

MooD 15

Model Driven Documents

This document covers Model Driven Documents (MDD) (the **Documents** synchronizer).

If you want a reminder of how fragments, patterns and templates interact, see the [diagram](#_bookmark3) on page [8](#_bookmark3).

**FAQ:** What are the **Save To** filename tokens?

#### Answer:

**$R** Repository name

**$D** Date

**$T** The date and the time (separated by a full stop)

**$N** Start element name

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# Introduction

This guide is written for MooD Business Architect users who want to use Documents synchronizers to output documentation from a MooD repository. Such documents are called model driven documents (MDD).

This guide contains the following sections:

* [About model driven documents](#_bookmark2) (page [8](#_bookmark2))

This gives you an overview of Documents synchronizers and how to develop them. It introduces the key concepts of fragments and patterns, and how they interact with the underlying Microsoft Word template file that is the starting point for every MDD.

* [Creating a Documents synchronizer](#_bookmark10) (page [11](#_bookmark10))

MDDs are created from synchronizers of type Documents. Once you create one, you can access its Documents synchronizer tab.

* [About the Documents synchronizer tab](#_bookmark12) (page [13](#_bookmark12))

You use this tab to develop and preview MDDs. This section covers the user interface and all its components.

* [Developing documents](#_bookmark26) (page [20](#_bookmark26))

This covers all the standard tasks you can perform when developing MDDs using the Documents synchronizer tab. It includes reference material on each of the items (rules) you can insert into a document, and begins with an overview of the workflow.

* [Executing Documents synchronizers](#_bookmark73) (page [56](#_bookmark73))

This covers using Documents synchronizers to generate documents.

* [Advanced usage](#_bookmark76) (page [58](#_bookmark76))

This includes guidance on using:

* + [Starting elements](#_bookmark77) (page [58](#_bookmark77)).
  + [Parameterized queries](#_bookmark79) (page [59](#_bookmark79)).
  + [The **<the rule subject>** setting for Query, Model and Matrix rules](#_bookmark80) (page [59](#_bookmark80)).
  + [Variables in Query, Model and Matrix rules](#_bookmark82) (page [62](#_bookmark82)) – this includes material on exposing variables as pins by passing them up to the document level.
  + [Pattern groups and Query rules](#_bookmark84) (page [65](#_bookmark84)).
  + [Repeating templates (templates within patterns)](#_bookmark85) (page [67](#_bookmark85)).

## Technical support and resources

MooD 15 is backed by a dedicated UK based technical support team. If you have a valid support contract, you have access to telephone and email support, and additional online resources.

We recommend that you refer to the *MooD 15: Getting Started Guide*. This covers the general use of MooD Business Architect and is available as a PDF from Business Architect’s **File** tab.

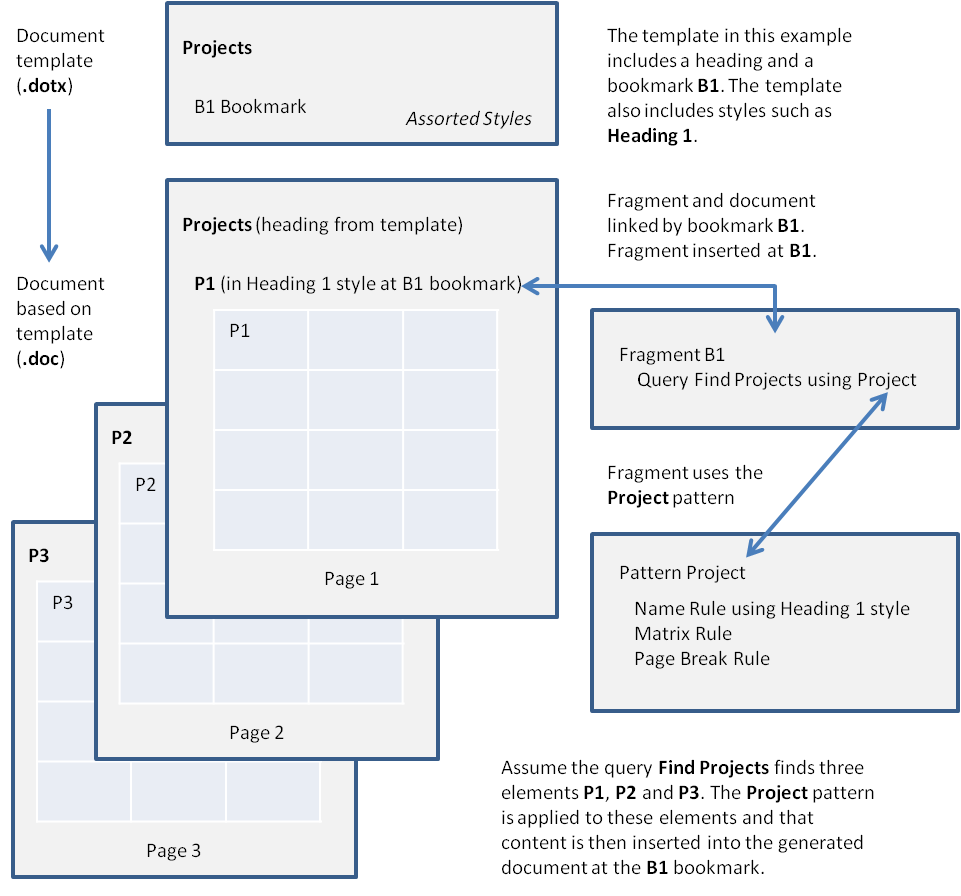
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# About model driven documents

A model driven document (MDD) is a Microsoft Word® document (**.doc**) generated from a MooD repository. Each MDD is a type of MooD synchronizer called **Documents**. This defines what is extracted from the repository and how it is structured and formatted. For example, you could create an MDD that generates a document detailing all projects with a particular status.

Once you have a Documents synchronizer, you use it like any other synchronization you have in Business Architect. Synchronizers are listed under **Synchronize** in the Explorer Bar’s **Libraries** section, and you can schedule or execute them as required.

## The template, fragments and patterns



#### Figure 1. Relationship between the template, fragments and patterns

Each MDD is based on a Microsoft Word template. A document based on this template is created and fragments are inserted into it. Patterns are used within fragments. Put simply, fragments are the elements you want to include in the document, and patterns are the content you want to include for each element. The sections that follow elaborate this basic description.

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### About the Microsoft Word template

All generated documents (**.doc** files) are based on a Microsoft Word template file (**.dot** or **.dotx** files). The template defines the basic properties of the document such as page size, margins, headers and footers etc. and any fixed text required, such as corporate logos, titles, or standard content. The template also defines the Microsoft Word styles that you will use in patterns.

The template can include bookmarks and you can insert content from the MooD repository directly into a bookmark location. Bookmarks can be included in the body of the template and in its headers and footers. One use of bookmarks is to have an entire document as the underlying template and only insert specific pieces of information from the MooD repository at bookmarked points. This is in contrast to generating all of a document’s content from the repository. You can, of course, have any combination of fixed and generated content.

When you generate a document, Business Architect creates a new document based on this template file. It will not alter the template file itself. This means you can use the same template file as the basis for many generated documents. You can create a Microsoft Word template file in a variety of ways, including saving an existing Word document as a template file. See your Microsoft Word documentation for more information on templates.

### About fragments

Fragments define structure and are inserted into the document.

Fragments reference elements in the MooD repository. Elements can be explicitly inserted or inserted as the result of a query. Fragments and their elements are inserted into the generated document. Fragments provide the structure for the content that will be extracted from the MooD repository. You can have multiple fragments. Each fragment can reference as many individual or sets of elements as required.

The order of fragments is the order they will be inserted into the document unless you use bookmarks in your template file. Fragments can be inserted at a bookmark location. If you use bookmarked fragments, any fragments that are not bookmarked are inserted at the end of the document.

### About patterns

Patterns define content and format. Patterns are used within fragments.

Each element is given a pattern. As elements are inserted into the generated document their patterns are applied. The pattern defines what content from the element will be added to the document, and how that content will be ordered and formatted (using styles from the underlying template). For example, a pattern can include the element’s name formatted as a heading, field values formatted as a list, and then an image of the element’s model. Business Architect gives you a variety of repository building blocks (***rules***) to construct your patterns, such as, Name, Field and Matrix. Patterns are reusable and ensure consistent content and presentation within the generated document.

## Exposing variables and parameters as pins

If you include content from your repository that requires variables, you can either set these at the rule level, or you can pass them upwards to the document level. At the document level they

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become exposed for pinning. See [*Variables in Query, Model and Matrix rules*](#_bookmark82) on page [62](#_bookmark82) for more on this feature.

## Templates within patterns

In the preceding overview, a pattern gets its styles from the underlying Microsoft Word template. However, patterns can have their own Microsoft Word template.

Content from any elements that such a pattern is applied to is inserted into the generated Word document within a section based on the pattern’s template and using styles from that template. This means that within a document based on the underlying Microsoft Word template, you can have any number of repeating sections based on other Microsoft Word templates. Each template has its own bookmarks, formatting and structure.

This feature simplifies the development of documents with many repeating sections. Rather than maintain one mammoth template, you can design, use, maintain, and more importantly reuse, component templates. The Documents synchronizer’s underlying template can become simpler and act as a wrapper for your various repeating templates.

See [*Repeating templates*](#_bookmark85) on page [67](#_bookmark85) for more on this feature. However, two key points to note are:

* Because each template can have its own bookmarks, patterns that use a template must define their rules within fragments. A pattern’s fragments are then inserted into the pattern’s template at their bookmarked location. Business Architect will not let you break this rule.
  + Headers and footers in the generated document are taken from the underlying template. Any headers and footers in pattern templates are ignored.

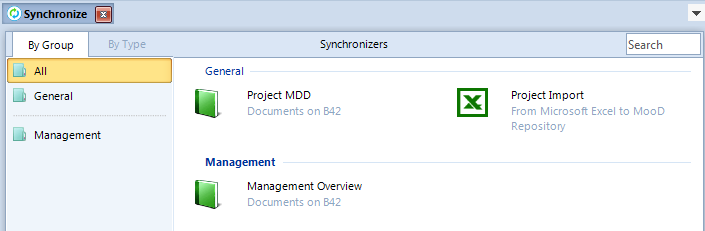
10

# Creating a Documents synchronizer

Each model driven document (MDD) is a MooD synchronization of type Documents.

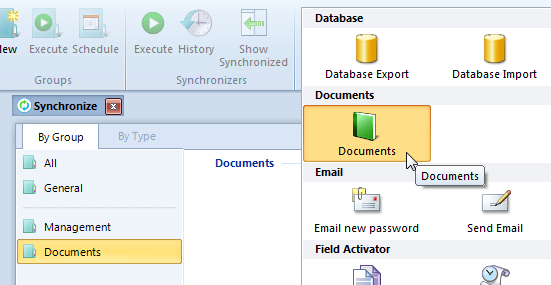
**Task 1** To create a Documents synchronizer:

1. In the Explorer Bar, under **Libraries**, click **Synchronize**.

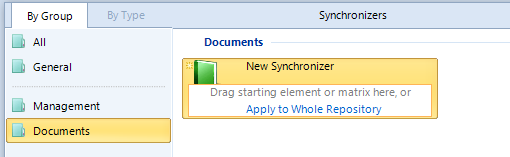
The **Synchronize** tab opens. This lists your synchronization groups.

1. Click the group that you want to add the Documents synchronizer to.

|  |
| --- |
| **Adding groups** |
| To add a group, on the ribbon, on the **Home** tab, in the **Groups** group, click **New**.  15RibbonNewGroup.png  In this task, a **Documents** group already exists. The new Documents synchronizer is added to this group. |

1. On the **Home** tab, in the **Insert** group, in the gallery of synchronizers, click **Documents**.

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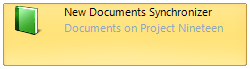
A synchronizer called **New Synchronizer** appears in the selected group (you can’t rename this until you have completed the next step).

1. Do one of the following:
   * Drag an element into the **Drag starting element here** area.

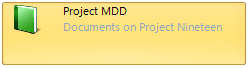
This type of Documents synchronizer lets you generate the same basic document many times but base it on a different element each time. See the [*Starting elements*](#_bookmark77) section (page [58](#_bookmark77)) for details.

**Note:** Although it is possible to start from a matrix, and this can be of limited use with respect to the Name rule, this isn’t generally done. Matrices are catered for by the Matrix rule.

* + Click **Apply to Whole Repository** if you do not want to use a starting element.

In either case, the synchronizer will then appear as follows with either the repository or starting element included in the detail.

1. Right click the synchronizer, click **Rename**, and then give the synchronizer a meaningful name.



You can now double-click the synchronizer and construct your document model. See [*About the Documents synchronizer tab*](#_bookmark12) on page [13](#_bookmark12) for general details on the working environment, and [*Developing documents*](#_bookmark26) on page [20](#_bookmark26) for guidance on the actual tasks.

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# About the Documents synchronizer tab

You use a Documents synchronizer tab to construct your model driven document (MDD).

**Note:** You must have a Documents synchronizer before you can access this tab. See

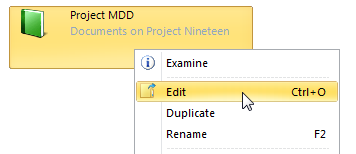
[*Creating a Documents synchronizer*](#_bookmark10) on page [11](#_bookmark10) for how to create one.

The tab’s name will be the name of your synchronizer. However, this guide always refers to it as the ***Documents synchronizer tab***.

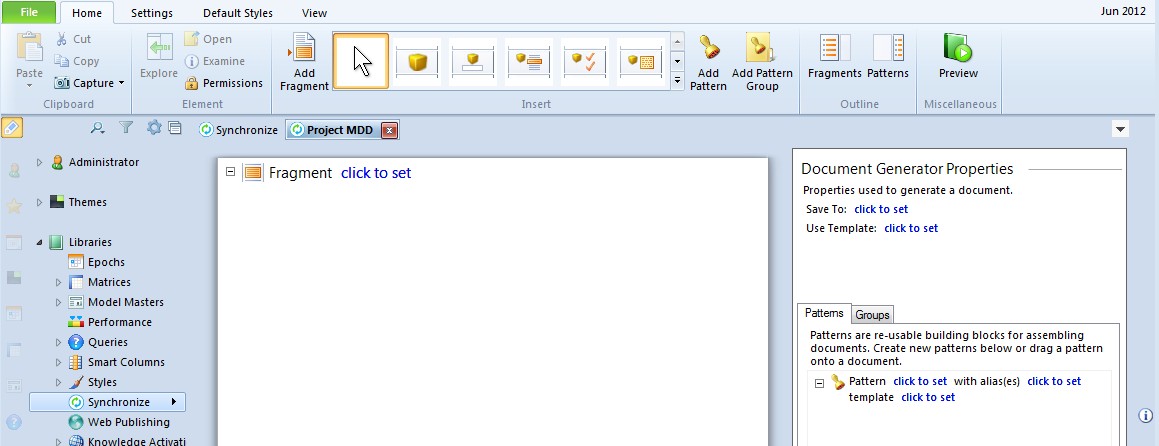
**Task 2** To open the Documents synchronizer tab for an MDD:

1. In the Explorer Bar, under **Libraries**, click **Synchronize**.

The **Synchronize** tab opens. This lists your synchronization groups and the synchronizers within.

1. Right click the Documents synchronizer you want to configure, and then click **Edit**.

The Documents synchronizer tab for that MDD is displayed. It will look similar to this:



The Documents synchronizer tab has three areas:

* The Fragments pane.
* The Document Generator Properties pane. This includes two tabs: Patterns and Groups.
* The ribbon.

The purpose and features of these three areas are outlined in the following sections.

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## The Fragments pane

This holds ***fragments***. Fragments define structure.

Fragments contain elements from the repository. You can insert individual elements into a fragment, or you can insert a query that will find and insert elements. Documents can include one or more fragments. Combined together, these fragments, and the elements they hold, define the structure of your generated document. You can consider fragments as analogous to sections in a finished document.

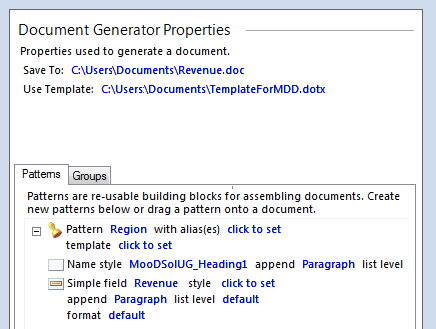
**Note:** While fragments will typically reference elements, they can also include rules more commonly used in patterns, for example, Custom Text and Matrix rules.

If you create a Documents synchronizer that uses a starting element, you can construct fragments that do not include element references. Such fragments get their element reference from the starting element. See [*Starting elements*](#_bookmark77) on page [58](#_bookmark77) for details.

The order of fragments in the pane is the order they will appear in the generated document, unless they have the same name as a bookmark in the Microsoft Word template file being used, in which case the fragment is inserted into the generated document at its bookmark. If you use bookmarked fragments, any fragments that are not bookmarked are inserted at the end of the document.

You can reorder fragments, and preview individual fragments. You can reorder the items within a fragment, move items between fragments, and duplicate items (**Ctrl** drag).

## The Document Generator Properties pane



This area lists basic settings, such as the Microsoft Word template file to use, and where to save generated documents (you can include tokens in this filename (see page [21](#_bookmark30))). When you create a document model, you should set these before you build your document structure. It also holds the Patterns and Groups tabs described next.

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### The Patterns tab

This holds ***patterns***. Patterns define content and format.

Each element must have a pattern. Patterns are reusable. When a document is generated, each element has its pattern applied. The pattern uses ***rules*** to specify what content from the element will be included in the generated document, and how that content will be ordered and formatted. For example, you could have a pattern that includes the element’s name formatted as a heading, followed by an image of its model. The same pattern can be applied to any number of individual elements, or to all of the elements returned by a query.

Patterns can include any number and combination of the following rules:

* Name – the element’s name.
* Field – values taken from the element’s simple fields.
* Formatted Text – content taken from the element’s HTML and rich text memo fields.
* Pick List – content taken from Pick lists associated with the element.
* Model – the element’s model, a selected element’s model, or a Model Master applied to an element.
* Matrix – a matrix associated with the element, a matrix generated against an element, or a selected matrix (ignoring the current element).
* Custom Text – pieces of fixed text that you type yourself when you construct a pattern, that is, it is not drawn from the element.
* Break – assorted page and section breaks.
* Lists – there are two rules (Start List and End List) that you can use to insert formatted lists without using styles from the underlying Microsoft Word template.
* Element and Query – more complex patterns can include elements and queries to provide a degree of nesting.

o Parameterized queries are useful within patterns as they get their parameter (an element) from the element to which the pattern is applied. See [*Parameterized queries*](#_bookmark79) on page [59](#_bookmark79) for details.

The Fragments pane and Patterns tab synchronize with each other. If you click an item in either pane, the fragments or patterns that use the selected item are highlighted in the other pane.

When you select an item in either pane, a **Delete** button DeleteButton appears.

**Note:** If you delete a pattern that is used elsewhere, a warning icon is inserted beside the affected rules. Your document will still generate, but the affected elements will be excluded.



Patterns can also include fragments when the pattern is using its own Microsoft Word template to insert specially formatted or repeating sections into the generated document. See [*Repeating*](#_bookmark85)[*templates*](#_bookmark85) on page [67](#_bookmark85) for details.

To duplicate a pattern, use **Ctrl** drag.

### The Groups tab

This holds ***pattern groups***. Pattern groups include multiple patterns and are used with queries. As a query can return multiple elements, you use a pattern group to apply different patterns to

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the different types of elements returned by the query. See [*Pattern groups and Query rules*](#_bookmark84) on page [65](#_bookmark84) for details.

## The ribbon

When a Documents synchronizer tab is displayed, on the ribbon, the **Home**, **Settings** and

**Default Styles** tabs include commands specifically for MDD. These are described next.

### The Home tab

This tab includes commands that let you build and test your document model.

#### Table 1. The Home tab (on the ribbon)

|  |  |  |  |
| --- | --- | --- | --- |
| **Insert group** | | | |
| AddFragmentRibbonButton | Click this to add a new fragment to the Fragments pane (or the Patterns tab if that has focus).  Once a fragment has been added, you can drag it to another position, or **Ctrl** drag it to create a copy. | | |
| **Insert group – Rules gallery** | | | |
| NoRuleButton | The first item in the **Rules** gallery (No Rule) cancels the insertion point cursor:  CrosshairCursor  When you click any other rule in the gallery, the cursor changes to an insertion point when it is over the Fragments pane or Patterns tab.  The **Esc** key also returns the cursor to normal. | | |
|  | **Insert rule** | **Fragments** | **Patterns** |
| ElementButtonGallery | Element. Once an Element rule is inserted and set to an actual element, you can double-click its icon to display a dialog box showing its memos and strings. | MC900432530[1] | MC900432530[1] |
| NameGalleryButton | Name. | **Start MC900432530[1]** | MC900432530[1] |
| SimpleFieldGalleryButton | Field (Simple). | **Start MC900432530[1]** | MC900432530[1] |
| PickListGalleryButton | Pick List. | **Start MC900432530[1]** | MC900432530[1] |

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|  |  |  |  |
| --- | --- | --- | --- |
| FormattedTextGalleryButton | Formatted Text (HTML and rich text memo fields). | **Start MC900432530[1]** | MC900432530[1] |
| ModelGalleryButton | Model. | MC900432530[1] | MC900432530[1] |
| MatrixGalleryButton | Matrix. | MC900432530[1] | MC900432530[1] |
| QueryGalleryButton | Query. | MC900432530[1] | MC900432530[1] |
| CustomTextGalleryButton | Custom Text. | MC900432530[1] | MC900432530[1] |
| BreakGalleryButton | Break. A Microsoft Word page or section break. | MC900432530[1] | MC900432530[1] |
| StartList.png | Start List. | MC900432530[1] | MC900432530[1] |
| EndList.png | End List. | MC900432530[1] | MC900432530[1] |
| **Start MC900432530[1]**indicates that these are only really useful in fragments when you are using a starting element. See [*Starting elements*](#_bookmark77) on page [58](#_bookmark77) for details. | | | |
| **Insert group** | | | |
| AddPatternRibbonButton | Add a new pattern to the Patterns tab. | | |
| AddPatternGroupRibbonButton | Add a new pattern group to the Groups tab. | | |
| **Outline group** | | | |
| FragmentsRibbonButton | Click this to expand or contract the fragments in the Fragments pane. | | |

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|  |  |
| --- | --- |
| 15PatternsButton.png | Click this to expand or contract the patterns in the Patterns tab. |
| When contracted, only the fragment and pattern headings are displayed. Their content is hidden. | |
| **Miscellaneous group** | |
| PreviewGalleryButton | Click this to generate and test your output. This generates the entire document.  You can also preview individual fragments. When you select a fragment heading, a **Preview** button is added to its line:  PreviewFragmentButton |

### The Settings tab

This tab includes general settings for your document model and epoch settings.

#### Table 2. The Settings tab (on the ribbon)

|  |  |
| --- | --- |
| **Epoch group** | |
| **Epoch**. The epoch that the MDD will be generated against. Rules will source their data from this epoch. You can click and select from:  Epoch.png  This property defaults to **Current Epoch** which by default is the current month. The current epoch is shown in Business Architect’s upper right corner. | |
| **Plus or minus**. An epoch modifier. A number plus or minus the selected epoch. This is plus or minus the unit of the selected epoch. For example, if epoch is set to the current month, setting it to:   * 1 will generate the MDD against the next month. * -12 will generate against the same month one year earlier.   For custom epochs, the modifier is relative to the epoch’s position in its epoch group. | |
| **Variables group** | |
| VariablesRibbonButton | Use this to set defaults for any variables that have been passed to the document level. Document level variables are exposed for pinning.  See [*Variables in Query, Model and Matrix rules*](#_bookmark82) on page [62](#_bookmark82) for details on how to pass variables from the rule level to the document level, but note that if there are no document level variables, the **Select Query Variables** dialog box that this command opens will be empty. |
| **Form group** | |
| **Output Text Colour**. Provided the underlying document does not use grey, setting | |

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|  |
| --- |
| **Output Text Colour** to **Grey** allows you to quickly see what text in a generated document has been inserted using an MDD. The other setting, **Default**, uses the colours in the style that is applied to the text. |
| **Caption Position**. The default position of matrix and model captions. Choose between **Top** and **Bottom**. The Model and Matrix rules let you set the actual caption used and its style (the rules have **caption** and **caption style** properties). |

### The Default Styles tab

This tab sets default styles for text and tables.

#### Table 3. The Default Styles tab (on the ribbon)

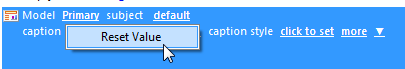
|  |
| --- |
| **Default Text Style gallery** |
| A style to apply to items (excluding matrices) that do not have their **style** property set. You select a style from a gallery of styles available in the associated Microsoft Word template. If the **Use Template** property is not set, the gallery includes styles from the Microsoft Word Normal template. |
| **Default Table Style gallery** |
| A style to apply to matrices that do not have their **style** property set. It behaves in the same way as **Default Text Style**. |

## Link settings

Links are used to both display and set the various settings. Initially many are set to **Click to set**

HyperlinkExamplewhile others show a default setting. For example:

When you click a link, it lets you set that property. This might be using a dialog box, a drop- down list of possible values, or by just typing the setting. Once set, the link changes to show the new setting.

If you right click a link, you can choose between **Clear value** and **Reset value** (which depends on whether the setting requires a value). For example:

**Note:** If a rule has additional settings that are still set to their defaults, the **more** link gives you a **Show Extra Settings** command to display them. Once any of these settings have been changed from their default, they remain visible and the **Show Extra Settings** command changes to **Clear Extra Settings**. This returns the additional settings to their defaults. It does not just hide them.

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# Developing documents

This section covers the tasks involved in developing Documents synchronizers. It begins with an overview of the typical workflow.

## Workflow

The suggested workflow for developing a Documents synchronizer is:

1. Make sure you have a suitable Microsoft Word template file (**.dot** or **.dotx**) for your document. In particular, if you want to insert content (***fragments***) at specific points in the document, make sure that the template file includes bookmarks at those locations. See [*About model driven documents*](#_bookmark2) on page [8](#_bookmark2) for general details of how Documents synchronizers work.
2. Create a synchronizer of type **Documents**. See [*Creating a Documents synchronizer*](#_bookmark10) on page [11](#_bookmark10).

At this point you can access the Documents synchronizer tab and undertake the remaining tasks outlined below. These tasks assume you have read [*About the*](#_bookmark12)[*Documents synchronizer tab*](#_bookmark12) on page [13](#_bookmark12) and are aware of its general purpose and features.

1. Set the document’s properties. The properties are divided between:
   * The **Document Generator Properties** pane to the right of the Documents synchronizer tab. This includes the **Use Template** property. One of the first things you must do is set this to the Microsoft Word template file your document will use. Also note that **Save To** can include tokens that are replaced with their value when the document is generated, for example, **$R** for the name of the repository, and **$D** for the date.
   * The **Settings** tab on the ribbon. This includes some defaults that you can set once **Use Template** is set.

See [*Document properties*](#_bookmark28) on page [21](#_bookmark28) for details on both groups of settings and for instructions on the key ones to set including **Use Template**.

1. Construct your document’s model. This means defining its structure, content and formatting by developing ***fragments****,* and the ***patterns*** to use in your fragments:
   * [Fragments](#_bookmark34) (page [24](#_bookmark34))
   * [Patterns](#_bookmark43) (page [31](#_bookmark43))

When you develop fragments and patterns you insert any number and combination of the ***rules*** listed below (a rule defines how that item is included in the generated document).

Typically fragments use the first two rules to include content (elements) from your repository.

* + [Elements](#_bookmark37) (page [26](#_bookmark37))
  + [Queries](#_bookmark40) (page [28](#_bookmark40)) to include multiple elements

Typically patterns use the remaining rules to define the actual content that is extracted and inserted for each element included in your fragments.

* + [Names](#_bookmark48) (page [34](#_bookmark48))

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* + [Fields](#_bookmark51) (simple) (page [36](#_bookmark51))
  + [Formatted Text](#_bookmark54) (HTML and Rich Text memo fields) (page [38](#_bookmark54))
  + [Pick Lists](#_bookmark57) (page [41](#_bookmark57))
  + [Models](#_bookmark60) (page [45](#_bookmark60))
  + [Matrices](#_bookmark63) (page [48](#_bookmark63))
  + [Custom Text](#_bookmark66) (page [51](#_bookmark66))
  + [Lists](#_bookmark69) (page [53](#_bookmark69))

There are two rules (Start List and End List) that you can use to insert formatted lists without using styles from the underlying Microsoft Word template. You may find this an easier way to generate formatted (bulleted, numbered etc.) lists.

* + [Page and Section Breaks](#_bookmark70) (page [54](#_bookmark70))

**Note:** The division of the rules between fragments and patterns above is a simplification. Each rule can be used anywhere. However, for the purpose of explaining the basics of Documents synchronizers, it is a useful division. More complex scenarios are noted in the text and covered in the [*Advanced*](#_bookmark76)[*usage*](#_bookmark76) section starting on page [58](#_bookmark76).

1. Test your Documents synchronizer. You can test individual fragments or preview the entire document. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

**Note:** In common with all synchronizers, on the **Synchronize** tab, on the ribbon, on the **Home** tab, in the **Synchronizers** group, click **History** to see the **Activation History** dialog box for the selected synchronizer. Alternatively, right click a synchronizer and then click **View History**. The **Activation History** dialog box includes information that can help you investigate errors and warnings in your synchronizer.

## Document properties

Each Documents synchronizer has properties divided between the **Document Generator Properties** pane and the **Settings** tab on the ribbon. The key property to set is the **Use Template** setting on the **Document Generator Properties** pane. Many other settings rely on this being set.

#### Table 4. Properties in the Document Generator Properties pane

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Save To** | The filename and location where the generated document will be saved. The link displays a **Save As** dialog box and you can choose between a Microsoft Word document and a PDF document.  You can include the following filename tokens that will be replaced with their current value when the document is saved:  **$R** Repository name  **$D** Date  **$T** The date and the time (separated by a full stop) |

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|  |  |
| --- | --- |
|  | **$N** Start element name  For example, **C:\Documents\$RReport$D.doc**.  You can preview documents without having this set. Preview only generates temporary documents. |
| **Use Template** | The Microsoft Word template file that the document gets its page setup, default content, and styles and bookmarks from. When you generate a document, Business Architect creates a new document based on this template file. It will not alter the template file itself. This means you can use the same template file for many generated documents.  Styles define how items tagged with that style are formatted in a Microsoft Word document. For example, styles typically exist for headings, lists and normal text. The Name, Field, Formatted Text, Pick List, Matrix and Custom Text rules have a **style** property that is set to a style from the underlying Microsoft Word template. This controls how they appear in the generated document.  If you do not specify a valid template file, you will not be able to set styles or select bookmarks. You can still preview and generate your document, but it will use the Microsoft Word Normal style throughout.  Fragments given the same name as bookmarks in the template file are inserted at that bookmark. This includes bookmarks in the template’s headers and footers. |

#### Table 5. Document properties on the Settings and Default Styles tabs on the ribbon

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Settings tab** | |
| Epoch | The epoch that the MDD will be generated against. Any measures, matrices, queries, etc. that use epochs will source their data from this epoch. You can click and select from:  Epoch.png  This property defaults to the ***Current Epoch*** which by default is the current month. The current epoch is shown in Business Architect’s upper right corner. |
| Plus or minus | An epoch modifier. A number plus or minus the selected epoch. This is plus or minus the unit of the selected epoch. For example, if epoch is set to the current month, setting it to:   * 1 will generate the MDD against the next month. * -12 will generate against the same month one year earlier.   For custom epochs, the modifier is relative to the epoch’s position in its epoch group. |
| Edit Variables | Use this to set defaults for any variables that have been passed to the |

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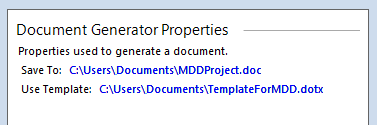
|  |  |
| --- | --- |
|  | document level. Document level variables are exposed for pinning. See [*Variables in Query, Model and Matrix rules*](#_bookmark82) on page [62](#_bookmark82) for details on how to pass variables from the rule level to the document level, but note that if there are no document level variables, the **Select Query Variables** dialog box that this command opens will be empty. |
| Output Text Colour | Use this to set a colour for generated text. This means that repository content added to a template can have a different colour to the content already in the template document. |
| Caption Position | The default position of matrix and model captions. |
| **Default Styles tab** | |
| Default Text Style | A style to apply to items (excluding matrices) that do not have their **style** property set. You select a style from a gallery of styles available in the associated Microsoft Word template. If the **Use Template** property is not set, the gallery includes styles from the Microsoft Word Normal template. |
| Default Table Style | A style to apply to matrices that do not have their **style** property set. It behaves in the same way as **Default Text Style**. |

### Setting a document’s properties including Use Template

Before you can construct a Documents synchronizer, you need to set some basic properties.

**Task 3** To set the basic properties including **Use Template**:

1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).

The properties you should set are listed under **Document Generator Properties**.

1. Next to **Save To**, click the **click to set** link. The **Save As** dialog box is displayed.

**Note:** If a property is set, the link will be its setting and not **click to set** (as is the case in the preceding image). You can right click a setting, and then choose to clear or reset its value. This works for all settings that do not need a setting, or have a default setting.

1. Use the **Save As** dialog box to select a location and name for the generated document.

**Note:** You can include tokens in the filename that will be replaced with their current value when the document is generated. The tokens are: **$R** repository name, **$D** date, **$T** date and time, and **$N** start element name.

The **Save To** property will show the selected path as a link.

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1. Next to **Use Template**, click the **click to set** link. The **Open** dialog box is displayed.
2. Use the **Open** dialog box to select the Microsoft Word template file that you want to base the generated document on.

The **Use Template** property will show the selected file as a link.

1. If required, use the **Settings** and **Default Styles** tabs on the ribbon to set the epoch and the various default styles. You can return and edit these settings later if required.

Once these basic properties are set, you can begin constructing your document’s model by adding fragments, and developing patterns to use within those fragments.

## Fragments

Fragments define structure by referencing the elements that will be included in the generated document.

Fragments are named. This can be anything, but is more likely to be the name of a bookmark in the underlying Microsoft Word template. When you set the name, you can type a name, or select a bookmark from a drop-down list. If you use a bookmark, the fragment is inserted into the generated document at that bookmarked location. If you use bookmarked fragments, any fragments that are not bookmarked are inserted at the end of the document.

**Note:** You can name your fragments and then subsequently add corresponding bookmarks to your Microsoft Word template. You can rename fragments at any time.

**Task 4** To add a fragment:

1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. AddFragmentRibbonButtonOn the **Home** tab, in the **Insert** group, click **Add Fragment**.

This adds a new fragment to the bottom of the Fragments pane.

FragmentInFragmentsPane

**Note:** If this is a new Documents synchronizer, the Fragments pane will already include a default fragment. You should start with this.

You can drag fragments up and down the Fragments pane. Their position in the Fragments pane is only relevant if you are not using bookmarks.

When you click **Add Fragment**, if a pattern is currently selected in the Patterns tab and that pattern is empty or it includes fragments, then the new fragment will be added to that pattern. See [*Repeating templates*](#_bookmark85) on page [67](#_bookmark85) for information on when you might want to include fragments in patterns. See also *Dragging fragments into patterns* next.

1. Click the **click to set** link and do one of the following:

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* + Type a name for the fragment.
  + Select a bookmark from the drop-down list. The bookmark name will act as the fragment’s name, and the fragment will be inserted into the generated document at that bookmark’s location.

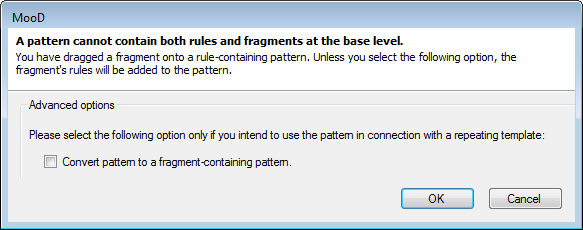
FragmentExampleThe **click to set** link will be replaced with the name.

As outlined in [*Workflow*](#_bookmark27) on page [20](#_bookmark27), you can now add ***rules*** to the fragment. Typically, you will add Element and Query rules, and thereby populate your fragment with the elements that it will draw content from. Once fragments include rules, you can test them. See [*Previewing*](#_bookmark71)[*documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

**Note:** The fragment’s name will not appear in the generated document. If, for instance, you want a section heading, you can either include it in the Microsoft Word template at the fragment’s bookmarked location, or add a Custom Text rule as the first rule in the fragment.

### Dragging fragments into patterns

You can drag fragments from the Fragments pane (or from other patterns) and drop them into patterns in the Patterns tab. This functions as follows:

* If the pattern is empty or already contains fragments, the dragged fragment is moved into the pattern.
* If the pattern already contains rules (not held within a fragment), the following dialog box is displayed.

If you proceed, you have two possible outcomes:

* + If you just click **OK**, the fragment’s rules are extracted and added to the pattern.
  + If you select **Convert pattern to a fragment-containing pattern** and then click **OK**, the dragged fragment is added to the pattern, and the pattern’s existing rules are moved into a new fragment created for them within the pattern. See [*Repeating templates*](#_bookmark85) on page [67](#_bookmark85) for details on fragments within patterns and their use with repeating templates.

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## Element rules

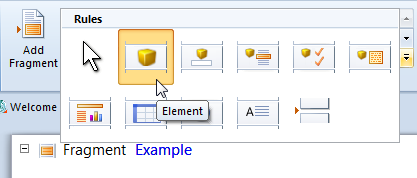
Inserting an Element rule into a fragment means that content from the element referenced by the rule will be inserted into the generated document. What content is inserted and how it is formatted is determined by the pattern used by the Element rule.

**Note:** You can also insert Element rules into patterns. This allows you to construct more complex structures as it allows for a degree of nesting.

#### Table 6. Element rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| ***<element>*** | The element to use. The link for this will initially be **click to set**. Once set, the element’s name becomes the link. |
| **using** | The pattern to use. The pattern defines what content from the element will be inserted into the document and how it will be formatted once generated. Patterns are reusable blocks configured in the Patterns tab.  If you drag a pattern from the Patterns tab into the Fragments pane, this creates an Element rule with **using** set to that pattern. |

**Task 5** To insert an Element rule into a fragment (using the ribbon):

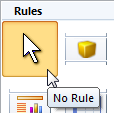
1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. On the **Home** tab, in the **Insert** group, in the **Rules** gallery, click **Element**.

When the cursor is over the Fragments pane (or the Patterns tab) it changes to:

CrosshairCursor

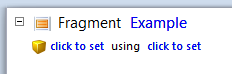
This is where the rule will be inserted.

**Note:** To cancel this, use the **Esc** key, or, in the **Rules** gallery, click **No Rule**:

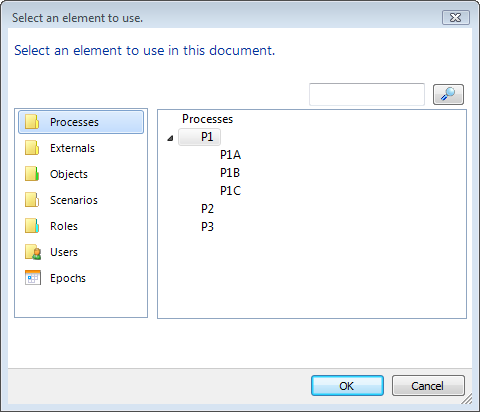


1. Click to insert a new Element rule at the cursor’s location.

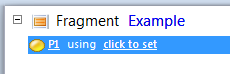
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1. Click the first **click to set** link.

The **Select an element to use** dialog box is displayed.

1. Select the element you want to insert, and then click **OK**.

The Element rule is updated to show the selected element as the first link.

**Note:** Once an Element rule is inserted and set to an actual element, you can double-click the element’s icon to display a dialog box showing its memos and strings.

1. Click the remaining **click to set** link and select a pattern from the drop-down list.
2. You can now test your generated output. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

The preceding task describes using the ribbon to add Element rules. You can also add them as follows:

* Drag an element from the Explorer Bar (or any element’s Examine pane) and drop it at the required location. An Element rule set to the dragged element is created.

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* + Drag a pattern from the Patterns tab to the Fragments pane. This method inserts an Element rule already set to that pattern.

## Query rules

A Query rule finds matching elements and includes them in a fragment one after another. Iteratively, each element has a pattern applied and its content added. For example, you could have a Query rule that finds all known risks and applies a pattern that adds a heading and description for each into the generated document.

**Note:** You can also insert Query rules into patterns. This allows you to construct more complex structures as it allows for a degree of nesting. This is especially useful if you want to use a parameterized query. See [*Parameterized queries*](#_bookmark79) on page [59](#_bookmark79) for details.

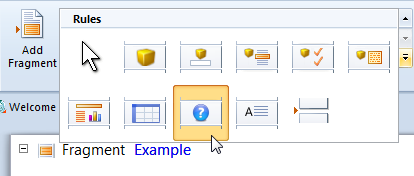
#### Table 7. Query rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Query** | The query to use. |
| **using** | The pattern to apply to each element returned by the query. The pattern defines what content from the element will be inserted into the document and how it will be formatted once generated. Patterns are reusable blocks configured in the Patterns tab.  If you want to apply the same pattern to each element, click the **click to set** link to select a pattern from a drop-down list (do not change the **using** setting).  QueryRuleUsingDropDown  If you want each element to be assigned a pattern based on its type, click the **using** link, and then select **group**.  QueryRuleUsingGroup  Now click the **click to set** link and select a pattern group (provided you have changed **using** to **group**, the drop-down list will now list your pattern groups).  QueryRulePatternGroupDropDown  See [*Pattern groups and Query rules*](#_bookmark84) on page [65](#_bookmark84) for details on using pattern groups. The task that follows sets the Query rule to a single pattern. |

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|  |  |
| --- | --- |
|  | **Note:** If you use a Query rule in a pattern, do not set its **using**  property to that pattern. This would form a recursive loop. |
| **edit variables** | If you include a query that takes variables, this property is added to the Query rule. Use it to set rule level values for each variable, or pass them up to the document level where they become exposed for pinning (you can also set document level defaults). See [*Variables in Query, Model and*](#_bookmark82)[*Matrix rules*](#_bookmark82) on page [62](#_bookmark82) for more details. You could also make use of [the](#_bookmark80)  [**<the rule subject>** setting](#_bookmark80) as described on page [59](#_bookmark80). |

**Task 6** To insert a Query rule into a fragment (using the ribbon):

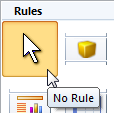
1. [Open the Documents synchronizer tab.](#_bookmark13)
2. On the **Home** tab, in the **Insert** group, in the **Rules** gallery, click **Query**.

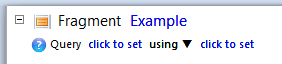
When the cursor is over the Fragments pane (or the Patterns tab) it changes to:

CrosshairCursor

This is where the rule will be inserted.

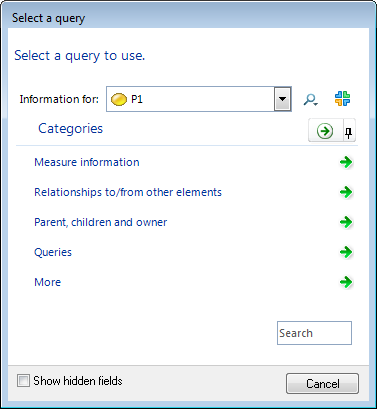
**Note:** To cancel this, use the **Esc** key, or, in the **Rules** gallery, click **No Rule**:

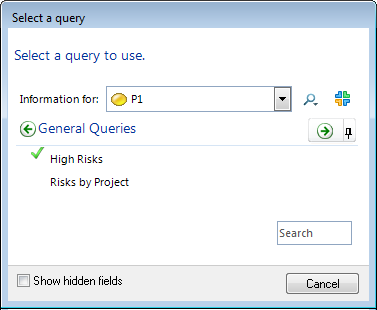


1. Click to insert the new Query rule at the cursor’s location.
2. Click the first **click to set** link.

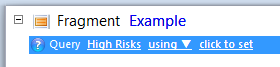
This displays the **Select a query** dialog box. You can use this to find a query, or select from some standard queries such as Children.

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1. Find and select the query you want to use.

The **click to set** link is replaced by the name of the selected query.



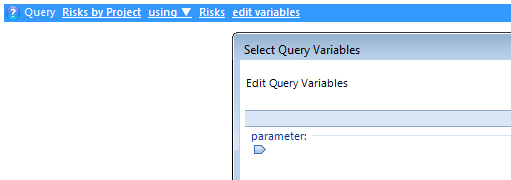
1. Click the remaining **click to set** link and select a pattern from the drop-down list.

**Note:** In Query rules you can use a pattern group instead of a pattern. Pattern groups let you apply a pattern based on the type of each element

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returned by a query. This involves clicking the **using** link and changing it to **group**. See [*Pattern groups and Query rules*](#_bookmark84) on page [65](#_bookmark84) for details on using pattern groups.

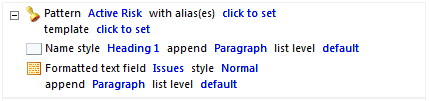
1. If you selected a query that takes variables, click the **edit variables** link and use the **Select Query Variables** dialog box to specify the variables or pass them to the document level.

The **edit variables** link is only added to the Query rule when you select a query that takes variables, for example:

1. You can now test your generated output. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

The preceding task describes using the ribbon to add Query rules. You can also use the Explorer Bar’s **Libraries** section to open a Queries pane, and then drag a query to the required location in a fragment or pattern. If dropped at a valid location, a Query rule set to the dragged query is created.

## Patterns

Patterns define content and format. Patterns are applied to elements. A pattern uses rules to define what content from the element will be added to the document and how it is formatted (using styles from the underlying template). For example, a pattern could include the element’s name formatted as a heading, followed by the contents of a memo field formatted as normal text (that is, a Name rule followed by a Formatted Text rule) as shown here:

Patterns themselves have the properties listed below. This is followed by instructions on how to create a pattern and add rules to it.

#### Table 8. Pattern properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Pattern** | The pattern’s name. When you apply patterns to Element and Query rules (their **using** property), you select from a drop-down list of these names.  You should make your pattern names unique and descriptive. |

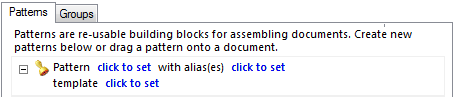
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|  |  |
| --- | --- |
| **with alias(es)** | A Query rule can use a pattern group. Pattern groups let you apply a pattern based on the type of each element returned by the Query rule. If this pattern is to be included in a pattern group, set **with alias(es)** to the type(s) of element that it will apply to.  The link for this setting displays the **Select Aliases** dialog box. Use this to select one or more types that the pattern can be used with. It also includes an **Any** setting.  See [*Pattern groups and Query rules*](#_bookmark84) on page [65](#_bookmark84) for details on using pattern groups. |
| **template** | A Microsoft Word template file to be used each time the pattern is applied to an element. This means you can insert repeating sections based on a different Microsoft Word template. See [*Repeating templates*](#_bookmark85) on page [67](#_bookmark85) for more details.  If you have a pattern that contains rules, and you subsequently set **template**, you will be prompted to create a fragment to contain those rules. See the next section on the **Fragment Auto-Creation** dialog box for more details. |

**Task 7** To create a pattern:

1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. AddPatternRibbonButtonOn the **Home** tab, in the **Insert** group, click **Add Pattern**.

A new pattern is added to the Patterns tab.

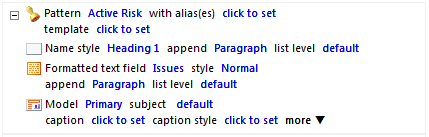


**Note:** If nothing is selected on the Patterns tab, the new pattern appears at the top. If something is selected on the tab, the new pattern is added after that selection.

1. PatternGiveNameClick the first **click to set** link and name the pattern.
2. You can now use the **Rules** gallery to add content to the pattern. With the exception of Custom Text and Break rules, this will be content taken from each of the elements the pattern is applied to. You can insert the following rules:
   * [Name](#_bookmark48) (page [34](#_bookmark48))
   * [Field](#_bookmark51) (simple) (page [36](#_bookmark51))
   * [Formatted Text](#_bookmark54) (HTML and rich text memo fields) (page [38](#_bookmark54))

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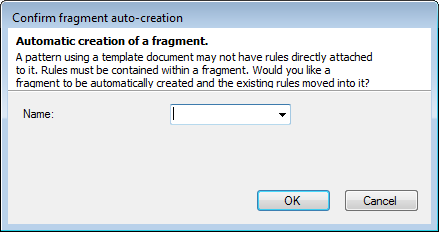
* + [Pick List](#_bookmark57) (page [41](#_bookmark57))
  + [Model](#_bookmark60) (page [45](#_bookmark60))
  + [Matrix](#_bookmark63) (page [48](#_bookmark63))
  + [Custom Text](#_bookmark66) (page [51](#_bookmark66))
  + [Lists (created using the Start List and End List rules)](#_bookmark69) (page [53](#_bookmark69))
  + [Page and Section Break](#_bookmark70) (page [54](#_bookmark70)) For example:



As you insert rules, you can specify how they will be formatted in the generated document. See the individual rules sections for details on inserting each.

You can drag rules and reorder them within a pattern. If you select a rule within a pattern, you can use the DeleteButton button at the end of its line to delete it.

The Fragment Auto-Creation dialog box

When you click to insert a rule, if you get the dialog shown here:

It means that the pattern has its **template** property set. If you want to proceed, you must accept the automatic insertion of a fragment. If required, use **Name** to set a bookmark for the new fragment. This is a bookmark in the pattern’s template, not the document’s template.

See [*Repeating templates*](#_bookmark85) on page [67](#_bookmark85) for more details.

### Using patterns

Once you have created patterns, you can apply them to Element and Query rules in your fragments. You can do this in two ways:

* Set the **using** property for Element and Query rules.

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* Drag a pattern from the Patterns tab onto the Fragments pane. This inserts an Element rule with its **using** property already set to the pattern.

Once a pattern is used in a fragment, you can use the Preview features to see how it will appear in the generated document. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

You can also include your patterns within patterns groups for use with Query rules. If you have a query that returns different element types, you might want to apply a pattern to each element based on its type. You use a ***pattern group*** to do this. See [*Pattern groups and Query rules*](#_bookmark84) on page [65](#_bookmark84) for details on this.

## Name rules

NameRuleExampleUse a Name rule to include an element’s name in a pattern.

**Note:** You can also insert Name rules into fragments. This is useful if you create an MDD that uses a starting element (see [*Starting elements*](#_bookmark77) on page [58](#_bookmark77) for details), or if you use templates within patterns (see [*Repeating templates*](#_bookmark85) on page [67](#_bookmark85) for details).

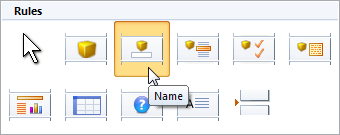
#### Table 9. Name rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **style** | The Microsoft Word style to apply to the content when it is inserted into the generated document.  Styles come from a Microsoft Word template file. This will be the template set in the **Use Template** setting under **Document Generator Properties**, unless the pattern has its **template** property set in which case the style comes from that template. If a Microsoft Word template file is not set, styles from **Normal.dot** will appear in the drop-down list.  If **style** is unset, it uses the **Default Text Style** (on the ribbon), or if that is unset, the Microsoft Word Normal style. This means you can always generate and preview your document. |
| **append** | What formatting character to append to the Element’s name when it is inserted into the generated document. Choose between:   * Paragraph. This is the default. * Nothing * Space * Tab * Line Break |
| **list level** | If the element’s name is being inserted into a style that supports multi- level lists, the level at which to insert it. You can set levels **1** to **9** or leave  this set to **default** for no list. If the style is not a list style, any number set |

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|  |  |
| --- | --- |
|  | here is ignored. **list level** also applies when the rule sits within a Start List and End List construct. |

**Task 8** To insert a Name rule into a pattern:

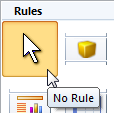
1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. On the **Home** tab, in the **Insert** group, in the **Rules** gallery, click **Name**.

When the cursor is over the Patterns tab (or the Fragments pane) it changes to:

CrosshairCursor

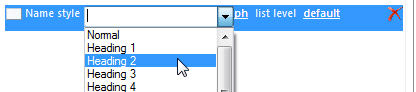
This is where the rule will be inserted.

**Note:** To cancel this, use the **Esc** key, or, in the **Rules** gallery, click **No Rule**:



1. NameRuleNewClick to insert the Name rule at the cursor’s location.

**Note:** If instead of an insertion you get the **Fragment Auto-Creation** dialog box, it means that the pattern has its **template** property set and the rule must be placed within a fragment. This dialog box does this for you. If required, use the dialog box’s **Name** setting to set a bookmark for the new fragment. See [*The Fragment Auto-Creation dialog box*](#_bookmark46) on page [33](#_bookmark46) for more details.

1. Click the first **click to set** link and select a style from the drop-down list.

**Note:** If you have not set **Use Template** (under **Document Generator Properties**) to a Microsoft Word template file, the drop-down list includes styles from **Normal.dot**. You can leave **style** unset and still preview and generate your document, but it will use the Microsoft Word Normal style throughout. You can also type the names of styles that don’t currently

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exist. If they are not found when the document is generated, again the default style is used.

1. If required, use the remaining links to change the default **append** and **list level** settings.
2. You can now preview your generated output. To preview a pattern you must use it within a fragment. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

## Field rules (simple fields)

FieldRuleExampleUse a Field rule to include content from an element’s simple fields in a pattern. Simple fields are defined in the theme to which the element belongs.

**Note:** You can also insert Field rules into fragments. This is useful if you create an MDD that uses a starting element (see [*Starting elements*](#_bookmark77) on page [58](#_bookmark77) for details), or if you include fragments within patterns either to achieve a degree of fragment nesting or to make use of templates with patterns (see [*Repeating templates*](#_bookmark85) on page [67](#_bookmark85) for details on both).

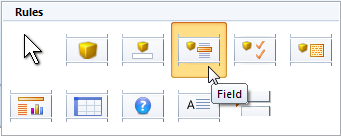
#### Table 10. Field rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Simple field** | The name of the simple field whose content is to be inserted. The link displays the **Select the Simple Field** dialog box. Use this to find and select the field.  If the element to which the pattern is being applied does not have this simple field, or it is not set, nothing is inserted into the generated document. |
| **style** | The Microsoft Word style to apply to the simple field’s content when it is inserted into the generated document.  Styles come from a Microsoft Word template file. This will be the template set in the **Use Template** setting under **Document Generator Properties**, unless the pattern has its **template** property set in which case the style comes from that template. If a Microsoft Word template file is not set, styles from **Normal.dot** will appear in the drop-down list.  If **style** is unset, it uses the **Default Text Style** (on the ribbon), or if that is unset, the Microsoft Word Normal style. This means you can always generate and preview your document. |
| **append** | A formatting character to append to the simple field’s content when it is inserted into the generated document. Choose from:   * **Paragraph**. This is the default. * **Nothing** * **Space** |

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|  |  |
| --- | --- |
|  | * **Tab** * **Line Break** |
| **list level** | If the simple field’s content is being inserted into a style that supports multi-level lists, the level at which to insert it. You can set levels **1** to **9**, or leave this set to **default** for no list. If the style is not a list style, any number set here is ignored. **list level** also applies when the rule sits within a Start List and End List construct. |
| **format** | If the simple field is a date or number, this extra property lets you set its formatting. The link displays the **Number Formatting** or **Date Format** dialog box as appropriate. |

**Task 9** To insert a Field rule into a pattern:

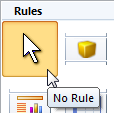
1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. On the **Home** tab, in the **Insert** group, in the **Rules** gallery, click **Field**.

When the cursor is over the Patterns tab (or the Fragments pane) it changes to:

CrosshairCursor

This is where the rule will be inserted.

**Note:** To cancel this, use the **Esc** key, or, in the **Rules** gallery, click **No Rule**:

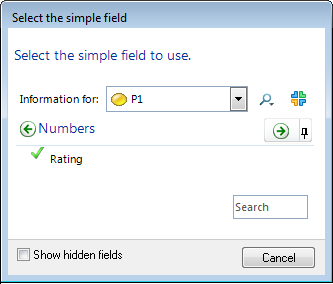


1. SimpleFieldNewClick to insert a Field rule at the cursor’s location.

**Note:** If instead of an insertion you get the **Fragment Auto-Creation** dialog box, it means that the pattern has its **template** property set and the rule must be placed within a fragment. This dialog box does this for you. If required, use the **Name** setting (on the dialog box) to set a bookmark for the new fragment. See [*The Fragment Auto-Creation dialog box*](#_bookmark46) on page [33](#_bookmark46) for more details.

1. Click the first **click to set** link.

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This displays the **Select the simple field** dialog box.

1. Use the **Select the simple field** dialog box to find and select the simple field you want.

SimpleFieldPartCompleteThe **click to set** link is replaced by the name of the simple field. If the simple field is a date or number, a **format** link is added.

1. Click the **style** setting’s **click to set** link and choose a Microsoft Word style from the drop-down list.

**Note:** If you have not set **Use Template** (under **Document Generator Properties**) to a Microsoft Word template file, the drop-down list includes styles from **Normal.dot**. You can leave **style** unset and still preview and generate your document, but it will use the Microsoft Word Normal style throughout. You can also type the names of styles that don’t currently exist. If they are not found when the document is generated, again the default style is used.

1. If required, use the remaining links to change the default **append** and **list level** settings, and, if available, the **format**.
2. You can now preview your generated output. To preview a pattern, you must use it within a fragment. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

## Formatted Text rules (HTML and rich text memo fields)

FormattedTextExampleUse a Formatted Text rule to insert content from an element’s memo fields into a pattern. This can be HTML or rich text.

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**Note:** You can also insert Formatted Text rules into fragments. This is useful if you create an MDD that uses a starting element (see [*Starting elements*](#_bookmark77) on page [58](#_bookmark77) for details), or if you include fragments within patterns either to achieve a degree of fragment nesting or to make use of templates with patterns (see [*Repeating*](#_bookmark85)[*templates*](#_bookmark85) on page [67](#_bookmark85) for details on both).

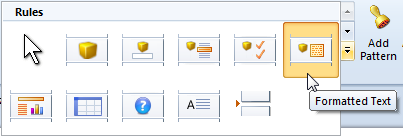
#### Table 11. Formatted Text rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Formatted text field** | The name of the memo field whose content is to be inserted. The link displays the **Select the formatted text field** dialog box. Use this to find and select the field.  If the element to which the pattern is being applied does not have this memo field, or it is not set, nothing is inserted into the generated document. |
| **style** | The Microsoft Word style to apply to the content when it is inserted into the generated document.  Styles come from a Microsoft Word template file. This will be the template set in the **Use Template** setting under **Document Generator Properties**, unless the pattern has its **template** property set in which case the style comes from that template. If a Microsoft Word template file is not set, no styles will appear in the drop-down list.  If **style** is unset, it uses the **Default Text Style** (on the ribbon), or, if that is unset, the Microsoft Word Normal style. This means you can always generate and preview your document. |
| **append** | What formatting character to append to the content when it is inserted into the generated document. Choose between:   * **Paragraph**. This is the default. * **Nothing**. * **Space**. * **Tab**. * **Line Break**. |
| **list level** | If the content is being inserted into a Microsoft Word style that supports multi-level lists, the level at which to insert it. You can set levels **1** to **9**, or leave this set to **default** for no list. If the style is not a list style, any number set here is ignored. **list level** also applies when the rule sits within a Start List and End List construct. |

**Task 10** To insert a Formatted Text rule into a pattern:

1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. On the **Home** tab, in the **Insert** group, in the **Rules** gallery, click **Formatted Text**.

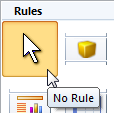
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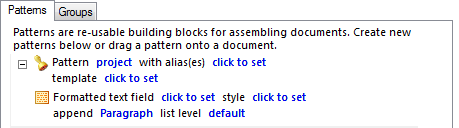


CrosshairCursorWhen the cursor is over the Patterns tab (or the Fragments pane) it changes to:

This is where the rule will be inserted.

**Note:** To cancel this, use the **Esc** key, or, in the **Rules** gallery, click **No Rule**:



1. Click to insert a Formatted Text rule at the cursor’s location.

**Note:** If instead of an insertion you get the **Fragment Auto-Creation** dialog box, it means that the pattern has its **template** property set and the rule must be placed within a fragment. This dialog box does this for you. If required, use the **Name** setting (on the dialog box) to set a bookmark for the new fragment. See [The Fragment Auto-Creation dialog box](#_bookmark46) on page [33](#_bookmark46) for more details.

1. Click the first **click to set** link.

The **Select the formatted text field** dialog box is displayed.

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1. Find and click the field you want to use.

FormattedTextInPatternSetThe **click to set** link is replaced by the name of the field.

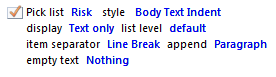
1. If required, do any of the following:
   * Use the **style** property to apply a specific Microsoft Word style. Leave this unset to accept the default style.

**Note:** If a Microsoft Word template file is not set, no styles will appear in the drop-down.

* + Use the **append** property to insert formatting after the content.
  + If **style** is set to a multi-level list, use the **list level** property to control its position. See the properties table that precedes this task for more details on these settings.

1. You can now preview your generated output. To preview a pattern you must use it within a fragment. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

## Pick List rules

Use the Pick List rule to insert content from a Pick list into a pattern.

**Note:** You can also insert Pick List rules into fragments. This is useful if you create an MDD that uses a starting element (see [*Starting elements*](#_bookmark77) on page [58](#_bookmark77) for details), or if you include fragments within patterns either to achieve a degree of fragment nesting or to make use of templates with patterns (see [*Repeating templates*](#_bookmark85) on page [67](#_bookmark85) for details on both).

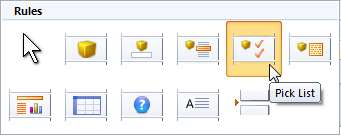
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#### Table 12. Pick List rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Pick list** | The Pick list whose content is to be inserted. The link displays the **Select the pick list** dialog box. |
| **style** | The Microsoft Word style to apply to the content when it is inserted into the generated document.  Styles come from a Microsoft Word template file. This will be the template set in the **Use Template** setting under **Document Generator Properties**, unless the pattern has its **template** property set in which case the style comes from that template. If a Microsoft Word template file is not set, no styles will appear in the drop-down list.  If **style** is unset, it uses the **Default Text Style** (on the ribbon), or, if that is unset, the Microsoft Word Normal style. This means you can always generate and preview your document. |
| **display** | Use this to set what parts of the Pick list are displayed and their order. Choose from:  PickListDisplay.png |
| **list level** | If the content is being inserted into a Microsoft Word style that supports multi-level lists, the level at which to insert it. You can set levels **1** to **9**, or leave this set to **default** for no list. If the style is not a list style, any number set here is ignored. **list level** also applies when the rule sits within a Start List and End List construct. |
| **item separator** | A formatting character to place between items in the list. Choose from the drop-down list or type the character you require:  ItemSeparator.png |
| **append** | A formatting character to append to the list when it is inserted into the generated document. Choose from:  AppendPickList.png |
| **empty text** | What to include when the Pick list is not set for an element. Choose between **Nothing** to insert no text at all, or **<Unknown>** to include the text **<Unknown>** in the actual document. |

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**Task 11** To insert a Pick List rule:

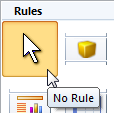
1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. On the **Home** tab, in the **Rules** gallery, click **Pick List**.

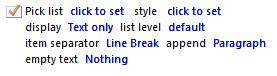
When the cursor is over the Fragments pane (or the Patterns tab) it changes to:

CrosshairCursor

This is where the rule will be inserted.

**Note:** To cancel this, use the **Esc** key, or, in the **Rules** gallery, click **No Rule**:



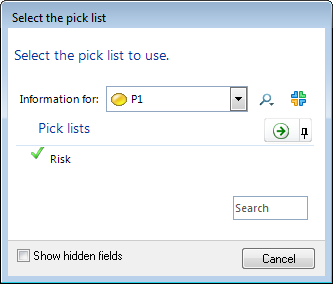
1. Click to insert the Pick List rule at the curser’s location.

**Note:** If instead of an insertion you get the **Fragment Auto-Creation** dialog box, it means that the pattern has its **template** property set and the rule must be placed within a fragment. This dialog box does this for you. If required, use the **Name** setting (on the dialog box) to set a bookmark for the new fragment. See [The Fragment Auto-Creation dialog box](#_bookmark46) on page [33](#_bookmark46) for more details.

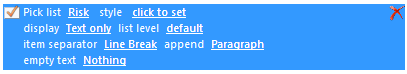
1. Click the first **click to set** link.

This displays the **Select the pick list** dialog box.

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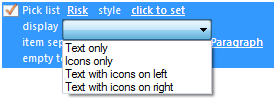


1. Find and select the Pick list.

The **click to set** link is replaced by the name of the Pick list.

1. Click the **style** setting and choose a Microsoft Word style from the drop-down list.

**Note:** If you have not set **Use Template** (under **Document Generator Properties**) to a Microsoft Word template file, styles from **Normal.dot** will appear in the drop-down list. You can leave **style** unset and still preview and generate your document, but it will use the Microsoft Word Normal style throughout.

1. If required, use the **display** setting to change how the Pick list is represented in the generated document. This defaults to **Text only**, but you can choose from:
2. If required, use the remaining links to control how the Pick list is formatted. See the [*Pick List rule properties*](#_bookmark58) table for details on the remaining settings.
3. You can now preview your generated output. To preview a pattern you must use it within a fragment. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

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## Model rules

ModelRuleNewUse a Model rule to insert an element’s model into a pattern, or to apply a Model Master to an element and insert the resultant model. Element user permissions do not affect their models in an MDD.

and with the **Model** property set to **Model Master**:

15ModelMasterRule.png

**Note:** You can also insert Model rules into fragments. This is useful if you set the Model rule’s **subject** property to a specific element, or if you create an MDD that uses a starting element. See [*Starting elements*](#_bookmark77) on page [58](#_bookmark77) for details.

#### Table 13. Model rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Model** | What model to insert. Choose between these three settings:   * **Primary**. This is the default and behaves as follows:   + For an Object element the primary model is the context model.   + For a Process element it is the capability, activity or object association model depending on the sub-type. * **Secondary**. Typically, elements do not have a secondary model. However, if it does, it behaves as follows:   + For an Object element it is the state model.   + For a Process element it is the insight model. * **Model Master**. Use this to insert a Model Master populated with an element. When this is set you get two additional links: **master** and **edit variables**. Use **master** to select the Model Master, and then use **edit variables** to set what element is shown in that Model Master. The **edit variables** link displays the **Select Query Variables** dialog box. This exposes the **Model Master Subject** parameter, as shown here:   15ModelMasterSubjectParameter.png  In addition to explicitly setting this to an element, setting **Model** to  **Model Master** also allows you to: |

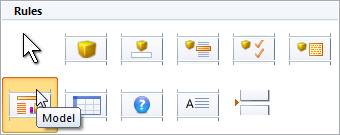
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|  |  |
| --- | --- |
|  | * Make use of the **<the rule subject>** setting. This sets the **Model Master Subject** parameter to the element that the rule is being applied to. See [*The* ***<the rule subject>*** *setting for Query, Model and Matrix*](#_bookmark80) rules on page [59](#_bookmark80) for details. * Pass the **Model Master Subject** parameter (and any variables the Model Master might have) up to the document level where it becomes exposed for pinning. See [*Variables in Query, Model and Matrix rules*](#_bookmark82) on page [62](#_bookmark82) for more details. |
| **subject** | Only present when **Model** is set to **Primary** or **Secondary**.  The element whose model is to be inserted. Leave this set to **default** to use the element to which the pattern is applied (or the starting element if applicable). Alternatively, click the link to display the **Select subject** dialog box and choose a specific element. |
| **caption** | Click this to display the **Caption Settings** dialog box. Use this to configure the caption text. You can type specific text or use the **<element name>** token, and type your own **Label**. You can also stop a caption from being inserted by clearing the **Show Caption** check box.  **Note:** The position of the caption is determined by the **Caption Position** setting on the ribbon (the **Settings** tab). |
| **caption style** | The Microsoft Word style to apply to the caption if shown.  Styles come from a Microsoft Word template file. This will be the template set in the **Use Template** setting under **Document Generator Properties**, unless the pattern has its **template** property set in which case the style comes from that template.  If **caption style** is unset, it uses the **Default Text Style** (on the ribbon) or if that is unset, the Microsoft Word Normal style. This means you can always generate and preview your document. |
| And if you click:  ShowExtraSettings  Note that once you have shown extra settings, the command changes to **Clear Extra Settings**. This returns the extra settings to their defaults. It does not just hide them. | |
| **scale** | How to scale the inserted model relative to its size in the MooD repository. Choose between **100** (the default), **75**, **50** and **25** percent or enter a percentage. However, note that if the image will not fit in the generated document, it will be scaled to fit automatically. |
| **format** | The format of the image. Leave this set to **Auto**, or select from:   * **Emf** (Microsoft Windows Enhanced Metafile) |

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|  |  |
| --- | --- |
|  | * **Jpg** * **Png**   When set to **Auto**, MooD will generate an **Emf** file. If this is above a certain size, a **Png** is also generated and the smaller of the two is used. |

**Task 12** To insert a Model rule into a pattern (using the ribbon):

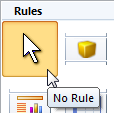
1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. On the **Home** tab, in the **Insert** group, in the **Rules** gallery, click **Model**.

When the cursor is over the Patterns tab (or the Fragments pane) it changes to:

CrosshairCursor

This is where the rule will be inserted.

**Note:** To cancel this, use the **Esc** key, or, in the **Rules** gallery, click **No Rule**:



1. ModelRuleNewInPatternClick to insert a Model rule at the cursor’s location.

**Note:** If instead of an insertion you get the **Fragment Auto-Creation** dialog box, it means that the pattern has its **template** property set and the rule must be placed within a fragment. This dialog box does this for you. If required, use the **Name** setting (on the dialog box) to set a bookmark for the new fragment. See [The Fragment Auto-Creation dialog box](#_bookmark46) on page [33](#_bookmark46) for more details.

1. If required, use the links to change the rule’s default settings. See the table of properties that precedes this task for details.
2. You can now preview your generated output. To preview a pattern, you must use it within a fragment. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

The preceding task describes using the ribbon to add Model rules. You can also drag a Model from an element’s Examine pane (right-click an element, and then click **Examine**) to the required location in a fragment or pattern. If dropped at a valid location, a Model rule set to the dragged model is created.

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## Matrix rules

MatrixRuleNewUse a Matrix rule to insert a matrix into a pattern or fragment. For matrices, you select the specific matrix that you want to include. In MDD, element user permissions do not affect the matrices associated with them.

|  |
| --- |
| **Introducing <the rule subject>** |
| You can use this feature to insert the same table multiple times for different elements. Provided your matrix includes a variable for its Row Query, you can, in the Matrix rule within a pattern, set this variable to **<the rule subject>**. When the pattern is then used in a fragment, a matrix is generated and inserted for each element in the fragment. See [*The* ***<the rule subject>*** *setting*](#_bookmark80)[*for Query, Model and Matrix rules*](#_bookmark80) on page [59](#_bookmark80) for more details on this usage (the remainder of this topic outlines the basic rule properties and how to insert a standard Matrix rule). |

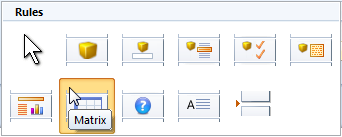
#### Table 14. Matrix rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Matrix** | The matrix to insert. Click the link to display the **Select a Matrix** dialog box. |
| **style** | The Microsoft Word table style to use when the matrix is inserted into the generated document. The first style in the drop-down list is a special style called **MooD matrix style**. This attempts to replicate the formatting within Business Architect as far as possible. You must test the output and note that setting **fit page to width** to **False** is likely to improve the accuracy.  If **style** is unset, it uses the **Default Table Style** setting on the ribbon. |
| If the matrix requires a subject element, the rule will include the **use as matrix subject**  property, as shown here:  UseAsMatrixSubjectProperty.png  This defaults to **ActualSubject** (the subject element of the matrix itself), but you can click the link and change it to **Parameter**. As shown next, this adds an **edit variables** link to the rule. Click this to open the **Select Query Variables** dialog box. Use this to set the parameter that will supply the subject for the matrix when the MDD is generated. If the parameter is not set, the rule subject is used.  UseAsMatrixSubjectParameter.png | |
| If the matrix requires a variable, for example, if its Row Query uses one, the rule will include the **edit variables** property, as shown here:  EditVariablesMatrixSetting.png  Click **edit variables** to open the **Select Query Variables** dialog box. Use it to set rule level | |

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|  |  |
| --- | --- |
| values for each variable, or pass them up to the document level where they become exposed for pinning (you can also set document level defaults). See [*Variables in Query, Model and*](#_bookmark82)[*Matrix rules*](#_bookmark82) on page [62](#_bookmark82) for more details.  You may also want to make use of the **<the rule subject>** setting. This sets the variable to the element that the rule is being applied to. See [*The* ***<the rule subject>*** *setting for Query,*](#_bookmark80)[*Model and Matrix*](#_bookmark80) rules on page [59](#_bookmark80) for more details on this. | |
| If you click **more**, and then click **Show Extra Settings**, you get the remaining properties listed in this table.  MatrixRuleMoreSettings  Note that once you have shown extra settings, the command changes to **Clear Extra Settings**. This returns the extra settings to their defaults. It does not just hide them. | |
| **caption** | Click this to display the **Caption Settings** dialog box. Use this to configure the caption text. You can type specific text or use the **<element name>** token, and type your own **Label**. You can also stop a caption from being inserted by clearing the **Show Caption** check box.  **Note:** The position of the caption is determined by the **Caption Position** setting on the ribbon (the **Settings** tab). |
| **caption style** | The Microsoft Word style to apply to the caption if shown.  Styles come from a Microsoft Word template file. This will be the template set in the **Use Template** setting under **Document Generator Properties**, unless the pattern has its **template** property set in which case the style comes from that template.  If **caption style** is unset, it uses the **Default Text Style** setting on the ribbon, or, if that is unset, the Microsoft Word Normal style. This means you can always generate and preview your document. |
| **fit to page width** | Set this to **True** or **False**. If **style** is set to **MooD matrix style**, setting this to **False** is likely to improve the accuracy of the replication. |

**Task 13** To insert a Matrix rule into a pattern (using the ribbon):

1. [Open the Documents synchronizer tab](#_bookmark13).
2. On the **Home** tab, in the **Insert** group, in the **Rules** gallery, click **Matrix**.

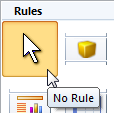
When the cursor is over the Patterns tab (or the Fragments pane) it changes to:

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CrosshairCursor

This is where the rule will be inserted.

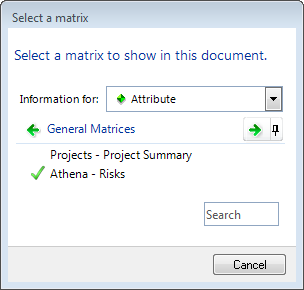
**Note:** To cancel this use the **Esc** key, or in the **Rules** gallery click **No Rule**:



1. MatrixRuleNew15Click to insert a Matrix rule at the cursor’s location.

**Note:** If instead of an insertion you get the **Fragment Auto-Creation** dialog box, it means that the pattern has its **template** property set and the rule must be placed within a fragment. This dialog box does this for you. If required, use the **Name** setting (on the dialog box) to set a bookmark for the new fragment. See [The Fragment Auto-Creation dialog box](#_bookmark46) on page [33](#_bookmark46) for more details.

1. Click the first **click to set** link.

This displays the **Select a matrix** dialog box.

1. Find and select the matrix.

The **click to set** link is replaced by the name of the matrix.

1. If required, use the remaining links to set the various optional properties.
2. You can now preview your generated output. To preview a pattern, you must use it within a fragment. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

The preceding task describes using the ribbon to add Matrix rules. You can also add them as follows:

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* Use the Explorer Bar’s **Libraries** section to open a Matrices pane, and then drag a matrix to the required location in a fragment or pattern. If dropped at a valid location, a Matrix rule set to the dragged matrix is created.

Drag a matrix from an element’s Examine pane (right-click an element and click

**Examine** (or press **F12**)) to the required location.

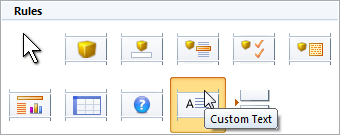
## Custom Text rules

Inserting a Custom Text rule includes a piece of text in the fragment or pattern that will then be inserted into the generated document. This piece of text is not derived from the repository. It is a piece of text that you supply when you insert a Custom Text rule. For example, you might want to include “This information is for internal use only.” in certain sections of your generated document.

#### Table 15. Custom Text rule properties

|  |  |
| --- | --- |
| **Property** | **Description** |
| **Custom text** | The piece of text to insert. |
| **style** | The Microsoft Word style to apply to the text when it is inserted into the generated document. |
| **append** | What formatting character to append to the content when it is inserted into the generated document. Choose between:   * **Paragraph**. This is the default. * **Nothing**. * **Space**. * **Tab**. * **Line Break**. |
| **list level** | If the Custom Text is being inserted into a multi-level list, the level at which to insert it. You can set levels **1** to **9** or leave this set to **default** for no list. If the style is not a list style, any number set here is ignored. **list level** also applies when the rule sits within a Start List and End List construct. |

**Task 14** To insert a Custom Text rule into a pattern:

1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. On the **Home** tab, in the **Insert** group, in the **Rules** gallery, click **Custom Text**.

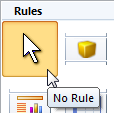
When the cursor is over the Patterns tab (or the Fragments pane) it changes to:

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CrosshairCursor

This is where the rule will be inserted.

**Note:** To cancel this, use the **Esc** key, or, in the **Rules** gallery, click **No Rule**:

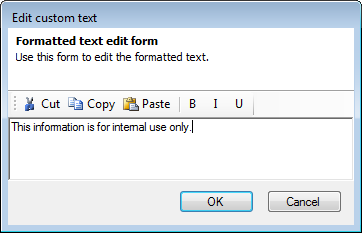


1. CustomTextRuleNewClick to insert the Custom Text rule at the cursor’s location.

**Note:** If instead of an insertion you get the **Fragment Auto-Creation** dialog box, it means that the pattern has its **template** property set and the rule must be placed within a fragment. This dialog box does this for you. If required, use the **Name** setting (on the dialog box) to set a bookmark for the new fragment. See [*The Fragment Auto-Creation dialog box*](#_bookmark46) on page [33](#_bookmark46) for more details.

1. Click the first **click to set** link.

This displays the **Edit custom text** dialog box.

1. Type the text you want to use and then click **OK**.

**Note:** Bold, italic and underline will only be preserved if used sparingly within the text. Microsoft Word may remove such formatting when it applies the style. For example, if you make the entire piece of custom text bold, but apply a style that doesn’t set the text to bold, Microsoft Word will remove the bold formatting. However, if you only make one or two words bold, that formatting should be preserved. If you want to make entire Custom Text items bold, italic or underlined, you should use a style that applies that formatting.

You can also paste formatted text from another application, such as

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WordPad, into this dialog box. This is one way to increase the font size or include more complex formatting without using Word styles.

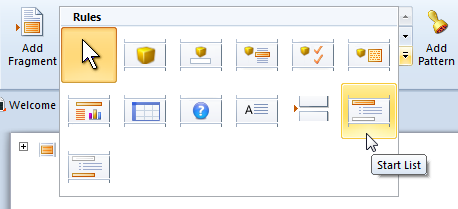
The **click to set** link is replaced by the piece of text.

CustomTextFilledIn

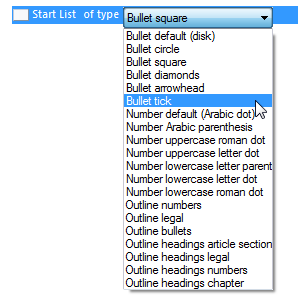
1. If required, use the remaining links to set the optional properties.
2. You can now preview your generated output. To preview a pattern, you must use it within a fragment. See [*Previewing documents and fragments*](#_bookmark71) on page [55](#_bookmark71) for details.

## Inserting lists

You can use the Start List and End List rules to include simple lists. On the ribbon, in the **Rules**

gallery, click **Start List**.

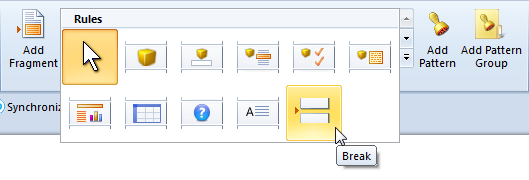
This inserts a Start List rule with a single **of type** property. Click the link to select a type of list formatting from a drop-down:



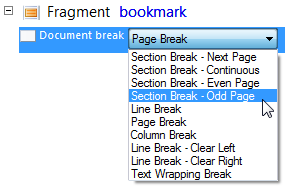
You can then insert other rules into the list before closing the list by inserting an End List rule (in the **Rules** gallery, this follows the Start List rule). Everything that you include between these two rules will be formatted in a list.

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## Inserting page and section breaks

You can include any kind of Microsoft Word break in your document model. On the ribbon, in the **Rules** gallery, click **Break**.

This inserts a **Document break** rule with a single property that is, by default, set to **Page Break**. Click the link to select the type of break required.



15SectionBreakOdd.pngDepending on the type of break inserted, other settings will appear, for example:

These settings relate directly to their settings in Microsoft Word.

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# Previewing documents and fragments

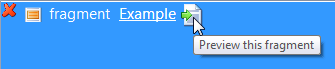
You can preview your document as you develop it. You can preview the entire document or individual fragments. If you want to test a pattern, you must use it in a fragment and preview that.

**Task 15** To preview a document or fragment:

1. [Open the Documents synchronizer tab](#_bookmark13) (page [13](#_bookmark13)).
2. Do one of the following:
   * To preview the entire document, on the ribbon, on the **Home** tab, in the

PreviewToolbarButton**Miscellaneous** group, click **Preview**.

* + To preview a fragment, click the fragment, and then click the **Preview** button at the end of its line.



A temporary Microsoft Word document is generated and displayed.

**Note:** You will see some progress dialog boxes as the preview is generated. If there is a problem, the progress dialog boxes will include the error encountered, for example, if the template file cannot be found, or if a fragment uses a pattern that no longer exists. You still get a preview of your document, but items may be missing or the formatting might default to the Microsoft Word Normal style.

In common with all synchronizers, on the **Synchronize** tab, on the ribbon, on the **Home** tab, in the **Synchronizers** group, click **History** to see the **Activation History** dialog box for the selected synchronizer. Alternatively, right click a synchronizer and then click **View History**. The **Activation History** dialog box includes information that can help you investigate errors and warnings in your synchronizer.

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# Executing Documents synchronizers

When you execute a Documents synchronizer, the document is generated and saved. It is not opened in Microsoft Word, and you will not be prompted to confirm any file overwrites.

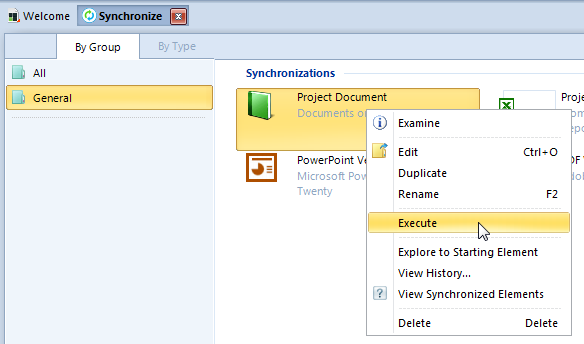
**Note:** Include the **$T** token (substitute with *date.time*) in the synchronizer’s **Save To** filename to guarantee uniquely named files. See the [**Save To** property](#_bookmark30) on page [21](#_bookmark30) for details on all the tokens that you can include in the filename.

**Task 16** To execute a Documents synchronizer:

1. In the Explorer Bar, under **Libraries**, click **Synchronize**.

The **Synchronize** tab is displayed. This lists your synchronization groups and the synchronizers within.

1. Right click the Documents synchronizer you want to execute, and then click **Execute**

(the ribbon also has an **Execute** command).

The document is generated and saved to the filename and location specified in the Documents synchronizer’s **Save To** property (see [*Document properties*](#_bookmark28) on page [21](#_bookmark28)). The generated document is not opened in Microsoft Word, and, if the filename already exists, it will be overwritten without warning.

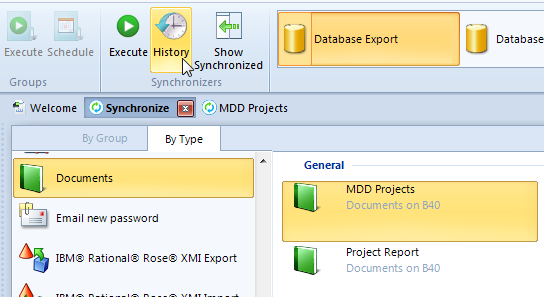
**Note:** You will see some progress dialog boxes as the document is generated.

If there is an issue, these will include the problem encountered, for example, if the template file cannot be found, or if a fragment uses a pattern that no longer exists. Provided the **Save To** property is set, the document is created and saved, but its content will reflect the problems encountered. If **Save To** is not set, the synchronizer will execute, but you are warned that no document will be saved.

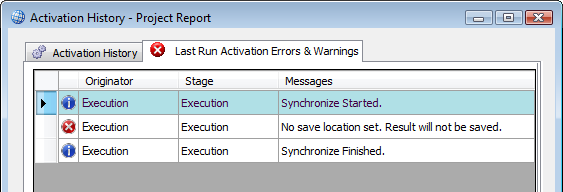
If you have developed Documents synchronizers that use starting elements, see [*Starting*](#_bookmark77)[*elements*](#_bookmark77) (page [58](#_bookmark77)) for instructions on executing them.

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## Viewing the Activation History

In common with all synchronizers, on the **Synchronize** tab, on the ribbon, on the **Home** tab, in the **Synchronizers** group, click **History** (shown next) to see the **Activation History** dialog box for the selected synchronizer.

Alternatively, right click a synchronizer and then click **View History**.

The **Activation History** dialog box includes information that can help you investigate errors and warnings in your synchronizer, for example, the following image shows the error when no **Save To** location is set.

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# Advanced usage

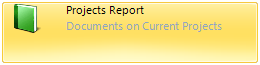
The remaining topics cover these more advanced aspects of MDD:

* + [Starting elements](#_bookmark77)
  + [Parameterized queries](#_bookmark79) (page [59](#_bookmark79))
  + [The **<the rule subject>** setting for Query, Model and Matrix rules](#_bookmark80) (page [59](#_bookmark80))
  + [Variables in Query, Model and Matrix rules](#_bookmark82) (page [62](#_bookmark82)) – this includes material on exposing variables as pins
  + [Pattern groups and Query rules](#_bookmark84) (page [65](#_bookmark84))
  + [Repeating templates (templates within patterns)](#_bookmark85) (page [67](#_bookmark85))

## Starting elements

Documents synchronizers can use a starting element. This gives you more flexibility and lets you reuse your MDDs more widely.

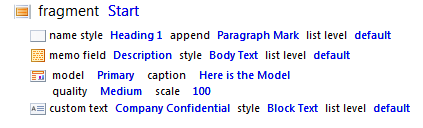
Starting elements let you generate the same document many times but using a different starting point each time. You pass the starting element to the synchronizer each time you want to generate the model driven document. If you use Active Enterprise, you could collect the starting element from the user.

In Business Architect’s **Synchronize** tab, the synchronizer’s description includes the last starting element used. For example, the following shows a synchronizer that was last run (or configured to run) on the **Current Projects** element:

If you drag another element, for example **Future Projects**, onto the synchronizer, the description changes to show the new starting element that the document will be generated against.



### Using starting elements

Using a starting element means that you can insert Names, Fields, Memos, Models and parameterized Query rules into fragments and build document models like the following:

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Normally such rules are included in patterns which are applied to elements within fragments. However, as you are passing the MDD a starting element each time, the rules will know which element to extract their content from.

You can mix fragments that make use of the starting element with fragments that use Element or Query rules to specify the elements to include. Individual fragments can incorporate both approaches.

## Parameterized queries

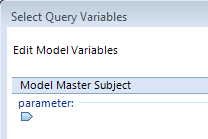
Parameterized queries are queries that take an element as a parameter. You can include parameterized queries:

* In patterns, in which case the element used as the parameter is the element that the pattern is applied to when it is used within a fragment.
* In fragments, provided your synchronizer uses a starting element. See [*Starting elements*](#_bookmark77) on page [58](#_bookmark77) for more details.

Parameterized queries allow you to build more complex content into your model driven documents. For example, you could include a query in a pattern that returns all the risks associated with a project. This pattern would then be applied to a query within a fragment that returns all current projects. Used together you would obtain content showing all the risks associated with each of your current projects. Each time the document is generated, it would execute the queries and generate up to date content.

## The <the rule subject> setting for Query, Model and Matrix rules

Queries, matrices and models can require variables (and or parameters). Hence, when you include their corresponding rules in a pattern or fragment, those rules include an **edit variables** setting. This gives you the **Select Query Variable** dialog box complete with fields for all the variables required.

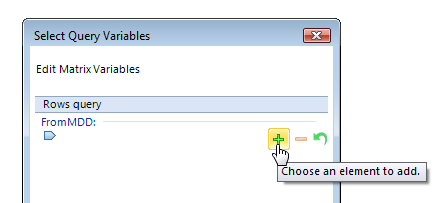
For example, if you include a Model rule and set its **Model** setting to **Model Master**, and its **master** setting to a Model Master, an **edit variables** setting is added to the rule. Click this to get a **Select Query Variables** dialog box with **Model Master Subject** exposed as a parameter:

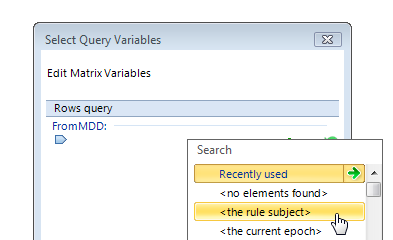
Whilst you can explicitly set variables to elements, for MDD there is a special setting called

**<the rule subject>**. This sets the variable to the element that the rule is being applied to.

To access this setting, on the **Select Query Variables** dialog box, click the **+** button, as shown in the next image (this example is for a Matrix rule where the matrix Row Query uses a variable called **FromMDD**):

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In the list that appears, **<the rule subject>** appears near the top:

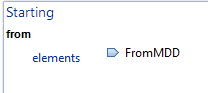
### Example of using <the rule subject> - Generating multiple tables

The power of **<the rule subject>** is illustrated by this example scenario:

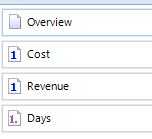
***You want to construct a Projects Report MDD that, for each project returned by a query, inserts a table of details for that project.***

To achieve this you:

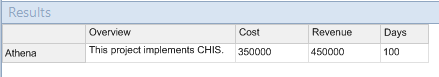
* + Create a matrix for the table that you want to insert multiple times into the Word document. This matrix acts as a template for the table that will be populated and inserted by the MDD.

In the matrix, the key point is to set the Row Query to a variable. When the matrix is included in a Matrix rule, this is the variable that you will set to **<the rule subject>**. For example, the following image shows this in a Data Sheet matrix.

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You can then create columns in the matrix that will be populated with content from the element passed to it using this variable (**FromMDD** in this example). For example, here the Data Sheet matrix has four columns set to:

Giving you a table like:



This is the table structure that will be inserted into the generated document when the Data Sheet matrix is used in a Matrix rule. For the purposes of this example, this matrix is called **Projects Table for MDD**.

* + Create a Documents synchronizer that uses the matrix in a Matrix rule, ensuring that you set the matrix variable to **<the rule subject>**.

15VariableFragment.pngFor example, the following structure would work:



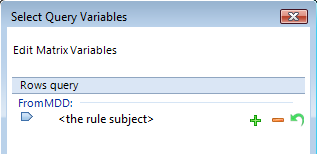
Here you have:

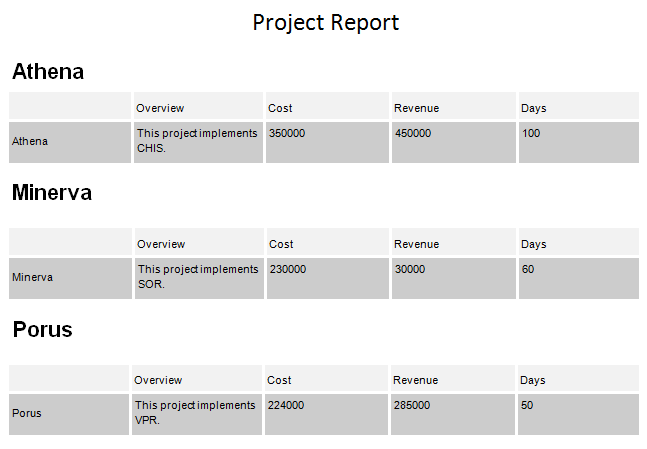
* + - A fragment with a Query rule that finds projects and applies the pattern **Project Matrix** to the elements found.
    - The pattern **Project Matrix** that includes a Matrix rule set to the Data Sheet matrix called **Projects Table for MDD**.

The **edit variable** link for this Matrix rule sets the matrix’s **FromMDD** variable to

**<the rule subject>** as shown here:

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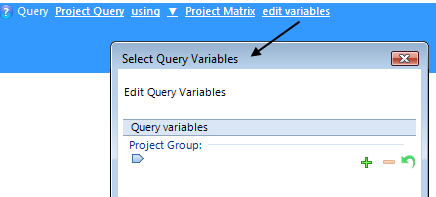
Together the Data Sheet matrix and Documents synchronizer outlined in this example would generate a document like:

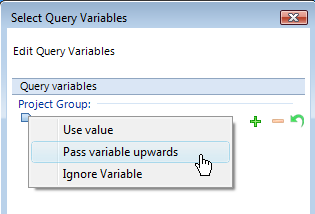
This assumes that the **Project Query** query used in the fragment found three elements: **Athena**, **Minerva** and **Porus**. These elements became the **<the rule subject>** and were iteratively passed to the matrix and inserted into the generated document.

## Variables in Query, Model and Matrix rules

Queries, models, model masters and matrices can all use variables. When a corresponding rule requires variables, it includes an **edit variables** link. This opens the **Select Query Variables** dialog box where you can set the variable, or pass it upwards to the document level where it becomes exposed for pinning (you can set defaults on the ribbon (the **Edit Variables** command on the **Settings** tab)).

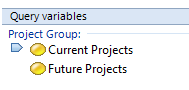
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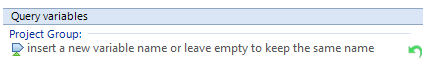
If you click on the symbol for a variable, you get a choice of settings:

Choose between:

* + **Use value**. This is the default and means use the value that is set here at the rule level.

Use the plus and minus group of buttons to set the variable. Variables can have more than one setting. For example, the following would run the same query for **Current Projects** and then **Future Projects**, and all matching elements would then be included in the rule (ordered as one group of elements, not as two sets).

* + **Pass variable upwards**. Select this to set the variable at the document level. This exposes the variable for pinning, although you can use the **Edit Variable** command on the **Settings** tab on the ribbon to set defaults. This changes the **Select Query Variable** dialog box to:



When you pass variables to the document level you can keep the same name or rename them. Provided variables are of the same data type, you can rename them all to the same single document level variable. MDD will automatically rename conflicting variables so that you cannot end up with two document level variables of the same name.

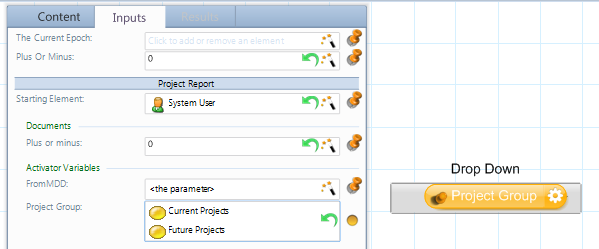
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See [*Document level variables and pinning*](#_bookmark83) next for more details.

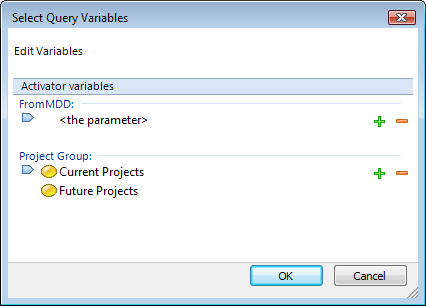
* + **Ignore variable**. Select this to ignore this variable. If this is selected, MDD will include a warning that it has done so.

### Document level variables and pinning

Variables passed upwards (see the previous section) to the document level are exposed for pinning. This lets you gather their value from a user. For example, you could allow a user to select the group of projects that they want to generate a report for.

When you add an Action panel that executes a Documents synchronizer, any document level variables are listed on the panel’s **Inputs** tab. For example, the following shows such a panel with the document level variable **Project Group** pinned to a Drop Down Action panel.

On the ribbon for a Documents synchronizer, there is an **Edit Variables** command on the

**Settings** tab. Use this to set defaults for any document level variables. For example:

These defaults can be seen on the Action panel in the preceding image, and they are the settings used when the MDD is run directly.

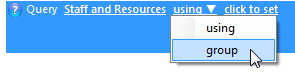
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**Note:** The **<the parameter>** setting at the document level means the element to which the rule is currently being applied. This has the same effect as the **<the subject rule>** setting covered on page [59](#_bookmark80).

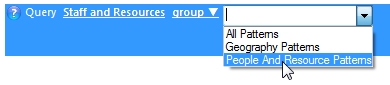
If you click **Edit Variables** and get an empty dialog box, it means that no variables have been passed upwards. This either means that the MDD doesn’t use anything with a variable, or all the variables have been set at the rule level.

## Pattern groups and Query rules

If you have a query that returns different element types, you might want to apply a pattern to each element based on its type. You use a ***pattern group*** to do this.

Query rules include a **using** setting that you can change to **group**, as shown here:

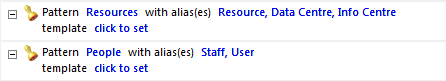
When this is set to **group**, the **click to set** link lets you select a pattern group from a list of those available on the Groups tab, for example:



Each element returned by the query will then be assigned a pattern from the selected pattern group.

The decision as to which pattern is applied to each element is determined by each pattern’s

**with alias(es)** setting. This setting lists what element types that pattern can be applied to. For example, if a pattern group included the following two patterns:

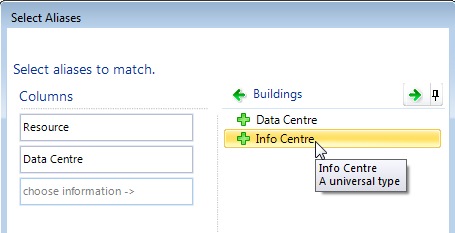


a query using that pattern group would assign the pattern:

* + **Resources** to any Resource, Data Centre and Info Centre elements.
  + **People** to any Staff and User elements.

When you click the **with alias(es)** link, you get the **Select Aliases** dialog box. Use this to select the element types that you want the pattern to be used with, for example:

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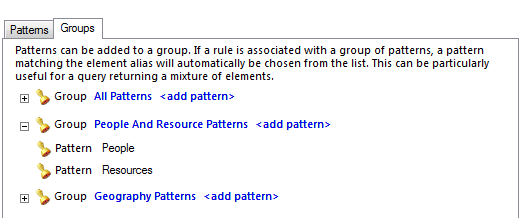


There is a special setting **Any** that can be uses as a catch all (it is at the bottom of the first list shown in the **Select Aliases** dialog box).

**Note:** The **with alias(es)** setting only affects a pattern’s use when it applied by means of a pattern group. If the pattern is applied directly to an element, the **with alias(es)** setting is ignored.

Patterns are tested by alias in the order they appear in the pattern group.

Pattern groups are listed on the Groups tab. For example:

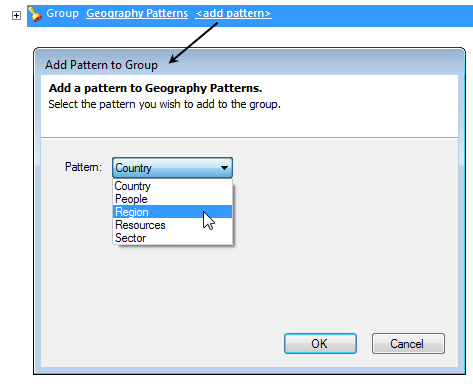


On the ribbon, on the **Home** tab, in the **Insert** group, there is an **Add Pattern Group**

command:

Use each group’s **<add pattern>** link to add its patterns:

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See [*Query rules*](#_bookmark40) on page [28](#_bookmark40) for more information on using queries to find and include elements in your document and [*Patterns*](#_bookmark43) on page [31](#_bookmark43) for more information on creating and using patterns.

## Repeating templates (templates within patterns)

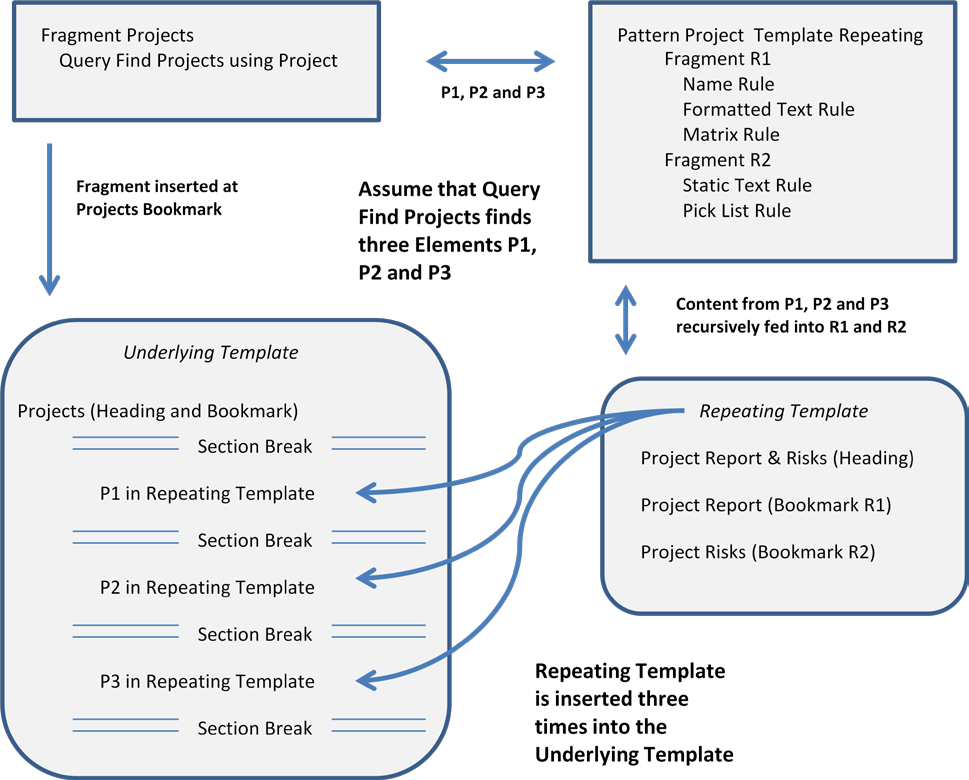
PatternWithTemplate.pngEach document always has a single underlying Microsoft Word template. In many cases this will be sufficient. However, patterns can use a different template. For example:

Content from elements that such a pattern is applied to is inserted into the generated document within a section based on the pattern’s template, and thereby uses styles, structure, content and bookmarks from the pattern’s template instead of the document’s underlying template. The underlying template still provides the overriding structure and the document’s headers and footers.

**Note:** The type of Microsoft Word section break used is ***Continuous***.

The following diagram illustrates this behavior for a fragment that uses such a pattern.

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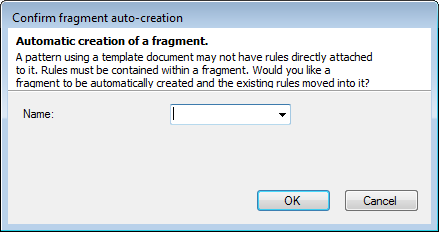


#### Figure 2. Templates in patterns – repeating sections

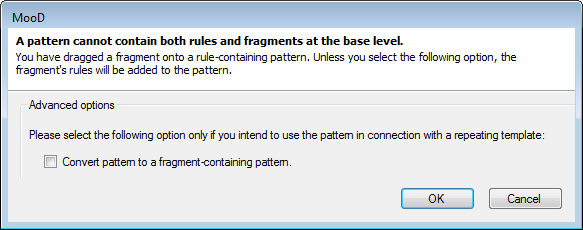
This feature helps in the development of documents with many repeating sections. Rather than maintaining one mammoth template, you can design, use, maintain, and more importantly, reuse, several component templates. The underlying template can become simpler and act as a wrapper for your various repeating templates.

Because you use bookmarks from the pattern’s template, the pattern’s rules must be held within fragments (this is because fragments include the ***bookmark*** setting). The pattern can include any number of fragments. As a result of this, you may encounter the two dialogs detailed next.

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When you set the **template** property for a pattern that already includes rules, Business Architect displays the dialog shown above. If you click **OK**, the template will be set to the selected template and a fragment created containing the existing rules. **Name** lets you select a bookmark from the pattern’s template.

For the same reason, if you drag a fragment and drop it into a pattern that already contains rules (not held in a fragment and hence with **template** unset), you get the following dialog box:

If you proceed, you have two possible outcomes:

* + If you select **Convert pattern to a fragment containing pattern** and then click **OK**, the dragged fragment is added to the pattern, and the pattern’s existing rules are put into another fragment.
  + If you just click **OK**, the fragment’s rules are extracted and added to the pattern.

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