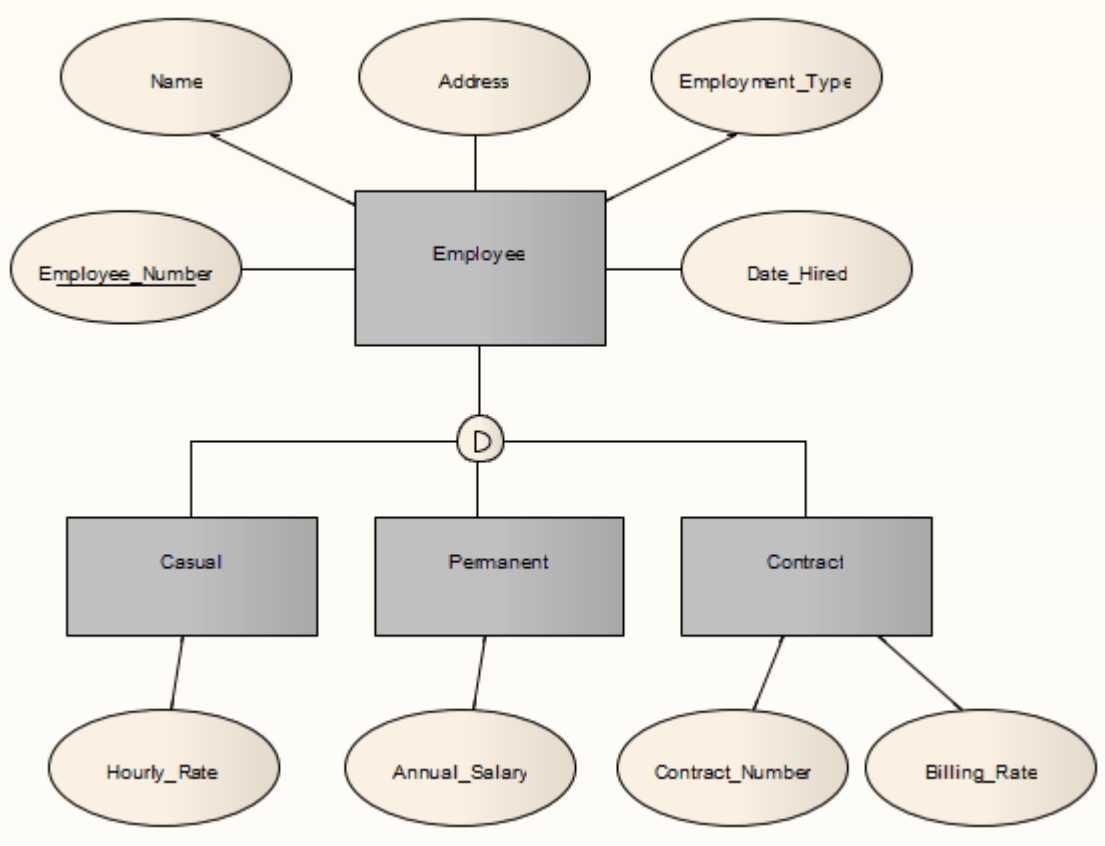
Foreign Key	A special sort of connector, in which the Source and Target sections list all of the columns involved so that: • The columns exist • A matching Primary Key exists in the destination Class, and • The transformation creates the appropriate Foreign Key

Generalization

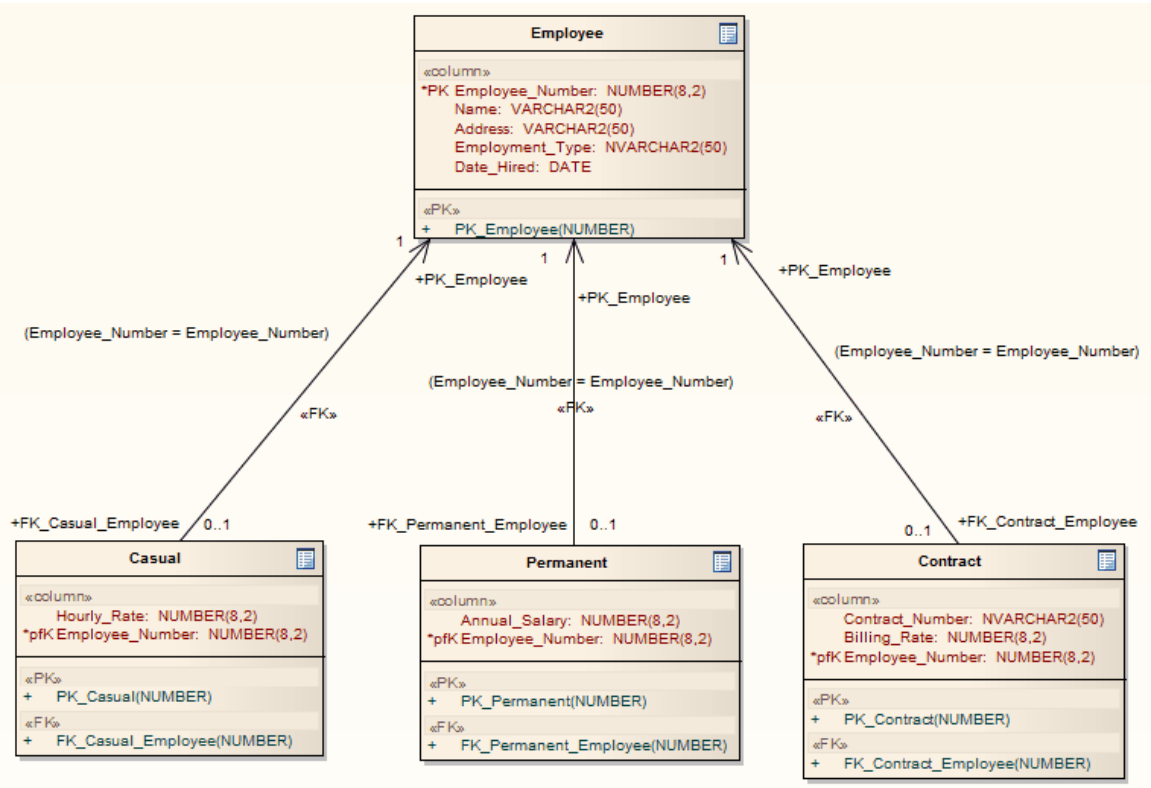
ERD technology can handle Generalization, as shown. Note that the copy-down inheritance is currently supported with two levels only.

Example

The ERD elements



After transformation, become the Data Model elements



Notes

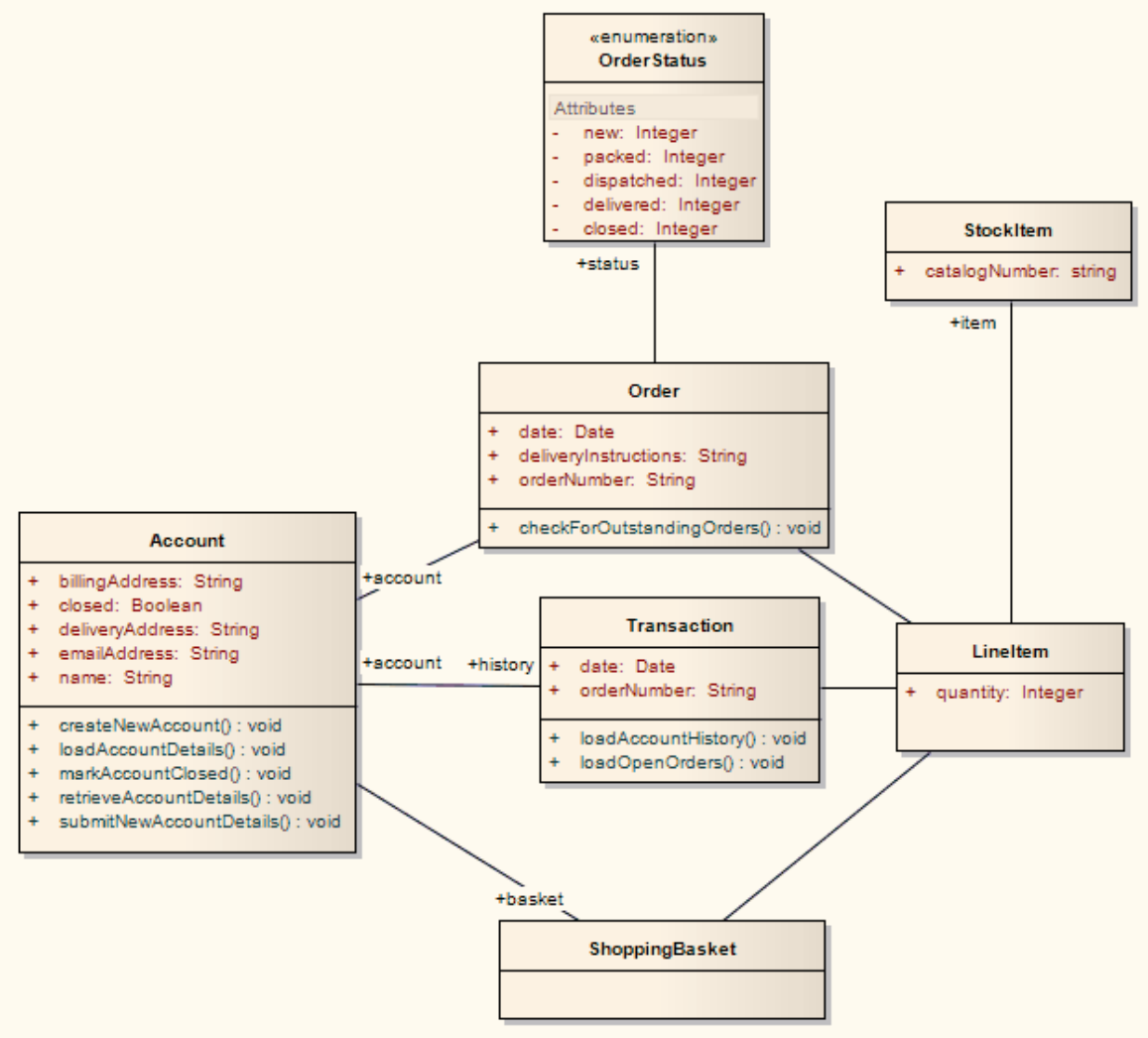
- Sometimes you might go back to the ERD, make some changes and then need to do another transformation; in this case, to achieve better results, always delete the previous transformation Package before doing the next transformation

Java Transformation

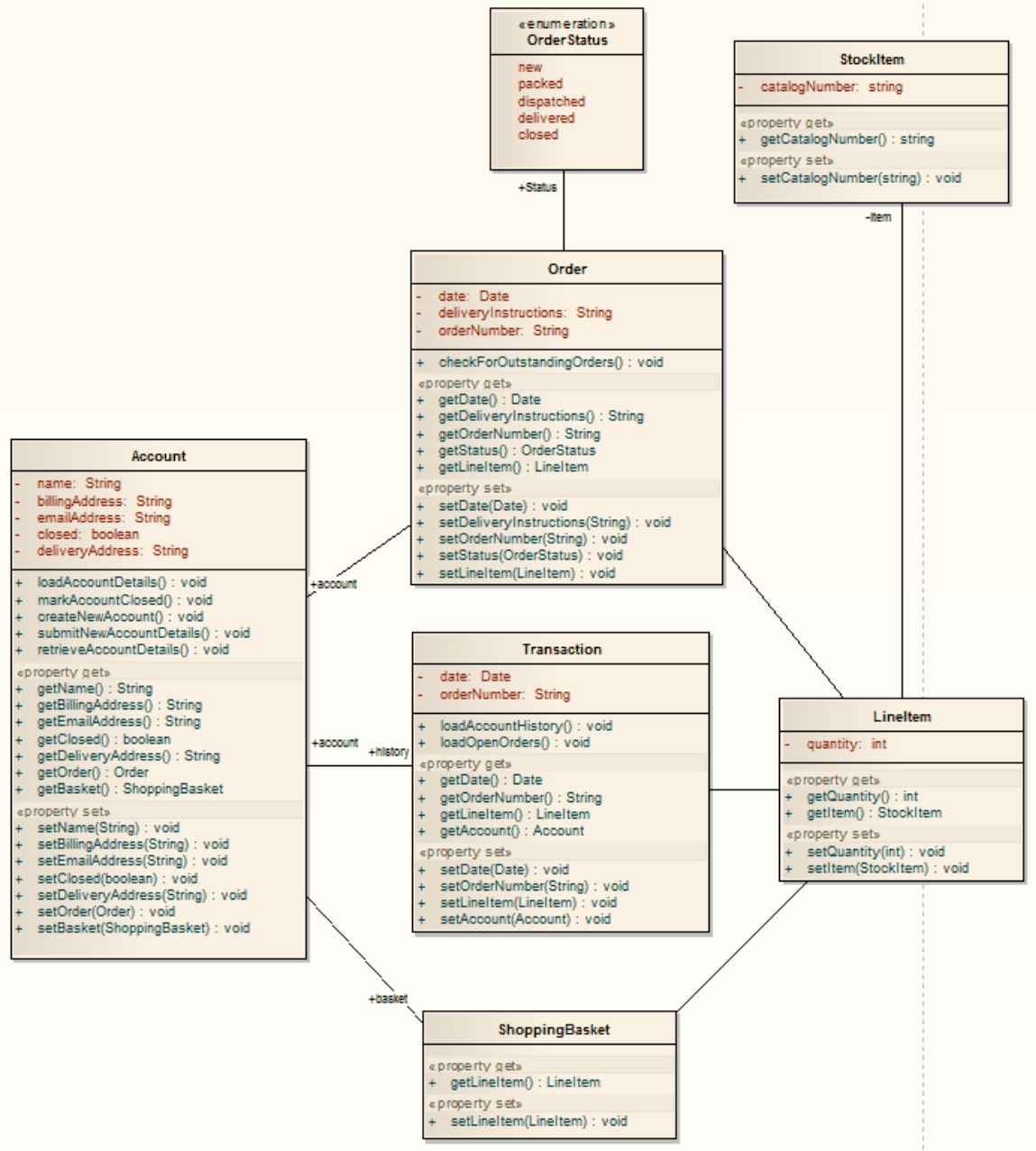
The Java transformation converts Platform-Independent Model (PIM) element types to Java-specific Class element types, and creates encapsulation (producing the getters and setters) according to the options you have set for creating properties from Java attributes (on the 'Java Specifications' page of the 'Preferences' dialog). Note that the public attributes in the PIM are converted to private attributes in the PSM. All operations in the interface are transformed into pure virtual methods.

Example

The PIM elements



After transformation, become the PSM elements

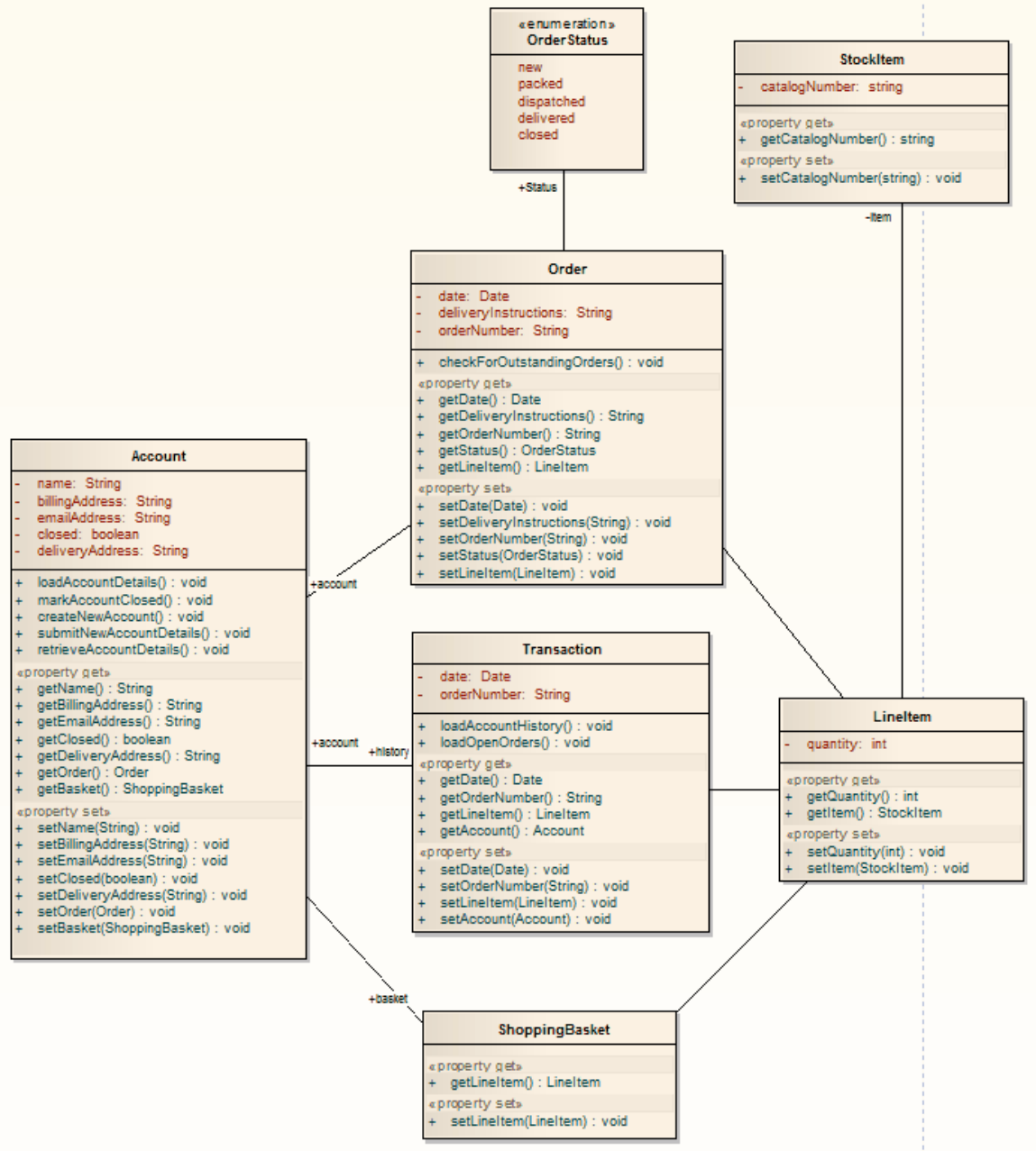

«enumeration»
OrderStatus
new
packed
dispatched
delivered
closed
+Status
StockItem
- catalogNumber: string
«property get»
+ getCatalogNumber() : string
«property set»
+ setCatalogNumber(string) : void
-Item
Order
- date: Date
- deliveryInstructions: String
- orderNumber: String
+ checkForOutstandingOrders() : void
«property get»
+ getDate() : Date
+ getDeliveryInstructions() : String
+ getOrderNumber() : String
+ getStatus() : OrderStatus
+ getLineItem() : LineItem
«property set»
+ setDate(Date) : void
+ setDeliveryInstructions(String) : void
+ setOrderNumber(String) : void
+ setStatus(OrderStatus) : void
+ setLineItem(LineItem) : void
Account
- name: String
- billingAddress: String
- emailAddress: String
- closed: boolean
- deliveryAddress: String
+ loadAccountDetails() : void
+ markAccountClosed() : void
+ createNewAccount() : void
+ submitNewAccountDetails() : void
+ retrieveAccountDetails() : void
«property get»
+ getName() : String
+ getBillingAddress() : String
+ getEmailAddress() : String
+ getClosed() : boolean
+ getDeliveryAddress() : String
+ getOrder() : Order
+ getBasket() : ShoppingBasket
«property set»
+ setName(String) : void
+ setBillingAddress(String) : void
+ setEmailAddress(String) : void
+ setClosed(boolean) : void
+ setDeliveryAddress(String) : void
+ setOrder(Order) : void
+ setBasket(ShoppingBasket) : void
+account
Transaction
- date: Date
- orderNumber: String
+ loadAccountHistory() : void
+ loadOpenOrders() : void
«property get»
+ getDate() : Date
+ getOrderNumber() : String
+ getLineItem() : LineItem
+ getAccount() : Account
«property set»
+ setDate(Date) : void
+ setOrderNumber(String) : void
+ setLineItem(LineItem) : void
+ setAccount(Account) : void
+account
+history
LineItem
- quantity: int
«property get»
+ getQuantity() : int
+ getItem() : StockItem
«property set»
+ setQuantity(int) : void
+ setItem(StockItem) : void
+basket
ShoppingBasket
«property get»
+ getLineItem() : LineItem
«property set»
+ setLineItem(LineItem) : void

JUnit Transformation

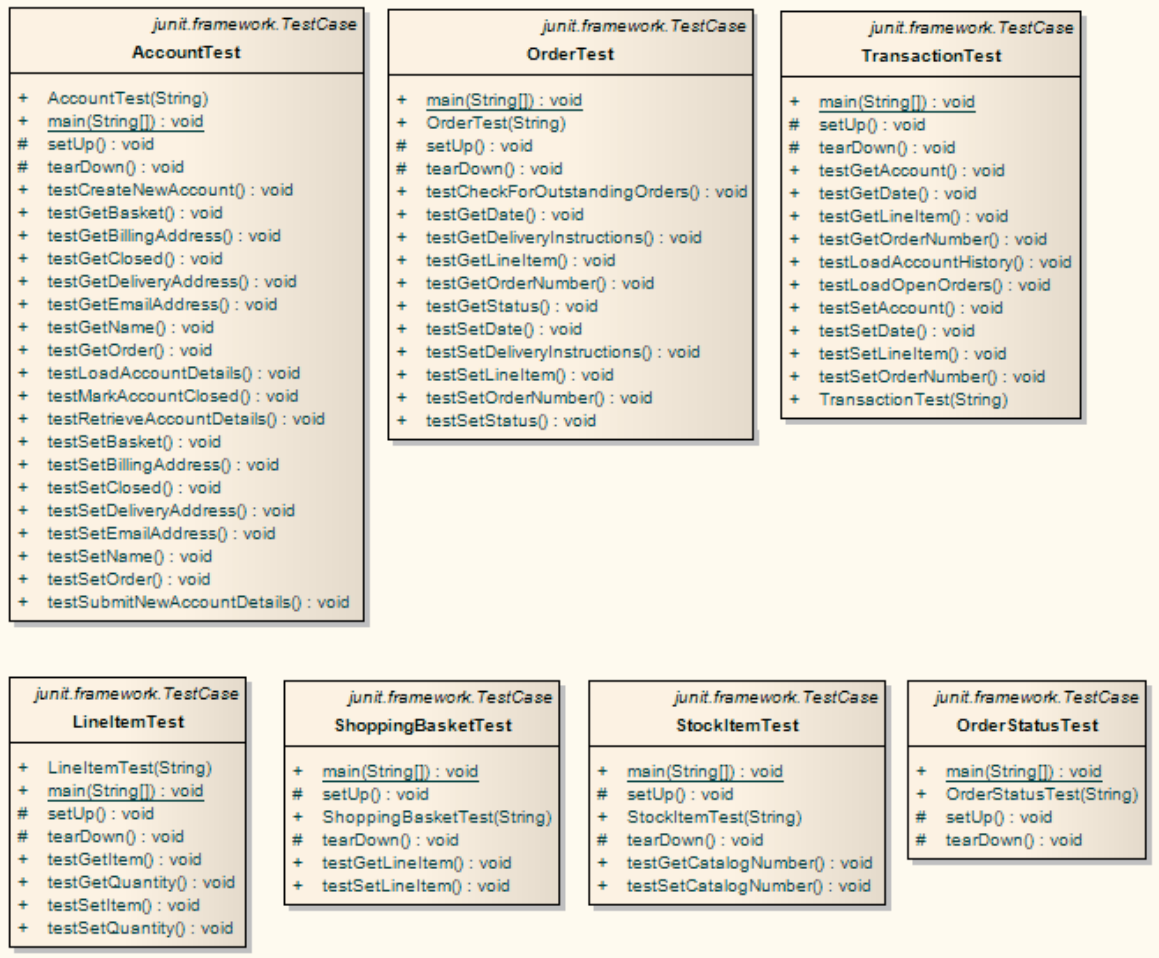
The JUnit transformation converts an existing Java Class with public methods into a Class with a test method for each public method. The resulting Class can then be generated and the tests filled out and run by JUnit.

Example

The Java model elements (originally transformed from the PIM)



After transformation, become the PSM elements



Notes

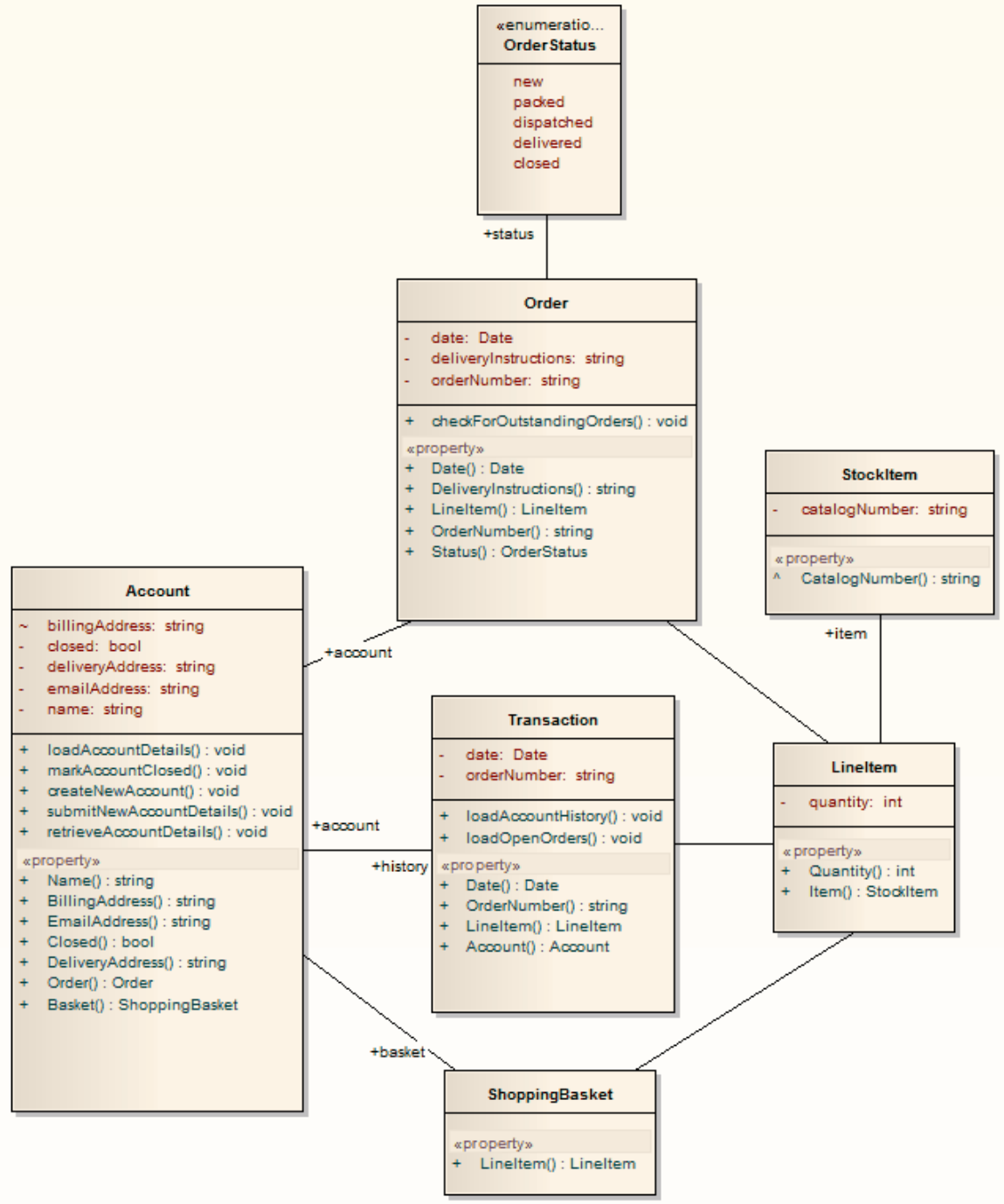
- For each Class in the Java model, a corresponding Test Class has been created containing a test method for every public method in the source Class, plus the methods required to appropriately set up the tests; you fill in the details of each test

NUnit Transformation

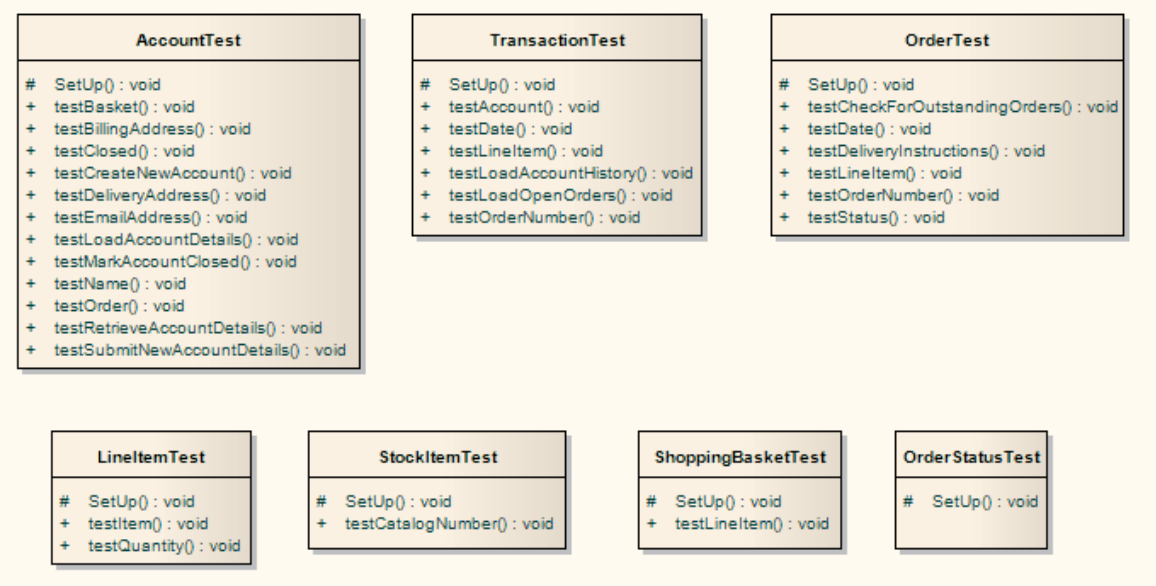
The NUnit transformation converts an existing .NET compatible Class with public methods into a Class with a test method for each public method. The resulting Class can then be generated and the tests filled out and run by NUnit.

Example

The C# elements (originally transformed from the PIM)



After transformation, become the PSM elements



Notes

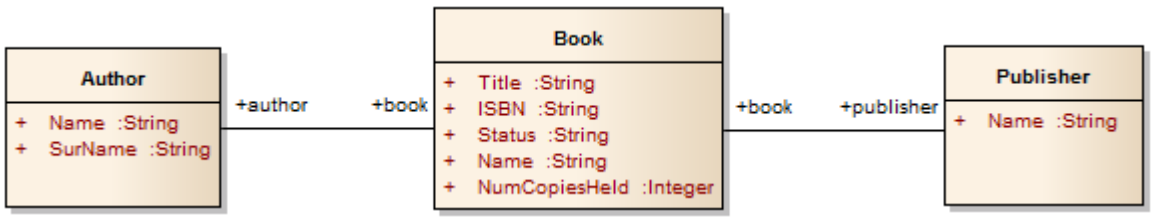
- For each Class in the C# model, a corresponding Test Class has been created containing a test method for every public method in the source Class, plus the methods required to appropriately set up the tests; you fill in the details of each test

PHP Transformation

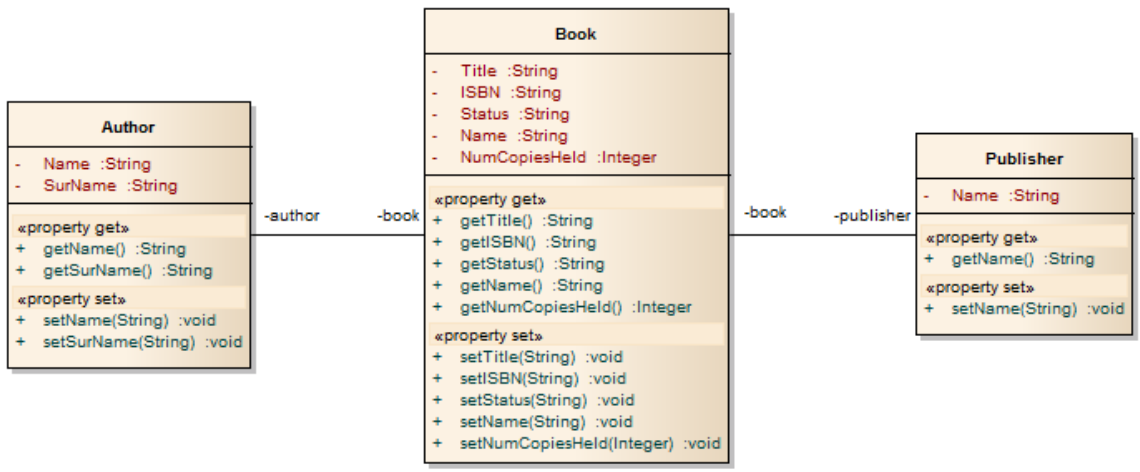
The PHP transformation converts Platform-Independent Model (PIM) element types to language-specific PHP Class element types and creates encapsulation (producing the getters and setters) according to the options you have set for creating properties from PHP attributes (on the 'PHP Specifications' page of the 'Preferences' dialog). Note that the public attributes in the PIM are converted to private attributes in the PSM.

Example

The PIM elements



After transformation, become the PSM elements



Sequence/Communication Diagram Transformations

It is possible to transform a Sequence diagram into a Communication diagram, and to transform a Communication diagram into a Sequence diagram. In each case, every element or message in the source diagram type is mapped 1:1 to a matching element or message in the target diagram.

Access

Ribbon	Design > Tools > Transform > Transform Selection
Keyboard Shortcuts	**Ctrl+Shift+H** (transform current Package) **Ctrl+H** (transform selected elements)

Perform a Transformation

Field/Button	Action
Elements	Lists and highlights all the elements from the diagram, which will be included in the transformation.
Transformations	Select: • The 'Communication' checkbox, if transforming a Sequence diagram into a Communication diagram, or • The 'Sequence' checkbox, if transforming a Communication diagram into a Sequence diagram In either case, the 'Browse Project' dialog displays. Browse for and select the target Package into which the target diagram will be created, then click on the **OK button**.
Do Transform	Click on this button to execute the transformation. The target diagram is created and listed in the **Browser window** under the target Package with the name (depending on which transformation you have executed): <source diagram name> Communication or

	<source diagram name> Sequence

Notes

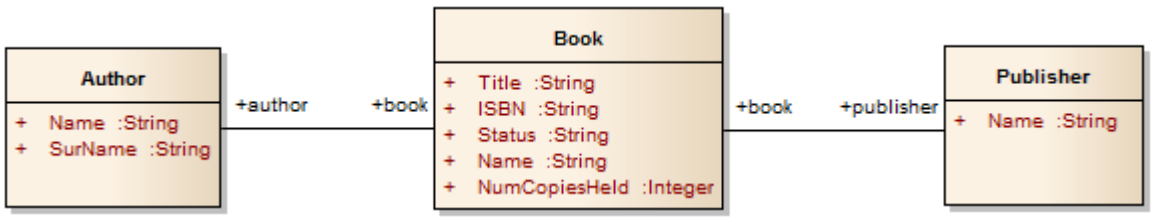
- The diagram being transformed must be open in the main diagram view for the 'Communication' or 'Sequence' options to appear in the Model Transformation dialog.
- Once you have selected the 'Communication' or 'Sequence' checkbox, these transforms ignore any other field setting in the dialog except for 'Target Package', and will perform a direct transformation of every element in the source diagram

VB.Net Transformation

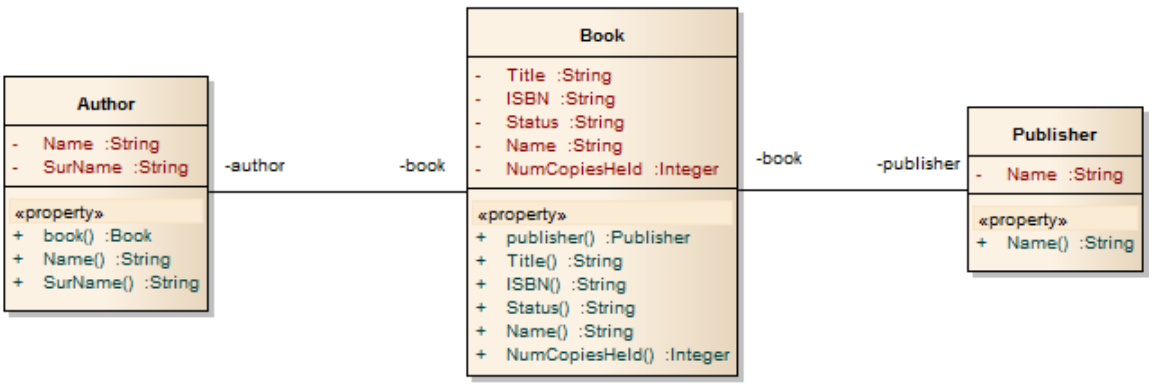
The VB.Net transformation converts Platform-Independent Model (PIM) element types to language-specific VB.Net Class element types, and creates encapsulation according to the options you have set for creating properties from VB.Net attributes (on the 'VB.Net Specifications' page of the 'Preferences' dialog). Note that the public attributes in the PIM are converted to private attributes in the PSM.

Example

The PIM elements

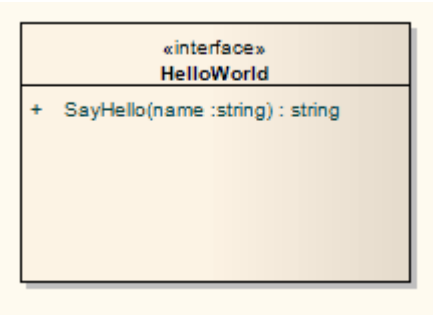


After transformation, become the PSM elements



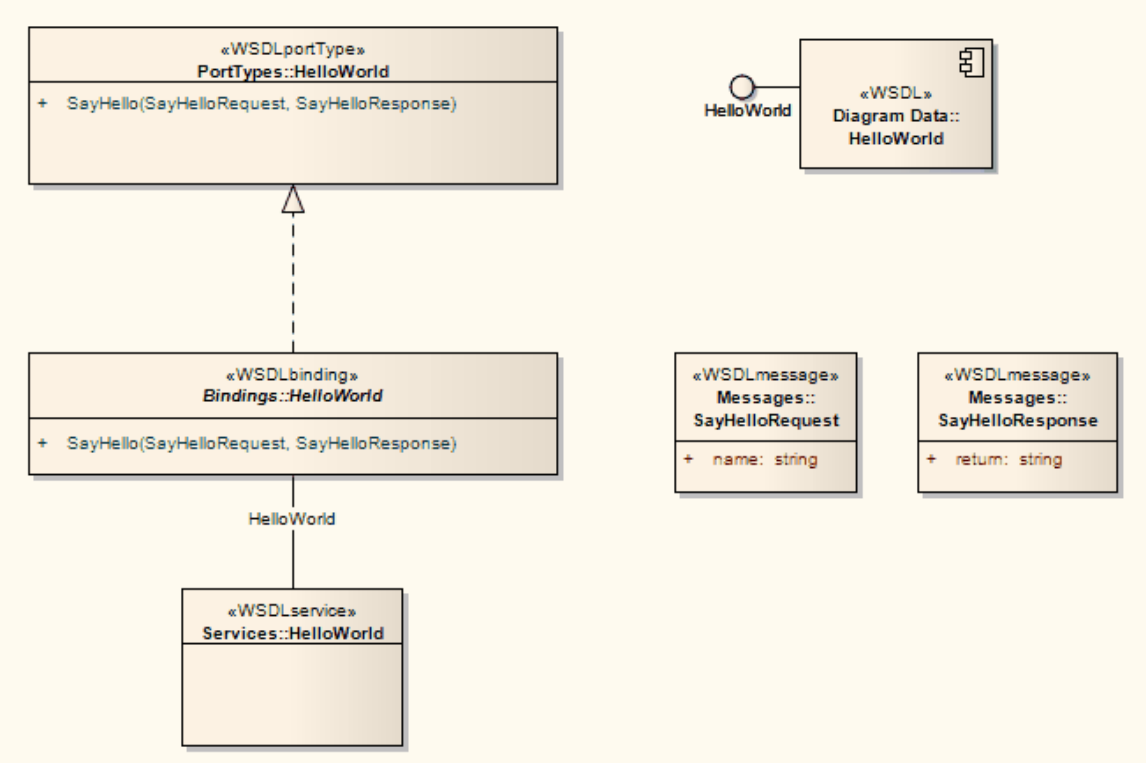
WSDL Transformation

The WSDL transformation converts a simple model into an expanded model of a WSDL interface that is suitable for generation. For example:



Transformation of this generates the corresponding WSDL Component, Service, Port Type, Binding and Messages:

- Classes are handled in the same way as in the **XSD** Transformation
- All 'in' parameters are transformed into WSDL Message Parts in the Request message
- The return value and all 'out' and 'return' parameters are transformed into WSDL Message Parts in the Response message
- All methods where a value is returned are transformed into Request-Response operations, and all methods not returning a value are transformed into OneWay operations
- The transformation does not handle the generation of Solicit-Response and Notification methods or faults



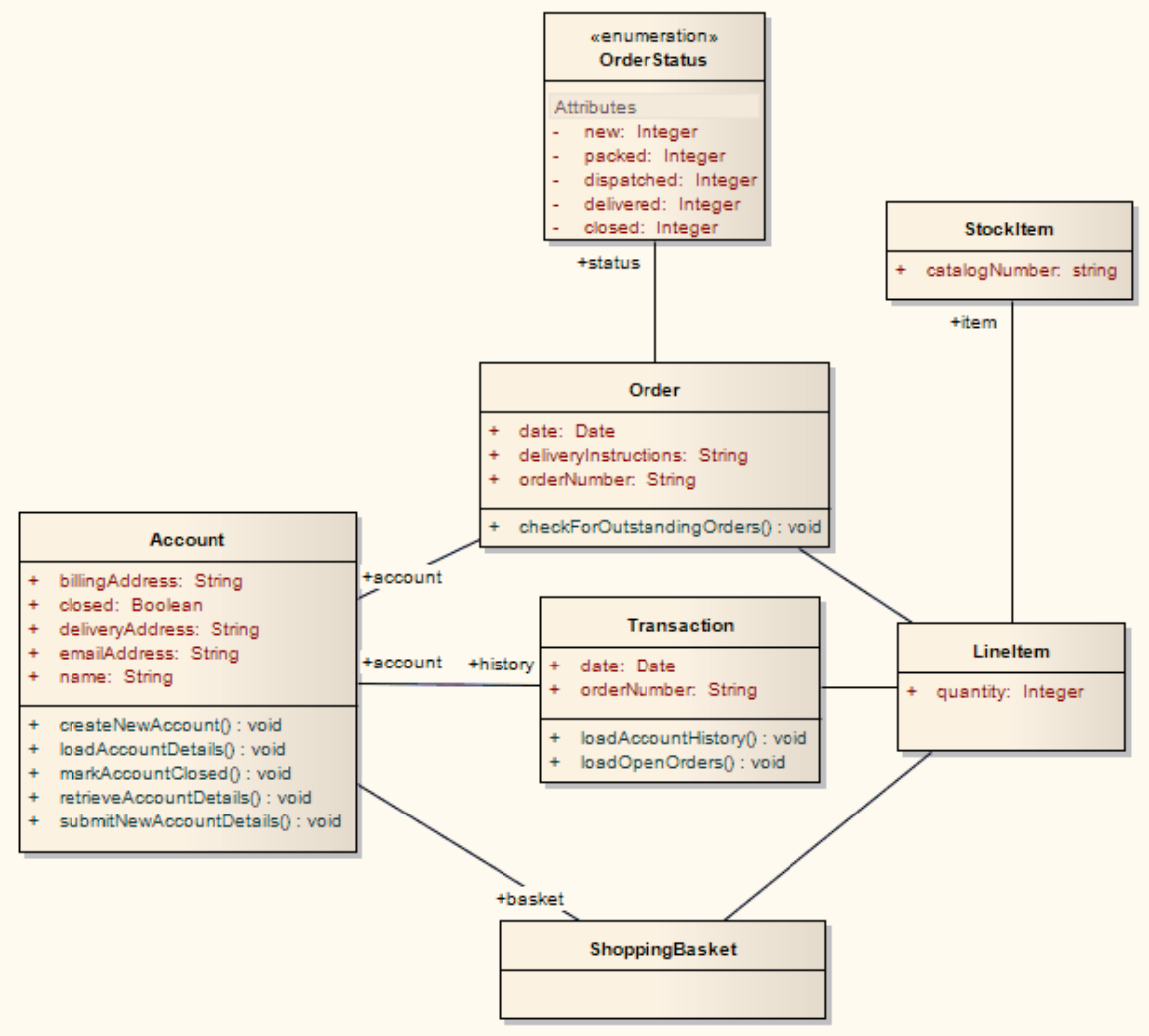
In the resulting Package you can then fill out the specifics using the WSDL editing capabilities of Enterprise Architect, and finally generate the Package using the WSDL generation tools.

XSD Transformation

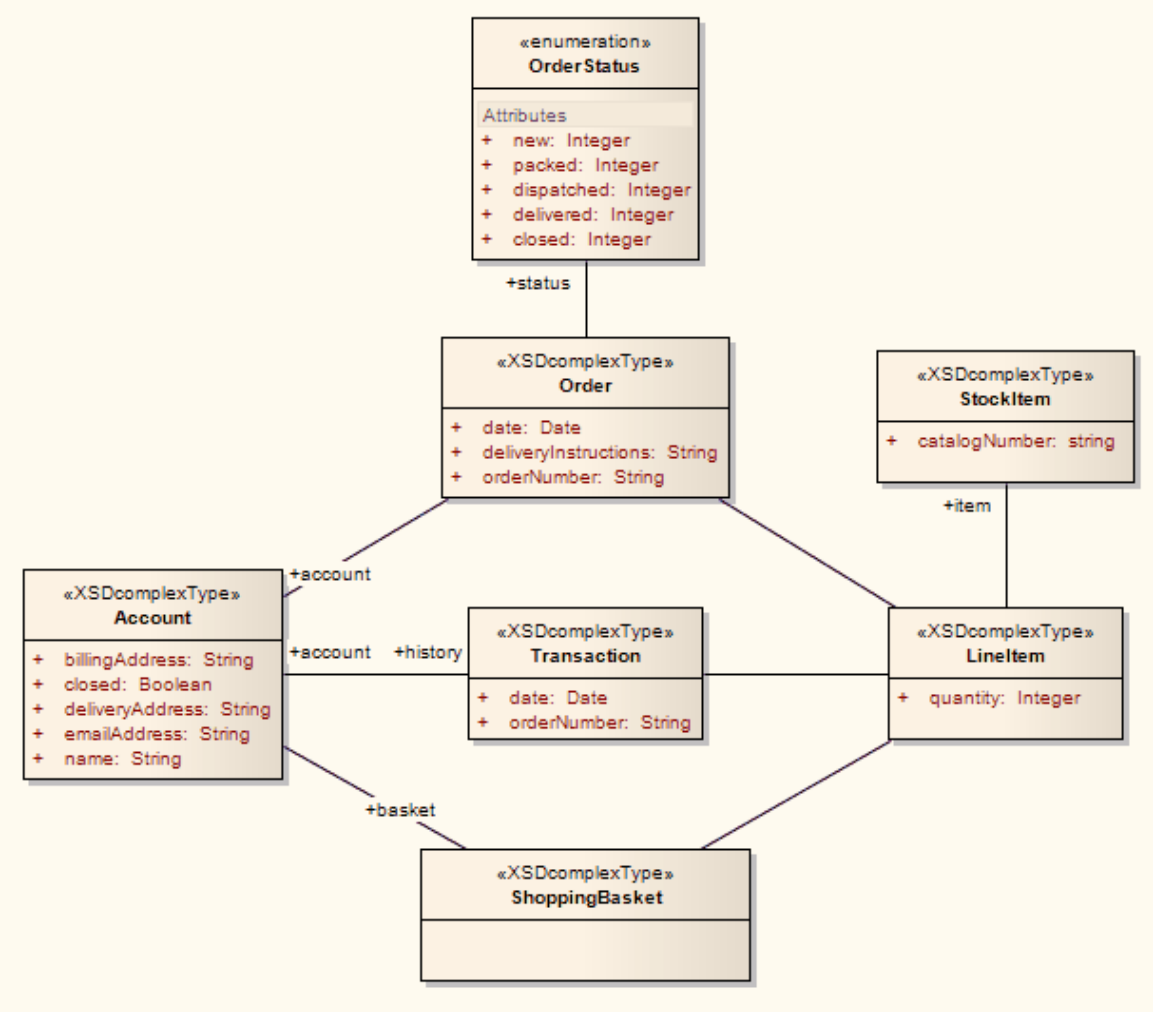
The **XSD** transformation converts Platform-Independent Model (PIM) elements to UML Profile for XML elements as an intermediary step in creating an XML Schema. Each selected PIM Class element is converted to an «XSDcomplexType» element.

Example

The PIM elements



After transformation become the PSM elements



These in turn generate this **XSD**

<?xml version="1.0" encoding="ISO-8859-1"?>

<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">

<xs:element name="Account" type="Account"/>

<xs:complexType name="Account">

<xs:sequence>

<xs:element name="name" type="xs:string"/>

<xs:element name="billingAddress" type="xs:string"/>

<xs:element name="emailAddress" type="xs:string"/>

```
<xs:element name="closed" type="xs:boolean"/>
<xs:element name="deliveryAddress" type="xs:string"/>
<xs:element ref="Order"/>
<xs:element ref="ShoppingBasket"/>
</xs:sequence>
</xs:complexType>
<xs:element name="LineItem" type="LineItem"/>
<xs:complexType name="LineItem">
<xs:sequence>
<xs:element name="quantity" type="xs:integer"/>
<xs:element ref="StockItem"/>
</xs:sequence>
</xs:complexType>
<xs:element name="Order" type="Order"/>
<xs:complexType name="Order">
<xs:sequence>
<xs:element name="date" type="xs:date"/>
<xs:element name="deliveryInstructions" type="xs:string"/>
<xs:element name="orderNumber" type="xs:string"/>
<xs:element ref="LineItem"/>
<xs:element name="status" type="OrderStatus"/>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="OrderStatus">
<xs:restriction base="xs:string">
```

```
<xs:enumeration value="new"/>
<xs:enumeration value="packed"/>
<xs:enumeration value="dispatched"/>
<xs:enumeration value="delivered"/>
<xs:enumeration value="closed"/>
</xs:restriction>
</xs:simpleType>
<xs:element name="ShoppingBasket"
type="ShoppingBasket"/>
<xs:complexType name="ShoppingBasket">
<xs:sequence>
<xs:element ref="LineItem"/>
</xs:sequence>
</xs:complexType>
<xs:element name="StockItem" type="StockItem"/>
<xs:complexType name="StockItem">
<xs:sequence>
<xs:element name="catalogNumber" type="xs:string"/>
</xs:sequence>
</xs:complexType>
<xs:element name="Transaction" type="Transaction"/>
<xs:complexType name="Transaction">
<xs:sequence>
<xs:element name="date" type="xs:date"/>
<xs:element name="orderNumber" type="xs:string"/>
```

```
<xs:element ref="Account"/>
<xs:element ref="LineItem"/>
</xs:sequence>
</xs:complexType>
</xs:schema>
```

Edit Transformation Templates

A single transformation applies a number of transformation templates, each of which defines a type of object that is acted on within the transformation, and the actions that are performed on objects of that type. The system provides a range of built-in default templates, and each type of transformation uses a specific subset of these templates. Typically, the transformation type and the subset of templates are tailored to the target language. Some default templates within a set have no content; these are 'latent', and represent the potential for acting on an object that is not generally included in the transformation but is perfectly valid if you wanted to include it. An example of a latent template is the Linked Class Base template in the **C#** transformation.

You can tailor the transformation templates in various ways, including:

- Adjust the code in one or more of the templates in a default set
- Add code to a 'latent' default template
- Add a new custom template, based on one of the defaults but serving a different purpose that you define
- Add a new transformation type containing - initially - a basic set of default templates
- Add (or remove) a stereotyped override for a template

A stereotyped override directs the transformation to use the

modified template only if the element and/or feature are of the specified stereotyped types. If the object or feature are not of that type, the transformation applies the base template.

Access

Ribbon	Design > Tools > Transform > Transform Templates
Keyboard Shortcuts	**Ctrl+Alt+H**

Edit Transformation Templates

Option	Action
Language	Click on the **drop-down arrow** and select the name of the transformation.
New Transformation Type	Click on this button if you want to create a new transformation. A prompt displays for the name of the transformation; type in the name and

	click on the **OK button**. The 'Templates' list shows the default set of built-in templates, from which you can develop your transformation. Your custom transformation is not saved or available for use unless you add and/or edit one or more templates in the transformation.
Templates	Lists the transformation templates for the current transformation. Click on a template name to highlight it and display its content in the Template panel. The 'Modified' column indicates whether you have edited the template for this transformation.
Template	Displays the contents of the currently-selected template, and provides the editor facilities for modifying the template (right-click on the code text).
Stereotype Overrides	Lists the stereotyped templates, for the active base template. The 'Modified' column indicates whether you have modified a stereotyped template.
Add New	Click on this button to create a custom

Custom Template	template to add to the current transformation. A dialog displays, prompting you to specify: • The object type (base template type) that this new template will respond to - click on the **drop-down arrow** and select the name (custom template types are not included in this list) • The name of the new template - type in the appropriate text Click on the **OK button**. The new template name is added to the list of templates, and it is opened in the template editor ready for you to add its code.
Add New Stereotyped Override	Click on this button to add a new stereotype override for the currently selected template. A dialog displays, prompting you to specify the: • Base Class (stereotyped Class type - click on the **drop-down arrow** and click on the type in the list) and/or • Feature (click on the drop-down arrow and click on the stereotyped feature in the list) Click on the **OK button**. The override is added to the 'Stereotype Overrides' list.

Get Default Template	Click on this button to update the editor display with the default version of the current built-in template or to clear the content of the current custom template. If you have saved the changed template, re-instating the default version is a change, so the 'Modified' field still displays the word 'Yes'.
Save	Click on this button to save the new or edited current template. You cannot switch to another template without saving the current template, so this effectively saves the transition as well.
Delete	Click on this button to delete the current custom template or stereotype override, or the most recent changes to a built-in template (effectively returning it to the default, base content). You cannot delete a built-in template. You are prompted to confirm the deletion.
Help	Click on this button to display this Help topic.

Notes

- Transformation template editing is based very strongly on code generation template editing; for additional information on editing transformation templates see the ***Code Template Editor*** section and the *Editing Source Code* topic

Write Transformations

Enterprise Architect provides a facility to create your own transformations; this can be useful to automate the process of generating more specific models from more general ones, reusing the transformation and preventing errors from being introduced as they might if the models were created by hand. The existing templates will provide a useful guide and reference to assist you when creating new templates.

Transformation templates are based on the **Code Generation Template Framework**, and an understanding of the way these templates work is critical to be able to adjust existing transformation templates or to create new ones. Therefore it is suggested that you read and understand the topics discussing Code Generation Templates prior to using the Transformation Template language.

Access

Ribbon	Design > Tools > Transform > Transform Templates
Keyboard Shortcuts	**Ctrl+Alt+H**

Factors concerning Transformation Templates

Factor	Detail
Default Transformation Templates	Enterprise Architect provides a set of default transformation templates that you can use 'as is' or customize to your requirements.
General Syntax for the Intermediary Language	Transformations in Enterprise Architect generate an intermediary code form of the model being created in the transformation. You can review and edit this code.
Intermediary Language Debugging	You can also debug transformation scripts by checking the intermediary code generated from the Transform script.
Editing transformation templates and code	When writing transformations, you use the facilities of the common Code Editor.
Code Template	You use the **Code Template Framework** to perform forward

Framework	engineering of UML models. The Transformation Template Framework is derived from this.
Syntax for Creating Objects	To generate objects or elements in a transformation, you apply a specific syntax in the template script.
Syntax for Creating Connectors	To generate connectors (relationships) in a transformation, you also apply a specific syntax in the template script.
Transforming Duplicate Information	In many transformations there is a substantial amount of information to be copied. Rather than place this information in the template, you can use macros to read it from its source.
Transforming Template Parameter Substitutions	In a transformation template, if you are transforming Template Binding connector binding parameter substitutions, you can use the Template Parameter substitution macros.
Converting Types	You can apply various methods for converting data types to different target platform types.
Converting	You can apply various methods for

Names	converting names of elements to different target platform naming conventions.
Cross References	During a transformation, you can perform cross verification of transformed elements.

Notes

- Further hints and tips can be gleaned from a close study of the Transformation Templates provided with Enterprise Architect
- The Transformation Template editor applies the facilities of the common Code Editor

Default Transformation Templates

Transformation templates provide the ability to represent the existing information in a model in a modified way. When creating a new transformation Enterprise Architect provides a default set of transformation templates that perform a direct copy of the source model to the target model. This allows you to think in terms of how the source model and target model are different. For each template you are able to prevent properties from being copied and add additional information until the appropriate target model is created.

You can list and examine the default templates in the Transformation Editor. The combination of default templates varies according to the language you are transforming.

Access

Ribbon	Design > Tools > Transform > Transform Templates
Keyboard Shortcuts	**Ctrl+Alt+H**

Notes

- When creating a new transformation you must modify at least one template before the new transformation becomes available

Intermediary Language

All transformations in Enterprise Architect create an intermediary language form of the model to generate. You can access and edit the file containing this intermediary language code using an external editor. Each object is represented in this language by the object type (for example, Class, Action, Method, Generalization or Tag) followed by the object properties and the features that it is made from; the grammar of the object description resembles this:

element:

elementName { (elementProperty | element)* }

elementProperty:

packageName

stereotype

propertyName = " propertyValueSymbol* "

packageName:

name = " propertyValueSymbol* " (. " propertyValueSymbol* ")*

stereotype:

stereotype = " propertyValueSymbol* " (, " propertyValueSymbol* ")*

propertyValueSymbol:

\\

\"

Any character except " (U+0022), \ (U+005C)

- elementName is any one of the set of element types
- propertyName is any one of the set of properties

Literal strings can be included in property values by 'escaping' a quote character:

```
default = "\"Some string value.\""
```

Intermediary Language Debugging

The script from an MDA template produces intermediate language text. However, on generating the model this script could return errors. When an error occurs, you can view and debug the generated text externally, preferably in an editor that prompts on updates to the file alterations.

Access

Ribbon	Design > Tools > Transform > Transform Selection
Keyboard Shortcuts	**Ctrl+H** (transform selected elements) **Ctrl+Shift+H** (transform current Package)

Debug when errors are returned on generating altered code

Step	Description

1	Select the Package to be transformed, and the 'Transform Package' option. The 'Model Transformations' dialog displays.
2	In the 'Name' column, select the checkbox against the type of transformation being altered.
3	In the 'Intermediary File' field, click on the ... button and set the file location into which to generate the code.
4	Select the 'Write Always' checkbox, and click on the **Write Now button** to generate the script. This only generates the script, not the model.
5	If an error is returned specifying the line number of the problem, open the file in an external Code Editor (with Line Numbering) and locate the line number of problem.
6	Alter the template code to correct the error.
7	Click on the **Do Transform button** to check that the alteration has corrected the problem.

Example

For a MySQL database, the template code might resemble this:

$enumFieldName = “test”

Column

{

name= %qt%% CONVERT_NAME ($enumFieldName, "Pascal Case", "Camel Case")%%qt%

type= %qt%% CONVERT_TYPE (genOptDefaultDatabase, "Enum")%%qt%

}

This returns the output in the generated text file as:

Column

{

name = "test"

type = "ENUM"

}

If there is an error in the original transform, such as a spelling error - ‘Colum’ - clicking the **Do Transform button** returns an error message referring to the first line of intermediate code that includes the error 'Colum’.

Objects

Objects are generated in a transformation as text in this form:

```
objectType
{
    objectProperties*
    XRef{xref}*
    Tag{tag}*
    Attribute{attributes}*
    Operation{operations}*
    Classifier{classifiers}*
    Parameter{parameters}*
}
```

For example:

```
Class
{
    name = "Example"
    language = "C++"
    Tag
    {
        name = "defaultCollectionClass"
        value = "List"
```

```
        }
        Attribute
        {
            name = "count"
            type = "int"
        }
    }
```

Every object created in a transformation should include an XRef syntax element (see the end of this topic), as it helps the system to synchronize with the object and makes it possible to create a connector to that Class in the transformation.

Syntax elements in the code

Element	Detail
objectType	objectType is one of these: • Action • ActionPin • Activity • ActivityParameter • ActivityPartition • ActivityRegion

	• Actor • Association • Change • Class • Collaboration • CollaborationUse • Component • DeploymentSpecification • DiagramFrame • Decision • EntryPoint • Event • ExceptionHandler • ExecutionEnvironment • ExitPoint • ExpansionNode • ExpansionRegion • ExposedInterface • GUIElement • InteractionFragment • InteractionOccurrence • InteractionState • Interface • InterruptibleActivityRegion • Issue

	• Iteration • Object • ObjectNode • MessageEndpoint • Node • Package • Parameter • Part • Port • ProvidedInterface • RequiredInterface • Requirement • Sequence • State • StateMachine • StateNode • Synchronization • Table • TimeLine • Trigger • UMLDiagram • UseCase
objectProperties	objectProperties is zero, or one instance of one or more of these: • Abstract

	• Alias • Arguments • Author • Cardinality • Classifier • Complexity • Concurrency • Filename • Header • Import • IsActive • IsLeaf • IsRoot • IsSpecification • Keyword • Language • Multiplicity • Name • Notes • Persistence • Phase • Scope • Status • Stereotype • Version

	• Visibility
Attribute	Attribute has the same structure as objectType, and includes these properties: • Alias • Classifier • Collection • Container • Containment • Constant • Default • Derived • LowerBound • Name • Notes • Ordered • Scope • Static • Stereotype • Type • UpperBound • Volatile Attribute also includes these elements: • Classifier

	• Tag • XRef
Operation	Operation has the same structure as objectType, and includes these properties: • Abstract • Alias • Behavior • Classifier • Code • Constant • IsQuery • Name • Notes • Pure • ReturnArray • Scope • Static • Stereotype • Type Operation also includes these elements: • Classifier • Parameter • Tag

	• XRef
Parameter	Parameter has the same structure as objectType, and includes the Tag element and these properties: • Classifier • Default • Fixed • Name • Notes • Kind • Stereotype
Tag	Tag has these properties: • Name • Value

Special Cases

Certain types of object have variations of the object definition syntax.

Object	Detail
Packages	Packages differ from other objects in

	these ways: • They have a reduced set of properties: alias, author, name, namespaceRoot, notes, scope, stereotype and version • The property namespaceRoot is only given to Packages • A name must be specified for each Package • The name property can be a qualified name; when a qualified name is specified, the properties given are applied only to the final Package • Only Packages can contain other Packages • Packages cannot contain attributes and operations
XRef	Cross references are defined using the transform statements. The properties include: • Namespace • Name • Source • Notes
Tables	Tables are a special type of object, with these differences from other object types: • They can include columns and primary

	keys • They cannot include attributes
Columns	Columns are similar to attributes, but have an autonumber element containing Startnum and its increment, and these added properties: • Length • NotNull • Precision • PrimaryKey • Scale • Unique In the column definition, you cannot assign a value to the NotNull, PrimaryKey or Unique properties.

Connectors

The process of creating connectors in a transformation has the same form as for creating elements (objects). It is a little more complex, because you also define each end of the connector - the source and target.

Connectors are represented in the Intermediary language as:

```
ConnectorType
{
    connectorProperties*
    AssociationClass {associationClassProperties*}
    Source {sourceProperties*}
    Target {targetProperties*}
}
```

For example:

```
Association
{
    name="anAssociation"
    stereotype=""
    direction="Unspecified"
    Source
    {
        access="Private"
        navigability="Unspecified"
```

```
        }
        Target
        {
            access="Private"
            multiplicity="1..*"
        }
    }
```

Syntax elements in the code

Element	Detail
ConnectorType	ConnectorType is one of these: • Abstraction • Aggregation • Assembly • Association • Collaboration • ControlFlow • Connector • Delegate • Dependency • Deployment • ForeignKey • Generalization

	• InformationFlow • Instantiation • Interface • InterruptFlow • Manifest • Nesting • NoteLink • ObjectFlow • Package • Realization • Sequence • Substitution • TemplateBinding • Transition • Usage • UseCase • Uses
connectorProperties	connectorProperties is zero, or one instance of one or more of these: • alias • direction • notes • name • stereotype • tag

	• XRef
associationClassProperties	associationClassProperties are one instance of these: • Classifier • XRef
sourceProperties targetProperties	sourceProperties and targetProperties are each a reference to an element and zero, or one instance of one or more of these: • aggregation • alias • allowduplicates • changeable • constraint • containment • navigability • membertype • multiplicity • Notes • ordered • qualifier • role • scope • stereotype • tag

Element Reference	An element reference is either a guid that references an element that already exists before the transformation, or an XRef to reference an element that is created by a transformation. • guid • XRef

Notes

- Each connector is transformed at both end objects, therefore the connector might appear twice in the transformation; this is not a problem, although you should check carefully that the connector is generated exactly the same way, regardless of which end is on the current Class

Transform Connectors

When you transform a connector, you can use two different types of Class as the connector ends: either a Class created by a transformation, or an existing Class for which you already know the GUID.

Connect to a Class Created by a Transformation

The most common connection is to a Class created by a transformation; to create this connection you use three items of information:

- The original Class GUID
- The name of the transformation
- The name of the transformed Class

This type of connector is created using the TRANSFORM_REFERENCE function macro; when the element is in the current transformation, it can be safely omitted from the transformation. The simplest example of this is when you have created multiple Classes from a single Class in a transformation, and you want a connector between them; consider this script from the EJB Entity transformation:

```
Dependency
{
```

%TRANSFORM_REFERENCE("EJBRealizeHome",classGUID)% stereotype="EJBRealizeHome"

Source

{

%TRANSFORM_REFERENCE("EJBEntityBean",classGUID)%

}

Target

{

%TRANSFORM_REFERENCE("EJBHomeInterface",classGUID)%

}

}

In this script there are three uses of the TRANSFORM_REFERENCE macro: one to identify the connector for synchronization purposes and the other two to identify the ends; all three use the same source GUID, because they all come from the one original Class. None of the three have to specify the transformation because the two references are to something within the current transformation - each of them then only has to identify the transform name.

It is also possible to create a connector from another connector. You can create a connector template and list all connectors connected to a Class from the Class level templates; you don't have to worry about only generating the connector once, because if you have created a

TRANSFORM_REFERENCE for the connector then the system automatically synchronizes them.

This script copies the source connector:

```
%connectorType%
{
%TRANSFORM_CURRENT()%
%TRANSFORM_REFERENCE("Connector",connectorGUID)%
Source
{
%TRANSFORM_REFERENCE("Class",connectorSourceGUID)%
%TRANSFORM_CURRENT("Source")%
}
Target
{
%TRANSFORM_REFERENCE("Class",connectorDestGUID)%
%TRANSFORM_CURRENT("Target")%
}
}
```

Connecting to a Class for which you know the GUID

The second type of Class that you can use as a connector end is an existing element for which you know the current GUID. To create this connection, specify the GUID of the target Class in either the source or target end; this script creates a Dependency from a Class created in a transformation, to the Class it was transformed from:

```
Dependency
{
%TRANSFORM_REFERENCE("SourceDependency",class GUID)%
stereotype="transformedFrom"
Source
{
%TRANSFORM_REFERENCE("Class",classGUID)%
}
Target
{
GUID=%qt%%classGUID%%qt%
}
}
```

Notes

- Each connector is transformed at both end objects,

therefore the connector might appear twice in the transformation; this is not a problem, although you should check carefully that the connector is generated exactly the same way, regardless of which end is on the current Class

Transform Foreign Keys

Enterprise Architect supports the transformation into Foreign Keys of many different types of relationship defined between entities in a logical model.

Each Foreign Key in a Physical model is represented by the combination of a stereotyped connector and an operation in each of the involved Tables. Foreign Key transformations are achieved with the 'Connector' template in the DDL language. This template generates an intermediate dataset that is then interpreted by Enterprise Architect's transformation engine to create all the required physical entities and connectors.

By default, Enterprise Architect supports transformations of these connector types:

- Generalization - this kind of connector will create a Foreign Key with a multiplicity of 0..1 in the source and 1 in the destination
- Association Class - this kind of connector will create a 'join' table linking both the source and destination Tables
- Association/Aggregation - these kinds of connector use the multiplicity defined in the Logical model's relationship to join the source and destination Tables

All Foreign Key definitions will cause the addition of a new integer (or equivalent) column in both source and destination Tables, which will act as the Primary Key in the source Table and the Foreign Key column in the destination Table. The default names for the new columns will be the

Table name with the suffix of 'ID' added, whilst the names of the Foreign Keys will be automatically generated using the FK DDL template.

Copy Information

In many transformations there is a substantial amount of information to be copied.

It would be tedious to type all of the common information into a template so that it is copied to the transformed Class; the alternative is to use the TRANSFORM_CURRENT and TRANSFORM_TAGS function macros.

Use of Macros

Objective	Detail
Copy Object	TRANSFORM_CURRENT (<listOfExcludedItems>) The function generates an exact copy of all the properties of the current item, except for the items named in <listOfExcludedItems>.
Copy Connector	Another form of the function is available when transforming connectors to copy either end of the connector: TRANSFORM_CURRENT (<connectorEnd>, <listOfExcludedItems>)

	This generates an exact copy of the connector end specified by <connectorEnd> (either Source or Target) except for the items named in <listOfExcludedItems>.
Copy Tags	TRANSFORM_TAGS (<listOfExcludedItems>) The function generates an exact copy of all the Tagged Values of the current item, except for the items named in <listOfExcludedItems>.

Convert Types

Different target platforms almost certainly require different data types, so you usually require a method of converting between types. This is offered by the macro:

CONVERT_TYPE (<destinationLanguage>, <originalType>)

This function converts <originalType> to the corresponding type in <destinationLanguage> using the datatypes and common types defined in the model, where <originalType> is assumed to be a platform independent common type.

A similar macro is available when transforming common datatypes to the datatypes for a specified database:

CONVERT_DB_TYPE (<destinationDatabase>, <originalType>)

This function converts <originalType> to the corresponding datatypes in <destinationDatabase>, which is defined in the model; <originalType> refers to a platform independent common datatype.

Convert Names

Different target platforms use different naming conventions, so you might not want to copy the names of your elements directly into the transformed models. To facilitate this requirement, the transformation templates provide a CONVERT_NAME function macro.

Another way in which you can transform a name is to remove a prefix from the original name, with the REMOVE_PREFIX macro.

CONVERT_NAME (<originalName>, <originalFormat>, <targetFormat>)

This macro converts <originalName>, which is assumed to be in <originalFormat>, to <targetFormat>.

The supported formats are:

- Camel Case: the first word begins with a lower-case letter but subsequent words start with an upper-case letter; for example, myVariableTable
- Pascal Case: the first letter of each word is upper case; for example, MyVariableTable
- Spaced: words are separated by spaces; the case of letters is ignored
- Underscored: words are separated by underscores; the case of letters is ignored

The original format might also specify a list of delimiters to be used. For example a value of '_' breaks words whenever either a space or underscore is found. The target format might also use a format string that specifies the case for each word and a delimiter between them. It takes this form:

<firstWord> (<delimiter>) <otherWords>

- <firstWord> controls the case of the first word
- <delimiter> is the string generated between words
- <otherWords> applies to all words after the first word

Both <firstWord> and <otherWords> are a sequence of two characters. The first character represents the case of the first letter of that word, and the second character represents the case of all subsequent letters. An upper case letter forces the output to upper case, a lower case letter forces the output to lower case, and any other character preserves the original case.

Example 1: To capitalize the first letter of each word and separate multiple words with a space:

"Ht()Ht" to output "My Variable Table"

Example 2: To generate the equivalent of Camel Case, but reverse the roles of upper and lower case; that is, all characters are upper case except for the first character of each word after the first word:

"HT()hT" to output "MY vARIABLE tABLE"

REMOVE_PREFIX(<originalName>,

<prefixes>)

This macro removes any prefix found in <prefixes> from <originalName>. The prefixes are specified in a semi-colon separated list.

The macro is often used in conjunction with the CONVERT_NAME macro. For example, this code creates a get property name according to the options for Java:

```
$propertyName=%REMOVE_PREFIX(attName,genOptPropertyPrefix)%
    %if genOptGenCapitalisedProperties=="T"%
    $propertyName=%CONVERT_NAME($propertyName, "camel case", "pascal case")%
    %endIf%
```

Notes

- Acronyms are not supported when converting from Camel Case or Pascal Case

Cross References

Cross References are an important part of transformations. You can use them to:

- Find the transformed Class to synchronize with
- Create connectors between transformed Classes
- Specify a classifier of a type
- Determine where to transform to for future transformations

Each Cross Reference has three different parts:

- A Namespace, corresponding to the transformation that generated the element
- A Name, which is a unique reference to something that can be generated in the transformation, and
- A Source, which is the GUID of the element that this element was created from

When writing the templates for a transformation it is easiest to generate the Cross References using the macro defined for this purpose:

TRANSFORM_REFERENCE (<name>, <sourceGuid>, <namespace>)

The three parameters are optional. The macro generates a reference that resembles this:

XRef{namespace="<namespace>" name="<name>" source="<sourceGuid>"

- If <name> is not specified the macro gets the name of the

current template

- If <sourceGUID> is not specified the macro gets the GUID of the current Class
- If <namespace> is not specified the macro gets the name of the current transformation

The only time that a Cross Reference should be specified is when creating a connector to a Class created in a different transformation.

A good example of the use of Cross References is in the DDL transformation provided with Enterprise Architect. In the Class template a Cross Reference is created with the name 'Table'. Then up to two different connectors can be created, each of which must identify the two Classes it connects using Cross References, while having its own unique Cross Reference.

Specify Classifiers

Objects, attributes, operations and parameters can all reference another element in the model as their type. When this type is created from a transformation you must use a cross reference to specify it, using the macro:

TRANSFORM_CLASSIFIER (<name>, <sourceGuid>, <namespace>)

This macro generates a cross reference within a classifier element, where the parameters are identical to the TRANSFORM_REFERENCE macro but the name Classifier is generated instead of XRef.

If the target classifier already exists in the model before the transformation, TRANSFORM_CLASSIFIER is inappropriate, so instead the GUID can be given directly to a classifier attribute.

If a classifier is specified for any type, it overrides that type.

Transform Template Parameter Substitution

If you want to provide access in a transformation template to data concerning the transformation of a Template Binding connector's binding parameter substitution in the model, you can use the Template Parameter substitution macros.

Factors in the Transformation

Factor	Detail

Intermediary Language	Template Parameter Substitutions are represented in the Intermediary language as:
	TemplateParameterSubstitution
	{
	Formal { FormalProperties }
	Actual { ActualProperties }
	}
	
	For example:
	TemplateParameterSubstitution
	{
	Formal

	{
	name=%qt%%parameterSubstitutionFormal%%qt%
	}
	Actual
	{
	name=%qt%%parameterSubstitutionActual%%qt%
	%TRANSFORM_CLASSIFIER("Class", parameterSubstitutionActualClassifier)%
	}
	}

Formal Properties or Actual Properties	FormalProperties and ActualProperties are zero, or one instance of one of these properties: • name • classifier
Transform of Parameter Substitution Actual parameter	If the Actual parameter is assigned a String Expression, it will transform as Actual name. You can assign the Actual Classifier if you know the GUID: TemplateParameterSubstitution (

	Formal
	{
	name=%qt%%parameterSubstitutionFormal%%qt%
	}
	Actual
	{
	name=%qt%%parameterSubstitutionActual%%qt%
	classifier=%qt%%parameterSubstitutionActualClassifier%%qt%
	}
	}
	
	If you want the Actual parameter to be transformed so that its Classifier is assigned with an element that is transformed, then use TRANSFORM_CLASSIFIER or TRANSFORM_REFERENCE, as shown:
	
	TemplateParameterSubstitution
	{
	Formal
	{
	name=%qt%%parameterSubstitutionFormal%%qt%

	}
	Actual
	{
	name=%qt%%parameterSubstitutionActual%%qt%
	%TRANSFORM_CLASSIFIER("Class", parameterSubstitutionActualClassifier)%
	}
	}
	
	Or
	
	TemplateParameterSubstitution
	{
	Formal
	{
	name=%qt%%parameterSubstitutionFormal%%qt%
	}
	Actual
	{
	name=%qt%%parameterSubstitutionActual%%qt%
	%TRANSFORM_REFERENCE("Class", parameterSubstitutionActualClassifier)%
	}

	}