

MooD 15

Free Form Matrix

This document covers how to create a Free Form matrix in MooD Business Architect.

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MooD 15 Free Form Matrix

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# Introduction

This document has two main sections:

* [About the Free Form matrix](#_bookmark1)
* [How to create a Free Form matrix](#_bookmark13) (page [13](#_bookmark13))

# About the Free Form matrix

This section explains the Free Form matrix by answering:

* [Briefly, what is it?](#_bookmark2)

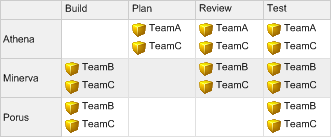
o [What sort of tables is it suitable for?](#_bookmark3)

* [List the key details.](#_bookmark4)
* [Where is it in Business Architect?](#_bookmark11)
* [Explain how the Free Form matrix tab works](#_bookmark12).

## Briefly, what is a Free Form matrix?

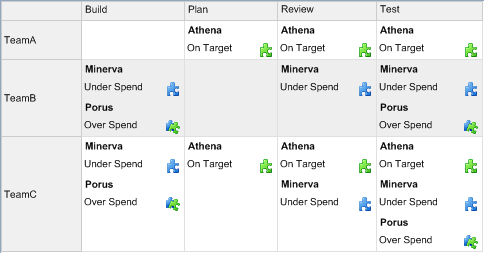
A Free Form matrix displays elements on both the X and Y axis. These elements are related by a query, and the cells can show information from those elements or from related elements. It is the most flexible matrix in MooD. This flexibility brings complexity. A Free Form matrix is constructed using queries. The key to using it is to understand clearly what you want to show in the matrix, and whether your repository has the data and relationships required to produce the queries needed. Knowing what you want to show in a table is central to successfully implementing any matrix, but this is particularly true of the Free Form matrix.

### What sort of tables is it suitable for?

Because of its flexibility, any type of table. However, it is particularly suited to tables where you want to show the relationships between groups of elements and not just data values. This is best illustrated by two examples that show relationships between Task, Team and Project elements.

This first example has Projects as rows, and then shows the different Teams assigned to Tasks.

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In this next example, the cells show Projects and the Pick list status for an applied measure.

## Key details

An awareness of these key details will help you understand and construct Free Form matrices. The sections are:

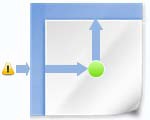
* [Three starting points](#_bookmark5) – when you create a Free Form matrix, you choose between three starting points.
* [Cell display](#_bookmark9) (page [8](#_bookmark9)) – how to control what is shown in the cells.
* [Auto-generate columns and rows by default](#_bookmark10) (page [8](#_bookmark10)) – a brief overview of how you can extend the basic configurations by disabling some of the automatically generated content. This gives you finer control, but you have to write additional queries.

### Three starting points (the three basic configurations available)

Free Form matrices all start with a query. However, you choose between three starting points: a **Row** query, a **Column** query, or a **Cell** query. The Free Form matrix tab has a **Change** button to cycle between them. Each starting point gives you a different type of table, and a different sequence of queries to construct it. The sections that follow outline each starting point.

### The Row query starting point

This adds the rows first. After this you add a **Cell to column** query to add the columns and position elements against them. This second query starts from a row element.

On the **General** tab for a Free Form matrix, this is the default starting point and it appears as:

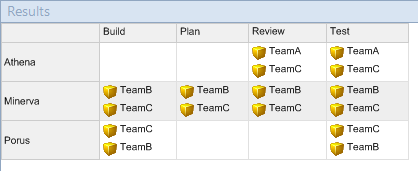
(Query sequence: **Row** > **Cell to column**)

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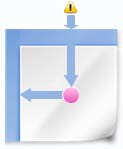
**Note:** For each query in the sequence, there is a sub tab within the main tab. For example, for a Free Form matrix that starts with a **Row** query, you have these tabs:

TabSequence.png

This type is ideal when you know what elements you want to show as rows. From this starting point, you then find the elements for your columns, and configure the cells to show some relationship between the two.

For example, as shown in the following image, show Projects as rows, then find Tasks as columns, and in the cells show what resources (if any) are allocated.

### The Column query starting point

This adds the columns first. After this you add a **Cell to row** query to add the rows and position elements amongst them. This second query starts from a column element. The icon for this is:

(Query sequence: **Column** > **Cell to row**)

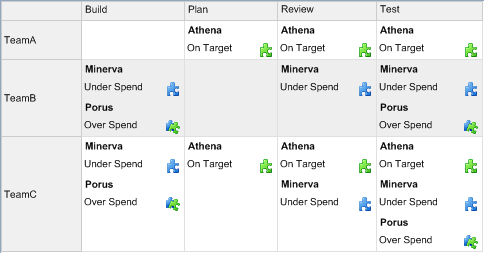
This starting point is the inverse of the **Row** query starting point. Choosing between them is a presentation choice, not a logical or content choice. For example, here is the previous example but with the Project elements added as columns:

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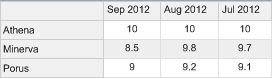
### The Cell query starting point

This is the most complex starting point. It lets you define a query that finds elements to use as cells, and then lets you define two queries (**Cell to Column** and **Cell to Row**) to add the columns and rows by which those elements are positioned within the table. Both these queries start from a cell element. The icon for this is:

(Query sequence: **Cell** >**Cell to column** > **Cell to row**)

This starting point is ideal for where you want cells to show elements **and** some information related to that element. For example, the following shows Project elements and a Measure status for different Teams and Tasks.

The **Cell** query starting point is also useful when you want one of the axes to show epochs. For example:

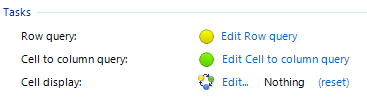


This second example:

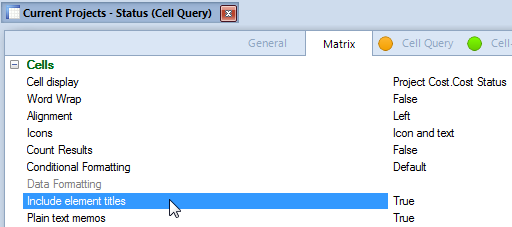
* Starts with a **Cell** query that finds measure instances.
* Then has a **Cell to column** query that finds and orders their epochs (specifically a **Find Instances Epoch** block followed by an **And finally** block with an **order by** clause).
* Ends the query sequence with a **Cell to row** query that finds the Project elements that contain the measure instances (a **Find Instances Container Element** block).
* Finally, the **Cell display** setting is configured to show the value of the measure instance within each cell.

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### Cell display (Controlling what appears in the cells)

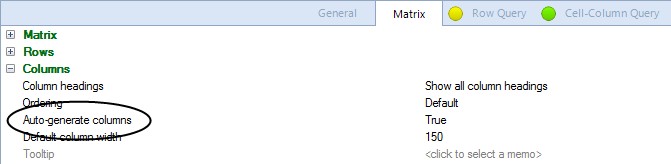
For all three types of Free Form matrix, once you have completed the queries to get the content, use the **Cell display** setting to control what is actually shown in the cells. This setting is the last setting under **Tasks** on the **General** tab. Click **Edit** to display a **Select Content** dialog box.

If the matrix starts from a **Cell** query, the cells can include or exclude the name of the elements they contain. This setting (**Include element titles**) is on the **Matrix** sub tab, within the **Cells** group, as shown in the next image:



### Auto-generate columns and rows by default

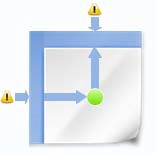
Once you add a **Cell to** query, the columns or rows included in the table are added automatically based on the content returned by that query. In many cases, MooD’s selection will be what you want. However, if it isn’t, you can switch off the auto generation and manually write another query to find exactly what you want. For example, if the auto generation includes too many columns, you can replace it with a query that finds just the required columns. As soon as you switch off auto generation, you get a new sub tab for the replacement query. How to do this for a **Row** query Free Form matrix is outlined next.

On the **Matrix** tab, in the **Columns** group, there is an **Auto-generate columns** setting that defaults to **True**.

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TabSequenceColumnsFalse.pngWhen **False**, the query sequence for the **Row** query Free Form matrix changes from **Row** > **Cell to column** to **Row** > **Column** > **Cell to column**, and a **Column Query** sub tab is added to the main tab, as shown here:

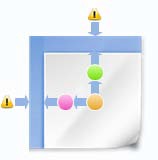
The image that represents this configuration also changes to:



Use the new **Column Query** sub tab to replace the automatically generated columns. At the expense of an additional manual step, this gives you complete control over what columns appear in your matrix.

There are equivalent **Auto-generate** settings for the other two types of Free Form matrices. They function in the same manner. For example, for a **Cell** query (the third starting point), if you set both **Auto-generate rows** and **Auto-generate columns** to **False**:

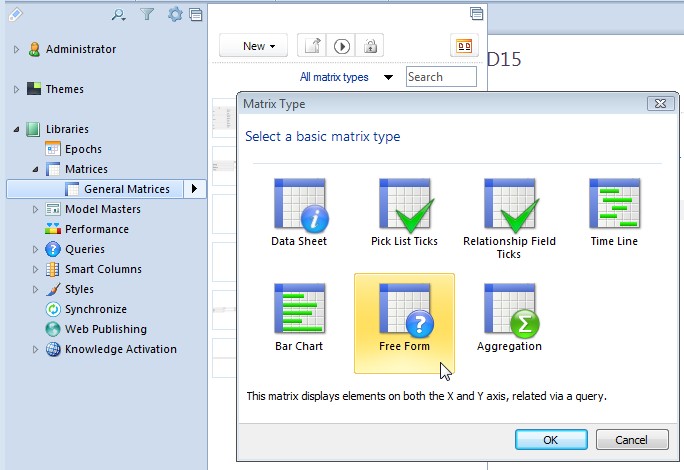
* + The query sequence becomes: **Row** > **Column** > **Cell** > **Cell to column** > **Cell to row**.
  + Fivetabs.pngYou have five sub tabs:
  + The image that represents this particular configuration becomes:



**Note:** This document does not elaborate further on these extended configurations. They add flexibility should you require it.

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## Where is the Free Form matrix in Business Architect?

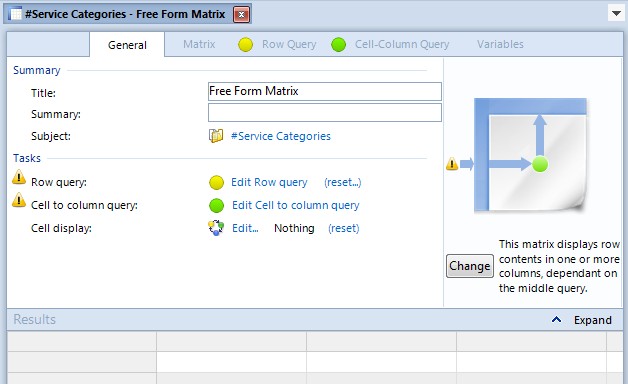
In the Explorer Bar, in the **Matrices** library, when you add a matrix, **Free Form** is one of the types you can select.

When you click **OK**, a matrix designer tab is displayed. The next section outlines this tab’s features in relation to Free Form matrices.

**Note:** You can see if your repository already contains Free Form matrices by filtering the Matrix library by that type. Click **All matrix types** (shown in the previous image just above the **Matrix Type** dialog box) and apply the **Free Form** filter to the Matrix pane.

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## The Free Form matrix tab in Business Architect



#### Figure 1. Image of Free Form matrix tab for Row query configuration

Key usage points:

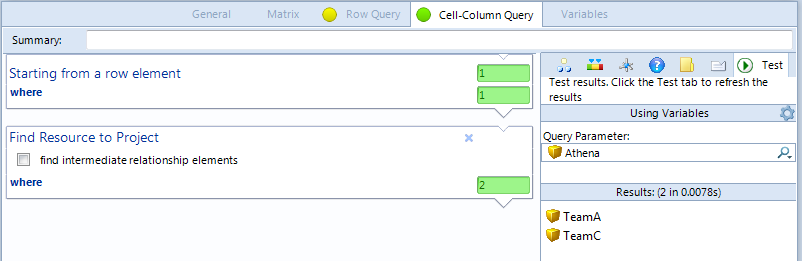
* + Click the **Change** button to switch between the three basic configurations outlined on page [5](#_bookmark5).
    - The sub tabs, and what is included within the **Tasks** area, change as you move between the three configurations.
  + Under **Tasks**, if you click on any **Edit *query*** link, it takes you to the sub tab for that query (meaning there is a one to one relationship between the queries listed under **Tasks** and the sub tabs along the top of the main tab).
    - The image above the **Change** button is also clickable. Different points take you to the query they represent.
  + The **Matrix** sub tab includes a variety of standard configuration options, including the

**Auto-generate** settings outlined on page [8](#_bookmark10).

* + The **reset** link next to a query lets you reset that query to a standard query chosen from a list of basic, but frequently used, queries. This will replace any existing query, but if you are developing a new Free Form matrix, you can use **reset** to quickly select a query.
    - The **reset** link next to **Cell display** does reset that setting to nothing (after prompting for confirmation).
  + All **Cell to** queries start from an element found by the first query in its sequence. This will be a **row element**, a **column element** or a **cell element**. You cannot change this starting block.

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If you want to test a **Cell to** query on its own tab, you must supply a relevant element on the **Test** sub tab.

The next image shows all of this for a **Cell to column** query. The **Starting from a row element** block is fixed, and to test it, the **Athena** element has been added as the **Query Parameter**.

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# How to create a Free Form matrix

This section covers creating a Free Form matrix. It has the following sections:

* + [Preparation](#_bookmark14) – some guidance on what you should consider before you begin creating the matrix.
  + [Developing a **Row** query Free Form matrix](#_bookmark15) (page [13](#_bookmark15)). A step by step task. The information here also applies to the **Column** query starting point (fundamentally the processes are the same).
  + [Developing a **Cell** query Free Form matrix](#_bookmark17) (page [15](#_bookmark17)). This outlines the differences between this and the previous task.

These sections assume that you are familiar with the concepts and user interface covered in the [*About the Free Form matrix*](#_bookmark1) section starting on page [4](#_bookmark1).

## Preparation

Preparation typically involves answering these questions:

* What do I want to show in this matrix?
* Does the repository include the information I need to show this?

o In particular, do the relationships exist?

* Could I use one of the simpler matrix types?
* If it involves calculations, is it more suited to an Aggregation matrix?

You can discover this by trial and error, but a little preparation, in particular having a clear understanding of what you want your matrix to show, is advisable.

## Developing a Row query Free Form matrix

This section describes creating a Free Form matrix that uses at the default **Row** query starting point.

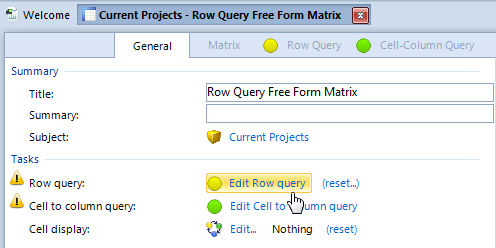
**Task 1** To develop a Free Form matrix that starts with a **Row** query:

1. In Business Architect, under **Libraries**, open the **Matrices** pane.
2. In the **Matrices** pane, click **New**, and then select the element that the matrix will belong to.
3. In the **Matrix Type** dialog box, click **Free Form**, and then click **OK**.

A tab for the new matrix is displayed. This defaults to the **Row** query format.

1. Give the matrix a meaningful name.

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1. Under **Tasks**, click **Edit Row query**.

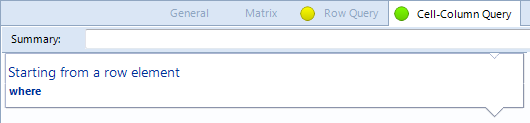
The **Row Query** sub tab is displayed.

1. Construct the query that finds the elements that you want to show as rows.

Use the **Test** tab (on the right side of the **Row Query** sub tab) to check that the query returns the elements you expect.

**Note:** At this point, if you click **Execute**, the **Results** area will show a table with these elements shown as both the rows and columns. This is because **Auto-generate columns** on the **Matrix** sub tab is set to **True**. This is the expected behaviour. The next step gives MooD the information it needs to find the actual columns required.

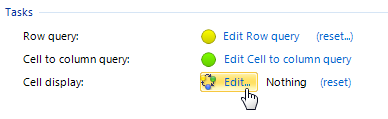
1. Click the **Cell-Column Query** sub tab.

This is the query that finds the elements that you want to use as columns. As these elements are related to the row elements returned by the **Row Query**, this query already has **row element** as its starting point. You cannot change this.

1. Construct the query.

Use the **Test** tab, or click **Execute**, to check that the query finds what you want and adds the desired columns to the table.

All that remains is to specify what will be displayed in the table’s cells.

1. Click the **General** sub tab.
2. Under **Tasks**, next to **Cell display**, click **Edit**.

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The **Select Content** dialog box is displayed.

1. Select what you want to show in the table’s cells.
2. On the ribbon, click **Execute** to test the matrix.

The **Results** area will show the completed matrix. You can configure it further, or place it on a model. If it does not show what you want, you will have to revisit the queries and **Cell display** setting as appropriate.

**Note:** To create a Free Form matrix that starts with a **Column** query, you follow the same process but, before step 4, click the **Change** button to change the configuration. The image above the **Change** button will change, and the **Row Query** sub tab is replaced with the **Column Query** sub tab.

## Developing a Cell query Free Form matrix

The process is the same as developing a **Row** query Free Form matrix except that the sequence of queries is:

* + **Cell** query – this finds the elements that will populate the cells.
  + **Cell to column** query – starting from a cell element, this query finds the columns.
  + **Cell to row** query – starting from a cell element, this query finds the rows.

Once you have defined these queries, use the **Cell display** setting on the **General** sub tab to select the content that will be shown within each cell. By default, the name of the element is included in the cell, but you can control this using the **Include element titles** setting in the **Cells** group of settings on the **Matrix** sub tab.

Another useful setting in the **Cells** group is **Icons**. Use this to include or exclude Pick list icons.

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